Dup redesignated AS 3679.1-1990

superseded by AS/NZS 3679.1:1996

AS 3679~~.1~~-1990

METALS FILE

Australian Standard®

Hot-rolled structural steel bars and sections

STRUCTURAL STEEL
PART 1 : HOT-rolled bars and sections.

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STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee BD/23, Structural Steel. It was approved on behalf of the Council of Standards Australia on 6 October 1989 and published on 12 March 1990.

The following interests are represented on Committee BD/23:

Australian Institute of Steel Construction

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Institute of Steel Service Centres of Australia

Metal Trades Industry Association of Australia

National Association of Australian State Road Authorities

Railways of Australia Committee

Steel Reinforcement Institute of Australia

University of New South Wales

University of Sydney

This Standard was issued in draft form for comment as DR 87235.

Dup

STANDARDS AUSTRALIA

Amendment No 1
to
AS 3679—1990
Hot-rolled structural steel bars and sections

REVISED TEXT

The 1990 edition of AS 3679 is amended as follows; the amendments should be inserted in the appropriate place.

SUMMARY: This Amendment applies to the Title, History Block, Preface, Clauses 1(i), 3.12, 4, 5(b), Tables 1, 3, 4, 6, 12 and Figure 9. Published on 9 December 1991.

AMDT No 1 DEC 1991

Front cover and title page

Delete 'AS 3679—1990 Hot-rolled structural steel bars and sections' and *substitute* the following:
'AS 3679.1—1990 Structural steel, Part 1: Hot-rolled bars and sections'.

History Block

Delete 'AS 3679—1990' and *substitute* 'AS 3679.1—1990'.

AMDT No 1 DEC 1991

Page 2 Preface

Delete 'AS 3679—1990' and *substitute* 'AS 3679.1—1990'.

AMDT No 1 DEC 1991

Page 4 Title

Delete '**Hot-rolled structural steel bars and sections**' and *substitute*

Structural steel

Part 1: Hot-rolled bars and sections

AMDT No 1 DEC 1991

Page 4 Clause 1(i)

Delete text and *substitute* the following:

Structural steel—Hot-rolled plates, floorplates and slabs (see AS 3678).

AMDT No 1 DEC 1991

Page 4 Clause 3

Add the following:

3.12 Batch—unit of production such as a ladle, rolling, caster sequence or bundle which is substantially consistent.

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AMDT No 1 DEC 1991

Page 5 Clause 4

First paragraph, last line:

Delete 'AS 3679' and *substitute* 'AS 3679.1'.

Delete existing 'Examples' and *substitute* the following:

Examples:

AS 3679.1—250
AS 3679.1—250L0
AS 3679.1—WR350/1
AS 3679.1—WR350/2L0
AS 3679.1—WR350/2L15

In the 'where' list, *delete* 'AS 3679 = number of this Standard' and *substitute* the following:

AS 3679.1 = number of this Standard

AMDT No 1 DEC 1991

Page 5 Clause 5(b)

Delete text and *substitute* the following:

to enable it to be traced to the batch of steel from which it was made;

AMDT No 1 DEC 1991

Page 5 Table 1

Delete table and notes, and *substitute* the following:

TABLE 1
CHEMICAL COMPOSITION

Grade	Type of analysis	Analysis, percent maximum					
		C	Si	Mn	P	S	CE
250	Cast	0.25	0.40	—	0.040	0.040	0.43
	Product	0.29	0.45	—	0.050	0.050	—
250L0 and 250L15	Cast	0.20	0.40	1.50	0.040	0.040	0.42
	Product	0.24	0.45	1.60	0.050	0.050	—
300 300L0 and 300L15	Cast	0.22	0.50	1.60	0.040	0.040	0.45
	Product	0.26	0.55	1.70	0.050	0.050	—
350 350L0 and 350L15	Cast	0.22	0.50	1.60	0.040	0.040	0.45
	Product	0.26	0.55	1.70	0.050	0.050	—

NOTES:

