BS EN 771-6:2011+A1:2015

BSI Standards Publication

Specification for masonry units

Part 6: Natural stone masonry units

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National foreword

This British Standard is the UK implementation of EN 771-6:2011+A1:2015. It supersedes BS EN 771-6:2011, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by [A1] [A1].

EN 771-6:2011+A1:2015 is a "harmonized" European Standard and fully takes into account the requirements of the European Commission mandate M116, Masonry and related products, given under the EU Construction Products Regulation (Regulation (EU) No. 305/2011).

EN 771-6:2011+A1:2015 was the subject of transitional arrangements agreed under the Commission mandate. In the UK, there were no corresponding national standards.

The UK participation in its preparation was entrusted by Technical Committee B/519, Masonry and associated testing, to Subcommittee B/519/1, Masonry units.

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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Compliance with a British Standard cannot confer immunity from legal obligations.

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English Version

Specification for masonry units - Part 6: Natural stone masonry units

Spécification pour éléments de maçonnerie - Partie 6: Eléments de maçonnerie en pierre naturelle

Festlegungen für Mauersteine - Teil 6: Natursteine

This European Standard was approved by CEN on 3 March 2011 and includes Amendment 1 approved by CEN on 11 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.

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Contents

Page

European foreword

This document (EN 771-6:2011+A1:2015) has been prepared by Technical Committee CEN/TC 125 “Masonry”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2016, and conflicting national standards shall be withdrawn at the latest by May 2017.

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 [A1] EN 771-6:2011 [A1].

This document includes Amendment 1 approved by CEN on 2015-01-11.

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1] [A1].

[A1] 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 the EU Construction Products Regulation (Regulation (EU) No 305/2011).

For relationship with EU Regulation/Directive(s), see informative Annex ZA, which is an integral part of this document. [A1]

This European Standard also takes into account the general rules for unreinforced and reinforced masonry in EN 1996-1-1.

EN 771, *Specification for masonry units* consists of:

— *Part 1: Clay masonry units*

— *Part 2: Calcium silicate masonry units*

— *Part 3: Aggregate concrete masonry units (Dense and light weight aggregates)*

— *Part 4: Autoclaved aerated concrete masonry units*

— *Part 5: Manufactured stone masonry units*

— *Part 6: Natural stone masonry units*

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 the characteristics and performance requirements of masonry units manufactured from natural stone the width of which is equal to or greater than 80 mm, for which the main intended uses are common, facing or exposed masonry units in loadbearing or non-loadbearing building and civil engineering applications These units are suitable for all forms of coursed or random masonry walling, including single leaf, cavity, partition, retaining and the external masonry to chimneys. They can provide fire protection, thermal insulation, sound insulation and sound absorption.

This European Standard includes natural stone masonry units of an overall non-rectangular parallelepiped shape, specially shaped and accessory units for internal and external application.

It defines the performance related to e.g. strength, petrographic description, density, porosity, dimensional accuracy, thermal conductivity, water absorption, and frost resistance and provides for the ▌A1⟩ assessment and verification of constancy of performance (AVCP) ⟨A1▌ of the product to this European Standard. The marking requirements for products covered by this European Standard are also included.

This European Standard does not cover storey height panels, natural stone for paving, chimney flue linings nor units intended for use as damp proof course.

2 Normative references

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

EN 772-1:2011, *Methods of test for masonry units — Part 1: Determination of compressive strength*

EN 772-11, *Methods of test for masonry units — Part 11: Determination of water absorption of aggregate concrete, autoclaved aerated concrete, manufactured stone and natural stone masonry units due to capillary action and the initial rate of water absorption of clay masonry units*

EN 772-16:2011, *Methods of test for masonry units — Part 16: Determination of dimensions*

EN 772-20, *Methods of test for masonry units — Part 20: Determination of flatness of faces of aggregate concrete, manufactured stone and natural stone masonry units*

EN 998-2:2010, *Specification for mortar for masonry — Part 2: Masonry mortar*

EN 1052-2, *Methods of test for masonry — Part 2: Determination of flexural strength*

EN 1052-3, *Methods of test for masonry — Part 3: Determination of initial shear strength*

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

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 ISO 10456, *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values (ISO 10456:2007)*

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 data from reaction to fire tests*

EN ISO 12572, *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties (ISO 12572:2001)*

3 Terms and definitions

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

3.1
apparent density
ratio between the mass of the dry specimen and its apparent volume

3.2
masonry unit
preformed component intended for use in masonry construction

3.3
face
exposed surface of natural stone masonry units

3.4
natural stone masonry unit
masonry unit manufactured from natural stone

3.5
dimensions and surfaces
defined by reference to figure 1 relates to the name of the dimensions and surfaces for dimensioned stone and squared rubble stone

3.6
co-ordinating size
size of the co-ordinating space allocated to a masonry unit including allowances for joints and tolerances

3.7
work size
size of a masonry unit specified for its manufacture, to which the actual size conforms within permissible deviations

3.8
actual size
size of a masonry unit as measured

3.9
rubble stone
masonry unit squared or not of any shape with variable dimensions, whose face is rough or worked

3.10
squared rubble stone
rubble stone which is squared and worked to dimensions declared by the manufacturer

3.11
regular shaped masonry unit
masonry unit with an overall rectangular parallelepiped shape

3.12
specially shaped masonry unit
masonry unit which is not rectangular parallelepiped

3.13
accessory masonry unit
masonry unit which is shaped to provide a particular function, e.g. to complete the geometry of the masonry

3.14
dimensioned stone
stone worked on all faces to declared dimensions

3.15
extra width
width exceeding the work size, to be adjusted to work-size width after application of the unit on site

3.16
declared value
value that a manufacturer is confident of achieving bearing in mind the precision of the test and the variability of the manufacturing process

3.17
indicative samples
piece of natural stone of sufficient size to indicate the appearance of the finished work, regarding the colouring, the vein pattern, the physical structure and face finish

3.18
Category I masonry units
units with a declared compressive strength with a probability of failure to reach it not exceeding 5 %

NOTE This may be determined via the mean or characteristic value.

