BS EN 15286:2013

BSI Standards Publication

Agglomerated stone — Slabs and tiles for wall finishes (internal and external)

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National foreword

This British Standard is the UK implementation of EN 15286:2013.

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

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English Version

Agglomerated stone - Slabs and tiles for wall finishes (internal and external)

Pierres agglomérées - Carreaux et plaques pour finitions murales (intérieures et extérieures)

Künstlich hergestellter Stein - Platten und Fliesen für Wandflächen (innen und außen)

This European Standard was approved by CEN on 25 April 2013.

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Foreword

This document (EN 15286:2013) 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of an identical text or by endorsement, at the latest by December 2013, and conflicting national standards shall be withdrawn at the latest by December 2013.

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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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

This document is one of a series of European Standards for specifications of agglomerated stone products, which includes the following:

— EN 15285, *Agglomerated stone — Modular tiles for flooring and stairs (internal and external)*

— EN 15286, *Agglomerated stone — Slabs and tiles for wall finishes (internal and external)*

— EN 15388, *Agglomerated stone — Slabs and cut-to-size products for vanity and kitchen tops*

NOTE 1 A document on slabs and other cut-to-size products for flooring and stairs (internal and external) is under development within CEN/TC 246/WG 4.

NOTE 2 An overview on standards for agglomerated stone products is given in Table 1.

Table 1 — Standards for agglomerated stone products

Harmonised product standards	EN 15285 *Modular tiles for flooring and stairs (int. & ext.) (under M/119)*	EN 15286 *Slabs and tiles for wall finishes (int. & ext.) (under M/121)*
Non-harmonised product standards	EN 15388 *Slabs and cut-to-size products for vanity and kitchen tops*	
Main supporting standards	EN 14617 (all parts) *Test methods*	EN 14618 *Terminology and classification*
NOTE A document on *Slabs and other cut-to-size products for flooring and stairs (int. & ext.) (under M/119)*) is under development within CEN/TC 246/WG 4.		

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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 and appropriate test methods for cladding slabs and tiles of agglomerated stone of length or width up to 3 500 mm which are made for use as internal and external wall finishes and are either fixed mechanically or glued by adhesive or mortar. It also provides provisions for the evaluation of conformity and marking of these products.

This standard does not cover cladding slabs and tiles of agglomerated stone used for internal and external ceiling finishes. In addition, it does not cover slabs and tiles of agglomerated stone intended to be used in suspended ceilings. Products covered by the standards EN 14992, EN 13198, EN 13748-1 and EN 13748-2 are also excluded from the scope of the present standard.

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 1015-12*, Methods of test of mortar for masonry — Part 12: Determination of adhesive strength of hardened rendering and plastering mortars on substrates*

EN 1324, *Adhesives for tiles — Determination of shear adhesion strength of dispersion adhesives*

EN 1348, *Adhesives for tiles — Determination of tensile adhesion strength for cementitious adhesives*

EN 12003, *Adhesive for tiles — Determination of shear adhesion strength of reaction resin adhesives*

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

EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*

EN 14617-1, *Agglomerated stone — Test methods — Part 1: Determination of apparent density and water absorption*

EN 14617-2, *Agglomerated stone — Test methods — Part 2: Determination of flexural strength (bending)*

EN 14617-5, *Agglomerated stone — Test methods — Part 5: Determination of freeze and thaw resistance*

EN 14617-6, *Agglomerated stone — Test methods — Part 6: Determination of thermal shock resistance*

EN 14617-8, *Agglomerated stone — Test methods — Part 8: Determination of resistance to fixing (Dowel Hole)*

EN 14617-11, *Agglomerated stone — Test methods — Part 11: Determination of linear thermal expansion coefficient*

EN 14617-12, *Agglomerated stone — Test methods — Part 12: Determination of dimensional stability*

EN 14617-16, *Agglomerated stone — Test methods — Part 16: Determination of dimensions, geometric characteristics and surface quality of modular tiles*

EN 14618:2009, *Agglomerated stone — Terminology and classification*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14618:2009 and the following apply.

3.1
dimensions of cladding slab or tile
length *l*, width *b* and thickness *d* of a slab or a tile for wall finishes given in the stated sequence in millimetres (see Figure 1)

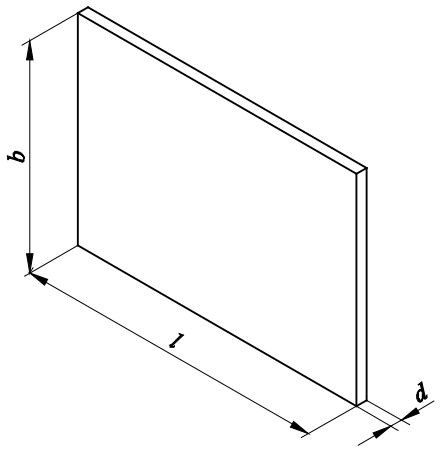


Figure 1 — Nominal dimensions of a cladding slab or a tile

3.2
class A cladding slab or tile
cladding slab or tile with stricter tolerances in length, width and thickness (see Table 2) used for internal or external wall finishes, the surface of which can be textured (see Figure 2) or non-textured, either mechanically fixed or glued by adhesive or mortar

3.3
class B cladding slab or tile
cladding slab or tile with wider tolerances in length, width and thickness (see Table 2) used for internal or external wall finishes, the surface of which can be textured (see Figure 2) or non-textured, with a mechanical fixing able to compensate the differences in thickness of a cladding slab or a tile, in order to ensure the overall planarity of the cladding

Note 1 to entry: The differences in length and width are compensated by suitable open joint pattern in the wall.

Note 2 to entry: Class B is not suitable for cladding slabs or tiles glued by adhesive or mortar.

4 Requirements

4.1 Geometric characteristics

4.1.1 Dimensions

Measurements of dimensions (see Figure 2) of cladding tiles shall be carried out in accordance with EN 14617-16 and those of cladding slabs with Annex A.

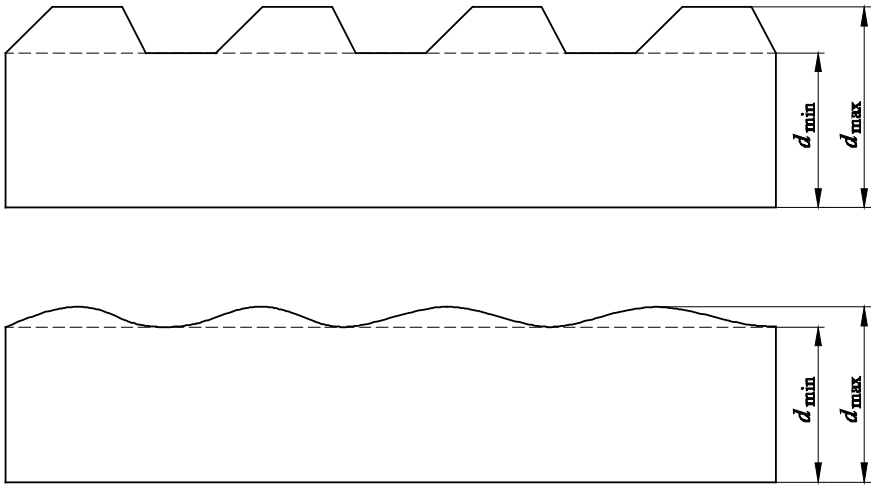
4.1.2 Tolerances in dimensions

Deviations in dimensions of cladding slabs and tiles shall not exceed values given in Table 2. The dimensions (i.e. length, width and thickness) of cladding tiles shall be determined according to EN 14617-16 and those of cladding slabs with Annex A.

