

General Safety Tips for Lithium-ion Battery Powered Equipment for Consumers

Lithium-ion battery powered equipment such as e-bikes, e-scooters, smartphones, laptops, power banks, power tools and many other everyday devices use the stored electrical energy contained in lithium-ion batteries to operate.

Lithium-ion batteries are popular because they are lightweight, rechargeable, and have a high energy capacity. However, they can catch fire or explode if not used properly.

Examples of Lithium-ion Battery Powered Equipment:

Transport & Portable devices:	Consumer Electronics:	Power Tools	Home Appliances
e-scooters e-bikes e-skateboards Power banks Portable speakers Handheld gaming consoles	Smartphones Laptops Tablets Smartwatches Fitness trackers Wireless headphones and earbuds Digital cameras	Cordless drills Electric screwdrivers Lawnmowers Leaf blowers Hedgers Chainsaws	Robot vacuums Cordless vacuum cleaners Electric toothbrush Blenders

Charging Equipment (charger)

The charger is an external device used to safely replenish the battery’s energy. It converts AC power to the correct voltage and current for the battery. Approved chargers can be identified by the Regulatory Compliance Mark (RCM)




The charger must be compatible with the specific battery type and model to avoid damage or fire risk.

What are the safety risks?

Toxic and flammable fumes	Explosion	Fire
Damaged or overheated batteries can release harmful gases like hydrogen fluoride or lithium compounds, posing respiratory hazards. The fumes produced are flammable that can cause an explosion.	Damaged batteries can cause explosion /rupture violently, leading to serious injury or property and equipment damage.	Faulty or damaged batteries, overcharging, or short circuits can ignite flammable materials in the battery that are very hard to extinguish.

“Prevention” plays a big part in avoiding and controlling the electrical and fire risk. To prevent the risk, you should buy and use the equipment correctly.

Buying and product selection

<p>The power supply/charger:</p> <ul style="list-style-type: none">• Must be compatible with battery operated equipment.• Power supply/chargers must have certificate of approval, must be registered on the EESS by the importer and must be marked with the RCM:  <ul style="list-style-type: none">• Where possible, purchase replacement chargers/batteries from the original equipment manufacturer; or, if not possible always buy from a trusted supplier recommended by the original manufacturer.	<p>The battery-powered equipment should:</p> <ul style="list-style-type: none">• be acquired from a reputable supplier in Australia or New Zealand (NZ).• be provided with relevant safety information in English (e.g. safe use instructions, details of the charger type and voltage, battery details and type and safety tips on charging).• have a battery management system (BMS), if you are not sure, ask the seller.• Note: Buying battery operated equipment directly from overseas may NOT comply with Australia and NZ safety requirements which can put you and your family at risk.
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Remember, if you import products from overseas containing lithium-ion batteries, you are responsible for ensuring their safety.

Second hand and replacement batteries:



- Exercise caution when considering the purchase of second-hand battery-operated equipment.
- If the seller isn't selling the manufacturer supplied charger with the equipment (or a replacement charger as recommended by manufacturer), don't buy the second-hand battery powered equipment. If the original owner doesn't have the right charger, it may have been charged incorrectly, and the batteries may already be damaged.
- It is recommended to inspect for any damage to the equipment and make sure it hasn't been 'tinkered' with. If you are not confident in inspecting the equipment have a suitably qualified person look at the equipment.
- Purchase replacement chargers/batteries from the original equipment manufacturer where possible. If this is not possible, always buy from a trusted manufacturer and check the original battery-operated equipment manufacturer's information for the specifications required for the charger/batteries to use.

Charging and Storage Practices

Never charge your devices in a bedroom or an area that might block your exit as batteries can overheat and potentially cause fires. If a fire starts near an exit, it can block your escape route. Battery fires can also produce toxic fumes which can fill escape paths, making evacuation difficult.

Always charge battery-operated devices away from exits and in well-ventilated areas.

