

No matter what design, application or technology, all batteries are electro-chemical devices optimised to store and release energy according to the application demand. Due to their energy releasing and chemical properties, batteries must fulfil a series of international, European and national safety requirements during their production, transport, storage, use and end-of-life management. Safety is, hence, a key priority for RECHARGE and the advanced European rechargeable and lithium battery industry.

DESIGNED FOR SAFETY

Batteries are designed and manufactured to withstand normal or reasonable, foreseeable conditions of use and damage for a very long time.

- + **Battery design:** Batteries are sealed units and their single parts are carefully assembled to withstand the application's environment conditions. The battery's contents are not released during operation.
- + **BMS:** Sophisticated battery management systems prevent batteries from working outside of their safe operating mode.
- + **Application management:** High-quality batteries are designed to meet the needs of a very specific application.
- + **Material design:** Advanced battery manufacturers invest a lot of time and effort in innovative and safe material design.
- + **Testing and transport:** According to the UN Manual of Tests and Criteria, batteries undergo extensive testing before they can be placed on the EU market. Standard testing includes external short circuit, abnormal charge and forced discharge, as well as exposure to heat, drop, crush, shock or vibration.



Repair/
Refurbishment

Do not modify, open, damage or otherwise manipulate a battery. Repair of batteries is likely to interfere with the safety status of specific batteries.



Damage

Severe damage or exposure to extreme mechanic stress can result in unforeseeable chemical or electro-chemical reactions.



Misuse

Using non-original batteries, batteries designed for another application, or unadapted charging systems, as well as combining different batteries, can decrease the safety of your battery or battery-powered equipment.



Exposure/
Storage

Exposure to direct sunlight, heating sources or liquids can lead to temperature increase and short-circuit. Batteries and battery-powered equipment are to be used or stored dry, cool and well ventilated.

For detailed information, consult the instruction manual of your battery or battery-powered equipment.

HOW TO DISPOSE OF A BATTERY?

Batteries are subject to separate collection and treatment. They must not be disposed of in your household waste and must be separated from the equipment before returning for recycling.

Portable batteries can be disposed of at municipal collection points or in dedicated shops, whereas industrial and most automotive batteries are subject to a separate take-back obligation by the Producer, or a third party acting on their behalf. They must be disposed of at Authorised Treatment Facilities.

TRANSPORT AND SAFETY

PROFESSIONAL TRANSPORT

The **professional transport** of battery cells, batteries and equipment containing batteries is regulated by international as well as European legislation.

Due to their dual hazard properties associated with their chemical and electrical content, lithium-based batteries as well as lithium-based batteries contained in equipment or packed with equipment are classified as 'Dangerous Goods'. The rules governing the transport of dangerous goods in the EU can be found in the Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).

PRIVATE TRANSPORT

There are no legal restrictions for **private** persons transporting battery cells, batteries and equipment containing batteries at this point.

Some airplane operators do require special transport for spare (not installed in device) lithium-based batteries, however. This includes that lithium-based batteries must be carried in carry-on package only and batteries must be prevented from short circuiting.

For more information, contact your flight operator prior to boarding.

For more information on safe transport of advanced rechargeable batteries: www.batteriestransport.org

CHEMICALS AND SAFETY

The majority of batteries contain hazardous substances. However, in the use phase these substances are contained in the battery within sealed units and thus do not represent a health or environmental risk.

Potential risks from battery materials are limited to the professional workplace, where trained personnel either manufacture or dismantle batteries. In Europe, the high standards for worker and environmental protection as well as advanced factory design have already contributed to the achievement of an unsurpassed emission and dissipation control system:

- + Control of water emissions
- + Collection of gas and particle emissions with high-performance dust filters
- + Recycling and reuse of solvents
- + Recycling of production scrap
- + Recycling targets for used batteries
- + De facto ban of landfilling of batteries

FIRE AND SAFETY

Battery-based energy storage does not represent a general fire hazard. Nevertheless, battery safety is based on a specific design and chemicals composition that provides the user with a particular battery performance.

If this design is disrupted, through damage, misuse, improper charging, manipulation to the safety design or another form of manipulation, this can potentially lead to chemical reactions that might increase battery temperature.

“We want to educate the public on the safe use of battery power. Batteries are used in so many different applications that people sometimes forget that these are energy sources, just like a socket or a gas boiler”, Claude Chanson, General Manager, RECHARGE.

RECHARGE is the leading industry voice of the advanced rechargeable and lithium batteries value chain in Europe. Founded in 1998, it is our mission to promote advanced rechargeable batteries as a key technology that will contribute to a more empowered, sustainable and circular economy. RECHARGE's unique membership covers all aspects of the advanced rechargeable battery value chain in Europe: From suppliers of primary and secondary raw materials, to battery, equipment and original equipment manufacturers, to logistic partners and battery recyclers. www.rechargebatteries.org

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