BS EN 1469:2015

BSI Standards Publication

Natural stone products — Slabs for cladding — Requirements

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National foreword

This British Standard is the UK implementation of EN 1469:2015. It supersedes BS EN 1469:2004 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/545, Natural stone.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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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.

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

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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of an identical text or by endorsement, at the latest by September 2015, and conflicting national standards shall be withdrawn at the latest by December 2016.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).

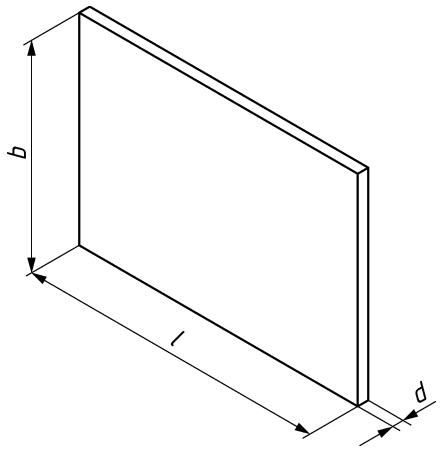


Figure 1 — Dimensions of a slab for cladding

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.

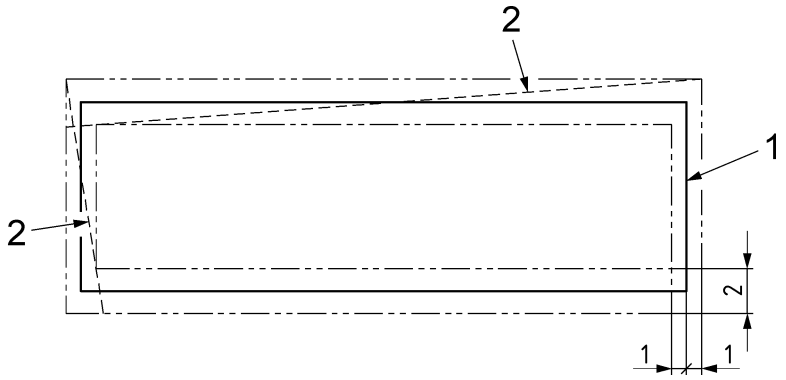
4.1.5 Special shapes

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.

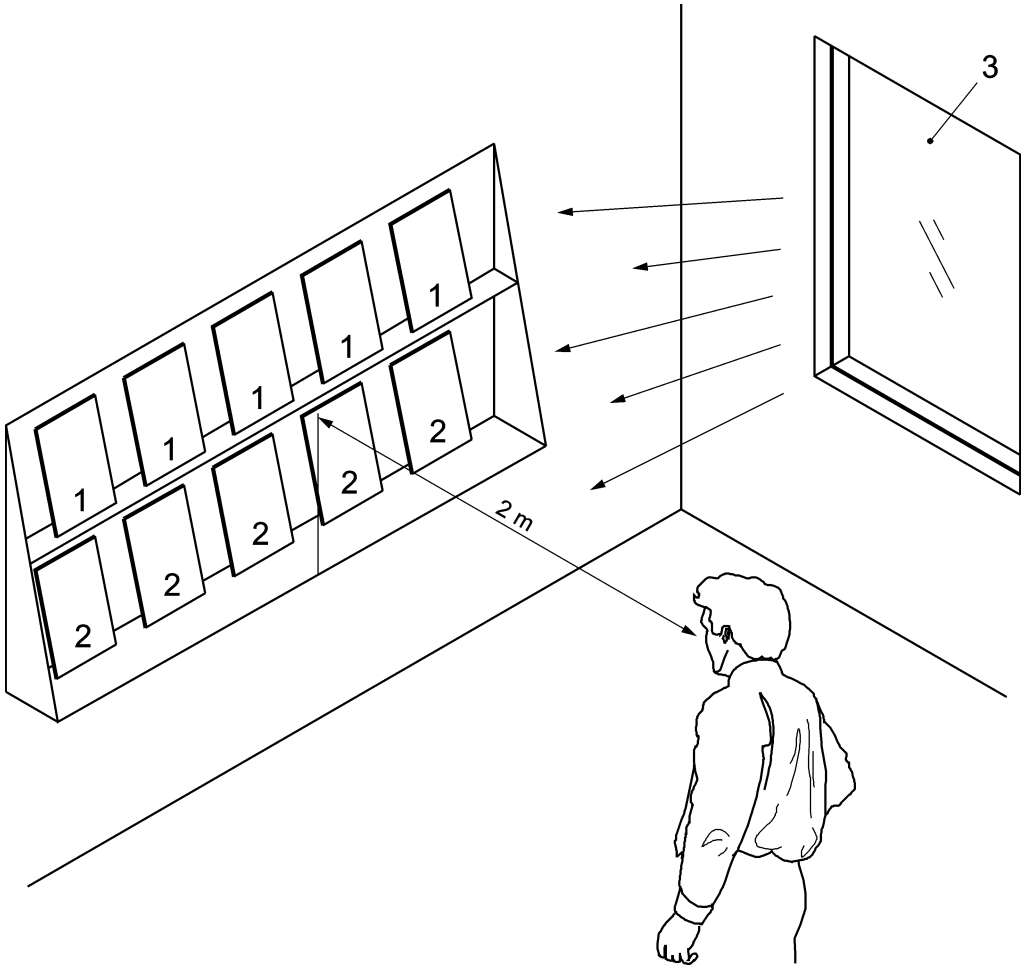
The reference sample does not imply strict uniformity between the sample itself and the actual supply; natural variations may always occur.

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).

The water absorption by capillarity shall be determined using the test method in EN 1925 and expressed as higher expected value (E_H).

For stone having an open porosity less than 1,0 % this test shall not be performed.

4.2.9 Apparent density and open porosity

When required this characteristic shall be declared.

The apparent density and open porosity shall be determined using the test method in EN 1936 and the mean values of the results expressed accordingly.

4.2.10 Durability

4.2.10.1 Durability of flexural strength against freeze thaw

When required this characteristic shall be declared. The frost resistance shall be determined using the test method in EN 12371 and the results expressed:

— as the value of the flexural strength without frost and after 14 freeze/thaw cycles by giving the mean value;

The physical properties of all stones vary within a normal range. Therefore, to evaluate the change in flexural strength before and after a frost test it is recommended to first determine whether the reduction in strength is statistically significant in relation to the normal range for the stone.

— or in case the stone failed before 14 cycles, as the number of cycles necessary to initiate cracks, rupture, etc.

For some specific uses, it may be appropriate to use different test cycles, for example freezing in water, freezing in water containing sodium chloride, freezing to a lower temperature, or testing specimens embedded in non-porous siliceous granules or a different number of cycles. In these cases, national provisions may be followed but these variations shall be clearly stated in the test report and in the product marking.

NOTE The selection of the stone is subjected to climatic zone and/or to codes of practice.

4.2.10.2 Resistance to thermal shock

When required this characteristic shall be declared.

The resistance to thermal cycles shall be determined using the test method in EN 14066 and the changes both in porosity and in flexural strength expressed accordingly.

4.2.10.3 Resistance to thermal and moisture cycling

The resistance of marble to thermal and moisture cycling shall be declared upon request only for marble intended for cladding of building facades and determined according to EN 16306.

For scientific definition of marble, see EN 12670:2001, 2.1.243 a.

4.2.11 Water vapour permeability

This characteristic shall be declared when the slab is to be used in a location subject to vapour control requirements.

The permeability coefficient shall be tested or given as tabulated values in accordance with EN ISO 12572 and/or EN ISO 10456.

4.2.12 Direct airborne sound insulation

Where required this characteristic shall be declared and determined using the test method in EN 1936 and declared as mean value.

4.2.13 Thermal conductivity

Where required this characteristic shall be declared and determined using the test method in EN 1745 and declared as mean value.