Store battery-operated equipment and chargers in a cool, dry place away from direct sunlight and heat sources. Keep storage and charging areas clear of clutter and away from flammable materials such as loose papers, clothing, bedding, couches, or curtains to allow heat to dissipate safely. Never leave lithium-ion batteries or products in hot environments, such as parked vehicles, garden or tool sheds as these enclosed spaces can trap heat and increase the risk of fire.

Safely Use 	Avoid misuse 
<p>Read the Manufacturer’s Manual</p> <ul style="list-style-type: none"> Always follow the operating instructions and safety guidelines provided. <p>Use Approved Batteries and Chargers</p> <ul style="list-style-type: none"> Only use batteries and chargers recommended by the manufacturer to avoid compatibility issues. <p>Inspect Before Use</p> <ul style="list-style-type: none"> Check that chargers and devices are not physically damaged before use. Check for signs of damage, wear, or corrosion on battery terminals, cables, and connectors. <p>Charge Safely</p> <ul style="list-style-type: none"> Charge in a well-ventilated area. Avoid charging near flammable materials. Never leave charging batteries unattended for long periods. Allow batteries to cool down after use before recharging Charge in a dry, weather-protected area, on a non-flammable surface like concrete, ceramic, or steel. Unplug the equipment when fully charged Keep the charging area free from clutter and away from flammable materials such as paper, bedding, or curtains to allow heat to dissipate safely. Install and regularly test a working smoke alarm in areas where charging occurs. Avoid charging equipment in garden or tools sheds, as these enclosed spaces can trap heat and increase the risk of fire. <p>Maintenance and service</p> <ul style="list-style-type: none"> Servicing must be carried out only by an authorised provider approved by the manufacturer. 	<p>Overloading the Equipment</p> <ul style="list-style-type: none"> Exceeding the equipment’s rated capacity or duty cycle <p>Incorrect Battery Handling</p> <ul style="list-style-type: none"> Using incompatible batteries (wrong voltage or chemistry). Mixing old and new batteries or different brands. Charging non-rechargeable batteries. Leaving batteries on the charger for a prolonged time after they have been fully charged <p>Improper Storage</p> <ul style="list-style-type: none"> Leaving equipment in damp or excessively hot environments. Storing batteries in direct sunlight or near heat sources. Leaving batteries accessible to children and pets <p>Neglecting Maintenance</p> <ul style="list-style-type: none"> continuing to use batteries with rusty or dirty contacts or terminals. Ignoring firmware updates or calibration schedules. <p>Unauthorized Modifications</p> <ul style="list-style-type: none"> Modifying or repairing batteries. Bypassing safety interlocks or modifying battery packs. Using third-party chargers or accessories not approved or recommended by the manufacturer.

Disposal and Recycling

Don’t put rechargeable lithium-ion batteries in household rubbish, normal recycle bins or in kerbside hard waste collection. Many battery types can be recycled.

For information about where and how to dispose of used batteries, see:

- [B-cycle](#)
- [Planet Ark](#)
- [Mobile Muster](#)
- [Australian Battery Recycler’s Initiative](#)
- [Recycle Mate](#)

Product Specific Guidance

e-bikes, e-scooters, e-skateboards, self-balancing scooters

Before buying new e-scooters or e-skateboards ask if they comply with the Australian standard for those devices (AS/NZS 60335.2.114:2023)

In NSW, E-bikes, e-scooters, e-skateboards, self-balancing scooters, and the lithium-ion batteries used to power these e-micromobility devices are now 'declared electrical articles' under the [Gas and Electricity \(Consumer Safety\) Act 2017](#). This means that these products must comply with the prescribed [relevant safety standards](#) before they can be sold in NSW.

The NSW Government has also introduced a new [Information Standard](#) for lithium-ion e-micromobility devices sold in NSW. From 19 February 2025, suppliers must provide clear and accurate safety information at the point of supply. This includes details about safe use, charging, storage, fire prevention, and disposal of devices and their batteries.



