



Safety Information for Lithium Ion Batteries for Cordless Power Tools



PRELIMINARY REMARKS

EC

These batteries are neither "substances" nor "mixtures" according to the REACH Regulation 1907/2006 EC. They have, however, to be regarded as "articles" which are not intended to release substances under normal or reasonably foreseeable conditions of use. Therefore it is not required to provide a Safety Data Sheet according to article 31 of the REACH Regulation (EC) 1907/2006.

US

Material Safety Data Sheets (MSDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as a manufactured item other than a fluid or particle;

(i) which is formed to a specific shape or design during manufacture;

(ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and

(iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees.

Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard.

1. IDENTIFICATION OF THE PRODUCT AND OF THE COMPANY

Product identifier:

92604175020 Battery

Details of the supplier of the safety information:

C. & E. Fein GmbH, Hans-Fein-Str. 81, 73529 Schwäbisch Gmünd-Bargau

Telefon: +49 (0)7173/183-0, +49 (0)7173/183-800

www.fein.de

2. HAZARDS IDENTIFICATION

Lithium ion batteries have a gas-tight seal and not hazardous when used and handled in accordance with the manufacturer's specifications.

3. COMPOSITION / INFORMATION ON INGREDIENTS

cathode: Li-, Ni-, Co-, Mn- containing oxides (active material), phosphates
polyvinylidene fluoride / styrene-butadiene rubber (binder)
carbon (conductive material), additives, aluminium foil

anode: carbon (active material)
silicone, polyvinylidene fluoride / styrene-butadiene rubber (binder), additives, copper foil

electrolyte: organic solvents (non aqueous liquids), lithium salt, additives

The product does not contain metallic lithium or lithium alloys.

4. FIRST AID MEASURES

Skin or eye contact with released substances (electrolyte):

Rinse eyes thoroughly with water for at least 15 minutes. Seek medical attention.



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Chemical Burns:

Chemical burns require appropriate treatment. Seek medical attention.

Respiratory tract:

In case of intensive smoke generation or gas release immediately leave the room. In case of large quantities and irritation of the respiratory tract, seek medical attention. Ensure sufficient ventilation.

Swallowing:

Rinse mouth and vicinity with water. Seek immediate medical attention.

5. FIREFIGHTING MEASURES

Fires from lithium batteries can basically be fought with water. There is no need for additional or special extinguishing agents. Surrounding fires can 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 prevents surrounding fire from spreading to batteries which have not yet reached the critical ignition ("thermal runaway") temperature.

Reduce fire load by separating large quantities and moving them away from the area of risk.

During a fire, gases may develop which may cause injuries of the respiratory tract. Take care of sufficient respiratory protection.

6. ACCIDENTAL RELEASE MEASURES

When damaged the battery housing may release electrolyte. Seal batteries in an airtight plastic bag, add dry sand, chalk powder (CaCO_3) or vermiculite. Traces of electrolyte can be absorbed with dry paper towels. Wear protective gloves in order to prevent direct contact with skin. Thoroughly rinse contaminated areas with water.

Use appropriate personal protective equipment (protective gloves, protective clothing, protective mask, respiratory protection).

7. HANDLING AND STORAGE

Handling and Occupational Safety

Handle discharged batteries with care

Even when discharged, batteries represent a risk as they may deliver a very high short-circuit current. Even if they seem to be discharged lithium ion batteries need to be treated as carefully as if they were not discharged.

Avoid impact and physical damage

Impact and penetration may damage the battery. This may cause leakage, heat generation, smoke, fire, or explosion.

Keep batteries away from other metal objects

Paperclips, coins, keys, nails, screws or other metal objects can short the terminals. This may cause burns or fire.

Under abusive conditions liquid may be released from the battery

Avoid contact with battery liquids. Rinse with water. Upon contact with eyes, seek also medical assistance. Liquid released from the battery may cause irritation or chemical burns.

Do not expose a batteries to fire or excessive temperature

Exposure to fire or temperature above $130\text{ }^{\circ}\text{C}$ may cause fire, explosion and personal injuries. Do not incinerate batteries except for permitted waste incinerators.

Do not disassemble batteries

Disassembly or modification of the battery may damage the protection circuit. This may cause heat generation, smoke, fire, or explosion.



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Do not immerse batteries in liquids like water or beverages

Exposure to liquids may damage the battery. This may cause heat generation, smoke, fire, or explosion.

