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

GB/T 42655-2023

**Test method for compression properties of continuous fiber
reinforced ceramic matrix composites at high temperature**

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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 14544.2013 "Fine ceramics (advanced ceramics, advanced technical ceramics) high temperature strength of ceramic matrix composites"

"Determination of Compression Properties".

Compared with ISO 14544.2013, this document has many structural adjustments.

Comparison list of structure number changes between the two files

See Appendix A.

Compared with ISO 14544.2013, this document has many technical differences. Vertical text is used in the outer margin of the clauses involved.

Single lines (l) 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 High Temperature Compression Performance of Continuous Fiber Reinforced Ceramic Matrix Composites";

---Deleted the notes in Chapter 4, 5.1, 5.5, 6.1, 6.2, 6.3, 7.1, 8.1.3, and 8.3.2 in ISO 14544.2013;

---Deleted Note 1, Note 3, Note 4 and Note 5 of 5.2 in ISO 14544.2013;

---Added Appendix A (informative) "List of comparison of structure numbers between this document and ISO 14544.2013";

---Added Appendix B (informative) "List of technical differences between this document and

ISO 14544.2013 and their reasons";

---Added Appendix D (informative) "Relationship Curves between Type 3 Load and Deformation of Samples".

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 method for high temperature compression properties of continuous fiber reinforced ceramic matrix composites.

This document is applicable to the measurement of high temperature compression properties of unidirectional, bidirectional and multidirectional continuous fiber reinforced ceramic matrix composites along a main reinforcement axis.

Certainly. This document is also applicable to the determination of the eccentric high-temperature compression properties of bidirectional and multidirectional continuous fiber-reinforced ceramic matrix composites.

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 12160 Calibration of extensometer systems for uniaxial testing of metallic materials

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 measuring 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 21389 Verniers, band meters and digital calipers

ISO 17161.2014 Fine ceramics (advanced ceramics, advanced technical ceramics) Uniaxial mechanical testing error of ceramic composite materials

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Test temperature

The temperature at the center of the gauge length of the test specimen.

3.2

Calibrated length

The length of the portion of the sample with uniform, smallest cross-sectional area.

3.3

Gauge length

L₀

The initial distance between reference points within the calibration length.