1. Grain refining elements, i.e. aluminium and titanium, may be added, provided that the total content does not exceed 0.15 percent.
2. Carbon equivalent (CE) is calculated from the equation:

$$CE = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Ni + Cu}{15}$$

3. Niobium ($\leqslant$0.010 percent), vanadium ($\leqslant$0.015 percent) and titanium ($\leqslant$0.040 percent) are not considered as micro-alloying elements.
4. The following elements may be present to the limits stated, subject to a total content of 1.00 percent:
   (a) Copper: 0.40 percent.
   (b) Nickel: 0.50 percent.
   (c) Chromium: 0.30 percent.
   (d) Molybdenum: 0.10 percent.
5. Niobium is not permitted as a micro-alloying element in grades 250, 250L0 and 250L15.
   Except for sections and bars as in Note 6, micro-alloying elements are not permitted in grades 250, 250L0, 250L15, 300, 300L0 and 300L15.
6. For sections and bars 15 mm and over in grades 250, 250L0, 250L15, 300, 300L0 and 300L15, the following apply:
   (a) The maximum permitted percentage of micro-alloying element is 0.15.
   (b) Where micro-alloying elements are used, this is to be shown on the certificate.
7. Micro-alloying elements niobium and vanadium may be added for grades 350, 350L0 and 350L15 provided that their total combined content does not exceed 0.15 percent.

AMDT No 1 DEC 1991

Page 7 Table 3

Delete table and note, and *substitute* the following:

TABLE 3

TENSILE REQUIREMENTS FOR FLAT BARS AND SECTIONS

Grade	Minimum yield strength for thickness of (see Note): MPa			Minimum tensile strength MPa	Minimum elongation, percent as a proportion of gauge length of $5.65\sqrt{S_o}$
	⩽12 mm	>12 mm to <40 mm	⩾40 mm		
250	260	250	230	410	22
250L0 and 250L15	260	250	230	410	22
300	300	300	300	430	22
300L0 and 300L15	300	300	300	430	22
350	360	340	330	480	20
350L0 and 350L15	360	340	330	480	20

NOTE: For a section, the term 'thickness' refers to the nominal thickness of the part from which the sample is taken.

AMDT No 1 DEC 1991

Page 7 Table 4

Under the column heading, '**>50 mm to <100 mm**' and for grade '250': *delete* '250' and *substitute* '230'.

AMDT No 1 DEC 1991

Page 8 Table 6

Delete note and the text.

AMDT No 1 DEC 1991

Page 16 Figure 9

For nominal size '200 x 75', in column '17', *delete* '33.8' and substitute '32.7'.

AMDT No 1 DEC 1991

Page 22 Table 12

Delete table and *substitute* the following:

TABLE 12

PERMISSIBLE VARIATIONS IN CROSS-SECTIONAL DIMENSIONS FOR ROUNDS AND SQUARES

millimetres

Specified size (diameter or thickness)	Permissible variation from specified size		Permissible out-of-round or out-of-square (See Notes 1 and 2)
	Plus	Minus	
⩽20	0.20	0.20	0.30
>20 ⩽25	0.25	0.25	0.38
>25 ⩽30	0.30	0.30	0.45
>30 ⩽40	0.40	0.40	0.60
>40 ⩽50	0.50	0.50	0.75
>50 ⩽60	0.60	0.60	0.90
>60 ⩽70	0.70	0.70	1.05
>70 ⩽80	0.80	0.80	1.20
>80 ⩽100	0.90	0.90	1.35
>100 ⩽125	3.20	—	3.20
>125 ⩽170	1.80	—	4.80
>170 ⩽215	6.40	—	4.80

NOTES:

1. Out-of-round is the difference between the maximum and minimum diameters of the bar, measured at the same cross-section.
2. Out-of-square is the difference in the two dimensions at the same cross-section of a square bar, each dimension being the distance between opposite faces.

AS 3679—1990

Australian Standard®

~~Hot-rolled structural steel bars and sections~~

STRUCTURAL STEEL
PART 1: HOT-rolled bars and sections

For history before 1989, see Preface.
AS 1131—1979, and parts of AS 1204—1980, AS 1205—1980 and AS 1227—1980 revised, amalgamated and redesignated AS 3679—1990.
Redesignated as AS 3679.1-1990 (by amendment) 1991

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SEE AMENDMENT

PREFACE

This Standard was prepared by the Standards Australia Committee on Structural Steel. It supersedes AS 1131—1979 (first published as part of AS A1—1925, which was revised in 1931 and redesignated AS 1131—1973), *Dimensions of hot-rolled structural steel sections*, in total and in conjunction with AS 3678, *Hot-rolled structural steel plates, floorplates, and slabs*, supersedes the following Standards of which it is a revision and an amalgamation in part:

AS 1204—1980 Structural steels—Ordinary weldable grades (first published as part of AS A1.1—1956 and AS A33—1955. These were revised and redesignated as AS A149—1966 revised and redesignated AS A186—1971. This was subsequently revised and redesignated as AS 1204—1972; second edition 1980).