3.19
Category II masonry units
units not intended to comply with the level of confidence of Category I units

3.20
normalised compressive strength of masonry units
compressive strength of masonry units converted to the air dry compressive strength of an equivalent 100 mm wide × 100 mm high masonry unit

3.21
mean compressive strength of masonry units
arithmetic mean of the compressive strengths of masonry units

3.22
characteristic compressive strength of masonry units
compressive strength corresponding to the 5 % fractile of the compressive strength of masonry units

3.23
product group
products from one manufacturer having common values for one or more characteristics

4 Materials of natural stone

Natural stone is a natural product obtained by mining or by quarrying and made into masonry units by a manufacturing process.

The following groups of materials are considered as natural stone:

— **Magmatic or igneous rocks:** Rocks formed by the cooling and solidification of the magma, e.g. granite, basalt, diorite, porphyry.

— **Sedimentary rocks:** Rocks formed by deposition (generally in water) and consolidation of organic or inorganic particles. For example limestone, sandstone, travertine.

— **Metamorphic rocks:** Transformed rocks resulting from action of heat and/or pressure on the pre-existing rocks. For example slate, gneiss, quartzite, marble.

5 Requirements for natural stone masonry units

5.1 General

The requirements and properties specified in this European Standard shall be defined in terms of the test methods and other procedures referred to in this European Standard.

It should be noted that the test methods are not always applicable to specially shaped and accessory units as defined in 3.9 and 3.10.

The conformity criteria given in the following subclauses relate to ⟦A1⟩ product type determination ⟨A1⟧ (see 8.2) and to consignment testing (see Annex A). For the compressive strength of Category I units use a 50 % fractile (p = 0,50) for mean values or 5 % fractile (p = 0,05) for characteristic values and a confidence level of 95 %.

For production evaluation the manufacturer shall define the conformity criteria in the factory production control documentation (see 8.3).

5.2 Denomination

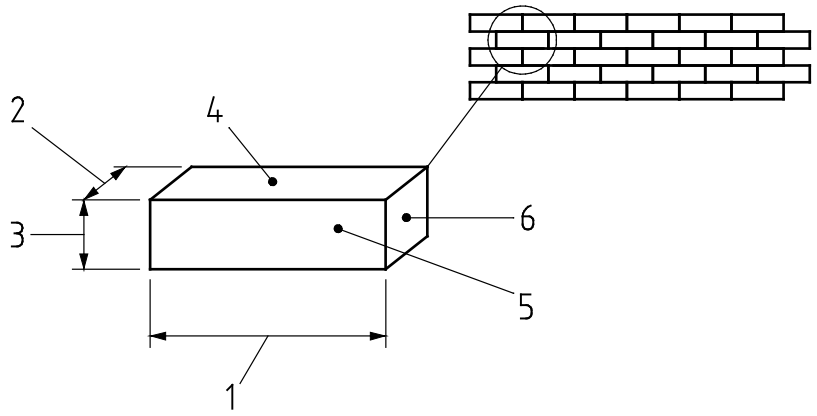
The denomination shall be declared in accordance with EN 12440 (meaning traditional name, ⟦A1⟩ petrographic ⟨A1⟧ family, typical colour and place of origin).

The petrographic name shall be declared in accordance with EN 12407.

5.3 Dimensions and tolerances

5.3.1 Dimensions

The dimensions of a natural stone masonry unit shall be declared (by the manufacturer/supplier) in mm for length, width and height in that order. They shall be given in terms of work size and in addition the coordinating size may be given. The assembly dimensions may also be given.



Key

1	Length	3	Height	5	Face
2	Width	4	Bed	6	Header

Figure 1 — Dimensions and surfaces for dimensioned stone and squared rubble stone

5.3.2 Dimensional tolerances

The permissible deviations for individual masonry units shall be as given in Table 1. The manufacturer shall also declare which tolerance category the dimensioned natural stone masonry units shall fulfil. The manufacturer may declare closer tolerances for one or more dimensions.

When sampled in accordance with Annex A and tested in accordance with EN 772-16:2011 using measurement method a), the deviation from the declared dimensions shall not exceed the tolerances for the dimensions in question taken from Table 1 or any closer tolerance the manufacturer has declared.

In addition the definition of dimensioned stone (finished units) includes the requirement that the faces and headers are plane without a separate declaration and that the bed faces of category D3 masonry units are suitable for use with thin layer mortar. When sampled in accordance with Annex A and tested in accordance with EN 772-20, the flatness shall meet the requirements of Table 1. When sampled in accordance with Annex A and tested in accordance with EN 13373, the out-of-squareness shall meet the requirements of Table 1.

When dimensioned stone masonry units category D3, intended for use with thin layer mortar, are sampled in accordance with Annex A and tested in accordance with EN 772-16:2011 by procedure d, the deviation from plane parallelism shall not exceed the values given in Table 1.

Table 1 — Dimensional tolerances for natural stone masonry units

Dimensions	Dimensioned stone			Squared rubble stone	Rubble stone
	Sawn faces			Faces roughly cut	
	D1	D2	D3		
Length	± 5 mm	± 2 mm	± 2 mm	± 15 mm	No requirement
Width[a]	± 5 mm	± 2 mm	± 2 mm	No requirement	No requirement
Height	± 5 mm	± 2 mm	± 1 mm	± 15 mm	No requirement
Flatness	0,5 % of the longest dimension of the face	0,3 % of the longest dimension of the face	0,3 % of the longest dimension of the face and not more than ± 1mm for the bed face	± 1,5 % for longest straight edge of the face	No requirement
Squareness	0,5 % for the longest straight edge of the face	0,3 % for the longest straight edge of the face	0,3 % for the longest straight edge of the face	± 1,5 % for longest straight edge of the face	No requirement
Plane parallelism			≤ 1,0 mm		

[a] Not in the case of extra width.