4.2.14 Release of dangerous substances

4.2.14.1 Emission of radioactivity

There is evidence that for finished product no dangerous concentration of radioactivity exists. National regulations on emission of radioactivity may require verification and declaration on emission of radioactivity when construction products covered by this standard are placed on those markets.

In the absence of an European harmonized test method, verification and declaration on emission should be done taking into account national provisions in the place of use.

4.2.14.2 Other dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, of other dangerous substances, in addition to those dealt with in other clauses, when construction products covered by this standard are placed on those markets.

In the absence of European harmonized test methods[1)] verification and declaration on release/content should be done taking into account national provisions in the place of use.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction website on EUROPA accessed through: http://ec.europa.eu/enterprise/sectors/construction/legislation/index_en.htm.

4.2.15 Bond strength/adhesion

This standard does not consider fixing by means of mortar and adhesives.

NOTE The value of the bond strength adhesion and the durability depend on several influences, e.g. the type of adhesive/mortar, the surfaces being bonded and the climatic conditions.

5 Testing, assessment and sampling methods

5.1 Testing

References to the test methods are given in Clause 4.

5.2 Sampling

5.2.1 General

This sub-clause specifies methods for obtaining samples of natural stone from quarries, or plants or buildings. Sampling from buildings may be necessary if the delivered natural stone product is already applied in a building.

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1) CEN/TS 00351014 is under preparation.

The aim of sampling is to obtain a bulk sample that is representative of the average properties of the batch and of its variability.

The methods described are based on manual procedures. The methods described are limited to building and civil engineering purposes.

It is important that samplers are accordingly trained in the application of the methods set out in this document.

In case of dispute or if tests are to be done by more than one organization all interested parties shall have the opportunity to observe the sampling and should agree upon the number of sampling increments to be taken.

5.2.2 Principles of sampling

Proper and careful sampling and sample transport is a prerequisite for an analysis that will give reliable results. An adequate number of samples shall be taken to obtain a good estimation of the natural heterogeneity of the batch.

The sampler shall be informed of the aim of the sampling.

5.2.3 Taking bulk samples

The number and sizes of samples depend on the test methods for which they are taken. The number and shape of specimens are given in the relevant test methods.

5.2.4 Preparing a sampling plan

A sampling plan shall be prepared, prior to sampling, taking into account the following:

— the type of the natural stone (following EN 12440 and EN 12670);

— the aim of the sampling including a list of the properties to be tested;

— the identification of sampling points;

— the approximate size of samples;

— the number of samples;

— the sampling apparatus to be used;

— the methods of sampling;

— the marking, packaging and dispatch of the samples.

5.2.5 Sampling apparatus

Any suitable cutting equipment for natural stone may be used for sampling. In addition, drills, which are suitable for taking drill cores, may be used.

5.2.6 Sampling methods

5.2.6.1 General

The sampling methods will inevitably involve the samplers working at a quarry, plant or building. Regulations for safety and ergonomics shall be followed.

5.2.6.2 Sampling from quarries

5.2.6.2.1 General

The sample shall be taken by a qualified specialist, experienced in the examination of natural stone deposits. The main objective of sampling from such deposits is to establish, the average, the range of variations and the differences in the structure and properties of the natural stone, taking account of the fabric and geological structure and the anticipated quarrying conditions.

5.2.6.2.2 Sampling of solid rock

a) Identification of anisotropy and orientation of samples

If the exploratory work reveals a pronounced fabric or geological structure which is not necessarily visible at the sample scale (e.g. stratification, massive bedding, lamination, cleavage or rift), the sample shall be marked accordingly.

b) Sampling for petrographic analysis

For petrographic analysis, hand specimens shall be taken from all distinct types and varieties which characterize the rock in terms of mineral composition, fabric and geological structure.

Samples from drilling (cores and pieces) may also be used.

In addition to samples of fresh material, samples shall also be taken to illustrate the effects of weathering.

c) Sampling for physical testing

For physical testing, sample blocks shall be used as samples, their number and location depending on the results of the petrographic analysis and the required test methods.

The sample blocks shall measure approximately 0,40 m × 0,25 m × 0,25 m or more where a coarse-grained and/or a large-pored rock is to be sampled.

It is recommended that they are taken from larger natural stones which have been least affected by blastings. Care shall be applied to ensure the sample blocks do not show any hairline cracks resulting from the removal process.

Samples may also be cut from rough blocks, slabs or dimension stones, the number and size of samples depending on the particular test method.

5.2.6.3 Sampling from plants

A representative sample of adequate size and characteristic of the natural stone in terms of mineral composition, fabric and geological structure, shall be taken from the material to be tested (e.g. slabs, dimension stones), taking into account the intended use of the material.

5.2.6.4 Sampling at the point of delivery

Where sampling at the point of delivery (e.g. a construction site) of the products is required, with regard to ensuring the accuracy, reliability and stability, sample testing and assessment of each consignment shall be carried out.

The testing and control should consist of at least the following characteristics.

— Geometrical properties;

— Visual appearance;

— Mechanical strength by direct or indirect test.

5.2.7 Marking, packaging and dispatch of the samples

The samples or containers shall be clearly and durably marked. Marking shall include:

a) a unique code, or

b) identification of the laboratory samples, place of sampling, date of sampling and denomination of the material.

The laboratory samples shall be packed and transported in such a way that they are protected from damage.

5.2.8 Sampling report

5.2.8.1 The sampler shall prepare a sampling report for each laboratory sample or for each group of laboratory samples from a single source. The sampling report shall refer to this European Standard and state:

a) the sampling report identification (serial number);

b) the laboratory sample identification mark(s);

c) the date and place of sampling;

d) sampling point(s) or identification of the batch sampled;

e) a reference to the sampling plan prepared according to 5.2.4;

f) the name of the sampler(s).

5.2.8.2 Depending on the circumstances, other information might be relevant. Table 3 shows an example of a comprehensive sampling report.

Table 3 — Example of a sampling report

Sampling report identification (serial n°):
Laboratory sample identification mark: no. of package

Description of the natural stone and sampling places

Name of the quarry or production plant or building:
Name of producer:
Origin of batch:
Purpose for which the natural stone is to be used:
Location of sampling point(s):
Identification of the batch:
Size of the batch:
Other comments (e.g. warnings, if appropriate):

Description of the sampling method

Date and time of sampling:
Reference to sampling plan used:
Sampling procedure (drilling, cutting, etc.)
Purpose of the sampling

Samples

No. and dimensions of samples:
Other comments:
Dispatch of the samples:
Sampler(s) (print name):

Contract details

Contract identification:
Name and address of party requesting the sampling:…….. ……
Name of person(s) present at sampling:……. ……
Signatures:…… …… ……

6 Assessment and verification of constancy of performance - AVCP

6.1 General

The compliance of natural stone slabs for cladding for walls and ceilings with the requirements of this standard and with the declared values shall be demonstrated by:

— determination of the product type on the basis of type testing;

— documented factory production control by the manufacturer, including product assessment.

The manufacturer shall always retain the overall control and shall have the necessary means to take responsibility for the conformity of the product with its declared performance(s).

6.2 Type Testing

6.2.1 General

All performances related to characteristics included in this standard shall be determined when the manufacturer intends to declare the respective performances unless the standard gives provisions for declaring them without performing tests. [e.g. use of previously existing data, CWFT (Classification without further testing] and conventionally accepted performance). A list of possible characteristics is given in Table 4.

Assessments previously performed in accordance with the provisions of this standard, may be taken into account provided that they were made to the same or a more rigorous test method, under the same AVCP system on the same product or products of similar design, construction and functionality, such that the results are applicable to the product in question.

For the purposes of assessment, the manufacturer's products may be grouped into families, where it is considered that the results for one or more characteristics from any one product within the family (description as given in the CE marking) are representative of those same characteristics for all products within that same family

NOTE Products may be grouped in different families for different characteristics.

Reference to the test method standards should be made to allow the selection of a suitable representative sample.

