BRITISH STANDARD

BS EN ISO
8673:2001

Hexagon nuts, style 1, with metric fine pitch thread — Product grades A and B

The European Standard EN ISO 8673:2000 has the status of a British Standard

ICS 21.060.20

National foreword

This British Standard is the official English language version of EN ISO 8673:2000. It is identical with ISO 8673:1999. It supersedes BS EN 28673:1992 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee FME/9, Bolts, nuts and accessories, to Subcommittee FME/9/6, General purpose fasteners and accessories, 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

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement these international or European publications may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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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, pages ii and iii, a blank page, pages 1 to 5, 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 Committee, was published under the authority of the Standards Committee and comes into effect on 15 February 2001

ISBN 0 580 36191 8

Amendments issued since publication

Amd. No.	Date	Comments

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 8673

November 2000

ICS 21.060.20

Supersedes EN 28673:1991

English version

Hexagon nuts, style 1, with metric fine pitch thread - Product grades A and B (ISO 8673:1999)

Ecrous hexagonaux, style 1, à filetage métrique à pas fin - Grades A et B (ISO 8673:1999)

Sechskantmuttern, Typ 1, mit metrischem Feingewinde - Produktklassen A und B (ISO 8673:1999)

This European Standard was approved by CEN on 26 October 2000.

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COMITÉ EUROPÉEN DE NORMALISATION
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Management Centre: rue de Stassart, 36 B-1050 Brussels

Foreword

The text of the International Standard from Technical Committee ISO/TC 2 "Fasteners" of the International Organization for Standardization (ISO) has been taken over as an European Standard 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 May 2001, and conflicting national standards shall be withdrawn at the latest by May 2001.

This European Standard supersedes EN 28673:1991.

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

Endorsement notice

The text of the International Standard ISO 8673:1999 has been approved by CEN as a European Standard without any modification.

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

EN ISO 8673:2000

INTERNATIONAL STANDARD

ISO 8673

Second edition
1999-08-15

Hexagon nuts, style 1, with metric fine pitch thread — Product grades A and B

Écrous hexagonaux, style 1, à filetage métrique à pas fin — Grades A et B

Reference number
ISO 8673:1999(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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 8673 was prepared by Technical Committee ISO/TC 2, *Fasteners*.

This second edition cancels and replaces the first edition (ISO 8673:1988) which has been technically revised.

Introduction

This International Standard is part of the complete ISO product standard series on external hexagon drive fasteners. The series comprises:

a) hexagon head bolts (ISO 4014 to ISO 4016 and ISO 8765);

b) hexagon head screws (ISO 4017, ISO 4018 and ISO 8676);

c) hexagon nuts (ISO 4032 to ISO 4036, ISO 8673 to ISO 8675);

d) hexagon bolts with flange (ISO 4162 and ISO 15071);

e) hexagon nuts with flange (ISO 4161 and ISO 10663);

f) structural bolts and nuts (ISO 4775, ISO 7411 to ISO 7414 and ISO 7417).

Hexagon nuts, style 1, with metric fine pitch thread — Product grades A and B

1 Scope

This International Standard specifies the characteristics of hexagon nuts, style 1, with metric fine pitch thread, with nominal thread diameters d from 8 mm up to and including 64 mm, with product grade A for sizes d up to and including 16 mm and product grade B for sizes d over 16 mm.

If, in special cases, specifications other than those listed in this International Standard are required, they should be selected from existing International Standards, for example ISO 724, ISO 898-6, ISO 965-1, ISO 3506-2 and ISO 4759-1.

Coarse thread hexagon nuts, style 1, according to ISO 4032 should be the first choice.

NOTE For hexagon nuts, style 2, with fine pitch thread, see ISO 8674.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 225:1983, *Fasteners — Bolts, screws, studs and nuts — Symbols and designations of dimensions.*

ISO 724:1993, *ISO general-purpose metric screw threads — Basic dimensions.*

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

ISO 965-1:1998, *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data.*

ISO 3269:—[1)], *Fasteners — Acceptance inspection.*

ISO 3506-2:1997, *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 2: Nuts.*

ISO 4042:1999, *Fasteners — Electroplated coatings.*

ISO 4759-1:—[2)], *Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C.*

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

ISO 8839:1986, *Mechanical properties of fasteners — Bolts, screws, studs and nuts made of non-ferrous metals.*

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1) To be published. (Revision of ISO 3269:1988)

2) To be published. (Revision of ISO 4759-1:1978)

