BRITISH STANDARD

**BS EN ISO 10484:2004**

*Incorporating Amendment No. 1 to BS ISO 10484:1997 (renumbers the BS ISO as BS EN ISO 10484: 2004)*

# Widening test on nuts

The European Standard EN ISO 10484:2004 has the status of a British Standard

Confirmed May 2008

ICS 21.060.20



BSI British Standards

# National foreword

This British Standard is the official English language version of EN ISO 10484:2004.

The UK participation in its preparation was entrusted by Technical Committee FME/9, Bolts, nuts and accessories, to Subcommittee FME/9/1, Mechanical properties of materials, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

**Cross-references**

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled "International Standards Correspondence Index", or by using the "Search" facility of the *BSI Electronic Catalogue* or of British Standards Online.

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**Summary of pages**

This document comprises a front cover, an inside front cover, the EN ISO title page, the EN ISO foreword page, the ISO title page, the ISO foreword page, pages 1 to 3, the Annex ZA page, an inside back cover and a back cover.

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This British Standard, having been prepared under the direction of the Engineering Sector Board, was published under the authority of the Standards Board and comes into effect on 15 December 1997

**Amendments issued since publication**

| Amd. No. | Date | Comments |
|---|---|---|
| 15307 | 11 August 2004 | Implementation of the European Standard |
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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN ISO 10484

July 2004

ICS 21.060.20

Supersedes EN 493:1992

English version

## Widening test on nuts (ISO 10484:1997)

Essai d'évasement des écrous (ISO 10484:1997)

Aufweitversuch an Muttern (ISO 10484:1997)

This European Standard was approved by CEN on 1 July 2004.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. 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.

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Ref. No. EN ISO 10484:2004: E

## Foreword

The text of ISO 10484:1997 has been prepared by Technical Committee ISO/TC 2 "Fasteners" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 10484:2004 by Technical Committee CEN/TC 185 "Threaded and non-threaded mechanical fasteners and accessories", 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 January 2005, and conflicting national standards shall be withdrawn at the latest by January 2005.

This document supersedes EN 493:1992.

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

## Endorsement notice

The text of ISO 10484:1997 has been approved by CEN as EN ISO 10484:2004 without any modifications.

NOTE  Normative references to International Standards are listed in annex ZA (normative).

EN ISO 10484:2004

INTERNATIONAL STANDARD

**ISO 10484**

First edition
1997-11-01

# Widening test on nuts

*Essai d'évasement des écrous*

Reference number
ISO 10484:1997(E)

## 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.

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.

International Standard ISO 10484 was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 1, *Mechanical properties of fasteners*.

# Widening test on nuts

## 1 Scope

This International Standard specifies the test procedure for evaluating the acceptability of surface discontinuities designated in ISO 6157-2 excluding nuts made of free cutting steel.

It applies to nuts with

– property classes to ISO 898-2 and ISO 898-6;

– nominal thread diameter, $d$, from 5 mm up to and including 39 mm;

– product grades A and B.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 898-2:1992, *Mechanical properties of fasteners – Part 2: Nuts with specified proof load values – Coarse thread*.

ISO 898-6:1994, *Mechanical properties of fasteners – Part 6: Nuts with specified proof load values – Fine pitch thread*.

ISO 2320:1997, *Prevailing torque type steel hexagon nuts – Mechanical and performance properties*.

ISO 6157-2:1995, *Fasteners – Surface discontinuities – Part 2: Nuts*.

## 3 Widening test

### 3.1 Principle

After removal of the thread up to the nominal thread diameter a tapered mandrel is pushed into the nut.

The widening is measured as a percentage of the hole diameter.

### 3.2 Test mandrel

The test mandrel shown in figure 1 shall be used for measurement of widening of 6 % or 4 % respectively (see clause 4). It shall have a minimum hardness of not less than 45 HRC and the cone shall be polished (roughness $R_a$ = 2,5 µm).

