

## भारतीय मानक ब्यूरो

**DRAFT FOR WIDE CIRCULATION**

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भारतीय मानक मसौदा  
धात्विक सामग्री - विकर्स कठोरता परीक्षण  
भाग 1: परीक्षण पद्धति  
(IS 1501 (Part 1) का छठा पुनरीक्षण)

*Draft Indian Standard*  
**Metallic Materials — Vickers Hardness Test**  
**Part 1: Test Method**  
(Sixth Revision of IS 1501 (Part 1))

ICS 77.040.10

Mechanical Testing of Metals  
Sectional Committee, MTD 03

Last date of comment:  
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### NATIONAL FOREWORD

This draft standard (Sixth Revision) is identical to ISO 6507-1 : 2023 Metallic materials — Vickers hardness test Part 1: Test method' issued by the International Organization for Standardization (ISO), and subject to its finalization, is to be adopted by the Bureau of Indian Standards on the recommendation of the Mechanical Testing of Metals Sectional Committee and approval of the Metallurgical Engineering Division Council.

This standard was originally published in 1959 and subsequently revised in 1968, 1984, 2002, 2013 and 2020. The sixth revision of this standard has been undertaken to align with the latest version ISO 6507-1 : 2023 to harmonize it with the latest developments that have taken place at international level.

This Indian Standard is published in three parts. Other parts in this series are:

- Part 2 Verification and calibration of testing machines
- Part 3 Calibration of reference blocks
- Part 4 Tables of hardness values

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

- 1) Scope revised to include testing on metallic coatings and other inorganic coatings;
- 2) added [7.6](#) - Metallic and other inorganic coatings;
- 3) requirements have been added to the test report for reporting the surface curvature, if the curvature correction is applicable;
- 4) added [Annex H](#) to cover coatings specific requirements;
- 5) updated references.

The text of ISO standard has been approved as suitable for publication as in Indian Standard without deviations. Certain terminologies and conventions are, however, not identical with those used in Indian Standard. Attention is especially drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, it should be read as 'Indian Standard'
- b) Comma (,) has been used as a decimal marker while in Indian Standards the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exists. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the edition indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 6507-2:2018, Metallic materials — Vickers hardness test — Part 2: Verification and calibration of testing machines	IS 1501 (Part 2) : 2020 / ISO 6507-2 : 2018 Metallic Materials — Vickers Hardness Test Part 2 Verification and Calibration of Testing Machines ( <i>Fifth Revision</i> )	Identical
ISO 6507-3, Metallic materials — Vickers hardness test — Part 3: Calibration of reference blocks	IS 1501 (Part 3) : 2020 / ISO 6507-3 : 2018 Metallic Materials — Vickers Hardness Test Part 3 Calibration of Reference Blocks ( <i>Fifth Revision</i> )	Identical

In reporting the result of a test or analysis made in accordance with this standard, is to be rounded off, it shall be done in accordance with IS 2 : 2022 'Rules for rounding off numerical-values (*second revision*)'.

The scope of the standard is as follows:

## **SCOPE**

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

**Table 1 — Ranges of test force**

<b>Ranges of test force, <math>F_N</math></b>	<b>Hardness symbol</b>	<b>Designation</b>
$F \geq 49,03$	$\geq HV 5$	Vickers hardness test
$1.961 \leq F < 49.03$	$HV 0.2$ to $< HV 5$	Low-force Vickers hardness test
$0,009\ 807 \leq F < 1.961$	$HV 0.001$ to $< HV 0.2$	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.

The Vickers hardness specified in this document is also applicable for metallic and other inorganic coatings including electrodeposited coatings, autocatalytic coatings, sprayed coatings and anodic coatings on aluminium.

This document is applicable to measurements normal to the coated surface and to measurements on cross-sections, provided that the characteristics of the coating (smoothness, thickness, etc.) permit accurate readings of the diagonal of the indentation.

This document is not applicable for coatings with thickness less than 0.030 mm when testing normal to the coating surface. This standard is not applicable for coatings with thickness less than 0.100 mm when testing a cross-section of the coating. [ISO 14577-1](#) can be used for the determination of hardness from smaller indentations.”

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

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

**The complete document/text of ISO 6507-1 : 2023 Metallic materials — Vickers hardness test Part 1: Test method' may be made available, on request to:**

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