

TAN
09

Portable Fire Extinguishers: Lithium-ion Batteries

Fire Protection Association Australia

PO Box 1049, Box Hill, VIC 3128

Telephone: 03 8892 3131

Web: www.fpa.com.au

Copyright

© Copyright 2023 Fire Protection Association Australia.

Material distributed by FPA Australia is subject to copyright. Any information within this publication may not be reproduced in printed or electronic form without permission from FPA Australia.

For more information, see www.fpa.com.au or contact FPA Australia on 1300 731 922.

Trademarks

Fire Protection Association Australia (FPA Australia) and the FPA Australia Logo are registered trademarks of Fire Protection Association Australia. No use of these trademarks is authorised by any party without written authorisation by Fire Protection Association Australia.

Disclaimer

The opinions expressed in this correspondence reflect those of FPA Australia however are subject to change based on receipt of further information regarding the subject matter. You should interpret the technical opinion or information provided carefully and consider the context of how this opinion / information will be used in conjunction with the requirements of regulation (state and/or federal); relevant standards, codes or specifications; certification; accreditation; manufacturer's documentation and advice; and any other relevant requirements, instructions or guidelines. FPA Australia does not accept any responsibility or liability for the accuracy of the opinion / information provided, nor do they accept either directly or indirectly any liabilities, losses and damages arising from the use and application of this opinion / information.

Document History

Version	Status	Details	Date	Approved by
1.00	Approved	Initial version.	July 2022	FPA Australia
2.00	Approved	Includes major updates.	April 2023	FPA Australia

Table of Content

Purpose	1
Audience	1
Overview	1
ACCC Mandatory Standards	1
Extinguisher and extinguishing agent compliance	2
Lithium-ion battery portable fire extinguishers	2
New designs and innovations	3
Summary	5
References	6

Purpose

The purpose of this document is to provide clarification on the Lithium-ion portable and mobile fire extinguishers that are being sold and available for sale in Australia.

At present, there are no Australian Standards available for fire extinguishers specifically designed for mitigating risks posed by Lithium-ion batteries.

Audience

This Technical Advisory Note is intended for:

- FPA Australia members
- Service providers
- Certifying bodies and certifiers
- Commercial and end users
- Stakeholders – resellers, manufacturers.

Overview

Lithium batteries come in different forms and sizes and are widely used due to their superior characteristics compared to other battery types. This document only relates to Lithium-ion batteries and not Lithium Metal. Lithium Metal extinguishers are defined in the FM Standard for reference.

This document only relates to items that are commonly and increasingly used products, used in a home, caravan, boat and office. This includes phones, e-cigarettes, e-bikes/scooters, portable tools etc.

Lithium-ion batteries, however, can be a considerable risk if they catch fire. This risk can be due to various reasons such as manufacturing faults, accidents, design defects, charger issues and incorrect use.

Fire investigators are seeing a rise in Lithium batteries related fires incidents where the home has been significantly damaged or completely destroyed.

The manufacturing of these batteries is continually changing.

ACCC Mandatory Standards

Portable fire extinguishers must be manufactured, fire rated and tested to the new and revised ACCC Mandatory Standards for Portable Fire Extinguishers, AS/NZS1841-2007 and AS/NZS1850-2009.

The mandatory safety standards will improve existing performance and identification requirements to reduce the risk of a non-aerosol fire extinguisher not operating correctly during a fire.

The standards, issued by the Australian Government, will replace the existing standard to provide the safety requirements for the labelling and testing of non-aerosol fire extinguishers.

The safety standard maintains these important consumer protections, so Australians can continue to have confidence in the safety of fire extinguishers and have easy access to important product information.

Under the Australian Consumer Law, suppliers of portable fire extinguishers must comply with the safety standard to protect individuals from harm, or risk fines and penalties.

This new and revised consumer law came into effect as of 22 December 2022.

Extinguisher and extinguishing agent compliance

Each portable fire extinguisher model must be compliant with the performance tests in the AS/NZS 1841:2007 series and AS/NZS 1850:2009.

The test performed on portable fire extinguisher shall use specific components and formulation of extinguishing agent. It is only an extinguisher with those components and formulation of extinguishing agent can be deemed compliant with the ACCC Mandatory Standards.

Lithium-ion battery portable fire extinguishers

Portable fire extinguishers are now being imported into Australia for Lithium-ion battery risks.

AS/NZS 1841-2007 currently has the following fire extinguishers:

- Portable Fire Extinguishers - General – AS/NZS 1841.1 (Part 1)
- Water – AS/NZS 1841.2 (Part 2)
- Wet chemical – AS/NZS 1841.3 (Part 3)
- Foam – AS/NZS 1841.4 (Part 4)
- Powder – AS/NZS 1841.5 (Part 5)
- CO2 – AS/NZS 1841.6 (Part 6)
- Vaporizing liquid – AS/NZS 1841.7 (Part 7)
- Non rechargeable – AS/NZS 1841.8 (Part 8)

Note: Lithium-ion Battery - Proposed New Part 9 - under development.

