



INDUSTRY GUIDE

# Lithium-ion Batteries

## Understanding The Issues & Risks

Our quick guide for understanding the issues around lithium batteries and the risks to self-storage businesses.





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## Understanding The Issues & Risks

Lithium-ion batteries are everywhere; in our pockets, in our homes, and now firmly on the agenda in Self-Storage. The attention can sometimes feel intense, but for good reason; recent incidents have shown just how much of a risk these batteries can pose if things go wrong.

We've put this piece together to give some clear context, a bit of reassurance, and a few practical points for operators to consider when it comes to what's stored on site.

### Why are Lithium batteries a topic?

Several recent storage fires have been linked to Lithium-ion batteries. In some cases they triggered thermal runaway; in others they added fuel to a wider blaze.

For operators, this creates a clear challenge. It's near impossible to ban lithium-ion items completely; they're part of everyday life and built into most modern goods. The task is not to eliminate them, but to understand the risks and manage them sensibly.

This piece is not about rules or regulations. It is about giving operators background on why lithium-ion (Li-ion) batteries are such a focus, reassurance that most are safe, and a few practical points to consider.



### Lithium Batteries – an explanation

Lithium-ion batteries are rigorously tested before they reach the market. As their use has increased, so too have the safety standards around them. The vast majority are safe in normal use. It is important to note that despite being safe, if a battery does enter thermal runaway or contribute to a blaze, they will exacerbate a fire. Think of them like a fuel canister, usually safe, but can be an accelerant to a fire.

The greater concern comes from replacement or aftermarket batteries, especially those bought cheaply or outside the original manufacturer's supply chain. These often don't meet the same quality or safety checks and are more likely to fail.

### What is Thermal Runaway?

Inside each battery, a thin separator keeps two sides apart while ions flow back and forth during charging and discharging. If that separator fails, usually through damage or poor build, the sides short circuit. Heat builds up, triggering chemical reactions, which release fumes and create even more heat.

This feedback loop is called thermal runaway. If unchecked, it can cause the battery to catch fire, or explode.

*Continued...*



## How Lithium Fires Behave

Lithium-ion fires develop quickly and burn hotter than typical fires. They can also re-ignite even after appearing extinguished. Fire services now use large amounts of water to cool the batteries and prevent spread. However, with the increased heat and risk, fire services may choose to fight externally. If there is no danger to life, they may allow the fire to burn through the building, causing significant damage.

On a storage site, the focus must be prevention, not firefighting.

*For operators: most small batteries: phones, tablets, laptops, are very unlikely to cause large problems when stored sensibly. Larger packs like e-bikes and e-scooters carry more energy, so the potential consequences are greater.*

## How Batteries Fail – Types of Abuse

There are three main ways batteries can be pushed into failure:

- **Mechanical abuse** – physical damage, such as being dropped, crushed, or stored loose so the casing is deformed.
- **Electrical abuse** – overcharging or deep discharging, which stresses the cells and can create faults.
- **Thermal abuse** – exposure to high temperatures that destabilises the chemistry and may cause thermal runaway.

*For operators: mechanical abuse is the most common in storage, think garden tools, power tools, or headphones tossed in boxes and crushed under heavier items.*

## The Reality for Operators

It isn't realistic to exclude lithium-ion batteries altogether. Trying to do so risks frustrating customers and may even weaken your insurance position, since these items inevitably find their way into store.

Self-Storage isn't directly regulated when it comes to Lithium-ion batteries. While some associations and fire services have produced guidance, for example, London Fire Brigade highlights charging as the number one risk, operators ultimately need to weigh the risks for their own sites.

The best approach is to have a clear understanding of the risks and adopt proportionate measures.

## Practical Advice for Operators

- **No charging near units** – the single most effective step. Most serious incidents begin while batteries are charging or being worked on.
- **State of charge** – advise customers to store larger items (e-bikes, e-scooters, power tools) at around 30–60% charge for long-term storage. This reduces stress on the cells.
- **Check for damage** – swollen, cracked, or modified batteries should be avoided. Encourage customers to check items before storing.
- **Mechanical abuse** – be mindful of goods more likely to be thrown around: garden machinery, older tools, headphones. These are higher risk.
- **Educate customers** – a quick conversation about larger batteries can help understand what's being stored and whether extra precautions are needed.



## Battery Size Bands – A Simple Way to Think About Risk

### **Band A — Small ( $\leq 100$ Wh or $\leq 2$ g lithium)**

Phones, tablets, smart watches, earbuds, cameras, small power banks.

*Implication: low fire load.*

*Advice: generally acceptable if undamaged and not charged in units.*

### **Band B — Medium ( $>100$ to $\leq 160$ Wh or $>2$ to $\leq 8$ g lithium)**

Laptops, drones, professional cameras, larger power banks.

*Implication: higher risk.*

*Advice: accept if original manufacturer batteries, no charging; check condition.*

### **Band C — Large ( $>160$ Wh or $>8$ g lithium)**

E-bikes, e-scooters, mobility scooters, large tool packs, home energy storage units.

*Implication: very high fire load.*

*Advice: store in isolation or metal cabinets if accepted; never charge; consider asking for proof of manufacturer or certification.*

## Final Thoughts

Lithium-ion batteries are part of daily life, and they will inevitably enter storage facilities. The industry may one day see clearer standards, but for now the responsibility sits with operators.

By understanding the risks and applying proportionate, practical steps: no charging, sensible storage, and simple checks and conversations, operators can reassure customers, protect their sites, and stay ahead of the conversation.



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