



SLOVENSKI STANDARD
SIST EN 493:2001
01-julij-2001

Mehanski vezni elementi - Površinske napake - Matice

Fasteners - Surface discontinuities - Nuts

Verbindungselemente - Oberflächenfehler - Muttern

Eléments de fixation - Défauts de surface - Ecrous

Ta slovenski standard je istoveten z: EN 493:1992

[SIST EN 493:2001
https://standards.iteh.ai/catalog/standards/sist/854abe53-f3c2-491a-8f3c-cc2b610510e2/sist-en-493-2001](https://standards.iteh.ai/catalog/standards/sist/854abe53-f3c2-491a-8f3c-cc2b610510e2/sist-en-493-2001)

ICS:

21.060.20 Matice Nuts

SIST EN 493:2001 **en**

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EUROPEAN STANDARD

EN 493:1992

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 1992

UDC 621.882.3:620.191

Descriptors: Fasteners, nuts : Fasteners, appearance, surface defects, limits

English version

Fasteners - Surface discontinuities - NutsEléments de fixation - Défauts de surface -
EcrousVerbindungselemente - Oberflächenfehler -
Muttern**iTeh STANDARD PREVIEW**
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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENEuropean Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

This European Standard has been drawn up by Technical Committee CEN/TC 185 "Threaded and non-threaded mechanical fasteners and accessories" and was submitted to the Unique Acceptance Procedure.

National standards identical to this European Standards shall be published at the latest by 1992-11-30 and conflicting national standards shall be withdrawn at the latest by 1992-11-30.

In accordance with the CEN/CENELEC Common Rules, the following countries are bound to implement this European Standard : Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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1 Scope

1.1 This European Standard establishes limits for various types of surface discontinuities on nuts with

- nominal thread diameters from 5 up to and including 39 mm
- product grade A and B
- all property classes according to EN 20 898-2, ISO 898-6 and ISO 2320

unless otherwise specified in product standards or by the purchaser.

1.2 In case of the permissible limits for surface discontinuities indicated in clause 3, properties according to EN 20 898-2, ISO 898-6 and ISO 2320 as appropriate must be satisfied. In addition, the dimensional requirements of the appropriate product standard must be satisfied.

Notes:

- The figures in clause 3 are examples only. They also apply correspondingly to other types of nuts.
- The individual figures show the surface discontinuities exaggerated in some cases for clarity.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies."

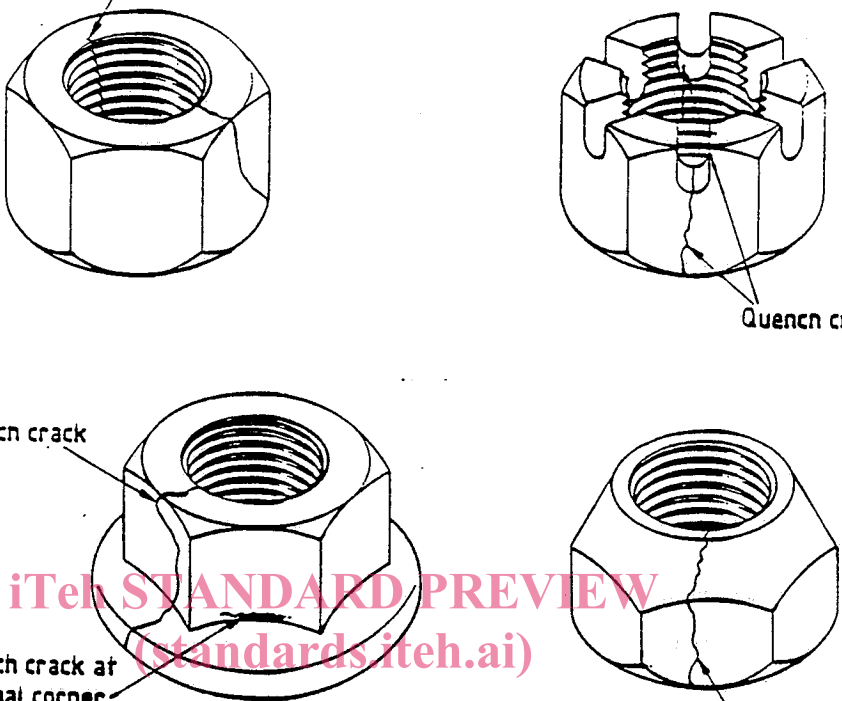
- ISO 468, Surface roughness - Parameters, their values and general rules for specifying requirements.
- EN 20 898-2, Mechanical properties of fasteners - Part 2: Nuts with specified proof load values.
- ISO 898-6, Mechanical properties of fasteners - Part 6: Nuts with specified proof load values - Fine pitch thread.
- ISO 2320, Prevailing torque type steel hexagon nuts - Mechanical and performance properties
- ISO 3269, Fasteners - Acceptance inspection.

