1. Product and company name

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

Emergency information: GBK Gefahrgut Büro GmbH
E-mail: gbk@gbk-ingelheim.de
24-hour telephone number **(001) 352-323-3500**

2. Possible hazards

Lithium ion batteries are gas-tight sealed and innocuous, as long as the manufacturer's instructions are followed during use and handling.

Warning!
Never use chargers not intended for the battery type.

Do not short circuit. Do not damage mechanically (perforate, deform, take apart, etc.). Do not heat up above the permissible temperature or burn. Keep batteries away from small children. Always store batteries in a cool and dry place.

Battery packs are safe to use if handled properly under the parameters given in the instructions for use. Incorrect handling or circumstances that lead to an improper operation can lead to leaks and the escape of the battery contents and decomposition products and to strong associated reactions that endanger the health and the environment.

In principle, contact with leaked-out battery components is a health and environmental hazard. Therefore, sufficient body and respiratory protection is necessary when there is contact with conspicuous batteries (leaked-out contents, deformations, discolorations, dents and the like). Battery packs can react very violently when combined with fire, for example, and highly potentially hazardous components can be emitted.

Handling and operational safety:
Battery packs must be handled according to the instructions for use under all circumstances. This applies especially to compliance with the limits of mechanical and thermal stresses.

Battery packs may never be modified or manipulated, as this can cause significant safety risks.

Danger!
As with other batteries, lithium batteries that have supposedly been discharged can still pose a hazard because they are capable of delivering a very high short-circuit current.

A discharge that is too low leads to long-term damage. Deeply discharged battery packs may no longer be charged or operated.

Excessively high charging voltages and overcharge must be avoided at all costs. They cannot only lead directly to critical situations, but also have a negative effect on the battery's life.

3. Composition / Content information product and company Name

Characterizations
The battery pack contains cells with lithium metal oxide cathode.

Important note
The battery may not be opened, heated up to temperatures above 120°C or burned, as exposure to its contents can be dangerous under certain conditions. The battery contains neither metallic lithium nor lithium alloys.

Composition

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

4. First-aid measures

The first-aid instructions given below refer exclusively to handling when contents are emitted.

Skin or eye contact:
If contact occurs, the affected areas must be thoroughly rinsed with water for at least 15 minutes. If there is eye contact, a doctor must be called in addition to a thorough rinsing with water.

Burns:
Burns must be correspondingly treated. It is also strongly recommended to call the doctor.

Airways:
If a lot of smoke is produced or gas is released, leave the room immediately. If quantities are larger and the airways are irritated, seek medical attention. Ensure good ventilation if possible.

Swallowing:
Rinse off the mouth and surroundings. Seek medical attention at once.

5. Fire-fighting procedures

In principle, fires caused by lithium batteries can be extinguished with water.

No additional or special fire extinguishers are needed.
Surrounding battery fires are put out with conventional fire extinguishers. A burning battery cannot be considered separately from the surrounding fire.

The cooling effect of water effectively inhibits the spread of a fire to the battery cells that have not yet reached the temperature critical for an ignition ("thermal runaway").

As with any fire, the gases produced can be a health hazard if inhaled. For this reason, sufficient ventilation should be ensured.

6. Measures to be taken in case of an unintended release

Electrolytes can leak out if the battery housing is damaged. Batteries must be placed inside an airtight plastic bag and dry sand, chalk powder (CaCO3) or vermiculite added if possible. Electrolyte traces can be absorbed with dry household paper, but protective gloves should be worn to avoid direct skin contact. The area should be subsequently rinsed with plenty of water.

Personal protection equipment adapted to the situation should be worn (protective gloves, facial protection, respiratory protection).

7. Handling and storage

Battery packs should be preferably stored in a dry place at room temperature (max. 60 °C). Large temperature fluctuations should be avoided (e.g. do not store near heaters, do not expose to direct sunlight for long periods).

Protect from humidity and water.

8. Exposure limit and personal protection measures

Battery packs are products from which no substances are released under normal and reasonably predictable conditions of use.

If handled properly, no personal protection equipment is necessary.

9. Physical and chemical properties

Compact battery pack with plastic sheathing.

10. Stability and reactivity

When the temperature of 120°C is exceeded, there is the risk of the batteries bursting and possibly burning (“thermal runaway”).

When a storage temperature of 60°C is exceeded, the batteries may age faster and lose their function prematurely.

11. Toxicological information

No danger if the batteries are used properly under normal conditions. If damaged or used improperly, irritating or sensitising components can leak out.

12. Ecological information

Negative ecological effects are not expected with proper use and disposal.

13. Disposal instructions

Batteries may not be disposed of in household waste; they must be collected separately from the remaining waste.

Used batteries must be returned to the place of purchase or to an industrial or retail disposal system.

When collecting or storing, avoid short circuits. To prevent short circuits and the associated heating up, battery packs may never be stored or transported unprotected in loose bulk. Some appropriate measures for preventing short circuits are:

- Putting batteries in their original packaging or in a plastic bag
- Masking over the poles
- Embedding in dry sand

Whenever possible, battery packs should be disposed of in a discharged state.

14. Transport information

The transport and storage temperature may not exceed 60°C

Important information!
The commercial transport of lithium batteries is subject to hazardous materials legislation. Both transport preparations and transport must be carried out by appropriately trained staff or the process must be accompanied by the corresponding experts or qualified companies.

Exception: For battery packs with a maximum energy content of 100 Wh, simplified special regulations of the hazardous materials legislation can be applied (ADR, RID: SV 188; IMDG: SP 188; IATA: PI 965, 966, 967, in each case Section II).

(The energy content of battery packs in Wh is indicated on the nameplate of the battery pack.)

Transport regulations:
Lithium batteries are subject to the following hazardous materials regulations and exceptions there from– in the currently valid version: Class 9

- UN 3480: LITHIUM ION BATTERIES
- UN 3481: LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT
  (inserted or incorporated in the device) or
  LITHIUM ION BATTERIES PACKAGED WITH EQUIPMENT
  (e.g. enclosed in the carrying case)

Packaging group: II, tunnel category E

Special and special packaging regulations: ADR, RID: 188, 230, 310, 636, P903, P903a, P903b

Note: For ADR, see:
http://www.unece.org/trans/danger/publi/adr/adr2011/11contentse.html

IATA: A88, A99, A154, A164, P965, P966, P967, P968, P969, P970

Note: For the IATA Guidance Document about lithium batteries see:
www.iata.org/whatwedo/cargo/dgr/Documents/Lithium-Battery-Guidance-2013-V1.1.pdf

IMDG code: 188, 230, 310, P903

EmS: F-A, S-I

Stowage category A

Defective or damaged batteries are subject to stricter regulations that can include a full transport ban. The transport ban applies to air traffic carriers (ICAO T.I., IATA DGR – special provision A154).

For the transport of used but undamaged batteries, reference is also made to the corresponding special regulations (636) and packaging instructions (P903a and P903b / ADR).

Waste batteries and batteries sent for recycling or disposal are prohibited in air traffic (IATA-special provision A 183).

Exceptions must be granted by the national authority in charge in the country of departure.

15. Regulations

In EU countries, the national laws for implementing directive 2006/66/EC (battery guideline) apply.

16. Other information

The information given provides assistance for complying with legal stipulations, but it does not replace them. The information given above was compiled according to the best of our knowledge and belief, but no assurance is made regarding properties.

Distributors and users of the product are responsible for complying with applicable laws and stipulations.