

LITHIUM-ION BATTERY FIRES

AND THE ROLE OF CEASEFIRE MULTIMAX FIRE EXTINGUISHERS-
CERTIFIED TO NTA 8133 A1:2025 | AWARDED THE BSI COMPLIANCE CERTIFICATE.

NTA 8133 A1:2025

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1 Emergence of Class L Fire Risk

1.1 Executive Summary

A fundamental shift is underway in global fire-safety thinking. Lithium-ion battery fires are no longer niche or emerging risks- they are rapidly becoming one of the most prevalent and complex fire hazards across everyday environments. From retail spaces such as vape shops and mobile phone outlets to mobility devices and even routine domestic charging setups, the presence of lithium-ion batteries is now ubiquitous- and so is the risk they carry.

This white paper examines the underlying fire science behind lithium-ion battery fire fighting, the evolving standards and testing frameworks, and the role of Ceasefire Multimax, with NTA 8133:2021+A1:2025 certification and having received the BSI conformity certification on lithium battery fires.

1.2 Evolving Fire Risks Landscape

Incidents like the one in Glasgow exemplify precisely the kind of threat regulators worldwide are striving to address. The lithium-ion battery fires are typically triggered by thermal runaway in small-format lithium batteries, a phenomenon where internal failure leads to a rapid, uncontrollable rise in temperature.

During thermal runaway, a failing cell can release heat and flammable gases, potentially triggering neighbouring cells and creating a cascading failure. Venting may release hot gases and hazardous decomposition products, while cell rupture can present additional physical hazards. Even when visible flames are suppressed, residual heat and continuing cell failure can lead to renewed ignition.

What follows is not a conventional fire, but an intense, self-sustaining reaction that can reignite, spread rapidly, and release toxic gases. Unlike traditional Class A, B, C, or even D fires, lithium-ion battery fires behave in fundamentally different ways- demanding new suppression technologies, revised safety standards, and a complete rethinking of preparedness strategies.

At the same time, the risk of fires caused by everyday materials such as furniture, paper and fabrics (Class A), as well as flammable liquids such as fuels and solvents (Class B), remains ever-present in modern living spaces. Adding to these are cooking oil and fat fires (Class F), which can escalate rapidly and require a special approach. The result is a layered fire risk environment where different classes of fire hazards are not isolated but exist simultaneously, demanding a more integrated and aware approach to fire safety.

This convergence of traditional and emerging fire risks underscores the urgent need for modern fire protection solutions that are versatile, specialized, and capable of addressing multiple fire scenarios within a single environment.

1.3 Case Reference: The Glasgow vape shop fire incident

"Recent incidents have highlighted the practical implications of these risks. The Glasgow vape shop fire demonstrated how lithium-ion battery failures can escalate rapidly, driven by thermal runaway and re-ignition. The event also demonstrated the risk of re-ignition, even after initial suppression. Such behaviour is not typically observed in conventional fire scenarios and requires extinguishing methods that are capable of addressing fires that involve lithium-ion batteries.

Source: BBC

2 The Evolution of Standards and Testing Frameworks

2.1 ISO 3941:2026 - Class L Fires Introduced:

With the growing threat of lithium-ion battery fires, ISO has formally recognised lithium-ion battery fires as Class L, acknowledging their unique behaviour. This marks the first time that lithium-ion battery fires have been formally recognised as a distinct fire category (Class L) in the ISO and EN ecosystems.

ISO 3941:2026, published in January 2026, introduced Class L for fires involving lithium-ion cells and batteries where no lithium metal is present. This recognises lithium-ion battery fires as a distinct fire classification, reflecting their unique behaviour, including thermal runaway, rapid fire escalation and the possibility of re-ignition.

2.2 NTA 8133 A1:2025 Standard - Current Test Framework

While the original reference for lithium-ion battery fire extinguishers testing has been NTA 8133, which established a structured methodology for testing and evaluating fire extinguishers' performance on lithium battery fires, this standard has evolved from the 2021 version into its latest - NTA 8133 A1:2025, incorporating refinements to testing procedures addressing the evolving lithium battery fire risks.

What the latest amendment means?

According to NEN, the 2021 edition of the NTA 8133 (NTA 8133:2021) is superseded by NTA 8133 A1:2025 and has now become the current standard for Li-ion extinguisher testing.