AS 1205—1980 Structural steels—Weather-resistant weldable grades (first published as AS A187—1971. This was revised and redesignated AS 1205—1972; second edition in 1980).

AS 1227—1980 General requirements for the supply of hot-rolled steel plates, sections, piling and bars for structural purposes (first published as part of AS A1—1956 which was revised and redesignated AS A147—1965; second edition 1971. AS A147 was revised and redesignated AS 1227 in 1974; second edition 1980).

AS 1131—1979 and parts of AS 1204—1980, AS 1205—1980 and AS 1227—1980 revised, amalgamated and redesignated AS 3679—1990.

This Standard sets out the requirements for hot-rolled structural steel bars and sections which have been segregated from the abovementioned documents.

It was decided to revise and amalgamate the above Standards in an effort to produce a complete product-based Standard which has been rationalized in relation to tolerance requirements.

Determination of compliance guidelines on sampling, frequency of testing and retests have been moved to Appendix B and brought into line with Standards Australia policy.

CONTENTS

STANDARDS AUSTRALIA

Australian Standard

~~Hot-rolled~~ Structural steel ~~bars and sections~~—

Part 1: Hot-rolled bars and sections SEE AMENDMENT 1.

1 SCOPE. This Standard specifies the requirements for the production and supply of hot-rolled structural steel bars and sections for structural and engineering purposes in—

(a) ordinary weldable grades; and

(b) weather-resistant weldable grades.

This Standard does not cover the following:

(i) ~~Structural steel plates, floorplates and slabs (see AS 3678).~~ SEE AMENDMENT 1.

(ii) Structural steel hollow sections (see AS 1163).

(iii) Bars supplied to chemical composition only (see AS 1442).

(iv) Steel reinforcing bars for concrete (see AS 1302).

NOTE: Guidelines to purchasers on requirements that should be specified by the purchaser and those that should or may be agreed on at the time of enquiry or order are given in Appendix A. Guidelines on cold-bending of round bar during fabrication are given in Appendix D.

2 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

AS
1050 Methods for the analysis of iron and steel
1163 Structural steel hollow sections
1171 Methods for magnetic particle testing of ferromagnetic products and components
1199 Sampling procedures and tables for inspection by attributes
1213 Iron and steel—Methods of sampling
1302 Steel reinforcing bars for concrete
1391 Methods for tensile testing of metals
1399 Guide to AS 1199, Sampling procedures and tables for inspection by attributes
1442 Carbon steels and carbon-manganese steels—Hot-rolled bars and semi-finished products
1544 Methods for impact tests on metals
1544.2 Part 2: Charpy V-notch
1553 Covered electrodes for welding
1553.1 Part 1: Low carbon steel electrodes for manual metal-arc welding of carbon and carbon-manganese steels
1554 SAA Structural Steel Welding Code
1554.1 Part 1: Welding of steel structures
1821-23 Suppliers Quality Systems
1821 Suppliers quality systems for design, development, production and installation
1822 Suppliers quality systems for production and installation
1823 Suppliers quality inspection systems
2000 Guide to AS 1821-23, Suppliers quality systems
2062 Methods for non-destructive penetrant testing of products and components
2490 Sampling procedures and charts for inspection by variables for percent defective
2706 Numerical values—Rounding and interpretation of limiting values
3900 Quality systems—Guide to selection and use
3901 Quality systems for design/development, production, installation and servicing
3902 Quality systems for production and installation
3903 Quality systems for final inspection and test
3904 Quality systems—Guide to quality management and quality system elements
K1 Methods for the sampling and analysis of iron and steel

ISO
2566 Steel—Conversion of elongation values
2566/1 Part 1: Carbon and low-alloy steels

3 DEFINITIONS. For the purpose of this Standard, the definitions below apply.

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

(a) Flat bars (flats)

(b) Round bars (rounds)

(c) Square bars (squares)

(d) Hexagonal bars (hexagons)

3.2 Sections—rolled finished sections of special contour and dimensions as outlined in Clause 13.

3.3 Testing—includes both chemical analysis tests and mechanical tests as specified in Clauses 6 and 11.

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

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

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

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

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

3.9 Cast analysis—chemical analysis determined from test samples taken from the ladle during casting.

3.10 Density of steel—hot-rolled steel assumed to be 7850 kg/m^3.

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