

FINAL
DRAFT

INTERNATIONAL
STANDARD

ISO/FDIS
4018

ISO/TC 2/SC 11

Secretariat: DIN

Voting begins on:
2021-06-29

Voting terminates on:
2021-08-24

Fasteners — Hexagon head screws — Product grade C

Fixations — Vis à tête hexagonale entièrement filetées — Grade C

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/FDIS 4018](https://standards.iteh.ai/catalog/standards/sist/ac64739b-b4eb-49ca-9d01-e023f17bb015/iso-fdis-4018)

<https://standards.iteh.ai/catalog/standards/sist/ac64739b-b4eb-49ca-9d01-e023f17bb015/iso-fdis-4018>

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

ISO/CEN PARALLEL PROCESSING



Reference number
ISO/FDIS 4018:2021(E)

© ISO 2021

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/FDIS 4018

<https://standards.iteh.ai/catalog/standards/sist/ac64739b-b4eb-49ca-9d01-e023f17bb015/iso-fdis-4018>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

| | Page |
|---|----------|
| Foreword | iv |
| 1 Scope | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions | 1 |
| 4 Dimensions | 2 |
| 5 Requirements and reference International Standards | 6 |
| 6 Marking and labelling | 6 |
| 6.1 Marking on product | 6 |
| 6.2 Labelling on package | 6 |
| 7 Designation | 7 |
| Bibliography | 8 |

iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO/FDIS 4018

<https://standards.iteh.ai/catalog/standards/sist/ac64739b-b4eb-49ca-9d01-e023f17bb015/iso-fdis-4018>

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 11, *Fasteners with metric external thread*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 185, *Fasteners*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fifth edition cancels and replaces the fourth edition (ISO 4018:2011), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the permissible shapes for free formed head and indentation on the head have been added;
- tables for dimensions have been restructured;
- M7 has been added;
- $d_{w,min}$ has been changed for M5 from $s_{min} - IT16$ to $s_{min} - IT15$ (as for hexagon head screws of product grades A and B) in order to have a larger bearing surface area and thus less contact pressure;
- the rules for the shortest and greatest standard lengths have been added, and they have been amended accordingly; standard greatest lengths have been limited to 200 mm (longer lengths are to be agreed between the purchaser and the manufacturer);
- specifications for marking and labelling have been added as [Clause 6](#).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Fasteners — Hexagon head screws — Product grade C

1 Scope

This document specifies the characteristics of hexagon head screws, in steel, with metric coarse pitch threads M5 to M64, and with product grade C.

NOTE If in certain cases other specifications are requested, property classes can be selected from ISO 898-1, and dimensional options from ISO 888 or ISO 4753.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 225, *Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions*

ISO 888, *Fasteners — Bolts, screws and studs — Nominal lengths and thread lengths*

ISO 898-1, *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 965-1, *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data*

ISO 1891-4, *Fasteners — Vocabulary — Part 4: Control, inspection, delivery, acceptance and quality*

ISO 3269, *Fasteners — Acceptance inspection*
<https://standards.iteh.ai/catalog/standards/sist/ac64739b-b4eb-49ca-9d01-6025117bb015/iso-fdis-4018>

ISO 4042, *Fasteners — Electroplated coating systems*

ISO 4753, *Fasteners — Ends of parts with external ISO metric thread*

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

ISO 6157-1, *Fasteners — Surface discontinuities — Part 1: Bolts, screws and studs for general requirements*

ISO 8991, *Designation system for fasteners*

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

ISO 10683, *Fasteners — Non-electrolytically applied zinc flake coating systems*

ISO 10684, *Fasteners — Hot dip galvanized coatings*

3 Terms and definitions

No terms and definitions are listed in this document.

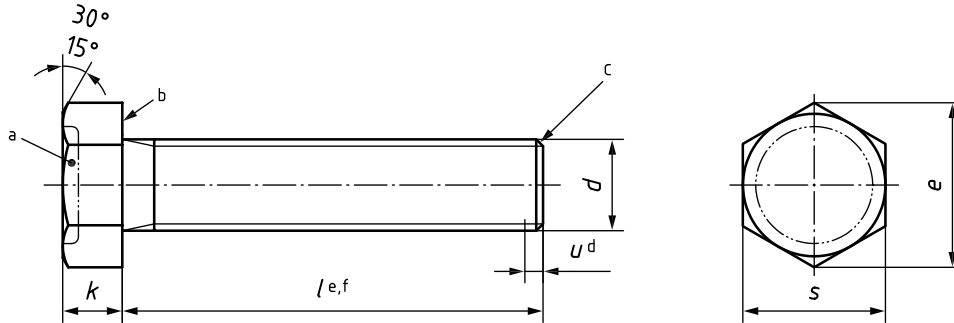
ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Dimensions

Dimensions shall be in accordance with [Figures 1](#) and [2](#) and with [Tables 1](#) to [3](#).