5.4 [A1] Configuration and appearance [A1]

[A1]

5.4.1 Configuration

When relevant to the uses, for which they are put on the market, the geometry, shape and features of natural stone masonry units shall be declared by the manufacturer. The declaration may be made by reference to one or another of the groups defined in EN 1996-1-1.

NOTE Dimensioned natural stone units are considered to be Group 1.

The test shall be carried out according to EN 772-16. [A1]

5.4.2 Surface appearance

An indicative sample [A1] shall be delivered to the customer upon request. It [A1] shall show the general tonality and finish of the natural stone, but does not imply any total uniformity in colour, and veins between the sample and supply.

Indicative samples shall also show the surface finish proposed.

NOTE Indicative samples should be delivered to the customer as an indication of specific characteristics such as glass seams, spots, holes for travertine, worm holes for marble, crystalline veins, rust stains, geodes, lens etc. which should not be considered as flaws.

When an indicative sample cannot exhibit sufficiently the characteristic features of the stone, at least three specimens shall be delivered.

One specimen out of three should indicate the average appearance and the other two the extreme appearance.

5.5 Apparent density

The manufacturer shall declare the apparent density of six specimens sampled in accordance with Annex A and tested in accordance with EN 1936.

NOTE The term apparent density used in relation to natural stone units is the same property declared as gross density in EN 771-1 to EN 771-5.

5.6 Mechanical strengths

5.6.1 Compressive strength

The manufacturer shall declare the mean normalised compressive strength (fb). ▌A1⟩ *deleted text* ⟨A1▐ In addition, the manufacturer shall declare whether the natural stone masonry unit is classified as Category I or Category II.

The normalised compressive strength procedure of a natural stone masonry unit is given in EN 772-1:2011, Annex A.

When the natural stone masonry units are sampled from a consignment in accordance with Annex A and tested in accordance with EN 772-1 and conditioned in accordance with EN 772-1:2011, 7.3.2 a), the mean compressive strength of the specified number (at least 10 specimen) of natural stone masonry units from a consignment shall be not less than the declared compressive strength and no individual unit shall have a compressive strength of less than 80 % of the declared mean value.

When it is not convenient to test whole units the test specimen may be cubes with (100 ± 5) mm (70 ± 5) mm or (50 ± 5) mm edge or right circular cylinders with diameter and height which are equal to (100 ± 5) mm (70 ± 5) mm or (50 ± 5) mm.

The number of specimen shall be at least 10.

Sawn test specimens shall be representative of the original unit section.

The declaration shall relate to and indicate the intended orientation of natural stone masonry units as tested and the method of bedding the units. Where, due to its means of formation, the strength properties of the stone are not isotropic, e.g. due to presence of bedding planes, it may be necessary to declare the compressive strength normal to more than one face of the test specimen. If the grinding process significantly alters the contact area of the faces tested or if the flatness tolerance cannot be achieved and the capping procedure is thereby used, this shall be declared.

The size and shape of the specimen tested shall be reported.

NOTE When shape factors are available e.g. in a database to be used to normalize the compressive strength from cut cubes or cylinders, these may be used.

5.6.2 Flexural strength

For natural stone masonry units that could be subjected to flexural stress during use, the manufacturer shall declare the mean flexural strength of ten specimens sampled in accordance with Annex A and tested in accordance with EN 12372.

▌A1⟩ When the stone shows bedding planes or anisotropy features, the declaration shall give the orientation of the force relatively to them. ⟨A1▐

5.7 Shear bond strength

5.7.1 General

For natural stone masonry units [A1] *deleted text* [A1] to be used in elements subjected to structural requirements, the shear bond strength of the unit in combination with mortar shall be declared in terms of the characteristic initial shear strength in accordance with EN 1052-3. The declaration may be made either on the basis of fixed values as in 5.7.2 below or tests as in 5.7.3 below. The manufacturer shall declare whether the value of bond strength has been obtained from the fixed values or from test.

NOTE In most cases, it is expected that the use of fixed values will be sufficient.

5.7.2 Declaration based on fixed values

When no declaration is made in accordance with 5.7.3, the characteristic initial shear strength of the unit in combination with mortar may be declared by reference to EN 998-2:2010, Annex C.

5.7.3 Declaration based on tests

The characteristic initial shear strength of the unit in combination with a specific type of mortar specified in accordance with EN 998-2 may be declared based on the tests on masonry units sampled from a consignment in accordance with Annex A and tested in accordance with EN 1052-3. The characteristic initial shear strength shall not be less than the declared value.

NOTE Bond strength depends on the mortar, the masonry unit and the workmanship.

5.8 Flexural bond strength

When relevant to the uses for which natural stone masonry units are put on the market, the flexural bond strength of masonry made with the units and mortar specified in accordance with EN 998-2 shall be declared. The declaration shall give the value of the characteristic flexural strength of the masonry combination for either a plane of failure perpendicular to the bed joints or a plane of failure parallel to the bed joints or both, as relevant, and the mortar specification for which the declaration is valid.

When natural stone masonry units are sampled in accordance with Annex A and tested in combination with the specified mortar, in accordance with EN 1052-2, the characteristic flexural strength of the relevant masonry specimens shall not be less than the declared value for the plane of failure.

5.9 Open porosity

The manufacturer shall declare the average open porosity of six specimens sampled in accordance with Annex A and tested in accordance with EN 1936.

5.10 Water absorption coefficient by capillarity

When relevant for the uses of the product the water absorption coefficient due to the capillary action shall be declared by the manufacturer. When the natural stone masonry units are sampled from a consignment in accordance with Annex A and tested in accordance with EN 772-11, then the mean water absorption of the specified number of natural stone masonry units shall be not greater than the declared water absorption.

When it is not convenient to test whole units, the test specimen may be cubes with (70 ± 5) mm edge or cylinders with diameter and height which are equal to (70 ± 5) mm. The area of the base to be immersed shall be calculated by measurements of two medians to the nearest 0,1 mm. The mass of the specimen shall weigh to the nearest 0,01 g. The specimens shall be weighed a minimum of 7 times, at the following intervals ± 5 %:

— High absorbent stone: time = 1 min, 3 min, 5 min, 10 min, 15 min, 30 min, 60 min, 480 min and 1 440 min.

