AS 1227—1980
UDC 669.14.018.29

Australian Standard 1227—1980

GENERAL REQUIREMENTS FOR THE SUPPLY OF HOT-ROLLED STEEL PLATES, SECTIONS, PILING AND BARS FOR STRUCTURAL PURPOSES

[Title allocated by Defence Cataloguing Authority:
METAL BAR, PLATE, ROUND, SHEET, STRIP AND SHAPES
(Hot-rolled, Structural, General Requirements) ... NSC:Group 95]

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and SAA technical committees were officially represented on the committee entrusted with the preparation of this standard:

Australian Institute of Steel Construction Ltd

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Department of Public Works, New South Wales

National Association of Australian State Road Authorities

Railways of Australia Committee

Steel Reinforcement Promotion Group

University of New South Wales

University of Sydney

SAA Committee on Concrete Structures

SAA Committee on Prestressed Concrete

SAA Committee on Testing of Metals

This standard, prepared by Committee BD/23, Structural Steel, was approved on behalf of the Council of the Standards Association of Australia on 31 October 1980, and was published on 31 December 1980.

To keep abreast of progress in industry, Australian standards are subject to continuous review and are kept up-to-date by the issue of amendments or new editions as necessary. It is important therefore that standards users ensure that their standards are up-to-date. Full details of all SAA publications will be found in the Annual List of Australian Standards; these details are supplemented by listings in the SAA monthly journal 'The Australian Standard'. Information on the Annual List and 'The Australian Standard' may be obtained from any sales office of the Association, where details are also available of the current status of individual standards. Suggestions for improvements to published standards, addressed to the head office of the Association, are welcomed.

This standard was issued in draft form for public review as DR 79169.

AUSTRALIAN STANDARD

GENERAL REQUIREMENTS FOR THE SUPPLY OF HOT-ROLLED STEEL PLATES, SECTIONS, PILING AND BARS FOR STRUCTURAL PURPOSES

AS 1227—1980

First edition.....1974
Second edition 1980

PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

ISBN 0 7262 2103 1

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

AMENDMENT No 1
to
AS 1227—1980
GENERAL REQUIREMENTS FOR THE SUPPLY OF HOT-ROLLED STEEL PLATES, SECTIONS, PILING AND BARS FOR STRUCTURAL PURPOSES

REVISED TEXT

SUMMARY: This amendment applies to the Preface, the Table of Contents, Clause 5.1, Clause 5.2 and Tables 1 to 6 (inclusive).

Published on 6 July 1987.

AMDT No 1 JULY 1987

Page 2. Preface.

Under first paragraph, for list of reference standards include:

AS 1365 Tolerances for Flat-rolled Steel Products

AMDT No 1 JULY 1987

Page 3. Contents, under Tables of Permissible Variations.

Delete reference to Tables 1, 2, 3, 4, 5 and 6.

AMDT No 1 JULY 1987

Page 4. Clause 5.1 third line.

Delete 'Tables 1 to 6 inclusive' and *substitute* 'Sections 3 and 4 of AS 1365'.

AMDT No 1 JULY 1987

Page 5. Clause 5.2 third line.

Delete 'Tables 1 to 6 inclusive' and *substitute* 'Sections 3 and 4 of AS 1365'.

AMDT No 1 JULY 1987

Pages 10, 11 and 12. Tables 1 to 6 (inclusive).

Delete Tables 1, 2, 3, 4, 5 and 6.

PREFACE

This edition of this standard was prepared by the Association's Committee on Structural Steel. The standard is intended for use in conjunction with the following standards:

AS 1204 Structural Steels—Ordinary Weldable Grades

AS 1205 Structural Steels—Weather-resistant Weldable Grades

AS 1446 Hot-rolled Carbon and Carbon-manganese Steel Plate for General Engineering Purposes, Based on Chemical Composition

AS 1548 Steel Plates for Boilers and Unfired Pressure Vessels

Among the changes in this edition are tighter tolerances on flatness of plate and out-of-square of I sections.

The standard now makes provision for the supply of floorplate, strip and products supplied in coil form; zeds, tees and bulb angles are no longer included.

This standard requires reference to the following standards:

AS 1050 Methods for the Analysis of Iron and Steel

AS 1131 Dimensions of Hot-rolled Structural Steel Sections

AS 1213 Methods for the Sampling of Iron, Steel, Permanent Magnet Alloys and Ferro-alloys

AS 1391 Methods for Tensile Testing of Metals

AS 1544 Methods for Impact Tests on Metals
Part 2—Charpy V-notch

AS 1553 Low Carbon Steel Covered Electrodes for Manual Metal-arc Welding

AS K1 Methods for the Sampling and Analysis of Iron and Steel

Attention is also drawn to the following Australian and international standards to which reference may be necessary:

AS 1163 Welded and Seamless Steel Hollow Sections for General Structural Purposes

AS 1450 Circular and Non-circular Carbon Steel Tubes for Mechanical and General Engineering Purposes

AS 1554 SAA Structural Steel Welding Code
Part 1—Welding of Steel Structures

ISO 2566/1 Steel—Conversion of Elongation Values
Part 1—Carbon and Low Alloy Steels.

©Copyright — STANDARDS ASSOCIATION OF AUSTRALIA 1980

Users of standards are reminded that copyright subsists in all SAA publications. No part of this publication may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing of the Standards Association of Australia.