Table 2 — Tolerances in dimensions of cladding slabs and tiles

	Tolerances in dimensions of cladding slabs and tiles			
	Class A			**Class B**
Length (*l*) Width (*b*)	**< 600 mm**	**≥ 600 mm and ≤ 1 000 mm**	**> 1 000 mm and ≤ 3 500 mm**	**≤ 3 500 mm**
Tolerances in length and width	± 0,5 mm	± 0,7 mm	± 1,0 mm	± 0,2 %, but max. ± 2,0 mm
Tolerances in thickness[a] (*d*)	± 0,7 mm			(-1/+3) mm

[a] Tolerances for thickness shall not apply for cladding slab and tile with textured upper surface where $d_{max} - d_{min} > 1$ mm (see Figure 2).



Key

d_{min} minimum thickness

d_{max} maximum thickness

Figure 2 – Cross section examples of the textured upper surface cladding slabs and tiles

To calculate the weight of the cladding slab or tile with the textured upper surface the maximum thickness d_{max} shall be considered.

To determine the breaking load of the cladding slab or tile with the textured upper surface the minimum thickness d_{min} shall be considered.

4.1.3 Tolerances in flatness

Deviations in flatness of the surface of cladding tiles shall be determined according to EN 14617-16 and those of cladding slabs with Annex A and shall not exceed the tolerances, either 0,3 % of the length of diagonal of a cladding slab/tile or 4 mm, whichever is lower.

NOTE This requirement does not apply for cladding slabs and tiles with the textured upper surface where $d_{max} - d_{min} > 1$ mm (see Figure 2).

4.1.4 Straight angles

Straight angle of a cladding slab or a tile shall result by comparison of its two diagonal lengths measured as described in Annex B.

The difference between the two diagonals lengths shall not deviate by more than that given in Table 3.

Table 3 — Requirements for tolerances on diagonal lengths of cladding slabs and tiles

Length (*l*) or **width (*b*)** (mm)	**< 600**	**≥ 600 and ≤ 1 000**	**> 1 000 and ≤ 3 000**
Tolerance for diagonal lengths (mm)	± 0,9	± 1,2	± 3,0

4.1.5 Surface finish

Surface finish shall extend uniformly to the edges of a cladding slab or a tile.

Surface after its finishing shall have a regular appearance as a function of the finishing process and shall be worked to meet the declared surface finish.

This should be established on the samples of a cladding slab or a tile submitted beforehand by the manufacturer to the purchaser.

EXAMPLE Surface finishes of a cladding slab or a tile include:

- fine ground surfaces, obtained, e.g. by means of a grinding disk of grain size F 220;
- matte finished surfaces, obtained, e.g. by means of a polishing disk with grain size F 400;
- highly polished surfaces, obtained, e.g. by means of a polishing disk or felt.

4.2 Physical and mechanical characteristics

4.2.1 General

The characteristics of the cladding slabs or tiles in 4.2.2 to 4.2.12 shall be declared when these products are subject to regulatory requirements and may be declared otherwise with reference to intended end use conditions.

Contractual specifications may be used to establish reference values, e.g. stated in design or manufacturer's data sheet, due account being taken of any regulatory requirements applicable.

4.2.2 Visual appearance

This characteristic of a cladding slab or a tile shall be declared.

The colour, surface finish and brightness of the agglomerated stone, which a cladding slab or a tile is made of, shall be identified visually according to Annex C, e.g. by a range of samples selected in agreement between manufacturer and purchaser.

Any visual variations, e.g. inclusions and veins, are permissible provided that they are characteristic of the relevant type of agglomerated stone and provided that they do not adversely affect the performances of the cladding slabs or tiles.

Reference samples shall be as described in Annex C.

4.2.3 Reaction to fire

Reaction to fire performance shall be declared when cladding slabs or tiles are intended to be used in areas subjected to reaction to fire regulation and may be declared otherwise.

A cladding slab or a tile may be classified without the need for testing (CWT) as the reaction to fire Class A1[1)], when it is made of an agglomerated stone containing:

a) an organic material as a binder, if any, of not more than 0,1 % by mass or volume, whichever is the most onerous; and

b) a homogenously distributed organic material as an aggregate, if any, of not more than 1 % by mass or volume, whichever is the most onerous.

A cladding slab or a tile made of an agglomerated stone, which does not comply with the provisions a) and b) given above and having an intended use subject to the reaction to fire regulatory requirements shall be classified in accordance with EN 13501-1 after being tested in accordance with the test standards given therein, including mounting and fixings in accordance with EN 13823.

4.2.4 Apparent density and water absorption

The values for apparent density and water absorption shall be declared when a cladding slab or a tile is fixed (glued) by an adhesive or mortar and is intended to be used in a location subject to water contact. They shall be determined according to EN 14617-1 and the results expressed accordingly.

4.2.5 Flexural tensile strength

The value for flexural tensile (bending) strength of a cladding slab or a tile shall be declared when required.

The flexural tensile strength shall be determined using the test method in EN 14617-2 and the results expressed accordingly.

In case of the textured upper face cladding slabs and tiles, the textured surface shall be prepared by grinding until fully flat or use flat samples of the same material with the minimum thickness d_{min} (see Figure 2).

4.2.6 Thermal conductivity

Where a cladding slab or a tile is fixed (glued) by adhesive or mortar and subject to regulatory requirements the value for thermal conductivity shall be declared.

Thermal conductivity shall be based on the apparent density value, determined using the test method indicated in 4.2.4. This value shall be used to calculate the thermal conductivity according to EN ISO 10456.

Thermal conductivity may also be obtained by testing in accordance with EN ISO 13787 and the results expressed in W/(m·K) rounded to the first decimal place.

4.2.7 Thermal shock resistance

Where subject to regulatory requirements or where a cladding slab or a tile is intended to be used subject to critical thermal cycles, the value for thermal shock resistance shall be declared.

The thermal shock resistance shall be determined using the test method in EN 14617-6 and the results expressed accordingly.

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1) Commission Decision 96/603/EC, as amended (see [1]).

In case of textured upper face cladding slabs and tiles, the textured surface shall be prepared by grinding until fully flat or use flat samples of the same material with the minimum thickness d_{min} (see Figure 2).

