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Australian Standard 1205—1980

Amdt 1 870706

STRUCTURAL STEELS
WEATHER-RESISTANT WELDABLE GRADES

STANDARDS ASSOCIATION OF AUSTRALIA
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THE FOLLOWING 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, N.S.W.

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 10 October 1980, and was published on 1 December 1980.

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This standard was issued in draft form for public review as DR 79184.

STANDARDS ASSOCIATION OF AUSTRALIA
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AMENDMENT No 1
to
AS 1205—1980
STRUCTURAL STEELS
WEATHER-RESISTANT WELDABLE GRADES

REVISED TEXT

SUMMARY: This amendment applies to the Preface and new Clause 4.1.

Published on 6 July 1987.

AMDT No 1 JULY 1987

Page 2. Preface.

Include in the last paragraph under list of reference Australian standards:

AS 1365 Tolerances for Flat-rolled Steel Products.

AMDT No 1 JULY 1987

Page 4. Insert new Clause 4.1.

4.1 Manufacturing Tolerances. The variations in nominal dimensions shall not exceed the appropriate limits given in Sections 3 and 4 of AS 1365.

AUSTRALIAN STANDARD

STRUCTURAL STEELS
WEATHER-RESISTANT WELDABLE GRADES

AS 1204—1980

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PREFACE

This standard was prepared by the Association's Committee on Structural Steel to supersede AS 1205—1972. The number of grades of steel has been reduced to include only those which are readily available. Special requirements for ordinary weldable structural steels are specified in AS 1204.

The grade designation used in the standard is a number which is the minimum yield stress in megapascals (MPa). Suffixes 1 and 2 indicate the chemical composition of the steel. Where low-temperature impact properties are specified, an L suffix is introduced followed by 0 or 15, depending on the temperature at which the Charpy V-notch tests are to be carried out, i.e. at 0° C or −15° C, as appropriate.

The fact that low temperatures are used for impact tests does not necessarily imply that the relevant steels are guaranteed to be completely satisfactory for use at those temperatures, although in general they can be regarded as progressive improvements in the order shown over steels for which low-temperature impact tests are not prescribed.

The mechanical tests for universal sections are carried out on test pieces taken from the flange. AS 1227, which lays down general requirements for structural steel, defines the location of the test piece. Tapered-flange beams and channel sections will continue to be tested in the web, as this is the only location from which a parallel-sided test piece can be obtained.

The bend test is not included in the mechanical test requirements but a table giving recommended minimum bending radii for fabrication is given in Appendix B for guidance.

Any heat treatment or hot-forming operation must be controlled to avoid prolonged soaking times or excessively high temperatures which may have adverse effects on any type of steel since many of the grades covered have their properties developed by the use of grain refining and controlled temperatures during rolling.

This standard may require reference to the following Australian standards:

AS 1000	The International System of Units (SI) and Its Application
AS 1155	Metric Units for Use in the Construction Industry
AS 1163	Welded and Seamless Steel Hollow Sections for General Structural Purposes
AS 1204	Structural Steels—Ordinary Weldable Grades
AS 1227	General Requirements for the Supply of Hot-rolled Steel Plates, Sections, Piling and Bars for Structural Purposes
AS 1391	Methods for Tensile Testing of Metals
AS 1544	Methods for Impact Tests on Metals Part 2—Charpy V-notch
AS 1554	SAA Structural Steel Welding Code Part 1—Welding of Steel Structures
AS 1365	Tolerances for Flat-rolled Steel Products. (Amdt 1)

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard for STRUCTURAL STEELS—WEATHER-RESISTANT WELDABLE GRADES

1 SCOPE. This standard specifies requirements for the production and supply of hot-rolled steel as

(a) plate,

(b) strip,

(c) structural sections (excluding piling bar), and

(d) bar,

from low alloy steels. The steels are suitable for welded, bolted or riveted construction where enhanced corrosion resistance and savings in mass are required.

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

2 DESIGNATION. The grade designation shall be based on the yield strength of the steel (see Clause 7.1), chemical composition (see Table 2) and impact strength requirement (see Clause 7.2).

3 GRADES AND PRODUCT FORMS. The grade of the steel shall be suitable for the required product form. The thickness limitations for various product forms shall be as shown in Table 1.

TABLE 1

GRADES, PRODUCT FORMS AND MAXIMUM THICKNESSES

Grade	Maximum thickness (mm)		
	Plate and strip	Sections	Bars
WR350/1	20	12	24
WR350/1L0	20	—	—
WR350/2	50	50	50
WR350/2L0	50	30	30
WR350/2L15	20	—	—

NOTES:

1. A dash (—) denotes the grades not covered by this standard for the product forms indicated.
2. L indicates guaranteed low-temperature impact properties.

4 GENERAL REQUIREMENTS. Steel shall comply with AS 1227.

4.1 See Amdt 1

5 CHEMICAL COMPOSITION.

5.1 Ladle Analysis. The ladle analysis of the steel shall conform to the limits given in Table 2 for the appropriate grade.

5.2 Product Analysis. When the steel is subjected to a product analysis, the analysis shall conform to the limits given in Table 2 for the appropriate grade.

6 MECHANICAL TESTS.

6.1 Frequency of Testing. Test samples shall be taken to represent finished steel of the same product form treated in the same manner and from the same ladle as follows:

(a) One sample for up to 50 t.

(b) Two samples for over 50 t and up to 100 t.

(c) Three samples for over 100 t and up to 150 t.

(d) Four samples for over 150 t.

6.2 Tensile Test. One tensile test shall be made on a test piece prepared from a test sample taken in accordance with Clause 6.1. The position and preparation of the test piece and the method of test shall be in accordance with Clauses 9 to 13 of AS 1227.

If the quantity includes steel of more than one thickness, a further tensile test shall be made for each 5 mm variation in thickness, above or below the thickness of the first test sample selected.

6.3 Impact Tests. For grades WR350/1L0, WR350/2L0 and WR350/2L15, one test shall be performed on each of three test pieces prepared from each test sample which shall be taken from the thickest plate, strip, section or bar in accordance with Clause 6.1. The position and preparation of the test piece and the method of test shall be in accordance with Clauses 9 to 13 of AS 1227.

TABLE 2

CHEMICAL COMPOSITIONS*

Grade	Type of analysis	Analysis, percent											
		C	Si		Mn	P		S	Cr		Ni	Cu	
		max.	min.	max.	max.	min.	max.	max.	min.	max.	max.	min.	max.
WR350/1	Ladle	0.12	0.20	0.70	1.00	0.06	0.15	0.040	0.40	1.00	0.50	0.15	0.45
WR350/1L0	Product	0.15	0.15	0.75	1.10	0.055	0.16	0.050	0.37	1.05	0.55	0.12	0.48
WR350/2	Ladle	0.19	0.20	0.60	1.35	—	0.040	0.040	0.25	0.70	0.50	0.20	0.45
WR350/2L0	Product	0.23	0.15	0.65	1.45	—	0.050	0.050	0.22	0.75	0.55	0.17	0.48
WR350/2L15													

*The maximum permitted percentage of micro-alloying elements is 0.15.

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