



# FIRECHIEF®

making the world a safer place

## Handling, transporting, or manufacturing products using Lithium-ion batteries?


Instantly contain, suppress and  
isolate Li-ion battery thermal  
runaway fires within seconds

Put fire safety first with Firechief PyroFlow granules

# PYROFLOW<sup>MAXI</sup>

FIRE SUPPRESSION GRANULES



 +44 (0)330 999 0019

 [sales@firechiefglobal.com](mailto:sales@firechiefglobal.com)

 [firechiefglobal.com](http://firechiefglobal.com)

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## FIRE SUPPRESSION GRANULES



## Lithium-ion battery fire risks. What every business needs to know...

Lithium-ion (Li-ion) batteries feature in almost every part of our daily life. They power our smartphones, personal devices, laptops, e-bikes and e-scooters, electric vehicles and more.

However, in the event of malfunction, they can also represent a serious fire risk.

In 2021, the London Fire Brigade attended 104 fires involving Lithium-ion batteries: 44 caused by e-bikes, 28 caused by e-scooters

and 32 other Li-ion battery events including mobile phones and laptops.<sup>1</sup> The Brigade's data for 2020 also suggests the fire incident rate for electric cars is 0.1%, more than double that for petrol and diesel vehicles.<sup>2</sup>

In the UK, Lithium-ion batteries in domestic and business waste are responsible for an estimated 201 fires a year. That's 48% of all waste fires costing the UK economy £158m per annum.<sup>3</sup>

### Sources

1. London Evening Standard
2. Fleet News
3. Eunomia and the Environmental Services Association (ESA): Cutting Lithium-ion Battery Fires in the Waste Industry, Jan 2021

### Organisations and environments at risk include...



Emergency Fire and Rescue Services



Courier services and Logistics providers



E-scooter/e-bike OEMs and retailers



Transport operators and passenger hubs



Recycling centres and consumer recycling points



Battery Electric Vehicle OEMs and retailers



Device OEMs



Aerospace OEMs

# What goes wrong?

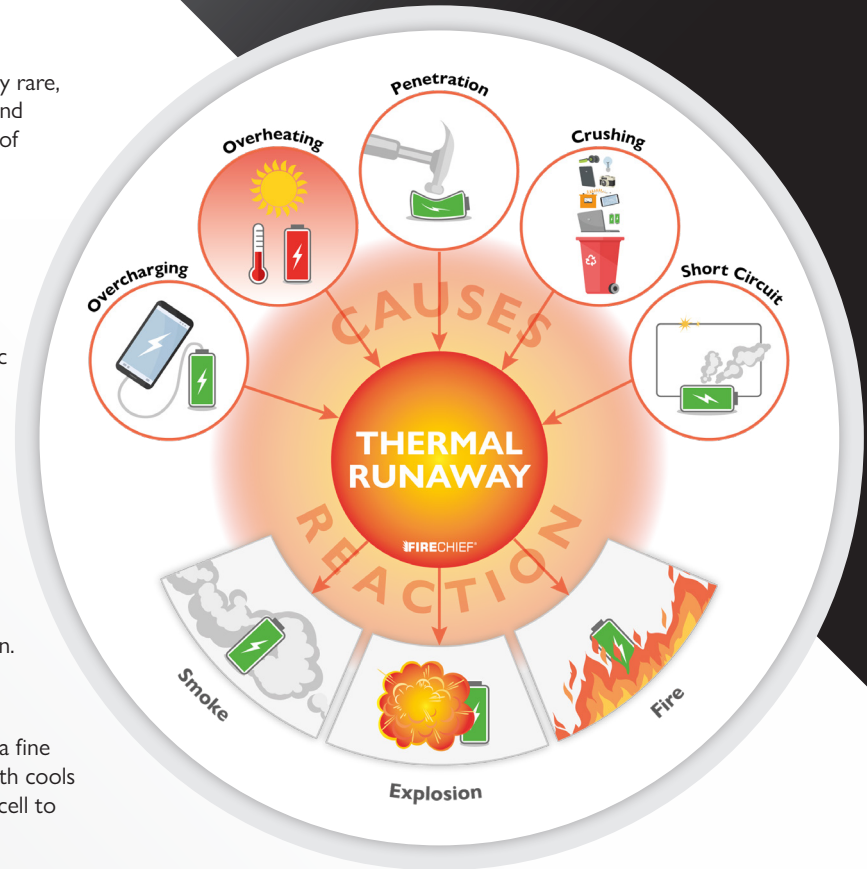
Whilst catastrophic Lithium-ion battery failures are relatively rare, when they do occur, they can be extremely serious. Small and lightweight, when charged Li-ion cells store a large amount of energy and are especially sensitive to high temperatures.