CONTENTS

Page

SPECIFICATION

1 Scope 4
2 Definitions 4
3 Chemical Analysis 4
4 Density 4
5 Manufacturing Tolerances 4
6 Steelmaking Process 5
7 Freedom from Defects 5
8 Removal of Surface Defects 5
9 Mechanical Tests 6
10 Selection of Test Samples 6
11 Position of Test Specimen 6
12 Orientation of Test Piece 6
13 Preparation of Test Pieces for Mechanical Testing 6
14 Rounding of Numbers 7

TABLES OF PERMISSIBLE VARIATIONS

1 Thickness Tolerance for Plate, Strip and Floorplate in all Edge Conditions 10
2 Width Tolerance for Plate, Strip and Floorplate in all Edge Conditions 10
3 Length Tolerance for Plate and Floorplate Only 10
4 Permissible Camber for Universal and Mill Edge Plates with Thickness Less Than or Equal to 50 mm and all Gas Cut Plates, Sheared Plates and Floor Plates 11
5 Permissible Camber for Universal and Mill Edge Plates over 50 mm and up to and Including 180 mm Thick 11
6 Permissible Variations from Flatness for Plates and Floorplates 12
7 Permissible Variations in Cross-sectional Dimensions for Tapered Flange Beams and Channels 13
8 Permissible Variations in Cross-sectional Dimensions for Angles 14
9 Permissible Variations in Length for Bars and Sections 15
10 Permissible Out-of-square for Ends of Sections Other Than Universal Sections 15
11 Permissible Variations in Straightness for Sections Other Than Universal Sections 15
12 Permissible Variations in Cross-sectional Dimensions for Universal Sections 16
13 Permissible Variations in Straightness for Universal Sections 17
14 Permissible Variations in Cross-sectional Dimensions for Rounds and Squares 17
15 Width Tolerances for Flat Bars 17
16 Thickness Tolerances for Flat Bars 18
17 Permissible Variations in Cross-sectional Dimensions for Hexagons 18
18 Permissible Variations in Straightness for Angles Having a Combined Leg Length of 153 mm or Less 18

APPENDICES

A Purchasing Guidelines 19
B Rounding of Numbers 20
C Measurement of Camber and Sweep in Universal Sections 22

COPYRIGHT

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

GENERAL REQUIREMENTS FOR THE SUPPLY OF HOT-ROLLED STEEL PLATES, SECTIONS, PILING AND BARS FOR STRUCTURAL PURPOSES

1 SCOPE. This standard specifies the general technical requirements for the supply of hot-rolled steel as—

(a) plate,

(b) floorplate,

(c) strip,

(d) sections,

(e) piling bar, and

(f) bars,

for general structural and engineering purposes, the material requirements of which are specified in other Australian standards.

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

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

2.1 Plate—a hot-rolled product supplied flat, with width greater than or equal to 600 mm and with nominal thickness greater than or equal to 3 mm. Edges are as rolled, sheared or gas cut. Plate may be produced by cutting—

(a) from a parent plate being the product of a slab rolled on a reversing mill; or

(b) from a coil rolled on a continuous mill.

2.2 Floorplate—a hot-rolled product supplied flat, or in coils, with width greater than or equal to 600 mm. Floorplate has a rolled raised pattern at regular intervals on one surface.

2.3 Strip—a hot-rolled product supplied in coil form. Edges are as rolled or sheared.

2.4 Bars—finished products of solid section which may have rectangular, square, round or hexagonal cross-section, defined as follows:

(a) *Flat bars (flats)*—bars of rectangular cross-section with edges of controlled contour and of thickness greater than or equal to 3 mm, width less than 600 mm and supplied in straight lengths.

(b) *Round bars (rounds)*—bars of circular cross-section supplied in straight lengths or coils.

(c) *Square bars (squares)*—bars of square cross-section supplied in straight lengths or coils.

(d) *Hexagonal bars (hexagons)*—bars of regular hexagonal cross-section supplied in straight lengths or coils.

2.5 Sections and piling bar—rolled finished sections of special contour.

NOTE: For dimensions of sections, see AS 1131.

2.6 Testing—includes both mechanical tests and chemical analysis tests as required by individual standards.

2.7 Test sample—a portion of material or product or a group of items selected from a batch or group by a sampling procedure.

2.8 Test specimen—a portion or a single item taken from the test sample for the purpose of applying a particular test.

2.9 Test piece—a prepared piece for testing, made from a test specimen by some mechanical operation.

2.10 Edge conditions for plate, strip and floorplate.

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

(b) *Universal edge*—the edge produced by hot rolling between horizontal and vertical rolls. Edges produced are approximately parallel.

(c) *Sheared edge*—the trimmed edge produced by shearing.

(d) *Gas-cut edge*—the trimmed edge produced by gas-cutting.

2.11 Longitudinal direction—the direction of the greatest extension of the steel during rolling.

2.12 Transverse direction—the direction at right angles to the direction of the greatest extension of the steel during rolling.

2.13 Ladle analysis—a chemical analysis determined from a test sample taken during the pouring of each ladle (see Clause 3.2).

2.14 Product analysis—a chemical analysis determined from a test sample of the finished material.

3 CHEMICAL ANALYSIS.

3.1 General. The method of sampling for chemical analysis shall be in accordance with AS 1213. Chemical composition shall be determined by any procedures which are not less accurate than AS 1050 or AS K1.

3.2 Ladle Analysis. A chemical analysis of the steel from each ladle shall be made to determine the proportions of the specified elements. In cases where it is impracticable to obtain samples from the liquid steel, analysis on test samples taken in accordance with Clause 3.5 of AS 1213 may be reported as ladle analysis.

4 DENSITY. For the purpose of this standard, the density of hot-rolled steel shall be assumed to be 7850 kg/m^3.

5 MANUFACTURING TOLERANCES.

5.1 Plate and Strip. The variations in nominal dimensions shall not exceed the appropriate limits given in Tables 1 to 6 inclusive.

COPYRIGHT