

## 1. Name of the product and the company

### **Trade name**

Lithium-Ion-Battery (Battery with lithium-ion cells)  
Battery Pack Li-Power  
Battery Pack LiHD  
Battery Pack CAS (Cordless Alliance System)

### **Information on the manufacturer / supplier**

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## 2. Possible Hazards

The ingredients of the lithium-ion cells are housed in gas-tight metal housings, which are designed to withstand the temperatures and pressures when used and handled properly. Under normal conditions of use and in accordance with the manufacturer's instructions, there is no risk of ignition or explosion or the risk of escaping contents.

### **Handling and work safety**

#### **Protect battery packs from moisture**

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

#### **Do not expose battery packs to fire or heat**

Fire or temperatures above 130 ° C may cause the battery pack to ignite or explode.

#### **Do not use damaged, deformed or modified battery packs**

Damaged, deformed or altered battery packs may have altered characteristics that could lead to fire, explosion, leaking fluids or injury.

### **Defective battery packs can leak flammable liquid**

Incorrect use or defective battery packs may cause a slightly acidic, flammable liquid to escape. Avoid contact with this liquid. In case of contact with skin, rinse with water. If the fluid gets into your eyes, rinse with clear water and seek medical attention immediately. Leaking battery fluid may cause skin irritation or burns.

### **Do not open or disassemble battery packs**

Opening or disassembling the battery pack may modify or disable built-in safety and protection measures. This can lead to heat development, smoke, combustion or explosion of the battery pack.

### **Only charge battery packs in chargers of the approved battery system**

Only charge battery packs in chargers recommended and approved by the manufacturer for the type of battery pack. There is a risk of fire and explosion when charging battery packs on non-recommended chargers. There is also a risk of fire and explosion if non-original equipment batteries are charged on Holmatro or CAS chargers.

### **Do not use faulty or defective battery packs**

Do not use defective battery packs. Battery packs that show abnormal properties such as abnormal heating or poor power output, show signs of odor, heat, discoloration or thermal deformation should not be used. The use of defective or faulty battery packs can cause fire and explosion.

### **Storage and keeping of battery packs**

Short circuits can be caused by bridging the battery contacts with metal objects such as screws, nails, paper clips, keys or other electrically conductive objects. Short circuits can cause burns or fires. Even discharged battery packs can still cause short circuits because they still have a residual charge to protect against a deep discharge. To avoid accidental and unwanted short circuits, insulate the battery contacts of battery packs outside the machine with a protective cap from the scope of delivery or adhesive tape.

### **Shock, impact and the penetration of objects are to be avoided for battery packs.**

Battery packs should not be exposed to large external forces such as shocks or blows, and foreign objects should be prevented from entering. This can lead to leakage, heat, smoke, ignition or explosion.

## **3. Composition / information on ingredients**

### **Characterization**

The 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 excluded under normal conditions of use.

	Chemical substance	CAS number
Electrolyte salt	Lithiumhexafluorophosphat	21324-40-3
Electrolyte solvents	Ethylene carbonate	96-49-1
	Ethyl methyl carbonate	623-53-0
	Methyl ethyl carbonate	623-53-0
	Diethyl carbonate	114435-02-8
	Kathode	Li-, Ni-, Co-, Al-oxide
	Li-, Ni-, Mn-, Co-Oxid	346417-97-8
	Polyvinylidene fluoride	24937-79-9
Anode	Carbon	7782-42-5
	Silicon	7440-21-3
	Silicon monoxide	10097-28-6
Aluminium foil	Aluminium	7429-90-5
Copper foil	Copper	7440-50-8

## 4. First aid measures

### **Description of first aid measures**

The product contains an organic electrolyte. If the electrolyte escapes from the battery pack or ignites, the following measures must be taken:

#### **Inhalation (respiratory system)**

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

In case of intensive smoke, leave room, ventilate sufficiently if possible.

#### **Flush eyes (contact)**

Flush eyes with open eyelid for several minutes with plenty of water. Remove contact lenses if possible. Get medical attention immediately.