3 Types, causes, appearance and limits of surface discontinuities

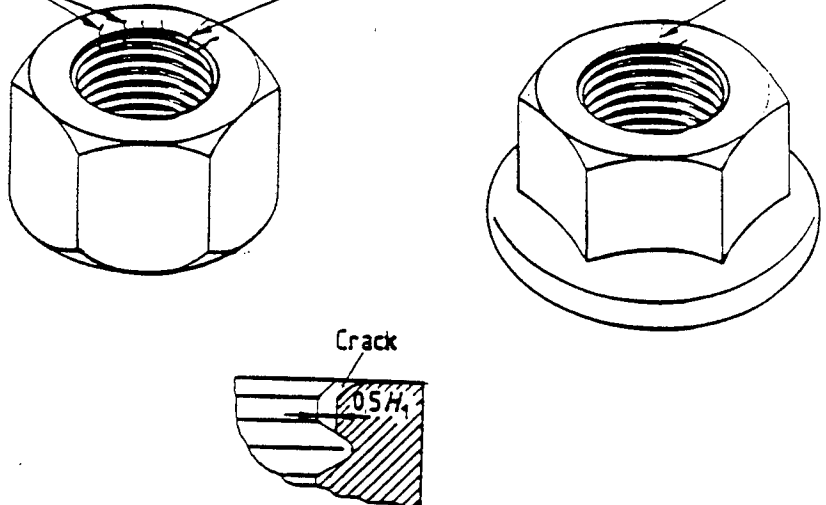
3.1 Cracks

A crack is a clean (crystalline) fracture passing through or across the grain boundaries and may possibly follow inclusions of foreign elements. Cracks are normally caused by overstressing the metal during forging or other forming operations, or during heat treatment or may have been present in the raw material.

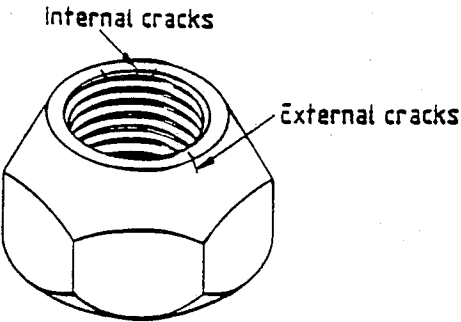
3.1.1 Quench cracks

Cause	Quench cracks may occur during heat treatment. Such cracks usually appear as irregular and branched pathways on any surface of the nut.
Appearance	<p>Quench crack in thread</p>  <p>Quench crack</p> <p>Quench crack at internal corner (These are difficult to detect)</p> <p>Quench crack</p> <p><i>Standard Reference:</i> SIST EN 493:2001</p>
Limits	Quench cracks of any depth, any length or in any location are not permitted.