4.2.8 Linear thermal expansion coefficient

Where subject to contractual request or where a cladding slab or a tile is intended to be used subject to relevant dimensional variations due to thermal actions, the value for linear thermal expansion coefficient shall be declared.

The linear thermal expansion coefficient shall be determined using the test method in EN 14617-11 and the results expressed accordingly.

4.2.9 Dimensional stability

Where subject to regulatory requirements or where a cladding slab or a tile is intended to be installed by an adhesive or mortar, on which it is sensitive to, the class for dimensional stability shall be declared.

The dimensional stability shall be determined using the test method in EN 14617-12 and the results expressed accordingly.

4.2.10 Bond strength/adhesion

When the intended use of a cladding slab or tile includes their fixation glued by adhesive or mortar the bond/strength adhesion shall be determined according to the test method of at least one of the following standards:

a) for cementitious adhesives: according to EN 1348;

b) for dispersion adhesives: according to EN 1324;

c) for reaction resin adhesives: according to EN 12003;

d) for mortar: according to EN 1015-12.

The manufacturer shall declare the test result for the specific type of adhesive(s) and/or mortar tested.

4.2.11 Resistance to fixings

When the intended use of a cladding slab or tile includes their mechanical fixation, the resistance to fixings (Dowel hole) shall be determined using the test method in EN 14617-8 and the results expressed accordingly.

The performance of the chosen fixation system with regard to the resistance to fixings should be designed taking into account the declared results of the mentioned test method.

4.2.12 Release of dangerous substances

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

In the absence of European harmonised 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/.

4.2.13 Durability of flexural strength against freeze and thaw cycles

Where subject to regulatory requirements or where a cladding slab or a tile is intended to be used subject to freeze/thaw cycles, the value for the freeze and thaw resistance shall be declared.

The freeze and thaw resistance shall be determined using the test method in EN 14617-5 and the results expressed accordingly.

5 Test methods

Test methods are described in the specific parts of EN 14617 standard and in the specific annexes of this document.

6 Evaluation of conformity

6.1 General rules

The compliance of agglomerated stone cladding slabs and tiles with the requirements of this standard and with the declared values (including classes) shall be demonstrated by:

— Initial Type Testing (ITT);

— 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 product.

For the purposes of testing, the 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 are representative for the same characteristics for all products within that same family.

A product may be in different product families for different characteristics.

6.2 Initial Type Testing – Type Testing

6.2.1 General

Initial Type Testing and Type Testing shall be performed to demonstrate compliance with this European Standard.

All essential characteristics, in bold letters in Table 4, for which the manufacturer declares performances, are subject to Initial Type Testing. In addition, the need to perform Type Tests applies to all other characteristics included in a standard when the manufacturer claims compliance, unless the standard gives provisions (e.g. use of previously existing data, CWFT and conventionally accepted performance) for declaring performances without performing tests.

Tests 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 system of attestation of conformity, on the same product or products of similar design, construction and functionality, such that the results are applicable to the product in question.

NOTE Same system of attestation of conformity means testing by an independent third party for products covered by attestation of conformity system 1 and 3.

For the purposes of testing, 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 are representative for that same characteristics for all products within that same family (a product may be in different families for different characteristics).

Products may be in different families for different characteristics.

In addition, Type Tests or Initial Type Testing shall be performed for all characteristics included in the standard for which the manufacturer declares performances:

— at the beginning of the production of a new or modified agglomerated stone cladding slab or tile (unless a member of the same family); or

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

— they shall be repeated for the appropriate characteristic(s), whenever a change occurs in the agglomerated stone cladding slab or tile design, in the raw material or in the supplier of the components, or in the production process (subject to the definition of a family), which would affect significantly one or more of the characteristics.

Where components 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 marked in accordance with appropriate harmonised European specifications may be presumed to have the performances stated with the marking, although this does not replace the responsibility on the agglomerated stone cladding slab or tile designer to ensure that the agglomerated stone cladding slab or tile as a whole is correctly designed and its component products have the necessary performance values to meet the design.

6.2.2 Test samples, testing and compliance criteria

Initial Type Testing of essential characteristics of an agglomerated stone cladding slab or tile, as given in bold letters in Table 4, shall be carried out:

— to demonstrate compliance with this European Standard or at the beginning of production of a new agglomerated stone cladding slab or tile; or

— when significant variations occur in the production process, determined visually or by significant changes in FPC results.

Tests previously performed in accordance with the provisions of this European Standard (i.e. same material/product, characteristic measured with same test method, same sampling procedure and system of attestation of conformity) may be taken into account for the purpose of ITT.

The evaluation of the declared performances (e.g. values, classes) may be supported by a "test report" supplied with the cladding slabs or tiles, provided that the tests have been performed according to the requirements and test methods of this standard.

The results of the selected tests shall be expressed as referred to in 4.1 and 4.2.

All results of the Initial Type Testing shall be recorded and held by the manufacturer for at least 10 years after the date of last production of the cladding slabs or tiles to which they relate.

Whenever a change occurs in cladding slabs or tiles, the raw material or the production process (subject to definition of a product), which would change significantly the declared performances of one or more of the characteristics, the ITT shall be repeated for the appropriate characteristics.

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

Characteristic	Requirement [a]	Assessment method and number of samples	Compliance criteria
Dimensions (i.e. length, width and thickness)	4.1.1	EN 14617-16 [b] or Annex A [c]	4.1.1
Tolerances in dimensions	4.1.2		4.1.2
Tolerances in flatness	4.1.3		4.1.3
Straight angles	4.1.4	Annex B	4.1.4
Surface finish	4.1.5	Visual (see 4.1.5)	4.1.5
Visual appearance	4.2.2	Annex C	4.2.2
Reaction to fire, for an agglomerated stone containing a percentage [d] of an organic material, if any, in its: – **binder ≤ 0,1 % and aggregate ≤ 1 %, (CWT), or** – **otherwise based on test results**	4.2.3	– See 4.2.3 [e], or – See EN 13501-1	4.2.3
Apparent density and water absorption [f]	4.2.4	EN 14617-1	4.2.4
Flexural strength	4.2.5	EN 14617-2	4.2.5
Thermal conductivity [f]	4.2.6	EN 14617-1 [g]	4.2.6
Thermal shock resistance	4.2.7	EN 14617-6	4.2.7
Linear thermal expansion coefficient	4.2.8	EN 14617-11	4.2.8
Dimensional stability	4.2.9	EN 14617-12	4.2.9
Bond strength/adhesion [f] **for:** – **cementitious adhesives** – **dispersion adhesives** – **reaction resin adhesives** – **mortar**	4.2.10	EN 1348 EN 1324 EN 12003 EN 1015-12	4.2.10
Resistance to fixings [h]	4.2.11	EN 14617-8	4.2.11
Release of dangerous substances	4.2.12	As relevant in accordance with 4.2.12	As relevant in accordance with 4.2.12
Durability of flexural strength against freeze and thaw cycles	4.2.13	EN 14617-5	4.2.13

[a] Reference shall be made to Clause 4 in order to decide which characteristics need to be declared.
[b] For tiles only.
[c] For cladding slabs only.
[d] By mass or volume, whichever is the most onerous.
[e] Appropriate assessment shall be made to ensure meeting the requirements for classification without testing (CWT).
[f] For cladding slabs or tiles intended to be glued with adhesive or mortar.
[g] To give a reference allowing data to be taken from EN ISO 10456. Alternatively, cladding slabs or tiles may be tested according to EN ISO 13787.
[h] For cladding slabs or tiles fixed mechanically only.