In addition, the determination of the product type shall be performed for all characteristics included in the standard for which the manufacturer declares the performance

— at the beginning of the production of a new or modified natural stone slabs for cladding (unless a member of the same family), or they shall be repeated for the appropriate characteristic(s), whenever a change occurs identified by the Factory Production Control in the natural stone slabs for cladding design, in the raw material or in the supplier of the components, or in the production process, which would affect significantly one or more of the characteristics;

— at the beginning of a new or modified method of production (where this may affect the stated properties).

Where components (i.e. rough blocks, rough slabs) are used whose characteristics have already been determined, by the component manufacturer, on the basis of compliance with other product standards, these characteristics need not be re-assessed. The specifications of these components shall be documented, as shall be included in the inspection scheme for ensuring their compliance. Products bearing a regulatory marking in accordance with appropriate harmonized European specifications may be presumed to have the performances stated with that marking, although this does not replace the responsibility on the natural stone slabs for cladding producer to ensure that the natural stone slabs for cladding as a whole is correctly designed and its component products have the declared performance values.

6.2.2 Test samples, testing and compliance criteria

The number of samples of the natural stone for cladding to be tested/assessed shall be in accordance with Table 4.

Table 4 — Number of samples to be tested and compliance criteria

Characteristic	Requirement	Assessment method	No. of samples	Compliance criteria
Geometrical characteristics	4.1	5.2 and 4.1	See EN 13373	4.1
Petrographic description	4.2.2	5.2 and 4.2.2	See EN 12440	4.2.2
Visual appearance	4.2.3	5.2 and 4.2.3	See 4.2.3	4.2.3
Flexural strength	4.2.4	5.2 and 4.2.4	See EN 12372	4.2.4
Resistance to fixings	4.2.5	5.2 and 4.2.5	See EN 13364	4.2.5
Water absorption at atmospheric pressure	4.2.6	5.2 and 4.2.6	See EN 13755	4.2.6
Reaction to fire	4.2.7	5.2 and 4.2.7	See EN 13501–1	4.2.7
Water absorption by capillarity	4.2.8	5.2 and 4.2.8	See EN 1925	4.2.8
Apparent density and open porosity	4.2.9	5.2 and 4.2.9	See EN 1936	4.2.9
Durability of flexural strength against freeze thaw	4.2.10.1	5.2 and 4.2.10.1	See EN 12371	4.2.10.1
Resistance to thermal shock	4.2.10.2	5.2 and 4.2.10.2	See EN 14066	4.2.10.2
Resistance to thermal and moisture cycling	4.2.10.3	5.2 and 4.2.10.3	See EN 16306	4.2.10.3
Water vapour permeability	4.2.11	5.2 and 4.2.11	See EN ISO 12572 and/or EN ISO 10456	4.2.11
Direct airborne sound insulation	4.2.12	5.2 and 4.2.12	See EN 1936	4.2.12
Thermal conductivity	4.2.13	5.2 and 4.2.13	See EN 1745	4.2.13
Release of radioactivity	4.2.14.1	4.2.14.1 and 5.2	As relevant	4.2.14.1
Release of dangerous substances other than radioactivity	4.2.14.2	4.2.14.2 and 5.2	As relevant	4.2.14.2

6.2.3 Test reports

The results of the determination of the product type shall be documented in test reports. All test reports shall be retained by the manufacturer for at least 10 years after the last date of production of the natural stone slabs for cladding to which they relate.

6.2.4 Shared other party results

A manufacturer may use the results of the product type determination obtained by someone else (e.g. by another manufacturer, as a common service to manufacturers, or by a product developer), to justify his own declaration of performance regarding a product that is manufactured according to the same design (e.g. dimensions) and with raw materials, constituents and manufacturing methods of the same kind, provided that:

— the results are known to be valid for products with the same essential characteristics relevant for the product performance;

— in addition to any information essential for confirming that the product has such same performances related to specific essential characteristics, the other party who has carried out the determination of the product type concerned or has had it carried out, has expressly accepted[2)] to transmit to the manufacturer the results and the test report to be used for the latter's product type determination, as well as information regarding production facilities and the production control process that can be taken into account for FPC;

— the manufacturer using other party results accepts to remain responsible for the product having the declared performances and he also:

— ensures that the product has the same characteristics relevant for performance as the one that has been subjected to the determination of the product type, and that there are no significant differences with regard to production facilities and the production control process compared to that used for the product that was subjected to the determination of the product type; and

— keeps available a copy of the determination of the product type report that also contains the information needed for verifying that the product is manufactured according to the same design and with raw materials, constituents and manufacturing methods of the same kind.

6.2.5 Cascading determination of the product type results

For some construction products, there are companies (often called "system houses") which supply or ensure the supply of, on the basis of an agreement,[3)] some or all of the components (e.g. in case of windows: profiles, gaskets, weather strips)[4)] to an assembler who then manufactures the finished product (referred to below as the "assembler") in his factory.

Provided that the activities for which such a system house is legally established include manufacturing/assembling of products as the assembled one, the system house may take the responsibility for the determination of the product type regarding one or several essential characteristics of an end product which is subsequently manufactured and/or assembled by other firms in their own factory.

When doing so, the system house shall submit an "assembled product" using components manufactured by it or by others, to the determination of the product type and then make the determination of the product type report available to the assemblers, i.e. the actual manufacturer of the product placed on the market.

To take into account such a situation, the concept of cascading determination of the product type might be taken into consideration in the technical specification, provided that this concerns characteristics for which either a notified product certification body or a notified test laboratory intervene, as presented below.

The determination of the product type report that the system house has obtained with regard to tests carried out by a notified body, and which is supplied to the assemblers, may be used for the regulatory marking purposes without the assembler having to involve again a notified body to undertake the determination of the product type of the essential characteristic(s) that were already tested, provided that:

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2) The formulation of such an agreement can be done by license, contract, or any other type of written consent.

3) This can be, for instance, a contract, license or whatever kind of written agreement, which should also contain clear provisions with regard to responsibility and liability of the component producer (system house, on the one hand, and the assembler of the finished product, on the other hand.

4) These companies may produce components but they are not required to do so.

— the assembler manufactures a product which uses the same combination of components (components with the same characteristics), and in the same way, as that for which the system house has obtained the determination of the product type report. If this report is based on a combination of components not representing the final product as to be placed on the market, and/or is not assembled in accordance with the system house's instruction for assembling the components, the assembler needs to submit his finished product to the determination of the product type;

— the system house has notified to the manufacturer the instructions for manufacturing/assembling the product and installation guidance;

— the assembler (manufacturer) assumes the responsibility for the correct assembly of the product in accordance with the instructions for manufacturing/assembling the product and installation guidance notified to him by the system house;

— the instructions for manufacturing/assembling the product and installation guidance notified to the assembler (manufacturer) by the system house are an integral part of the assembler's Factory Production Control system and are referred to in the determination of the product type report;

— the assembler is able to provide documented evidence that the combination of components he is using, and his way of manufacturing, correspond to the one for which the system house has obtained the determination of the product type report (he needs to keep a copy of the system house's determination of the product type report);

— regardless the possibility of referring, on the basis of the agreement signed with the system house, to the latter's responsibility and liability under private law, the assembler remains responsible for the product being in compliance with the declared performances, including both the design and the manufacture of the product, which is given when he affixes the regulatory marking on his product.

6.3 Factory production control (FPC)

6.3.1 General

The manufacturer shall establish, document and maintain an FPC system to ensure that the products placed on the market comply with the declared performance of the essential characteristics.

The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product. All the elements, requirements and provisions adopted by the manufacturer shall be recorded in a systematic manner in the form of written policies and procedures.

This factory production control system documentation shall ensure a common understanding of the evaluation of the constancy of performance and enable the achievement of the required product performances and the effective operation of the production control system to be checked. Factory production control therefore brings together operational techniques and all measures allowing maintenance and control of the compliance of the product with the declared performances of the essential characteristics.

