

**Spetsiaalne tehniline keraamika.
Monoliitkeraamika. Termofüüsikalised
omadused. Osa 1: Soojuspaisumise
määramine**

Advanced technical ceramics - Monolithic ceramics -
Thermo-physical properties - Part 1: Determination
of thermal expansion

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 821-1:2000 sisaldab Euroopa standardi EN 821-1:1995 ingliskeelset teksti. Käesolev dokument on jõustatud 11.01.2000 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 821-1:2000 consists of the English text of the European standard EN 821-1:1995. This document is endorsed on 11.01.2000 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.
--	---

Käsitlusala: See standardi EN 821 osa kirjeldab spetsiaalse tehnilise monoliitkeraamika lineaarse soojuspaisumise karakteristikute määramise meetodit maksimaaltemperatuurini 1500 °C ja tabelis 1 kindlaksmääratud täpsusega A või B.	Scope:
--	----------------------

ICS 81.060.30

Võtmesõnad: katsed, keraamika, määramine, soojuspaisumine, termodünaamilised omadused

ICS 81.060.20

Descriptors: Ceramics, testing, thermal expansion.

English version

Advanced technical ceramics

Monolithic ceramics

Thermophysical properties

Part 1: Determination of thermal expansion

Céramiques techniques avancées; céramiques monolithiques; propriétés thermophysiques. Partie 1: Détermination de la dilatation thermique

Hochleistungskeramik; monolithische Keramik; thermophysikalische Eigenschaften. Teil 1: Bestimmung der thermischen Längenänderung

This European Standard was approved by CEN on 1995-01-04.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Contents

	Page
Foreword	2
1 Scope	3
2 Normative references	3
3 Definitions	3
4 Principle	4
5 Apparatus	4
6 Test pieces	7
7 Procedure	8
8 Calculation of results	9
9 Reporting of results	10
10 Test report	11
Annexes	
A (normative) Calibration of apparatus (direct-measuring instruments)	15
B (normative) Calibration of apparatus (differential type)	17
C (informative) Thermal expansion reference data	18
D (informative) Bibliography	20

Foreword

This European Standard was prepared by CEN/TC 184 'Advanced technical ceramics', the Secretariat of which is held by BSI.

EN 821 consists of three Parts:

Part 1 Determination of thermal expansion

Part 2 Determination of thermal diffusivity

Part 3 Determination of specific heat capacity

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by July 1995 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard:

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This Part of EN 821 describes the method for the determination of the linear thermal expansion characteristics of advanced monolithic technical ceramics up to a maximum temperature of 1500 °C (see 5.2) and to a specified level of accuracy A or B as defined in table 1.

The method describes general principles of construction, calibration and operation of suitable apparatus. Specific details, including test piece dimensions, depend on the design of the apparatus. Methods of calibration are given in annexes A and B. Thermal expansion reference data are given in annex C.

2 Normative references

This European standard incorporates by dated or undated references, 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.

- EN 45001 General criteria for the operation of testing laboratories
- ENV 1006 Advanced technical ceramics - Methods of testing monolithic ceramics - Guidance on the sampling and selection of test pieces
- HD 446.1 S1 Thermocouples - Part 1 : Reference tables
- ISO 3611 Micrometer callipers for external measurement
- ISO 6906 Vernier callipers reading to 0,02 mm

3 Definitions

For the purposes of this Part of EN 821, the following definitions apply:

3.1 linear thermal expansion. The proportional extension which occurs when a material is heated.

3.2 linear thermal expansion coefficient. The proportional extension which occurs when a material is heated over a temperature interval of 1 K at temperature T .

3.3 mean linear thermal expansion coefficient. The average value of the thermal expansion coefficient over a temperature range T_1 to T_2 .