



# SLOVENSKI STANDARD

## SIST EN 23878:2000

01-december-2000

---

### Hardmetals - Vickers hardness test (ISO 3878:1983)

Hardmetals - Vickers hardness test (ISO 3878:1983)

Hartmetalle - Vickers-Härteprüfung (ISO 3878:1983)

Métaux-durs - Essai de dureté Vickers (ISO 3878:1983)

Ta slovenski standard je istoveten z: **EN 23878:1993**

[SIST EN 23878:2000](https://standards.iteh.ai/catalog/standards/sist/fb81aa18-0b7d-43b8-93d1-80ab7998d812/sist-en-23878-2000)

<https://standards.iteh.ai/catalog/standards/sist/fb81aa18-0b7d-43b8-93d1-80ab7998d812/sist-en-23878-2000>

#### **ICS:**

77.040.10	Mehansko preskušanje kovin	Mechanical testing of metals
77.160	Metalurgija prahov	Powder metallurgy

**SIST EN 23878:2000**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 23878:2000

<https://standards.iteh.ai/catalog/standards/sist/fb81aa18-0b7d-43b8-93d1-80ab7998d812/sist-en-23878-2000>

EUROPEAN STANDARD

EN 23878:1993

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 1993

UDC 669.018.25:620.178.152.341

Descriptors: Powder metallurgy, hard metals, mechanical tests, hardness tests, Vickers hardness

English version

**Hardmetals - Vickers hardness test  
(ISO 3878:1983)**Métaux-durs -  
(ISO 3878:1983)

Essai de dureté Vickers

Hardmetalle -  
(ISO 3878:1983)

Vickers-Härteprüfung

**STANDARD PREVIEW**  
**(standards.iteh.ai)**SIST EN 23878:2000<https://standards.iteh.ai/catalog/standards/sist/b81aa18-0b7d-43b8-93d1-80ab7998d812/sist-en-23878-2000>

This European Standard was approved by CEN on 1993-04-02. 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 Central Secretariat or to any CEN member.

The European Standards exist 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**CEN**European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Page 2  
EN 23878:1993

## Foreword

In 1992 ISO 3878:1983 "Hardmetals - Vickers hardness test" was submitted to the CEN Primary Questionnaire procedure.

Following the positive result of the CEN/CS Proposal ISO 3878:1983 was submitted to the CEN Formal Vote. The result of the Formal Vote was positive.

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 October 1993, and conflicting national standards shall be withdrawn at the latest by October 1993.

According to the Internal Regulations of CEN/CENELEC, the following countries are bound to implement this European Standard :

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

### Endorsement notice

[SIST EN 23878:2000](#)

[https://standards.iteh.ai/catalog/standards/sist/fb81aa18-0b7d-43b8-93d1-](https://standards.iteh.ai/catalog/standards/sist/fb81aa18-0b7d-43b8-93d1-80d1-70981817351a/sist-en-23878-2000)

The text of the International Standard ISO 3878:1983 was approved by CEN as a European Standard without any modification.

NOTE: The European references to international publications are given in annex ZA (normative).

**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 (including amendments).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 146		Metallic materials - Hardness test - Verification of Vickers hardness testing machines HV 0,2 to HV 100	-----	----
ISO 409-1		Metallic materials - Hardness test - Tables of Vickers hardness values for use in tests made on flat surfaces - Part 1: HV 5 to HV 100	-----	----
ISO 409-2		Metallic materials - Hardness test - Tables of Vickers hardness values for use in tests made on flat surfaces - Part 2: HV 0,2 to less than HV 5	-----	----
ISO 4505		Hardmetals - Metallographic determination of porosity and uncombined carbon	EN 24505	
ISO 6507-1		Metallic materials - Hardness test - Vickers test - Part 1: HV 5 to HV 100	-----	----
ISO 6507-2		Metallic materials - Hardness test - Vickers test - Part 2: HV 0,2 to less than HV 5	-----	----

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 23878:2000

<https://standards.iteh.ai/catalog/standards/sist/fb81aa18-0b7d-43b8-93d1-80ab7998d812/sist-en-23878-2000>

