



SLOVENSKI STANDARD SIST EN ISO 4545-1:2006

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Kovinski materiali – Preskus trdote po Knoopu – 1. del: Preskusna metoda (ISO 4545-1:2005)

Metallic materials - Knoop hardness test - Part 1: Test method (ISO 4545-1:2005)

Metallische Werkstoffe - Härteprüfung nach Knoop - Teil 1: Prüfverfahren (ISO 4545-1:2005)

Matériaux métalliques - Essai de dureté Knoop - Partie 1: Méthode d'essai (ISO 4545-1:2005)

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77.040.10 Mehansko preskušanje kovin Mechanical testing of metals

SIST EN ISO 4545-1:2006

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 4545-1

November 2005

ICS 77.040.10

English Version

**Metallic materials - Knoop hardness test - Part 1: Test method
(ISO 4545-1:2005)**

Matériaux métalliques - Essai de dureté Knoop - Partie 1:
Méthode d'essai (ISO 4545-1:2005)

Metallische Werkstoffe - Härteprüfung nach Knoop - Teil 1:
Prüfverfahren (ISO 4545-1:2005)

This European Standard was approved by CEN on 28 October 2005.

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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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of 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.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

EN ISO 4545-1:2005 (E)**Foreword**

This document (EN ISO 4545-1:2005) has been prepared by Technical Committee ISO/TC 164 "Mechanical testing of metals" in collaboration with Technical Committee ECISS/TC 1 "Steel - Mechanical testing", 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of an identical text or by endorsement, at the latest by May 2006, and conflicting national standards shall be withdrawn at the latest by May 2006.

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.

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The text of ISO 4545-1:2005 has been approved by CEN as EN ISO 4545-1:2005 without any modifications.

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INTERNATIONAL
STANDARD

ISO
4545-1

First edition
2005-11-15

**Metallic materials — Knoop hardness
test —**

**Part 1:
Test method**

*Matériaux métalliques — Essai de dureté Knoop —
Partie 1: Méthode d'essai*
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ISO 4545-1:2005(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 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 4545-1 was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 3, *Hardness testing*.

ISO 4545-1 cancels and replaces ISO 4545:1993, which has been technically revised.

ISO 4545 consists of the following parts, under the general title *Metallic materials — Knoop hardness test*:

- *Part 1: Test method* [SIST EN ISO 4545-1:2006](https://standards.iteh.ai/catalog/standards/sist/e088a25e-937e-4d04-bd9d-e01776ce8418/sist-en-iso-4545-1-2006)
- *Part 2: Verification and calibration of testing machines*
- *Part 3: Calibration of reference blocks*
- *Part 4: Table of hardness values*

Introduction

The periodic checking of the testing machine described in informative Annex A is good metrological practice. It is intended to make this annex normative in the next revision of this part of ISO 4545.

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Metallic materials — Knoop hardness test —

Part 1: Test method

1 Scope

This part of ISO 4545 specifies the Knoop hardness test method for metallic materials, for test forces from 0,098 07 N to 19,614 N. The method is recommended only for indentations with diagonals $\geq 0,020$ mm.

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 4545-2:2005, *Metallic materials — Knoop hardness test — Part 2: Verification and calibration of testing machines*

ISO 4545-3:2005, *Metallic materials — Knoop hardness test — Part 3: Calibration of reference blocks*

ISO 4545-4, *Metallic materials — Knoop hardness test — Part 4: Table of hardness values*

3 Principle

A diamond indenter, in the form of a rhombic-based pyramid with angles α and β between opposite faces respectively equal to $172,5^\circ$ and 130° at the vertex, is forced into the surface of a test piece followed by measurement of the long diagonal, d , of the indentation remaining in the surface after removal of the test force, F (see Figures 1 and 2).