

ICS 81.060.30

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

GB/T 43296-2023

**Test method for bending fatigue of fine ceramics at room
temperature**

精细陶瓷室温弯曲疲劳性能试验方法

(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 is modified to adopt ISO 22214:2006 "Fine Ceramics (Advanced Ceramics, Advanced Technology Ceramics) Monolithic Ceramic Periodicity at Room Temperature" Test methods for bending fatigue:

Compared with ISO 22214:2006, this document has made the following structural adjustments:

---Deleted 3:3 and 3:4 in ISO 22214:2006 terms and definitions:

Compared with ISO 22214:2006, 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 A:

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 Bending Fatigue Performance of Fine Ceramics";

---To simplify the text, the note in 5:2 has been deleted;

---In order to be consistent with GB/T 6569, a note of 7:1 is added;

---To simplify the text, Note 2 of 7:3 has been deleted:

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 describes a method for determining the fatigue properties of fine ceramics using the four-point cyclic bending method at room temperature and in an air atmosphere:

This document is suitable for qualification testing of bulk fine ceramic materials, and can also be used to test the overall fatigue of materials under different stress levels:

Behavior:

The three-point cyclic bending method can also be used to test the fatigue properties of fine ceramics with reference to this document:

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 8170 Numerical rounding rules and expression and determination of limit values JJG556 axial force fatigue testing machine

3 Terms and definitions

The following terms and definitions apply to this document:

fatigue test **fatigue test** A test in which repeated stress is applied to a sample and the number of cycles to fracture is measured:

fatigue failure **fatigue failure** Fracture of a material under cyclic loading well below its static strength:

cyclic stress the stress changes periodically over time between a specific maximum force value and a specific minimum force value:

see picture 1:

maximum stress **maximum stress** σ_{max} Algebraic maximum value of cyclic stress: see picture 1:

minimum stress **minimum stress** σ_{min} Algebraic minimum of cyclic stress:

see picture 1: