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

GB/T 42665-2023

**Test method for spherical indentation strength of porous
ceramics**

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Table of Contents

- Foreword
- 1 Scope
- 2 Normative reference documents
- 3 Terms and definitions
- 4 Principles

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document is modified to adopt ISO 17170.2015 "Fine Ceramics (Advanced Ceramics, Advanced Technology Ceramics) Spherical Indentation Test of Porous Ceramics" method".

Compared with ISO 17170.2015, this document has many structural adjustments. Comparison list of structure number changes between the two files

See Appendix A.

Compared with ISO 17170.2015, there are many technical differences between this document and the clauses involved in the outer margin of the page.

Single lines (?) are marked. A list of these technical differences and their causes is provided in Appendix B.

The following editorial changes have been made to this document.

---In order to coordinate with the existing standards, the name of the standard is changed to "Test Method for Spherical Indentation Strength of Porous Ceramics";

---Change the description of the application fields of porous ceramics in 3.1 from text to note;

---Change the title of Chapter 7 from "Test Methods" to "Test Procedures", and modify the corresponding subtitle names;

---Added Appendix A (informative) "List of comparison of structure numbers between this document and ISO 17170.2015";

---Added Appendix B (informative) "List of technical differences between this document and ISO 17170.2015 and their reasons".

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

1 Scope

This document specifies the principles, samples, instruments, test procedures, test result processing and testing methods for porous ceramic spherical indentation strength.

Report.

This document is applicable to the determination of the spherical indentation strength of porous ceramics in room temperature atmospheric environment.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations

For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to

this document.

GB/T 308.1 Rolling bearing balls Part 1.Steel balls (GB/T 308.1-2013, ISO 3290-1.2008, NEQ)

GB/T 1182 Product Geometric Specification (GPS) Geometric Tolerance Shape, Direction, Position and Runout Tolerance Marking

(GB/T 1182-2018, ISO 1101.2017, MOD)

GB/T 3505 Product Geometric Specification (GPS) Surface Structure Profile Method Terms, Definitions and Surface Structure Parameters

(GB/T 3505-2009, ISO 4287.1997, IDT)

GB/T 8170 Numerical rounding rules and representation and determination of limit values

GB/T 16825.1 Inspection and calibration of static uniaxial testing machines for metallic materials Part 1.Tensile and/or compression testing machines

Inspection and calibration of force systems (GB/T 16825.1-2022, ISO 7500-1.2018, IDT)

GB/T 21389 Verniers, band meters and digital calipers

GB/T 34484.1 Heat-treated steel Part 1.Non-alloy steel (GB/T 34484.1-2017, ISO

683-1.2016, MOD)

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Porous ceramicsporousceramics

Ceramics with a porosity of 30%~60% and a pore diameter of $1\mu\text{m}$ ~ $100\mu\text{m}$.

Note. Porous ceramics are used in fields such as filtration, catalyst carriers, humidity sensors or molecular sieves.

3.2

spherical indenter sphericalindenter

A rigid sphere that applies a compressive load to the sample.

3.3

The maximum load measured from the beginning of the test to the fracture failure of the sample under the load exerted by the spherical indenter.

4 Principles

Under the action of a spherical indenter applying a compressive load at a constant displacement rate, the sample is compressed and fractured into two or more fragments or powders.