

# Wheels



Rolling Stock Standard



This Australian Standard® AS 7514 Wheels was prepared by a Rail Industry Safety and Standards Board (RISSB) Development Group consisting of representatives from the following organisations:

ARTC Downer EDI John Holland Group

Queensland Rail Pacific National Rail Corp

V/Line Trans Adelaide Amsted Rail/Gemco Rai

KiwiRail Metro Trains Aurizon

Varley Group

The Standard was approved by the Development Group and the Rolling Stock Standing Committee in November, 2018. On November 26, 2018 the RISSB Board approved the Standard for release.

This standard was issued for public consultation and was independently validated before being approved.

Development of the Standard was undertaken in accordance with RISSB's accredited process. As part of the approval process, the Standing Committee verified that proper process was followed in developing the Standard.

RISSB 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 comment 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.



Chief Executive Officer
Rail Industry Safety and Standards Board

#### Keeping Standards up-to-date

Australian Standards developed by RISSB are living documents that reflect progress in science, technology and systems. To maintain their currency, Australian Standards developed by RISSB are periodically reviewed, and new editions are published when required. Between editions, amendments can be issued. Australian Standards developed by RISSB could also be withdrawn.

It is important that readers assure themselves they are using a current Australian Standard developed by RISSB, which should include any amendments that have been issued since the Standard was published. Information about Australian Standards developed by RISSB, including amendments, can be found by visiting <a href="https://www.rissb.com.au.">www.rissb.com.au.</a>

RISSB welcomes suggestions for improvements, and asks readers to notify us immediately of any apparent inaccuracies or ambiguities. Members are encouraged to use the change request feature of the RISSB website at: <a href="http://www.rissb.com.au/products/">http://www.rissb.com.au/products/</a>. Otherwise, please contact us via email at <a href="mailto:info@rissb.com.au">info@rissb.com.au</a> or write to Rail Industry Safety and Standards Board, PO Box 518 Spring Hill Qld 4004, Australia.

# AS 7514:2018

# **Wheels**

#### **Document details**

First published as: AS 7514: 2018 Wheels ISBN 978-1-76072-218-0

Published by SAI Global Limited under licence from the Rail Industry Safety and Standards Board, PO Box 518 Spring Hill Qld 4004, Australia

#### Copyright

© RISSB

All rights are reserved. No part of this work can be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of RISSB, unless otherwise permitted under the Copyright Act 1968.

#### **Notice to users**

This RISSB product has been developed using input from rail experts from across the rail industry and represents good practice for the industry. The reliance upon or manner of use of this RISSB product is the sole responsibility of the user who is to assess whether it meets their organisation's operational environment and risk profile.

# **Document control**

#### **Document identification**

Designation / Title
---------------------

AS 7514:2018 Wheels

## **Document history**

Publication Version	Effective Date	Reason for and Extent of Change(s)
AS 7514:2018	26/11/2018	Aged review (supersedes AS 7514:2010)
AS 7514:2010 (Parts 1,2,3,4)	18/02/2010	

# **Approval**

Name	Date	
Rail Industry Safety and Standards Board	26/11/2018	_

#### **Contents**

1	Introduction				
	1.1	Purpose	6		
	1.2	Scope	6		
	1.3	Compliance	6		
	1.4	Referenced documents			
	1.4.1	Normative references			
	1.4.2	Informative references			
	1.5	Terms, definitions, and abbreviations			
2	Wheel	design	9		
3	Geome	Geometrical assessment			
	3.1	Rim width	9		
	3.2	Wheel diameter	10		
	3.3	Wheel web shape	11		
	3.4	Hub axle interface	11		
	3.5	Maintenance features	12		
4	Mechar	nical assessment	13		
5	Thermo	o-mechanical assessment	14		
6	Acousti	ical assessment	14		
7	Wheel	profile	14		
8	Manufa	acturing process	15		
9	Materia	al	15		
10	Machin	ing and peening	16		
11		performance compatibility			
12		ing			
13	Wheel	corrosion protection	18		
14	Identific	cation and records	18		
	14.1	Branding of wheel designs	18		
	14.2	Branding method	19		
	14.3	Records	19		
15	Tyred v	wheels	19		
16	Road w	vheels	20		
17	Inspection- General2				
18	Inspect	tion schedule	21		
19	Dimens	sional limits	21		
20	Non-de	estructive testing (NDT)	21		
21	In-service defects				

# 

22	Actions	following derailments	. 23
23	Repairs	S	. 23
24	Tempo	rary repairs to wheel skids	. 24
Apı	pendix	Contents	
App	endix A	Wheel profiles	. 25
	A.1	ANZR-1	. 25
	A.2	ANZR-1 1 in 40	. 25
	A.3	WPR 2000 Full	. 26
	A.4	LW3	
	A.5	WR1	
	A.6	WR2	
	A.7	2M-40	
	A.8	2M-41	
	A.9	MP1	
	A.10	MP2	
	A.11	HRS1	
	A.12	Square flange RRV	
App	endix B	Wheel profile co-ordinates	. 31
	B.1	WPR 2000 140 mm width full profile	. 31
	B.2	WPR 2000 130 mm width full profile	
	B.3	WPR 2000 140 mm width 7/8 profile	
	B.4	WPR 2000 130 mm width 7/8 profile	
	B.5	LW3 140 mm width profile	
	B.6	LW3 127 mm width profile	
	B.7	MP1 140 mm width profile	
	B.8	MP2 130 mm width profile	. 47
Ann	endix C	Hazard table	40

#### 1 Introduction

### 1.1 Purpose

This Standard describes requirements for rolling stock wheels.

The main purpose of the requirements are to reduce the risk of derailment arising from wheel failure or damage to infrastructure caused by wheel defects.

#### 1.2 Scope

This document covers the design, construction, and maintenance of rolling stock wheels. It applies to:

- (a) new locomotive, freight, passenger, and infrastructure rolling stock wheels going into service after the date of publication;
- (b) existing locomotive, freight, passenger, and infrastructure rollingstock wheels going into service after modification.

Operation of rolling stock is not covered.

Rolling stock used on light rail, cane railway, and monorail networks are not covered.

Requirements for the assembly of wheels onto wheelsets and geometric tolerances of wheels fitted on wheelsets are not covered. These are covered in AS 7517.

Infrastructure maintenance rolling stock used for transportation of goods and material is treated as freight rolling stock.

### 1.3 Compliance

There are two types of control contained within Australian Standards developed by RISSB:

- (a) Requirements.
- (b) Recommendations.

**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 recognise that there could be limitations to the universal application of the control, i.e. the identified control cannot be applied, or other controls could be 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.

Controls in RISSB standards address known railway hazards as included in Appendix C.