SLOVENSKI STANDARD
SIST EN 1469:2015

01-maj-2015

Nadomešča:
SIST EN 1469:2005

Proizvodi iz naravnega kamna - Plošče za navpične in stropne obloge - Zahteve

Natural stone products - Slabs for cladding - Requirements

Natursteinprodukte - Bekleidungsplatten - Anforderungen

Produits en pierre naturelle - Dalles de revêtement mural - Exigences

Ta slovenski standard je istoveten z: EN 1469:2015

ICS:

91.100.15	Mineralni materiali in izdelki	Mineral materials and products

SIST EN 1469:2015 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1469

March 2015

ICS 91.100.15

Supersedes EN 1469:2004

English Version

Natural stone products - Slabs for cladding - Requirements

Produits en pierre naturelle - Dalles de revêtement mural - Exigences

Natursteinprodukte - Bekleidungsplatten - Anforderungen

This European Standard was approved by CEN on 3 January 2015.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword

This document (EN 1469:2015) has been prepared by Technical Committee CEN/TC 246 “Natural stones”, the secretariat of which is held by UNI.

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 September 2015, and conflicting national standards shall be withdrawn at the latest by December 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1469:2004.

EN 1469:2015 includes the following significant technical changes with respect to EN 1469:2004:

- squareness tolerances, durability, direct airborne sound insulation, thermal conductivity, release of dangerous substances added to requirements;
- sampling at the point of delivery added to the sampling;
- assessment and verification of constancy of performance added;
- Annex ZA substantially changed.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports basic requirements for construction works of Regulation (EU) No 305/2011 on Construction Products.

For relationship with the regulation, see informative Annex ZA, which is an integral part of this document.

This European Standard is one of a series of standards for specifications of natural stone products which includes the following:

- EN 1467, *Natural stone — Rough blocks — Requirements*
- EN 1468, *Natural stone — Rough slabs — Requirements*
- EN 1469, *Natural stone products — Slabs for cladding — Requirements*
- EN 12057, *Natural stone products — Modular tiles — Requirements*
- EN 12058, *Natural stone products — Slabs for floors and stairs — Requirements*
- EN 12059, *Natural stone products — Dimensional stone work — Requirements*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies requirements for slabs of natural stone that are made for use as cladding for internal and external wall and ceiling finishes. This European Standard does not cover aggregates and artificially agglomerated stone material and does not cover installation. Furthermore, this European Standard does not cover roofing slates used as external cladding and slates and stone products for discontinuous roofing. This European Standard does not consider fixing by means of mortar and adhesives.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1745, *Masonry and masonry products — Methods for determining thermal properties*

EN 1925, *Natural stone test methods — Determination of water absorption coefficient by capillarity*

EN 1936, *Natural stone test methods — Determination of real density and apparent density, and of total and open porosity*

EN 12371, *Natural stone test methods — Determination of frost resistance*

EN 12372, *Natural stone test methods — Determination of flexural strength under concentrated load*

EN 12407, *Natural stone test methods — Petrographic examination*

EN 12440, *Natural stone — Denomination criteria*

EN 12670:2001, *Natural stone — Terminology*

EN 13364, *Natural stone test methods — Determination of the breaking load at dowel hole*

EN 13373, *Natural stone test methods — Determination of geometric characteristics on units*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

EN 13755, *Natural stone test methods — Determination of water absorption at atmospheric pressure*

EN 14066, *Natural stone test methods — Determination of resistance to ageing by thermal shock*

EN 16306, *Natural stone test methods — Determination of resistance of marble to thermal and moisture cycles*

EN ISO 10456, *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values (ISO 10456)*

EN ISO 12572, *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties (ISO 12572)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12670:2001 and the following apply.

3.1
slab for cladding
slab cut to size to be used as cladding for internal and external walls and may be fixed or suspended at any angle

3.2
dimensions of slabs for cladding
length *l*, width *b* and thickness *d* are the dimensions of a slab for cladding for external and internal use

Note 1 to entry: Dimensions are given in the stated sequence in millimetres (see Figure 1).