In case the manufacturer has used shared or cascading product type results, the FPC shall also include the appropriate documentation as foreseen in 6.2.4 and 6.2.5.

6.3.2 Requirements

6.3.2.1 General

This production control system documentation shall ensure a common understanding of conformity evaluation and enable the achievement of the required product characteristics and the effective operation of the production control system to be checked. Factory production control therefore brings together operational

techniques and all measures allowing maintenance and control of the compliance of the product with this European Standard.

The manufacturer is responsible for organizing the effective implementation of the FPC system in line with the content of this product standard. Tasks and responsibilities in the production control organization shall be documented and this documentation shall be kept up-to-date.

The responsibility, authority and the relationship between personnel that manages, performs or verifies work affecting the constancy of performance of the product, shall be defined. This applies in particular to personnel that needs to initiate actions preventing product non-constancies from occurring, actions in case of non-constancies and to identify and register product conformity problems.

Personnel performing work affecting the constancy of performance of the product shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

In each factory the manufacturer may delegate the action to a person having the necessary authority to:

— identify procedures to demonstrate the constancy of performance of the product at appropriate stages;

— identify and record any instance of non-constancy;

— identify procedures to correct instances of non-constancy.

The manufacturer shall draw up and keep up-to-date documents defining the factory production control. The manufacturer's documentation and procedures should be appropriate to the product and manufacturing process. The FPC system should achieve an appropriate level of confidence in the constancy of performance of the product. This involves:

a) the preparation of documented procedures and instructions relating to factory production control operations, in accordance with the requirements of the technical specification to which reference is made;

b) the effective implementation of these procedures and instructions;

c) the recording of these operations and their results;

d) the use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of non-constancy and, if necessary, revise the FPC to rectify the cause of non-constancy.

Where subcontracting takes place, the manufacturer shall retain the overall control of the product and ensure that he receives all the information that is necessary to fulfil his responsibilities according to this European Standard.

If the manufacturer has part of the product designed, manufactured, assembled, packed, processed and/or labelled by subcontracting, the FPC of the subcontractor may be taken into account, where appropriate for the product in question.

The manufacturer who subcontracts all of his activities may in no circumstances pass these responsibilities on to a subcontractor.

NOTE Manufacturers having an FPC system, which complies with EN ISO 9001 standard and which addresses the provisions of the present European Standard are considered as satisfying the FPC requirements of the Regulation (EU) No 305/2011.

6.3.2.2 Equipment

6.3.2.2.1 Testing

All weighing, measuring and testing equipment shall be calibrated or retraceable to measurement standards and regularly inspected according to documented procedures, frequencies and criteria.

6.3.2.2.2 Manufacturing

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process. Inspections and maintenance shall be carried out and recorded in accordance with the manufacturer's written procedures and the records retained for the period defined in the manufacturer's FPC procedures.

6.3.2.3 Raw materials and components

The specifications of all incoming raw materials and components shall be documented, as shall the inspection scheme for ensuring their compliance. In case supplied kit components are used, the attestation of conformity level of the component shall be that given in the appropriate harmonized technical specification for that component.

6.3.2.4 Traceability and marking

Natural stone slabs for cladding shall be identifiable and traceable with regard to the original source. The manufacturer shall have recorded procedures ensuring that processes related to affixing traceability codes and/or markings are inspected regularly.

6.3.2.5 Controls during manufacturing process

The manufacturer shall plan and carry out production under controlled conditions.

During the manufacturing process the manufacturer shall apply a continuous verification of characteristics in accordance with manufacturer's FPC plan.

The control testing of each of these characteristics is to be carried out using the most appropriate direct or indirect test/check method(s), which is to be detailed in the manufacturer's quality control plan for the parameter(s).

6.3.2.6 Product testing and evaluation

The manufacturer shall establish procedures to ensure that the stated values of the characteristics he declares are maintained. The characteristics and the means of control are given in Table 5.

Table 5 — Characteristics and means of control for factory production control

Reference to clause for applica-bility[a]	Properties/ characteristics	Controls during manufacturing process	Minimum control frequency[c]	Test method in accordance with
4.2.2	Petrographic description	Continuous verification in accordance with manufacturer's factory production control[d]	10 years	EN 12407
4.2.3	Visual appearance		Every production lot	Visual
4.1	Geometrical characteristics		Every production lot	EN 13373
4.2.4	Flexural strength		2 years	EN 12372
4.2.5	Resistance to fixings[b]		10 years	EN 13364
4.2.6	Water absorption at atmospheric pressure		2 years	EN 13755
4.2.7	Reaction to fire[b] (only where testing is required)		10 years	EN 13501–1
4.2.8	Water absorption by capillarity [b]		10 years	EN 1925
4.2.9	Apparent density and open porosity		2 years	EN 1936
4.2.10.1	Durability of flexural strength against freeze–thaw[b]		10 years	EN 12371
4.2.10.2	Resistance to thermal shock[b]		10 years	EN 14066
4.2.10.3	Resistance of marble to thermal and moisture cycling[b]		10 years	EN 16306
4.2.11	Water vapour permeability[b]		10 years	EN ISO 10456 and/or EN ISO 12572
4.2.12	Direct airborne sound insulation[b]		10 years	EN 1936
4.2.13	Thermal conductivity[b]		10 years	EN 1745
4.2.14.1	Release of radioactivity[b]		10 years	- e
4.2.14.2	Release of other dangerous substances[b]		10 years	As relevant

a Reference shall be made to these clauses in order to decide which characteristics need to be declared.

b Only for products intended for uses subject to this requirement.

c The testing frequency should be established so that it represents a means to guarantee the constancy of the product's performance and a reliable declaration for both the users and the manufacturer.

d When alternative tests to the reference tests are used for the test procedure, their correlation to the reference test shall be determined and available for inspections

e CEN/TS 00351014 is under preparation.

6.3.2.7 Non-complying products

The manufacturer shall have written procedures which specify how non-complying products shall be dealt with. Any such events shall be recorded as they occur and these records shall be kept for the period defined in the manufacturer's written procedures.

Where the product fails to satisfy the acceptance criteria, the provisions for non-complying products shall apply, the necessary corrective action(s) shall immediately be taken and the products or batches not complying shall be isolated and properly identified.

Once the fault has been corrected, the test or verification in question shall be repeated.

The results of controls and tests shall be properly recorded. The product description, date of manufacture, test method adopted, test results and acceptance criteria shall be entered in the records under the signature of the person responsible for the control/test.

With regard to any control result not meeting the requirements of this European Standard, the corrective measures taken to rectify the situation (e.g. a further test carried out, modification of manufacturing process, throwing away or putting right of product) shall be indicated in the records.

6.3.2.8 Corrective action

The manufacturer shall have documented procedures that instigate action to eliminate the cause of non-conformities in order to prevent recurrence.

6.3.2.9 Handling, storage and packaging

The manufacturer shall have procedures providing methods of product handling and shall provide suitable storage areas preventing damage or deterioration.

6.3.3 Product specific requirements

The FPC system shall:

— address this European Standard

and

— ensure that the products placed on the market comply with the declared performance characteristics.

The FPC system shall include a product specific FPC, which identifies procedures to demonstrate compliance of the product at appropriate stages, i.e.:

a) the controls and tests to be carried out prior to and/or during manufacture according to a frequency laid down in the FPC test plan,

and/or

b) the verifications and tests to be carried out on finished products according to a frequency laid down in the FPC test plan.

If the manufacturer uses only finished products, the operations under b) shall lead to an equivalent level of compliance of the product as if FPC had been carried out during the production.

If the manufacturer carries out parts of the production himself, the operations under b) may be reduced and partly replaced by operations under a). Generally, the more parts of the production that are carried out by the manufacturer, the more operations under b) may be replaced by operations under a).

In any case the operation shall lead to an equivalent level of compliance of the product as if FPC had been carried out during the production.

NOTE Depending on the specific case, it can be necessary to carry out the operations referred to under a) and b), only the operations under a) or only those under b).