This means:

- Manufacturers still testing to the 2021 version are not completely aligned with the latest frameworks.
- Certification bodies (BSI, Kiwa, etc.) will now reference the latest 2025 edition.
- Buyers and specifiers will expect compliance with the latest version.

2.3 BS EN 3-11: The Future Standard for Lithium Battery Fire Testing

The NTA 8133 A1:2025 is set to evolve into BS EN 3-11, which will harmonise lithium-ion battery fire testing within the EN 3 framework and establish a unified European standard. This upcoming BS EN 3-11 will mark the first inclusion of lithium-ion battery fire performance within the EN 3 series.

2.4 The introduction of BSI's Lithium-ion Compliance Certification

BSI recognises NTA 8133 A1:2025: as the current reference framework for assessing extinguisher performance under lithium-ion battery fire conditions and has now introduced the BSI Certificate of Conformity .

The introduction of BSI's **Lithium-ion Compliance Certification** marks a turning point in fire safety. For the first time, manufacturers can independently validate lithium-ion suppression performance while EN 3-11 is still in development.

BSI conformity certification provides a structured route for independently assessing products against the applicable NTA 8133 requirements. It helps manufacturers substantiate performance claims and gives specifiers and other stakeholders a clearer evidential basis for evaluating product suitability.



a. Why BSI Created This Certification

Lithium-ion fires behave differently from traditional fire classes. They involve:

- Thermal runaway
- Cascading cell failure
- Violent ignition
- Reignition
- Toxic offgassing

"Fires caused by rechargeable lithium-ion batteries... are a major and increasing problem all around the world."

BSI recognised the urgent need for an interim validation method.

b. What the Certification Actually Tests

BSI's certification is based on NTA 8133 A1:2025, the most advanced lithium-ion extinguisher test method available.

It includes a dedicated witnessed testing approach:

- The test uses 24 lithium pouch cells, arranged in sets of four and suspended in a metal frame to prevent full submersion-even if submerged, the fire may not stop.
- The third cell pack is ignited via overcharging (ignition typically within 7 to 9 minutes).
- Once flames appear, the extinguisher must be deployed within three minutes.
- A brief reflare (up to 5 seconds) is allowed after extinguishment, provided it self-extinguishes, and no reignition occurs for 20 minutes thereafter.
- The test is conducted under the direct supervision of an independent witness to ensure the procedure is followed and the results are objectively verified and documented.
- Passing this test twice qualifies as a successful test (with up to three attempts allowed)

This is not a simple fire test, it is a scientific validation of lithium-ion suppression capability.



3 Ceasefire MultiMax: Developed for Class L risks

NTA 8133 A1: 2025 Certified plus Certificate of Compliance from BSI

a. Introduction

The Ceasefire MultiMax is a multi-risk fire extinguisher specifically designed to address the emerging threat of lithium-ion battery fires, along with conventional fire classes including Class A, Class B, electrically started fires, and cooking oil fires (Class F), is certified to the latest NTA 8133 A1: 2025 standard and is one of the first extinguisher to receive the BSI compliance certificate on lithium-ion battery fires.

b. Fire Types Multimax Fights



Class L: Fires in Lithium battery powered devices and tools.



Class A:
Solid combustibles like paper, wood, fabric, etc.



Class B:
Flammable liquids like petrol, diesel, etc.



Electrically Started Fires:
Fires due to short circuits in electrical panels & appliances.