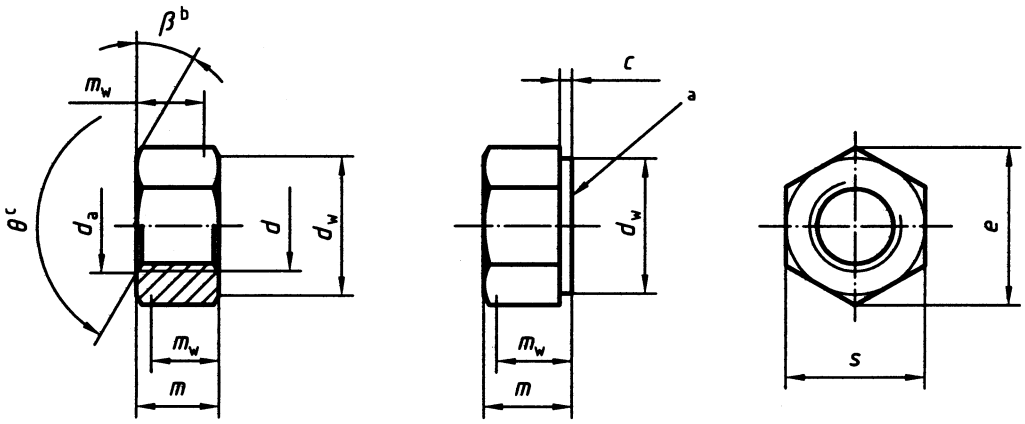
ISO 8992:1986, *Fasteners — General requirements for bolts, screws, studs and nuts.*

ISO 10683:—[3], *Fasteners — Non-electrolytically applied zinc flake coatings.*

3 Dimensions

See Figure 1, Tables 1 and 2.

Symbols and descriptions of dimensions are defined in ISO 225.



a Washer-face form to be ordered separately.

b $\beta = 15°$ to $30°$

c $\theta = 90°$ to $120°$

Figure 1

[3] To be published.

Table 1 — Preferred threads

Dimensions in millimetres

Thread ($d \times P$)		M8 × 1	M10 × 1	M12 × 1,5	M16 × 1,5	M20 × 1,5	M24 × 2	M30 × 2	M36 × 3	M42 × 3	M48 × 3	M56 × 4	M64 × 4
c	max.	0,60	0,60	0,60	0,8	0,8	0,8	0,8	0,8	1,0	1,0	1,0	1,0
	min.	0,15	0,15	0,15	0,2	0,2	0,2	0,2	0,2	0,3	0,3	0,3	0,3
d_a	max.	8,75	10,8	13	17,3	21,6	25,9	32,4	38,9	45,4	51,8	60,5	69,1
	min.	8,00	10,0	12	16,0	20,0	24,0	30,0	36,0	42,0	48,0	56,0	64,0
d_w	min.	11,63	14,63	16,63	22,49	27,7	33,25	42,75	51,11	59,95	69,45	78,66	88,16
e	min.	14,38	17,77	20,03	26,75	32,95	39,55	50,85	60,79	71,3	82,6	93,56	104,86
m	max.	6,80	8,40	10,80	14,8	18,0	21,5	25,6	31,0	34,0	38,0	45,0	51,0
	min.	6,44	8,04	10,37	14,1	16,9	20,2	24,3	29,4	32,4	36,4	43,4	49,1
m_w	min.	5,15	6,43	8,3	11,28	13,52	16,16	19,44	23,52	25,92	29,12	34,72	39,28
s	nom. = max.	13,00	16,00	18,00	24,00	30,00	36	46	55,0	65,0	75,0	85,0	95,0
	min.	12,73	15,73	17,73	23,67	29,16	35	45	53,8	63,1	73,1	82,8	92,8

Table 2 — Non-preferred threads

Dimensions in millimetres

Thread ($d \times P$)		M10 × 1,25	M12 × 1,25	M14 × 1,5	M18 × 1,5	M20 × 2	M22 × 1,5	M27 × 2	M33 × 2	M39 × 3	M45 × 3	M52 × 4	M60 × 4
c	max.	0,60	0,60	0,60	0,8	0,8	0,8	0,8	0,8	1,0	1,0	1,0	1,0
	min.	0,15	0,15	0,15	0,2	0,2	0,2	0,2	0,2	0,3	0,3	0,3	0,3
d_a	max.	10,8	13	15,1	19,5	21,6	23,7	29,1	35,6	42,1	48,6	56,2	64,8
	min.	10,0	12	14,0	18,0	20,0	22,0	27,0	33,0	39,0	45,0	52,0	60,0
d_w	min.	14,63	16,63	19,64	24,85	27,7	31,35	38	46,55	55,86	64,7	74,2	83,41
e	min.	17,77	20,03	23,36	29,56	32,95	37,29	45,2	55,37	66,44	76,95	88,25	99,21
m	max.	8,40	10,80	12,8	15,8	18,0	19,4	23,8	28,7	33,4	36,0	42,0	48,0
	min.	8,04	10,37	12,1	15,1	16,9	18,1	22,5	27,4	31,8	34,4	40,4	46,4
m_w	min.	6,43	8,3	9,68	12,08	13,52	14,48	18	21,92	25,44	27,52	32,32	37,12
s	nom. = max.	16,00	18,00	21,00	27,00	30,00	34	41	50	60,0	70,0	80,0	90,0
	min.	15,73	17,73	20,67	26,16	29,16	33	40	49	58,8	68,1	78,1	87,8

4 Specifications and reference standards

See Table 3.

