
Prenosni gasilniki - 11. del: Delovanje, zahteve, preskusna metoda in označevanje gasilnikov EN 3-7, primernih za uporabo pri požarih litij-ionskih baterij

Portable fire extinguishers - Part 11: Performance, requirements, test method and marking for EN 3-7 extinguishers suitable to be used on lithium-ion battery fires

Tragbare Feuerlöscher - Teil 11: Leistungsmerkmale, Anforderungen, Prüfverfahren und Kennzeichnung nach EN 3-7, geeignet für Brände mit Lithium-Ionen-Batterien

Extincteurs d'incendie portatifs - Partie 11 : Performances, exigences, méthode d'essai et marquage pour les extincteurs EN 3 7 utilisables sur des feux de batteries lithium-ion

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**Portable fire extinguishers - Part 11: Performance,
requirements, test method and marking for EN 3-7
extinguishers suitable to be used on lithium-ion battery
fires**

Extincteurs d'incendie portatifs - Partie 11 :
Performances, exigences, méthode d'essai et marquage
pour les extincteurs EN 3-7 utilisables sur des feux de
batteries lithium-ion

Tragbare Feuerlöscher - Teil 11: Leistungsmerkmale,
Anforderungen, Prüfverfahren und Kennzeichnung
nach EN 3-7, geeignet für Brände mit Lithium-Ionen-
Batterien

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 70.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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European foreword

This document (prEN 3-11:2025) has been prepared by Technical Committee CEN/TC 70 “Manual means of fire fighting equipment”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document describes a reliable and standardized fire extinguishing test that demonstrates the suitability of an EN 3-7 fire extinguisher model to extinguish a lithium-ion battery fire. It also specifies corresponding marking.

This document has been prepared by a working group of CEN/TC 70.

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Introduction

Rechargeable batteries based on lithium chemistry have high energy density, low weight, and a long service life. These characteristics make this type of battery very popular in portable and mobile applications such as laptops, mobile phones, power tools, bicycles, and cars.

This relatively new technology has a considerable disadvantage: the contents of the battery cells can ignite due to overloading, heating, or mechanical damage. An uncontrollable chemical reaction ('thermal runaway') then occurs in the battery cell and large amounts of heat are released in a short period of time. This usually causes intense flames and leads to a sharp rise of pressure and temperature in the cell.

Modern lithium-ion batteries have built-in protective circuits that prevent ignition by overloading. But these systems cannot prevent ignition of the cell as a result of heating or mechanical damage. After the first cell in a lithium-ion battery is ignited, the heat will cause a thermal runaway in adjacent cells as well and the fire will spread through the battery pack until all cells are fully burnt. This releases a great deal of energy for a prolonged time which may ignite other combustible materials in the vicinity.

Test-protocol

As of yet, there are no known extinguishing agents that can stop a thermal runaway in a lithium-ion battery cell. There are, however, extinguishing agents that can effectively stop the fire propagation in the battery pack.

The fire development in burning lithium ion batteries cannot be compared with the development of normal fires of solid materials, liquids or gases. Therefore, existing test protocols of EN 3-7:2004+A1:2007 cannot be used for the evaluation of the suitability of extinguishing agents for this specific risk.

The test protocol described in this document can be used to demonstrate that a certain extinguishing agent used in combination with a specific type or model of portable fire extinguisher can stop a fire in a lithium battery pack. The test protocol is aligned with the current common capacity of bicycle batteries.

WARNING During an extinguishing action, the user of a portable fire extinguisher is exposed to health risks as a result of the released heat and combustion products. This is the case with any fire, but certainly when lithium-ion batteries are involved. This type of fire releases toxic and highly irritating combustion products. The user is advised to follow specific instruction for this type of fire and use suitable personal protection equipment, for example a breathing mask. Where applicable, it is advised to pay close attention to these risks and measures in the workplace safety procedures.

During and after a lithium-ion battery fire, it is important to thoroughly ventilate the area to remove harmful combustion products.

After each extinguishing action it is advised:

- to cool damaged and burnt batteries under water for a prolonged time (48 h) to prevent re-ignition;
- to store damaged batteries outside at a safe distance from other objects until they can be safely removed;
- to consider proper treatment of the used cooling water.