The operations under a) refer to the intermediate states of the product as on manufacturing machines and their adjustment, and measuring equipment etc. These controls and tests and their frequency shall be chosen based on product type and composition, the manufacturing process and its complexity, the sensitivity of product features to variations in manufacturing parameters etc.

The manufacturer shall establish and maintain records that provide evidence that the production has been sampled and tested. These records shall show clearly whether the production has satisfied the defined acceptance criteria and shall be available for at least three years.

Where the product fails to satisfy the acceptance measures, the provisions for non-complying products shall apply, the necessary corrective action shall immediately be taken and the products or batches not complying shall be isolated and properly identified.

Once the fault has been corrected, the test or verification in question shall be repeated.

The results of controls and tests shall be properly recorded. The product description, date of manufacture, test method adopted, test results and acceptance criteria shall be entered in the records under the signature of the person responsible for the control/test.

With regard to any control result not meeting the requirements of this European Standard, the corrective measures taken to rectify the situation (e.g. a further test carried out, modification of manufacturing process, throwing away or putting right of product) shall be indicated in the records.

Individual products or batches of products and the related manufacturing documentation shall be completely identifiable and retraceable.

6.3.4 One-off products, pre-production products (e.g. prototypes) and products produced in very low quantity

The natural stone slabs for cladding produced as a one-off, prototypes assessed before full production is established, and products produced in very low quantities up to 10 m^2 per year) shall be assessed as follows.

For type assessment, the provisions of 6.2.1, 3rd paragraph apply, together with the following additional provisions:

— in case of prototypes, the test samples shall be representative of the intended future production and shall be selected by the manufacturer;

— on request of the manufacturer, the results of the assessment of prototype samples may be included in a certificate or in test reports issued by the involved third party.

The FPC system of one-off products and products produced in very low quantities shall ensure that raw materials and/or components are sufficient for production of the product. The provisions on raw materials and/or components shall apply only where appropriate. The manufacturer shall maintain records allowing traceability of the product.

For prototypes, where the intention is to move to series production, the initial inspection of the factory and FPC shall be carried out before the production is already running and/or before the FPC is already in practice.

The following shall be assessed:

— the FPC-documentation; and

— the factory.

In the initial assessment of the factory and FPC it shall be verified:

— that all resources necessary for the achievement of the product characteristics included in this European Standard will be available, and

— that the FPC-procedures in accordance with the FPC-documentation will be implemented and followed in practice, and

— that procedures are in place to demonstrate that the factory production processes can produce a product complying with the requirements of this European Standard and that the product will be the same as the samples used for the determination of the product type, for which compliance with this European Standard has been verified.

Once series production is fully established, the provisions of 6.3 shall apply.

6.3.5 Procedure for modifications

If modifications are made to the product, production process or FPC system that could affect any of the product characteristics declared according to this standard, then all the characteristics for which the manufacturer declares performance, which may be affected by the modification, shall be subject to the determination of the product type, as described in 6.2.1 and 6.3.2.7.

Where relevant, a re-assessment of the factory and of the FPC system shall be performed for those aspects, which may be affected by the modification.

All assessments and their results shall be documented in a report.

7 Marking and packaging

As a minimum of identification, each consignment shall carry the following indications:

a) the denomination of the natural stone in accordance with EN 12440;

b) quantities and dimensions of the slabs for cladding.

Additional information is advisable:

c) the mass of the slabs for cladding;

d) dimensions and mass of packaging.

These indications shall be given on labels, packaging or on accompanying documents.

An identification system may be used in order to identify individual slabs; in such a case individual stones shall be clearly marked accordingly. Marking will usually consist of alphanumeric codes and symbols (e.g. to define proper orientation at installation).

The slabs for cladding shall be clean before packaging.

Packaging shall allow adequate, solid and durable protection for packed stones, both during transport and during handling and storage. Movement of slabs inside the packaging has to be prevented by securing individual pieces.

Packaging shall be of appropriate mass and size in consideration of transportation and lifting facilities; the top and bottom of the packaging as well as stacking possibility shall be indicated.

The supplier shall ensure safety against contamination caused by packaging materials, in wet or dry conditions.

Packaging and tapes which are likely to stain shall not be used. Sensitive polished surfaces shall be protected by appropriate means (for example plastic foil). Products with caustic properties shall not be used.

Where regulatory marking provisions require information on some or all items listed in this clause, the provisions of this clause concerning those common items are deemed to be met and the information needs not be repeated for the purpose of this clause.

Annex ZA
(informative)

Clauses of this European Standard addressing the provisions of the EU Construction Products Regulation

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under Mandate M/121 “Internal and external wall and ceiling finishes” given to CEN by the European Commission and the European Free Trade Association.

If this European Standard is cited in the Official Journal of the European Union (OJEU), the clauses of this standard, shown in this annex, are considered to meet the provisions of the relevant mandate, under the Regulation (EU) No. 305/2011.

This annex deals with the CE marking of the natural stones for cladding intended for the uses indicated in Tables ZA.1.1 to ZA.1.2 and shows the relevant clauses applicable.

This annex has the same scope as in Clause 1 of this standard related to the aspects covered by the mandate and is defined by Tables ZA.1.1 to ZA.1.2.

Table ZA.1.1 — Relevant clauses for natural stone slabs for internal wall finishes

Product: Natural stone slab **Intended use:** Cladding as internal wall finish			
Essential Characteristics	**Clauses in this and other European Standard(s) related to essential characteristics**	**Regulatory classes**	**Notes**
Reaction to fire *(intended for uses subject to reaction to fire regulations)*	4.2.7	Class A1 to E	Class A1 is without testing, when relevant[b] or to be tested in accordance with EN 13501–1[c]
Water vapour permeability *(only for products subject to water vapour control requirements)*	4.2.11	-	To be tested or as tabulated values in accordance with EN ISO 12572 and/or EN ISO 10456 and declared as coefficient
Flexural tensile strength *(only for use in ceilings)*	4.2.4	-	To be tested in accordance with EN 12372 and declared in MPa
Resistance to fixing *(as relevant)*	4.2.5	-	To be tested in accordance with EN 13364 and declared in N

Direct airborne sound insulation *(expressed as apparent density) (for products intended for uses subject to acoustic insulation requirements)*	4.2.12	-	To be tested in accordance with EN 1936 and declared in kg/m^3 [d]
Thermal resistance *(expressed as apparent density) (only for products intended for uses subject to thermal insulation requirements)*	4.2.9	-	To be tested in accordance with EN 1936 and declared in kg/m^3 [e]
Emission of radioactivity	4.2.14.1	-	- [g]
Release of other dangerous substances[a, f] - Substance X[h]	4.2.14.2	-	Testing according to national provisions in the place of use and declare as relevant (units as relevant)

a In particular those dangerous substances defined in Directive 76/69/EC as amended.

b No test required, see Decision 96/603/EC, as amended.

c Only for the following cases:

— natural stones containing asphalt greater than 1 by mass or volume, whichever is the more onerous;
— whenever processing of natural stones involves the use of organic patching, fillers or other similar products at greater than 1 % by mass or volume, whichever is the more onerous.

d EN 1936 is used in order to give the apparent density as reference for calculation of acoustic behaviour.

e EN 1936 is used in order to give the apparent density as reference for calculation of thermal behaviour. Alternatively the data may be taken from EN ISO 10456.

f Only if there is a regulated substance to declare.

g CEN/TS 00351014 is under preparation.

h This needs not to be declared if there is no other specific substance regulated in the market of destination.