3.1.2 Forging cracks and inclusion cracks

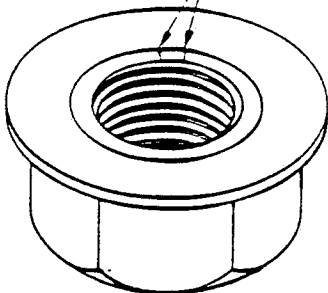
Cause	<p>Forging cracks may occur during the cut-off or forging operations and are located only in the top and bottom face of the nuts or in the intersection of the face and flat.</p> <p>Inclusion cracks are caused by non-metallic inclusions inherent in the raw material</p>
Appearance	<p>Cracks in top or bottom face or in thread, caused by inclusions</p> <p>Forging cracks in top or bottom face</p> <p>Forging cracks in top or bottom face</p> 
Limits	<p>Cracks located in the top and bottom faces shall be permitted provided that:</p> <ul style="list-style-type: none"> - there are no more than two forging cracks which extend across the full width of the bearing face neither of which shall exceed a depth of $0.05d$. In the case of flange nuts, cracks in the area between s and d_w are not permitted. - no crack extends into the tapped hole beyond the first full thread. - no crack in the first full thread exceeds a depth of $0,5 H_1$. <p>d = Nominal thread diameter</p> <p>d_w = external diameter of the bearing face</p> <p>H_1 = effective thread height $H_1 = 0,541 P$ P = pitch of thread</p> <p>s = width across flats</p>

3.1.3 Cracks in the locking element of all metal prevailing torque type nuts

Cause	Cracks in the locking element of all metal prevailing torque type nuts may occur during cut off, forging or deflecting process and are either on the external or internal face.
Appearance	
Limits	<p>Cracks in the locking element resulting from the forging process shall be permitted provided that all mechanical and functional requirements are met and that</p> <ul style="list-style-type: none"> - there are no more than two cracks which extend the full width of the crown circle neither of which shall exceed a depth of $0,05 d$ - no crack extends into the tapped hole beyond the first full thread - no crack in the first full thread exceeds a depth of $0,5 H_1$ <p>Cracks in the locking element resulting from deflecting process are not permitted.</p> <p>d = nominal thread diameter</p> <p>H_1 (see 3.1.2)</p>

3.1.4 Cracks in the washer retainer

A crack in the washer retainer is an opening in a lip or hub of metal used for securing a washer on a nut.

Cause	Washer retainer cracks may occur when pressure is applied to the lip or hub during assembly of the washer.
Appearance	<p style="text-align: center;">Washer retainer cracks</p> 
Limits	Washer retainer cracks are permissible if limited to the contour of the lip or hub used for retaining purposes provided that the washer is securely held and able to rotate freely.

