# SLOVENSKI STANDARD
# SIST EN ISO 4498:2010

**01-september-2010**

**Nadomešča:**
**SIST EN ISO 4498:2007**

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**Sintrane kovine brez trdin - Določevanje trdote in mikrotrdote (ISO 4498:2010)**

Sintered metal materials, excluding hardmetals - Determination of apparent hardness and microhardness (ISO 4498:2010)

Metallische Sinterwerkstoffe, ausgenommen Hartmetalle - Bestimmung der Sinterhärte und der Mikrohärte (ISO 4498:2010)



Matériaux métalliques frittés, à l'exclusion des métaux-durs - Détermination de la dureté apparente et de la microdureté (ISO 4498:2010)



**Ta slovenski standard je istoveten z:** **EN ISO 4498:2010**

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**ICS:**

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

**SIST EN ISO 4498:2010** **en,fr**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN ISO 4498

June 2010

ICS 77.160; 77.040.10

Supersedes EN ISO 4498:2007

English Version

# Sintered metal materials, excluding hardmetals - Determination of apparent hardness and microhardness (ISO 4498:2010)

Matériaux métalliques frittés, à l'exclusion des métaux-durs - Détermination de la dureté apparente et de la microdureté (ISO 4498:2010)

Sintermetalle, ausgenommen Hartmetalle - Bestimmung der Sinterhärte und der Mikrohärte (ISO 4498:2010)

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COMITÉ EUROPÉEN DE NORMALISATION
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# Foreword

This document (EN ISO 4498:2010) has been prepared by Technical Committee ISO/TC 119 "Powder metallurgy".

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of an identical text or by endorsement, at the latest by December 2010, and conflicting national standards shall be withdrawn at the latest by December 2010.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.

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**Endorsement notice**

The text of ISO 4498:2010 has been approved by CEN as a EN ISO 4498:2010 without any modification.

INTERNATIONAL STANDARD

**ISO 4498**

Second edition
2010-06-15

# Sintered metal materials, excluding hardmetals — Determination of apparent hardness and microhardness

*Matériaux métalliques frittés, à l'exclusion des métaux-durs — Détermination de la dureté apparente et de la microdureté*



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## 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 4498 was prepared by Technical Committee ISO/TC 119, *Powder metallurgy*, Subcommittee SC 3, *Sampling and testing methods for sintered metal materials (excluding hardmetals)*.



This second edition cancels and replaces the first edition (ISO 4498:2005), of which it constitutes a minor revision.

# Introduction

Sintered metal materials generally have a porous structure. Therefore, they can be understood as composite metal/pore materials. That is why this International Standard describes two procedures to determine their hardness:

— Procedure 1 for the macrohardness (this is the apparent hardness);

— Procedure 2 for the microhardness (this is the hardness of the metallic phase only).

Tests in Procedure 1 determine Vickers, Brinell and/or Rockwell macrohardnesses; their acronyms are: HV, HBW and HR. These tests determine the apparent hardness (macrohardness) of the materials because indentations generally include both the solid phase and a number of pores. The usual test forces applied to an indenter are from 10 N to 2 000 N.

The apparent hardness value is often used as an expression of the mechanical strength of the material as a whole; it is usually lower than that of a solid material of the same composition and metallurgical condition. However, this does not imply that the functional characteristics (for example wear resistance) are necessarily inferior to those of an equivalent full-density material.

The apparent hardness is a macrostructural property. It characterizes the material taken as a whole.



Tests in Procedure 2 determine the Vickers and/or Knoop microhardnesses of the material; their acronyms are: HV$a$ and HK$a$[1]. The usual test forces applied to an indenter are from 0,147 N to 1,960 N for Vickers, and 0,981 N for Knoop.



The microhardness is a microstructural property used to control chemical composition, heat treatment or surface treatment. For these purposes, it is necessary to ensure that hardness test indentations are small enough not to include any visible pores, but only the solid phase.

1) Where $a$ is the test load, in kilograms.