DIN EN ISO 898-1

DIN

ICS 21.060.10

Supersedes
DIN EN ISO 898-1:2009-08

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 (ISO 898-1:2013); English version EN ISO 898-1:2013, English translation of DIN EN ISO 898-1:2013-05

Mechanische Eigenschaften von Verbindungselementen aus Kohlenstoffstahl und legiertem Stahl –
Teil 1: Schrauben mit festgelegten Festigkeitsklassen –
Regelgewinde und Feingewinde (ISO 898-1:2013);
Englische Fassung EN ISO 898-1:2013,
Englische Übersetzung von DIN EN ISO 898-1:2013-05

Caractéristiques mécaniques des éléments de fixation en acier au carbone et en acier allié –
Partie 1: Vis, goujons et tiges filetées de classes de qualité spécifiées –
Filetages à pas gros et filetages à pas fin (ISO 898-1:2013);
Version anglaise EN ISO 898-1:2013,
Traduction anglaise de DIN EN ISO 898-1:2013-05

Document comprises 64 pages

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In case of doubt, the German-language original shall be considered authoritative.

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A comma is used as the decimal marker.

National foreword

This document (EN ISO 898-1:2013) has been prepared by Technical Committee ISO/TC 2 “Fasteners” in collaboration with Technical Committee CEN/TC 185 “Fasteners” (Secretariat: DIN, Germany).

The responsible German body involved in its preparation was the *Normenausschuss Mechanische Verbindungselemente* (Fasteners Standards Committee), Working Committee NA 067-00-02 AA *Verbindungselemente mit metrischem Außengewinde*.

The DIN 4000-161-2 tabular layout of article characteristics shall apply to nuts covered in this standard.

Users of this standard should note that when a strength of over 1 200 MPa is required, use of bolts, screws and studs of property class 12.9 is recommended.

The DIN Standards corresponding to the International Standards referred to in Clause 2 of this standard are as follows:

ISO 68-1	DIN ISO 68-1	ISO 965-4	DIN ISO 965-4
ISO 148-1	DIN EN ISO 148-1	ISO 4042	DIN EN ISO 4042
ISO 225	DIN EN ISO 225	ISO 6157-1	DIN EN 26157-1
ISO 261	DIN ISO 261	ISO 6157-3	DIN EN 26157-3
ISO 262	DIN ISO 262	ISO 6506-1	DIN EN ISO 6506-1
ISO 273	DIN EN 20273	ISO 6507-1	DIN EN ISO 6507-1
ISO 724	DIN ISO 724	ISO 6508-1	DIN EN ISO 6508-1
ISO 898-2	DIN EN ISO 898-2	ISO 6892-1	DIN EN ISO 6892-1
ISO 898-5	DIN EN ISO 898-5	ISO 7500-1	DIN EN ISO 7500-1
ISO 898-7	DIN EN 20898-7	ISO 10683	DIN EN ISO 10683
ISO 965-1	DIN ISO 965-1	ISO 10684	DIN EN ISO 10684
ISO 965-2	DIN ISO 965-2	ISO 16426	DIN EN ISO 16426

Amendments

This standard differs from DIN EN ISO 898-1:2009-08 as follows:

a) the standard has been editorially revised.

b) in Subclause 9.3.1 “Apparatus”, it has been specified that tools altering the effect of the wedge angle, as in Figure 1 and Table 16, are not to be used;

c) Subclause 9.3.2 “Applicability” (of the tensile test) has been extended to include studs with metal end stronger than the nut end;

d) (German version only) for the hardness test on a longitudinal section, the requirement in Subclause 9.11.2.4 has been corrected to read *gleich oder kleiner* (less than or equal) instead of *gleich oder größer;*

e) (German version only) for the surface hardness method, the requirement in Subclause 9.11.3.4 has been corrected to read *gleich oder kleiner* (less than or equal) instead of *gleich oder größer.*