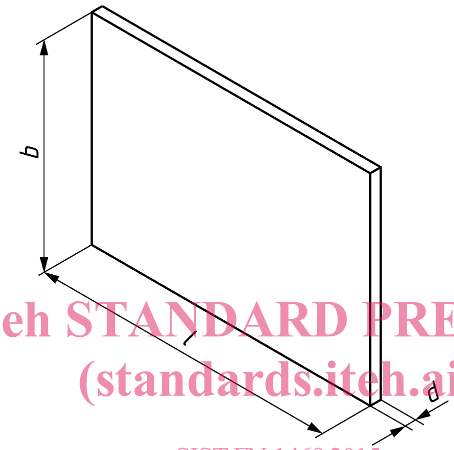


Figure 1 — Dimensions of a slab for cladding

3.3
lower expected value
lower expected value (E_L) corresponds to the 5 %-quantile of a logarithmic normal distribution for a confidence level of 75 %

3.4
higher expected value
higher expected value (E_H) corresponds to the 95 %-quantile of a logarithmic normal distribution for a confidence level of 75 %

4 Characteristics of natural stone for cladding

4.1 Geometrical characteristics

4.1.1 General

All measurements shall be carried out in accordance with EN 13373 and all measured values of individual units shall fall within the required tolerances.

4.1.2 Thickness

The thickness shall be measured in accordance with EN 13373 and the measured values shall not deviate from the nominal thickness by more than given in Table 1.

Table 1 — Tolerances on the nominal thickness

Nominal thickness in mm	Tolerance
More than 12 Up to and including 30	±10 %
More than 30 Up to and including 80	±3 mm
More than 80	±5 mm

Stricter deviations may be declared by the manufacturer. This is particularly important when the edges of the slabs will be visible after installation.

NOTE If the slab is to be fixed by adhesive or a thin mortar bed, stricter tolerances may be needed.

The required thickness of slabs shall result from a structural analysis or similar procedure that takes into account the technical and physical properties of the stone and the intended application.

For natural cleft/riven faces, Table 1 does not apply and the deviations on thickness shall be set out by the manufacturer.

4.1.3 Flatness

The deviation from flatness of the surface (except for natural cleft faces) when measured in accordance with EN 13373 shall not exceed 0,2 % of the slab length, and shall not exceed 3 mm. For natural cleft faces, the tolerance on flatness shall be declared by manufacturer.

4.1.4 Length, width and squareness

The length, width or squareness shall not deviate from the nominal size by more than the tolerances given in Table 2. Measurements shall be made according to EN 13373.

Table 2 — Tolerances on length, width and squareness

Nominal length or width in mm	< 600	≥ 600
Sawn edges thickness ≤ 50 mm	±1 mm	±1,5 mm
Sawn edges thickness > 50 mm	±2 mm	±3 mm
Squareness	±1 mm	±2 mm

Stricter deviations may be declared by the manufacturer.

For natural cleft/riven edges, Table 2 does not apply and the tolerances on length, width and squareness shall be set out by the manufacturer.

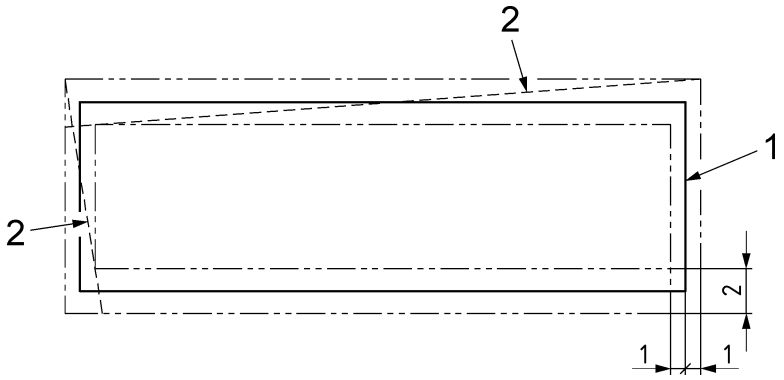
4.1.5 Special shapes

The permissible deviation at any point shall be as stated in Table 2 (see Figure 2).

Each slab angle shall be in accordance with the agreed geometry. Pieces of special or irregular shape shall be checked for compliance with the required shape by use of a suitable template, the permissible deviation at any point shall be as stated in Table 2.

Stricter deviations may be declared by the manufacturer. This is particularly important when the edges of the slabs will be visible.

Dimensions in millimetres



Key

1 nominal size

2 the slab sides shall fall within the two dotted lines indicating the tolerances of length and width according to Table 2

Figure 2 — Example of tolerances on angles

4.1.6 Location of dowel holes

The specified location, depth and diameter (shape) of dowel holes shall be as follows:

— Location measured along the length or width of the slab: ± 2 mm

— Location measured along thickness: ± 1 mm (to be measured from the exposed face)

— Depth: + 3 / - 1 mm

— Diameter: + 1 / - 0,5 mm

Stricter deviations may be declared by the manufacturer.

