

Dup redesignated AS 3679.1-1990

superseded by AS/NZS 3679.1:1996

AS 3679+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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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

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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, '4, ' and Figure 9. Published on 9 December 1991.

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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'.

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Page 2 Preface

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

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Page 4 Title

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

Part 1 Hot-rolled bars and sections

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Page 4 Clause 1(i)

Delete text and substitute the following:
Structural steel—Hot-rolled plates, floorplates and
slabs (see AS 3678,

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Page 4 Clause 3.12

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

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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

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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;

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Page 5 Table 1

Delete table and notes, and substitute the following:

**TABLE 1
CHEMICAL COMPOSITION**

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

NOTES:

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

$$CE = C + \frac{Mn}{6} + \frac{Cr}{5} + \frac{Mo + V}{5} + \frac{Ni + Cu}{15}$$
3. Niobium (≤ 0.01 percent), vanadium (≤ 0.015 percent) and titanium (≤ 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) Cobalt: 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.

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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 percentage at a proportion of gauge length of $5.65\sqrt{S_0}$
	≤ 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	48	20

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

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Page 7 Table 4

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

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Page 8 Table 6

Delete note and the text.

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Page 16 Figure 9

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

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Page 22 Table 12

Delete table and substitute the following:

**TABLE 12
PERMISSIBLE VARIATIONS IN CROSS-SECTIONAL DIMENSIONS FOR
ROUNDS AND SQUARES**

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 ≤ 20	0.20	0.20	0.30
> 25 ≤ 25	0.25	0.25	0.38
> 25 < 30	0.30	0.30	0.45
> 30 ≤ 30	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.

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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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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.

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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 low-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 low-carbon-manganese steels
- 1554 SA A 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 Method 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/m³.

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