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

GB/T 4340.2-2025

**Metallic materials - Vickers hardness test - Part 2: Verification
and calibration of testing machines**
(English Translation)

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Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020 Directives

for Standardization - Part 1.Rules for the Structure and Drafting of Standardizing

Documents.

This document is Part 2 of GB/T 4340 Metallic Materials - Vickers Hardness Test. GB/T 4340

has issued the following parts.

---Part 1.Test Method;

---Part 2.Verification and Calibration of Testing Machines;

---Part 3.Calibration of Hardness Reference Blocks;

---Part 4.Tables of Hardness Values.

This document serves as a replacement for GB/T 4340.2-2012 Metallic Materials - Vickers Hardness Test - Part 2.Verification and Calibration of Testing Machines. In comparison with GB/T 4340.2-2012, apart from structural adjustments and editorial modifications, the main technical changes are as follows.

---The Scope is modified, and content of hardness testers, to which, this document does not apply, is added (see Chapter 1; Chapter 1 of Version 2012);

---The test method for when the test force is not affected by the spindle position is modified, and a simplified method for testing the test force at only one position of the spindle is added (see 5.2.1; 4.2.1 of Version 2012);

---The requirements for test force deviation are modified, and the maximum permissible relative deviation of the test force for the small force range of "0.009807 N ~ 0.09807 N" is added to the original requirements (see Table 1; Table 1 of Version 2012);

---The requirements for the indenter verification instruments are added (see 5.3.2);

---For the measurement of the intersection line of the indenter top, the minimum force value is modified from "0.09807 N" into "0.009807 N" (see Table 2; Table 2 of Version 2012);

---The requirements for indenter verification / calibration certificate are added (see 5.3.6 and 8.2);

---The requirements for verification and calibration of diagonal measurement system are modified (see 5.4; 4.4 of Version 2012);

---The requirements for maximum permissible error of standard indentations are modified

(see 6.3; 5.2 of Version 2012);

Metallic Materials - Vickers Hardness Test - Part 2.

Verification and Calibration of Testing Machines

1 Scope

This document specifies the verification and calibration methods for Vickers hardness tester and diagonal measurement system used to determine Vickers hardness in accordance with GB/T

4340.1.

The direct verification method specified in this document applies to the verification and calibration of the hardness tester, indenter and diagonal measurement system. The indirect verification method applies to the verification of the entire Vickers hardness tester using a standard block.

If the Vickers hardness tester is also used for hardness testing by other methods, then, the Vickers hardness tester shall be respectively verified in accordance with the corresponding methods.

This document also applies to the verification and calibration of portable Vickers hardness testers.

This document does not apply to hardness testers that measure hardness using other different

principles (for example, ultrasonic impedance method).

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only

versions with a specified date are applicable to this document. In terms of references without a

specified date, the latest version (including all the modifications) is applicable 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 4340.3 Metallic Materials - Vickers Hardness Test - Part 3. Calibration of Reference Blocks (GB/T 4340.3-2025, ISO 6507-3.2018, MOD)

GB/T 13634 Metallic Materials - Calibration of Force-proving Instruments Used for the Verification of Uniaxial Testing Machines (GB/T 13634-2019, ISO 376.2011, IDT)

3 Terms and Definitions

This document does not have terms or definitions that need to be defined.

4 General Requirements

Before verification, the Vickers hardness tester (hereinafter referred to as the "hardness tester")

shall be checked to ensure that it is correctly installed in accordance with the manufacturer's instructions.

The following items shall be particularly checked.

- a) The spindle fixing the indenter can slide in its guide rail without friction or excessive lateral deflection.
- b) The indenter shank is securely mounted in the spindle bore.
- c) The application and removal of the test force are free from shock, vibration or overload that may affect the measurement results.
- d) Diagonal measurement system.
 - 1) If the diagonal measurement system is integrated into the main unit, then, the transition from test force removal to indentation measurement shall not affect the reading;
 - 2) The illumination device of the measuring microscope produces uniform illumination throughout the entire field of view, providing sufficient contrast between the indentation and the surrounding surface to allow clear identification of its boundaries;
 - 3) Where necessary, the center of the indentation shall be located in the center of