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AUSTRALIAN RAIL INDUSTRY
STANDARDS ORGANISATION

AS 7529.1

Rolling Stock Fire Safety – Part 1: Locomotives and Freight

STANDARDS

Australian STANDARD

Advancing safety and productivity

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Development of this Standard was prepared by an Australian Rail Industry Standards Organisation (ARISO) Development Group consisting of representatives from the following organisations:

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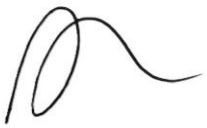
The Rolling Stock Standing Committee verified that ARISO's accredited process was followed in developing the product, before the ARISO Board approved the document for publication.

ARISO wishes to acknowledge the positive contribution of subject matter experts in the development of this Standard. Their efforts ranged from membership of the Development Group through to individuals providing comments on a draft of the Standard during the open review.

I commend this Standard to the Australasian rail industry as it represents industry good practice and has been developed through a rigorous process.



Alan Fedda
Chief Executive Officer
Australian Rail Industry Standards Organisation

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Document history

Publication Version	Effective Date	Reason for and Extent of Change(s)
2026	19 February 2026	This document has been reviewed to ensure it remains relevant and applicable. The latest review assessed the content, confirming that while updates were made to align with current industry practices, technologies, and regulatory requirements, the original authorship and copyright have been acknowledged as required.

Approval

Name	Date
Australian Rail Industry Standards Organisation Board	19 February 2026

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Preface

This standard was prepared by the Rolling Stock Fire Safety – Part 1: Locomotives and Freight Development Group, overseen by the ARISO Rolling Stock Standing Committee.

The major change from AS 7529.1:2014 is the consolidation of AS 7529.2:2014 into this document. Additionally, the document has been updated to address new zero emission technology such as lithium-ion batteries, hydrogen and ammonia.

Objective

The objective of this document is to provide requirements, recommendations and guidance for fire safety for locomotive & freight rolling stock operating in Australia.

The requirements aim to ensure rolling stock is designed and maintained to reduce fire ignition risk, control fire growth, minimize fire impacts on people and operations, and support safe occupant egress and emergency intervention.

Compliance

There are four types of provisions contained within Australian Standards developed by ARISO:

(a) Requirements.

(b) Recommendations.

(c) Permissions.

(d) Constraints.

Requirements – it is mandatory to follow all requirements to claim full compliance with the Standard. Requirements are identified within the text by the term ‘shall’.

Recommendations – do not mention or exclude other possibilities but do offer the one that is preferred. Recommendations are identified within the text by the term ‘should’.

Recommendations recognize that there could be limitations to the universal application of the control, i.e. the identified control is not able to be applied or other controls are more appropriate or better.

For compliance purposes, where a recommended control is not applied as written in the standard it could be incumbent on the adopter of the standard to demonstrate their actual method of controlling the risk as part of their WHS or Rail Safety National Law obligations. Similarly, it could also be incumbent on an adopter of the standard to demonstrate their method of controlling the risk to contracting entities or interfacing organisations where the risk may be shared.

Permissions – conveys consent by providing an allowable option. Permissions are identified within the text by the term ‘may’.

Constraints – provided by an external source such as legislation. Constraints are identified within the text by the term ‘must’.

ARISO Standards address known hazards within the railway industry. Hazards and clauses within this Standard that address those hazards, are listed in Appendix A.

Appendices in ARISO Standards may be designated either “normative” or “informative”. A "normative" appendix is an integral part of a Standard and compliance with it is a requirement, whereas an "informative" appendix is only for information and guidance.

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Commentary

Commentary *C Preface*

This Standard includes a commentary on some of the clauses. The commentary directly follows the relevant clause, is designated by 'C' preceding the clause number and is printed in italics in a box. The commentary is for information and guidance and does not form part of the Standard.

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Section 1 Scope and general

1.1 Scope

This document outlines fire safety requirements for locomotive & freight rolling stock. These requirements are intended to form part of a broader rolling stock fire safety strategy aimed at minimizing the risk of harm to train crew and passengers, including those in coupled vehicles and reducing the risks that a fire on such rolling stock can pose to the safety of other persons who might be affected — such as emergency responders, infrastructure workers and nearby passengers.

Fire safety is achieved through design, construction and maintenance measures, including compartmentation, fire-resistant materials, fire suppression systems and features that support evacuation.

This document includes fire safety requirements for locomotive & freight rolling stock configured with zero emission technology used for propulsion or auxiliary supply. This includes battery-electric and hydrogen fuel cell technologies. These systems introduce distinct fire safety hazards compared to conventional diesel and electric traction.

This document applies to the design, construction, modification and maintenance of locomotive & freight rolling stock, including locomotive & freight rolling stock fitted with zero emission (ZE) energy propulsion systems such as energy storage systems (ESS) and hydrogen fuel systems (HFS). The document covers requirements for fire prevention, fire detection, fire suppression systems, material flammability and evacuation.

This document does not cover the following:

- Operational procedures for rolling stock, including activities such as refuelling, hydrogen recharging, battery charging, and handling flammable liquids or gases during those processes.
- Transport of dangerous goods requirements for freight operations, including classification, packaging, marking/placarding, documentation, loading/unloading, stowage, segregation and marshalling of dangerous goods carried as freight (cargo).
- Locomotives with liquified petroleum gas (LPG), liquified natural gas (LNG) or compressed natural gas (CNG) as propulsion fuel.
- Heritage, light rail and cane rolling stock, but items from this document can be applied to such systems as deemed appropriate by the relevant RIM and/or RSO.

The requirements of this document do not address asset protection for either the rolling stock or the infrastructure, nor do they include any specific mitigations for fire safety risks associated with terrorism or fires resulting from major collision events that fall outside typical rolling stock design assumptions.

This document deals with explosion risks in the context of reducing the risk of a build up of flammable gases that could result in an explosion. However, mitigating the consequence of a blast from an explosion is not part of the scope of this document.

Compliance with this standard represents the minimum requirement under the designer's duties under Rail Safety National Law.

1.2 General information

1.2.1 Application by rolling stock type

A locomotive or non-passenger-carrying power car that is operated in passenger service at any stage during its service life is required to comply with the fire safety requirements specified for locomotives in this document.

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