

ICS 81.060.30

CCS Q 30



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

GB/T 1965-2023

Replacing GB/T 1965-1996

**Porous ceramics - Test method for flexural strength at room
temperature**

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(English Translation)

Issued on: November 27, 2023

Implemented on: June 1, 2024

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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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 replaces GB/T 1965-1996 "Test Method for Flexural Strength of Porous Ceramics": Compared with GB/T 1965-1996, except for the structure in addition to adjustments and editorial changes, the main technical changes are as follows:

---Changed the requirements for instruments and equipment (see Chapter 4, Chapter 2 of the:1996 edition);

---Changed the requirements for samples (see Chapter 5, Chapter 3 of the:1996 edition);

---Added steps to measure the distance between the upper and lower indenter (see 6.3);

---Changed the movement speed (see 6.4, 4:2 of the:1996 version);

---Added requirements for force-displacement curve (see 6.5);

---Added the calculation of the standard deviation and dispersion coefficient of bending strength (see 7.2):

This document has been modified to adopt ISO 14610:2012 "Fine Ceramics (Advanced Ceramics, Advanced Technology Ceramics) Bending Strength of Porous Ceramics at Room Temperature" Degree Test Methods":

Compared with ISO 14610:2012, this document has many structural adjustments: A comparison list of structural number changes between the two documents:

See Appendix A:

Compared with ISO 14610:2012, this document has many technical differences: Vertical text is used in the outer margin of the clauses involved:

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 Room Temperature Flexural Strength of Porous Ceramics";

---Deleted the note 4:2 in ISO 14610:2012;

---Deleted the note 6:2 in ISO 14610:2012;

---Changed the symbol of the bending strength of 7:1 in ISO 14610:2012, replacing the original σ_f with σ_B ;

---Changed the symbol of sample thickness of 7:1 in ISO 14610:2012, replacing the original d with h ;

---Changed the sign of the arithmetic mean of the flexural strength of 7:2 in ISO 14610:2012, replacing the original x with σ ;

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 test methods, instruments and equipment, samples, test procedures, results and calculations for measuring the flexural strength of porous ceramics at room temperature:

experiment report:

This document is applicable to the determination of the room temperature flexural strength of porous ceramics:

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 6569 Test method for flexural strength of fine ceramics (GB/T 6569-2006, ISO 14704:2000, MOD) GB/T 16491 Electronic Universal Testing Machine GB/T 17991 Terminology for fine ceramics (GB/T 17991-2009, ISO 20507:2003, MOD) GB/T 21389 Verniers, band meters and digital calipers

3 Terms and definitions

The terms and definitions defined in GB/T 17991 and the following apply to this document:

Porous ceramicsporousceramics Ceramic materials with pore diameters ranging from 0:05 μ m to 100 μ m and apparent porosity ranging from 25% to 90%:

The maximum stress when the sample breaks under the bending load formed by the two lower fulcrums and the two upper indenter:

4 Instruments and equipment

4.1

Testing machine

The testing machine should comply with the regulations of GB/T 16491: The testing machine level should be level 1 or better, and can automatically record load and displacement or measure the relationship curve of trial time:

4.2

Fixture

The test fixture adopts a structure similar to the four-point 1/4 bend in GB/T 6569: The schematic diagram of the test fixture is shown in Figure 1: to prevent for specimens that are torsionally deformed, half or fully adjustable clamps should be used: The elastic modulus of the pressure head support roller should be greater than 140GPa, and no plasticization should occur during the test:

Sexual deformation or breakage: The outer span length L is 60mm, the inner span length l is 30mm, the radius of curvature of the indenter is 2mm~3mm, and the surface is rough the degree Ra does not exceed 0:40 μ m: