

# Guidance

## Lithium Batteries

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Most homes and workplaces will have some form of lithium-ion batteries in their premises. The use of lithium-ion (LiOn) batteries is widespread, from mobile phones, smoke detectors, portable computers, tablets, power tools and more recently electric bikes, scooters, skateboards, vehicles and solar battery storage units are becoming more popular.

These batteries have many advantages, in particular their small size, varying shape profiles, light weight and reduced charging times, and in most situations they are quite safe.

However, in some situations, all batteries are hazardous and potentially dangerous if they are not correctly stored, maintained and/or used according to the manufacturer's guidelines.

Failing to correctly store, maintain and/or use a battery correctly can have significant impact on its performance and life.

The risks associated with lithium-ion batteries can include overheating causing fire or an explosion, resulting in burns, toxic chemical exposure and pollution due to the battery rupturing.

There have been a number of reported incidents of lithium-ion battery fires across the country that have caused extensive damage to vehicles and premises, usually as a result of them becoming damaged or being cheap imports that have overheated.

Employers may face situations where employees wish to store and charge e-scooters/e-bikes at the workplace (when using them to commute to and from work for example). This should be subject to a risk assessment to determine the risks involved.

To manage the risks associated with Lithium-ion batteries, you should:

- Ensure batteries are stored so as not to overheat
- Avoid exposing the battery packs to heat or direct sunlight
- Only charge batteries using a charger recommended by the manufacturer.
- Check battery and charging cables for signs of damage, wear and tear before use.
- Charge away from flammable surfaces (such as wood, carpet, material, paper, plastics)
- If charging a large number of items containing lithium batteries, for example laptops or tablets, this should be done in a suitable storage cabinet, that allows sufficient airflow around the items to reduce the risks of overheating. *See an example of a suitable type of charging cabinet at the end of this document.*
- Avoid leaving batteries unattended when charging.

- Ensure there is fire detection and fire-fighting equipment in the vicinity where charging takes place
- Before charging and pre-use, check the condition of the battery for any warning signs (see list below).
- Disconnect the battery if you witness a battery changing shape, starting to balloon, swell up, smoke or becoming extremely hot
- Refer to the battery manufactures guidance and Material Safety Data Sheet (MSDS) before use.
- Lithium batteries must NEVER be disposed of in general waste bins, especially single use vapes. Instead, they should be taken to a waste recycling centre, where special bins are available. Alternatively, some supermarkets and vape shops may also accept them.
- The use, storage, charging and disposal of all lithium battery containing items should be considered as part of your fire safety controls.

#### Warning signs - what to look for

- Heat: It's completely normal for batteries to generate some heat when charging or in use. But if your device's lithium-ion battery feels extremely hot to the touch, there's a good chance it's defective and at risk of starting a fire.
- Swelling: When a lithium battery fails, another common sign is battery swelling. If the shape of your battery has changed, or it looks swollen, you should stop using it immediately, ensuring it is disconnected from any power supply. Similar signs include any type of lump or bulge, or leakage from the device.
- Noise: Failing lithium batteries have also been reported to make hissing or cracking sounds.
- Odour: If you notice a strong or unusual odour coming from the battery, this is also a bad sign.
- Smoke: This one's a little more obvious. But if your device is smoking, a fire has already started.



The National Fire Chiefs Council has produced [generic guidance on charging e-bikes and e-scooters](#), including using approved charging devices and avoiding storage in escape routes.