AS 1303—1991

Australian Standard®

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

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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AS A82—1971 withdrawn 1976.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.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 6636 1

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

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^3 (0.00785 kg/m.mm^2).

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:

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