



NSAI
Standards

Irish Standard
I.S. EN ISO 6507-1:2018

Metallic materials - Vickers hardness test - Part 1: Test method (ISO 6507-1:2018)

I.S. EN ISO 6507-1:2018

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN ISO 6507-1:2018

Published:

2018-03-07

This document was published under the authority of the NSAI and comes into effect on:

2018-03-26

ICS number:

77.040.10

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

I.S. EN ISO 6507-1:2018 is the adopted Irish version of the European Document EN ISO 6507-1:2018, Metallic materials - Vickers hardness test - Part 1: Test method (ISO 6507-1:2018)

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This page is intentionally left blank

EUROPEAN STANDARD

EN ISO 6507-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2018

ICS 77.040.10

Supersedes EN ISO 6507-1:2005

English Version

Metallic materials - Vickers hardness test - Part 1: Test method (ISO 6507-1:2018)

Matériaux métalliques - Essai de dureté Vickers - Partie 1: Méthode d'essai (ISO 6507-1:2018)

Metallische Werkstoffe - Härteprüfung nach Vickers - Teil 1: Prüfverfahren (ISO 6507-1:2018)

This European Standard was approved by CEN on 18 January 2018.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

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



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	3

European foreword

This document (EN ISO 6507-1:2018) has been prepared by Technical Committee ISO/TC 164 “Mechanical testing of metals” in collaboration with Technical Committee ECISS/TC 101 “Test methods for steel (other than chemical analysis)” the secretariat of which is held by AFNOR.

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 September 2018, and conflicting national standards shall be withdrawn at the latest by September 2018.

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

This document supersedes EN ISO 6507-1:2005.

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 6507-1:2018 has been approved by CEN as EN ISO 6507-1:2018 without any modification.

This page is intentionally left blank

INTERNATIONAL STANDARD

ISO 6507-1

Fourth edition
2018-01

Metallic materials — Vickers hardness test —

Part 1: Test method

*Matériaux métalliques — Essai de dureté Vickers —
Partie 1: Méthode d'essai*



Reference number
ISO 6507-1:2018(E)

© ISO 2018

ISO 6507-1:2018(E)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2018

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, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	2
5 Symbols and designations	2
5.1 Symbols and designations used in this document.....	2
5.2 Designation of hardness number.....	3
6 Testing machine	3
6.1 Testing machine.....	3
6.2 Indenter.....	3
6.3 Diagonal measuring system.....	4
7 Test piece	4
7.1 Test surface.....	4
7.2 Preparation.....	4
7.3 Thickness.....	4
7.4 Tests on curved surfaces.....	4
7.5 Support of unstable test pieces.....	5
8 Procedure	5
8.1 Test temperature.....	5
8.2 Test force.....	5
8.3 Periodic verification.....	5
8.4 Test piece support and orientation.....	5
8.5 Focus on test surface.....	6
8.6 Test force application.....	6
8.7 Prevention of the effect of shock or vibration.....	6
8.8 Minimum distance between adjacent indentations.....	6
8.9 Measurement of the diagonal length.....	7
8.10 Calculation of hardness value.....	7
9 Uncertainty of the results	7
10 Test report	8
Annex A (normative) Minimum thickness of the test piece in relation to the test force and to the hardness	9
Annex B (normative) Tables of correction factors for use in tests made on curved surfaces	11
Annex C (normative) Procedure for periodic checking of the testing machine, diagonal measuring system and the indenter by the user	15
Annex D (informative) Uncertainty of the measured hardness values	17
Annex E (informative) Vickers hardness measurement traceability	24
Annex F (informative) CCM — Working group on hardness	28
Annex G (informative) Adjustment of Köhler illumination systems	29
Bibliography	30

ISO 6507-1:2018(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.

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 on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 3, *Hardness testing*.

This fourth edition cancels and replaces the third edition (ISO 6507-1:2005), which has been technically revised.

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

- requirements for testing hardmetals and other cemented carbides have been added;
- all references of indentation diagonals, <0,020 mm, have been removed;
- resolution requirements for the measuring system have been defined;
- the lower test force limit of the Vickers microhardness test has been expanded to 0,009 807 N;
- requirements for the periodic (weekly or daily) verifications of the testing machine are normative, and the maximum permissible bias value has been revised. Requirements for the maximum permissible error in measuring a reference indentation have been revised;
- recommendations for inspection and monitoring of the indenter have been added;
- requirements have been added for the approach velocity of the indenter prior to contact with the sample surface;
- the timing requirements for the test force application and the duration at maximum test force have been revised to indicate target time values;
- [Figure 2](#), which illustrates the requirements for the minimum distance between indentations, has been added, but the requirements have not changed;
- requirements have been added to the test report for reporting the test date and any hardness conversion method used;

- [Annex D](#) has been revised;
- [Annexes E, F](#) and [G](#) have been added concerning Vickers hardness measurement traceability, the CCM — Working group on hardness and adjustment of Köhler illumination systems.

A list of all parts in the ISO 6507 series can be found on the ISO website.

Metallic materials — Vickers hardness test —

Part 1: Test method

1 Scope

This document specifies the Vickers hardness test method for the three different ranges of test force for metallic materials including hardmetals and other cemented carbides (see [Table 1](#)).

Table 1 — Ranges of test force

Ranges of test force, F N	Hardness symbol	Designation
$F \geq 49,03$	$\geq \text{HV } 5$	Vickers hardness test
$1,961 \leq F < 49,03$	HV 0,2 to $< \text{HV } 5$	Low-force Vickers hardness test
$0,009\ 807 \leq F < 1,961$	HV 0,001 to $< \text{HV } 0,2$	Vickers microhardness test

The Vickers hardness test is specified in this document for lengths of indentation diagonals between 0,020 mm and 1,400 mm. Using this method to determine Vickers hardness from smaller indentations is outside the scope of this document as results would suffer from large uncertainties due to the limitations of optical measurement and imperfections in tip geometry.

A periodic verification method is specified for routine checking of the testing machine in service by the user.

For specific materials and/or products, particular International Standards exist.

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 6507-2:2017, *Metallic materials — Vickers hardness test — Part 2: Verification and calibration of testing machines*

ISO 6507-3, *Metallic materials — Vickers hardness test — Part 3: Calibration of reference blocks*

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:

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

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](#)
-