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

GB/T 18449.3-2012

Replacing GB/T 18449.3-2001

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

金属材料 努氏硬度试验 第3部分：标准硬度块的标定

(English Translation)

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Foreword

GB/T 18449 "Knoop hardness test of metallic materials" is divided into four parts.

- Part 1. Test methods;
- Part 2. Verification and calibration of hardness;
- Part 3. Calibration of hardness reference blocks;
- Part 4. Tables of hardness values.

This is Part 3 GB/T 18449 in.

Rules in this section in accordance with GB/T 1.1-2009 given draft.

This Part replaces GB/T 18449.3-2001 "metal Knoop hardness test - Part 3. Calibration standard hardness block," and GB/T 18449.3-2001 compared to the main technical changes are as follows.

- Modify the standard name;
- In Chapter 2 normative references list with GB/T 3505 instead of GB/T 1031-1995 "surface roughness parameters its value," adds references GB/T 13634 (see Chapter 2, Section 2 of the 2001 edition);
- Modify the standard hardness block thickness requirements (see 32, 2001, version 3.2.);
- Increased use of standard dynamometer test standard machine test force measurement times (see 4.4);
- Increasing the temperature fluctuations during calibration and effectiveness requirements (see Chapters 5 and 9);
- Modify the hardness uniformity of technical indicators and an increase in the calculation formula relative uniformity standard block (see Chapter 7, 2001 edition Chapter 7);
- Increase the informative Appendix B "measurement uncertainty of the standard block

average hardness values" (see Appendix B).

This section uses redrafted law revision of international standards ISO 4545-3. "Part 3 of metallic materials Knoop hardness test 2005 Score. standard hardness blocks calibrated "(second edition), in terms of technical content and structure of the text and ISO 4545-3:2005 agreement.

This portion of the ISO 4545-3:2005 technical differences and for the following reasons.

--- Remove the ISO 4545-3:2005 foreword, preface rewritten;

Inside --- on normative references, this part of the technical differences have been adjusted in order to adapt to China's technical conditions, adjustment Yung focus reflected in Chapter 2, "Normative references", the specific adjustments are as follows.

- equivalents adoption of international standards GB/T 3505 instead of ISO 4287 (see 3.6);
- equivalents adoption of international standards GB/T 13634 instead of ISO 376 (see 4.4);
- Modify with international standards of GB/T 18449.1-2009 replaced ISO 4545-1:2005 (see 4.5b), section 5 and Appendix B);
- Modify with international standards of GB/T 18449.2-2012 replaced ISO 4545-2:2005 (see Chapter 1, 4.1 , attached B.1 B's record);

--- It will neither be unrealistic indicators 0.02μm error and can not be modified to a minimum of uncertainty for the resolution 0.05μm (see 4.6);

--- International Standard ISO 4545-3:2005 Original symbol uniformity in standard hardness block is "U", easy and symbols Measurement Uncertainty Confusion, this section by the symbol "J" indicates (see 7.1 and Table 1);

--- Deleted references.

This portion of the ISO 4545-3:2005 compared to the existence of technical differences in terms of these differences it has been involved through its outer margins Vertical single-line position (|) were marked.

This section also made the following editorial changes.

--- With "this Part" instead of "ISO 4545 present section";

--- With Chinese decimal symbol "." Decimal symbol instead of the English "." Please note that some of the content of this document may involve patent issuing authority of this document does not assume responsibility for the identification of these patents.

This part is proposed by China Machinery Industry Federation.

This part of the National Technical Committee of Standardization Testing Machine (SAC/TC122) centralized.

This section is drafted. Quanzhou Donghai instrument hardness block factory, Changchun Research Institute of Machinery Co., Ltd., Shanghai Measurement and Testing Technology Research Institute, the Haitai Ming Optical Instrument Co., Ltd., Shenzhen City, measuring Detection Technology Co., Ltd.

1 Scope

This section GB/T 18449 requirements in GB/T 18449.2-2012 described indirect Knoop hardness test standard hardness Block (hereinafter referred to as the standard block) calibration method.

This section applies only to the long diagonal length of not less than 0.02mm indentation.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated edition applies to this article Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 3505-2009 Geometrical product specifications (GPS) Surface texture Profile method - Terms, definitions and surface texture parameters (ISO 4287:1997, IDT) GB/T 13634 uniaxial testing machines dynamometer calibration standard (GB/T 13634-2008, ISO 376:2004, Metallic materials-Calibration of force-proving instruments used for the verification of uniaxial testing machines, IDT) Test methods. Part 1 GB/T 18449.1-2009 metallic materials Knoop hardness test (ISO 4545-1:2005, MOD) GB/T 18449.2-2009 metallic materials Knoop hardness test - Part 2. Verification and calibration of hardness (ISO 4545-2. 2005, MOD)

3 Manufacturing, standard blocks

3.1

Standard block should be devoted to manufacturing.

Note: The manufacturing process is required to be of concern, these standard manufacturing processes will block the necessary homogeneity, stability and surface hardness of the organization are Uniformity.

3.2

standard block should be greater than 20 times the thickness of the calibration test force pushed out of the indentation depth.

3.3

standard block should be non-magnetic.

Flatness 3.4 standard block surface is 0.005mm.

3.5

standard parallel block is 0.010mm/50mm.

3.6

Standard test surface shall not affect the block indentation scratches; the test surface of the surface roughness parameters Ra of the maximum allowable value 0.1 μ m; its sampling length L should be 0.80mm (see GB/T 3505-2009 3.1.9).

3.7

To be able to check on the standard block is not removed from any material, its thickness should be marked when calibrated on a standard block, accurate to 0.1mm or make a differential mark [see 8.1e)] in which the test surface.

4 Standard machine

4.1

In addition to the standard Knoop hardness machine should meet the general requirements GB/T 18449.2-2012 provisions, it must also meet the requirements of 4.2 to 4.7.

Note: Appendix A gives an example of a method to adjust the lighting system.