Advanced technical ceramics - Methods of testing monolithic ceramics - Thermo-mechanical properties - Part 2: Determination of self-loaded deformation

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EESTI STANDARDIKESKUS

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN 820-2:2003 sisaldab Euroopa standardi EN 820-2:2003 ingliskeelset teksti. Käesolev dokument on jõustatud 16.05.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 820-2:2003 consists of the English text of the European standard EN 820-2:2003. This document is endorsed on 16.05.2003 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This European Standard specifies a method for the determination of the temperature at which the self-loaded deformation of a ceramic test piece commences and the extent of this deformation	**Scope:** This European Standard specifies a method for the determination of the temperature at which the self-loaded deformation of a ceramic test piece commences and the extent of this deformation

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Advanced technical ceramics - Methods of testing monolithic ceramics - Thermo-mechanical properties - Part 2: Determination of self-loaded deformation

Céramiques techniques avancées - Méthodes d'essai pour céramiques monolithiques - Propriétés thermo-mécaniques - Partie 2: Détermination de la déformation sous son propre poids

Hochleistungskeramik - Prüfverfahren für monolithische Keramik - Thermomechanische Eigenschaften - Teil 2: Bestimmung der Verformung unter Eigengewicht

This European Standard was approved by CEN on 2 January 2003.

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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 Management Centre has the same status as the official versions.

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

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Contents

Foreword

This document (EN 820-2:2003) has been prepared by Technical Committee CEN/TC 184 "Advanced technical ceramics", the secretariat of which is held by BSI.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2003, and conflicting national standards shall be withdrawn at the latest by October 2003.

This document supersedes ENV 820-2:1992.

EN 820 *Advanced technical ceramics – Methods of testing monolithic ceramics – Thermo-mechanical properties* consists of four parts:

— Part 1: *Determination of flexural strength at elevated temperatures*

— Part 2: *Determination of self-loaded deformation*

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

— Part 4: *Determination of flexural creep deformation 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies a method for the determination of the temperature at which the self-loaded deformation of a ceramic test piece commences and the extent of this deformation.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:1999).*

ENV 1006, *Advanced technical ceramics - Methods of testing monolithic ceramics - Guidance on the sampling and selection of test pieces.*

3 Term and definition

For the purposes of this European Standard the following term and definition applies.

3.1
self-loaded deformation
the property induced by heat, which results in a ceramic body being readily deformed under its own weight

4 Principle

The method involves determining whether or not test bars supported only at their ends deform at a series of temperatures, recording any self-loaded deformation observed, and recording the results graphically. The temperature of commencement of self-loaded deformation, taken from the graph, is reported.

This test is intended as a simple method of determining the upper use temperature of ceramic components in a self-loaded condition. The criterion is an upper limit of flexural distortion. The test is suitable for use on furnace construction materials and on any ceramic materials, from which components are subjected to further processing at high temperatures.

5 Apparatus

5.1 Measurement apparatus, of the type shown in Figure 1. The distance between the knife edge supports shall be 160 mm ± 0,5 mm. The gauge for measuring deformation (sag or bow) shall be accurate to 0,01 mm.

NOTE The dial gauge shown in Figure 1 is an example only.

5.2 Steel bar, of dimensions as shown in Figure 2, with the top surface flat to ± 0,01 mm and parallel, to ± 0,01 mm, to the under surfaces in the regions of reduced thicknesses.

5.3 Laboratory furnace, capable of achieving 1600 °C, and of holding the temperature uniformly over the area occupied by the test pieces (see Figure 3) to within ± 5 °C. A controlled atmosphere, other than air, may be used if required. This shall be reported (see clause 10).