Tihedate tulekindlate profiiltoodete katsemeetodid. Osa 4: Gaasi läbilaskvuse määramine

Methods of test for dense shaped refractory products - Part 4: Determination of permeability to gases

EESTI STANDARDI EESSÕNA

Käesolev Eesti standard EVS-EN 993-4:2000 sisaldab Euroopa standardi EN 993-4:1995 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 993-4:2000 consists of the English text of the European standard EN 993-4:1995. 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.

NATIONAL FOREWORD

Käsitlusala: See standard määrab kindlaks meetodi gaasi läbilaskvuse mõõtmiseks tihedates tulekindlates profiiltoodetes. MÄRKUS. Esitatud meetod arvestab gaasi dünaamilist viskoossust, seetõttu ei pruugi saadud tulemused olla varasemate, viskoossust mittearvestavate meetodite kasutamisel saadud tulemustega otseselt võrreldavad. Määramine on tehtud õhu läbivoolamise teel. Vajaduse korral võib kasutada teisi gaase, kui õhu ja lämmastiku viskoossus on antud.	**Scope:**

ICS 81.080

Võtmesõnad: gaasi läbilaskvus, mõõtmed, teimid, tihedad tulekindlad profiiltooted, tulekindlad materjalid, tulekindlad profiilmaterjalid

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 993-4

February 1995

ICS 81.080

Descriptors: Refractory products, gas permeability, testing.

English version

Methods of test for dense shaped refractory products
Part 4: Determination of permeability to gases

Méthodes d'essai pour produits réfractaires façonnés denses. Partie 4: Détermination de la perméabilité aux gaz

Prüfverfahren für dichte geformte feuerfeste Erzeugnisse. Teil 4: Bestimmung der Gasdurchlässigkeit

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CEN

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Comité Européen de Normalisation
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Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 187 "Refractory products and materials", the secretariat of which is held by BSI.

It is closely based on the corresponding International Standard, ISO 8841 : 1991 "Dense, shaped refractory products - Determination of permeability to gases", published by the International Organization for Standardization (ISO).

Reproducibility and repeatability data are not available, but may be given in a subsequent edition.

EN 993 'Methods of test for dense shaped refractory products' consists of 18 Parts:

Part 1 : Determination of bulk density and porosity
Part 2 : Determination of true density
Part 3 : Test methods for carbon-containing refractories
Part 4 : Determination of permeability to gases
Part 5 : Determination of cold crushing strength
Part 6 : Determination of modulus of rupture, ambient temperatures
Part 7 : Determination of modulus of rupture, elevated temperatures
Part 8 : Determination of refractoriness-under-load
Part 9 : Determination of creep in compression
Part 10 : Determination of permanent change in dimensions on heating
Part 11 : Determination of resistance to thermal shock
Part 12 : Determination of pyrometric cone equivalent
Part 13 : Specification for pyrometric cones
Part 14 : Determination of thermal conductivity (hot wire, cross-array)
Part 15 : Determination of thermal conductivity (hot wire, parallel)
Part 16 : Determination of resistance to acids
Part 17 : Determination of bulk density of granular material (mercury method)
Part 18 : Determination of bulk density of granular material (water method)

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 August 1995, and conflicting national standards shall be withdrawn at the latest by August 1995.

According to 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, United Kingdom.

1 Scope

This European Standard specifies a method for the measurement of the permeability to gases of dense, shaped refractory products.

Note : The method specified takes account of the dynamic viscosity of the gas, and therefore the results obtained may not be directly comparable with those obtained by earlier methods which took no account of viscosity. The determination is generally made by the passage of air. Other gases may be used when required and the viscosities of air and nitrogen are given.

2 Normative reference

This European Standard incorporates, by dated or undated reference, provisions from another publication. This normative reference is cited at the appropriate places in the text and the publication is listed hereafter. For a dated reference, subsequent amendments to or revisions of this publication apply to this European standard only when incorporated in it by amendment or revision. For an undated reference the latest edition of the publication referred to applies.

ISO 6906 : 1984 Vernier callipers reading to 0,02 mm

3 Definition

For the purposes of this standard the following definition applies :

3.1 permeability of a material : The property by which the material allows a gas to pass through it when under a difference of pressure.

The permeability (μ) is calculated using the following equation, given for the volume of gas passing through a test piece in a given time.

$$\frac{V}{t} = \mu \cdot \frac{1}{\eta} \cdot \frac{A}{\delta} \cdot (p_1 - p_2) \cdot \frac{(p_1 + p_2)}{2p} \qquad (1)$$

where :

V is the volume of gas passing through the material, in cubic metres;

t is the time, in seconds, in which that volume of gas passes through the material;

μ is the permeability of the material, in square metres;

η is the dynamic viscosity, in pascal seconds, of the gas at the temperature of the test;

A is the cross-sectional area, in square metres of the material traversed;