### 3.3 Test nut

The nut to be subjected to the widening test shall have the thread removed to a diameter equal to the nominal diameter of the thread with the tolerance H12.

### 3.4 Procedure

Prior to the test, lubricate the mandrel with molybdenum disulphide ($MoS_2$).

Insert the mandrel into the nut as shown in figure 2 and apply a load axially in a slow and continuous manner until the mandrel is pushed through the hole up to the cylindrical part. The mandrel shall be tightly clamped at the upper end. For reference purposes the speed of insertion shall not exceed 25 mm/min.

## 4 Criteria

The total widening of nuts shall be

6 % for nuts of property classes 4 to 12

and

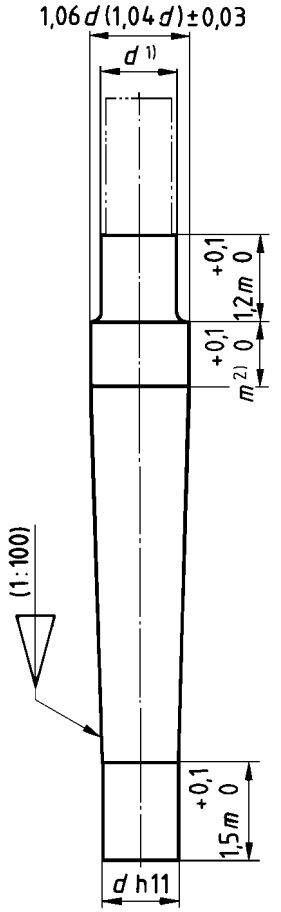
4 % for nuts of property classes 04 and 05.

Failure of a nut occurs when the wall of the nut breaks entirely before the minimum specified widening value is obtained. In cases of doubt, the fracture may be recognized when the nut is cut on the opposite side and then falls into two single parts.

## 5 Special case – Prevailing torque type nuts

For prevailing torque type nuts according to ISO 2320 the minimum value of widening shall be 20 % below the values for hexagon nuts specified in 4.

Tolerances in millimetres

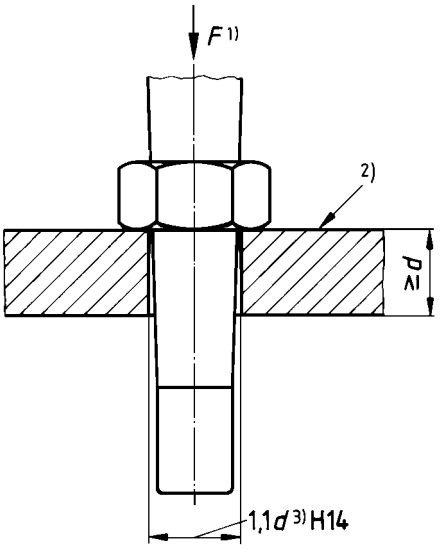



1) $d$ is the nominal thread diameter of the nut. For the testing of oversize tapped nuts the dimension $d$ shall be enlarged according to the major diameter of the internal thread.

2) $m$ is the nominal height of the nut.

**Figure 1 — Test mandrel for widening of nuts up to 6 % (1,06 $d$) or up to 4 % (1,04 $d$) respectively**

Tolerances in millimetres




1) $F$ is the load.

2) Hardened.

3) $d$ is the nominal thread diameter of the nut.

**Figure 2 — Test assembly**

# Annex ZA
(normative)

## Normative references to international publications with their relevant European publications

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 (including amendments).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

| Publication | Year | Title | EN | Year |
|---|---|---|---|---|
| ISO 898-2 | 1992 | Mechanical properties of fasteners - Part 2: Nuts with specified proof load values - Coarse thread | EN 20898-2 | 1993 |
| ISO 2320 | 1997 | Prevailing torque type steel hexagon nuts - Mechanical and performance requirements | EN ISO 2320 | 1997 |

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