Table ZA.1.2 — Relevant clauses for natural stone slabs for external wall finishes

Product: Natural stone slab
Intended use: Cladding as external wall finish

Essential Characteristics	Requirement clauses in this and other European Standard(s)	Levels and/or classes	Notes
Reaction to fire *(intended for uses subject to reaction to fire regulations)*	4.2.7	Class A1 to E	Class A1 is without testing[b] or to be tested in accordance with EN 13501–1[c]
Release of other dangerous substances[a,f] - Substance X[g]	4.2.14.2	-	Testing according to national provisions in the place of use and declare as relevant (units as relevant)
Water vapour permeability *(only for products subject to water vapour control requirements)*	4.2.12	-	To be tested or as tabulated values in accordance with

			EN ISO 12572 and/or EN ISO 10456 and declared as coefficient
Mechanical resistance *(as flexural strength)*	4.2.4	-	To be tested in accordance with EN 12372 and declared in MPa
Resistance to fixing *(as relevant)*	4.2.5	-	To be tested in accordance with EN 13364 an declared in N
Resistance to thermal shock (where relevant, according to material)	4.2.10.2	-	To be tested in accordance with EN 14066 and declared in %
Direct airborne sound insulation *(expressed as apparent density) (for products intended for uses subject to acoustic insulation requirements)*	4.2.9	-	To be tested in accordance with EN 1936[d] and declared in kg/m^3[d]
Thermal resistance *(apparent density) (only for products intended for uses subject to thermal insulation requirements)*	4.2.9	-	To be tested in accordance with EN 1936 and declared in kg/m^3 [e]
ability of flexural strength against freeze thaw	4.2.10.1	-	To be tested in accordance with EN 12371 and declared in MPa
istance of marble to thermal and moisture cycling	4.2.10.3	-	To be tested in accordance with EN 16306

[a] In particular those dangerous substances defined in Directive 76/69/EC as amended and only if there is a regulated substance to declare in the market of destination.

[b] No test required, see Decision 96/603/EC, as amended.

[c] Only for the following cases:

— natural stones containing asphalt greater than 1 by mass or volume, whichever is the more onerous;
— whenever processing of natural stones involves the use of organic patching, fillers or other similar products at greater than 1 % by mass or volume, whichever is the more onerous.

[d] EN 1936 is used in order to give the apparent density as reference for calculation of acoustic behaviour.

[e] EN 1936 is used in order to give the apparent density as reference for calculation of thermal behaviour. Alternatively the data may be taken from EN ISO 10456.

[f] Only if there is a regulated substance to declare.

[g] This needs not to be declared if there is no other specific substance regulated in the market of destination.

The requirement on a certain characteristic is not applicable in those Member States (MSs) where there are no regulatory requirements on that characteristic for the intended use of the product. In this case, manufacturers placing their products on the market of these MSs are not obliged to determine nor declare the performance of their products with regard to this characteristic and the option “No performance determined” (NPD) in the information accompanying the CE marking (see ZA.3) may be used. The NPD option may not be used, however, where the characteristic is subject to a threshold level.

ZA.2 Procedure for AVCP of natural stone slabs for cladding

ZA.2.1 System(s) of AVCP

The AVCP system(s) of natural stone slabs for cladding indicated in Tables ZA.1.1 to ZA.1.2, established by EC Decision(s) 94/611/EC [O.J. L 241 of September 1994]" with "No. EC Decision 98/437/EC of 30 June (OJ L 194 of 10 July 1998) with a corrigendum (OJ L 278 of 15 October 1998) as amended by EC Decision 2001/596/EC of 8 January 2001 (OJ L 209 of 2 August 2001) is shown in Table ZA.2.1 for the indicated intended use(s) and relevant level(s) or class(es) of performance.

Table ZA.2.1— System(s) of AVCP

Product	Intended Use(s)	Level(s) or class(es) of performance	AVCP system(s)
Cladding slabs	In internal or external ceilings subject to safety in use requirements against accidental fall of objects onto transit areas.	–	3
Cladding slabs	As internal and external finishes in walls or ceilings subject to reaction to fire regulations	A1(*), A2(*), B(*), C(*) A1(**), A2(**), B(**), C(**), D and E (A1 to E)(***)	1 3 4
	As internal or external finishes in walls or ceilings, as relevant, subject to regulations on dangerous substances[a]	–	3
	As internal or external finishes in walls or ceilings for other uses mentioned in the mandate[b]	–	4
(*) Products/materials for which a clearly identifiable stage in the production process which results in an improvement of the reaction to fire classification (e.g. no addition of fire retardants nor a limiting, during the production process, of organic material) (**) Products/materials not covered by footnote (*) (***) Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A1 according to Commission Decision 96/603/EC, as amended)			
System 1: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.2 System 3: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.4 System 4: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.5			
[a] In particular those dangerous substance defined in Council Directive 76/769/EEC, as amended. [b] Other intended uses covered by the mandate are: for safety in use, for vapour control, for water penetration control, for acoustic control and for thermal control.			

The AVCP of the natural stone slabs for cladding in Tables ZA.1.1 to ZA.1.2 shall be according to the AVCP procedures indicated in Tables ZA.2.2 to ZA.2.3 resulting from application of the clauses of this or other European Standard indicated therein. The content of tasks of the notified body shall be limited to those essential characteristics as provided for, if any, in Annex III of the relevant mandate and to those that the manufacturer intends to declare.

Table ZA.2.2 — Assignment of AVCP tasks for slabs of natural stone which are made for use as internal and external cladding for wall finishes under systems 1 (RtoF), system 3(DS and SinU) and system 4 (rest) (1 of 2)

Tasks		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to essential characteristics of Table ZA.1.1 or Table ZA.1.2 relevant for the intended use, which are declared.	6.1 and 6.3
	Further testing of samples taken at factory according to the prescribed test plan	Essential characteristics of Table ZA.1.1 or Table ZA.1.2 relevant for the intended use which are declared, namely reaction to fire (for classes A1(*), A2(*), B(*), C(*) (*for internal and external walls and ceilings)*).	6.1 and 6.3
	Determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Tables ZA.1.1 and ZA.1.2 relevant for the intended use indicated, namely - Water vapour permeability *(for internal and external walls and ceilings);* - Thermal shock resistance *(for external walls and ceilings);* - Flexural tensile strength *(for internal and external walls and ceilings);* - Resistance to fixings *(for internal and external walls and ceilings)*; - Direct airborne sound insulation *(for internal and external walls and ceilings);* - Thermal resistance *(for internal and external walls and ceilings)* ; - Durability of flexural strength against freeze–thaw, when relevant (*for internal and external walls and ceilings)*; and - Durability (resistance to thermal and moisture cycling) *(for external walls and ceilings).*	6.1 and 6.2
Tasks for a notified Testing laboratory	Determination of the product type on the basis of type testing (based on sampling carried out by the manufacturer), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Table ZA.1.1 or Table ZA.1.2 relevant for the intended use indicated in Annex III of the mandate, namely - Emission of radioactivity *(for internal walls and ceilings)*; - Release of other dangerous substances *(for internal and external walls and ceilings);* - Flexural tensile strength *(for internal and external walls and ceilings)*; - Resistance to fixings *(for internal and external walls and ceilings)*; and - Durability of flexural strength against	6.1 and 6.2

		freeze–thaw, when relevant (*for internal and external walls and ceilings)*	
Tasks for the notified product certification body	Determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Table ZA.1.1 or Table ZA.1.2 relevant for the intended use indicated, namely reaction to fire (for classes A1(*), A2(*), B(*), C(*) (*for internal and external walls and ceilings)*).	6.1 and 6.2
	Initial inspection of manufacturing plant and of FPC	Parameters related to essential characteristics of Table ZA.1.1 or Table ZA.1.2, relevant for the intended use, which are declared, namely reaction to fire (for classes A1(*), A2(*), B(*), C(*) (*for internal and external walls and ceilings)*). Documentation of the FPC.	6.1 and 6.3
	Continuous surveillance, assessment and evaluation of FPC	Parameters related to essential characteristics of Table ZA.1.1 or Table ZA.1.2, relevant for the intended use, which are declared, namely reaction to fire (for classes A1(*), A2(*), B(*), C(*) (*for internal and external walls and ceilings)*). Documentation of FPC	6.1 and 6.3
(*) See Table ZA.2.1			