Use only chargers recommended by the manufacturer

Chargers which are not suited for the battery being recharged may be damaged. This may cause fire.

Use cordless power tools and electric garden equipment only with designated batteries

Use of cordless power tools and electric garden equipment with other batteries may lead to battery damage. This may cause fire and personal injury.

Do not use damaged or modified batteries

Damaged or modified batteries may exhibit unpredictable risks. This may cause fire, explosion and personal injury.

Do not use defective batteries

Immediately stop using batteries when abnormalities are noticed, such as smell, heat, discoloration, or deformation. Otherwise the battery may be damaged. This may cause heat generation, smoke, fire, or explosion.

Storage

Always carefully observe warning notices on batteries and in instructions for use. Use only recommended battery types.

Lithium batteries preferably are to be stored at ambient temperature and in dry places (max. 50 °C). Large temperature fluctuations are to be avoided. (For example, do not store near heat radiators, do expose to sunlight for sustained periods).

Consult local authorities and insurers when storing large quantities of lithium batteries.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Not applicable. Lithium ion batteries are products, which do not release substances under normal and reasonably foreseeable conditions of use. Therefore there is normally no need for exposure controls and personal protection

9. PHYSICAL AND CHEMICAL PROPERTIES

Compact batteries with (plastic) housing, terminals

10. STABILITY AND REACTIVITY

When an upper temperature limit of (e.g. 130°C) is exceeded, batteries may rupture or the pressure relief mechanism may be activated.

Exceeding a storage temperature of 60 °C may lead to accelerated ageing and premature loss of function.

11. TOXICOLOGICAL INFORMATION

Lithium ion batteries are products, which do not release substances under normal and reasonably foreseeable conditions of use. In case of damaged ingredients may be released.

12. ECOLOGICAL INFORMATION

Lithium ion batteries do not contain heavy metals (such as lead, cadmium or mercury).

13. DISPOSAL CONSIDERATIONS

In the EU, used batteries must not be disposed of with household waste and not be mixed with batteries of other systems in order to prevent risk for man and environment and not to exacerbate recycling.

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Used batteries shall be returned (free of charge) to the point of sale or to a collection system (industry, distribution).

According to the EU battery directive, lithium batteries are marked with the symbol indicating 'separate collection' (crossed-out wheeled bin shown below).



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
- Individual protection of battery contacts (e.g. using insulating tape)
- 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 personnel and/or the process has to be accompanied by experts with suitable knowledge or qualified companies.

Transport regulations:

Lithium batteries are subject to the following dangerous goods regulations and exemptions based on the respective valid revision:

Class 9

UN 3480: LITHIUM ION BATTERIES

UN 3481: LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT,
(i.e. inserted in battery operated product) or

LITHIUM ION BATTERIES PACKED WITH EQUIPMENT
(i.e. packed together with battery operated product)

ADR, RID

Special provisions: 188, 230, 310, 376, 377, 636

Packing instructions: P903, P908, P909, LP903, LP904

Tunnel category E

IMDG Code

Special provisions: 188, 230, 310, 348, 360, 376, 377

Packing instructions: P903, P908, P909, LP903, LP904

EmS: F-A, S-I

Stowage category A

ICAO, IATA-DGR

Special provisions: A88, A99, A154, A164, A181, A182, A183, A185, A201

Packing instructions: 965, 966, 967

All transport modes

UN test (test number 38.3)

The series of tests described in the Tests and Criteria, Part III, section 38.3 of the UN Manual was passed. Test certificates and manufacturer's confirmations are that this corresponds to the current version of the manual.

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Defective or damaged batteries are subject to more stringent regulations. These regulations may prohibit the transport completely. A general ban applies to air transport (IATA DGR - special provision A154).

For transport of used - but not damaged - batteries please refer to the respective special provisions.

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

Exemptions need to be approved in advance by the competent authority of the country of origin and the respective country of the airline.

15. REGULATORY INFORMATION

Regardless of shape, volume, weight and application, batteries, in the EU are subject to the respective national implementation of the European Battery Directive (2006/66/EC). It includes but is not limited to regulations regarding placing on the market, collection, treatment and recycling of batteries.

Transport regulations are according to IATA, ADR, IMDG, RID. Refer to section 14.

16. OTHER INFORMATION

This information provides assistance for compliance with legal requirements, but does not replace them. It is based on our present knowledge.

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

The information does not represent any warranties. Distributors and users of the product have to take their own responsibility to observe applicable laws and regulations.