AS/NZS 4671:2001
(Incorporating Amendment No. 1)

Australian/New Zealand Standard™

Steel reinforcing materials

Standards Australia

STANDARDS NEW ZEALAND
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This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee BD-084, Reinforcing and Prestressing Materials. It was approved on behalf of the Council of Standards Australia on 18 January 2001 and on behalf of the Council of Standards New Zealand on 9 March 2001. It was published on 2 April 2001.

The following are represented on Committee BD-084:

Association of Consulting Engineers, Australia
Australian Chamber of Commerce and Industry
Australian Post Tensioning Association
Australian Steel Association
AUSTROADS
Bureau of Steel Manufacturers of Australia
Cement & Concrete Association of New Zealand
Galvanizers Association of Australia
Institution of Professional Engineers New Zealand
Master Builders Australia
National Precast Concrete Association Australia
New Zealand Manufacturers' Federation
Steel Reinforcement Institute of Australia

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We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia International or Standards New Zealand at the address shown on the back cover.

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PREFACE

This Standard was prepared by the Standards Australia/Standards New Zealand Committee BD/84, Reinforcing and Prestressing Materials, to supersede the following Standards:

AS 1302—1991	*Steel reinforcing bars for concrete*
AS 1303—1991	*Steel reinforcing wire for concrete*
AS 1304—1991	*Welded wire reinforcing fabric for concrete*
NZS 3402:1989	*Steel bars for the reinforcement of concrete*
NZS 3421:1975	*Specification for hard drawn mild steel wire for concrete reinforcement. Metric units*
NZS 3422:1975	*Specification for welded fabric of drawn steel wire for concrete reinforcement*

This Standard incorporates Amendment No. 1 (5 June 2003). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

To permit the reinforcing steel and reinforced concrete design industries with time to adjust to the new Standard, the above six standards will remain current and will be withdrawn 12 months from the date of publication of this Standard.

The objective of the Standard is to provide a single specification of material requirements for steel bars, wire and mesh, intended for use in reinforced concrete structures which have been designed in accordance with AS 3600 or NZS 3101.1.

Differences between this Standard and current Standards are briefly outlined below.

1 General

A major departure from the current Standards is that this document applies to reinforcement generally, irrespective of the process of its manufacture.

Although closely aligned technically with both ISO 6935, *Steel for the reinforcement of concrete,* and the European Pre-Standard DDENV 10080, *Steel for the reinforcement of concrete—Weldable ribbed reinforcing steel B500 — Technical delivery conditions for bars, coils and welded fabric,* the Standard is not classed as ‘technically equivalent’ to either of these documents primarily because—

(a) both ISO 6935 and ENV 10080 require mandatory third party assessment of compliance, contrary to the principles of Standards Australia and Standards New Zealand in this regard (see Appendix A);

(b) ISO 6935 does not contain specific requirements appropriate for reinforcement for earthquake-resistant structures; and

(c) consequent differences in both the text and numerical values, although minor in nature, are too numerous to meet the strict definition of ‘technically equivalent’.

In choosing to vary the above documents where they considered it necessary, the Committee took into account the fact that, to date, neither document has found wide acceptance.

2 Strength grades

Only three strength Grades have been considered, i.e., those having lower characteristic yield strengths of 250 MPa, 300 MPa and 500 MPa respectively. The 500 Grade material replaces the Grade 400/450 Australian and the Grade 430/485 New Zealand materials, while

the Grade 300 material corresponds closely to the current New Zealand Standard. Plain round material other than grade 300E is required to correspond to AS/NZS 3679.

Requirements for Grade 500 steel have been developed from ENV 10080, while those for earthquake-resistant applications have been developed from the current edition of NZS 3402.

3 Ductility classes

The need to provide reinforcement with ductility appropriate to earthquake-resistant concrete structures, coupled with recent investigations into the structural consequences of the relatively low ductility of cold-worked reinforcement, has led to the introduction of three ductility classes. These are distinguished in requirements by the letters ‘L’ (low), ‘N’ (normal) and ‘E’ (earthquake), placed immediately after the strength-grade number, corresponding with different minimum values for uniform elongation and maximum stress to yield stress ratio.

4 Chemical and mechanical properties

Adjustments have been made to the chemical composition, carbon equivalent, and mechanical properties parameters, as necessary, to satisfy the (sometimes conflicting) requirements of strength, ductility and weldability.

5 New inclusions

In addition to the items noted above the following new material has been included:

(a) *Production control* in all stages of manufacture is a specific requirement (Clauses 6.3 and 8) with the details of how it is to be achieved being spelt out in Appendix B.

(b) *Purpose-made meshes* are covered in Clause 7.5.4 and distinguished from the commonly available meshes, whereas only stock meshes were previously specified.

(c) *Identification* rules for the standard strength grades and ductility classes are given and illustrated in Clause 9 so that the different materials can be readily differentiated visually on site and distinguished from previously manufactured materials.

(d) *The bond test* in Appendix C has been introduced as an alternative means for demonstrating the ability of deformed reinforcement to develop sufficient bond to achieve its characteristic yield strength when embedded in concrete.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard.