
**Fine ceramics (advanced ceramics,
advanced technical ceramics) —
Determination of elastic modulus of
ceramics at high temperature by thin
wall C-ring method**

Céramiques techniques (céramiques avancées, céramiques techniques avancées) – Détermination du module élastique des céramiques à haute température par la méthode de l'anneau en C à parois minces



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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Fine ceramics (advanced ceramics, advanced technical ceramics) — Determination of elastic modulus of ceramics at high temperature by thin wall C-ring method

1 Scope

This document specifies the determination of elastic modulus of ceramics at high temperatures up to 2 100 °C by using the thin wall relative C-ring method. Procedures for test piece preparation, test modes, heat rate, load rates, data collection and reporting are given.

This document applies primarily to ceramic materials including monolithic fine ceramics, refractory materials, whisker and particulate-reinforced ceramic composites. This method is not applicable to super plastic ceramics or ceramics with high creep rate. This test method can be used for material research, quality control and characterization and design data generation purposes.

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: Micrometers for external measurements — Design and metrological characteristics*

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

IEC 60584-1, *Thermocouples — Part 1: Reference tables*

3 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 elastic modulus

ratio of stress to strain, also known as Young's modulus

3.2 C-ring test piece

test piece in the shape of a split ring, prepared by cutting an incision from a thin wall ring

Note 1 to entry: R is the outer radius, r is the inner radius, and b is the width (axial length), as shown in [Figure 1](#).