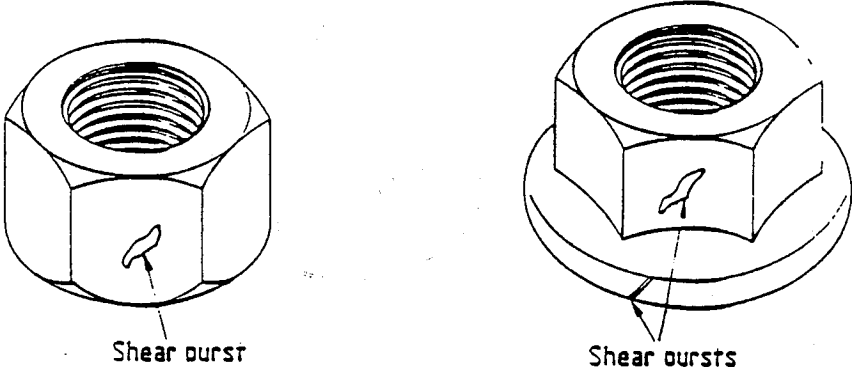
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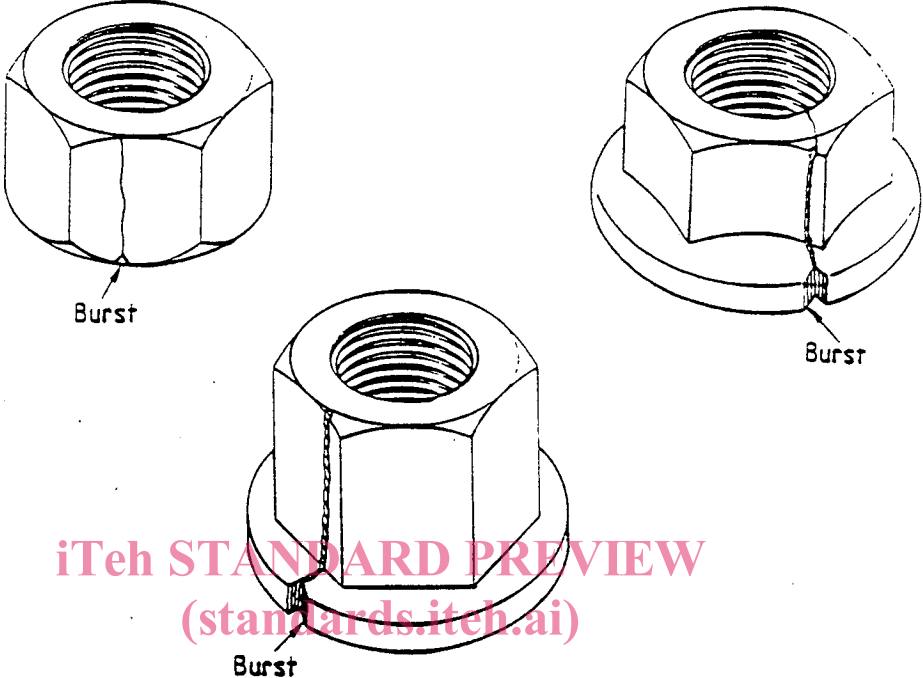
3.2 Shear bursts

Shear bursts are open breaks in the surface of the metal.

Cause	Shear bursts occur e. g. during forging operations on the external surfaces of nuts and at periphery of flange nuts. Shear bursts are located at approximately 45° to the axis of the nut.
Appearance	
Limits	<p>STANDARD PREVIEW</p> <p>No shear burst in the flats of hexagon nuts shall extend into the bearing faces of the nut or crown circle of the flange nut. Shear bursts occurring at the intersection of two wrenching flats shall not reduce the width across corners below specified minimums.</p> <p>Shear bursts at the periphery of the flange of flange nuts are allowed providing they do not extend into the minimum diameter of the bearing face d_w.</p> <p>https://standards.iteh.ai/catalog/standards/sist/854abe53-3c2-491a-83c-cc2b610510e2/sist-en-493-2001</p>

3.3 Bursts

Bursts are open breaks in the surface of the metal.

Cause	Bursts may occur e. g. during forging operations on the external surfaces of nuts and at periphery of flanged nuts because of surface discontinuities in the raw material.
Appearance	 <p style="text-align: center;">iTeh STANDARD PREVIEW (standards.itech.ai)</p> <p style="text-align: center;">SIST EN 493:2001</p>
Limits	<p>https://standards.itech.ai/catalog/standards/sist/854abe53-3c2-491a-83c-c2131510e2/sist-en-493-2001</p> <p>If a burst occurs in connection with a seam resulting from the raw material, the seam may extend into the crown circle, see 3.4 but not the burst. Bursts occurring at the intersection of two wrenching flats shall not reduce the width across corners below specified minimums. No burst located at the intersection of top or bottom face with a wrenching flat shall have a width greater than $0,25 \text{ mm} + 0,02 s$.</p> <p>Bursts at the periphery of the flange of flange nuts are allowed providing they do not extend into the minimum diameter of the bearing face d_w and the width of the burst does not exceed $0,08 d_c$.</p> <p>d_c = flange diameter s = width across flats</p>