If a battery degrades, gets hot, or suffers a short circuit, heat and pressure build up inside. At a certain level, the chemical reaction creates thermal runaway, causing rapid overheating and quickly affecting adjacent cells. Batteries will spontaneously ignite, burning at extremely high temperatures, releasing flammable hydrogen and other toxic gases during and after the event. In certain situations, cells may even explode.

# Suppressing Lithium-ion battery fires

The use of a highly flammable organic electrolyte makes Li-ion battery fires very hard to extinguish. Li-ion cells release oxygen as the temperature rises, further fuelling combustion.

Until now, the only effective way to suppress Lithium-ion battery events has been to use Firechief Lith-Ex Aqueous Vermiculite Dispersion (AVD) extinguishers. By discharging a fine mist of Vermiculite particles suspended in water, a spray both cools and forms a heat-proof barrier around the burning battery cell to prevent propagation and re-ignition.



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## FIRE SUPPRESSION GRANULES



## Introducing Firechief PyroFlow granules: the most affordable, effective way to contain and isolate Lithium-ion battery fires

Using low grade waste glass recycled into lightweight, aerated spherical granules, Firechief PyroFlow offers a highly consistent, effective extinguishing agent that instantly smothers problematic Li-ion battery fires in seconds.

Firechief PyroFlow granules range from 1-4mm in diameter, delivering the optimal fire suppression and battery cell smothering performance.

The robust, consistent granules are stored in convenient 12.5 kg bags. In the event of a fire, simply pour Firechief PyroFlow granules onto the flames, or place the entire bag onto the visible flames, to rapidly smother, cool and contain any blaze.


PyroFlow granules also bind liquids and filter gases, making them an ideal packing media for storing or transporting damaged or recycled batteries which may leak electrolyte.

**ECO-FRIENDLY**

**NON-TOXIC**

**EASY TO USE**

**LIGHTWEIGHT**

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# How Firechief PyroFlow granules work

## Suffocation

Smothering the fire load with Firechief PyroFlow granulate displaces oxygen and separates it from the fuel, suffocating the blaze.

## Cooling effect

Because of its thermal capacity Firechief PyroFlow absorbs heat energy, cooling the fire and disrupting the thermal reaction.

## Isolation

A Lithium-ion battery fire can reach over 1000° C. Firechief PyroFlow glass granules melt at high temperature. As they liquify, they absorb heat, cooling the fire whilst also forming an impervious liquid glass layer, removing oxygen. Even difficult to control Class D metal fires (i.e., sodium or magnesium) can be extinguished with Firechief PyroFlow.

## Gas impedance

The shape of Firechief PyroFlow granules results in dense sphere packing. The packed bed impedes the supply of oxygen preventing the formation of combustible gases.

## Absorption of liquids

The granulate mixture combined with the aerated porous large grain surface binds liquids.

## Fire Gas Filtering

Liquids, gases, and vapours accumulate on the extremely large surface of the granulate.



*For more details  
scan the QR code*



# LITHIUM-ION

## BATTERY SAFETY RANGE



## Learn more about other products in the Firechief Lithium-ion Battery Safety Range

In addition to PyroFlow, the Firechief Lithium-ion Battery Safety Range includes Lithium-ion Battery Fire Extinguishers, fire blankets, suppression kits and fire resistant containers.

All the products in the range are designed to put out and keep out Lithium-ion battery fires.

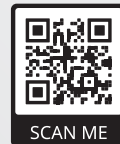
## Need help with choosing a product?

For more guidance on what to use on certain applications, see our product selector opposite or scan the QR code.

### Benefits:

- Kitemark approved (Models FLE2, FLE6, FLE9)
- Designed for use on battery fires with a power rating from 50Wh - 1000Wh
- Quickly cools the excessive heat, preventing re-ignition
- Lightweight and compact
- Non-toxic and environmentally friendly
- Effectively extinguishes Class A fires

*For more details scan the QR code*





Which battery safety products do I need?

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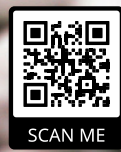
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 Watch PyroFlow in  
action on YouTube

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Firechief Global, 3 Lands End Way,  
Oakham, Rutland, LE15 6RB

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