— Low absorbent stone: time = 30 min, 60 min, 180 min, 480 min, 1 440, 2 880 min and 4 320 min.

When the stone shows bedding planes or anisotropy features, the test shall be carried out with the base immersed parallel to that which will be horizontal during use. If no arrangement of use is established (e.g. isometric units), two values of coefficient of absorption due to capillary action shall be declared: normal and parallel to the bedding or anisotropy. In that case, two sets of six specimens shall be tested.

5.11 Durability

When relevant to the uses for which the units are put on the market, the manufacturer shall declare the units as freeze/thaw resistant or not freeze/thaw resistant, dependent upon the location i.e. geographical or in a building. For units sampled in accordance with Annex A and tested in accordance with EN 12371 and declared as freeze/thaw resistant, the manufacturer shall also declare the number of cycles the units can resist without initiating cracks, ruptures, etc.

NOTE When the intended use of the product provides a complete protection against water penetration (e.g. a suitable layer of render, cladding, inner leaf of a cavity wall, internal walls), no reference to freeze/thaw resistance is required.

5.12 Thermal properties

When relevant to the uses for which the unit is put on the market and in all cases for masonry units intended to be used in elements subject to thermal insulation requirements, the manufacturer shall provide the mean $\lambda_{10,dry,unit}$-value and the determination model as prescribed in EN 1745.

Additionally another fractile may be provided. In such cases both the additional fractile and the corresponding $\lambda_{10,dry,unit}$-value shall be given.

When the natural stone masonry units are sampled in accordance with Annex A and tested in accordance with EN 1745 following the model provided, then the obtained λ-value of the specified number of natural stone masonry units shall be not greater than the provided λ-value.

When relevant to the use for which the units are put on the market, the value of specific heat capacity given in EN 1745 may be given.

5.13 Reaction to fire

For natural stone masonry units intended to be used in elements subject to fire requirements, the manufacturer shall declare the reaction to fire classification of the masonry unit.

For natural stone masonry units containing ≤ 1,0 % by mass or volume (whichever is the most onerous) of homogeneously distributed organic materials, the declaration may be fire Class A1 without the need to test.

Natural stone masonry units containing > 1,0 % by mass or volume (whichever is the most onerous) of homogeneously distributed organic materials shall be tested in accordance with EN 13501-1 and the appropriate fire classification declared.

Information on reaction to fire class of supplementary insulation material shall be on basis of European Standards as declared by the supplier of insulating material.

NOTE Attention is drawn to the Commission Decision 96/603/EC, amended by Commission Decision 2000/605/EC, in which non-combustible masonry units containing not more than 1 % (by mass or volume whichever is the more onerous) of homogeneously distributed organic materials are classified as reaction to fire Class A1 without testing.

5.14 Water vapour permeability

This characteristic shall be declared upon request (e.g. when the unit is to be used in a location subject to vapour control requirements and fixed by means of mortar or adhesives).

The permeability shall be given by making reference to tabulated values in EN ISO 10456, or by determining the permeability using the test method in EN ISO 12572 and the results expressed accordingly.

〈A1〉

5.15 Dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this standard are placed on those markets.

In the absence of European harmonized test methods, 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 web site on EUROPA accessed through: http://ec.europa.eu/enterprise/construction/cpd-ds/. 〈A1〉

6 Description, designation and classification of natural stone masonry units

6.1 Description and designation

The description and designation of a natural stone masonry unit shall comprise at least the following:

a) number, title and date of issue of this document, i.e. EN 771-6;

b) work size dimensions and tolerance category (for dimensioned natural stone masonry units) (see 5.3);

c) denomination (see 5.2);

d) mean compressive strength and the size and shape of the specimen tested (see 5.6.1).

When relevant to the uses for which the unit is placed on the market, the description and designation shall include:

e) normalised compressive strength (see 5.6.1);

f) mean flexural strength (see 5.6.2);

g) shear bond strength (see 5.7);

h) flexural bond strength (see 5.8);

i) open porosity (see 5.9);

j) apparent density (see 5.5);

k) water absorption coefficient by capillarity (see 5.10);

l) durability (see 5.11);

m) thermal properties (see 5.12);

[A1]

n) dangerous substances (see 5.15). [A1]

Other technical information may optionally be provided.

6.2 Classification

Specification of the properties of masonry units may be given by reference to classification systems provided those systems are based only on those properties included in this European Standard and do not themselves constitute a barrier to trade.

This does not remove the requirement that all manufacturers claiming compliance with this European Standard shall state declared values of the properties of their products, when required.

7 Marking

The following particulars shall be clearly marked in one of the following: the units, the packaging, the delivery note or any certificate supplied with the masonry units:

a) name, trademark or other means of identification of the manufacturer/supplier;

b) means of identifying the masonry units and relating them to their description and designation.

NOTE For CE-marking and labelling, see Annex ZA. Where ZA.3 requires the CE-marking to be accompanied by the same information as required by this clause, the requirements of this clause can be considered to have been met.

8 [A1] Assessment and verification of constancy of performance (AVCP) [A1]

8.1 General

[A1] The manufacturer shall demonstrate compliance of his product with the requirements of this European Standard and with the declared performance for the product properties by carrying out both:

— product type determination (see 8.2), which can be physical testing, calculation, reference to tabulated values or combinations of these methods;

— factory production control (see 8.3).

Alternative methods of test to the reference methods specified in this European Standard may be adopted except for the product type determination tests and in case of dispute, provided that these alternative methods satisfy the following:

a) a correlation can be shown to exist between the results from the reference method and those from the alternative method; or

b) a safe relationship can be demonstrated when using the alternative method compared to the reference methods and

c) the information on which the relationship is based is available. [A1]

A1

8.2 Product type determination

After completion of the development of a new product type and before placing on the market, appropriate product type determination shall be carried out to confirm that the properties predicted from the development meet the requirements of this standard and the performance of the characteristics to be declared for the product.