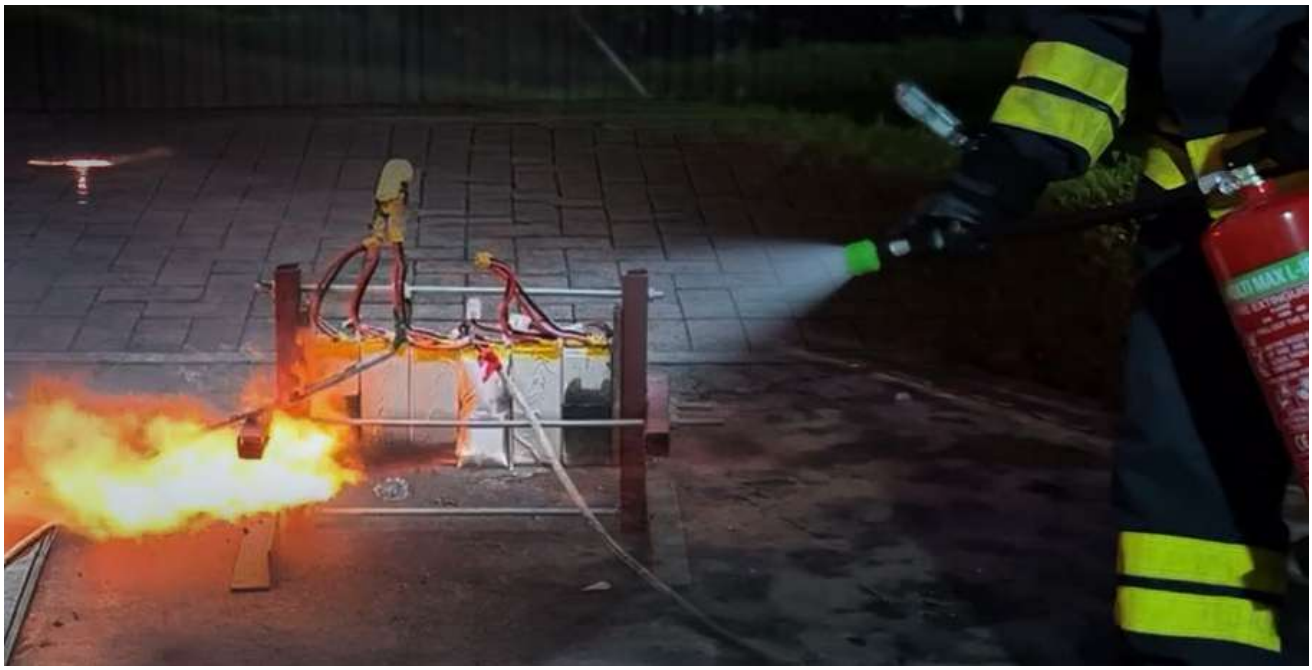
Class F:
Fires in cooking oils.



Learn More About
Ceasefire MultiMax

c. NTA 8133 A1:2025 Certified

Ceasefire MultiMax has been tested under the NTA 8133 A1:2025 framework, the latest version of the NTA testing framework for lithium-ion battery fires. With BSI recognising NTA 8133 A1:2025 as the current reference test method for lithium battery fire extinguishers, and also the closest precursor to the upcoming EN3-11 standard, MultiMax is validated against the most credible and widely accepted standard in use today.



What this means

> *This makes MultiMax particularly relevant for industrial and commercial environments from an insurer's perspective, where multiple fire risks coexist and the potential for loss escalation is high. In such scenarios, where even a small lapse in first response can lead to significant damage, business interruption, and higher claims exposure, MultiMax offers a reliable, multi-risk solution, helping mitigate severity, improve first-response effectiveness, and support stronger risk control.*

Learn More About
Ceasefire MultiMax

d. Certificate of Conformity by BSI on NTA 8133 for Lithium-Ion Battery Fires



Ceasefire MultiMax 6 L and 9 L variants are one of the first extinguishers to have received Certificate of Conformity by BSI on NTA 8133 :2021+A1:2025, with 600 Wh lithium-ion suitability.

Why it matters?

BSI describes its compliance certification as the latest approval of extinguishers on lithium battery fires while national and European standards for lithium-ion fire suppression continue to develop.

It provides independent trust for fire extinguishers, allowing manufacturers to validate product performance claims through independent testing conducted by an established certification body.

This represents a significant certification milestone: MultiMax is the first extinguisher to receive the BSI compliance certification for lithium-ion battery fires.

It provides independent third-party verification of performance against a defined lithium-ion battery fire test methodology, adding an additional level of technical assurance beyond conventional extinguisher approvals.

e. A Perspective from BSI

As lithium-ion battery technology continues to evolve, so must the standards and certification frameworks designed to address its associated fire risks.

Recognising the importance of innovation and independent conformity assessment, BSI shares its perspective on the evolving landscape of lithium-ion battery fire suppression and its collaboration with Ceasefire on MultiMax.

It is a privilege to support Kitemark-certified manufacturers as they continue to develop innovative products that address emerging risks and evolving market demands.

