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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 9097-2016

Replacing GB/T 9097.1-2002

Sintered metal materials, excluding hard metals -- Determination of apparent hardness and microhardness

烧结金属材料(不包括硬质合金)表观硬度和显微硬度的测定

(English Translation)

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Appendix A Test load and test conditions and the name and symbol (normative) hardness value of

Annex B (informative) repeatability and reproducibility

Ref.

Foreword

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

"Determination of apparent hardness - Part 1 sintered metal materials (excluding hardmetal). Materials of essentially uniform section hardness" This standard replaces GB/T 9097.1-2002.

This standard compared with GB/T 9097.1-2002, the main technical differences are as follows.

--- Changing the name of the standard;

--- Increased introduction;

--- Modify the contents of the specified range (see 11, Chapter 1, 2002 edition.);

--- Increasing the scope of the standard (see 12, Chapter 1, 2002 edition.);

--- Increased sintered metal carbide material does not include determination of the hardness of the metal phase (including the scope of application of this method, the equipment required for sampling and sample preparation, test procedures, test results indicated that the test data repeatability and reproducibility of the analysis, the content of the test report) (see section 1.3, Chapter 3, 4.3,4.4,4.5,5.2,6.2, Chapter 7, Chapter 8,

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Annex a, Annex B).

This standard uses the translation method identical with ISO 4498:2010 "sintered metal materials (excluding carbide) apparent hardness and microhardness measurement." Correspondence between the consistency of the standards of international documents and normative references of the following documents.

--- GB/T 230.1-2009 metallic materials - Rockwell hardness test - Part 1. Test methods (A, B, C, D, E, F, G, H, K, N, T scale) (ISO 6508-1 .2005, MOD) Test methods. --- GB/T 231.1-2009 metallic materials Brinell hardness test - Part 1 (ISO 6506-1:2005, MOD)

--- GB/T 4340.1-2009 metallic materials - Vickers hardness test - Part 1. Test method (ISO 6507-1:2005, MOD)

--- GB/T 9095-2008 Sintered ferrous materials, carburizing or carbonitriding Determination and verification hardened layer depth (ISO 4507:2000, IDT) this standard is proposed and managed by China Machinery Industry Federation.

Drafting of this standard. Beijing Institute of Powder Metallurgy Co., Ltd., Steel Research Institute.

Introduction

Tantamount to the adoption of international standards for the promotion of international trade have a positive role in promoting. GB/T 9097.1-2002 international standards of consistency and correspondence to, ISO 4498-1 identical with 1990 "Sintered metal materials (excluding hardmetal) - Determination of apparent hardness - Part 1. Materials of essentially uniform section hardness . " ISO 4498-1 was first released in 1978 and 1990 conducted the first revision of the formation of ISO 4498-1:1990, After 2005 and ISO 4498-2. 1981 "sintered metal carbide material does not include the determination of apparent hardness - Part 2. Surface or carbon carburizing, nitriding surface hardening of ferrous materials" Integration of ISO 4498:2005 "does not include carbide sintered metal materials - Determination of apparent hardness and microhardness" 2010 to ISO 4498:2005 was revised the formation of ISO 4498:2010. This revision is identical with ISO 4498:2010, to the GB/T 9097.1-2002 revision. Revised GB/T 9097 standard increases the scope of application, while increasing the hardness measurement method.

This standard allows only the determination of Brinell hardness using carbide ball indenter. Brinell hardness symbol HBW, not with the previous symbol and symbol HB HBS took the ball using head confused.

Sintered metal materials generally have a porous structure. Thus, they can be understood as the composite metal/porous material. This standard gives two methods to determine the hardness.

--- Method 1 is suitable for apparent hardness;

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--- Method 2 is suitable for hardness.

Method 1 Test Vickers, Brinell and Rockwell superficial hardness; their acronyms are. HV, HBW and HR. Since typically both comprise indentation solid phase also contains some of the pores, so these test measures the apparent hardness of the material. Typically the force applied to the test head of the pressure is 10N ~ 2000N.

Apparent hardness value is often used to represent the overall strength of the metal material; but sintered metal materials apparent hardness value is usually less than the same composition as the smelting of metallic materials. However, this does not mean that the use of performance (such as wear) will be lower than the corresponding dense metallic material.

Method 2 Test Vickers and Knoop hardness; their acronyms are. HVa and HKa1). Usually applied to the test force indenter for Vickers hardness is 0.147N ~ 1960N, for Knoop hardness is 0.147N ~ 0.981N.

1) where a is the test load, in grams.

Hardness value is to adjust the chemical composition of materials, heat treatment or surface treatment process based, thus requiring hardness test indentation is small enough, only the pressure in the solid phase, can not contain voids.

Sintered metal materials (excluding hardmetal) Determination of apparent hardness and microhardness

1 Scope

Hardness testing methods 1.1 Standard Specification for sintered metal materials (excluding hardmetal) of.

1.2
The method used to determine the apparent hardness throughout the material.

method 1

--- Suitable for processing without overheating, or sintered metal material after heat treatment, the surface of at least 5mm deep layer having a substantially uniform hardness;

--- Apply to the post-processing, range 5mm below the surface uneven surface hardness of sintered metal material;

--- Suitable for carburizing, carbonitriding, nitrocarburizing treatment or cure obtained hardness materials;

--- Suitable for induction hardening materials.

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1.3
method used to determine the hardness of the metal phase.

Method 2

--- Apply to all types of sintered metal material;

--- Hardness distribution curve is particularly suitable for measuring the surface hardening or carbonitriding material, the method is consistent with the 4507 ISO;

--- Also performed for the material had sintered metal plating, chemical coating, chemical vapor deposition (CVD), physical vapor deposition (PVD), laser, ion bombardment of the surface treatment. Method 2 applies only to the determination of the treated surface hardness.

NOTE: Many factors involved in micro-hardness testing internationally no consensus, but the method to determine the parameters is important enough to be widely used standardized measurement practices.

2 Normative references

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

Depth ISO 4507 carburizing or carbonitriding sintered iron-based material with a hardness test measurement and verification of the hardened layer ISO 4516 Metallic and other inorganic coatings Vickers and Knoop microhardness tests ISO 6506-1 Brinell hardness testing of metallic materials - Part 1. Test methods ISO 6507-1 Vickers hardness testing of metallic materials - Part 1. Test methods ISO 6508-1 Rockwell hardness testing of metallic materials - Part 1. Test methods

3 Instrument

Method 1 Vickers, Brinell, Rockwell hardness tester, respectively, to meet ISO 6506-1, test methods ISO 6507-1 and ISO 6508-1 of.

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