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Advanced technical ceramics - Ceramic composites - Guide to the determination of the degree of misalignment in uniaxial mechanical tests

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English Version

**Advanced technical ceramics - Ceramic composites - Guide to
the determination of the degree of misalignment in uniaxial
mechanical tests**

Céramiques techniques avancées - Céramiques
composites - Guide pour déterminer le degré de non-
alignement des essais mécaniques uniaxiaux

Hochleistungskeramik - Keramische Verbundwerkstoffe -
Anleitung zur Bestimmung der Fluchtungsfehler bei
mechanischen Prüfungen mit einachsiger Beanspruchung

This Technical Specification (CEN/TS) was approved by CEN on 3 February 2009 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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Foreword

This document (CEN/TS 15867:2009) has been prepared by Technical Committee CEN/TC 184 “Advanced technical ceramics”, the secretariat of which is held by BSI.

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1 Scope

This Technical Specification provides guidance on:

- verifying the degree of misalignment of the load train of test machines, using a reference test specimen uniformly loaded in tension or in compression;
- correcting for defects caused by, e.g. torsion and bending.

This document is not intended to provide a quantitative and acceptable limit before the testing of ceramic matrix composites with a fibre reinforcement: unidirectional (1D), bidirectional (2D) and tridirectional (xD, with $2 < x \leq 3$) loaded along one principle axis of reinforcement. This limit depends on the sensitivity of each type of composite to the misalignment defect.

NOTE 1 This limit is to be defined between the testing establishment and the customer.

NOTE 2 Monolithic ceramics are very sensitive to misalignment defects, while ceramic matrix composites (CMCs) in general are moderately sensitive to them.

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.

CEN/TR 13233:2007, *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/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005)*

ISO 3611, *Micrometer callipers for external measurement*

3 Terms and definitions

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

3.1 calibrated length

l
part of the reference test specimen which has a uniform and minimum cross section area

3.2 width

b
width of the reference test specimen in the calibrated length

3.3 thickness

h
thickness of the reference test specimen in the calibrated length

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