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Fine ceramics (advanced ceramics, advanced technical ceramics) — Mechanical properties of ceramic composites at ambient temperature in air atmospheric pressure — Determination of tensile properties

Céramiques techniques — Propriétés mécaniques des céramiques composites à température ambiante sous air à pression atmosphérique — Détermination des propriétés en traction

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Contents

Page

Foreword ..... **iv**

1 Scope **1**

2 Normative references **1**

3 Terms, definitions and symbols **1**

4 Principle **3**

5 Apparatus **4**
5.1 Test machine 4
5.2 Load train 4
5.3 Extensometer 4
5.4 Data recording system 5
5.5 Micrometer 5

6 Test specimens **5**

7 Test specimen preparation **8**
7.1 Machining and preparation 8
7.2 Number of test of specimens 8

8 Test procedures **8**
8.1 Test set-up: other considerations 8
8.1.1 Displacement rate 8
8.1.2 Measurement of test specimen dimensions 8
8.2 Testing technique 8
8.2.1 Specimen mounting 8
8.2.2 Setting of extensometers 8
8.2.3 Measurements 9
8.3 Test validity 9

9 Calculation of results **10**
9.1 Test specimen origin 10
9.2 Tensile strength 10
9.3 Longitudinal Strain 10
9.4 Lateral strain 10
9.5 Longitudinal strain at maximum tensile force 11
9.6 Tensile modulus 11
9.7 Poisson's ratio 12

10 Test report **12**

Annex A (informative) **Illustration of tensile modulus** **14**

Bibliography **15**

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Foreword

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This document was prepared by Technical Committee ISO/TC 206, *Fine ceramics*.

This third edition cancels and replaces the second edition (ISO 15733:2015), which has been technically revised.

The main changes are as follows:

— broader range of tensile properties: tensile modulus, Poisson’s ratio, strength, fracture strain, lateral deformations;

— test validity: possible singularities of force-deformation curves;

— editorial changes.

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Fine ceramics (advanced ceramics, advanced technical ceramics) — Mechanical properties of ceramic composites at ambient temperature in air atmospheric pressure — Determination of tensile properties

1 Scope

This document specifies the conditions for determining the tensile properties (including tensile modulus, Poisson's ratio, strength, strain at maximum force and fracture strain) of ceramic matrix composite materials with continuous fibre reinforcement at room temperature. This document applies to all ceramic matrix composites with a continuous fibre reinforcement, including unidirectional (1D), bi-directional (2D), and multi-directional (*x*D, with $x > 2$), reinforcement, loaded along a principal axis of reinforcement.

NOTE In most cases, ceramic matrix composites to be used at high temperature in air are coated with an antioxidation coating.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3611, *Geometrical product specifications (GPS) — Dimensional measuring equipment — Design and metrological characteristics of micrometers for external measurements*

ISO 7500-1:2018, *Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system*

ASTM E2208–02S–2018, *Standard Guide for Evaluating Non-Contacting Optical Strain Measurement Systems*

3 Terms, definitions and symbols

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
calibrated length
l
part of the test specimen that has uniform and minimum cross-section area

3.2
gauge length
L_o
initial distance between reference points on the test specimen in the *calibrated length* (3.1)

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