6.2.3 Test reports

All type tests, and/or initial type tests and their results 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 cladding slabs or tiles to which they relate.

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 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 documented in a systematic manner in the form of written policies and procedures.

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.

6.3.2 Requirements

6.3.2.1 General

The manufacturer is responsible for organising the effective implementation of the FPC system. Tasks and responsibilities in the production control organisation 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 product conformity, shall be defined. This applies in particular to personnel that needs to initiate actions preventing product non-conformities from occurring, actions in case of non-conformities and to identify and register product conformity problems. Personnel performing work affecting product conformity 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 conformity of the product at appropriate stages;

— identify and record any instance of non-conformity;

— identify procedures to correct instances of non-conformity.

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 conformity 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-conformity and, if necessary, revise the FPC to rectify the cause of non-conformity.

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 series standard and which addresses the requirements of this European Standard are recognised as satisfying the FPC requirements of the Council Directive 89/106/EEC.

6.3.2.2 Equipment

6.3.2.2.1 Testing

All weighing, measuring and testing equipment shall be calibrated 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 harmonised technical specification for that component.

6.3.2.4 Design process

The factory production control system shall document the various stages in the design of products, identify the checking procedure and those individuals responsible for all stages of design. During the design process itself, a record shall be kept of all checks, their results, and any corrective actions taken.

This record shall be sufficiently detailed and accurate to demonstrate that all stages of the design phase, and all checks, have been carried out satisfactorily.

6.3.2.5 Traceability and marking

Individual products, product batches or packages shall be identifiable and traceable with regard to their production origin. The manufacturer shall have written procedures ensuring that processes related to affixing traceability codes and/or markings are inspected regularly.

6.3.2.6 Controls during manufacturing process

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

6.3.2.7 Product testing and evaluation

Production control operations include some or all of the following operations:

a) the specification and verification of raw materials and constituents;

b) the controls and tests to be carried out during manufacture according to a frequency laid down;

c) the verifications and tests to be carried out on finished products (further testing of samples) according to a frequency which may be laid down in the technical specifications and adapted to the product and its conditions of manufacture.

Concerning b) and c), the manufacturer shall establish procedures to ensure that the stated values of the characteristics he declares are maintained.

All essential characteristics, in bold letters in Table 5, and means of control for which the manufacturer declares performances, are subject to Factory Production Control. In addition, the need to perform Factory Production Control applies to all other characteristics included in a standard when the manufacturer claims compliance.

Table 5 — Characteristics of cladding slabs or tiles for wall finishes subject to FPC

Characteristic	Reference sub-clause for applicability	Test method	Frequency of control during manufacture	Minimum frequency of control on finished products
Dimensions (*l*, *b* and *d*) Tolerances in dimensions Tolerances in flatness	4.1.1 4.1.2 4.1.3	EN 14617-16 or Annex A	-	Each production lot [a)]
Straight angles	4.1.4	Annex B	-	Each production lot [a)]
Surface finish	4.1.5	Visual (see 4.1.5)	-	Each production lot [a)]
Visual appearance	4.2.2	Annex C	-	Each production lot [a)]
Reaction to fire, for an agglomerated stone containing a percentage [c)] of an organic material, if any, in its: – **binder ≤ 0,1 % and aggregate ≤ 1 %, (CWT), or** – **otherwise based on test results**	4.2.3	– see 4.2.3 (CWT)[d)] – see EN 13501-1[e)]	Quality Control Plan [b)]	At least every 5 years
Apparent density and water absorption	4.2.4	EN 14617-1	Quality Control Plan [b)]	At least every 3 years
Flexural strength	4.2.5	EN 14617-2	Quality Control Plan [b)]	At least every year
Thermal conductivity [f)]	4.2.6	EN 14617-1	Quality Control Plan [b)]	At least every

				3 years
Thermal shock resistance	4.2.7	EN 14617-6	Quality Control Plan [b)]	At least every 3 years
Linear thermal expansion coefficient	4.2.8	EN 14617-11	Quality Control Plan [b)]	At least every 3 years
Dimensional stability [f)]	4.2.9	EN 14617-12	Quality Control Plan [b)]	At least every 3 years
Bond strength/adhesion [f)] for: – **cementitious adhesives** – **dispersion adhesives** – **reaction resin adhesives** – **mortar**	4.2.10	EN 1348 EN 1324 EN 12003 EN 1015-12	Quality Control Plan [b)]	At least every 3 years
Resistance to fixings [g)]	4.2.11	EN 14617-8	Quality Control Plan [b)]	At least every 3 years
Release of dangerous substances	4.2.12	As relevant in accordance with 4.2.12	As relevant in accordance with 4.2.12	As relevant in accordance with 4.2.12
Durability of flexural tensile strength against freeze and thaw cycles	4.2.13	EN 14617-5	Quality Control Plan [b)]	At least every 3 years

a) The dimension or amount of the "production lot" should be determined by the manufacturer having as reference a daily production quantity, the number of deliveries and the final destination of the considered quantity of cladding slabs or tiles.

b) Each of these characteristics shall be controlled with appropriate production process parameter(s) related to them (e.g. temperature, pressure, dosage, composition…), according to relevant direct or indirect measurement or assessment method(s). All these shall be specified in the manufacturer's Quality Control Plan.

c) By mass or volume, whichever is the most onerous.

d) Appropriate routine and regular check shall be carried out to maintain compliance with the requirements for CWT.

e) Appropriate routine and regular check/tests (if any) shall be carried out to maintain compliance of the manufactured cladding slabs or tiles with the ITT tested sample used for the declared reaction-to-fire classification.

f) For cladding slabs or tiles glued by adhesive or mortar only.

g) For cladding slabs or tiles fixed mechanically only.

6.3.2.8 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.

6.3.2.9 Corrective action

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

6.3.2.10 Handling, storage and packaging

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

6.3.2.11 Description of the records

The manufacturer's records shall include at least the following:

a) identification of the product tested;

b) information on sampling:

   1) place of sampling;

   2) identification of the production lot sampled;

   3) frequencies of sampling;

   4) size and number of samples;

c) the test methods applied;

d) the results of the test carried out;

e) calibration records of apparatus.

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 Initial inspection of factory and of FPC

Initial inspection of FPC for products covered by attestation of conformity system 1 shall be carried out when the production process has been finalised and in operation. The factory and FPC documentation shall be assessed to verify that the requirements of 6.3.2 and 6.3.3 are fulfilled.