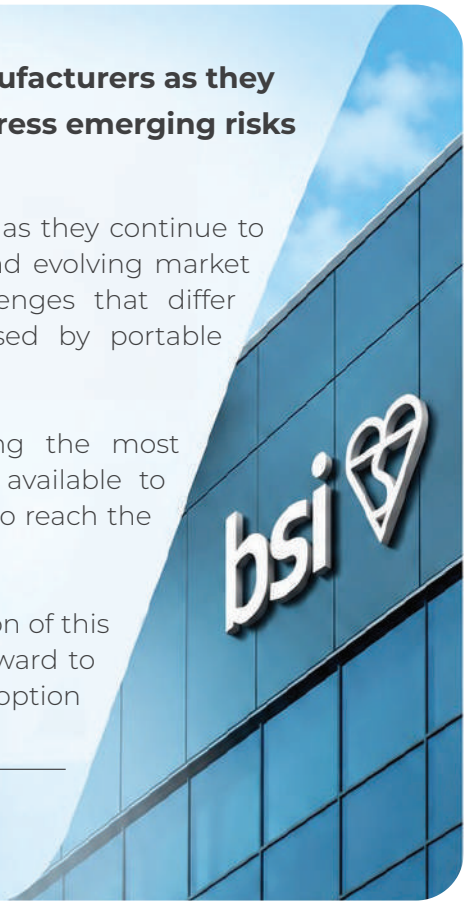
"It is a privilege to support Kitemark-certified manufacturers as they continue to develop innovative products that address emerging risks and evolving market demands. Lithium-ion battery fires present unique challenges that differ significantly from the types of fires traditionally addressed by portable extinguishers, requiring the industry to adapt and innovate.

As a certification body, BSI must remain agile, applying the most appropriate standards and conformity assessment routes available to provide trusted assurance while enabling new technologies to reach the market.

I am pleased to have worked with Ceasefire on the certification of this innovative lithium-ion fire suppression solution and look forward to continuing our support as the industry progresses towards adoption of the new EN 3-11 standard."

Robert Hearty,

Technical Delivery Manager, BSI



What this means for the industry

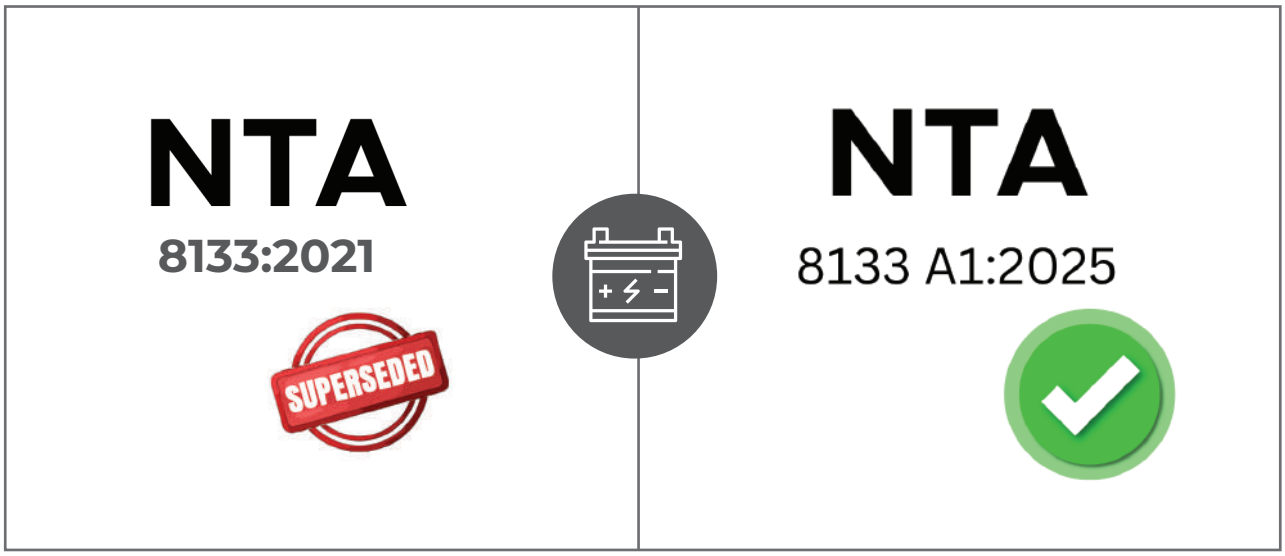
BSI's perspective reinforces the importance of independent conformity assessment in addressing emerging fire risks. Ceasefire MultiMax's certification under NTA 8133 A1:2025 represents a meaningful step towards strengthening confidence in lithium-ion battery fire suppression as the industry moves towards the adoption of BS EN 3-11.

f. The Grim Reality

With NTA 8133:2021+A1:2025 replacing the 2021 edition and is now the current standard for Li-ion extinguisher testing, this means that any manufacturer still testing to the NTA 8133:2021 version may not be fully aligned with the new testing frameworks.