---

# International Standard 3878

---

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

---

## Hardmetals — Vickers hardness test

*Métaux-durs — Essai de dureté Vickers*

Second edition — 1983-08-15

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 23878:2000](#)

<https://standards.iteh.ai/catalog/standards/sist/fb81aa18-0b7d-43b8-93d1-80ab7998d812/sist-en-23878-2000>

---

UDC 669.018.25 : 620.178.152.341

Ref. No. ISO 3878-1983 (E)

**Descriptors** : powder metallurgy, hardmetals, carbides, tests, hardness tests, Vickers hardness.

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3878 was developed by Technical Committee ISO/TC 119, *Powder metallurgy*, and was circulated to the member bodies in August 1982.

It has been approved by the member bodies of the following countries :

Austria	Italy	Sweden
China	Korea, Rep. of	Switzerland
Czechoslovakia	Poland	Thailand
Egypt, Arab Rep. of	Romania	United Kingdom
France	South Africa, Rep. of	USA
Germany, F.R.	Spain	USSR

No member body expressed disapproval of the document.

This second edition cancels and replaces the first edition (i.e. ISO 3878-1976).



# Hardmetals — Vickers hardness test

## 1 Scope and field of application

This International Standard specifies the method of Vickers hardness test for hardmetals.

## 2 References

ISO 146, *Metallic materials — Hardness test — Verification of Vickers hardness testing machines HV 0,2 to HV 100.*<sup>1)</sup>

ISO 409, *Metallic materials — Hardness test — Tables of Vickers hardness values for use in tests made on flat surfaces*

— Part 1 : HV 5 to HV 100.

— Part 2 : HV 0,2 to less than HV 5.

ISO 4505, *Hardmetals — Metallographic determination of porosity and uncombined carbon.*

ISO 6507, *Metallic materials — Hardness test — Vickers test*

— Part 1 : HV 5 to HV 100.

— Part 2 : HV 0,2 to less than HV 5.

## 3 Principle

See ISO 6507/1 and ISO 6507/2.

## 4 Symbols and designations

See ISO 6507/1 and ISO 6507/2.

## 5 Apparatus

**5.1 Testing machine**, capable of applying a predetermined force or forces within the range of 9,807 N to 490,3 N (HV 1 to HV 50), in accordance with ISO 146.

**5.2 Indenter**, a diamond in the form of a right pyramid with a square base, in accordance with ISO 146.

**5.3 Measuring device**, capable of measuring indentation diagonals to the following accuracy :

$d < 100 \mu\text{m} : \pm 0,2 \mu\text{m};$

$100 \mu\text{m} < d < 200 \mu\text{m} : \pm 1,0 \mu\text{m};$

$d > 200 \mu\text{m} : \pm 0,5 \%$ .

## 6 Test pieces

**6.1** The thickness of the layer removed from the surface of the test piece shall be not less than 0,2 mm.

The test shall be carried out on a surface which is free from foreign matter and, in particular, completely free from lubricants. The test surface shall be polished in accordance with ISO 4505.

Preparation shall be carried out in such a way that any alteration of the surface hardness, for example due to heat or cold working, is minimized.

When determining the hardness of a test piece with a curved surface, a flat surface shall be prepared on the test piece on which to carry out the test.

**6.2** The prepared test piece shall be at least 1 mm thick.

The thickness of the test piece shall be sufficient to allow the test to be carried out without breaking or deforming the test piece under the chosen force. For test pieces of small cross-section or of irregular shape, it may be necessary to provide some form of additional support, for example mounting in plastic material.

## 7 Procedure

**7.1** The test force shall be within the range of 9,807 N (HV 1) to 490,3 N (HV 50), the preferred force being 294,2 N (HV 30).

**7.2** The test piece shall be placed firmly on a rigid support. The contact surfaces shall be clean and free from foreign matter. It is important that the test piece is placed firmly on the support so that displacement cannot occur during the test.

1) At present at the stage of draft. (Revision of ISO 146.)