Due to the compact design and high energy storage of devices like **e-scooters, e-skateboards, and e-bikes**, they pose increased electrical risks in confined spaces. To reduce fire and explosion hazards:

- **Do not store or charge** these devices in enclosed rooms, narrow walkways, or near emergency exits.
- **Avoid carrying them in lifts**, where escape options are limited in case of battery failure.
- **Ensure proper ventilation** during charging and keep them away from flammable materials.

Power tools and Garden tools

- Never leave lithium-ion batteries or products in hot environments, such as parked vehicles, garden or tool sheds as these enclosed spaces can trap heat and increase the risk of fire.
- Never use batteries with equipment they were not designed for. Always match the battery to the specific tool or device recommended by the manufacturer.
- Do not transport batteries loosely in tool bags where they may short-circuit.
- Keep batteries dry and protected during transport.

Smartphones and tablets

- Avoid charging on beds, couches, or under pillows, as these can trap heat and increase fire risk.
- Unplug devices once fully charged—do not leave them charging overnight.
- Avoid leaving devices in hot cars or near windows.
- Do not use damaged or frayed charging cables.

Watch for signs of Battery Failure which include:

- Swelling or bulging of the device casing.
- Excessive heat during charging or use.
- Unusual smells, hissing sounds, or smoke.

If any of these signs appear, stop using the device immediately and seek professional help.

Battery Energy Storage Systems (BESS)

Battery energy storage systems (BESS) are the technologies we simply know as batteries that are big enough to store power from renewables, like solar and wind. BESS come in different shapes and sizes, suit different applications and settings, and use different technologies and chemicals to do their job.

If a BESS is installed at your property, it is recommended to:

- Ensure that you maintain the battery unit clearance and ventilation, refer to the exclusion zone for battery installation in AS/NZS 5139: 2019.
- Ensure your installer explains what the system can do and what are its limitations and helps you understand critical signs for your system i.e. battery monitoring system.
- Confirm that the wall where the BESS is installed is constructed from non-combustible material.
- Do not install batteries in a habitable room or living areas such as bedrooms, kitchens, or living rooms. Batteries may be installed outside or in a well-ventilated non-habitable area such as garages or utility rooms.
- Do not remove bollards or guards; these protect the battery from physical damage.
- Periodically check that your home battery remains free from dirt or debris, insect, and animal infestation.
- Schedule regular service with an accredited installer.
- Position the battery away from any potential hazards such as pools, taps, pipes, and water features, access paths, and vehicles.
- Ensure there are no objects or flammable objects that can conduct electricity near or inside the battery enclosure.
- Do not store anything on top of or against the battery or its enclosure.
- Ensure a fire safety plan is in place that includes clearly marked locations of fire extinguishers, installed smoke alarms, procedures for safely shutting down the battery system, and contact details for emergency services.
- Ensure awareness of all battery related alarms (e.g. audible or visual signal, SMS, email alerts etc), and what to do if there is an alarm activation.

Refer to the:

- **Technical Specification (TS) 5398:2023 Electrical Energy Storage Equipment – Safety Requirements**, this is a new specification supporting the safe deployment of battery energy storage systems (BESS)
- AS/NZS 5139:2019 – Electrical installations – Safety of battery systems for use with power conversion equipment
- manufacturer’s instruction manual for additional installation and operation requirements

General Safety Tips for Retailers

Purchasing Guidelines

Purchase from a registered responsible supplier on the [Electrical Equipment Safety System](#) (EESS). Ensure the power supply/battery charger supplied with the battery-operated equipment has the RCM and is certified and registered on the EESS.



Ensure the responsible supplier provided evidence the scooter or battery-operated equipment battery pack includes a battery management system (BMS) tested to relevant safety standards.

Ensure the supplier provided you with relevant safety information for you to supply to buyers (e.g. safe use instructions, details of the charger type and voltage, battery details and type and safety tips on charging).

Handling and Storage

Store batteries, battery-operated equipment and chargers in a cool, dry place away from direct sunlight and heat sources.