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Previous editions

DIN 266: 1931x-03
DIN 589: 1931-07, 1934-01
DIN Kr 550: 1936-03
DIN 267-1: 1937-04
DIN 267-2: 1937-04
DIN 267: 1940-06, 1943-01, 1954-01, 1960-12
DIN 267-3: 1967-10
DIN 267-7: 1968-05
DIN ISO 898-1: 1979-04, 1989-01
DIN EN 20898-1: 1992-04
DIN EN ISO 898-1: 1999-11, 2009-08

National Annex NA
(informative)

Bibliography

DIN EN 20273, *Fasteners — Clearance holes for bolts and screws*

DIN EN 20898-7, *Mechanical properties of fasteners — Part 7: Torsional test and minimum torques for bolts and screws with nominal diameters 1 mm to 10 mm*

DIN EN 26157-1, *Fasteners — Surface discontinuities — Part 1: Bolts, screws and studs subject to general requirements*

DIN EN 26157-3, *Fasteners — Surface discontinuities — Part 3: Bolts, screws and studs subject to special requirements*

DIN EN ISO 148-1, *Metallic materials — Charpy pendulum impact test — Part 1: Test method*

DIN EN ISO 225, *Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions*

DIN EN ISO 898-2, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 2: Nuts with specified property classes — Coarse thread and fine pitch*

DIN EN ISO 898-5, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 5: Set screws and similar threaded fasteners with specified hardness classes — Coarse thread and fine pitch thread*

DIN EN ISO 4042, *Fasteners — Electroplated coatings*

DIN EN ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method*

DIN EN ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method*

DIN EN ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T)*

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DIN EN ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

DIN EN ISO 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system*

DIN EN ISO 10683, *Fasteners — Non-electrolytically applied zinc flake coatings*

DIN EN ISO 10684, *Fasteners — Hot dip galvanized coatings*

DIN EN ISO 16426, *Fasteners — Quality assurance system*

DIN ISO 68-1, *ISO general purpose metric screw threads — Basic profil — Part 1: Metric screw threads*

DIN ISO 261, *ISO general purpose metric screw threads — General plan*

DIN ISO 262, *ISO general purpose metric screw threads — Selected sizes for screws, bolts and nuts*

DIN ISO 724, *ISO general purpose metric screw threads — Basic dimensions*

DIN ISO 965-1, *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data*

DIN ISO 965-2, *ISO general purpose metric screw threads — Tolerances — Part 2: Limits of sizes for general purpose external and internal screw threads — Medium quality*

DIN ISO 965-4, *ISO general purpose metric screw threads — Tolerances — Part 4: Limits of sizes for hot-dip galvanized external screw threads to mate with internal screw threads tapped with tolerance position H or G after galvanizing*

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EN ISO 898-1

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English Version

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 (ISO 898-1:2013)

Caractéristiques mécaniques des éléments de fixation en acier au carbone et en acier allié - Partie 1: Vis, goujons et tiges filetées de classes de qualité spécifiées - Filetages à pas gros et filetages à pas fin (ISO 898-1:2013)

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This European Standard was approved by CEN on 14 January 2013.

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Foreword

This document (EN ISO 898-1:2013) has been prepared by Technical Committee ISO/TC 2 “Fasteners” in collaboration with Technical Committee CEN/TC 185 “Fasteners” the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2013, and conflicting national standards shall be withdrawn at the latest by July 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 898-1:2009.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

ISO 898 consists of the following parts, under the general title *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*

— *Part 2: Nuts with specified property classes — Coarse thread and fine pitch thread*

— *Part 5: Set screws and similar threaded fasteners with specified hardness classes — Coarse thread and fine pitch thread*

— *Part 7: Torsional test and minimum torques for bolts and screws with nominal diameters 1 mm to 10 mm*[1)]

Endorsement notice

The text of ISO 898-1:2013 has been approved by CEN as EN ISO 898-1:2013 without any modification.

[1)] It is intended that, upon revision, the main element of the title of Part 7 will be aligned with the main element of the titles of Parts 1 to 5.

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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 M1,6 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,

— torque/clamp force performance (for test method, see ISO 16047), or

— fatigue resistance.

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