SLOVENSKI STANDARD
SIST ENV 1402-2:1998

01-april-1998

Neoblikovani ognjevzdrģni izdelki - 2. del: Vzorļenje

Unshaped refractory products - Part 2: Sampling for testing

Ungeformte feuerfeste Erzeugnisse - Teil 2: Probenahme

Matériaux réfractaires non-façonnés - Partie 2: Echantillonnage

Ta slovenski standard je istoveten z: **ENV 1402-2:1997**

ICS:

81.080 Ognjevzdržni materiali Refractories

SIST ENV 1402-2:1998 **en**

EUROPEAN PRESTANDARD **ENV 1402-2**

PRÉNORME EUROPÉENNE

EUROPÄISCHE VORNORM June 1997

ICS 81.080

Descriptors: refractory materials, unshaped refractories, sampling, quality control

English version

Unshaped refractory products - Part 2: Sampling for testing

Matériaux réfractaires non-façonnés - Partie 2: Echantillonnage

Ungeformte feuerfeste Erzeugnisse - Teil 2: Probenahme

This European Prestandard (ENV) was approved by CEN on 1997-06-01 as a prospective standard for provisional application. The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into an European Standard (EN).

CEN members are required to announce the existance of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, 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

Foreword

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

ENV 1402 'Unshaped refractory products' consists of seven Parts:

Part 1 : Introduction and definitions
Part 2 : Sampling for testing
Part 3 : Characterization as received
Part 4 : Consistency testing
Part 5 : Preparation and treatment of test pieces
Part 6 : Measurement of physical properties
Part 7 : Pre-formed shapes

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This part of ENV 1402 gives guidance for the sampling of unshaped refractory materials for the purpose of inspections and testing for quality and general information on the reduction and treatment of samples prior to testing. It covers all materials formulated for the purpose of monolithic refractory materials.

2 Normative references

This European Pre-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 listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Pre-standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 932-1	Tests for general properties of aggregates Part 1: Methods of sampling
ISO 3534	Statistics - Vocabulary and symbols
ISO 5022	Shaped refractory products - Sampling and acceptance testing
ISO 8656-1	Refractory products. Sampling of raw materials and unshaped products Parts 1: Sampling scheme

3 Definitions

For the purpose of this European Pre-standard 1402-2 the following definitions apply:

3.1 batch or lot: A quantity of material from which a sample is to be achieved for testing to determine the quality of the material. A batch consists of material characterised as being of the same type, composition, grading and which, as far as practical, has been manufactured under the same conditions.

3.2 consignment: A quantity of material supplied at one time. A consignment may consist of one or more batches or parts of batches.

3.3 unit package: A packaged part of batch which can be a bag or a big bag (castables, gunning material, ramming mixes), a carton (plastics), wrapped block (tap hole mixes), a drum or a can (injection material, refractory grout...). A pallet is not a unit package.

3.4 increment: Quantity of material taken at one time from a larger quantity.

3.4.1 elementary increment: Quantity of material taken at one time from a unit package. This operation repeated a number of times will constitute a package increment after mixing.

3.4.2 package increment: Increment that is representative of the unit package. It can be the unit package itself or the result of mixing a certain number of elementary increments. The mass and number of elementary increments which are necessary to form the package increment are defined in accordance with ISO 8656-1.

3.4.3 laboratory increment: Package increment that has been reduced by an approved method.

3.4.4 test-piece increment: Test bars or cylinders obtained by shaping the laboratory increment necessary to carry out several physical tests (e.g. castable test bars for cold modulus of rupture testing).

3.5 sample: One or more increments taken from a batch which are to be used to provide information on the batch and to allow a decision concerning the quality of the batch.

3.5.1 batch sample: Set of package increments representative of the batch. The number of package increments which are to form the batch sample, should be agreed by principal parties involved. ISO 5022 or other sampling schemes may be used.

3.5.2 laboratory sample: Set of laboratory increments. The number of laboratory increments are the same as the number of package increments.

3.5.3 test-piece sample: Set of test-piece increments. The number of test increments can be higher than the number of laboratory increments and is governed by EN test standards.