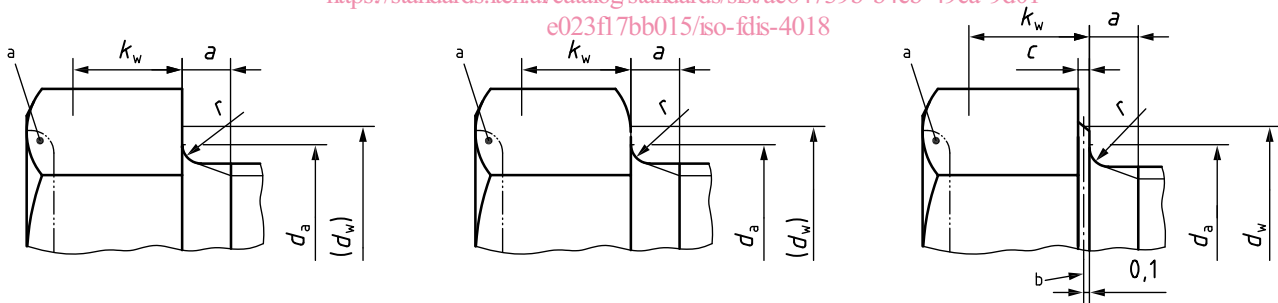
Symbols and descriptions of dimensions are defined in ISO 225.



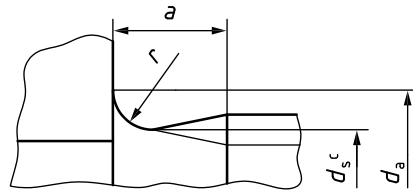
- a Indentation at the discretion of the manufacturer, in accordance with [Figure 2](#).
- b Washer-face at the discretion of the manufacturer, in accordance with [Figure 2](#).
- c End at the discretion of the manufacturer, in accordance with ISO 4753.
- d Incomplete thread $u \leq 2P$.
- e Shortest standard length l_{nom} determined with $2d$ and rounded (if necessary) to the nearest standard length; shortest standard length $l_{nom} = 120$ mm for M64.
- f Greatest standard length $l_{nom} \leq 10d$ or 200 mm, whichever is the shorter.

Figure 1 — Hexagon head screw

ISO/FDIS 4018
<https://standards.iteh.ai/catalog/standards/sist/ac64739b-b4eb-49ca-9d01-e023f17bb015/iso-fdis-4018>
 Dimensions in millimetres



a) Permissible shapes



b) Optional underhead junction

- a Any shape for the optional indentation within a maximum diameter of $0,8s$ and a maximum depth of $0,2k$.
- b Reference datum for d_w .
- c $d_s \approx$ pitch diameter.

