
**Fine ceramics (advanced ceramics,
advanced technical ceramics) —
Mechanical properties of ceramic
composites at room temperature —
Determination of flexural strength**

*Céramiques techniques — Propriétés mécaniques des composites
céramiques à température ambiante — Détermination de la
résistance en flexion*





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Published in Switzerland

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Foreword

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The committee responsible for this document is ISO/TC 206, *Fine ceramics*.

Fine ceramics (advanced ceramics, advanced technical ceramics) — Mechanical properties of ceramic composites at room temperature — Determination of flexural strength

1 Scope

This International Standard describes a method for the determination of the flexural strength of ceramic matrix composite materials with continuous fibre reinforcement, under three-point or four-point bend at room temperature. This method applies to all ceramic matrix composites with a continuous fibre reinforcement, unidirectional (1D), bidirectional (2D), and tridirectional xD with ($2 < x \leq 3$) as defined in CEN/TR 13233, loaded along one principal axis of reinforcement.

NOTE The method is not intended to be used to obtain absolute values of strength for design purposes.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

CEN/TR 13233: 2007, *Advanced technical ceramics — Ceramic composites — Notations and symbols*

3 Terms, definitions, and symbols

For the purposes of this document, the terms and definitions given in CEN/TR 13233¹⁾ and the following apply.

3.1

maximum flexural force

F_m

highest recorded force in a flexural test on the test specimen when tested to failure

3.2

flexural stress

σ

nominal stress on the outer surface of the test specimen, calculated at mid-span

Note 1 to entry: This stress is conventionally calculated according to the beam theory, whose basic assumptions cannot be met by ceramic matrix composite materials.

3.3

flexural strength

$\sigma_{f,m}$

maximum flexural stress applied to a test specimen that fractures during a flexural test

1) An International Standard, ISO 19634, *Fine ceramics (advanced ceramics, advanced technical ceramics) — Notations and symbols of ceramic composites* is under preparation.