Whenever a major change in the source, blend, or nature of raw materials occurs, or when there is a change in processing conditions, leading to what the manufacturer considers will constitute a new product type being produced, the appropriate product type determination shall be repeated.

The manufacturer may define product groups. The product group may differ according to the characteristics in question.

In the product type determination process a manufacturer may take in consideration already existing test results.

A manufacturer may use the product type determination results determined by someone else (e.g. another manufacturer or a research technology & development service provider) to justify his own declaration of performances regarding a product that is manufactured according to the same design and with raw materials, constituents and manufacturing methods of the same kind, provided that permission is given by the owner of the results, and the results are valid for both products.

The tests to be conducted shall be the tests or calculations as described in Table A.1 for the properties selected from the following list relevant to the manufacturer's declaration for the product type's intended use:

— dimensions and tolerances;

— configuration;

— apparent density;

— compressive strength;

— flexural strength;

— shear bond strength;

— flexural bond strength;

— open porosity;

— water absorption coefficient by capillarity;

— freeze/thaw resistance;

— thermal properties;

— reaction to fire;

— water vapour permeability.

Sampling for type testing shall be in accordance with Annex A.

The results of type tests shall be recorded.

NOTE For the performance characteristics to be determined in order to address the Declaration of Performance and CE marking provisions, see Table ZA.1. 〈A1〉

8.3 Factory production control

8.3.1 General

The manufacturer shall establish, document and maintain a factory production control system to enable continuing conformity with this European Standard and the declared 〈A1〉 performance of the characteristics 〈A1〉 of the products placed on the market.

The factory production control system may consist of procedures related to the process only (full process control and consequently no finished product testing; i.e. 8.3.6 does not apply), to finished products only (consequently no process control; i.e. 〈A1〉 8.3.5 〈A1〉 does not apply) or any combination of both. Consequently conformity criteria depend on the individual factory production procedures.

As appropriate, the responsibility, authority and interrelation of all personnel who manage, perform and verify work affecting the quality of masonry unit products shall be established.

The factory production control system shall describe the control procedure of production, the regular checks by the manufacturer and his testing, depending on the combination of the procedures related to process control and/or finished product testing. Controls and tests may include the characteristics of raw materials and finished products, the procedure of production, the production equipment or the production machines, the test equipment or the testing instruments and the marking of the product.

The test results shall be recorded.

Actions to be taken when the control test values or criteria do not meet those specified should be documented by the manufacturer.

For Category I masonry units the factory production control system shall be designed so that the probability of failure to reach the declared compressive strength is not exceeding 5 % corresponding to 95 % confidence level.

8.3.2 Testing and measuring equipment

All relevant weighing, measuring and testing equipment, that has an influence on the declared values, shall be verified and regularly inspected.

8.3.3 Production equipment

〈A1〉 When the factory production control system includes process control procedures, all production equipment, that forms part of these procedures and has an influence on the declared values, shall be regularly inspected. 〈A1〉

8.3.4 Raw materials

As appropriate, the manufacturer shall define the acceptance criteria of raw materials and the procedures operated to ensure that these are met.

8.3.5 Production process

As appropriate, the relevant features of the production processes shall be defined giving the frequency of the manufacturer's checks together with the required criteria. Actions to be taken when the criteria are not achieved shall be specified by the manufacturer.

8.3.6 Finished product testing

As appropriate, the factory production control system shall incorporate a sampling plan and the frequency of testing of the finished product. The results of sampling and testing shall be recorded.

The sample shall be representative of the production.

Guidance on testing frequencies for the characteristics of the finished products is given in Table B.1. The guidance should only be used if no better information is available.

Depending on the corrective measure may result in higher frequencies of testing than the ones used.

8.3.7 Statistical techniques

Where and when possible and applicable, the results of checks and testing shall be interpreted by means of statistical techniques, by attributes or by variables, to verify the product characteristics and to determine if the production conforms to the compliance criteria and the product conforms to the declared values.

NOTE One method of satisfying this conformity criterion is to use the approach given in ISO 12491.

8.3.8 Marking and stock control of products

The marking and stock control shall be documented. Lots (Batches) of products should be identifiable and traceable.

8.3.9 Traceability

As appropriate, systems of traceability shall be given in the factory production control system.

8.3.10 Nonconforming products

〚A1〉 The procedure for dealing with nonconforming products shall be documented. Products that do not conform with the requirements or the performance of the product type shall be segregated and marked accordingly. However, these products may be reassessed by the manufacturer and assigned to a different product type. 〈A1〛

The manufacturer shall take action to avoid a reoccurrence of the nonconformity.

Annex A
(normative)

[A1] Sampling for type testing and for independent testing of consignment [A1]

A.1 General

[A1] This sampling procedure shall apply for product type determination tests and in the event that there is a requirement for an assessment of product compliance.

Only those characteristics declared by the manufacturer shall be assessed by this procedure.

The number of units required to determine compliance with the specification shall be sampled from a consignment of up to 100 m^3 of gross volume or part thereof (see Table A.1). [A1]

A.2 Sampling procedure

A.2.1 General

NOTE The choice of the methods of sampling will normally be dictated by the physical form of the consignment in question.

A.2.2 Random sampling

Whenever possible, the random sampling methods shall be used, in which every masonry unit in the consignment has an equal chance of being selected for the sample. The appropriate number of units shall be selected at random from positions throughout the consignment without any consideration being given to the quality of those selected except that units damaged in transit shall not be selected.

NOTE In practice, random sampling is normally only convenient either when the masonry units forming the consignment are being moved in a loose (unpacked) form from one place to another or when they have been split into a large number of small stacks, e.g. on scaffolding awaiting laying.

A.2.3 Representative sampling

A.2.3.1 General

When random sampling is impracticable or not convenient, e.g. when the masonry units form a large stack or stacks with ready access to only a limited number, a representative sampling procedure shall be used.