Figure 2 — Head details

Table 1 — Dimensions – M5 to M16

Dimensions in millimetres

| Thread, <i>d</i> | | M5 | M6 | (M7) | M8 | M10 | M12 | (M14) | M16 |
|--|-------------|--|--|-------|-------|-------|-------|-------|-------|
| <i>p</i> ^a | | 0,8 | 1 | 1 | 1,25 | 1,5 | 1,75 | 2 | 2 |
| <i>a</i> ^b | max. | 2,40 | 3,00 | 3,00 | 3,75 | 4,50 | 5,25 | 6,00 | 6,00 |
| | min. | 0,80 | 1,00 | 1,00 | 1,25 | 1,50 | 1,75 | 2,00 | 2,00 |
| <i>c</i> | max. | 0,5 | 0,5 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,8 |
| <i>d</i> _a | max. | 6,0 | 7,2 | 8,2 | 10,2 | 12,2 | 14,7 | 16,7 | 18,7 |
| <i>d</i> _w | min. | 7,06 | 8,74 | 9,47 | 11,47 | 14,47 | 16,47 | 19,15 | 22,00 |
| <i>e</i> | min. | 8,63 | 10,89 | 11,94 | 14,20 | 17,59 | 19,85 | 22,78 | 26,17 |
| <i>k</i> | nom. | 3,5 | 4 | 4,8 | 5,3 | 6,4 | 7,5 | 8,8 | 10 |
| | max. | 3,875 | 4,375 | 5,175 | 5,675 | 6,85 | 7,95 | 9,25 | 10,75 |
| | min. | 3,125 | 3,625 | 4,425 | 4,925 | 5,95 | 7,05 | 8,35 | 9,25 |
| <i>k</i> _w | min. | 2,19 | 2,54 | 3,10 | 3,45 | 4,17 | 4,94 | 5,85 | 6,48 |
| <i>r</i> | min. | 0,20 | 0,25 | 0,25 | 0,4 | 0,4 | 0,6 | 0,6 | 0,6 |
| <i>s</i> | nom. = max. | 8,00 | 10,00 | 11,00 | 13,00 | 16,00 | 18,00 | 21,00 | 24,00 |
| | min. | 7,64 | 9,64 | 10,57 | 12,57 | 15,57 | 17,57 | 20,16 | 23,16 |
| <i>l</i> | | Range of standard lengths between the stepped bold lines | | | | | | | |
| nom. | min. | max. | | | | | | | |
| 10 | 9,25 | 10,75 | Screws with too short length Lengths to be agreed between the purchaser and the manufacturer in accordance with ISO 888 | | | | | | |
| 12 | 11,10 | 12,90 | | | | | | | |
| 16 | 15,10 | 16,90 | | | | | | | |
| 20 | 18,95 | 21,05 | | | | | | | |
| 25 | 23,95 | 26,05 | | | | | | | |
| 30 | 28,95 | 31,05 | | | | | | | |
| 35 | 33,75 | 36,25 | | | | | | | |
| 40 | 38,75 | 41,25 | | | | | | | |
| 45 | 43,75 | 46,25 | | | | | | | |
| 50 | 48,75 | 51,25 | | | | | | | |
| 55 | 53,50 | 56,50 | | | | | | | |
| 60 | 58,50 | 61,50 | | | | | | | |
| 65 | 63,50 | 66,50 | | | | | | | |
| 70 | 68,50 | 71,50 | | | | | | | |
| 80 | 78,50 | 81,50 | | | | | | | |
| 90 | 88,25 | 91,75 | | | | | | | |
| 100 | 98,25 | 101,75 | | | | | | | |
| 110 | 108,25 | 111,75 | | | | | | | |
| 120 | 118,25 | 121,75 | | | | | | | |
| 130 | 128,0 | 132,0 | | | | | | | |
| 140 | 138,0 | 142,0 | | | | | | | |
| 150 | 148,0 | 152,0 | | | | | | | |
| 160 | 156,0 | 164,0 | | | | | | | |
| — | — | — | | | | | | | |
| NOTE Sizes shown in brackets are non-preferred diameters. ^a <i>P</i> is the pitch of the thread. ^b <i>a</i> _{max} = 3 <i>P</i> and <i>a</i> _{min} = 1 <i>P</i> . | | | | | | | | | |

