#### Does NFPA 13 cover fire protection for lithium-ion batteries?

Since NFPA 13 does not cover fire protection for lithium-ion batteries, the available criteria for fire protection design are limited. At its meeting in December of 2023, the task group discussed the following considerations for fire protection:

Are lithium-ion batteries suitable for fire protection?

The use of lithium-ion batteries is widespread and in applications using cell quantities, both large and small. For this reason, consideration of any fire protection measures must take into account the particular circumstances and hazard configuration and whether any fire protection measures have been validated for the particular application.

How can NFPA help protect lithium-ion batteries?

NFPA offers several resources that provide information promote safer use of lithium-ion batteries across a wide range of applications. These free assets provide valuable safety information on lithium-ion batteries, with a focus on smaller devices.

Are lithium-ion batteries a fire hazard?

As lithium-ion (Li-Ion) batteries become ubiquitous in devices ranging from smartphones to electric vehicles (EVs), their high energy density poses new fire safety challenges, including the risk of thermal runaway which can lead to intense fires.

How to prevent a lithium-ion battery fire?

A cohesive strategy incorporating; risk avoidance, early detection, interventional actions, active extinguishing as well as physical separation, must always be taken to limit the likelihood and the consequences of a Lithium-ion battery fire.

Can a firefighter use water to fight a lithium-ion battery fire?

Firefighters should use water to fight a lithium-ion battery fire. Water works just fineas a fire extinguishing medium since the lithium inside of these batteries are a lithium salt electrolyte and not pure lithium metal.





And fire started in an Oklahoma home after one of the family dogs got hold of a lithium-ion battery cable. "These are burning over 1,000 degrees within split seconds and any combustible around

This paper is intended as guidance for all professionals dealing with fire safety, fire protection, extinguishing and fire suppression in connection with the use, storage or transport of Lithium ???

3S Incorporated designs and installs fire protection systems for lithium-ion battery storage and manufacturing. We understand the unique risks posed by lithium-ion batteries and how to protect against dangerous fires in storage or manufacturing areas.







Progress on the research of fire behavior and safe protection of lithium ion batteries (LIBs) is reviewed in this paper. Thermal runaway (TR) mechanism of LIB is revealed from the aspects of chemical reactions and heat accumulation. The fire behavior of high energy LIB is exhibited, and the TR propagations between cells and modules are discussed.

Share these fire safety tips to help increase awareness in your community about the fire dangers of lithium-ion and other types of batteries. Stop using lithium-ion batteries if you notice an odor, change in color, too much heat, change in shape, leaking or odd noises. Recycle them at your local battery recycling location.

Water-mist system: The consideration of a water-mist fire-suppression system for protecting a lithium-ion battery ESS is very plausible. Due to the small particle size and higher surface area, this allows for better heat absorption than a typical sprinkler system and therefore would require less water.





A lithium-ion or Li-ion battery is a type of rechargeable battery that uses the reversible intercalation of Li + ions into electronically Some chargers accomplish the balance by charging each cell independently. This is often performed by the battery protection circuit/battery A Li-ion battery fire can be started due to (1) thermal

Lithium-ion batteries (LiBs) are a proven technology for energy storage systems, mobile electronics, power tools, aerospace, automotive and maritime applications. LiBs have attracted interest from academia and industry due to their high power and energy densities compared to other battery technologies. Despite the extensive usage of LiBs, there is a ???



Table 5. Documents with guidance related to the safety of Li-ion battery installations in marine applications. Table 6. Marine class rules: Key design aspects for the fire protection of Li-ion battery spaces. Figures Figure 1. Basic principles and components of a Li-ion battery [1]. Figure 2. Cylindrical, prismatic, and pouch cells [4]. Figure 3.

