



# Fire Extinguishers and the Risks Associated with Lithium-ion Battery Fires

## A MULTI-HAZARD CHALLENGE

Suppression of lithium-ion battery fires is challenging due to the complexity of the hazards which may be present. These fires are typically unpredictable with the potential for fast growth due to high energy density. Lithium-ion batteries in thermal runaway have the potential to present multiple hazards which can include A, B, C and even D fire classifications:

### Class A:

The battery enclosure or surrounding equipment may be made of class A material.



### Class B:

Volatile, explosive and harmful off-gases from a thermal runaway event.



### Class C:

Li-ion batteries are energized presenting a significant class C hazard.



### Class D:

Li-ion batteries can be packaged in metal housings (e.g., aluminum alloy material used for containment structure) that are combustible.



## REAL WORLD SOLUTIONS NEEDED

Third-party Nationally Recognized Test Laboratories (NRTLs) are currently investigating the various hazards associated with lithium-ion battery thermal runaway events. NRTLs will likely consider the classifications mentioned above as well as other factors such as battery size/capacities and safe distance for attacking a lithium-ion thermal runaway fire. In order to avoid injury to the firefighter, currently, there are limited guidelines for extinguishing battery fires with a handheld fire extinguisher. While water-based agents may comply with the UL8 standard for class A fires, they do not address the dangers of fighting the B, C, or D fire hazards associated with lithium-ion battery fires.

## OUR WORK

Finding solutions for lithium-ion battery fires is a high priority for Amerex. Our team has significant experience in developing real-world solutions for the fire protection market. We are working with other industry experts and NRTLs to create unified performance criteria for effective products to be used for suppressing lithium-ion battery fires. Amerex experts serve on a variety of standards and fire code committees that are dedicated to addressing one of the biggest challenges facing our industry. We are committed to providing the highest quality safe solutions that meet the expectations of our distributors and the industry.