

Safety information – according to 1907/2006/EC, Art. 31
Information on the safe handling of lithium-ion rechargeable batteries
MAFELL AG D-78727 Oberndorf a.N. - Revision 2.0 / 08/05/2024

1. Designation of product and company

Trade name

Rechargeable battery pack Li-Power and LiHD

10 M 22, 10 M 43, 12 M 43, 18 M 72, 18 M 94, 18 M 99 and 18 M 144

Manufacturer's / supplier's data

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2. Possible hazards

The ingredients of lithium-ion cells are contained in gas-tight sealed metal housings designed to withstand the temperatures and pressures arising when used and handled as intended. When used normally and as intended in accordance with the manufacturer's instructions, there is neither a risk of ignition or explosion nor a risk of leaking ingredients.

Handling and occupational health and safety

Protect rechargeable battery packs against humidity

Protect rechargeable battery packs against humidity, e.g. rain or splash water, and do not immerse in liquids, e.g. water. Contact with liquids can cause damage, which in some cases even leads to the generation of heat, smoke development, ignition or explosion of the rechargeable battery pack after hours or days.

Do not expose rechargeable batteries to fire or heat

Fire or temperatures above 130°C may cause fire or explosion of the rechargeable battery pack.

Do not use damaged, deformed or modified rechargeable battery packs

Damaged, deformed or modified rechargeable battery packs may have altered characteristics that can lead to fire, explosion, leaking fluids or injuries.

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Flammable liquid can escape from defective rechargeable battery packs

If used incorrectly or if the rechargeable battery pack is defective, a slightly acidic, flammable liquid may escape. Avoid contact with this liquid. Rinse with water in case of contact with the skin. If the liquid gets into the eyes, rinse them with clear water and immediately seek medical attention. Leaking rechargeable battery liquid may lead to skin irritations or burns.

Do not open or disassemble rechargeable battery packs

Opening or disassembling the rechargeable battery pack may alter or disable built-in safety and protective measures. This may result in the generation of heat or smoke, ignition or explosion of the rechargeable battery pack.

Only charge rechargeable battery packs (CAS) in chargers of the approved battery system (CAS).

Only charge rechargeable battery packs in chargers that are recommended and approved by the manufacturer for the rechargeable battery pack type. There is a risk of fire and explosion when charging rechargeable battery packs on non-recommended chargers. There is also a risk of fire and explosion if rechargeable batteries from other manufacturers are charged on CAS-chargers.

Do not use faulty or defective rechargeable battery packs

Do not use defective rechargeable battery packs. Do not use rechargeable battery packs that show abnormal characteristics such as abnormal heating or poor power output, exhibit odour or heat development, or show discolouration or thermal deformation. There is a risk of fire and explosion when using defective or faulty rechargeable battery packs.

Safekeeping and storage of rechargeable battery packs

Short circuits can be caused by bridging the rechargeable battery contacts with metallic objects such as screws, nails, paper clips, keys or other electrically conductive objects. Short circuits can cause burns or fires. Even discharged rechargeable battery packs can still trigger short circuits, as they still have a residual charge to protect against deep discharge. To prevent an accidental and unintentional short circuit, insulate battery contacts of rechargeable battery packs outside the machine with the protective cap provided or with adhesive tape.

Large impacts of force and the penetration of objects are to be avoided for rechargeable battery packs.

Rechargeable battery packs should not be subjected to large external forces such as impacts or shocks and the penetration of foreign bodies should be avoided. This can lead to leakage, generation of heat, smoke development, ignition or explosion.

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3. Composition / information on ingredients

Characterisation

The rechargeable battery pack contains rechargeable lithium-ion cells. These contain a positive electrode (cathode), a negative electrode (anode), and an electrolyte consisting of salts and solutions.

Contact with these substances is ruled out under normal conditions of use.

	Chemical substance	CAS number
Electrolyte salt	Lithium hexafluorophosphate	21324-40-3
Electrolyte solvent	Ethylene carbonate	96-49-1
	Ethyl methyl carbonate	623-53-0
	Diethyl carbonate	114435-02-8
Cathode	Li-, Ni-, Co-, Al-oxide	177997-13-6
	Polyvinylidene fluoride	24937-79-9
Anode	Carbon	7782-42-5
Aluminium film	Aluminium	7429-90-5
Copper film	Copper	7440-50-8

4. First aid measures

Description of the first aid measures

The product contains an organic electrolyte. If the electrolyte leaks from the rechargeable battery pack or ignites, the following measures must be carried out:

Inhalation (respiratory tract)

Remove the person affected to fresh air, use artificial respiration if necessary. If necessary, seek medical attention.

