

Lithium Battery

Waste Guidance

Date	Rev No.	Description
11.03.2024	V1	Initial document

1.0 Purpose of the Guidance:

In a recent report from the UK¹ the number of waste facility fires are on the rise. Around 48% of fires are expected to be linked to inappropriate disposal of waste rechargeable batteries, mainly, lithium batteries. The purpose of this guidance is to help sites identify possible rechargeable or lithium ion batteries, and Waste Electrical and Electronic Equipment (WEEE) containing sealed lithium battery to store them securely in order to reduce the risk of accidental discharge or from becoming damaged.

This guidance sheet outlines:

- Types of batteries
- Onsite Storage
- Identification of common lithium batteries
- Disposal Options

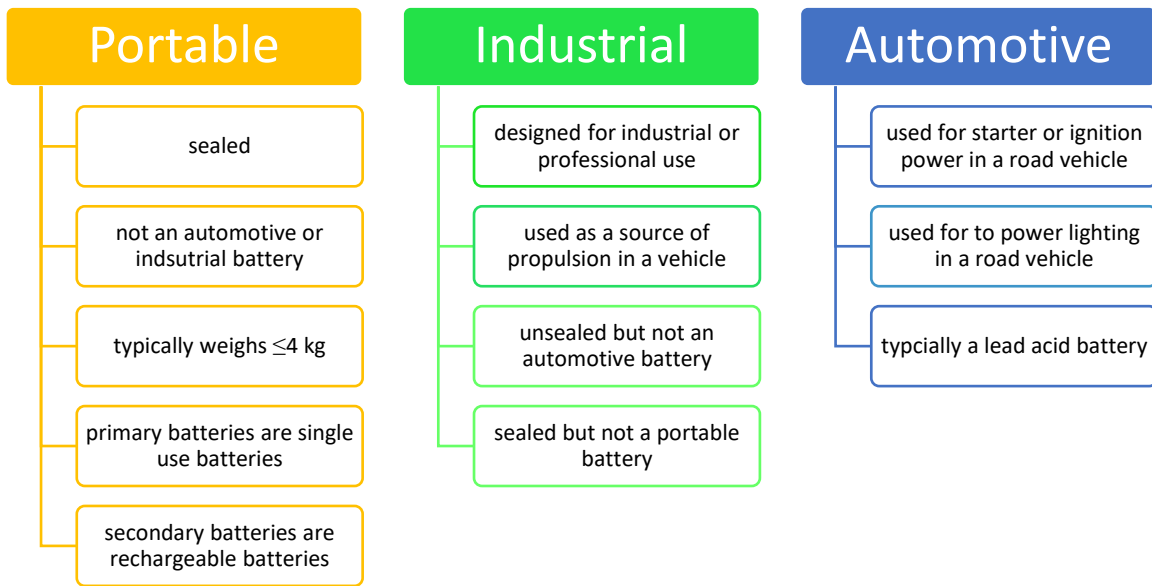
2.0 Types of batteries

Under the UK Waste Batteries and Accumulators Regulations 2009 there are three categories of batteries:

¹ <https://www.eunomia.co.uk/reports-tools/cutting-lithium-ion-battery-fires-in-the-waste-industry/>



Lithium Battery Waste Guidance



These three types of battery categories include a wide range of battery chemistries, including: lead acid, nickel metal hydride (NiMH), nickel cadmium (NiCd), zinc, alkaline, lithium, lithium iron, lithium ion, silver oxide, zinc-air.

Examples of the applications for the batteries are provided below:

Portable Batteries	Industrial Batteries	Automotive Batteries
Remote Controls, vapes, drones, portable music players, speakers and headphones, watches and clocks, electric toothbrushes, toys, power banks, power tools, mobile phones, laptops, vacuum cleaners.	Automotive traction batter powering an electric motor in battery electric vehicles, plug-in hybrids and hybrid electric vehicles. Street lighting, emergency lighting, industrial power tools, off road vehicles, mobility scooters, energy storage.	Starter motor – typically lead acid, though lithium ion available on the market. Ancillary lighting in vehicles

Batteries are used in a wide range of electric devices. However, until the battery is removed from the electrical device, the battery remains part of the Waste Electronic and Electrical Equipment (WEEE). The WEEE should not be placed in the battery recycling bin, the metal skip or Energy from Waste skip at Civic Amenity Sites or other waste facilities, but in a separate container for WEEE especially if it contains a sealed lithium battery that cannot be removed.



Sealed batteries should not be removed from the WEEE unless it is safe to do so with the correct tools, equipment, risk assessment, and procedures in place and should only be removed by trained staff.

Example of WEEE placed in metal skip at Civic Amenity Site



3.0 Onsite Storage

For safety issues we are requiring facilities collecting lithium batteries ≥ 1 kg per battery cell or pack to provide separate collection and safe storage to reduce the risk of fires.

It is good practice to separate all identified lithium batteries from other battery waste especially if they are damaged or the amount of lithium batteries in with mixed batteries affects the ability to comply with the transport and recovery requirements for unsorted batteries.

Small batteries can be placed in a plastic bag (e.g. sandwich bag), whilst larger batteries can have their terminals taped to prevent short circuiting and accidental discharge.

Portable Primary Batteries

- Placed in regular battery waterproof container.
- Recycling containers to only have a small opening to prevent larger batteries from being deposited.
- A plastic liner is recommended for any battery collection box.

