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Údarás um Chaighdeáin Náisiúnta na hÉireann

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**ADVANCED TECHNICAL CERAMIC -
CERAMIC COMPOSITES - METHODS OF TEST
FOR REINFORCEMENTS - PART 6:
DETERMINATION OF TENSILE PROPERTIES
OF FILAMENTS AT HIGH TEMPERATURE**

National Standards
Authority of Ireland
Glasnevin, Dublin 9
Ireland

Tel: +353 1 807 3800
Fax: +353 1 807 3838
<http://www.nsai.ie>

Sales

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English Version

Advanced technical ceramic - Ceramic composites - Methods of
test for reinforcements - Part 6: Determination of tensile
properties of filaments at high temperature

Céramiques techniques avancées - Céramiques
composites - Méthodes d'essai pour renforts - Partie 6 :
Détermination des propriétés en traction du filament à
haute température

Hochleistungskeramik - Keramische Verbundwerkstoffe -
Verfahren zur Prüfung der Faserverstärkungen - Teil 6:
Bestimmung der Zugeigenschaften von Fasern bei hoher
Temperatur

This European Standard was approved by CEN on 13 October 2007.

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Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 1007-6:2007) 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of an identical text or by endorsement, at the latest by **May 2008**, and conflicting national standards shall be withdrawn at the latest by **May 2008**.

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1 Scope

This European Standard specifies the conditions for measurement of tensile properties of a single filament of ceramic fibres at high temperatures in air or inert atmosphere (vacuum or controlled atmosphere). The method applies to continuous ceramic filaments taken from tows, yarns, staple fibre, braids and knitting, that have strain to fracture less than or equal to 5 % and show linear elastic behaviour to fracture.

The method does not apply to testing for homogeneity of strength properties of fibres, nor does it assess the effects of volume under stress. Statistical aspects of fibre failure are not included.

Two methods are proposed depending on the temperature of the filament end:

- Hot end method: this method allows determination of tensile strength, of Young's modulus and of the stress strain curve.

NOTE 1 Current experience with this technique is limited to 1 300 °C, because of the application temperature of ceramic glue.

- Cold end method.

NOTE 2 This method is limited to 1 700 °C in air and 2 000 °C in inert atmosphere because of the limits of furnaces.

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 1007-3, *Advanced technical ceramics — Ceramic composites — Methods of test for reinforcement — Part 3: Determination of filament diameter and cross-section area*

EN 1007-4, *Advanced technical ceramics — Ceramic composites — Methods of test for reinforcement — Part 4: Determination of tensile properties of filaments at ambient temperature*

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/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005)*

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)*

3 Terms and definitions

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

3.1 test temperature

T

temperature of the filament at the centre of the gauge length

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