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

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Advanced technical ceramics - Mechanical properties of ceramic composites at high temperature under inert atmosphere - Determination of creep behaviour

Céramiques techniques avancées - Propriétés mécaniques des céramiques composites à haute température sous atmosphère inerte - Détermination du comportement au fluage

Hochleistungskeramik - Mechanische Eigenschaften von keramischen Verbundwerkstoffen bei hoher Temperatur in inerter Atmosphäre - Bestimmung des Kriechverhaltens

This European Standard was approved by CEN on 10 September 2006.

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 13235:2006) 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of an identical text or by endorsement, at the latest by April 2007, and conflicting national standards shall be withdrawn at the latest by April 2007.

This document supersedes ENV 13235:1998.

ENV 13235 was approved by CEN/TC 184 for development into a full European Standard. The principal changes to the ENV are in the normative references, as follows:

- in 6.1.1, reference to EN 10002-2 has been replaced by reference to EN ISO 7500-1;

- in 6.2, reference to WI 136 has been removed;

- references to ENV 1892 have been replaced by references to EN 1892.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard specifies the conditions for the determination of the tensile creep deformation and failure behaviour of ceramic matrix composite materials with continuous fibre reinforcement for temperatures up to 2 000 °C under vacuum or in a gas atmosphere which is inert to the material under test. The purpose of these test conditions is to prevent changes to the material as a result of chemical reaction with the test environment.

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

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 1892, *Advanced technical ceramics — Mechanical properties of ceramic composites at high temperature under inert atmosphere — Determination of tensile properties*

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 Principle

A test specimen of specified dimensions is heated to the test temperature, and loaded under tension to a specified level of force. This force is maintained at a constant level for a specified time or until rupture. The variation in gauge length is recorded in relation to time.