Lithium Batteries

- Placed in a plastic bag and placed in a recycling bin.
- Signage on the container to educate what type of batteries are to be recycled in the container.
- The container must have good ventilation.
- Keep containers out of direct sunlight or heat.
- A plastic liner is recommended for any battery collection box.



Lithium Battery Waste Guidance

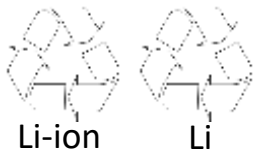
General Storage and Handling Information

- Signage on the recycling container for easy identification by the user.
- Storage in a non-conductive container, which is waterproof, flame resistant and shockproof is recommended, or line containers with plastic bags.
- For larger batteries ensure terminals are taped or batteries are individually bagged.
- Wear protective gloves when handling batteries to avoid chemical burns or cuts from sharp parts.

Risk Minimisation

- Minimise storage times on site.
- Keep spill kits near to the battery containers.
- Ensure an applicable fire extinguisher is located in close proximity
- Thermographic cameras could be used to complete daily checks on battery storage containers.
- A risk assessment should be carried out in regards to how batteries are to be collected and stored, frequencies of disposal and location of storage.
- Never mix other waste with the battery waste.
- Ensure batteries are not stored within 6 m of flammable gases or liquids.
- Inspect lithium batteries for damage by looking for bulging/cracking, hissing, leaking, rising temperature or smoking.
- On discovering damaged batteries, place in a fire-resistant container with sand or other extinguishable agent (e.g. vermiculite).
- Layer batteries with sand or vermiculite to minimize potential fire risk.
- Ensure containers are filled with no voids or empty spaces to reduce movement in transit.
- Use approved containers for safe storage and transit.
- Ensure all staff are adequately trained to manage the risks and appropriate information has been communicated to workers.
- Do not expose batteries to thermal extremes (heat or frost)
- Notify the fire service as to the storage location of batteries

4.0 Identification of Common Lithium Batteries



Recycling symbols placed upon lithium batteries as per a legal requirement for all batteries placed on the market in the UK or EU.

These batteries are typically used in rechargeable household goods like:

Mobile Phones

Cameras

Children's Toys



Drones



Portable Battery Packs (Power banks)



Emergency Radios



Vapes & E-cigarettes



Camcorder



Laptops (old)



Laptops (new)









Larger batteries (>1 kg) are likely to include:

Hover Boards	Electric Mobility Scooters
	
Electric Golf Trolley	E-Bikes
	

Typically, there are four types of lithium battery cell designs, these are:

Pouch	Cylindrical	Prismatic	Button
			
Mobile Phones Laptop Nissan, BMW, Audi,	Cameras Tesla car Medical Devices Power Tools Torches E-bikes Hover Board	Deep Cycle (Lead acid alternative) Energy storage systems Electric Vehicles	Medical Devices Calculators Watches Remote Controls Wireless Earphones

5.0 Waste Electronic and Electrical Equipment (WEEE)

Many electronic products use or contain lithium ion batteries because they are rechargeable and have a high capacity, allowing devices to be used for longer. However, these electronic items should not be placed in the battery recycling bin, metal waste skip, Energy from Waste skip or household waste bin.

WEEE received should be monitored in case of potential fire risks and presence of batteries. Small mixed WEEE, where it is likely to find these items, should be stored with weatherproof coverings.

Common WEEE found in the recycling bin		
Electric toothbrushes	Toys	Calculators
Mobile phones	Vapes	Hair appliances
Remote controls	Ear pods/headphones	Electric shavers
Torches	Smoke detectors	Medical devices

These items should be separated from the batteries and recycled in accordance with the local policy.



6.0 Waste Battery Transportation

Waste from the Isle of Man can only be shipped to Organisation for Economic Co-operation and Development (OECD) countries as part of the Basal Convention on the Control or Transboundary Movements of Hazardous Wastes and their Disposal. Shipping of wastes from the Isle of Man is conducted via two mechanisms:

1. Green List – non-hazardous waste
2. Amber List – hazardous waste

To determine what type of waste you have please see the UK regulation guidance on shipments of waste:

<https://www.gov.uk/government/publications/waste-shipments-regulation-wsr-consolidated-waste-list/consolidated-waste-list>

Batteries have multiple entries and depending on type and the composition of shipments can be green list or amber list. Batteries have been listed as:

Name	Description	Code	Notification Required
Waste batteries (including Lithium ion)	Conforming to a specification, excluding those made with lead, cadmium or mercury.	B1090	Annex VII
Lead Acid Batteries	Waste lead acid batteries, whole or crushed.	A1160	TFS
Unsorted Waste Batteries	Waste batteries not specified on list B containing Annex I constituents to an extent to render them hazardous.	A1170	TFS
WEEE	Waste electrical and electronic assemblies or scrap containing components such as accumulators and other batteries	A1180	TFS

Green List Waste Shipment Requirements:

Green list wastes are considered to be non-hazardous wastes and can be shipped for recovery within OECD countries under a low level of control. Green list waste must be accompanied by an [Annex VII Notification](#). No further consent is required from the sending or receiving authorities.

Amber List Waste Shipment Requirements:

Amber list wastes are those considered to be hazardous. Shipping requires consent from the regulatory bodies in both the sending country and the receiving country.



Lithium Battery Waste Guidance

For amber list waste shipments from the Isle of Man, intended for England or Wales the UK Environment Agency must provide their consent. Details on the application for such movements (including the costs) can be found [here](#).

For shipments to Scotland, the Scottish Environmental Protection Agency are responsible and information can be found [here](#).