AUSTRALIAN RAIL INDUSTRY STANDARDS ORGANISATION

AS 7504.1

Brake Components – Part 1: Brake Blocks

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:

FIP Brakes; Metro Trains Melbourne; Egis; Queensland Rail; and Aurizon

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	18 June 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	18 June 2026

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Preface

This standard was prepared by the Brake Components – Part 1: Brake Blocks Development Group, overseen by the ARISO Rolling Stock Standing Committee.

The major changes in this revision are as follows:

(a) Updates to the testing requirements for brake blocks.

(b) Inclusion of instantaneous friction requirements.

(c) Updates to the brake block material characteristics.

Objective

The objective of this standard is to describe the requirements for the manufacture and testing of cast iron and composite brake blocks to be installed on:

(a) locomotives and hauled rolling stock;

(b) self-propelled passenger rolling stock; and

(c) infrastructure maintenance rolling stock.

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 Work, Health, and Safety 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 identify known hazards relevant to the railway industry. Appendix A provides a non-exhaustive list of hazards relevant to the scope of this Standard.

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.

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 applies to new, modified, and existing locomotive, hauled freight and passenger rolling stock, self-propelled passenger rolling stock and infrastructure maintenance rolling stock.

This document applies to the design, construction, and maintenance of friction material used in the development and construction of brake blocks.

Operation of rolling stock in regard to network safeworking rules and route standards is not covered.

This document is not specifically intended to cover rolling stock used on light rail and cane railways, but items from this document can be applied to such systems as deemed appropriate by the relevant railway infrastructure manager (RIM) .

1.2 Normative references

The following documents are referred to in the text in such a way that *some* or all of their content constitutes requirements of this document:

- AS 7505, *Signal Detection Interface*
- AAR Standard M-107/208, *Wheels, carbon steel*
- AAR Standard M-926, *Brake shoe, high-friction or metal type*
- AAR Standard S-4023, *Brake shoe limiting contour, low-friction composition type*
- AAR Standard S-431, *Brake shoe, high friction composition type – limiting contour*
- ASTM D297:2002, *Standard Test Methods for Rubber Products—Chemical Analysis*
- *UNIFE Railway Industry Substance List*

NOTE:

Documents for informative purposes are listed in a Bibliography at the back of the Standard.

1.3 Defined terms and abbreviations

For the purposes of this document, the following terms and definitions apply:

1.3.1
AAR
Association of American Railroads

1.3.2
coefficient of friction (CoF)
ratio of the resultant retarding force produced to the applied brake block force (normal to the friction material)

1.3.3
OEM
original equipment manufacturer

1.3.4
rolling stock operator (RSO)
As defined in Rail Safety National Law.

1.3.5
safety management system (SMS)
organization’s system whose primary objective is to achieve safe rail operations