Testing to NTA 8133 A1:2025 is intended to assess the performance of extinguishing agents under conditions representative of lithium-ion battery failure, including the presence of thermal runaway and the associated release of heat and flammable gases.

The NTA protocol specifies a defined battery pack configuration in which cells are connected in series. The framework also specifies the type of lithium-ion cell chemistry used for testing. According to Annex A.1 of NTA 8133, the test utilises Lithium Cobalt Oxide (LCO) cells, a widely used lithium-ion battery chemistry. The use of defined cell chemistry ensures consistency and repeatability in evaluating extinguisher performance under controlled test conditions. (Source: NTA 8133 Standard- NEN).



Several extinguishers available in the market that claim suitability for lithium-ion battery fires are tested using methodologies where Nickel Manganese Cobalt (NMC) cells are used. NMC cells exhibit relatively higher thermal stability compared to certain other lithium-ion chemistries, meaning they are generally less prone to rapid thermal runaway propagation under the same conditions.

By securing BSI conformity certification against NTA 8133:2021+A1:2025, Ceasefire MultiMax has established an early position in the independent conformity assessment of portable extinguishers for lithium-ion battery fire scenarios. This milestone demonstrates the importance of aligning product performance claims with defined testing requirements as the regulatory and standards landscape develops.

4 MultiMax: A Multi-Class Protection for Reduced Loss Exposure

Ceasefire MultiMax being proven effective on Class L fires along with traditional classes including Class A, B, Electrically Started Fires, and Class F (Cooking oil) fires, is capable of providing any kind of premises- be it living, commercial, or industrial, a complete protection against fire, where multiple fire risks co-exist, thereby significantly reducing the loss exposure and claim frequency due to fire for insurers.

What Makes Ceasefire MultiMax Outshine the Rest?



- One of the first extinguishers certified to NTA 8133 A1:2025
- One of the first to achieve BSI's new lithium-ion compliance certification
- Proven potency on Lithium-ion battery fires (Class L)
- Tested on LCO chemistry (more severe thermal runaway)
- Also effective on Class A, B, Electrically Started, and Class F (Cooking Oil) Fires
- Backed by EN 3-7 Kitemark | UKCA Certified | CE Marked
- Fluorinefree, biodegradable, non-conductive agent



5 Why it matters for risk insurers

Lithium-ion battery fires present highseverity, highfrequency risks that challenge insurers. Their behaviour- thermal runaway, reignition, cascading failure increases the likelihood of:

- **Asset destruction**
- **Claim escalation**
- **Business interruption**
- **Total loss outcomes**

Ceasefire Multimax addresses this most effectively because:

Ceasefire Multimax is engineered for the fierce Lithium-Ion Battery Fires

Lithium-ion battery fires can escalate rapidly due to thermal runaway, re-ignition, and fire propagation, increasing the likelihood of severe asset damage and business interruption.

MultiMax, tested under the latest NTA 8133 A1:2025: 2025 and having received the BSI Compliance certificate, is designed to address these conditions alongside conventional fire risks, supporting early-stage control.

One solution for multi-risk environments

Modern commercial and industrial sites present combined fire risks, including combustible materials, flammable liquids, electrical systems, cooking operations, and lithium-ion battery-powered devices.

MultiMax is a single, standardised first-response firefighting solution across these risks, reducing dependence on multiple extinguisher types.

Reduces Risk Mitigation

Effective risk mitigation depends on the availability of fire protection equipment suited for the full range of hazards present on site.

MultiMax provides multi-risk coverage within a single universal green agent, supporting appropriate deployment in complex environments.

Compliance & Validation: Recognised Standards

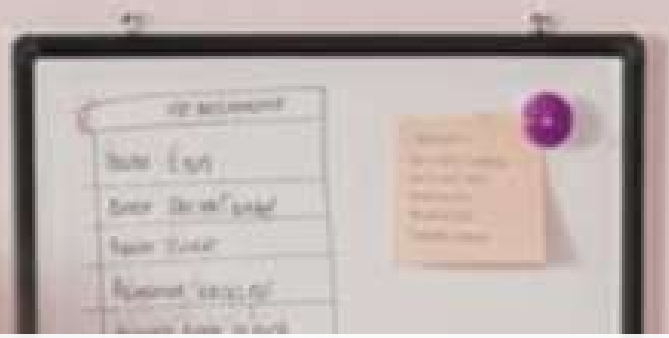
Fire protection assessment increasingly relies on recognised standards, with BSI recognising NTA 8133 A1:2025 as the current benchmark for lithium-ion battery fire performance.

