

Unshaped refractory products - Part 1: Introduction and classification

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and classification

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 1402-1:2004 sisaldab Euroopa standardi EN 1402-1:2003 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 28.01.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 1402-1:2004 consists of the English text of the European standard EN 1402-1:2003.</p> <p>This document is endorsed on 28.01.2004 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: This European Standard defines terms relating to unshaped refractory products and establishes the classification for the various types of products. Raw materials and crushed or granulated refractory materials which do not contain any binder are excluded</p>	<p>Scope: This European Standard defines terms relating to unshaped refractory products and establishes the classification for the various types of products. Raw materials and crushed or granulated refractory materials which do not contain any binder are excluded</p>
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ICS 01.040.81, 81.080

Võtmesõnad:

English version

Unshaped refractory products - Part 1: Introduction and classification

Produits réfractaires non façonnés - Partie 1: Introduction et classification

Ungeformte feuerfeste Erzeugnisse - Teil 1: Einführung und Klassifizierung

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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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Foreword

This document (EN 1402-1:2003) has been prepared by Technical Committee CEN/TC 187 "Refractory products and materials", 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 April 2004, and conflicting national standards shall be withdrawn at the latest by April 2004.

This document supersedes ENV 1402-1:1994.

EN 1402 "*Unshaped refractory products*" consists of eight parts:

- *Part 1: Introduction and classification*
- *Part 2: Sampling for testing*
- *Part 3: Characterization as received*
- *Part 4: Determination of consistency of castables*
- *Part 5: Preparation and treatment of test pieces*
- *Part 6: Measurement of physical properties*
- *Part 7: Tests on pre-formed shapes*
- *Part 8: Determination of complementary properties*

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.

Introduction

The general objective of this part of EN 1402 is to define, with as much accuracy as possible, the control of unshaped refractory products with special reference to:

- a) quality control;
- b) checking the conformity of the delivery as compared with claimed properties;
- c) the control of batch homogeneity;
- d) the final control of linings.

Properties are unavoidably influenced by industrial placing as a result of the equipment, environmental conditions and often by specific site conditions (target date, location). Quality control and final control of lining should not be considered in the same documents, since the former requires accuracy and clean operative methods while the latter requires the control of the placing.

Unshaped refractory products used in industrial linings are not fired, so that firing which results from use creates complicated conditions that make control difficult. The main points to be mentioned are:

- i) the temperature gradient, the consequence of which is a property gradient;
- ii) the level of maximum temperature reached on the hot face directly depends on the working temperature of the equipment;
- iii) the life of the equipment may be numbered in hours or in years.

It should be noted that properties measured in the laboratory frequently do not reflect the properties of the material when installed.

1 Scope

This part of this European Standard defines terms relating to unshaped refractory products and establishes the classification for the various types of products.

Raw materials and crushed or granulated refractory materials which do not contain any binder are excluded.

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 1094-4, *Insulating refractory products - Part 4: Determination of bulk density and true porosity*.

EN 1402-6, *Unshaped refractory products - Part 6: Measurement of physical properties*.

ISO 565, *Test sieves - Metal wire cloth, perforated metal plate and electroformed sheet - Nominal sizes of openings*.

3 Terms and definitions

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

3.1

unshaped refractory materials

mixtures which consist of an aggregate and a bond or bonds, prepared ready for use either directly in the condition in which they are supplied or after the addition of one or more suitable liquids

NOTE 1 They can contain metallic, organic or ceramic fibre material.

NOTE 2 These mixtures are either dense or insulating. Insulating mixtures are those whose true porosity is not less than 45 % when determined in accordance with EN 1094-4, using a test piece fired to specified conditions.

3.2

pre-formed shapes

shapes made from unshaped refractory materials, cast or moulded and pre-treated by the manufacturer, so that they can be directly placed in service

NOTE They may have a thermal pre-treatment.

4 Product types and methods of placement

4.1 Refractory castables

4.1.1 General

Mixtures of refractory aggregates and bond(s), mainly supplied dry and used after the addition and mixing with water or another liquid. They are placed by casting with vibration, by casting without vibration (self-flowing), by rodding, by shotcreting or when necessary by tamping. The bond is formed and hardening takes place without heating.