4 Sampling scheme

4.1 General principles

It is essential that the adoption of a particular sampling scheme be agreed by the principal parties and that a detailed sampling plan be documented and made available to those responsible for the taking and testing of the increments. The basic framework of a scheme requires decisions and documentation on the following:

a) The constitution and description of the total material to be sampled;
b) The identification of batches and quantities which make up the total material;
c) The type of packaging and mass content for each type of material;
d) The parties responsible for sampling and testing who may be third parties;
e) The location, timing and method of sampling;
f) The level of sampling, population of increments;
g) The properties to be measured;
h) The methods of test (reference to EN number);
i) The criteria for assessing values of measured properties for deciding batch quality.

- In all cases during sampling, increment division, preparation and storage of the increments, care shall be taken to protect against any changes in the properties to be tested.

- Sampling shall be performed under the supervision of a person having adequate experience on sampling. The sampler shall be approved either by the interested parties or by the appropriate body or bodies. The sampler shall be informed of the aim of the sampling.

- When individual batches are identified, agreement should be made between the parties on whether, or to what degree, a large batch should be subdivided into smaller batches. This may be undertaken to avoid the possibility of the whole of a large batch being rejected because of a problem with a proportion of it.

- When a sample is required for third party certification of the factory production control as the product is being made, the sample shall be achieved by the same method that the producer uses to obtain a sample for production control purposes.

- Where required, the consignment may be subdivided into individual test batches for example, if it is clear that the consignment consists of various batches or should be treated in separate partial quantities.

- The framework of sampling is presented in figure A.1.

4.2 Procurement of the batch sample

4.2.1 Method

a) Identify the test batch, i.e. of the consignment or part of the consignment to be sampled (nature of the product, mass, transport conditions, etc.);

b) Identify the unit package. The average weight of this unit package shall be known;

c) Obtain the number of package increments which are to form the batch sample as agreed between parties. The sampling scheme of ISO 5022 can be agreed by the parties if the unit packages, considered as equivalent to shaped pieces, weigh less than 35 kg;

d) Randomly, select this number of the unit packages from the batch;

e) Proceed to sampling of the selected unit packages, if their mass is more than 35 kg. It means, obtain a package increment of each of these unit packages. In this case, ISO 8656-1 shall be applied to determine the mass and the number of elementary increments which are necessary to obtain the package increment:

1) Estimate the maximum grain size of the material. This estimation is important because the minimum mass of the elementary increment shall be determined, taking into account the maximum grain size of the material in order to avoid systematic errors during sampling (see table 1).

Table 1: Minimum mass of elementary increment depending on the maximum grain size

Minimum grain size mm	Minimum mass of elementary increment g
10	500 g
3	200 g
1	50 g

NOTE 1: The masses of the elementary increments relate to a bulk density greater than 1 g/cm^3. For lower bulk densities, the mass of the elementary increment may be determined by multiplying the numerical value in the table by the bulk density of the material.

NOTE 2: Special agreements should be made in the case of very lumpy products.

In the case of pre-ground or pre-homogenized material, the minimum mass of the elementary increment can be determined, not from the grain size of the coarsest aggregate, but from the maximum size of the grains of the material before aggregating.

NOTE 3: The actual elementary increment masses should depend on the sampling equipment and the test to be performed. This is the case for unshaped products if the physico-mechanical properties of specimens taken from these products are to be determined.

2) Determine the mass of the elementary increment in accordance with ISO 8656-1, taking into account the minimum quantities required for the tests which are to be performed;

3) Classify the test batch in a quality variation class because the number of increments to be taken from a test lot shall be determined taking into account the deviations in the properties of the material.

The mean value and the standard deviation of a given property and type of unshaped product, designated respectively by μ and σ, define the coefficient of variation $v = 100\ \sigma/\mu$ of this property expressed in practice as a percentage.

The values of the coefficient of variation are divided into three classes:

$0 < v < 5$ %, small variation, class 1

5 % $< v <$ 15 %, medium variation, class 2

15 % $< v <$ 30 % large variation, class 3.