Table 3 — Specification and reference standards

Material		Steel	Stainless steel	Non-ferrous metal
General requirements	International Standard	ISO 8992		
Thread	Tolerance	6H		
	International Standards	ISO 724, ISO 965-1		
Mechanical properties	Property class[a]	$d \leqslant 39$ mm: 6, 8 $d \leqslant 16$ mm: 10 $d > 39$ mm: as agreed	$d \leqslant 24$ mm: A2-70, A4-70 24 mm $< d \leqslant 39$ mm: A2-50, A4-50 $d > 39$ mm: as agreed	Materials specified in ISO 8839
	International Standards	$d \leqslant 39$ mm: ISO 898-6 $d > 39$ mm: as agreed	$d \leqslant 39$ mm: ISO 3506-2 $d > 39$ mm: as agreed	
Tolerances	Product grade	$d \leqslant 16$ mm: A $d > 16$ mm: B		
	International Standard	ISO 4759-1		
Finish and/or coating		As processed Requirements for electroplating are covered in ISO 4042 Requirements for non-electrolytically applied zinc flake coatings are covered in ISO 10683	Plain	Plain Requirements for electroplating are covered in ISO 4042
		If different electroplating requirements are desired or if requirements are needed for other finishes, they should be negotiated between customer and supplier.		
		Limits for surface discontinuities are covered in ISO 6157-2		
Acceptability		For acceptance procedure, see ISO 3269.		

[a] For other property classes see ISO 898-6 for steel and ISO 3506-2 for stainless steel respectively.

5 Designation

EXAMPLE

A hexagon nut, style 1, with thread M16 × 1,5 and property class 8 is designated as follows:

Hexagon nut ISO 8673 - M16 × 1,5 - 8

Bibliography

[1] ISO 4014:1999, *Hexagon head bolts — Product grades A and B.*

[2] ISO 4015:1979, *Hexagon head bolts — Product grade B — Reduced shank (shank diameter approximately equal to pitch diameter).*

[3] ISO 4016:1999, *Hexagon head bolts — Product grade C.*

[4] ISO 4017:1999, *Hexagon head screws — Product grades A and B.*

[5] ISO 4018:1999, *Hexagon head screws — product grade C.*

[6] ISO 4032:1999, *Hexagon nuts, style 1 — Product grades A and B.*

[7] ISO 4033:1999, *Hexagon nuts, style 2 — Product grades A and B.*

[8] ISO 4034:1999, *Hexagon nuts — Product grade C.*

[9] ISO 4035:1999, *Hexagon thin nuts (chamfered) — Product grades A and B.*

[10] ISO 4036:1999, *Hexagon thin nuts (unchamfered) — Product grade B.*

[11] ISO 4161:1999, *Hexagon nuts with flange — Coarse thread.*

[12] ISO 4162:—[4)], *Hexagon bolts with flange — Small series — Product grade combination A/B.*

[13] ISO 4775:1984,*Hexagon nuts for high-strength structural bolting with large width across flats — Product grade B — Property classes 8 and 10.*

[14] ISO 7411:1984, *Hexagon bolts for high-strength structural bolting with large width across flats (thread lengths according to ISO 888) — Product grade C — Property classes 8.8 and 10.9.*

[15] ISO 7412:1984, *Hexagon bolts for high-strength structural bolting with large width across flats (short thread length) — Product grade C — Property classes 8.8 and 10.9.*

[16] ISO 7413:1984, *Hexagon nuts for structural bolting, style 1, hot-dip galvanized (oversize tapped) — Product grades A and B — Property classes 5, 6 and 8.*

[17] ISO 7414:1984, *Hexagon nuts for structural bolting with large width across flats, style 1 — Product grade B — Property class 10.*

[18] ISO 7417:1984, *Hexagon nuts for structural bolting, style 2, hot-dip galvanized (oversize tapped) — Product grade A — Property class 9.*

[19] ISO 8674:1999, *Hexagon nuts, style 2, with metric fine pitch thread — Product grades A and B.*

[20] ISO 8675:1999, *Hexagon thin nuts (chamfered) with metric fine pitch thread — Product grades A and B.*

[21] ISO 8676:1999, *Hexagon head screws with metric fine pitch thread — Product grades A and B.*

[22] ISO 8765:1999, *Hexagon head bolts with metric fine pitch thread — Product grades A and B.*

[23] ISO 10663:1999, *Hexagon nuts with flange — Fine pitch thread.*

[24] ISO 15071:1999, *Hexagon bolts with flange — Small series — Product grade A.*

[4)] To be published. (Revision of ISO 4162:1990)

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.

Publication	Year	Title	EN	Year
ISO 225	1983	Fasteners - Bolts, screws, studs and nuts - Symbols and designations of dimensions	EN 20225	1991
ISO 898-6	1994	Mechanical properties of fasteners - Part 6: Nuts with specified proof load values - Fine pitch thread	EN ISO 898-6	1995
ISO 3269	2000	Fasteners - Acceptance inspection	EN ISO 3269	2000
ISO 3506-2	1997	Mechanical properties of corrosion-resistant stainless-steel fasteners - Part 2: Nuts	EN ISO 3506-2	1997
ISO 4042	1999	Fasteners - Electroplated coatings	EN ISO 4042	1999
ISO 8839	1986	Mechanical properties of fasteners - Bolts, screws, studs and nuts made of non-ferrous metals	EN 28839	1991

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