During the inspection it shall be verified:

a) that all resources necessary for the achievement of the product characteristics required by this European Standard are in place and correctly implemented; and

b) that the FPC-procedures in accordance with the FPC documentation are followed in practice; and

c) that the product complies with the Initial Type Testing/Type Testing samples, for which compliance with this European Standard has been verified.

All locations where final assembly or at least final testing of the relevant product is performed, shall be assessed to verify that the above conditions a) to c) are in place and implemented. If the FPC system covers more than one product, production line or production process, and it is verified that the general requirements are fulfilled when assessing one product, production line or production process, then the assessment of the general requirements does not need to be repeated when assessing the FPC for another product, production line or production process.

All assessments and their results shall be documented in the initial inspection report.

6.3.5 Continuous surveillance of FPC

For products covered by attestation of conformity system 1, surveillance of the FPC shall be undertaken once per year. The surveillance of the FPC shall include a review of the FPC test plan(s) and production processes(s) for each product to determine if any changes have been made since the last assessment or surveillance. The significance of any changes shall be assessed.

Checks shall be made to ensure that the test plans are still correctly implemented and that the production equipment is still correctly maintained and calibrated.

The records of tests and measurement made during the production process and to finished products shall be reviewed to ensure that the values obtained still correspond with those values for the samples submitted to Initial Type Testing/Type Testing and that the correct actions have been taken for non-compliant devices.

6.3.6 Procedure for modifications

If modifications are made to the product, production process or FPC system that could affect any of the product characteristics required by this standard, then all the characteristics for which the manufacturer declares performance, which may be affected by the modification, shall be subject to Initial Type Testing/Type Testing, except as described in 6.2.1.

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, labelling and packaging

As a minimum of identification, each consignment of cladding slabs or tiles shall specify on a label and/or packaging and/or accompanying documents the denomination of the agglomerated stone (see EN 14618):

— type of binder (see 3.3.1 of EN 14618:2009);

— mineral nature of the aggregate (see 3.3.2 of EN 14618:2009);

— maximum grain size: coarse (≥ 15 mm); medium (≥ 4 mm and < 15 mm), or small (< 4 mm);

— type of fixings: to be mechanically fixed and/or glued using adhesive and/or glued using mortar; or to be mechanically fixed only;

— dimensions: length, width and thickness.

The cladding slabs and tiles shall be clean before packaging and transporting.

Sensitive polished and/or gloss surfaces shall be protected by appropriate means.

Cladding slabs or tiles, which are susceptible to stains shall get special attention in order to protect them.

Packing and tapes, which are likely to stain shall not be used. Products with caustic properties may not be used.

NOTE Where ZA.3 on CE marking covers the same information as this clause, the requirements of this clause are met.

Annex A
(normative)

Determination of dimensions of cladding slabs

A.1 Measurement of length and width

A.1.1 Apparatus

The following apparatus or other suitable apparatus for linear measurement shall be used for measuring the dimensions, which are:

– < 1 000 mm: Vernier calliper;

– ≥ 1 000 mm: Measuring tape.

A.1.2 Test specimens

Ten whole cladding slabs shall be submitted to measurement.

A.1.3 Procedure

If dimension is less than 1 000 mm, measure to the nearest 0,1 mm each side of the cladding slab under test, at positions 5 mm from the corners.

If dimension is equal or greater than 1 000 mm, measure to the nearest 1 mm each side of the cladding slab under test, at positions 5 mm from the corners.

A.1.4 Expression of results

The average dimension of square cladding slabs shall be the average of four measurements. The average dimension of the sample shall be the average of 40 measurements.

A.1.5 Test report

The test report shall include the following information:

a) reference to this document;

b) name of the manufacturer and/or the supplier;

c) description of the cladding slab;

d) all individual measurements of length and width;

e) average size of each test specimen for square cladding slab, and the average length and width for each oblong cladding slab;

f) average size of the 10 test specimens for square cladding slab, and the average length and width for oblong cladding slab;

g) difference, as a percentage, of the average size of each cladding slab (two sides or four sides) from the work size;

h) difference, as a percentage, of the average size of each cladding slab (two or four sides) from the average size of the 10 test specimens (20 sides or 40 sides).

A.2 Measurement of thickness

A.2.1 Apparatus

Micrometer screw gauge with anvils of 5 mm to 10 mm diameter or other suitable apparatus.

A.2.2 Test specimens

Ten whole cladding slabs shall be submitted to measurement.

A.2.3 Procedure

For all cladding slabs, draw diagonals between the corners and measure the thickness at the thickest point within each of the four segments. Measure, to the nearest 0,1 mm for class A cladding slabs or 1 mm for class B cladding slabs, the thickness of each cladding slab under test in four positions.

A.2.4 Expression of results

For all the cladding slabs, the average dimension of each individual cladding slab shall be the average of four measurements. The average thickness of the sample shall be the average of 40 measurements.

A.2.5 Test report

The test report shall include the following information:

a) reference to this document;

b) name of the manufacturer and/or the supplier;

c) description of the cladding slab;

d) all individual measurements of length and width;

e) average thickness of each cladding slab;

f) difference, in 0,1 mm for class A cladding slabs or in millimetres for class B, of the average thickness of each cladding slab from the work size thickness.

A.3 Measurement of flatness

A.3.1 Apparatus

A flat metal rule perforated at 100 mm intervals or other apparatus with similar characteristics shall be used for measuring of flatness, having a length at least equal to that of the cladding slab to be measured (Figure A.1), a set of thin shims accurate to 1/10 mm and a gauge accurate to 1/10 mm with a flat contact.

A.3.2 Test specimens

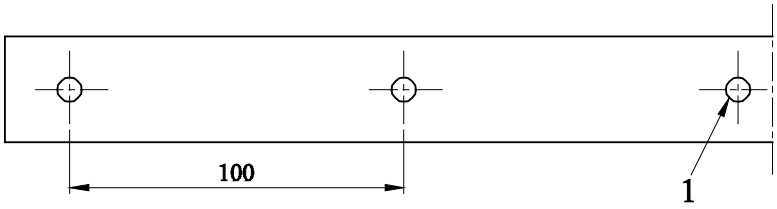
Three whole cladding slabs shall be submitted to measurement.

A.3.3 Procedure

Place the rule on two shims of known thickness, these being placed so as to be adjacent to the edges (Figure A.1 and Figure A.2).