Keep storage areas clear of clutter and away from flammable materials and liquids.

Avoid stacking heavy items on battery packs.

Ensure batteries are kept in original packaging or protective containers to prevent damage.

Customer Education

Inform customers to:

- always follow the manufacturer's instructions for charging, usage, and maintenance
- use only manufacturer-approved chargers that are compatible with the product being charged. It is essential that chargers are matched specifically to the brand and model of each device
- Provide details on any compatible battery or battery charger with the equipment

Help sustainability through assisting consumers with recycling. Commercial recycling facilities can be found through various places such as [Planet Ark Home - Business Recycling](#), [Recycle Mate](#) or [B-cycle](#)

General Safety Tips for Suppliers/ Manufacturers/ Importers

Regulatory Compliance

- Register as a Responsible Supplier on the [EESS](#).
- Obtain a Certificate of Conformity for the battery charger supplied with the battery-operated equipment, place the RCM on the battery charger and register the battery charger on the EESS. The charger must be compatible with the specific battery type and model to avoid damage or fire risk.



- Supply relevant safety information for your buyer (e.g. safe use instructions, details of the charger type and voltage, battery details and type and safety tips on charging).

Product Safety

- Confirm the presence of a Battery Management System (BMS) integrated into the battery and are tested to relevant safety standards.
- Implement a QA system that checks for damaged, cracked, or modified batteries or enclosures.
- Ensure you have a technical construction file in an accessible location and keep it updated with updated test reports and documents whenever a modification is made to the design or components. A technical construction file would include:
 - a supplier's declaration of conformity (listing all the relevant safety standards that equipment has been tested to and by whom) and all declarations made and details of who made them (and their qualifications) – for all brands and models supplied
 - all safety related test reports and certifications
 - details of the battery design, type, chemicals, BMS and certifications
 - software/firmware/hardware versions used
 - nameplate and rating details and layout
 - all documents, safety data sheets, specifications, component rating
 - circuit diagrams, detailed photographs (depicting external and internal layout and parts) to be able to identify the equipment is as per the equipment in the test reports
 - safe use instructions (for safe operation, maintenance requirements and safe charging processes)
 - details of any modifications made to the design or construction process, alternate components used or updated software/firmware and the evidence of testing to show continued safety compliance
 - details of ongoing assurance tests and inspections (details of testing/inspection regime, details of results and details of corrective actions taken for non-conformances found)
 - details of any electrical safety related complaints/incidents and reports on findings and actions undertaken from any report recommendations

Ongoing Safety Compliance

Have processes and procedures in place to check each shipment of battery-operated equipment and chargers, to ensure:

- compliance to Australian safety standards (still complies with relevant Australian safety standards it was originally tested to, as well as complies with any updated versions of those safety standards applicable when imported)
- samples from each shipment are subject to inspection and test to verify compliance
 - suitable sample rate used to select samples being subject to inspection
 - Suitable sample rate used to select samples having tests applied where inspection may not identify a change/fault – such as resistance to flammability test, drop test, prevention of overcharging function etc)
 - A minimum inspection process would include verifying the equipment:
 - pass standard routine tests for all samples selected for inspection (earthing check, insulation resistance /electric strength tests/functional operation and any interlock/safety function operate as required/expected
 - haven't been modified
 - haven't had parts substituted
 - do not have broken or cracked enclosures
 - haven't been damaged in transit (internal or external damage)
 - have been checked to confirm they are the same design, construction, and components (from same component supplier as the originally tested units) as listed in the safety test reports you have)

For further information please contact [Electrical Equipment Safety System \(EESS\)](#)

Disclaimer:

*Extra-low voltage (ELV) battery-powered equipment is **not currently within the scope** of the Electrical Equipment Safety System (EESS). However, **battery chargers** used with such equipment **are in-scope** and must comply with relevant EESS requirements. The safety information provided in this document is intended as **general guidance only** to support safer use, charging, handling and storage of lithium-ion battery-powered equipment.*

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