Table 2 — Dimensions - M18 to M36

Dimensions in millimetres

| Thread, <i>d</i> | | (M18) | M20 | (M22) | M24 | (M27) | M30 | (M33) | M36 |
|-----------------------|-------------|--|--|-------|-------|-------|-------|-------|-------|
| <i>p</i> ^a | | 2,5 | 2,5 | 2,5 | 3 | 3 | 3,5 | 3,5 | 4 |
| <i>a</i> ^b | max. | 7,5 | 7,5 | 7,5 | 9,0 | 9,0 | 10,5 | 10,5 | 12,0 |
| | min. | 2,5 | 2,5 | 2,5 | 3,0 | 3,0 | 3,5 | 3,5 | 4,0 |
| <i>c</i> | max. | 0,8 | 0,8 | 0,8 | 0,8 | 0,8 | 0,8 | 0,8 | 0,8 |
| <i>d</i> _a | max. | 21,2 | 24,4 | 26,4 | 28,4 | 32,4 | 35,4 | 38,4 | 42,4 |
| <i>d</i> _w | min. | 24,85 | 27,70 | 31,35 | 33,25 | 38,00 | 42,75 | 46,55 | 51,11 |
| <i>e</i> | min. | 29,56 | 32,95 | 37,29 | 39,55 | 45,20 | 50,85 | 55,37 | 60,79 |
| <i>k</i> | nom. | 11,5 | 12,5 | 14 | 15 | 17 | 18,7 | 21 | 22,5 |
| | max. | 12,40 | 13,40 | 14,90 | 15,90 | 17,90 | 19,75 | 22,05 | 23,55 |
| | min. | 10,60 | 11,60 | 13,10 | 14,10 | 16,10 | 17,65 | 19,95 | 21,45 |
| <i>k</i> _w | min. | 7,42 | 8,12 | 9,17 | 9,87 | 11,27 | 12,36 | 13,97 | 15,02 |
| <i>r</i> | min. | 0,6 | 0,8 | 0,8 | 0,8 | 1,0 | 1,0 | 1,0 | 1,0 |
| <i>s</i> | nom. = max. | 27,00 | 30,00 | 34,00 | 36,00 | 41,0 | 46,0 | 50,0 | 55,0 |
| | min. | 26,16 | 29,16 | 33,00 | 35,00 | 40,0 | 45,0 | 49,0 | 53,8 |
| <i>l</i> | | Range of standard lengths between the stepped bold lines | | | | | | | |
| nom. | min. | max. | <div style="text-align: center;"> <p>Screws with too short length</p> <p>ISO/FDIS 4018</p> <p>https://standards.iteh.ai/catalog/standards/sist/ac64739b-b4eb-49ca-9d01-e023f17bb015/iso-fdis-4018</p> </div> | | | | | | |
| 35 | 33,75 | 36,25 | | | | | | | |
| 40 | 38,75 | 41,25 | | | | | | | |
| 45 | 43,75 | 46,25 | | | | | | | |
| 50 | 48,75 | 51,25 | | | | | | | |
| 55 | 53,50 | 56,50 | | | | | | | |
| 60 | 58,50 | 61,50 | | | | | | | |
| 65 | 63,50 | 66,50 | | | | | | | |
| 70 | 68,50 | 71,50 | | | | | | | |
| 80 | 78,50 | 81,50 | | | | | | | |
| 90 | 88,25 | 91,75 | | | | | | | |
| 100 | 98,25 | 101,75 | | | | | | | |
| 110 | 108,25 | 111,75 | | | | | | | |
| 120 | 118,25 | 121,75 | | | | | | | |
| 130 | 128,0 | 132,0 | | | | | | | |
| 140 | 138,0 | 142,0 | | | | | | | |
| 150 | 148,0 | 152,0 | | | | | | | |
| 160 | 156,0 | 164,0 | | | | | | | |
| 180 | 176,0 | 184,0 | | | | | | | |
| 200 | 195,4 | 204,6 | | | | | | | |
| > 200 | | | Bolts specified in ISO 4016, or screws with lengths to be agreed between the purchaser and the manufacturer in accordance with ISO 888 | | | | | | |
| NOTE | | | Sizes shown in brackets are non-preferred diameters. | | | | | | |
| ^a | | | <i>P</i> is the pitch of the thread. | | | | | | |
| ^b | | | <i>a</i> _{max} = 3 <i>P</i> and <i>a</i> _{min} = 1 <i>P</i> . | | | | | | |
| ^c | | | Lengths to be agreed between the purchaser and the manufacturer in accordance with ISO 888. | | | | | | |