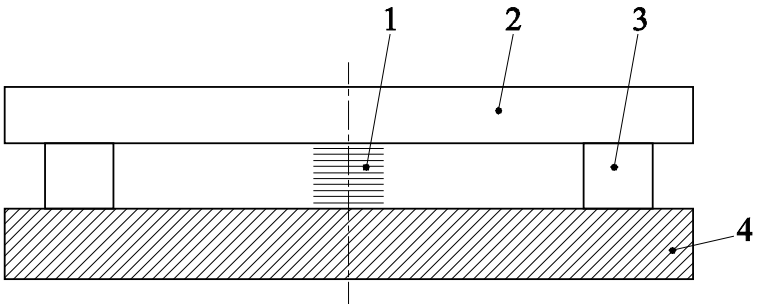
Place the gauge (Figure A.3) or a set of thin shims (Figure A.2) at the points of measurement. Measurements shall be taken at 8 positions to the nearest 0,5 mm (Figure A.4) and the 8 results noted.

Dimension in millimetres



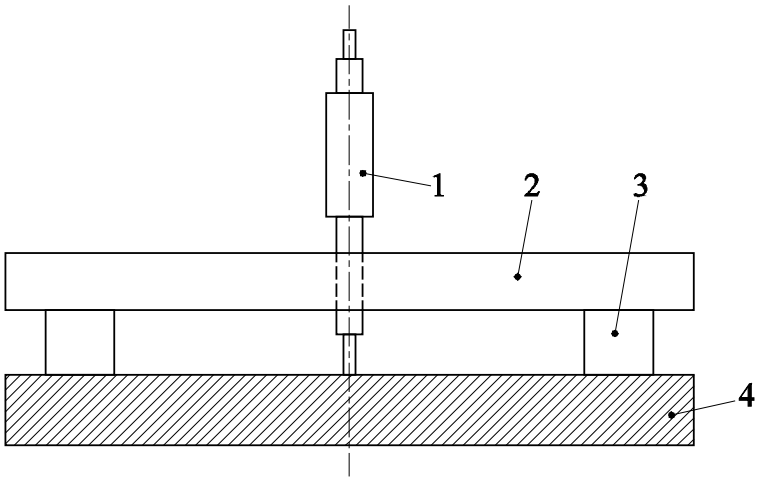
Key
1 hole for the gauge

Figure A.1 —Perforated flat rule



Key
1 thin shims to 1/10 mm
2 rule
3 shims of known thickness placed at the corners of the area to be measured
4 unit being measured

Figure A.2 — Measurement of the deviation from flatness with thin shims



Key

1 gauge to 1/10 mm

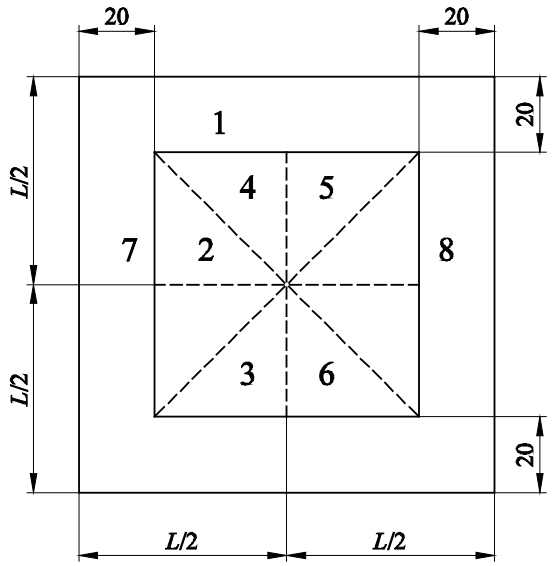
2 rule

3 shims of known thickness placed at the corners of the area to be measured

4 unit being measured

Figure A.3 — Measurement of the deviation from flatness with gauge

Dimension in millimetres



Key

L length of the sample

1 to 8 measurement positions

Figure A.4 — Positions for measurement of deviation from flatness

A.3.4 Expression of results

Results of measurement shall be expressed for every position according to Figure A.4.

Edge curvature shall be expressed in millimetres and as a percentage or the length of the diagonal.

Flatness shall be the maximum value of centre curvature and edge curvature.

A.3.5 Test report

The test report shall include the following information:

a) reference to this document;

b) name of the manufacturer and/or the supplier;

c) description of the cladding slab;

d) all individual measurements of deviations in millimetres and as a percentage of the length of the diagonal.

Annex B
(normative)

Determination of straight angles of cladding slabs and tiles

B.1 Apparatus

The following apparatus or other suitable apparatus for linear measurement shall be used for measuring the diagonal length, which is:

– < 1 000 mm: Vernier calliper;

– ≥ 1 000 mm: measuring tape.

In addition, fully flat surface of at least the size of the cladding slab or tile shall be available.

B.2 Test specimens

Ten whole cladding slabs or tiles shall be submitted to measurement.

B.3 Procedure

Put the specimen on the horizontal fully flat surface.

If diagonal length is less than 1 000 mm, measure to the nearest 0,1 mm each diagonal of the cladding slab or tile under test.

If diagonal length is equal or greater than 1 000 mm, measure to the nearest 1 mm each diagonal of the cladding slab or tile under test.

B.4 Expression of results

The straight angle deviation of a square cladding slab or tile shall be the difference between two diagonal lengths. The average straight angle deviation of the sample shall be the average of 10 such differences.

B.5 Test report

The test report shall include the following information:

a) reference to this document;

b) name of the manufacturer and/or the supplier;

c) description of the cladding slab or tile;

d) all individual measurements of diagonal length;

e) all differences between diagonals;

f) difference, in millimetres, of the average straight angle deviation of each cladding slab or tile from the work straight angle.

Annex C
(normative)

Reference sample, visual inspection and acceptance criteria

NOTE See 4.2.2.

A reference sample shall be an adequate number of pieces of agglomerated 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 m^2 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.