A.2.3.2 Sampling from a stack

The consignment shall be divided into at least six real or imaginary sections, each of a similar size. An equal number of masonry units shall be selected at random from within each section in order to give the required number without any consideration being given to the quality of those selected except that units damaged in transit shall not be selected.

NOTE It will be necessary to remove some sections of the stack or stacks in order to gain access to masonry units within the body of such stacks when taking samples.

A.2.3.3 Sampling from a consignment formed of packs

At least six packs shall be selected at random from the consignment. The packaging shall be removed and an equal number of masonry units shall be sampled at random from within each of the opened packs in order to give the required number without any consideration being given to the quality of those selected except that units damaged in transit shall not be selected.

A.2.4 Dividing the sample

When the sample is to provide masonry units for more than one test, the total number shall be collected together and then divided by taking units at random from within the total sample to form each successive sub-sample.

A.2.5 Number of units required for testing

The sample size shall be in accordance with Table A.1.

A1

Table A.1 — Number of units required for testing

Property	Clause number	Test method(s)	Number of specimens[a]	
Dimensions and dimensional tolerances	5.3	EN 772-16, EN 772-20 and EN 13373	6	
Configuration	5.4	EN 772-16	6	
Apparent density	5.5	EN 1936	6	
Compressive strength	5.6.1	EN 772-1	10	
Flexural strength	5.6.2	EN 12372	10	
Flexural bond strength	5.8	EN 1052-2	3	
Shear bond strength	5.7	EN 1052-3	Type I specimen	Type II specimen
		Procedure A	27	18
		Procedure B	18	12
Open porosity	5.9	EN 1936	6	
Water absorption by capillarity	5.10	EN 772-11	6	
Freeze/thaw resistance	5.11	EN 12371	7	
Thermal properties	5.12	EN 1745	—	
Water vapour permeability	5.14	EN ISO 10456, EN ISO 12572	—	
Reaction to fire	5.13	EN 13501-1	—	

[a] If appropriate, e.g. when units are not damaged by a test procedure, the same units may be used for different tests.

A1

Annex B
(informative)

A1 Guidance for test frequencies for designing a FPC system to demonstrate conformity of finished products with the requirements of the standard and the declaration of the manufacturer A1

A1

Table B.1 — Checking of finished products

Subject	Purpose of checking	Test method in accordance with b	Frequency of checking by the manufacturer for product range
Dimensions	Conformity with the declared dimensions and the permissible dimensional deviations determined by EN 771-6	EN 772-16 and EN 13373	— every production lot or — as given in the FPC documentation
Apparent density and open porosity	Conformity with the declared apparent density and open porosity	EN 1936	— every 2 years or — as given in the FPC documentation
Compressive strength	Conformity with the declared compressive strength and determined by EN 771-6	EN 772-1	— at least every 2 years[a] or — as given in the FPC documentation
Flexural strength	Conformity with the declared flexural strength and determined by EN 771-6	EN 12372	— every 2 years or — as given in the FPC documentation
Petrographic examination	Conformity with the declared petrographic examination	EN 12407	— every 10 years or — as given in the FPC documentation
Durability (Freeze/thaw resistance)	Conformity with the declared freeze/thaw resistance according to EN 771-6	EN 12371	— every 10 years or — as given in the FPC documentation
Water absorption by capillarity	Conformity with declared value	EN 772-11	— every 10 years or — as given in the FPC documentation
Shear bond strength	Conformity with declared value	EN 1052-3	— every 10 years or — as given in the FPC documentation
Flexural bond strength	Conformity with declared value	EN 1052-2	— every 10 years or — as given in the FPC documentation
Thermal conductivity	Conformity with declared value	EN 1745	— every 10 years or — as given in the FPC documentation

Subject	Purpose of checking	Test method in accordance with b	Frequency of checking by the manufacturer for product range
Water vapour permeability	Conformity with declared value	EN ISO 12572	— upon request or — as given in the FPC documentation
Reaction to fire	Conformity with declared value	EN 13501-1	— every 10 years or — as given in the FPC documentation

a Only for loadbearing. For non-loadbearing, the control frequency is at least every 10 years.

b The manufacturer does not necessarily have to declare a value against every property and some may be on the basis of, for example, tabulated values. Where the declared value is from a tabulated value, no testing is required. In these cases, certification can be based on evidence that the tables are being used correctly. The tests should be carried out in accordance with the reference methods mentioned in the standard or by applying alternative test methods with a proven correlation or a safe relationship to the reference methods.

⟨A1

Annex ZA
(informative)

A1 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 the Mandate M/116 (as amended) “Masonry and related products” 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 stone masonry units intended for the uses indicated in Table ZA.1 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 Table ZA.1.

Table ZA.1 — Relevant clauses for natural stone masonry units in masonry walls, columns and partitions

Product:	Natural stone masonry units			
Intended use:	In masonry walls, columns and partitions			
Essential Characteristics	**Clauses in this European Standard related to essential characteristics**		**Regulatory levels and/or classes**	**Notes**
Dimensions and dimensional tolerances	5.3	Dimensions and tolerances	None	Declared value, in mm and category
Configuration	5.4.1	Configuration	None	As described
Compressive strength (for units intended to be used in elements subject to structural requirements)	5.6.1	Compressive strength	None	Declared value in N/mm^2 (with indication of normalized compressive strength, direction of load and unit category)
Bond strength (for units intended to be used in elements subject to structural requirements)	5.7	Shear bond strength	None	Fixed value or declared value of initial shear strength, in N/mm^2
	5.8	Flexural bond strength	None	Declared values (with indication of plane of failure)
Reaction to fire (for units intended to be used in elements subject to fire regulations)	5.13	Reaction to fire	Euroclass A1 to F	Declared reaction to fire class A1 to F