#### **Skin (contact and burns)**

Remove contaminated clothing on contact with the electrolyte, wash skin with plenty of soap and water, or take a shower. Burns are to be treated accordingly. Medical assistance should be sought.

#### **Swallow**

First rinse mouth with plenty of water and then drink plenty of water. Do not induce vomiting. Get medical attention immediately

## 5. Firefighting

Fires of lithium-ion batteries can always be combated with water. There are no special extinguishing agents required. Ambient fires of the battery packs are to be combated with conventional

extinguishing agents. The fire of a battery pack cannot be considered separately from the surrounding fire.

The cooling effect of water inhibits the spread of fire to battery cells that have not yet reached the critical temperature for combustion ("thermal runaway"). For a burning battery, use plenty of water until the flames are extinguished and then immerse it in water.

Immerse a battery with signs of severe overheating in a sufficiently large, stable container filled with water. There is a risk that the overheated battery pack will vent, explode or that flames will emerge. Therefore avoid direct contact with the battery pack. For handling, use for example a long-stemmed shovel and suitable personal protective equipment to protect face, hands and body.

Reduce the fire load in the vicinity, separate larger quantities of battery packs and transport them out of the danger zone. Keep critical battery packs at least 24 hours and at least 15 feet away from flammable objects.

## 6. Accidental release measures

It is necessary to use personal protective equipment appropriate for the situation (suitable protective gloves, protective clothing, face protection, respiratory protection)

If the battery housing is damaged, electrolyte may leak out. Battery packs should be placed in an airtight, non-combustible container filled with dry sand, chalk powder ( $\text{CaCO}_3$ ) or vermiculite. That way, leaking chemicals are absorbed.

When storing damaged Li-ion batteries, it should be noted that even after days a thermal reaction can take place. Therefore, store in a safe place (for example, in a metal box with sand bed without combustible materials in the area).

Traces of electrolyte can be absorbed with dry household paper. Avoid direct skin contact by wearing suitable protective gloves. If skin contact occurs rinse with plenty of water.

## 7. Handling and storage

### **Handling**

No special protective equipment is required to handle Li-ion batteries. Attention should be paid to the warnings on the battery housing and the safety instructions in the operating instructions. Use only the recommended original Li-ion batteries and chargers.

### **Storage**

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

Storage of larger quantities of Li-ion batteries should be in consultation with local authorities, fire brigades and insurers.

## 8. Exposure controls / personal protection

Lithium ion batteries are products from which no substances are released under normal and reasonably foreseeable conditions of use. Accordingly, no action or personal protective equipment is required for normal and intended use.

## 9. Physical and chemical properties

Compact battery pack with plastic coating and connection contacts.

## 10. Stability and Reactivity

When exceeding an upper temperature limit of 130 °C, there is a risk of bursting of the battery packs. Above approx. 100 °C, pressure relief valves of the cells can respond.

The permissible charging temperature is between 0 °C and 50 °C. Exceeding a storage temperature of 60 °C can lead to accelerated aging and premature loss of function.

## 11. Toxicological information

With proper handling and compliance with the generally applicable hygiene and safety regulations, no health damage has been reported so far.

## 12. Environmental information

Proper handling will not cause any negative environmental impact.

## 13. Disposal considerations

The crossed-out wheeled bin symbol indicates that battery packs in the European Economic Area (EEA) may not be disposed of with household waste, but must be collected separately.



If possible, fully discharge used battery packs in the application and return them free of charge to the specialist dealer or a point of sale or hand them over to a corresponding public collection point. Observe the environmental regulations applicable in your area.

To prevent short circuits and the associated overheating, lithium-ion batteries should never be stored or transported unprotected in bulk. The battery must be returned secured against short circuit. Appropriate measures against short circuits are i.g.:

- Inserting the battery packs in their original packaging or in a plastic bag
- Covering poles and contacts with protective cap or insulating adhesive tape.
- Embedding the battery packs in dry sand

## 14. Transport information

The commercial transport of lithium-ion batteries is subject to the Dangerous Goods Act. Transport preparations and transport must be carried out exclusively by suitably trained personnel or the process must be supervised by appropriate experts or qualified companies.