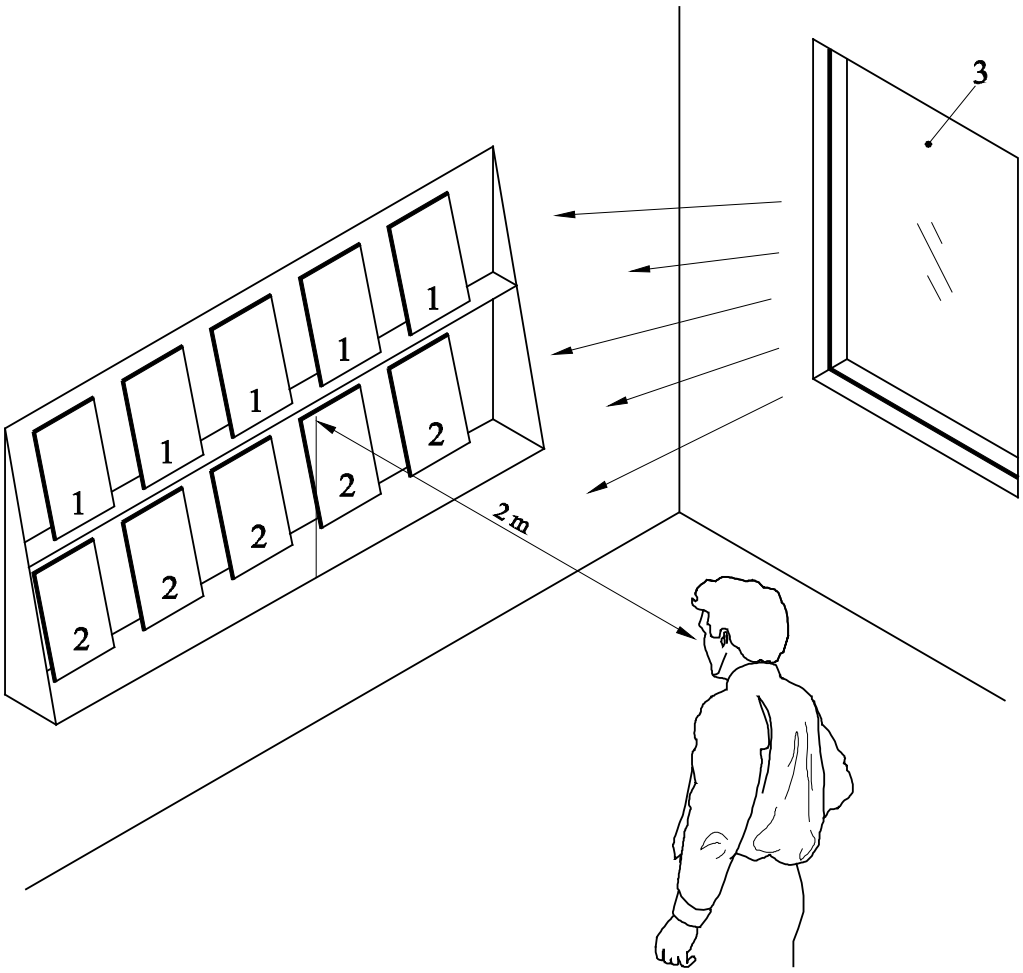
Evaluation of the reference sample does not imply strict uniformity between the sample itself and the actual supply; natural variations in tonality may always occur due to natural raw materials.

All the differences in aesthetical pattern between the cladding slabs or tiles and the reference sample shall be considered typical of the agglomerated stone and not as flaws. Therefore, they shall not become a reason for rejection, unless their presence exceeds 15 % of the surface and the typical pattern of the agglomerated stone is lost.

Any comparison between a production cladding slab or tile and the reference sample shall be carried out by placing the reference sample in a vertical position against the production cladding slab or tile and viewing them at a distance of about two metres under normal daylight conditions and recording any visible differences in the characteristics of the agglomerated stone (see Figure C.1). According to this method the shading tolerance and the gloss value (in the case of fine ground, honed or highly polished surfaces) measured at six different points of the slab or tile shall be evaluated.

The name and address of the manufacturer or supplier of the agglomerated stone shall also be indicated on the reference test sample.

The pieces of agglomerated stone should be analysed under similar conditions, e.g. wet/dry, light, etc.



Key

1 reference sample

2 production sample

3 daylight

Figure C.1 — Comparison between production sample and the reference sample of a cladding slab or a tile

Annex ZA
(informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 89/106/EEC, Construction Products Directive

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.

The clauses of this European Standard shown in this annex meet the requirements of the mandate given under the EU Construction Products Directive (89/106/EEC).

Compliance with these clauses confers a presumption of fitness of the agglomerated stone cladding slabs and tiles covered by this annex for the intended uses indicated herein; reference shall be made to the information accompanying the CE marking.

This annex establishes the conditions for the CE marking of the agglomerated stone cladding slabs and tiles intended for the uses indicated in Table ZA.1.1 to Table ZA.1.2 and shows the relevant clauses applicable.

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

Table ZA.1.1 — Relevant clauses for agglomerated stone cladding slabs and tiles for internal wall finishes

Construction products: Agglomerated stone cladding slabs and tiles **Intended uses:** For internal wall finishes			
Essential characteristics	**Requirement clause in this European Standard**	**Levels and/or classes**	**Notes**
Reaction to fire	4.2.3	A1 to F	– Class A1 WT, see 4.2.3 [a], or – Classes according to EN 13501-1[b]
Water permeability [c] as: – water absorption	4.2.4	–	Tested acc. to EN 14617-1 and expressed as declared value (in %)
Thermal resistance [d] (e.g. density) as: – thermal conductivity	4.2.7	–	Tabulated acc. to EN ISO 10456 or tested acc. to EN ISO 13787 and expressed as declared value (in W/m.K)
Bond strength/adhesion [e] for: – cementitious adhesives – dispersion adhesives – reaction resin adhesives – mortar	4.2.10	–	Tested acc. to these ENs & expressed as declared value (in N/mm^2): – EN 1348 and/or – EN 1324 and/or – EN 12003 and/or – EN 1015-12
Resistance to fixings [f]	4.2.11	–	Tested acc. to EN 14617-8 and expressed as declared value (in N)
Release of dangerous substances	4.2.12	–	As relevant in accordance with 4.2.12

a) For an agglomerated stone containing an organic material in its binder, if any, of not more than 0,1 % by mass or volume, whichever is the most onerous, and a homogenously distributed organic material as an aggregate, if any, of not more than 1 % by mass or volume, whichever is the most onerous.

b) For the agglomerated stone not meeting the requirements given in a).

c) The characteristic “water permeability” can be considered as the inverse of water absorption because a wall finish element can absorb water while not releasing any on the other side (i.e. remaining water tight).

d) Only for cladding slabs/tiles intended for uses in wall finishes subject to thermal insulation requirements.

e) For cladding slabs or tiles glued by adhesive or mortar only.

f) For cladding slabs or tiles fixed mechanically only.

Table ZA.1.2 — Relevant clauses for agglomerated stone cladding slabs and tiles for external wall finishes

Construction products: Agglomerated stone cladding slabs and tiles **Intended uses:** For external wall finishes			
Essential characteristics	**Requirement clause in this European Standard**	**Levels and/or classes**	**Notes**
Reaction to fire	4.2.3	A1 to F	– Class A1 WT, see 4.2.3 [a], or – Classes according to EN 13501-1 [b]
Mechanical resistance, as: – flexural strength	4.2.5	–	Tested acc. to EN 14617-2 and expressed as declared value (in MPa)
Water permeability [c] as: – water absorption	4.2.4	–	Tested acc. to EN 14617-1 and expressed as declared value (in %)
Thermal resistance [d] (e.g. density) as: – thermal conductivity	4.2.7	–	Tabulated acc. to EN ISO 10456 or tested acc. to EN ISO 13787 and expressed as declared value (in W/m.K)
Thermal shock resistance	4.2.8	–	Tested acc. to EN 14617-6 and expressed as declared value (in %)
Bond strength/adhesion [e] for: – cementitious adhesives – dispersion adhesives – reaction resin adhesives – mortar	4.2.10	–	Tested acc. to these ENs & expressed as declared value (in N/mm^2): – EN 1348 and/or – EN 1324 and/or – EN 12003 and/or – EN 1015-12
Resistance to fixings [f]	4.2.11	–	Tested acc. to EN 14617-8 and expressed as declared value (in N)
Release of dangerous substances	4.2.12	–	As relevant in accordance with 4.2.12
Durability of flexural strength against freeze and thaw cycles	4.2.13	–	Tested acc. to EN 14617-5 and expressed as declared as a ratio value

[a] For an agglomerated stone containing an organic material in its binder, if any, of not more than 0,1 % by mass or volume, whichever is the most onerous, and a homogenously distributed organic material as an aggregate, if any, of not more than 1 % by mass or volume, whichever is the most onerous.