MultiMax is certified and tested under these frameworks, providing a validated basis for inclusion in risk assessments.

Underwriting Confidence: First-Response Capability

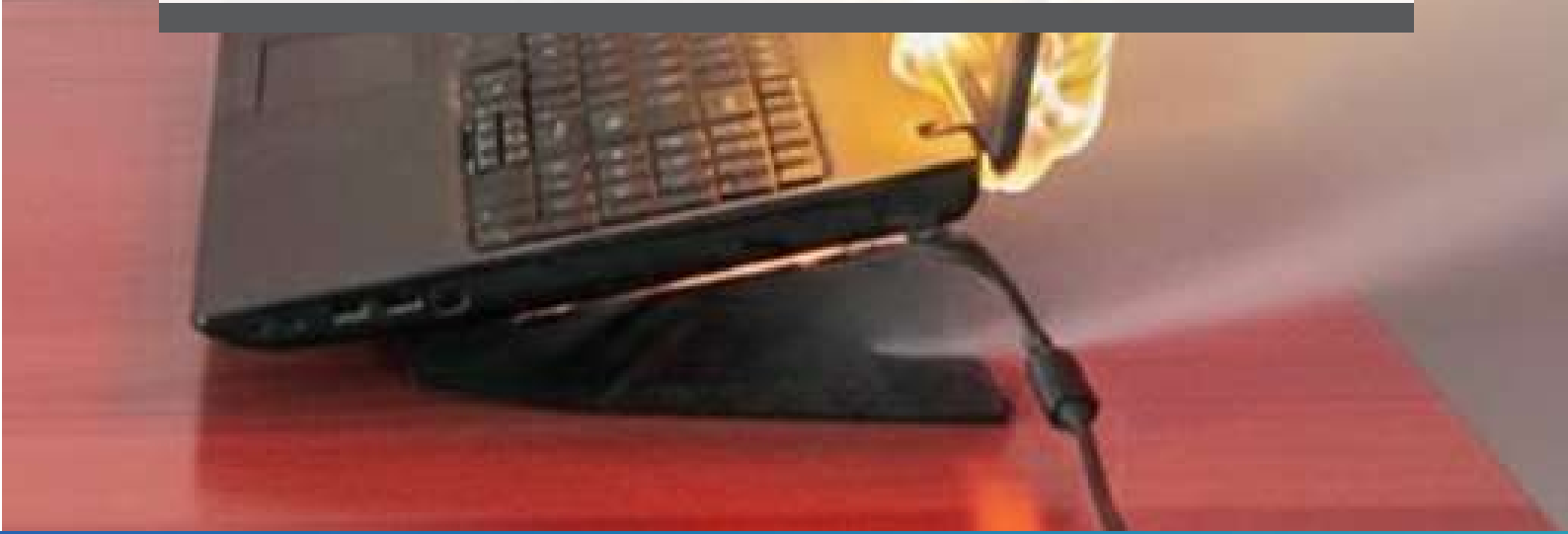
Early-stage fire suppression plays a critical role in limiting escalation and reducing claim severity.

MultiMax supports improved first-response capability across multiple fire types, contributing to more consistent risk management outcomes and enhanced underwriting confidence.



6 Key Takeaways for Risk Insurers

- Commercial environments increasingly present multi-hazard fire exposures, including lithium-ion battery risks, making risk assessment more complex.
- Lithium-ion battery fires carry higher severity potential due to thermal runaway, re-ignition, and fire propagation, increasing the likelihood of significant asset damage and business interruption.
- ISO 3941:2026 formally introduces Class L for lithium-ion battery fires, reinforcing the need to recognise these risks as part of evolving fire-risk assessment and mitigation strategies.
- MultiMax, tested under NTA 8133 A1:2025 and having received the BSI Compliance certificate provides a validated multi-risk fire protection solution, supporting effective first response across both conventional and lithium-ion battery fire scenarios.
- The inclusion of MultiMax extinguishers as a first line of defence within insured premises can significantly contribute to reduced fire escalation, lower loss severity, and improved underwriting confidence in environments with complex and evolving fire risks.



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