Remember to store batteries or products using lithium-ion batteries in a cool dry place away from flammable and combustible materials. Further information. RC59: Fire Safety When Charging Electric Vehicles; RE1: Battery Energy Storage Systems ??? Commercial Lithium-ion Battery Installations; RE2: Lithium-ion Battery Use and Storage

How to code fire incidents involving lithium-ion batteries. Learn how to code a NFIRS report for a fire incident in a vehicle, structure or equipment where a lithium-ion battery is present and ???



infrastructure, but they come with significant fire risks due to their potential for thermal runaway and explosion. Implementing rigorous safety measures for their storage and handling is critical to mitigating these dangers. In today's rapidly expanding energy infrastructure, particularly in battery energy storage systems, the safe

Lithium-ion batteries are essential to modern energy

#### LITHIUM ION BATTERY FIRE PROTECTION







How to Extinguish a Lithium-Ion Battery Fire. Despite their name, lithium-ion batteries used in consumer products do not contain any lithium metal. Therefore, a Class D fire extinguisher is not to be used to fight a lithium-ion battery fire. Class D fire extinguishers, which contain dry powder, are intended for combustible metal fires only.

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Even after extinguishing a lithium-ion battery fire, there is a risk of reignition. Thermal runaway. This is the chain reaction of uncontrolled heating can lead to fire or explosion. Signs of damage or thermal runaway include: Mechanical damage such as cracking (from abuse or dropping/collision).

Energy Storage Systems Fire Protection Hiller provides leading edge design & development of detection and suppression systems for lithium-ion battery facilities using a combination of early warning gas and smoke detection ??? clean agent suppression, sprinkler deluge systems, building gas venting, in participation of code development with



Fire protection recommendations for Lithium-ion (Li-ion) battery-based energy storage systems (ESS) located in commercial occupancies have been developed through fire testing. A series of small- to large-scale free burn fire tests were conducted on ESS comprised of either iron phosphate (LFP) or nickel manganese cobalt oxide (NMC) batteries.





The Science of Fire and Explosion Hazards from Lithium-Ion Batteries sheds light on lithium-ion battery construction, the basics of thermal runaway, and potential fire and explosion hazards. This guidance document was born out of findings from research projects, Examining the Fire Safety Hazards of Lithium-ion Battery Powered e-Mobility Devices

Fire growth rate. The impact of lithium-ion battery involvement on fire growth rate suggests that when firefighters respond to these incidents, they should consider: Rapid fire growth. Explosion hazards. The potential for unburned battery gas in a ventilation-limited fire to increase the flammability of smoke, which can increase risk of backdraft.



the fire protection requirements for lithium-ion cells and packs. In March 2013, FM Global published research a report titled, NFSM TECHNICALLY SPEAKING Fire Protection for Lithium-Ion Battery Manufacturing Facilities by Phil Friday, P.E., FSEPE continued on page 12 Wake up and sign in to get your work day started with SupplyNet.





G. Lithium-ion battery back-up units for distributed power systems installed in server racks of data processing equipment rooms/halls. This data sheet does not cover non-lithium-ion batteries, their associated battery chargers and associated systems related to backup power in UPS systems or DC power for circuit breaker protection, etc. Information

Testing has shown water and sprinkler systems are effective at extinguishing a lithium battery fire. Additional testing is still needed to determine the appropriate water application rate for an ESS. Inert gaseous system: Inert gaseous fire-suppression systems work by both depleting oxygen in the room and extracting heat from the fire.



In this fast-paced digital world, lithium-ion batteries have become an integral part of almost all devices that are used in our day-to-day lives. Smartphones, laptops, electric vehicles, e-cigarettes, and many more devices come with lithium batteries. The compact size, high energy density, and rechargeability of these batteries make them inevitable for modern technology ???





Fire Protection for Lithium-Ion Battery Manufacture Facilites by Phil Friday, P.E., FSPE. Allows pipe to be installed at the face of the rack and avoids arm-overs into the rack. Additional testing with rack storage of lithium-ion batteries in plastic trays. The only horizontal sidewall listed for protection of storage in racks