



## Safety Information for Lithium-Ion batteries for Cordless Power Tools and Electric Garden Equipment



### 1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY

Trade Name: Lithium ion rechargeable battery (battery pack with lithium ion cells)

Manufacturer/Supplier Information:

Robert Bosch GmbH, Power Tools, Max-Lang-Str. 40-46, D-70771 Leinfelden-Echterdingen

Contact:

Telephone: ++49 (0)711-758-0

Internet: [www.bosch-pt.com](http://www.bosch-pt.com)

Emergency information: GBK Gefahrgut Büro GmbH, Mail: [gbk@gbk-ingelheim.de](mailto:gbk@gbk-ingelheim.de)  
24-hour telephone number **(001) 352-323-3500**

### 2. HAZARDS IDENTIFICATION

Lithium-Ion-batteries have a gas-tight seal and are safe as long as they are used and handled in accordance with the manufacturer's specifications.

When recharging batteries, always use chargers which are suitable for the battery type.

Do not short-circuit batteries. Do not inflict mechanical damage (puncturing, deforming, disassembling etc.). Do not heat them above the permitted temperature or burn them. Keep batteries away from small children.

Always store batteries in a dry and cool place.

When handled properly and in accordance with the parameters specified by the manufacturer, Lithium-Ion-batteries are safe during use. Improper handling or conditions leading to improper operation can cause leakage and reactions which can lead to personal injury and environmental damage.

In general, contact with leaking battery substances can pose a danger to personal health and the environment. For this reason, when coming into contact with batteries with a conspicuous appearance (leaking substances, deformed, discoloured, dented or the like), appropriate body and breathing protection is required. Lithium batteries can, for example, react very severely in combination with fire. This can result in battery components being ejected with considerable force.

#### Handling and operational safety:

Lithium-Ion-batteries are always to be handled in accordance with the manufacturer's specifications. This is particularly true when complying with mechanical and thermal loads.

Usually batteries are marketed together with appropriate battery chargers as product packages. Such products are not to be modified or tampered with, since that could result in substantial safety hazards.

Even if assumed to be discharged, Lithium-ion-batteries may - as other batteries - still represent a source of danger. They may deliver a very high short-circuit current.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Note: When used properly Lithium-Ion-batteries do not release any substances.

Cathode: Lithium metal oxide (active material)  
Polyvinylidene fluoride (binder)  
Graphite (conductive material)

Anode: Carbon (active material)  
Polyvinylidene fluoride (binder)

Electrolytes: Organic solvent (non-aqueous liquid)  
Lithium salt

The product does not contain metallic lithium or lithium alloys.



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#### 4. FIRST AID MEASURES

**Eye contact:**

Rinse eyes with water for 15 minutes and seek medical attention.

**Skin contact:**

Wash area thoroughly with soap and water and seek medical attention.

**Burns:**

If burns are caused, treat them accordingly and seek medical attention.

**Respiratory tract:**

In case of intensive smoke generation and gas release or bad smell leave the room and initiate an alarm and fire fighting action, if required. Seek medical attention if there are large quantities and irritation of the airways. Ensure sufficient ventilation.

**Swallowing:**

Rinse out the mouth and around the mouth with water. Immediately seek medical attention.

#### 5. FIRE-FIGHTING MEASURES

Fires from lithium batteries in use can in principle be fought with water. No additional or special extinguishing agents need be used, since the batteries are protected accordingly. Fire surrounding the batteries is to be fought with conventional extinguishing agents. The fire of a battery cannot be considered separately from the surrounding fire.

The cooling effect of water effectively impedes fire from spreading to battery cells which still have not reached the critical ignition temperature ("thermal runaway").

The fire load can be reduced by separating high quantities and by transport out of the dangerous zone.

#### 6. ACCIDENTAL RELEASE MEASURES

If the battery housing gets damaged, electrolyte can leak out. Seal batteries in an airtight plastic bag, add dry sand, chalk powder (CaCO<sub>3</sub>) or vermiculite. Traces of electrolyte can be soaked up with dry paper towels. When doing so, prevent direct contact with skin by wearing safety gloves. Thoroughly rinse with water.

Use personal safety equipment appropriate for the situation (safety gloves, protective clothing, safety mask, breathing protection).

#### 7. HANDLING AND STORAGE

**HANDLING**

No special protective clothing required for handling individual cells.

