DR 87231

AS 1594—1981
UDC 669.14.018—41

Australian Standard 1594—1981

1989 ed

Amdt 1

HOT-ROLLED LOW CARBON STEEL PLATE, SHEET AND STRIP

1594—1989 **Hot-rolled steel flat products**
(In Update Services 19, 22, 24, 25) A4 9pp D

Specifies requirements for hot-rolled steel plate, floor plate, sheet and strip, rolled on a continuous mill in thicknesses up to 13 mm and widths up to 2000 mm, as analysis grades, structural grades, formable grades, extra-formability grades and weather-resistant grades. Excluded are steel plate for boilers and pressure vessels, steel plate for oil storage tank construction, steel slabs and structural steel plate and floor plate rolled on a reversing mill.

Committee MTI: ***Supersedes AS 1594—1981:*** *Draft for comment DR 87231:* ***Publication date 1989-07-07:*** *ISBN 0 7262 5508 4.*

[Title allocated by Defence Cataloguing Authority: METAL PLATE, SHEET AND STRIP (Hot-rolled, Low Carbon Steel) ..... NSC 9575]

STANDARDS ASSOCIATION OF AUSTRALIA
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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Electrical and Electronic Manufacturers Association

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Department of Industry and Commerce

Institute of Steel Service Centres of Australia

Metal Trades Industry Association of Australia

Society of Automotive Engineers—Australasia

This standard, prepared by Committee MT/1, Iron and Steel, was approved on behalf of the Council of the Standards Association of Australia on 18 August 1981, and was published on 9 November 1981.

This standard was issued in draft form for public review as DR 80171.

STANDARDS ASSOCIATION OF AUSTRALIA
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Amendment No 1
to
AS 1594—1981
HOT-ROLLED LOW CARBON STEEL PLATE, SHEET AND STRIP

REVISED TEXT

SUMMARY: This amendment applies to Clause 3.1.

Published on 6 December 1982.

Page 6. Clause 3.1.

AMDT No 1 DEC. 1982

Alter the title of Clause 3.1 to the following:

SAMPLING FOR MECHANICAL TESTS WHEN A TEST CERTIFICATE IS REQUIRED

AUSTRALIAN STANDARD

HOT-ROLLED LOW CARBON STEEL PLATE, SHEET AND STRIP

AS 1594—1981

First published 1974
Second edition 1981

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PREFACE

This edition of this standard was prepared under the direction of the Association's Committee on Iron and Steel by its subcommittee on uncoated unalloyed steel sheet and strip, to supersede the 1974 edition. It specifies requirements for hot-rolled, low carbon steel plate, sheet and strip produced on a continuous mill in thickness up to and including 13 mm, and provides for structural grades as well as ductile grades based on formability.

During the preparation of this edition, cognizance was taken of the following standards and draft proposals under the jurisdiction of the International Organization for Standardization (ISO):

ISO 3573	Hot-rolled Carbon Steel Sheet of Commercial and Drawing Qualities
ISO 3576	Hot-rolled Carbon Steel Sheet Coils for the Production of Cold-reduced Products
ISO 4995	Hot-rolled Steel Sheet of Structural Quality
DP 6316	Hot-rolled Carbon Steel Strip of Structural Qualities
DP 6317	Hot-rolled Carbon Steel Strip of Commercial and Drawing Qualities

This edition aligns essentially with ISO in respect of designation and tolerances, but product definitions have been developed to suit Australian practice.

Appendix A presents purchasing guidelines, including contractual requirements previously included in the body of AS 1594, and directs attention to matters requiring consideration at the time of enquiry and/or order.

The intention is to avoid misinterpretation or other problems and to ensure a clear understanding of product requirements by both purchaser and supplier.

