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**Fine ceramics (advanced ceramics,  
advanced technical ceramics) —  
Test method for determining elastic  
modulus of thick ceramic coatings at  
elevated temperature**

*Céramiques techniques — Méthode d'essai relative à la détermination  
du module élastique des revêtements de céramique épais à  
température élevée*

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## Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

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# Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for determining elastic modulus of thick ceramic coatings at elevated temperature

## 1 Scope

This document specifies a method of test for determining the elastic modulus of thick ceramic monolayer coatings (thickness > 0,03 mm) at elevated temperatures, using the impulse excitation method. Procedures for test piece preparation, test modes and rates (load rate or displacement), data collection, and reporting procedures are given.

This document applies primarily to brittle ceramic coatings on ceramic or metal substrates. 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 17561, *Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for elastic moduli of monolithic ceramics at room temperature by sonic resonance*

IEC 60584-1, *Thermocouples — Part 1: EMF specifications and tolerances*

## 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:

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

### 3.1

#### **elastic modulus**

ratio of plane stress to plane strain

Note 1 to entry: Also known as Young's modulus.

### 3.2

#### **flexural vibrations**

vibrations that occur when the displacements in a slender rod or bar are in a plane normal to the length dimension

### 3.3

#### **thickness ratio**

ratio of the coating thickness to the substrate thickness