AS/NZS 1850-2009 currently has the following performance tests:

- Class A
- Class B
- Class C
- Class D – Metal fires only

- Class E
- Class F.

Currently in Australia, there is no performance test for Lithium-ion battery portable fire extinguishers.

New designs and innovations

This requirement contained in AS/NZS 1841.1 Clause 1.2 states,

Any material, design, method of assembly or procedure that does not comply with the specific requirements of this Standard may be used provided the following criteria are met:

- The portable fire extinguisher complies with the performance and test requirements of the AS/NZS 1841.1 2007.*
- A certifying body having JAS-ANZ registration for product certification to Australian/New Zealand Standard AS/NZS 1841 attests in writing that it is no less safe than a portable fire extinguisher manufactured in accordance with the specific requirements of this Standard. The relative safety of the portable fire extinguishers is determined with regard to the purpose of the extinguishers, any instructions and warnings relating to the use of the extinguishers, and what might reasonably be expected to be done with or in relation to the extinguishers.*

The previous version of TAN 09 Version 1 was issued under the Federal regulation named Consumer Protection Notice No. 3 of 2004 which has now been superseded by the below Consumer Goods (Portable Non-aerosol Fire Extinguishers) Safety Standard 2021. The previous federal regulation stated the below on clause 1.2:

- the portable fire extinguisher complies with the performance and test requirements of the Standard, and*
- a certifying body having JAZ-ANZ registration for product certification to Australian/New Zealand Standard.*

AS/NZS 1841 attests in writing that it is no less safe than a portable fire extinguisher manufactured in accordance with the specific requirements of this Standard. The relative safety of the portable fire extinguishers is determined with regard to the purpose of the extinguishers, any instructions and warnings relating to the use of the extinguishers, and what might reasonably be expected to be done with or in relation to the extinguishers.”

The Consumer Goods (Portable Non-aerosol Fire Extinguishers) Safety Standard 2021 states the following requirements:

1. A portable non-aerosol fire extinguisher complies with the requirements in this Part if it complies with:
 - a. AS/NZS 1841.1:2007 (as modified by section 11), and
 - b. the following standards, to the extent that they apply to the fire extinguisher:

- i. AS/NZS 1841.2:2007
- ii. AS/NZS 1841.3:2007 (as modified by section 12)
- iii. AS/NZS 1841.4:2007
- iv. AS/NZS 1841.5:2007
- v. AS/NZS 1841.6:2007 (as modified by section 13)
- vi. AS/NZS 1841.7:2007
- vii. AS/NZS 1841.8:2007 (as modified by section 14).

2. If a standard mentioned in subsection (1) contains a reference to another standard mentioned in subsection (1), that reference is taken to be a reference to the other standard with any modifications mentioned in subsection (1).

In addition to the above, AS/NZS 1850:2009 should be considered for performance ratings.

Summary

As both AS/NZS 1841 and 1850 are legislated by the ACCC as a Mandatory Standard, this means that portable fire extinguishers currently available for sale and use in Australia for Lithium-ion battery risks cannot claim compliance to the Australian Fire Extinguisher Standards for use in extinguishing Lithium-ion battery fires as there are presently no standards applicable for this type of fire extinguishers specifically designed for mitigating risks posed by Lithium-ion batteries.

Additionally, in AS2444-2001, *Portable fire extinguishers and fire blankets—Selection and location*, tables 4.1 , 4.2 and 4.3 show the minimum rating for the various agents in fire extinguishers.

- Class A – 1A (+ No E rating.)
- Class B – 5B

The Fire Protection Association Australia (FPA Australia) Technical Advisory Committee for portable and mobile equipment (TAC/3/7) are reviewing the various global standards for testing procedures for portable fire extinguishers for use on Lithium-ion battery fires. Due to the manufacture changes in this type of battery, fire testing is extremely difficult.

References

Australian and Joint Australian/New Zealand Standards published by Standards Australia Limited:

- AS/NZS 1841:2007, *Portable fire extinguishers series (AS/NZS 1841 Parts 1 to 8)*.
- AS/NZS 1850:2009, *Portable fire extinguishers - Classification, rating and performance testing*.
- AS 1851: 2012, *Routine service of fire protection systems and equipment*.
- AS2444: 2001, *Selection & location of portable fire extinguishers & fire blankets*.
- FPA Australia *Good Practice Guide GPG-03 Adoption and use of AS 1851-2012*.