Product:	Natural stone masonry units			
Intended use:	In masonry walls, columns and partitions			
Essential Characteristics	**Clauses in this European Standard related to essential characteristics**		**Regulatory levels and/or classes**	**Notes**
Water absorption (for units intended to be used in damp proof courses and in external elements)	5.10	Water absorption coefficient by capillarity	None	Declared value, in $g/m^2 \cdot s^{0,5}$ (with indication of bedding planes)
Water vapour permeability (for units intended to be used in external elements)	5.14	Water vapour permeability	None	Fixed value or declared value
Direct airborne sound insulation (in end use conditions)/Density [Density and configuration] (for units intended to be used in elements subject to acoustic requirements)	5.3 5.4.1 5.5	Dimensions and tolerances Configuration Apparent density	None	Declared value of apparent density, in kg/m^3
Thermal resistance/[Density and configuration] (for units intended to be used in elements subject to thermal insulation requirements)	5.12	Thermal properties	None	Declared value of thermal conductivity, in W/m·K and the means of evaluation used
Durability (Freeze/thaw resistance)	5.11	Durability	None	Declared value or declared text:“Not to be left exposed.”
Dangerous substances	5.15	Dangerous substances	None	

The declaration of the product performance related to certain essential characteristics is not required in those Member States (MS) where there are no regulatory requirements on these essential characteristics for the intended use of the product.

In this case, manufacturers placing their products on the market of these MS are not obliged to determine nor declare the performance of their products with regard to these essential characteristics and the option “No performance determined” (NPD) in the information accompanying the CE marking and in the declaration of performance (see ZA.3) may be used for those essential characteristics.

ZA.2 Procedure(s) for AVCP of natural stone masonry units

ZA.2.1 System(s) of AVCP

The AVCP system(s) of natural stone masonry units indicated in Table ZA.1, established by EC Decision 97/740/EC of 14.10.1997 as amended by the Commission Decision 2001/596/EC of 8 January 2001 published in the OJEU as L209 (page 33) of 2.8.2001 is shown in Table ZA.2 for the indicated intended use(s) and relevant level(s) or class(es) of performance.

Table ZA.2 — System(s) of AVCP

Product(s)	Intended use(s)	Regulatory levels and/or classes	AVCP system(s)
Masonry Units. Category I [a]	In walls, columns and partitions	–	2+
Masonry Units. Category II	In walls, columns and partitions	–	4
System 2+: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.3 amended by the Regulation (EU) No 568/2014 including certification of the factory production control by a notified production control certification body on the basis of initial inspection of the manufacturing plant and of factory production control as well as of continuous surveillance, assessment and evaluation of factory production control. *System 4:* See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.5 amended by the Regulation (EU) No 568/2014.			
[a] Units with a specified mean compressive strength with a probability of failure to reach it not exceeding 5 %.			

The AVCP of the natural stone masonry units in Table ZA.1 shall be according to the AVCP procedures indicated in Table ZA.3.1 and Table ZA.3.2 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.3.1 — Assignment of AVCP tasks for Category I of natural stone masonry units under system 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 relevant for the declared intended use	8.3
	Determination of the product-type on the basis of type testing(including sampling), type calculation, tabulated values or descriptive documentation of the product	Parameters related to essential characteristics of Table ZA.1 relevant for the declared intended use	8.2
	Further testing of samples taken at factory according to the prescribed test plan	Essential characteristics of Table ZA.1 relevant for the declared intended use	8.3
Tasks for the notified factory production control	Initial inspection of the manufacturing plant and of FPC	Parameters related to essential characteristics of Table ZA.1, relevant for the declared intended use. Documentation of the FPC.	8.3

Tasks		Content of the task	AVCP clauses to apply
certification body	Continuous surveillance, assessment and evaluation of FPC.	Parameters related to essential characteristics of Table ZA.1, relevant for the declared intended use, namely Compressive strength Bond strength Documentation of the FPC.	8.3

Table ZA.3.2 — Assignment of AVCP tasks for Category II of natural stone masonry units under system 4

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. relevant for the declared intended use	8.3
	Determination of the product-type on the basis of type testing, type calculation, tabulated values or descriptive documentation of the product	Essential characteristics of Table ZA.1 relevant for the declared intended use	8.2

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 amended by the Regulation (EU) No 568/2014:

In case of products under system 2+:

— the determination of the product-type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product; the factory production control and the testing of samples taken at the factory according to the prescribed test plan, carried out by the manufacturer; and

— the certificate of conformity of the factory production control, issued by the notified production control certification body on the basis of:

  — 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 4:

— the factory production control carried out by the manufacturer;

— 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 amended by the Regulation (EU) No 574/2014.

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 amended by the Regulation (EU) No 568/2014;

— 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 Examples of DoP

ZA.2.2.3.1 General

The following are examples of completed DoPs for natural stone masonry units

ZA.2.2.3.2 Example A

The following gives an example of a filled-in DoP for natural stone masonry units under system 2+.

DECLARATION OF PERFORMANCE

No. 12345

1. Unique identification code of the product-type: **NaturalStone XYZ**

2. Intended use/es: **Outer loadbearing masonry walls**

3. Manufacturer:

Any Company SA
Production Plant A
Any Street 1
1234 Anywhere
e-mail: anyoco.sa@provider.eu

4. System/s of AVCP:

System 2+

5. Harmonized standard:

EN 771-6:2011+A1:2015

Notified body

NB 9999

6. Declared performance/s:

Essential characteristics		**Performance**
Dimensions	length	600 mm
	width	240 mm
	height	400 mm
Dimensional tolerances		D3
Configuration	group according to EC 6	Group 1
Compressive strength	unit category	Category I
	normalized compressive strength	14 N/mm^2
	direction of load	perpendicular to bed faces
Shear bond strength		0,15 N/mm^2 (tabulated value)
Flexural bond strength	failure parallel to bed joints	NPD
	failure perpendicular to bed joints	NPD
Reaction to fire		Euroclass A1 (Commission Decision 2000/605/EC)
Water absorption	parallel to bed faces	98 $g/(m^2 \cdot s^{0,5})$
	perpendicular to bed faces	NPD
Water vapour permeability		40 (dry) (tabulated value)
Apparent density		1 690 kg/m^3

Essential characteristics	Performance
Thermal properties	$\lambda_{10,dry}$ = 1,10 W/(m·K) (Model S1)
Durability against freeze-thaw	06 cycles
Dangerous substances	NPD

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

……..

