

Australian/New Zealand Standard™

Hot-rolled steel flat products

AS/NZS 1594:2002

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee MT-001, Iron and Steel. It was approved on behalf of the Council of Standards Australia on 16 August 2002 and on behalf of the Council of Standards New Zealand on 7 August 2002. It was published on 27 August 2002.

The following are represented on Committee MT-001:

Australasian Railway Association
Australian Chamber of Commerce and Industry
Australian Chamber of Manufactures
Australian Foundry Institute
Australian Institute of Steel Construction
Bureau of Steel Manufacturers of Australia
Institute of Materials Engineering Australia
Metal Trades Industry Association of Australia
Society of Automotive Engineers—Australasia

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Australia web site at www.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia International or Standards New Zealand at the address shown on the back cover.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

RECONFIRMATION
OF
AS/NZS 1594:2002
Hot-rolled steel flat products

RECONFIRMATION NOTICE

Technical Committee MT-001 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 29 October 2015.

Approved for reconfirmation in New Zealand on behalf of the Standards Council of New Zealand on 4 November 2016.

The following are represented on Technical Committee MT-001:

Australasian Corrosion Association
Australian Building Codes Board
Australian Institute of Architects
Australian Steel Association
Australian Steel Institute
Bureau of Steel Manufacturers of Australia
Employers And Manufacturers Association
Materials Australia
New Zealand Heavy Engineering Research Association
Society of Automotive Engineers- Australasia

NOTES

Australian/New Zealand Standard™

Hot-rolled steel flat products

Originated as part of AS G2—1945 and AS G33—1971.
Previous edition AS/NZS 1594:1997.
Sixth edition 2002.

COPYRIGHT

© Standards Australia/Standards New Zealand

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Jointly published by Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 4765 5

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee MT-001, Iron and Steel, at the request of Australian industry, to supersede AS/NZS 1594:1997.

This edition incorporates recent changes which have occurred in the hot-rolled flat products area of the Australian and New Zealand steel industries.

The objective of this Standard is to ensure that hot-rolled steel plate, floorplate, steel and strip, rolled on a continuous mill meets the needs of users in areas of dimensional tolerances and material requirements.

The objective of this revision is to update the requirements for hot-rolled steel plate, floor plate, sheet and strip, rolled on a continuous mill, in thicknesses up to 16 mm and widths up to 2000 mm.

During this revision the following International Standards were considered:

ISO

3573:1999	Hot-rolled carbon steel sheet of commercial and drawing qualities
4995:2001	Hot-rolled steel sheet of structural quality
4996:1999	Hot-rolled steel sheet of high-yield-stress structural quality
5951:2001	Hot-rolled steel sheet of higher yield strength with improved formability
6316:2000	Hot-rolled steel strip of structural quality
6317:2000	Hot-rolled carbon steel strip of commercial and drawing qualities
7452:1984	Hot-rolled structural steel plates—Tolerances on dimensions and shape
9034:1987	Hot-rolled structural steel wide flats—Tolerances on dimensions and shape
10384:2001	Hot-rolled carbon steel sheet as defined by chemical composition

Australia is a participating member of ISO Subcommittee ISO/TC 17/SC 12 which is responsible for the development of the majority of these Standards.

Australian and New Zealand industries consider that there are considerable advantages in having the requirements for all types of hot-rolled flat steel products in the one Standard.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE.....	4
1.2 REFERENCED DOCUMENTS.....	4
1.3 DEFINITIONS.....	5
1.4 DESIGNATION OF GRADE	6
1.5 ROUNDING OF TEST RESULT VALUES	8
1.6 MARKING	8
SECTION 2 MANUFACTURING REQUIREMENTS	
2.1 SCOPE.....	9
2.2 STEEL-MAKING PROCESS	9
2.3 CHEMICAL COMPOSITION	9
2.4 FREEDOM FROM DEFECTS	9
2.5 DIMENSIONAL TOLERANCES.....	9
SECTION 3 MECHANICAL PROPERTY REQUIREMENTS	
3.1 SCOPE.....	14
3.2 SELECTION OF TEST SAMPLES	14
3.3 PREPARATION OF TEST PIECES	14
3.4 TENSILE TEST	14
3.5 BEND TEST	15
3.6 STRAIN-AGE TENSILE TEST	15
APPENDICES	
A PURCHASING GUIDELINES	18
B MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS STANDARD	20
C RECOMMENDED MINIMUM INTERNAL RADII OF COLD BENDS IN FORMING.....	22
D METHOD FOR THE STRAIN-AGE TENSILE TEST.....	23

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard
Hot-rolled steel flat products

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for hot-rolled steel plate, floorplate, sheet and strip, rolled on a continuous mill, in thicknesses up to 8 mm for formability and extra formability grades and up to 16 mm for other grades, and for widths up to 2 000 mm. It includes slit material, provided that the parent material has an as-rolled width of not less than 600 mm.

The Standard specifies the following grade requirements:

- (a) *For analysis grades*—chemical composition only.
- (b) *For formability grades, extra formability grades, and structural grades including weather-resistant grades*—both chemical composition and mechanical properties.
- (c) *For floorplate*—both chemical composition and mechanical properties.

The Standard permits the addition of boron and micro-alloying elements for the achievement of special properties.

NOTES:

- 1 This Standard does not cover the following:
 - (a) Steel plate for boilers and pressure vessels (see AS 1548).
 - (b) Hot-rolled structural steel plates, floorplates and slabs (see AS/NZS 3678).
- 2 Advice and recommendations on information to be supplied by the purchaser at the time of enquiry or order are contained in the purchasing guidelines set out in Appendix A.
- 3 Alternative means for demonstrating compliance with this Standard are given in Appendix B.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1199	Sampling procedures and tables for inspection by attributes
1391	Methods for tensile testing of metals
1399	Guide to AS 1199—Sampling procedures and tables for inspection by attributes
1548	Steel plates for pressure equipment
2338	Preferred dimensions of wrought metal products
2505	Methods for bend and related testing of metals
2505.1	Part 1: Sheet, strip and plate
2706	Numerical values—Rounding and interpretation of limiting values
HB 18	Guidelines for third-party certification and accreditation
HB 18.28	Guide 28—General rules for a model third-party certification system for products