

ICS 19.060; 77.040.10
CCS N 71



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 4340.3-2025

Replacing GB/T 4340.3-2012

**Metallic materials - Vickers hardness test - Part 3: Calibration of
reference blocks**
(English Translation)

Issued on: March 28, 2025

Implemented on: October 1, 2025

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative references	
3 Terms and Definitions	
4 Manufacture of standard blocks	
4.1 General	
4.2 Thickness	
4.3 Test surface area	
4.4 Magnetism	
4.5 Flatness and parallelism	
4.6 Surface roughness	
4.7 Preventing the test surface from being re-ground	
5 Standard Vickers hardness tester	
5.1 General	
5.2 Direct Test	
5.3 Traceability of inspection devices	
5.4 Test force	
5.5 Indenter	
5.6 Diagonal measurement system	
6 Calibration Procedure	
7 Number of indentations	
8 Hardness uniformity	
8.1 Relative uniformity	
8.2 Measurement uncertainty	
9 Signs	
10 Calibration Certificate	
11 Validity	
Appendix A (Informative) Adjustment of the Kohler Illumination System	
A.1 General Principles	
A.2 Kohler Illumination System	

Appendix B (Informative) Measurement uncertainty of the average hardness value of the standard block

B.1 Overview

B.2 Direct inspection of standard machine

B.3 Indirect inspection of standard machines

B.4 Measurement uncertainty of standard blocks

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is part 3 of GB/T 4340 "Vickers hardness test for metallic materials". GB/T 4340 has been published in the following parts.

- Part 1: Test methods;
- Part 2: Verification and calibration of hardness testers;
- Part 3: Calibration of standard hardness blocks;
- Part 4: Hardness value table.

This document replaces GB/T 4340.3-2012 "Metallic materials Vickers hardness test Part 3: Calibration of standard hardness blocks" and Compared with GB/T 4340.3-2012, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- Added requirements for the test surface area of standard blocks (see 4.3);
- Changed the test requirements of the standard Vickers hardness machine test force, and changed the accuracy of the test force of the standard machine under different test conditions Requirements (see 5.4, 4.4 of the 2012 edition);
- Changed the lower limit of the test force range of the standard Vickers hardness machine from "0.09807N" to "0.009807N" (see Table 1, Table 1 of the 2012 edition);
- The requirements for the geometric deviation of the indenter are added to the calibration certificate (see 5.5);
- Added the requirements for the maximum expanded uncertainty of the standard line scale (see 5.6);
- Changed the upper limit of the diagonal measurement range from "0.040mm" to "0.060mm" (see Table 2, 2012 Edition)

Table 2);

--- Changed the requirements for test force duration and indenter approach speed (see Table 3, Table 3 of the 2012 edition);

--- The maximum allowable value of uniformity has been changed (see Tables 4 to 8, Table 4 of the 2012 edition).

This document is modified to adopt ISO 6507-3:2018 "Metallic materials Vickers hardness test Part 3: Calibration of standard hardness blocks".

Compared with ISO 6507-3:2018, this document has made the following structural adjustments.

--- Appendix A corresponds to Appendix B of ISO 6507-3:2018;

--- Appendix B corresponds to Appendix A of ISO 6507-3:2018.

This document contains technical differences from ISO 6507-3:2018. The clauses involved in these differences have been marked in the outer margins.

The technical differences and their causes are as follows.

--- ISO 6507-1 was replaced by GB/T 4340.1, which is a modified international standard [see the first paragraph of Chapter 6, 10d)] to adapt to Our country's technological conditions;

--- ISO 6507-2 (see 5.1, 5.5) was replaced by GB/T 4340.2, which is a modified international standard, to adapt to my country's technology condition;

--- GB/T 13634, which is equivalent to the international standard, replaced ISO 376 (see 5.4) to adapt to my country's technical conditions.

The following editorial changes were made to this document.

--- In Table 3, the "approach speed of the pressure head" when " $F < 1.961$ " is corrected to 0.015~0.07, and the "approach speed of the pressure head" when " $F \geq 49.03$ " is corrected to 0.015~0.07.

Speed" was corrected to "0.05~0.2";

---Added table titles for each table;

---Removed references.

Introduction

GB/T 4340 "Vickers hardness test for metallic materials" aims to standardize the test method and inspection of the Vickers hardness of metallic materials.

The method, the calibration method of standard materials for indirect inspection of test

instruments and the calculation table of Vickers hardness values are intended to consist of the following four parts.

--- Part 1: Test method. The purpose is to establish the procedures and methods to be followed for Vickers hardness testing.

--- Part 2: Inspection and calibration of hardness testers. The purpose is to specify the technical requirements and inspection and calibration requirements of Vickers hardness testers.

method.

--- Part 3: Calibration of standard hardness blocks. The purpose is to specify the technical requirements and calibration methods that standard Vickers hardness blocks must meet.

--- Part 4: Hardness value table. The purpose is to give the calculated value of Vickers hardness of metallic materials.

Vickers hardness test of metal materials Part 3: Calibration of standard hardness blocks

1 Scope

This document specifies the standard hardness blocks (hereinafter referred to as standard blocks) used for indirect testing of Vickers hardness testers as described in GB/T 4340.2.

Manufacturing requirements and calibration methods.

This document is only applicable to the calibration of standard blocks with a diagonal length of not less than 0.020 mm.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 4340.1 Metallic materials Vickers hardness test Part 1: Test method (GB/T 4340.1-2024, ISO 6507-1:2023,MOD) GB/T 4340.2 Metallic materials Vickers hardness test Part 2: Verification and calibration of hardness testers (GB/T 4340.2-2025,ISO 6507-2:2018,MOD) GB/T 13634 Calibration of standard dynamometers for uniaxial testing machines for metallic materials (GB/T 13634-2019, ISO 376.

2011, IDT)