In case of intense smoke development, leave the room, if possible ventilate adequately.

Eyes (contact)

Rinse opened eye for several minutes with copious amounts of water. Remove contact lenses if possible. Seek medical attention immediately.

Skin (contact and burns)

In case of contact with the electrolyte, take off soiled clothing, wash skin with copious amounts of water and soap or take a shower. Burns must be treated accordingly. Medical attention should be sought.

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Swallowing

First rinse mouth with copious amounts of water and then drink a lot of water. Do not induce vomiting. Seek medical attention immediately.

5. Firefighting

Fires involving lithium-ion rechargeable batteries can generally be quenched with water. No special extinguishing agents are required. Fires surrounding the rechargeable batteries must be quenched with conventional extinguishing agents. A rechargeable battery fire cannot be considered separately from the surrounding fire.

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

Reduce the fire load by separating larger quantities and transporting them out of the danger zone.

6. Measures in the event of accidental release

Personal protective equipment appropriate to the situation must be used (suitable protective gloves, protective clothing, face protection, respiratory protection).

Electrolyte may leak out if the rechargeable battery housing is damaged. Rechargeable battery packs must be placed airtight in a non-combustible container filled with dry sand, chalk powder (CaCO₃) or vermiculite. Leaking chemicals are absorbed in this manner.

When storing damaged Li-ion rechargeable batteries, please note that a thermal reaction can still take place after days. Therefore, store in a safe place (e.g. in a metal box with a sand bed without combustible materials in the vicinity).

Traces of electrolyte can be soaked up with dry household paper. Direct skin contact must be avoided by wearing suitable protective gloves. The area should be rinsed with copious amounts of water.

7. Handling and storage

Handling

No special protective equipment is required for handling Li-ion rechargeable batteries.

Observe the warnings on the rechargeable battery housing and the safety instructions in the operating instructions.

Only use the recommended original Li-ion rechargeable batteries and chargers.

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Storage

Li-ion rechargeable batteries should preferably be stored at room temperature and in a dry place. Large temperature fluctuations outside the recommended temperature range of 0 - 30°C should be avoided. Observe the notes on storage and transport in the operating instructions.

Storage of larger quantities of li-ion rechargeable batteries should be done in consultation with local authorities, fire brigade and insurance companies.

8. Limitation and monitoring of exposure / personal protective equipment

Lithium-ion rechargeable batteries are products (commodities) from which no substances are released under normal and reasonably foreseeable conditions of use. Accordingly, no measures and no personal protective equipment are required for normal and intended use.

9. Physical and chemical properties

Compact rechargeable battery pack with plastic sheathing and connection contacts.

10. Stability and reactivity

If an upper temperature limit of 130°C is exceeded, there is a risk of the battery pack bursting. Above approx. 100°C, overpressure valves of the cells may respond.

The permissible storage temperature is between 0 °C und 50 °C. Exceeding a storage temperature of 60°C may cause accelerated aging and premature loss of function.

11. Toxicological information

If handled properly and if the generally applicable hygiene and safety regulations are observed, no health hazards have become known so far.

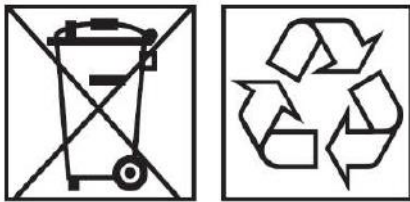
12. Environment-related data

If handled properly, no negative consequences for the environment are to be expected.

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13. Notes on disposal

The symbol of the crossed-out refuse bin serves as a reminder that in the area of the European Economic Area (EEA), rechargeable battery packs may not be disposed of with household waste, but have to be collected separately.



If possible, discharge used rechargeable battery packs in the application for disposal and return them free of charge to the specialist dealer or a sales outlet or hand them over to an appropriate public collection point. Observe the regulations for its environmentally friendly disposal that apply in your region.

To prevent short circuits and associated heating, lithium-ion rechargeable batteries must never be stored or transported unprotected in bulk. The rechargeable battery must be returned secured against short-circuits. Suitable measures against short circuits are for example:

- Inserting the rechargeable batteries in their original packaging or in a plastic bag
- Covering terminals and contacts with protective cap or masking with insulating adhesive tape.
- Embedding in dry sand

14. Transport information

The commercial transport of lithium-ion rechargeable batteries is subject to legislation on dangerous goods. Transport preparations and transport must be carried out exclusively by appropriately trained persons or the process must be accompanied by appropriate experts or qualified companies.

