Irish Standard
I.S. EN 820-4:2009

Advanced technical ceramics - Thermomechanical properties of monolithic ceramics - Part 4: Determination of flexural creep deformation at elevated temperatures

I.S. EN 820-4:2009

Incorporating amendments/corrigenda issued since publication:

This document replaces:	*This document is based on:*	*Published:*
I.S. ENV 820-4:2001	EN 820-4:2009 ENV 820-4:2001	8 July, 2009 11 December, 2001

This document was published under the authority of the NSAI and comes into effect on:
9 September, 2009

ICS number:
81.060.30

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W **NSAI.ie**

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Price Code:
G

Údarás um Chaighdeáin Náisiúnta na hÉireann

I.S. EN 820-4:2009

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 820-4

July 2009

ICS 81.060.30

Supersedes ENV 820-4:2001

English Version

Advanced technical ceramics - Thermomechanical properties of monolithic ceramics - Part 4: Determination of flexural creep deformation at elevated temperatures

Céramiques techniques avancées - Propriétés thermomécaniques des céramiques monolithiques - Partie 4 : Détermination de la déformation par fluage en flexion à températures élevées

Hochleistungskeramik - Thermomechanische Eigenschaften monolithischer Keramik - Teil 4: Bestimmung der Kriechverformung unter Biegebeanspruchung bei erhöhten Temperaturen

This European Standard was approved by CEN on 12 June 2009.

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 CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, 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.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 820-4:2009: E

Contents

Page

Foreword

This document (EN 820-4:2009) 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 January 2010, and conflicting national standards shall be withdrawn at the latest by January 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.

This document supersedes ENV 840-4:2001.

EN 820 consists of five parts, under the general title "Advanced technical ceramics - Methods of testing monolithic ceramics – Thermomechanical properties":

— Part 1: Determination of flexural strength at elevated temperatures

— Part 2: Determination of self-loaded deformation

— Part 3: Determination of resistance to thermal shock by water quenching

— Part 4: Determination of flexural creep deformation at elevated temperatures

— Part 5: Determination of elastic moduli at elevated temperatures

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, 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 Part of EN 820 describes a procedure for undertaking flexural creep tests at elevated temperatures on advanced technical ceramics, mainly for the purposes of comparison of deformation behaviour of materials under stressed conditions and under any appropriate atmospheric condition.

NOTE This European Standard does not provide a method of acquiring engineering performance data since the stress distribution under flexural loading is indeterminate.

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 820-1*, Advanced technical ceramics – Methods of testing monolithic ceramics - Thermomechanical properties* - Part 1: *Determination of flexural strength at elevated temperatures*

EN 843-1*, Advanced technical ceramics – Mechanical properties of monolithic ceramics at room temperature* - Part 1: *Determination of flexural strength*

EN 1006*, Advanced technical ceramics - Monolithic ceramics - Guidance on the selection of test pieces for the evaluation of properties*

EN 60584-1*, Thermocouples* - Part 1: *Reference tables (IEC 60584-1:1995)*

EN 60584-2*, Thermocouples* - Part 2: *Tolerances (IEC 60584-2:1989 + 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)*

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 following terms and definitions apply.

3.1
creep
time-dependent non-elastic deformation of a material under an applied stress

3.2
creep rupture
failure of a test piece under nominally constant loading conditions resulting from an accumulation of microstructural damage

3.3
stress rupture
catastrophic extension of a flaw having previously grown subcritically under constant nominal stress leading to failure of the test piece