

Battery Breakdown

Why are e-scooter and e-bike batteries exploding in people's homes and what can be done about it?

A report into the increase in lithium-ion battery fires and recommendations for addressing the problem

E-bike and e-scooter fires pose a significant risk due to their use of lithium-ion batteries. A fully charged e-bike battery contains a similar amount of energy to six hand grenades. When a battery fails this can lead to thermal runaway. Thermal runaway causes a prolonged release of energy, resembling an uncontrollable explosive firework and results in fires with temperatures exceeding 600 degrees Celsius, which spread rapidly, release toxic gases and are almost impossible to control.

Our Key Ask

Electrical Safety First requests that the UK Government considers whether micromobility and the lithium-ion batteries that power them should be subject to mandatory third-party certification and approval processes to reach the UK market.

Summary

Concerns are mounting over the risks to personal health and property posed by electrified micromobility (e-micromobility) such as e-bikes and e-scooters. Since the start of 2023 fires from the lithium-ion batteries used to power these devices have been linked to eight deaths in the UK, and left others hospitalised or seriously injured, with significant damage also to property.

The growing popularity of e-micromobility – with Mintel estimates placing the market value of e-bikes at £300 million in 2022, and double-digit volume growth forecasted for 2024 onwards - means that, unless action is taken, these risks will continue to grow.

The increasing number of fatalities, injuries and fires caused by malfunctioning e-bikes and e-scooters is a grave matter of concern, not just within the UK, but across the globe. However, due to the potential benefits of e-micromobility compared to traditional transport – fewer emissions and lower cost – their popularity is expected to grow.

With this growing popularity comes the necessity of an updated regulatory regime, to ensure the safety of consumers and others around them. Current regulations are sorely inadequate to deal with these emerging technologies, with key risks omitted from safety regulations relating specifically to e-bikes and e-scooters, and inconsistent technical requirements. In the case of self-conversion kits, there is a wholesale lack of product safety standards whatsoever.

This is frightening given the drastic rise in fires relating to e-bikes and e-scooters over the last few years. In 2019, the London Fire Brigade reported 8 fires caused by e-bikes and e-scooters. This figure has now risen more than tenfold to 87 fires in 2022 – a monumental increase within a three-year timespan.

Coupled with the intensity of lithium-ion battery fires - a fully charged e-bike battery contains a similar amount of energy to six hand grenades, the charity estimates - as well as the toxic gasses that are vented during battery breakdown, the risks to health and property cannot be understated. When thermal runaway occurs, a prolonged release of energy ensues, which results in fires exceeding 600 degrees Celsius, mimicking an out-of-control explosive firework.

It is therefore imperative that the UK Government takes action to mitigate these risks to consumers, by mandating third-party checks and certification to ensure that all e-micromobility products entering the UK market meet a minimum expected safety standard.

Electrical Safety First has undertaken a considerable task in producing this report, which in addition to the suggestions for regulatory change, also proposes a wealth of well-researched and ambitious policy recommendations and initiatives to combat the risks from lithium-ion batteries.

It is hoped that the UK Government will take these recommendations under consideration. It is vital that action is taken sooner rather than later, before further tragedies occur.

For a more comprehensive overview of ESF's policy asks, please see our full report at: <https://www.electricalsafetyfirst.org.uk/battery-breakdown>

Electrical Safety First

Electrical Safety First is the campaigning UK charity dedicated to preventing fires, injuries, and damage, caused by electricity.

For more information about our work, visit: www.electricalsafetyfirst.org.uk/westminster

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