For other fixing systems (e.g. slots), specific deviations shall be declared by the manufacturer.

4.1.7 Commercial sizes of slabs for cladding

Commercial sizes shall be based on the area of the smallest possible circumscribed rectangle measured in square metres accurate to two decimal places.

NOTE For small units it may be necessary to agree a minimum size, for example 0,25 m^2.

4.1.8 Surface finish

4.1.8.1 General

Surface finishes shall be carried out uniformly to the edges of the cladding slab.

The surface treatment of some types of stones may typically involve the use of patching, fillers or other similar products for natural holes, faults or cracks; this is to be considered as part of the normal processing. In such cases the type of treatment, as well as the type and nature of additional materials, shall be declared.

4.1.8.2 Surfaces after surface finishing

Surfaces shall have a regular appearance as a function of the finishing process and shall be worked to meet the specified finish (e.g. making reference to samples, see 4.2.3) on all exposed surfaces. For definitions of surface finishes see EN 12670.

4.2 Physical and mechanical characteristics

4.2.1 General

When during production the products have been subjected to a treatment that alters the properties of the stone (e.g. chemical or physical treatment, patching or filling or other similar products for natural holes, faults or cracks) then the use of such treatment shall be stated and changes to the physical and chemical properties considered.

In addition, specimens for testing shall be representative of the product and any process(es) that the stone is subjected to.

The following characteristics shall be declared where requested by this standard or with reference to the intended use conditions.

4.2.2 Denomination

The denomination shall always be declared in accordance with EN 12440 (it means traditional name, petrological family, typical colour and place of origin).

NOTE The place of origin can be given by GPS coordinates.

The petrographic definition shall be determined in accordance with EN 12407.

4.2.3 Visual appearance

4.2.3.1 General

When required this characteristic shall be declared.

The colour, veining, texture, etc. of the stone shall be identified visually, typically by a reference sample of the same stone suitable for providing a general description of visual appearance. The reference sample shall be provided by the manufacturer.

4.2.3.2 Reference sample, visual inspection and acceptance criteria

A reference sample shall be an adequate number of specimens of natural stone of sufficient size to indicate the general appearance of the finished work. The dimensions of individual pieces shall be at least 0,01 m^2 (typical values are between 0,01 and 0,25 m^2 in face area but may be more), and shall indicate the range of appearance regarding the colouring, the vein pattern, the physical structure and the surface finish. In particular the reference sample shall show specific characteristics of the stone, such as typical holes, glass seams, spots, crystalline veins and rusty spots.

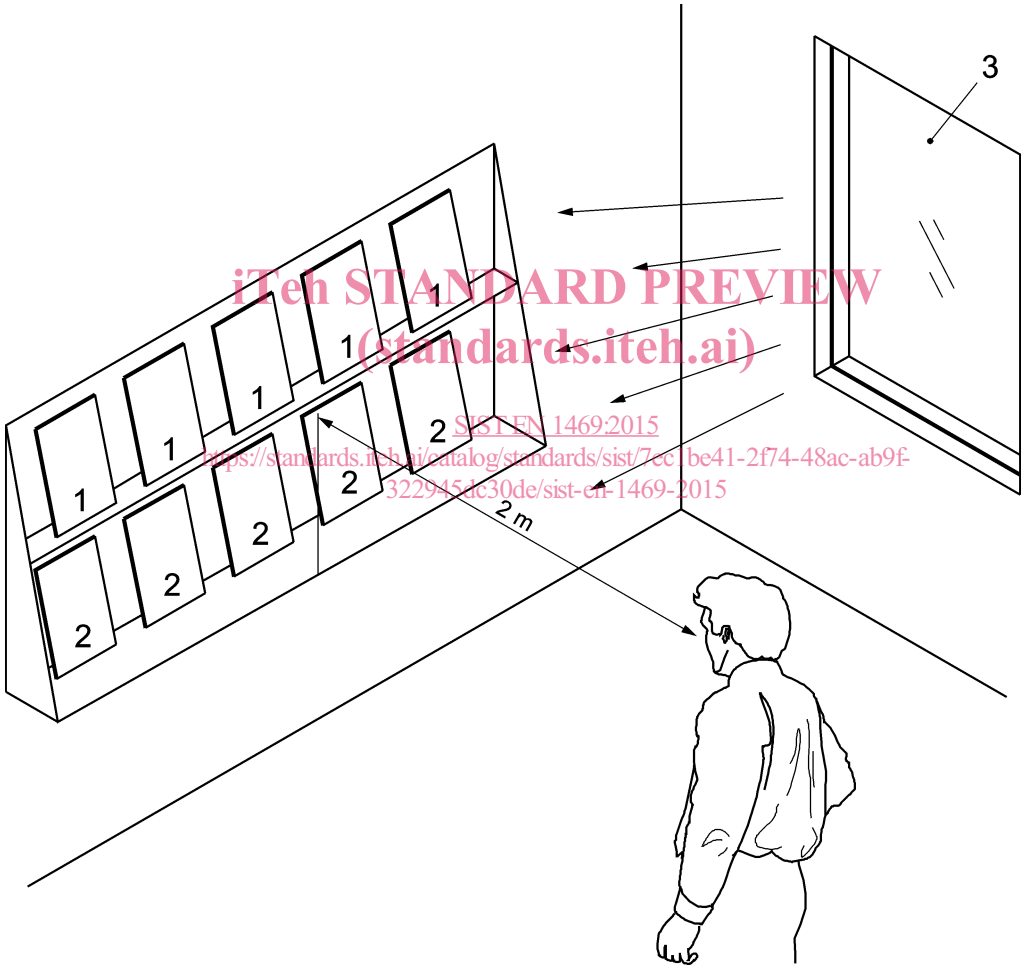
The reference sample does not imply strict uniformity between the sample itself and the actual supply; natural variations may always occur.

