Advanced technical ceramics - Mechanical properties of monolithic ceramics at room temperature - Part 8: Guidelines for conducting proof tests

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NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 843-8:2010 sisaldab Euroopa standardi EN 843-8:2010 ingliskeelset teksti.	This Estonian standard EVS-EN 843-8:2010 consists of the English text of the European standard EN 843-8:2010.
Standard on kinnitatud Eesti Standardikeskuse 30.09.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 30.09.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
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Advanced technical ceramics - Mechanical properties of monolithic ceramics at room temperature - Part 8: Guidelines for conducting proof tests

Céramiques techniques avancées - Propriétés mécaniques des céramiques monolithiques à température ambiante - Partie 8: Lignes directrices de conduite d'épreuves

Hochleistungskeramik - Mechanische Eigenschaften monolithischer Keramik bei Raumtemperatur - Teil 8: Leitlinien zur Durchführung von Überlast-Prüfungen

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Contents

Page

Foreword

This document (EN 843-8:2010) 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of an identical text or by endorsement, at the latest by December 2010, and conflicting national standards shall be withdrawn at the latest by December 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

EN 843, *Advanced technical ceramics — Mechanical properties of monolithic ceramics at room temperature*, consists of the following nine parts:

— *Part 1: Determination of flexural strength*

— *Part 2: Determination of Young's modulus, shear modulus and Poisson's ratio*

— *Part 3: Determination of subcritical crack growth parameters from constant stressing rate flexural strength tests*

— *Part 4: Vickers, Knoop and Rockwell superficial hardness*

— *Part 5: Statistical analysis*

— *Part 6: Guidance for fractographic investigation*

— *Part 7: C-ring tests*

— *Part 8: Guidelines for conducting proof tests*

— FprCEN/TS 843-9, *Advanced technical ceramics — Mechanical properties of monolithic ceramics at room temperature — Part 9: Method of test for edge-chip resistance*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, 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 the United Kingdom.

1 Scope

This European Standard describes requirements and methods for proof testing of advanced technical ceramic components. It provides general guidance concerning the design of the test and the methodology for the selection of loading conditions.

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 843-3, *Advanced technical ceramics — Mechanical properties of monolithic ceramics at room temperature — Part 3: Determination of subcritical crack growth parameters from constant stressing rate flexural strength tests*

EN 843-5, *Advanced technical ceramics — Mechanical properties of monolithic ceramics at room temperature — Part 5: Statistical analysis*

CEN/TS 14425-1, *Advanced technical ceramics — Test methods for determination of fracture toughness of monolithic ceramics — Part 1:Guide to test method selection*

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

3 Terms and definitions

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

3.1
delayed failure
fracture of an item after an extended period under stress

3.2
item under test
component to be subjected to the proof test

3.3
proof test
short-term test designed to investigate the mechanical or thermo-mechanical potential of a component, removing by fracture those components which do not meet specified levels

3.4
proof-test ratio
ratio of the stress to be applied in a short-term proof test to the expected long-term service stress within an item under test

NOTE "Item under test", see 3.2.

3.5
sub-critical crack growth
extension of existing cracks or flaws under a stress which does not produce instant failure