Table ZA.2.3 — Assignment of AVCP tasks for slabs of natural stone which are made for use as internal and external cladding for wall finishes under systems 3 (RtoF, DS and SinU) and 4 (rest)

Tasks		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to essential characteristics of Table ZA.1.1 or Table ZA.1.2 relevant for the intended use which are declared	6.1 and 6.3
	Determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Table ZA.1.1 or Table ZA.1.2 relevant for the intended use indicated, namely - Water vapour permeability *(for internal and external walls and ceilings);* - Thermal shock resistance *(for external walls and ceilings))* ; - Flexural tensile strength *(for internal and external walls and ceilings)*; - Resistance to fixings *(for internal and external walls and ceilings))* - Direct airborne sound insulation *(for internal and external walls and ceilings);* - Thermal resistance *(for internal and external walls and ceilings*) ; - Durability of flexural strength against freeze–thaw, when relevant (*for internal and external walls and ceilings)*; and - Durability (resistance to thermal and	6.1 and 6.2

		moisture cycling) *(for external walls and ceilings).*	
Tasks for a notified testing laboratory	Determination of the product-type on the basis of type testing (based on sampling carried out by the manufacturer), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Table ZA.1.1 or Table ZA.1.2 relevant for the intended use indicated in Annex III of the mandate, namely - Reaction to fire (for classes A1(**), A2(**), B(**), C(**), D and E) (*for internal and external walls and ceilings);* - Emission of radioactivity*(for internal walls and ceilings)* ; - Release of other dangerous substances *(for internal and external walls and ceilings);* - flexural tensile *strength (for internal and external walls and ceilings);* - Resistance to fixings *(for internal and external walls and ceilings);* and - Durability of flexural strength against freeze–thaw, when relevant (*for internal and external walls and ceilings)*	6.1 and 6.2
(**) as in Table ZA.2.1			

Table ZA.2.4— Assignment of AVCP tasks for slabs of natural stone which are made for use as internal and external cladding for wall finishes under systems 3 (DS and SiU) and system 4 (RtoF and rest)

Tasks		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to essential characteristics of Table ZA.1.1 or Table ZA.1.2 relevant for the intended use which are declared	6.1 and 6.3
	Determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Table ZA.1.1 or Table ZA.1.2 relevant for the intended use which are declared, namely - Reaction to fire (for classes (A1 to E)(***) (*for internal and external walls and ceilings*); - Water vapour permeability (*for internal and external walls and ceilings)*; - Thermal shock resistance (*for external walls and ceilings*); - Flexural tensile strength *(for internal and external walls and ceilings);* - Resistance to fixings *(for internal and external walls and ceilings*); - Direct airborne sound insulation (*for internal and external walls and*	6.1 and 6.2

		ceilings); - Thermal resistance (*for internal and external walls and ceilings)* ; and - Durability (resistance to thermal and moisture cycling) (*for external walls and ceilings)*.	
Tasks for a notified testing laboratory	Determination of the product-type on the basis of type testing (based on sampling carried out by the manufacturer), type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Table ZA.1.1 or Table ZA.1.2 relevant for the intended use indicated in Annex III of the mandate, namely - Emission of radioactivity *(for internal walls and ceilings)* ; - Release of other dangerous substances *(for internal and external walls and ceilings);* - Flexural tensile strength *(for internal and external walls and ceilings)*; - Resistance to fixings *(for internal and external walls and ceilings).*	6.1 and 6.2
(***) as in Table ZA.2.1			

ZA.2.2 Declaration of performance (DoP)

ZA.2.2.1 General

The manufacturer draws up the DoP and affixes the CE marking on the basis of the different AVCP systems set out in Annex V of the Regulation (EU) No 305/2011:

In case of products under system 1

— the factory production control and further testing of samples taken at the factory according to the prescribed test plan, carried out by the manufacturer; and

— the certificate of constancy of performance issued by the notified product certification body on the basis of determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product; initial inspection of the manufacturing plant and of factory production control and continuous surveillance, assessment and evaluation of factory production control.

In case of products under system 3

— the factory production control carried out by the manufacturer; and

— the determination of the product-type on the basis of type testing (based on sampling carried out by the manufacturer), type calculation, tabulated values or descriptive documentation of the product, carried out by the notified testing laboratory.

In case of products under system 4

— the factory production control carried out by the manufacturer; and

— the determination by the manufacturer of the product-type on the basis of type testing, type calculation, tabulated values or descriptive documentation of the product.

ZA.2.2.2 Content

The model of the DoP is provided in Annex III of the Regulation (EU) No 305/2011.

According to this Regulation, the DoP shall contain, in particular, the following information:

— the reference of the product-type for which the declaration of performance has been drawn up;

— the AVCP system or systems of the construction product, as set out in Annex V of the CPR;

— the reference number and date of issue of the harmonized standard which has been used for the assessment of each essential characteristic;

— where applicable, the reference number of the Specific Technical Documentation used and the requirements with which the manufacturer claims the product complies.

The DoP shall in addition contain:

a) the intended use or uses for the construction product, in accordance with the applicable harmonized technical specification;

b) the list of essential characteristics, as determined in the harmonized technical specification for the declared intended use or uses;

c) the performance of at least one of the essential characteristics of the construction product, relevant for the declared intended use or uses;

d) where applicable, the performance of the construction product, by levels or classes, or in a description, if necessary based on a calculation in relation to its essential characteristics determined in accordance with the Commission determination regarding those essential characteristics for which the manufacturer shall declare the performance of the product when it is placed on the market or the Commission determination regarding threshold levels for the performance in relation to the essential characteristics to be declared;

e) the performance of those essential characteristics of the construction product which are related to the intended use or uses, taking into consideration the provisions in relation to the intended use or uses where the manufacturer intends the product to be made available on the market;

f) for the listed essential characteristics for which no performance is declared, the letters “NPD” (No Performance Determined).

Regarding the supply of the DoP, Article 7 of the Regulation (EU) No 305/2011 applies.

The information referred to in Article 31 or, as the case may be, in Article 33 of Regulation (EC) No 1907/2006, (REACH) shall be provided together with the DoP.

ZA.2.2.3 Example of DoP

ZA.2.2.3.1 Example of DoP for natural stone slabs for cladding, inside use

The following gives an example of a filled-in DoP for slabs of granite named SEEBACH GRANIT (Type 1234) for cladding used inside of buildings, produced by the manufacturer AnyCo SA.

DECLARATION OF PERFORMANCE

No. 001CPR2014-04

1. Unique identification code of the product type:

Type Code SEG 4549

2 Type, batch or serial number or any other element allowing identification of the construction product as required under Article 11 (4):

SEEBACH GRANIT (Type 1234)

granite

light grey

near Achern, Schwarzwald, Baden-Württemberg, Germany

3. Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:

Natural stone slabs used as cladding for internal wall and ceiling finishes.

4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required under Article 11 (5):

AnyCo SA,

PO Box 21

B-1050 Brussels, Belgium

Tel. +32987654321

Fax: +32123456789

Email: anyco.sa@provider.be

5. Where applicable, name and contact address of the authorized representative whose mandate covers the tasks specified in Article 12 (2):

Not applicable

6. System or systems of assessment and verification of constancy of performance of the construction product as set out in CPR, Annex V:

System 3 and 4

7. In case of the declaration of performance concerning a construction product covered by a harmonized standard:

8765

8. In case of the declaration of performance concerning a construction product covered by a European Technical Assessment has been issued:

Not relevant

9. Declared performance

Essential characteristics	**Performance**	**Harmonized technical specification**
Resistance to fire	**Class A 1**	EN 1469:2015
Water vapour permeability - μ (tabulated value)	**10000**	
Flexural strength - lower expected value - mean value - standard deviation	**11 MPa** **14 MPa** **1,4 MPa**	
Resistance to fixing - lower expected value - mean value - standard deviation	**800 N** **1200 N** **190 N**	
Direct airborne sound insulation - mean value	**2750 kg/m^3**	
Thermal resistance - mean value	**2750 kg/m^3**	
Release of radioactivity	**-**	
Release of dangerous substances	**-**	

10. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed for and on behalf of the manufacturer by:

……

(name and function)

……..…… ……..……

(place and date of issue) (signature)

ZA.2.2.3.2 Example of DoP for natural stone slabs for cladding, outside use

The following gives an example of a filled-in DoP for slabs of granite named SEEBACH GRANIT (Type 1234) for cladding used outside of buildings, produced by the manufacturer **AnyCo SA.**

According to the ITT and FPC, the bending strength, the resistance to fixing and the durability of flexural strength against freeze thaw is given.

