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National Standards
Authority of Ireland
Glasnevin, Dublin 9
Ireland

Tel: +353 1 807 3800
Fax: +353 1 807 3838
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ADVANCED TECHNICAL CERAMICS - MECHANICAL PROPERTIES OF CERAMIC COMPOSITES AT ROOM TEMPERATURE - DETERMINATION OF FATIGUE PROPERTIES AT CONSTANT AMPLITUDE

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English Version

Advanced technical ceramics - Mechanical properties of ceramic composites at room temperature - Determination of fatigue properties at constant amplitude

Céramiques techniques avancées - Propriétés mécaniques des céramiques composites à température ambiante - Détermination des propriétés de fatigue à amplitude constante

Hochleistungskeramik - Mechanische Eigenschaften von keramischen Verbundwerkstoffen bei Raumtemperatur - Bestimmung der Dauerschwingeigenschaften bei Belastung mit konstanter Amplitude

This European Standard was approved by CEN on 14 July 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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Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 15156:2006) 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of an identical text or by endorsement, at the latest by February 2007, and conflicting national standards shall be withdrawn at the latest by February 2007.

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 constant-amplitude of load or strain in uniaxial tension/tension or in uniaxial tension/compression cyclic fatigue properties of ceramic matrix composite materials (CMCs) with fibre reinforcement at room temperature.

This European Standard applies to all ceramic matrix composites with fibre reinforcement, unidirectional (1D), bi-directional (2D), and tri-directional (xD, where $2< x \leq 3$).

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 658-1, *Advanced technical ceramics — Mechanical properties of ceramic composites at room temperature — Part 1: Determination of tensile properties*

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

EN 1893, *Advanced technical ceramics — Mechanical properties of ceramic composites at high temperature in air at atmospheric pressure — Determination of tensile properties*

EN 12291, *Advanced technical ceramics — Mechanical properties of ceramic composites at high temperature in air at atmospheric pressure — Determination of compression properties*

prCEN/TR 13233:2007[1], *Advanced technical ceramics — Notations and symbols*

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)*

EN ISO 9513, *Metallic materials — Calibration of extensometers used in uniaxial testing (ISO 9513:1999)*

ISO 3611, *Micrometer callipers for external measurement*

3 Terms, definitions and symbols

For the purposes of this document, the terms and definitions given in prCEN/TR 13233:2007 and the following apply.

3.1
calibrated length, l
part of the test specimen which has uniform and minimum cross-section area

3.2
gauge length, L_o
initial distance between reference points on the test specimen in the calibrated length

[1] To be published in 2007