If the processing of the stone involves the use of patching, fillers or other similar products for natural holes, faults or cracks, then the reference sample shall similarly display the impact of the same on the finished surface.

All the characteristics as shown by the reference sample shall be considered typical of the stone and not as flaws, therefore they shall not become a reason for rejection, unless their concentration becomes excessive and the typical character of the stone is lost.

The name and address of the producer or the supplier, as well as the denomination of the stone in accordance with 4.2.2 above, shall be indicated on the reference sample.

Any comparison between production sample and reference sample shall be carried out by placing the reference sample against the production samples and viewing them at a distance of about two metres under normal daylight conditions and recording any visible differences in the characteristics of the stones (see Figure 3).



Key

1 reference sample

2 production sample

3 daylight

Figure 3 — Comparison between production sample and reference sample

All visible variations such as cracks, inclusions, cavities, stylolites and veins are permitted as far as they are typical for the stone and the performance of the stone is not adversely affected.

4.2.4 Flexural strength

When required this characteristic shall be declared.

The flexural strength shall be determined using the test method in EN 12372 and the mean value, lower expected value and standard deviation shall be declared.

Where the surface finish of the delivered product has an influence on the characteristic, the test shall be carried out with this finish, in accordance with the technological tests defined in EN 12372.

4.2.5 Resistance to fixings

The characteristic is carried out by determining the breaking load at a dowel hole. It shall be declared when the slabs are to be mechanically fixed using dowels on the edges.

The breaking load at a dowel hole shall be determined using the test method in EN 13364 and the mean value, lower expected value and standard deviation shall be declared.

Where the surface finish of the delivered product has an influence on the characteristic, the test shall be carried out with this finish, in accordance with the technological tests defined in EN 13364.

If a different mechanical fixing is to be used the suitability of the stone is determined from a structural analysis taking into account the location and the technical properties of the material.

Anchor holes shall not be drilled by percussion drilling machines.

4.2.6 Water absorption at atmospheric pressure

When required this characteristic shall be declared.

Where required the water absorption shall be determined using the test method in EN 13755 and the higher expected value (E_H) shall be declared.

4.2.7 Reaction to fire

When required this characteristic shall be declared.

Natural stones are considered reaction to fire Class A1 following Commission Decision 96/603/EC, as amended, with the following exceptions:

— natural stones containing asphalt at greater than 1 % by mass or volume, whichever is the more onerous, and having a final use subject to fire regulations, shall be tested for reaction to fire and classified in accordance with EN 13501-1;

— whenever processing of natural stones involves the use of organic patching, fillers or other similar products for natural holes, faults, cracks or similar, at greater than 1 % by mass or volume, whichever is the more onerous and the same stones have a final use subject to fire regulations, then they shall be tested for reaction to fire and classified in accordance with EN 13501-1.

4.2.8 Water absorption by capillarity

When required this characteristic shall be declared (e.g. when the cladding slab is to be used for elements in contact with a horizontal surface where water may be present).