

Common Myth #32

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I need a Class D extinguisher for Lithium-Ion batteries.

Description

No – lithium-ion batteries do not require a Class D extinguisher, however lithium batteries do.

Lithium – ion batteries, despite their name, do not release any lithium during a fire incident, even if the casing is compromised. Lithium batteries, however, will release lithium during a fire incident.

How can you tell the difference? Lithium - ion batteries are rechargeable, Lithium batteries are “one-use” – not rechargeable. Rechargeable batteries for digital cameras, laptops, hybrid/plug-in vehicles, tablets and other devices would not be lithium batteries.

So what is the recommended protection? This is a difficult question to answer and involves some planning and decision on the part of the installer and the end-user. There have been many studies done on the proper protection for lithium-ion batteries. However, any large scale fire testing that would duplicate the storage or transportation of large quantities of lithium-ion batteries has not – to our knowledge – been conducted. Lithium batteries require a Class D extinguisher, preferably our B571 which uses a copper agent specifically for lithium fires. However, a Class D extinguisher may not have any effect on lithium-ion batteries. Unlike lead acid or gell-cell batteries, when a lithium - ion battery breeches the enclosure the electrolyte released is flammable. Based upon testing by other parties that we have reviewed and MSDS from lithium-ion battery manufacturers, fires involving lithium-ion batteries have been successfully extinguished using ABC dry chemical, water, water mist and clean agent including Halotron I. The MSDS sheet often says to use water or “an appropriate extinguishing agent for the surroundings”. While ABC dry chemical may be effective, is it the agent of choice if aircraft or electronic equipment is in the vicinity? Water or water mist may also be effective, but again, what is the surrounding environment and how will that affect the extinguisher (freezing) and adjacent equipment. Halotron I is effective and could be the best choice when considering the factors above.

In 2011, the NFPA Research Foundation conducted a study of lithium-ion batteries in conjunction with Exponents Failure Analysis titled “Lithium-Ion Batteries Hazard and Use Assessment”. The full report can be viewed on the NFPA Research website. It contains lots of information regarding lithium-ion batteries, how they differ from other battery types, how they can fail and testing that has been conducted. A similar report by the same authors can be viewed on the SFPE (Society of Fire Protection Engineers) website. You should be encouraged to read the report and have your customers who deal with quantities of these batteries read the report also.

More testing, including sprinkler and other fire testing will be performed in the future by the NFPA Research Foundation. While this will be beneficial, it is also important to keep in mind that the technology of battery construction is advancing so quickly that it is extremely difficult for the Fire Protection community to stay current on hazard and risk assessment regarding new battery technology.