**STORAGE**

In each case, carefully observe the warnings on batteries and the operating instructions for devices and other applications. Use only the recommended battery types.

Lithium batteries must be stored at regular temperatures and in a dry location (max. 60°C); large temperature fluctuations are to be avoided. (For example, do not store close to heating elements, do not expose to sunshine for long periods).

When storing large quantities of lithium batteries, consult local authorities and insurers.

#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Lithium-Ion-batteries are products, from which no substance is released under normal and reasonably foreseeable conditions of use.



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### 9. PHYSICAL AND CHEMICAL PROPERTIES

Compact battery pack with plastic housing.

### 10. STABILITY AND REACTIVITY

If an upper temperature limit of 120°C is exceeded, the batteries are in danger of bursting.

When storing the battery above a temperature 60°C, the battery may age faster and may lose its function early.

### 11. TOXICOLOGICAL INFORMATION

When handled appropriate, and when general hygiene regulations are followed, there are not known any injuries.

### 12. ECOLOGICAL INFORMATION

When handled appropriate, there are not expected any negative impacts to the environment.

### 13. DISPOSAL CONSIDERATIONS

Lithium batteries are marked with the symbol of the crossed-out wheeled bin (see figure).



The symbol reminds the end user that batteries in the EU are not permitted to be disposed of with household waste, but must be collected separately. Spent batteries have to be returned free of charge to collection schemes or distributors.

Please consider the rules for environmentally sound disposal, that apply to your region.

To prevent short circuits and associated heating, lithium batteries must not be stored or transported in bulk form and unprotected. Suitable measures against short circuits include:

- Placing the batteries in original packaging or a plastic bag
- Masking the contacts
- Embedding in dry sand

### 14. TRANSPORT INFORMATION

Commercial transport of Lithium-Ion-batteries is subject to dangerous goods regulations. Transport preparations and transport are exclusively to be carried out by appropriately trained persons and/or the process has to be accompanied by corresponding experts or qualified companies.

#### Transport regulations:




Lithium batteries are subject to the following dangerous goods regulations and exceptions to them—in the version applicable in each case:

UN 3480: LITHIUM-ION-BATTERIES

UN 3481: LITHIUM-ION-BATTERIES PACKED IN EQUIPMENT, i.e. inserted in battery operated product or

LITHIUM-ION-BATTERIES PACKED WITH EQUIPMENT, i.e. packed together with battery operated product.

Class 9  
Packing group: II

 <b>BOSCH</b>	<b>Safety Information for Lithium-Ion batteries for Cordless Power Tools and Electric Garden Equipment</b>	  <b>EPTA</b> <small>THE EUROPEAN POWER TOOL ASSOCIATION</small>
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ADR, RID:  
Special provisions: SP188, SP230, SP310, SP636  
Packing instructions: P903, P903a, P903b  
Tunnel category: 9

ICAO, IATA-DGR:  
Special provisions: A88, A99, A154, A164  
Packing instructions: P965, P966, P967

IMDG Code:  
Special provisions: SP188, SP230, SP310,  
Packing instruction: P903  
EmS: F-A, S-I  
Stowage category A

### Test and inspection specifications

In accordance with the dangerous goods regulations for lithium batteries, each new type of cell or battery must have passed all tests listed in the UN Manual of Tests and Criteria, Part III, Section 38.3. This particularly applies if multiple cells or batteries have been assembled into new batteries (battery packs or battery assemblies).

Defective or damaged batteries are subject to more stringent regulations. This regulations may prohibit the transport completely. The prohibition of transport applies to air transport carriers (ICAO T.I., IATA DGR - special provision A154).

However, for the transport of used - but not damaged - batteries, refer also to the corresponding special regulations (636), and/or packaging instructions (P903a and P903b / ADR).

Waste batteries and batteries which are sent for recycling or disposal are prohibited from air transport (IATA Special provision A 183).

Exceptions are to be approved by the competent authority of the country of origin and the respective country of the airline.

## 15. REGULATORY INFORMATION

Transportation regulations according to IATA, ADR, IMDG, RID

## 16. OTHER INFORMATION

The instructions provide help for complying with legal specifications, but do not replace them.

The foregoing information was compiled to the best of our knowledge and belief.

We cannot accept, however, responsibility for any error or omission, nor for any consequential loss or damage so arising.

The instruction does not represent any guarantee of properties. Distributors and users of the product have their own responsibility for observing applicable laws and regulations.