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

GB/T 47609-2026

**Continuous fibre-reinforced ceramic matrix composites - Test
method for in-plane shear strength at elevated temperature**

连续纤维增强陶瓷基复合材料 高温面内剪切强度试验方法

(English Translation)

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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 19587:2021 "Fine ceramics (advanced ceramics, advanced technical ceramics) - Ceramic matrix composites - High temperature air".

In-plane shear strength test method for atmospheric mechanical properties.

Compared with ISO 19587:2021, this document has undergone many structural adjustments. A table comparing the changes in structural numbering between the two documents is provided.

See Appendix A.

This document differs significantly from ISO 19587:2021. The relevant clauses are indicated in vertical margins.

Single lines (|) are indicated. A summary of these technical differences and their causes can be found in Appendix B.

The following editorial changes have been made to this document.

---To align with existing standards, the standard title has been changed to

"High-Temperature In-Plane Shear Strength Test of Continuous Fiber Reinforced Ceramic Matrix Composites".

method";

---Appendix A (informative) "Comparison of Structure Numbers in this Document with ISO 19587:2021" has been added;

---Appendix B (Informative) has been added. "Technical Differences Between This Document and ISO 19587:2021 and Their Reasons";

---Added a title to Appendix C.

This document was proposed by the China Building Materials Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Industrial Ceramics (SAC/TC194).

1 Scope

This document describes an asymmetric four-point bending test on a double-sided V-shaped notch sample under high temperature, air, or inert atmosphere.

A test method for determining the high-temperature in-plane shear strength of continuous fiber-reinforced ceramic matrix composites. This method can determine the shear strength in direction 1 and direction 2.

The in-plane shear strength of the plane (1,2), where direction 1 is the direction with a larger proportion of reinforcement, and direction 2 is perpendicular to direction 1. This document specifies...

The terminology, definitions, principles, general requirements, instruments and equipment, samples, test conditions, and test procedures for the high-temperature in-plane shear strength test method have been defined.

Steps, result calculations, and test reports.

This document applies to unidirectional, bidirectional, and multidirectional continuous fiber reinforced ceramic matrix composites. This document can be used for material development and material comparison.

Comparison, quality control, performance characterization, and reliability assessment.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this

document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 16825.1 Inspection and calibration of static uniaxial testing machines for metallic materials - Part 1: Tensile and/or compressive testing machines Inspection and calibration of force measurement systems (GB/T 16825.1-2022, ISO 7500-1:2018, IDT) GB/T 16839.1 Thermocouples - Part 1: Electromotive force specifications and tolerances (GB/T 16839.1-2018, IEC 60584-1) 2013, IDT) GB/T 17991 Terminology for Fine Ceramics (GB/T 17991-2009, ISO 20507:2003, MOD) GB/T 21389 Vernier, dial indicator and digital calipers GB/T 44541 Symbols and markings for fine ceramics and ceramic matrix composites (GB/T 44541-2024, ISO 19634:2017) IDT)

3 Terms and Definitions

The terms and definitions defined in GB/T 17991 and GB/T 44541, as well as the following terms and definitions, apply to this document.

initial cross-section area S_0 the cross-sectional area between the roots of the two V-shaped cuts on the sample.

test temperature

Temperature measured at the center of the gauge length.

shear force

Forces parallel to the shear plane of the sample.