Table 3 — Dimensions - M39 to M64

Dimensions in millimetres

| Thread, <i>d</i> | | (M39) | M42 | (M45) | M48 | (M52) | M56 | (M60) | M64 |
|-----------------------|--|--------|--|-------|-------|-------|-------|-------|--------|
| <i>P</i> ^a | | 4 | 4,5 | 4,5 | 5 | 5 | 5,5 | 5,5 | 6 |
| <i>a</i> ^b | max. | 12,0 | 13,5 | 13,5 | 15,0 | 15,0 | 16,5 | 16,5 | 18,0 |
| | min. | 4,0 | 4,5 | 4,5 | 5,0 | 5,0 | 5,5 | 5,5 | 6,0 |
| <i>c</i> | max. | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 |
| <i>d</i> _a | max. | 45,4 | 48,6 | 52,6 | 56,6 | 62,6 | 67,0 | 71,0 | 75,0 |
| <i>d</i> _w | min. | 55,86 | 59,95 | 64,70 | 69,45 | 74,20 | 78,66 | 83,41 | 88,16 |
| <i>e</i> | min. | 66,44 | 71,30 | 76,95 | 82,60 | 88,25 | 93,56 | 99,21 | 104,86 |
| <i>k</i> | nom. | 25 | 26 | 28 | 30 | 33 | 35 | 38 | 40 |
| | max. | 26,05 | 27,05 | 29,05 | 31,05 | 34,25 | 36,25 | 39,25 | 41,25 |
| | min. | 23,95 | 24,95 | 26,95 | 28,95 | 31,75 | 33,75 | 36,75 | 38,75 |
| <i>k</i> _w | min. | 16,77 | 17,47 | 18,87 | 20,27 | 22,23 | 23,63 | 25,73 | 27,13 |
| <i>r</i> | min. | 1,0 | 1,2 | 1,2 | 1,6 | 1,6 | 2,0 | 2,0 | 2,0 |
| <i>s</i> | nom. = max. | 60,0 | 65,0 | 70,0 | 75,0 | 80,0 | 85,0 | 90,0 | 95,0 |
| | min. | 58,8 | 63,1 | 68,1 | 73,1 | 78,1 | 82,8 | 87,8 | 92,8 |
| <i>l</i> | | | Range of standard lengths between the stepped bold lines | | | | | | |
| nom. | min. | max. | | | | | | | |
| 80 | 78,50 | 81,50 | iTeh STANDARD PREVIEW (standards.iteh.ai) ISO/FDIS 4018 https://standards.iteh.ai/catalog/standards/sst/ac64739b-b4eb-49ca-9d01-e023ff7bb015/iso-fdis-4018 | | | | | | |
| 90 | 88,25 | 91,75 | | | | | | | |
| 100 | 98,25 | 101,75 | | | | | | | |
| 110 | 108,25 | 111,75 | | | | | | | |
| 120 | 118,25 | 121,75 | | | | | | | |
| 130 | 128,0 | 132,0 | | | | | | | |
| 140 | 138,0 | 142,0 | | | | | | | |
| 150 | 148,0 | 152,0 | | | | | | | |
| 160 | 156,0 | 164,0 | | | | | | | |
| 180 | 176,0 | 184,0 | | | | | | | |
| 200 | 195,4 | 204,6 | | | | | | | |
| > 200 | Bolts specified in ISO 4016, or screws with lengths to be agreed between the purchaser and the manufacturer in accordance with ISO 888 | | | | | | | | |

NOTE Sizes shown in brackets are non-preferred diameters.

^a *P* is the pitch of the thread.

^b $a_{max} = 3P$ and $a_{min} = 1P$.

5 Requirements and reference International Standards

The requirements specified in the International standards listed in [Table 4](#) shall apply.

Table 4 — Requirements and reference International Standards

| Material | | Steel | |
|--|--|--|-----------|
| General requirements | International Standard | ISO 8992 | |
| Thread | Tolerance class | 8g ^a | |
| | International Standard | ISO 965-1 | |
| Mechanical properties | Property class | M5 ≤ <i>d</i> ≤ M39 | 4.6, 4.8 |
| | Symbol | <i>d</i> > M39 | As agreed |
| | International Standard | ISO 898-1 | |
| Tolerances | Product grade | C (except for size M5 where $d_{w,min} = s_{min} - IT15$) | |
| | International Standard | ISO 4759-1 | |
| Finish – Coating | As processed (no coating) | | |
| | Electroplated coatings as specified in ISO 4042 | | |
| | Non-electrolytically applied zinc flake coatings as specified in ISO 10683 | | |
| | Hot dip galvanized coatings as specified in ISO 10684 | | |
| Surface integrity | Additional requirements or other finishes or coatings shall be agreed between the supplier and the purchaser | | |
| | Limits for surface discontinuities as specified in ISO 6157-1 | | |
| Acceptability | Acceptance inspection as specified in ISO 3269 | | |
| ^a Depending on the type of coating to be applied, another tolerance position of the thread may be specified for the uncoated fastener in accordance with the relevant coating standard. | | | |

6 Marking and labelling

6.1 Marking on product

Marking shall be as specified in ISO 898-1.

6.2 Labelling on package

Labelling on the package shall be in accordance with ISO 898-1, and shall include at least:

- the reference to this document, i.e. ISO 4018,
- the thread size *d* and nominal length *l*,
- the symbol of the property class,
- the type of "Finish – Coating",
- the manufacturer's and/or distributor's identification and/or name,
- the manufacturing lot number as specified in ISO 1891-4,
- the quantity of pieces in the package.