### **Classification and transport regulations**

Lithium batteries are subject to the following dangerous goods regulations and exceptions, as amended in its current version:

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

For transport, the currently applicable regulations for the various modes of transport apply:

- Road transport in Europe: ADR
- Rail transport in Europe: RID
- Inland waterway transport in Europe: ADN
- Air transport worldwide: ICAO-TI / IATADGR
- Maritime transport worldwide: IMDG Code

ADR, RID: Special provision: SV188, SV230, SV376, SV377, SV636 (b)  
Packing instructions: P903, P908, P909  
Transport category II, tunnel category E

IMDG Code: Special provision: SV188, SV230, SV 376, SV377, SV636b  
Packing instructions: P903, P908, P909  
EmS: F-A, S-I  
Stowage category A

ICAO, IATA-DGR. Special provision: A88, A99, A154, A164, A183  
Part IA, IB or II  
Packing instructions: PI965, PI966, PI967

For other countries, the relevant transport regulations for road, rail and inland waterway transport can be obtained from the competent authorities.

### **All modes of transport**

Defective or damaged battery packs are subject to stricter regulations, up to and including the complete ban on transport. The transport ban applies to the mode of transport air (IATA special provision A154).

Transportation of used but not damaged battery packs must be according to corresponding special regulations.

Waste batteries and accumulators that are sent for recycling or disposal are prohibited in air traffic (IATA Special Provision A 183).

Exceptions are to be approved in advance by the competent national authority of the country of departure and the state of the air carrier.

### **Transportation by private individuals**

Individuals are exempted from the transport regulations in the legal area of ADR. However, the following criteria must be met:

- The goods are intended for personal or domestic use or for leisure or sports.
- The goods are packed in retail packaging.
- The cargo is sufficiently secured.

The transport in the aircraft as hand luggage or as checked baggage is to be agreed with the selected airline. There are differing regulations.

### **Transport by traders**

For traders, in the legal area of ADR for lithium-ion batteries with an energy content of more than 100 Wh, the exemption rules in 1.1.3.6 ADR ("1000-point regulation") apply. Up to a battery weight of 333 kg is therefore not a mandatory transport, i.e. no orange warning signs are required on the vehicle and the vehicle has to carry a 2 kg ABC powder fire extinguisher.

There are far-reaching exemption regulations for take-home use (at the customer) in the legal area of ADR, the so-called craftsman regulation. Recommended:

- Safe and stable packaging (original packaging).
- Labelling according to ADR (original packaging).
- The cargo is sufficiently secured.
- Instruction of the employees who carry out the transport.

There are no additional requirements for lithium-ion batteries with a maximum energy content of 100 Wh. Nevertheless, it is recommended:

- Safe and stable packaging (original packaging).
- The cargo is sufficiently secured.

Supply trips are not free.

## **15. Legislation**

Transport regulations according to IATA, ADR, IMDG, RID, US DOT, Transport Canada

## 16. Other Information

The instructions help to comply with legal requirements, but do not replace them. They are based on today's level of knowledge.

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

They do not constitute an assurance of properties. Applicable laws and regulations must be observed by the distributors, transporters, disposers and users of the product at their own responsibility.

### **Legal Notice**

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 regarded as "articles". The intentional release of substances during use is not intended. Therefore, there is no obligation to provide a safety data sheet according to Regulation (EC) No. 1907/2006, Article 31.

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

- (i) which gets a specific shape or form during manufacturing;
- (ii) which has one or more functions that depend wholly or partly on its shape or form during the end use; and
- (iii) which does not release more than very small amounts under normal conditions of use, e.g. traces of hazardous chemicals that do not cause any objective danger or health risk to employees.

Since all of our battery packs are defined as "articles", they are excluded from the requirements of the Hazard Communication Standard.