DECLARATION OF PERFORMANCE

No. 002CPR2014-04

1. Unique identification code of the product type:

Type Code SEG 4549

2. Type, batch or serial number or any other element allowing identification of the construction product as required under Article 11 (4):

SEEBACH GRANIT (Type 1234)

granite

light grey

near Achern, Schwarzwald, Baden-Württemberg, Germany

3. Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:

Natural stone slabs used as cladding for external wall and ceiling finishes.

4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required under Article 11 (5):

AnyCo SA,

PO Box 21

B-1050 Brussels, Belgium

Tel. +32987654321

Fax: +32123456789

Email: anyco.sa@provider.be

5. Where applicable, name and contact address of the authorized representative whose mandate covers the tasks specified in Article 12 (2):

Not applicable

6. System or systems of assessment and verification of constancy of performance of the construction product as set out in CPR, Annex V:

System 3 and 4

7. In case of the declaration of performance concerning a construction product covered by a harmonized standard:

8765

8. In case of the declaration of performance concerning a construction product covered by a European Technical Assessment has been issued:

Not relevant

9. Declared performance

Essential characteristics	**Performance**	**Harmonized technical specification**
Resistance to fire	**Class A 1**	EN 1469:2015
Water vapour permeability - μ (tabulated value)	**10000**	
Mechanical resistance as flexural strength - lower expected value - mean value - standard deviation	**11 MPa** **14 MPa** **1,4 MPa**	
Resistance to fixing - lower expected value - mean value - standard deviation	**800 N** **1200 N** **190 N**	
Direct airborne sound insulation - mean value	**2750 kg/m^3**	
Thermal resistance - mean value	**2750 kg/m^3**	
Thermal shock resistance - change in porosity - change in flexural strength	**5 %** **7 %**	
Durability of flexural strength against **freeze thaw** mean value before freeze thaw mean value after freeze thaw	**14 MPa** **13 MPa**	
Release of dangerous substances	**-**	

10. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed for and on behalf of the manufacturer by:

……

(name and function)

…….…… ……..……

(place and date of issue) (signature)

ZA.3 CE marking and labelling

The CE marking symbol shall be in accordance with the general principles set out in Article 30 of Regulation (EC) No 765/2008 and shall be affixed visibly, legibly and indelibly

— to the natural stone for cladding

or

— to a label attached to it.

Where this is not possible or not warranted on account of the nature of the product, it shall be affixed:

— on the packaging

or

— to the accompanying documents.

The CE marking shall be followed by:

— the last two digits of the year in which it was first affixed,

— the name and the registered address of the manufacturer, or the identifying mark allowing identification of the name and address of the manufacturer easily and without any ambiguity,

— the unique identification code of the product-type,

— the reference number of the declaration of performance,

— the level or class of the performance declared,

— the dated reference to the harmonized technical specification applied,

— the identification number of the notified body (only for products under system 3),

— the intended use as laid down in the harmonized technical specification applied.

The CE marking shall be affixed before the construction product is placed on the market. It may be followed by a pictogram or any other mark notably indicating a special risk or use.

Figures ZA.1 to ZA.2 give examples of the information related to products subject to AVCP under system 4.

The following gives an example of a filled-in CE-Mark for slabs of granite named SEEBACH GRANIT (Type 1234) for cladding used inside of buildings, produced by the manufacturer **AnyCo SA.**

According to the ITT and FPC, the bending strength and the resistance to fixing is given.

CE 8765	*CE marking, consisting of the "CE"-symbol* *Identification number of the notified test laboratory*
AnyCo Ltd, PO Box 21, B-1050 Brussels **15** **001CPR2014–04**	*name and the registered address of the manufacturer, or identifying mark* *Last two digits of the year in which the marking was first affixed* *Reference number of the DoP*
EN 1469:2015 **SEG 4549** **Natural stone slabs used as cladding for internal wall finishes** **Reaction to fire:** Class A1 **Water vapour permeability**: μ = 10 000 **Flexural strength:** - lower expected value: 11 MPa - mean value: 14 MPa - standard deviation: 1,4 MPa **Resistance to fixing** (d_1 = 10 mm) - lower expected value: 800 N - mean value: 1 200 N - standard deviation: 190 N **Direct airborne sound insulation** - mean value: 2 750 kg/m^3 **Thermal resistance:** - mean value: 2 750 kg/m^3 **Release of radioactivity: -** **Release of dangerous substances: -**	*No. of European Standard applied, as referenced in OJEU* *Unique identification code of the product-type* *Intended use of the product as laid down in the European Standard applied* *Level or class of the performance declared*

Figure ZA.1 — Example CE marking information of products for internal use under AVCP systems 3 and 4

The following gives an example of a filled-in CE-Mark for slabs of granite named SEEBACH GRANIT (Type 1234) for cladding used outside of buildings, produced by the manufacturer **AnyCo SA.**

According to the ITT and FPC, the bending strength, the resistance to fixing and the durability of flexural strength against freeze thaw is given.

CE 8765	*CE marking, consisting of the "CE"-symbol* *Identification number of the notified test laboratory*
AnyCo Ltd, PO Box 21, B-1050 Brussels **15** **002CPR2014–04**	*name and the registered address of the manufacturer, or identifying mark* *Last two digits of the year in which the marking was first affixed* *Reference number of the DoP*
EN 1469:2015 **SEG 4549** **Natural stone slabs used as cladding for external wall finishes** **Reaction to fire:** Class A1 **Water vapour permeability**: μ = 10 000 **Flexural strength:** - lower expected value: 11 MPa - mean value: 14 MPa - standard deviation: 1,4 MPa **Resistance to fixing** (d_1 = 10 mm) - lower expected value: 800 N - mean value: 1 200 N - standard deviation: 190 N **Direct airborne sound insulation** - mean value: 2 750 kg/m^3 **Thermal resistance:** - mean value: 2 750 kg/m^3 **Thermal shock resistance** - change in porosity: 5 % - change in flexural strength: 7 % **Durability of flexural strength against freeze thaw** - mean value before freeze thaw: 14 MPa - mean value after freeze thaw: 13 MPa **Release of dangerous substances -**	*No. of European Standard applied, as referenced in OJEU* *Unique identification code of the product-type* *Intended use of the product as laid down in the European Standard applied* *Level or class of the performance declared*

Figure ZA.2 — Example CE marking information of products for external use under AVCP systems 3 and 4

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[3] EN 1341, *Slabs of natural stone for external paving — Requirements and test methods*

[4] EN 1342, *Setts of natural stone for external paving — Requirements and test methods*

[5] EN 1343, *Kerbs of natural stone for external paving — Requirements and test methods*

[6] EN 12004, *Adhesives for tiles — Requirements, evaluation of conformity, classification and designation*

[7] EN 12326-1, *Slate and stone for discontinuous roofing and external cladding — Part 1: Specifications for slate and carbonate slate*

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[11] CEN/TS 00351014 [5)], *Construction products — Assessment of release of dangerous substances — Measurement of activity concentrations of gamma radiation*

[12] Commission Decision 96/603/EC as amended for the list of products belonging to Classes A “No contribution to fire”

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5) under preparation

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