INTERNATIONAL STANDARD

ISO 898-2

Third edition
2012-03-15

Mechanical properties of fasteners made of carbon steel and alloy steel —

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

Caractéristiques mécaniques des éléments de fixation en acier au carbone et en acier allié —

Partie 2: Écrous de classes de qualité spécifiées — Filetages à pas gros et filetages à pas fin

Reference number
ISO 898-2:2012(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 898-2 was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 12, *Fasteners with metric internal thread*.

This third edition cancels and replaces the second edition (ISO 898-2:1992) and ISO 898-6:1994, which have been technically revised.

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)]

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 title of Part 1.

Mechanical properties of fasteners made of carbon steel and alloy steel —

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

1 Scope

This part of ISO 898 specifies mechanical and physical properties of nuts with coarse thread and fine pitch thread made of carbon steel and alloy steel when tested at an ambient temperature range of 10 °C to 35 °C.

Nuts conforming to the requirements of this part of ISO 898 are evaluated at that ambient temperature range. It is possible that they do not retain the specified mechanical and physical properties at elevated and/or lower temperatures.

NOTE 1 Nuts conforming to the requirements of this part of ISO 898 have been used in applications ranging from –50 °C to +150 °C. It is the responsibility of users to consult an experienced fastener materials expert for temperatures outside the range of –50 °C to +150 °C and up to a maximum temperature of +300°C to determine 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 instance in EN 10269, ASTM F2281 and in ASTM A320/A320M.

This part of ISO 898 is applicable to nuts:

a) made of carbon steel or alloy steel;

b) with coarse thread M5 $\leq D \leq$ M39, and fine pitch thread M8×1 $\leq D \leq$ M39×3;

c) with triangular ISO metric thread according to ISO 68-1;

d) with diameter/pitch combinations according to ISO 261 and ISO 262;

e) with specified property classes, including proof load;

f) with different nut styles: thin nuts, regular nuts and high nuts;

g) with minimum height $m \geq 0{,}45D$;

h) with a minimum outside diameter or width across flats $s \geq 1{,}45D$ (see Annex A);

i) able to mate with bolts, screws and studs with property classes according to ISO 898-1.

For hot dip galvanized nuts, see ISO 10684.

This part of ISO 898 does not specify requirements for properties such as:

— prevailing torque properties (see ISO 2320);

— torque/clamp force properties (see ISO 16047 for test method);

— weldability;

— corrosion resistance.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6157-2, *Fasteners — Surface discontinuities — Part 2: Nuts*

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

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

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

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

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*

ISO 16426, *Fasteners — Quality assurance system*

3 Symbols

For the purposes of this document, the following symbols apply.

D nominal thread diameter of the nut, in millimetres

d_h hole diameter of the grip, in millimetres

F load, in newtons

h thickness of the grip, in millimetres

m height of the nut, in millimetres

P pitch of the thread, in millimetres

s width across flats, in millimetres

4 Designation systems

4.1 Designation of nut styles

This part of ISO 898 specifies requirements for three styles of nuts according to their height:

— style 2: high nut with minimum height $m_{min} \approx 0{,}9D$ or $m_{min} > 0{,}9D$; see Table A.1;

— style 1: regular nut with minimum height $m_{min} \geq 0{,}8D$; see Table A.1;

— style 0: thin nut with minimum height $0{,}45D \leq m_{min} < 0{,}8D$.

4.2 Designation of property classes

4.2.1 General

The marking and labelling of nuts with property classes shall be as specified in Clause 10 for only those nuts which meet all applicable requirements of this part of ISO 898.