

Battery Safety for E-bikes

The introduction of powered bicycles (e-bikes) has transformed the cycling scene in recent years. However, concerns about fires caused by their lithium batteries have led to worries about safety and restrictions on their use or storage.

This factsheet clarifies which e-bikes are safe to use and to store – those produced by reputable manufacturers and which have not been modified or damaged.

THE GROWTH OF E-BIKES

Lithium batteries that add power to the pedalling make cycling much easier without removing the health and fitness benefits. Extra power takes the hard work out of cycling uphill or against strong winds, making journeys easier and extending your range. This makes cycling much more attractive, particularly for older people and anyone who finds riding a push bike too hard. Cargo bikes carrying children or heavy/bulky loads are also far easier to use if they have a battery and motor.

As long as the e-bike is fitted with a motor that only operates when the rider is pedalling and the added power cuts out when the speed of 25kph (15.5 mph) is reached, an e-bike is considered to be a bicycle and riders don't need a motorbike licence, insurance or have to wear a helmet although they need to be 14 or over. The motor must have a 'continuous rated power' output of no more than 250 watts.

While e-bike sales and usage in the UK have grown significantly in recent years, they make up only 9% of the domestic cycling market - significantly below Europe's average of 27%, or 57% in Austria. Lack of segregated cycle lanes is one deterrent factor for all bike sales in the UK, but recent alarms about battery fires are also likely to have reduced e-bike demand. As noted below, these concerns are not justified for e-bikes produced by reputable manufacturers and which have not been modified or damaged.

HEALTH BENEFITS

The distance that you can ride an e-bike on one battery charge is anything from 20-100 miles. The capacity of batteries varies widely, and even if you have one of the less powerful versions it is possible to extend your range by using the battery sparingly and only turning the motor on when going uphill or against the wind. It also helps if you avoid the temptation to race up hills on the maximum power setting, using a low gear and a lesser power setting instead.

Cycling, in any form, is one of the healthiest activities you can do. It gets the heart and lungs pumping and has very low impact on your body – it can improve your



fitness, boost your immunity and enhance wellbeing among a range of other health benefits.

Because the e-bike motor only cuts in while you are pedalling you will still get a health benefit from riding an e-bike. The motor simply tops up your own effort - any effort is exercise – and indeed research has shown that e-bike users tend to cycle further than with their previous non-e bike.

REPORT CALLS FOR REGULATION

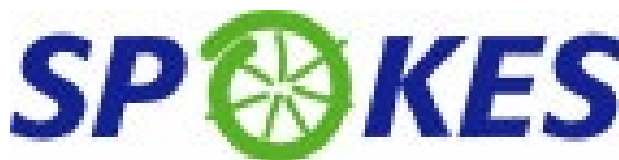
In a report published in July 2025, the Westminster All-Party Parliamentary Group on Cycling and Walking called for a number of changes to ensure e-bike safety. It notes that serious safety incidents, particularly battery fires, are linked to poor-quality, often illegal products, not to legal e-bikes from reputable manufacturers. The report recommends stronger product regulation, fairer working conditions for delivery cyclists, better enforcement, and support for those on the front lines; whether they are riders, firefighters, retailers or regulators.



The report emphasises that

“When legal and properly certified, e-bikes are a safe and efficient way to reduce congestion, cut emissions, and open up cycling to groups who might otherwise be excluded”

<https://appgcw.org/resources/inquiries/unregulated-and-unsafe-the-threat-of-illegal-e-bikes/>





BATTERY SAFETY

While there are charging safety issues with e-bikes fitted with sub-standard batteries, or batteries which have been modified or damaged, this does not mean that all e-bikes should be treated with suspicion.



Electric bikes sold with CE and UKCA safety certification use batteries that contain Battery Management Systems. These are the

equivalent to a household fuse box which prevents overheating using safety cut offs. Tests on different e-bike batteries at different price points, carried out by Warwick Manufacturing Group on behalf of the Office for Product Safety and Standards (OPSS), found that it is very hard to induce a legitimate product to enter thermal runaway leading to fire or explosion.

https://warwick.ac.uk/news/pressreleases/new_research_from

“How to keep your home safe when charging your e-bike or e-scooter” is a guide from Fire England

<https://fireengland.uk/fire-safety/charging-your-e-bike-or-e-scooter>

“How to buy, safely charge and store an e-cycle and spot the warning signs of a fire hazard” is published by

The Department of Transport

<https://www.gov.uk/government/publications/battery-safety-for-e-cycle-users>

E-BIKE POSITIVE CAMPAIGN

The following list of e-bike factors that indicate low risk was produced as part of the e-BIKE Positive campaign by the trade and retail bodies for cycling – the Bicycle Association (BA) and the Association of Cycle Traders (ACT),

- Frame label mentions EN15194, includes a UKCA and/or CE marking and also features the crossed out wheely bin symbol and specifies both manufacturer and (if different) the UK importer
- Battery pack undamaged, marked with a familiar brand name and battery pack label includes full manufacturer details and features the CE and/or UKCA marking, and the crossed out wheely bin symbol
- Battery pack is neatly integrated into the frame, or securely and tidily mounted with tidy wiring, all wires colour matched, connectors of similar type

(likely waterproof), cable routing using frame fittings or running inside the frame

- Motor in front or rear wheel but wheels appear original and match in rim and spoke type and colour OR the motor is mounted at the pedals and is neatly integrated into the bike
- Handlebar controls tidy and match the overall e-bike style, and are of the same brand as motor and battery pack. Usually no throttle but there may be a “walk assist” or “start assist” button.

A list of e-bike brands which have had their safety and quality processes independently audited by the Bicycle Association is also being produced.

<https://bicycleassociation.org.uk/pages/ba-register-of-safety-audited-e-bike-brands>

The Association of Cycle Traders produces a list of cycle retailers and mechanics who have committed to the following best practices:

- To sell or repair only road legal e-bikes which are safety-tested and from trusted suppliers, and which come with full safety information and user instructions.
- To repair or modify e-bikes only in accordance with the manufacturer’s instructions.
- To ensure that after any repair or modification, the e-bike can be charged and used safely. If this cannot be guaranteed, to refuse to do the work.
- To supply only safety-tested chargers and batteries from trusted suppliers.
- To supply only chargers, batteries and other components which are documented to be compatible with each other, and with the e-bike where they will be used.
- To supply chargers and/or batteries with full safety information and user instructions.

The list can be checked here:

<https://ebikepositive.co.uk/find-an-e-bike-positive-retailer/>

AVOIDING E-BIKE BANS

Some landlords, hoteliers and transport operators have introduced blanket bans on parking or storing e-bikes because they cannot distinguish between properly maintained e-bikes from reputable brands and the others which do pose an increased risk.

Spokes is investigating whether a certification scheme involving retailers could be established. We suggest that e-bike owners experiencing problems should retain documentation confirming that the bike has been purchased from a reputable bike shop and show a copy of this leaflet to anyone raising concerns about battery safety.

This Scotrail poster confirms that legal e-bikes can be taken on their trains.