This standard requires reference to the following Australian standards:

AS 1050	Methods for the Analysis of Iron and Steel
AS 1213	Methods for the Sampling of Iron, Steel, Permanent Magnet Alloys and Ferro-alloys
AS 1227	General Requirements for the Supply of Hot-rolled Steel Plates, Sections, Piling and Bars for Structural Purposes
AS 1365	Tolerances for Hot-rolled and Cold-rolled Unalloyed Low Carbon Steels (Coils and Cut Lengths)
AS 1391	Methods for the Tensile Testing of Metals
AS 2338	Preferred Dimensions of Wrought Metal Products
AS 2505	Methods for Bend and Related Testing of Metals Part 1—Sheet, Strip and Plate
AS K1	Methods for the Sampling and Analysis of Iron and Steel

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
HOT-ROLLED LOW CARBON STEEL PLATE, SHEET AND STRIP

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard specifies requirements for hot-rolled, low carbon steel plate, sheet and strip.

Provision is made for four grades based on formability and four structural grades based on yield strength.

NOTE: Guidelines for purchasers on requirements that must be specified by the purchaser and those that must be agreed at the time of enquiry and/or order are given in Appendix A.

1.2 DESIGNATION.

1.2.1 General. The steel designation, as given in Tables 2.1 and 3.1, shall include the number of this Australian standard, i.e. AS 1594, together with a set of characters in accordance with the following:

1st character—the letter 'H' to represent hot-rolled steel

2nd character—the letters U, R or A, as follows, to indicate the degree of deoxidation:

U = unspecified deoxidation (see Clause 1.3.4)
R = rimming
A = aluminium killed

3rd to 7th characters—alphanumeric in accordance with Clauses 1.2.2 and 1.2.3.

1.2.2 Structural Grades.

1.2.2.1 *Third, fourth and fifth characters.* The third, fourth and fifth characters shall indicate the minimum yield strength in megapascals, viz. 340, 280, 240, 200.

1.2.2.2 *Sixth and seventh characters.* The sixth and seventh characters, where applicable, shall be used in accordance with the following:

S = skin-passed
P = pickled and oiled

Examples of complete designation: AS 1594/HA200SP, AS 1594/HU280.

1.2.3 Formability Grades.

1.2.3.1 *Third character.* The third character shall consist of the number 1, 2, 3 or 4 to indicate formability, as follows:

1 = commercial forming
2 = commercial drawing
3 = deep drawing
4 = extra deep drawing

1.2.3.2 *Fourth, fifth and sixth characters.* The fourth, fifth and sixth characters, where applicable, shall be in accordance with the following:

S = skin-passed
P = pickled and oiled
N = non-ageing

Examples of complete designation: AS 1594/HU1S, AS 1594/HA4SNP, AS 1594/HR2.

1.3 DEFINITIONS. For the purpose of this standard, the following definitions apply:

1.3.1 Plate—a rolled product supplied in cut lengths and produced by cutting from a coil rolled on a continuous mill. Width is 600 mm and over, nominal thickness is 3 mm and over, and edges are mill, sheared or slit.

1.3.2 Hot-rolled sheet—a rolled product supplied in cut lengths and produced by cutting from a coil rolled on a continuous mill. Width is 600 mm and over, nominal thickness is under 3 mm, and edges are mill, sheared or slit.

1.3.3 Strip—a rolled product of any width and thickness supplied in coil form. Edges available are mill or slit.

1.3.4 Unspecified deoxidation—denoted by the letter 'U', and indicates that steel may be supplied at the manufacturer's option in respect of deoxidation.

1.3.5 Skin-passing—a light cold-rolling practice to improve the product flatness and to minimize coil break (see also Paragraph A3 of Appendix A).

1.3.6 Ageing—a term applied to changes in physical and mechanical properties of low carbon steel that occur with the passage of time, and which adversely affect formability. Ageing accelerates as the temperature is raised.

1.3.7 Edge conditions of plate, sheet and strip.

1.3.7.1 *Mill edge*—the edge produced by hot rolling between horizontal finishing rolls. Edges so formed have no definite contour.

1.3.7.2 *Sheared or slit edge*—the trimmed edge produced by shearing.

1.3.8 Test batch—consists of one grade of the same product form, processed from the same ladle of steel under similar conditions, and with a thickness variation not exceeding 2 mm.