AS 4291.1:2015
ISO 898-1:2013

AS 4291.1:2015

Australian STANDARD

Mechanical properties of fasteners made of carbon steel and alloy steel

Part 1: Bolts, screws and studs

STANDARDS Australia

This Australian Standard® was prepared by Committee ME-029, Fasteners. It was approved on behalf of the Council of Standards Australia on 24 July 2015.
This Standard was published on 26 August 2015.

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- Australasian Corrosion Association
- Australian Chamber of Commerce and Industry
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- New Zealand Heavy Engineering Research Association
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This Standard was issued in draft form for comment as DR AS 4291.1:2015.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Part 1: Bolts, screws and studs

Originally as AS/NZS 4291.1:1995.
Revised and redesignated as AS 4291.1—2000.
Second edition AS 4291.1:2015.

Published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 978 1 76035 203 5

PREFACE

This Standard was prepared by the Standards Australia Committee ME-029, Fasteners, to supersede AS 4291.1—2000.

The objective of this Standard is to provide manufacturers and users of threaded fasteners with material requirements and specifications for the mechanical properties of carbon steel and alloy steel bolts, screws and studs with ISO metric threads.

This Standard is identical with, and has been reproduced from ISO 898-1:2013, *Mechanical properties of fasteners made of carbon steel and alloy steel,* Part 1*: Bolts, screws and studs with specified property classes—Coarse thread and fine pitch thread.*

As this Standard is reproduced from an International Standard, the following applies:

(a) In the source text 'this part of ISO 898' should read 'this Australian Standard'.

(b) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian/New Zealand Standard*	
ISO		AS	
261	ISO general purpose metric screw threads—General plan	1721	General purpose metric screw threads
		AS/NZS	
898	Mechanical properties of fasteners made of carbon steel and alloy steel	4291	Mechanical properties of fasteners
898-2	Part 2: Nuts with specified property classes—Coarse thread and fine pitch thread	4291.2	Part 2: Nuts with specified proof load values—Coarse thread
		AS	
		4291	Mechanical properties of fasteners made of carbon steel and alloy steel
898-5	Part 5: Set screws and similar threaded fasteners with specified hardness classes—Coarse thread and fine pitch thread	4291.5	Part 5: Set screws and similar threaded fasteners not under tensile stresses
898-7	Part 7: Torsional test and minimum torques for bolts and screws with nominal diameters 1 mm to 10 mm	4291.7	Part 7: Torsional test and minimum torques for bolts and screws with nominal diameters 1 mm to 10 mm
965	ISO general purpose metric screw threads—Tolerances		
965-1	Part 1: Principles and basic data	1721	General purpose metric screw threads
965-2	Part 2: Limits of sizes for general purpose external and internal screw threads—Medium quality	1721	General purpose metric screw threads
10684	Fasteners—Hot dip galvanized coatings	1214	Hot-dip galvanized coatings on threaded fasteners (ISO metric coarse thread series)

Only normative references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The term ‘informative’ has been used in this Standard to define the application of the annex to which it applies. An ‘informative’ annex is only for information and guidance.

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AUSTRALIAN STANDARD

Mechanical properties of fasteners made of carbon steel and alloy steel

Part 1:
Bolts, screws and studs

1 Scope

This part of ISO 898 specifies mechanical and physical properties of bolts, screws and studs made of carbon steel and alloy steel when tested at an ambient temperature range of 10 °C to 35 °C. Fasteners (the term used when bolts, screws and studs are considered all together) that conform to the requirements of this part of ISO 898 are evaluated at that ambient temperature range. They might not retain the specified mechanical and physical properties at elevated temperatures (see Annex B) and/or lower temperatures.

NOTE 1 Fasteners conforming to the requirements of this part of ISO 898 are used in applications ranging from –50 °C to +150 °C. Users are advised to consult an experienced fastener metallurgist for temperatures outside the range of –50 °C to +150 °C and up to a maximum temperature of +300 °C when determining appropriate choices for a given application.

NOTE 2 Information for the selection and application of steels for use at lower and elevated temperatures is given, for example, in EN 10269, ASTM F2281 and in ASTM A320/A320M.

Certain bolts and screws might not fulfil the tensile or torsional requirements of this part of ISO 898 because the geometry of their heads reduces the shear area in the head compared to the stress area in the thread. These include bolts and screws having a low or countersunk head (see 8.2).

This part of ISO 898 is applicable to bolts, screws and studs

— made of carbon steel or alloy steel,

— having triangular ISO metric screw thread in accordance with ISO 68-1,

— with coarse pitch thread M1, to M39, and fine pitch thread M8×1 to M39×3,

— with diameter/pitch combinations in accordance with ISO 261 and ISO 262, and

— having thread tolerances in accordance with ISO 965-1, ISO 965-2 and ISO 965-4.

It is not applicable to set screws and similar threaded fasteners not under tensile stress (see ISO 898-5).

It does not specify requirements for such properties as

— weldability,

— corrosion resistance,

— resistance to shear stress,