Classification and transport regulations

Lithium batteries are subject to the following dangerous goods regulations and exemptions therefrom - as amended:

- UN 3480: Lithium-ion batteries
- UN 3481: Lithium-ion batteries in equipment
(i.e. inserted in the battery-operated product) or
Lithium-ion batteries packed with equipment

The currently valid regulations for the various modes of transport apply to the transport:

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- Transport by road in Europe: ADR
 - Transport by rail in Europe: RID
 - Transport on inland waterway vessels in Europe: ADN
 - Transport by air worldwide: ICAO-TI / IATADGR
- Transport by sea worldwide: IMDG code

European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), Regulation concerning the International Carriage of Dangerous Goods by Rail (RID):

Special regulation: SV188, SV230, SV376, SV377, SV636 (b)

Packaging instructions: P903, P908, P909

Transport category II, tunnel category E

IMDG Code: Special regulations: SV188, SV230, SV 376, SV377, SV636b

Packaging instructions: P903, P908, P909

EmS: F-A, S-I

Stowage category A

ICAO, IATA-DGR. Special regulations: A88, A99, A154, A164, A183

Part IA, IB or II

Packaging instructions: PI965, PI966, PI967

For other countries, the relevant transport regulations for road, rail and inland waterway transport are available from the competent authorities.

All modes of transport

Defective or damaged rechargeable batteries are subject to more stringent regulations, up to and including a complete ban on transport. The transport ban applies to the air transport mode (IATA Special Provision A154).

However, for the transport of used - but not damaged - rechargeable batteries, additional reference is made to the relevant special regulations.

Waste batteries and rechargeable battery packs shipped for recycling or disposal are prohibited in air transportation (IATA Special Provision A 183).

Exemptions must be approved in advance by the competent national authority of the state of departure and the state of the air carrier.

Transport by private individuals

Private individuals are exempted from the transport regulations in the legal area of the ADR. However, the following criteria have to be met:

- The goods are intended for personal or domestic use or for recreational or sports purposes.
- The goods are packaged in a manner suitable for the retail trade.
- The load is adequately secured.

The carrying of rechargeable batteries in the aircraft as hand luggage or as checked luggage must be agreed with the selected airline. Different regulations apply.

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Transport by traders

For traders, the exemption regulations according to 1.1.3.6 ADR ("1000 point regulation") apply in the legal area of the ADR for lithium-ion batteries with an energy content of more than 100 Wh. Accordingly, up to a battery weight of 333 kg, it is not a transport requiring labelling, i.e. no orange warning plates are required on the vehicle and only a 2 kg ABC powder fire extinguisher must be carried.

In the legal area of the ADR, there are far-reaching exemptions regarding transport for use (at the customer's premises), the so-called craftsmen's regulation. The following is recommended:

- Secure and sturdy packaging (original packaging).
- Labelling according to ADR (original packaging).
- The load is adequately secured.
- Instruction of the employees who carry out the transport.

No further requirements apply to lithium-ion batteries with an energy content of maximum 100 Wh. Nevertheless, the following is recommended:

- Secure and sturdy packaging (original packaging).
- The load is adequately secured.

Supply trips are not exempted.

15. Statutory provisions

Transport regulations according to IATA, ADR, IMDG, RID.

16. Miscellaneous information

The notes provide assistance in complying with legal requirements, but do not replace them. They are based on the current state of knowledge.

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

It does not represent any assurance of properties. Applicable laws and regulations must be observed by the distributors, carriers, disposal companies and users of the product under their own responsibility.

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Legal references

EU: Lithium-ion batteries are neither "substances" nor "preparations" within the meaning of Regulation (EC) No 1907/2006 of the European Parliament (REACH). Instead, they are to be considered "articles". The intentional release of substances during use is not intended. Therefore, there is no obligation to provide a safety data sheet according to Ordinance (EC) No. 1907/2006, article 31.

USA: The preparation of Safety Data Sheets (SDS) is a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard 29 CFR, Section 1910.1200. This standard does not apply to "articles". OSHA defines "article" as a manufactured product that is not liquid or granular;

- (I) which is given a specific shape or form during manufacture;
- (II) which has one or more functions which depend wholly or partly on its shape or form during its final use; and
- (III) which does not release more than very small quantities under normal conditions of use, e.g. traces of hazardous chemicals, and which does not cause an objective hazard or health risk to employees.

As all our rechargeable battery packs are defined as "articles", they are exempt from the requirements of the Hazard Communication Standard.