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

GB/T 18449.2-2012

Replacing GB/T 18449.2-2001

**Metallic materials -- Knoop hardness test -- Part 2: Verification
and calibration of testing machines**

金属材料 努氏硬度试验 第2部分：硬度计的检验与校准

(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 section GB/T 18449 Part 2.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This Part replaces GB/T 18449.2-2001 "metal Knoop hardness test - Part 2. hardness test", and GB/T 18449.2-2001 compared to the main technical changes are as follows.

- Modify the name;
- Remove the ISO foreword (version 2001 ISO foreword);
- Increasing the test force range (see Chapter 1, Chapter 1 of the 2001 edition);
- Increasing the reference standard GB/T 13634-2008 "uniaxial testing machines standard dynamometer calibration" (see Chapter 2);
- Increasing the test temperature, test and calibration instruments traceability indenter constant testing cycle, indirect measurement calibration test blocks on the reference indentation hardness showed the relative repeatability and indication of the relative error is

calculated (see 4.1.1,4.1.2,4.3.5, 4.5,5.1,5.2,5.7,5.8);

--- Modify the test force tolerance indicators and representation, diamond pyramid opposite edge angle beta between tolerance indices (see Table 1,4.3.4,

2001 Edition 4.1.4,4.2.3);

--- Modify the durometer value Index repeatability and hardness indication error (see Table 2 and 5.8,2001 version 5.2.2 and Table 1);

--- Adjust the standard configuration (see Chapter 4, Chapter 5, 2001 edition of Chapter 4, Chapter 5);

--- Increasing the specified testing period (see Chapter 6);

--- Increase the informative Appendix A "diamond indenter on the instructions";

--- Increase the informative Appendix B "durometer calibration measurement uncertainty." this section uses redrafted law revision of international standards ISO 4545-2. "Part 2 of metallic materials Knoop hardness test 2005 Score. hardness testing and calibration "(first edition). In the text structure and technical content 4545-2 and ISO .2005 agreement.

This part of ISO 4545-2:2005 and the technical differences for the following reasons.

--- Remove the ISO 4545-2:2005 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 13634 replaced by ISO 376 (see 4.2.2);

- Modify with international standards of GB/T 18449.1-2009 instead of ISO 4545-1:2005 (see Chapter 1, 4.2.1, 4.3.5,4.5,5.5 and Appendix B);

- Modify with international standards of GB/T 18449.3 instead of ISO 4545-3:2005 (see 5.1);

--- Corrected Table B.1 in Appendix B, Table B.3, table B.4, B.8 and Table Table B.5 some incorrect calculation results and data, and Done to correct place marked with an underscore;

--- Regulate the expression of some methods of calculation formula in Appendix B to the formula in substitution values;

--- Appendix B of the formula (B.10), formula (B.13) and Table B.9 the symbol "b" is replaced with the symbol "E";

--- Deleted references.

This part of ISO 4545-2:2005 as compared to the existence of technical differences between the terms of these differences has been involved through its outer margins A single vertical line (-) positions were marked.

This section also made the following editorial changes.

--- The "this part of ISO 4545" replaced by "this section";

--- With Chinese decimal symbol "." Decimal symbol instead of the English "." Please note that some of the content of this document may involve patents. Release mechanism of the present 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., Haitai Ming optical instruments Co., Ltd, Shanghai Measurement and Testing Technology Research Institute, Laizhou Huayin Test Instrument Co., Ltd., Shenzhen City, measuring Detection Technology Co. Shares the company.

1 Scope

This section GB/T 18449 specifies the press GB/T 18449.1-2009 Determination of metallic materials with Knoop hardness test force range from 0.09807N ~ 19.614N Knoop hardness (hereinafter referred to as hardness) test and calibration methods. This section applies only to long diagonal Line length not less than 0.020mm indentation.

This section applies to the basic functions of checking hardness test and inspection directly durometer overall performance of the indirect test. Indirect Inspection Method can be used independently for use in hardness regular routine checks.

If the durometer hardness test is also used other methods, respectively, for each type of method should be individually hardness tested.

2 Normative references

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

GB/T 13634 uniaxial testing machines standard dynamometer calibration (GB/T 13634-2008, ISO 376:2004, Metallic materials-Calibration of force-proving instruments used for the verification of uniaxial testing machines, IDT) Test Method. GB/T 18449.1-2009 metallic materials - Knoop hardness test - Part

1 (ISO 4545-1:2005, MOD) GB/T 18449.3 metallic materials Knoop hardness test - Part 3. Calibration standard hardness block (GB/T 18449.3-2012, ISO 4545-3:2005, MOD)

3 General requirements

In the hardness test before, should be checked to ensure that the hardness according to the manufacturer's instructions to properly install, and special check.

- a) a spindle head can slide freely without any friction or obvious gap;
- b) pressure head fixedly mounted on the spindle;
- c) upon application and removal of the test force, no shock or vibration does not affect the reading;
- d) For the measuring device and the host as one of hardness.

--- From the application and removal of test force the state to the measurement state conversion process does not affect the reading;

--- Lighting does not affect the reading;

--- Indentation center is located near the center of the field.

4.1 General

4.1.1

Direct test should be in the temperature range of $(23 \pm 5) ^\circ\text{C}$ were. If testing outside of this temperature range, the test should be reported the report noted.

4.1.2

appliance for testing and calibration should be traceable to national benchmarks.

4.1.3

Direct test include.