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ICS 81.060.30

ADVANCED TECHNICAL CERAMICS - MECHANICAL PROPERTIES OF CERAMIC COMPOSITES AT HIGH TEMPERATURE UNDER INERT ATMOSPHERE - DETERMINATION OF COMPRESSION PROPERTIES

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Hochleistungskeramik - Mechanische Eigenschaften von keramischen Verbundwerkstoffen bei hoher Temperatur in inerter Atmosphäre - Bestimmung der Eigenschaften unter Druck

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CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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Foreword

This document (EN 12290:2005) has been prepared by Technical Committee CEN/TC 184 “Advanced technical ceramics”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2005, and conflicting national standards shall be withdrawn at the latest by December 2005.

This document supersedes ENV 12290:1996.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard specifies the conditions for determination of compression properties of ceramic matrix composite materials with continuous fibre reinforcement for temperatures up to 2 000 °C under vacuum or a gas atmosphere which is inert to the material under test.

NOTE The use of these environments is aimed at avoiding changes of the material to be tested due to chemical reaction with its environment during the test.

This European Standard applies to all ceramic matrix composites with a continuous fibre reinforcement, unidirectional (1D), bidirectional (2D), and tridirectional (xD, with $2 < x \leq 3$), loaded along one principal axis of reinforcement.

Two types of compression are distinguished:

a) compression between platens;

b) compression using grips.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 10002-4, *Metallic materials - Tensile test - Part 4: Verification of extensometers used in uniaxial testing.*

EN 60584-1, *Thermocouples - Part 1: Reference tables (IEC 60584-1:1995).*

EN 60584-2, *Thermocouples — Part 2: Tolerances (IEC 60584-2:1982 + A1:1989).*

EN 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 7500-1:2004).*

ISO 3611, *Micrometer callipers for external measurement.*

3 Terms, definitions and symbols

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

3.1
test temperature, T
temperature of the test piece at the centre of the gauge length

3.2
calibrated length, l
part of the test specimen that has uniform and minimum cross-section area

3.3
gauge length, L_o
initial distance between reference points on the test specimen in the calibrated length