



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

GB/T 17394.3-2022

**Metallic materials - Leeb hardness test - Part 3: Calibration of
reference test blocks**

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Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents.

This Document is Part 3 of GB/T 17394 Metallic Materials - Leeb Hardness Test. GB/T 17394

consists of the following parts:

- Part 1: Test Method;
- Part 2: Verification and Calibration of Hardness Tester;
- Part 3: Calibration of Reference Blocks;
- Part 4: Tables of Hardness Values Conversation.

This Document replaced GB/T 17394.3-2012 Metallic Materials - Leeb Hardness Test - Part 3: Calibration of Reference Blocks. Compared with GB/T 173294.3-2012, the major technical

changes are as follows:

- Modify the calculation formula and technical indicators of the hardness range and hardness uniformity of standard Leeb hardness blocks (see 4.2, 8.2 of this Edition; 3.3 and 7.1 of the 2012 Edition);
- Modify the technical indicators, such as geometric dimensions, flatness, parallelism and surface roughness of standard Leeb hardness block; and add minimum quality requirements (see 4.3, 4.5 and 4.6 of this Edition; 3.2, 3.3 and 7.1 of the 2012 Edition);
- Modify the requirements for the standard machine used to calibrate standard Leeb hardness blocks (see Clause 5 and Annex B of this Edition; Clause 4 of the 2012 Edition);
- Modify the requirements for calibration method, number of indentations and validity (see Clauses 6, 7, and 10 of this Edition; Clauses 5, 6, and 9 of the 2012 Edition);
- Modify the geometric dimensions and technical requirements of the standard block; and change it to an informative annex (see Annex A of this Edition; 3.2 of the 2012 Edition);
- Add the requirements for standard machine performance parameters based on the principle of Leeb hardness speed measurement (see Annex B of this Edition);
- Modify the measurement uncertainty of the hardness value of the standard block (see Annex C of this Edition; Annex A of the 2012 Edition);
- Add the method of calibrating the standard block using a standard machine based on the non-Leeb hardness test principle (see Annex D of this Edition).

This Document modifies and adopts ISO 16895-3:2015 Metallic Materials - Leeb Hardness Test - Part 3: Calibration of Reference Test Blocks.

Compared with ISO 16895-3:2015, this Document has the following technical differences; the

terms to which these differences relate are indicated by a single vertical line () in their outer

margins. The specific technical differences and their causes are as follows:

- Replace ISO16859-1:2015 with GB/T 17394.1 (see Clause 1, 6.1);
- Replace ISO 16859-2:2015 with GB/T 17394.2-2022 that adopts the revises international standard (see Clause 1, 5.1);
- Replace ISO/IEC 17025:2005 with GB/T 27025-2008 that adopts the revises international standard (see 5.2.1);
- Replace the example of the standard block listed in Annex C of ISO16859-3:2015 by the conventional standard block of China (see Annex A);
- Add Annex D (normative) "Conversion Table between Vickers Hardness Value/Brinell Hardness Value and Leeb Hardness Value Calibrated by Standard Block".

Please note some contents of this Document may involve patents. The issuing agency of this

Document shall not assume the responsibility to identify these patents.

This Document was proposed by China Machinery Industry Federation.

This Document shall be under the jurisdiction of National Technical Committee on Tester of Standardization Administration of China (SAC/TC 122).

Drafting organizations of this Document: Quanzhou Fengze Donghai Instrument Hardness Block Factory; AVIC Changcheng Institute of Metrology & Measurement; Sinotest Equipment

Co., Ltd.; Beijing Times Peak Technology Co., Ltd.; Shenyang TX Testing Instrument Co., Ltd.;

Laizhou Huayin Testing Instrument Co., Ltd.; and Metrology and Measurement Institute of Hubei Space Academy.

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The historical editions replaced by this Document are as follows:

--- GB/T 17394.3-2012 was first-time published in 2012;

--- It is the first-time revised.

Metallic Materials - Leeb Hardness Test - Part 3:

Calibration of Reference Test Blocks

1 Scope

This Document specifies a method for the calibration of Leeb hardness standard blocks that are

used for the indirect verification of Leeb hardness testers according to GB/T 17394.2 and for

the periodic checking according to GB/T 17394.1.

This Document is applicable to the calibration of Leeb hardness standard block (hereinafter referred to as reference block).

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates

indicated are applicable to this Document; for the undated documents, only the latest version

(including all the amendments) is applicable to this Document.

GB/T 231.3-2012 Metallic materials - Brinell hardness test - Part 3: Calibration of reference blocks (ISO 6506-3:2005, MOD)

GB/T 4340.3-2012 Metallic Vickers hardness test - Part 3: Calibration of hardness (ISO 6507-3:2005, MOD)

GB/T 17394.1 Metallic materials - Leeb hardness test - Part 1: Test method

GB/T 17394.2-2022 Metallic materials - Leeb hardness test - Part 2: Verification and calibration of hardness testers (ISO 16859-2:2015, MOD)

GB/T 27025 General requirements for the competence of testing and calibration laboratories (GB/T 27025-2008, ISO/IEC 17025:2005, IDT)

3 Terms and Definitions

For the purposes of this Document, there are no terms and definitions apply.

5.2.1 Leeb primary hardness standard machines owned by national level institutions are used