



**NSAI**  
Standards

Irish Standard  
I.S. EN ISO 3506-3:2009

# Mechanical properties of corrosion-resistant stainless steel fasteners - Part 3: Set screws and similar fasteners not under tensile stress (ISO 3506-3:2009)

## I.S. EN ISO 3506-3:2009

*Incorporating amendments/corrigenda issued since publication:*

*This document replaces:*  
EN ISO 3506-3:1997

*This document is based on:*  
EN ISO 3506-3:2009  
EN ISO 3506-3:1997

*Published:*  
15 November, 2009  
10 July, 1998

This document was published  
under the authority of the NSAI  
and comes into effect on:  
17 December, 2009

ICS number:  
21.060.10

**NSAI**  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E [standards@nsai.ie](mailto:standards@nsai.ie)  
W [NSAI.ie](http://NSAI.ie)

**Sales:**  
T +353 1 857 6730  
F +353 1 857 6729  
W [standards.ie](http://standards.ie)

Údarás um Chaighdeáin Náisiúnta na hÉireann

English Version

**Mechanical properties of corrosion-resistant stainless steel  
fasteners - Part 3: Set screws and similar fasteners not under  
tensile stress (ISO 3506-3:2009)**

Caractéristiques mécaniques des éléments de fixation en  
acier inoxydable résistant à la corrosion - Partie 3: Vis sans  
tête et éléments de fixation similaires non soumis à des  
contraintes de traction (ISO 3506-3:2009)

Mechanische Eigenschaften von Verbindungselementen  
aus nichtrostenden Stählen - Teil 3: Gewindestifte und  
ähnliche nicht auf Zug beanspruchte Verbindungselemente  
(ISO 3506-3:2009)

This European Standard was approved by CEN on 24 October 2009.

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 CEN Management Centre or to any CEN member.

This European Standard exists 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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

## **Contents**

Page

<b>Foreword.....</b>	<b>3</b>
----------------------	----------

## **Foreword**

This document (EN ISO 3506-3:2009) has been prepared by Technical Committee ISO/TC 2 "Fasteners" in collaboration with Technical Committee CEN/TC 185 "Fasteners", 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 2010, and conflicting national standards shall be withdrawn at the latest by May 2010.

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

This document supersedes EN ISO 3506-3:1997.

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

### **Endorsement notice**

The text of ISO 3506-3:2009 has been approved by CEN as a EN ISO 3506-3:2009 without any modification.

*This page is intentionally left BLANK.*

I.S. EN ISO 3506-3:2009  
**INTERNATIONAL  
STANDARD**

**ISO  
3506-3**

Second edition  
2009-11-15

---

---

**Mechanical properties of corrosion-resistant stainless steel fasteners —**

**Part 3:  
Set screws and similar fasteners not  
under tensile stress**

*Caractéristiques mécaniques des éléments de fixation en acier  
inoxydable résistant à la corrosion —*

*Partie 3: Vis sans tête et éléments de fixation similaires non soumis à  
des contraintes de traction*



Reference number  
ISO 3506-3:2009(E)

© ISO 2009

**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2009

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

<b>Foreword .....</b>	<b>iv</b>
<b>Introduction.....</b>	<b>v</b>
<b>1 Scope .....</b>	<b>1</b>
<b>2 Normative references .....</b>	<b>1</b>
<b>3 Designation, marking and finish.....</b>	<b>2</b>
3.1 Designation .....	2
3.2 Marking.....	3
3.3 Finish .....	4
<b>4 Chemical composition .....</b>	<b>4</b>
<b>5 Mechanical properties.....</b>	<b>5</b>
5.1 General .....	5
5.2 Proof torque of hexagon socket set screws.....	5
5.3 Hardness .....	6
<b>6 Test methods .....</b>	<b>6</b>
6.1 Proof torque test for hexagon socket set screws.....	6
6.2 Hardness test HB, HRB or HV for set screws.....	7
<b>Annex A (normative) Description of the groups and grades of stainless steels .....</b>	<b>8</b>
<b>Annex B (informative) Austenitic stainless steel composition specifications .....</b>	<b>11</b>
<b>Annex C (informative) Austenitic stainless steels for cold heading and extruding.....</b>	<b>13</b>
<b>Annex D (informative) Time-temperature diagram of intergranular corrosion in austenitic stainless steels, grade A2 (18/8 steels).....</b>	<b>15</b>
<b>Annex E (informative) Magnetic properties for austenitic stainless steels .....</b>	<b>16</b>
<b>Bibliography.....</b>	<b>17</b>

## 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 3506-3 was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 1, *Mechanical properties of fasteners*.

This second edition cancels and replaces the first edition (ISO 3506-3:1997), which has been technically revised.

ISO 3506 consists of the following parts, under the general title *Mechanical properties of corrosion-resistant stainless steel fasteners*:

- *Part 1: Bolts, screws and studs*
- *Part 2: Nuts*
- *Part 3: Set screws and similar fasteners not under tensile stress*
- *Part 4: Tapping screws*

## **Introduction**

In the preparation of this part of ISO 3506, special attention has been given to the fundamentally different property characteristics of the stainless steel fastener grades compared with those of carbon steel and low-alloy steel fasteners. Austenitic stainless steels are strengthened only by cold working and consequently the components do not have as homogeneous local material properties as hardened and tempered parts. These special features have been recognized in the elaboration of the hardness classes and the test procedures for mechanical properties.



# Mechanical properties of corrosion-resistant stainless steel fasteners —

## Part 3: Set screws and similar fasteners not under tensile stress

### 1 Scope

This part of ISO 3506 specifies the mechanical properties of set screws and similar fasteners not under tensile stress made of austenitic stainless steel, when tested over an ambient temperature range of 10 °C to 35 °C. Properties vary at higher or lower temperatures.

This part of ISO 3506 applies to set screws and similar fasteners:

- with nominal thread diameter  $1,6 \text{ mm} \leq d \leq 24 \text{ mm}$ ;
- of triangular ISO metric threads with diameters and pitches in accordance with ISO 68-1, ISO 261 and ISO 262;
- of any shape.

It does not apply to screws with special properties, such as weldability.

**NOTE** The designation system of this part of ISO 3506 can be used for sizes outside the limits given in this clause (e.g.  $d > 24 \text{ mm}$ ), provided that all applicable mechanical and physical requirements of the hardness classes are met.

This part of ISO 3506 does not define corrosion or oxidation resistance in particular environments.

The aim of this part of ISO 3506 is the classification of corrosion-resistant stainless steel fasteners into hardness classes.

Corrosion and oxidation performances and mechanical properties for use at elevated or sub-zero temperatures can be agreed on between the user and the manufacturer in each particular case. Annex D shows how the risk of intergranular corrosion at elevated temperatures depends on the carbon content.

All austenitic stainless steel fasteners are normally non-magnetic in the annealed condition; after cold working, some magnetic properties can be evident (see Annex E).

### 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 68-1, *ISO general purpose screw threads — Basic profile — Part 1: Metric screw threads*

ISO 261, *ISO general purpose metric screw threads — General plan*

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-