(name and function)

…… ……

(place and date of issue) (signature)

ZA.2.2.3.3 Example B

The following gives an example of a filled-in DoP for natural stone masonry units under system 4.

DECLARATION OF PERFORMANCE

No. abcde

1. Unique identification code of the product-type: **Any Natural Stone-Ref1234**
2. Intended use/s: **Outer loadbearing masonry walls**
3. Manufacturer:

Any Company SA
Production Plant A
Any Street 1
1234 Anywhere
e-mail: anyoco.sa@provider.eu

4. System/s of AVCP:

System 4

5. Harmonized standard:

EN 771-6:2011+A1:2015

6. Declared performance

Essential characteristics		Performance
Dimensions	length	400 mm
	width	200 mm
	height	200 mm
Dimensional tolerances		D2
Configuration	group according to EC 6	Group 1
Compressive strength	4.1 unit category	Category II
	4.2 normalized compressive strength	116 N/mm^2
	4.3 direction of load	NPD
Shear bond strength		NPD
Flexural bond strength	6.1 failure parallel to bed joints	NPD
	6.2 failure perpendicular to bed joints	NPD
Reaction to fire		Euroclass A1 (Commission Decision 2000/605/EC)
Water absorption	8.1 parallel to bed faces	NPD
	8.2 perpendicular to bed faces	NPD
Water vapour permeability		NPD
Apparent density		2 690 kg/m^3
Thermal properties		NPD
Durability against freeze-thaw		144 cycles
Dangerous substances		NPD

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

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 masonry unit

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:

— to 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 [see example of DoP];

— the level or class of the performance declared;

— the reference to the harmonized technical specification applied;

— the identification number of the notified body [only for products under system 2+];

— 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.

The following gives examples of CE markings for natural stone masonry units:

CE	*CE marking, consisting of the "CE"-symbol*
NB 9999	*Identification number of the notified production control certification body*
AnyCo SA, Production Plant A **Any Street 1, 1234 Anywhere**	*Name and the registered address of the manufacturer, or identifying mark*
14	*Last two digits of the year in which the marking was first affixed*
No. 12345	*Reference number of the DoP*
EN 771-6:2011+A1:2015	*No. of European standard applied, as referenced in OJEU*
NaturalStone XYZ	*Unique identification code of the product-type*
intended to be used in **outer loadbearing masonry walls**	*Intended use of the product as laid down in the European standard applied*
Dimensions: 600 × 240 × 400 mm **Dimensional tolerances:** D3 **Group according to EC6:** Group 1 **Unit category:** Category I **Normalized compressive strength:** 14 N/mm^2 **Direction of load:** perpendicular to bed faces **Shear bond strength:** 0,15 N/mm^2(tabulated values) **Reaction to fire:** Euroclass A1 **Water absorption (parallel to bed faces):** 98 g/(m^2·s^{0,5}) **Water vapour permeability:** 40 (dry) (tabulated value) **Apparent density:** 1 690 kg/m^3 **Thermal properties:** $\lambda_{10,dry}$ = 1,10 W/(m·K) (Model S1) **Durability against freeze-thaw:** 06 cycles	*Level or class of the performance declared*
Further information : **www.anyco.eu/CPR/12345**	

Figure ZA.1 — Example CE marking information of products under AVCP system 2+ corresponding to DoP example A

CE	*CE marking, consisting of the "CE"-symbol*
AnyCo SA, Production Plant A **Any Street 1, 1234 Anywhere**	*Name and the registered address of the manufacturer, or identifying mark*
14	*Last two digits of the year in which the marking was first affixed*
No. abcde	*Reference number of the DoP*
EN 771-6	*No. of European standard applied, as referenced in OJEU*
Any Natural Stone-Ref1234	*Unique identification code of the product-type*
intended to be used in outer loadbearing masonry walls	*Intended use of the product as laid down in the European standard applied*
Dimensions: 400 × 200 × 200 mm **Dimensional tolerances:** D2 **Group according to EC6:** Group 1 **Unit category:** Category I **Normalized compressive strength:** 116 N/mm^2 **Direction of load:** perpendicular to bed faces **Shear bond strength:** 0,15 N/mm^2(tabulated values) **Reaction to fire:** Euroclass A1 **Apparent density:** 2 690 kg/m^3 **Durability against freeze-thaw:** 144 cycles	*Level or class of the performance declared*
Other information: www.anyco.eu/DoP/abcde	

Figure ZA.2 — Example CE marking information of products under AVCP system 4 corresponding to DoP example B A1

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[1] EN 771-1, *Specification for masonry units — Part 1: Clay masonry units*

[2] EN 771-2, *Specification for masonry units — Part 2: Calcium silicate masonry units*

[3] EN 771-3, *Specification for masonry units — Part 3: Aggregate concrete masonry units (Dense and lightweight aggregates)*

[4] EN 771-4, *Specification for masonry units — Part 4: Autoclaved aerated concrete masonry units*

[5] EN 771-5, *Specification for masonry units — Part 5: Manufactured stone masonry units*

[6] ISO 12491, *Statistical methods for quality control of building materials and components*

[7] 96/603/EC: Commission Decision of 4 October 1996 establishing the list of products belonging to Classes A 'No contribution to fire' provided for in Decision 94/611/EC implementing Article 20 of Council Directive 89/106/EEC on construction products, OJ L 267, 19.10.1996, p. 23-26

[8] 2000/605/EC: Commission Decision of 26 September 2000 amending Decision 96/603/EC establishing the list of products belonging to Classes A 'No contribution to fire' provided for in Decision 94/611/EC implementing Article 20 of Council Directive 89/106/EEC on construction products (notified under document number C(2000) 2640), OJ L 258, 12.10.2000, p. 36-37

[9] EN 1996-1-1, *Eurocode 6 — Design of masonry structures — Part 1-1: General rules for reinforced and unreinforced masonry structures*

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