

AS 1303—1991

Australian Standard<sup>®</sup>

---

**Steel reinforcing wire for concrete**

---

This Australian Standard was prepared by Committee BD/23, Structural Steel. It was approved on behalf of the Council of Standards Australia on 19 October 1990 and published on 11 February 1991.

---

The following interests are represented on Committee BD/23:

Australian Institute of Steel Construction  
AUSTROADS  
Bureau of Steel Manufacturers of Australia  
Confederation of Australian Industry  
Institute of Steel Service Centres of Australia  
Metal Trades Industry Association of Australia  
Railways of Australia Committee  
Steel Reinforcement Institute of Australia  
University of Queensland  
University of Sydney

---

**Review of Australian Standards.** To keep abreast of progress in industry, Australian Standards are subject to periodic 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 they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

---

Australian Standard<sup>®</sup>

---

**Steel reinforcing wire for concrete**

---

First published as AS A82—1958.  
Second edition 1966.  
Third edition 1971.  
AS A82—1971 revised and redesignated AS 1303—1973.  
AS A82—1971 withdrawn 1976.  
Second edition AS 1303—1984.  
Third edition AS 1303—1991.

## PREFACE

This Standard was prepared by the Standards Australia Committee on Structural Steel and is to supersede AS 1303–1984, *Steel reinforcing wire for concrete*.

The following significant changes have been made to the previous edition of the Standard:

- (a) To ensure the steel wire's suitability for resistance welding, a carbon equivalent is now specified.
- (b) Manufacturing tolerances on wires supplied in lengths have been amended to comply with AS 3600.
- (c) A new Appendix B, 'Means for demonstrating compliance with this Standard', has been included.
- (d) Changes to the 'bend test' have been made.
- (e) The process of manufacture has been deleted as it is no longer included in AS 1302, and is no longer relevant in present-day Standards.
- (f) A warning, on the need to avoid excessive cold-working when straightening wires for testing or subsequent processing, has been added.

In keeping with current ISO policy, the term 'yield strength', which is intended to cover the terms 'yield stress' and 'percentage proof stress', as appropriate, is defined and adopted throughout this Standard. Users of this Standard are alerted to the distinction between 'tensile strength' and 'yield strength' tests.

---

## CONTENTS

	<i>Page</i>
1 SCOPE .....	3
2 REFERENCED DOCUMENTS .....	3
3 DEFINITIONS .....	3
4 CHEMICAL COMPOSITION .....	3
5 DIMENSIONS AND MASS .....	4
6 MANUFACTURING TOLERANCES .....	4
7 DEFORMATION REQUIREMENTS FOR DEFORMED WIRE .....	4
8 MECHANICAL PROPERTIES .....	5
9 PREPARATION OF TEST PIECES .....	5
10 FREEDOM FROM DEFECTS .....	5
11 MARKING .....	5
 APPENDICES	
A PURCHASING GUIDELINES .....	6
B MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS STANDARD .....	7
C METHOD OF STRAIGHTENING STEEL WIRE BY THE USE OF THE 5-ROLL WIRE STRAIGHTENER .....	9

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

STANDARDS AUSTRALIA

---

**Australian Standard**

---

**Steel reinforcing wire for concrete**

---

**1 SCOPE** This Standard specifies requirements for steel wire, plain or deformed, suitable for resistance welding, and intended for use as reinforcement for concrete and for manufacture into welded wire fabric in accordance with AS 1304. It specifically excludes hard-drawn high tensile steel wire for prestressed concrete, which is dealt with by AS 1310.

NOTES:

- 1 For 'Purchasing guidelines', see Appendix A.
- 2 For 'Means for demonstrating compliance with this Standard', see Appendix B.

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

AS

- |        |  |
|--------|--|
| 1050   | Methods for the analysis of iron and steel                                   |
| 1199   | Sampling procedures and tables for inspection by attributes                  |
| 1213   | Iron and steel—Methods of sampling   |
| 1304   | Welded wire reinforcing fabric for concrete                                  |
| 1310   | Steel wire for tendons in prestressed concrete                               |
| 1391   | Methods for tensile testing of metals  |
| 1399   | Guide to AS 1199—Sampling procedures and tables for inspection by attributes |
| 2505   | Methods for bend and related testing of metals                               |
| 2505.4 | Part 4: Wire   |
| 3600   | Concrete structures  |
| 3900   | Quality systems—Guide to selection and use                                   |
| 3904   | Quality systems—Guide to quality management and quality system elements      |
| K1     | Methods for the sampling and analysis of iron and steel                      |

ISO

Guide 44—1985 General Rules for ISO or IEC International Third Party Certification Scheme for Products

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

**3.1 Bundle**—any number of lengths of wire bound together.

**3.2 Coil**—one continuous length of wire in the form of a coil.

**3.3 Deformed wire**—steel wire with a surface having deformations which—

- (a) inhibit longitudinal movement of the wire relative to the surrounding concrete; and
- (b) comply with Clause 7.

**3.4 Deformed wire size**—the nominal diameter of a plain wire having the same mass per unit length as the deformed wire.

**3.5 Mass per unit length**—the mass per metre calculated from the nominal area on the basis of the density of steel being 7850 kg/m<sup>3</sup> (0.00785 kg/m.mm<sup>2</sup>).

**3.6 Nominal area**—the cross-sectional area of wire calculated from the nominal diameter.

**3.7 Plain wire size**—the nominal diameter of a plain wire.

**3.8 Yield strength**—for wire, the yield strength is taken as being the proof stress at 0.4 percent total strain.

**4 CHEMICAL COMPOSITION**

**4.1 Composition** The cast analysis shall show that the steel contains not more than 0.25 percent of carbon, not more than 0.05 percent of sulfur and not more than 0.05 percent of phosphorus. The chemical composition shall be such that the carbon equivalent does not exceed 0.39 percent.

NOTE: Carbon equivalent (*CE*) is calculated from the following equation:

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