[b] For the agglomerated stone not meeting the requirements given in a).

[c] Only for cladding slabs or tiles, when their intended use in wall finishes is subject to water penetration requirements.

[d] Only for cladding slabs or tiles, when their intended use in wall finishes is subject to thermal insulation requirements.

[e] For cladding slabs or tiles glued by adhesive or mortar only.

[f] For cladding slabs or tiles fixed mechanically only.

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.

ZA.2 Procedures for attestation of conformity of agglomerated stone cladding slabs and tiles

ZA.2.1 Systems of attestation of conformity

The systems of attestation of conformity of agglomerated stone cladding slabs and tiles indicated in Tables ZA.1.1 and ZA.1.2, established by EC Decision of the Commission 98/437/EC of 1998-06-30 (*see OJEU L194 of 1998-07-10*), as corrected (*see OJEU L278 of 1998-10-15*) and amended by 2001/596/EC of 2001-01-08 (*see OJEU L209 of 2001-08-02*), as given in Annex III of the mandate for "Internal and external wall and ceiling finishes", are shown in Table ZA.2 for the indicated intended uses and relevant classes.

Table ZA.2 — Systems of attestation of conformity

Product(s)	Intended use(s)	Level(s) or class(es)	AoC systems
Tiles Cladding slabs	As internal or external finishes in walls subject to reaction to fire regulations	A1(*), A2(*), B(*) and C(*) A1(**), A2(**), B(**) and C(**) D, E A1 to E(***), F	1 3 4
	As internal or external finishes in walls, as relevant, subject to regulations on dangerous substances[1)]	-	3
	As internal or external finishes for other uses mentioned in the mandate[2)]	-	4
* Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting 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) .			
System 1: See Directive 89/106/EEC (CPD) Annex III.2.(i), without audit testing of samples. System 3: See Directive 89/106/EEC (CPD) Annex III.2.(ii), Second possibility. System 4: See Directive 89/106/EEC (CPD) Annex III.2.(ii), Third possibility. 1 In particular, those dangerous substances defined in Council Directive 76/769/EEC, as amended. 2 Other intended uses covered by the mandate are: for vapour control, for water penetration control, for acoustic control and for thermal control.			

The attestation of conformity (AoC) of the agglomerated stone cladding slabs and tiles in Tables ZA.1.1 and/or ZA.1.2 shall be according to the evaluation of conformity procedures for the relevant AoC systems indicated in Tables ZA.3.1 to ZA.3.3 resulting from application of the clauses of this European Standard indicated therein.

Table ZA.3.1 — Assignment of evaluation of conformity tasks for agglomerated stone cladding slabs and tiles under systems 1 and 3 and 4 (for reaction to fire, regulations on dangerous substances and other uses mentioned in the mandate respectively)

Tasks		Content of the task	EoC clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to EC of Tables ZA.1.1 and/or ZA.1.2, relevant for the intended use which are declared	6.3
	Initial type testing by the manufacturer	All essential characteristics of Tables ZA.1.1 and/or ZA.1.2, relevant for the intended use which are declared, except reaction to fire (see below) and release of dangerous substances (if relevant)	6.2
	Further testing of samples taken at the factory according to the prescribed test plan. See 6.3.2.7	Reaction to fire (classes A1, A2, B and C)[a)]	6.3
Tasks under the responsibility of a notified laboratory	Initial type testing	Release of dangerous substances, if relevant	6.2
Tasks under the responsibility of the notified certification body	Initial type testing	Reaction to fire (classes (A1, A2, B and C)[a)])	6.2
	Initial inspection of factory and of FPC	Reaction to fire (classes (A1, A2, B and C)[a)])	6.3
	Continuous surveillance, assessment and approval of FPC	Reaction to fire (classes (A1, A2, B and C)[a)])	6.3
[a)] See footnote (*) to Table ZA.2.			

Table ZA.3.2 — Assignment of evaluation of conformity tasks for agglomerated stone cladding slabs and tiles under AoC systems 3 and 3 and 4 (for reaction to fire, regulations on dangerous substances and other uses mentioned in the mandate respectively)

Tasks		Content of the task	EoC clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to EC of Tables ZA.1.1 and/or ZA.1.2, relevant for the intended use which are declared	6.3
	Initial type testing by the manufacturer	All essential characteristics of Tables ZA.1.1 and/or ZA.1.2, relevant for the intended use which are declared, except reaction to fire (see below) and release of dangerous substances (if relevant)	6.2
Tasks under the responsibility of a notified laboratory	Initial type testing	Reaction to fire (classes (A1, A2, B and C)[a)] D and E) Release of dangerous substances, if relevant	6.2
[a)] See footnote (**) to Table ZA.2.			

Table ZA.3.3 — Assignment of evaluation of conformity tasks for agglomerated stone cladding slabs and tiles under AoC systems 4 and 3 and 4 (for reaction to fire, regulations on dangerous substances and other uses mentioned in the mandate respectively)

Tasks		Content of the task	EoC clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to EC of Tables ZA.1.1 and/or ZA.1.2, relevant for the intended use which are declared	6.3
	Initial type testing by the manufacturer	All essential characteristics of Tables ZA.1.1 and/or ZA.1.2, relevant for the intended use which are declared except release of dangerous substances (if relevant)	6.2
Tasks under the responsibility of a notified laboratory	Initial type testing	Release of dangerous substances, if relevant	6.2

ZA.2.2 EC certificate of conformity and EC declaration of conformity

ZA.2.2.1 Products under AoC system 1

When compliance with the conditions of this annex is achieved, the certification body shall draw up a certificate of conformity (i.e. EC certificate of conformity), which entitles the manufacturer to affix the CE marking. The certificate shall include:

— name, address and identification number of the notified certification body;

— name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;

NOTE The manufacturer may also be the person responsible for placing the product onto the EEA market, if he takes responsibility for CE marking.

— description of the product (type, identification, use, ...);

— provisions to which the product conforms (i.e. Annex ZA of this EN);

— particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions);

— the number of the certificate;

— conditions of validity of the certificate, where applicable;

— name of, and position held by, the person empowered to sign the certificate.

The above mentioned certificate shall be presented in the language or languages accepted in the Member State in which the product is intended to be used.

ZA.2.2.2 Products under AoC system 3 or 4

When compliance with the conditions of this annex is achieved, the manufacturer or his agent established in the EEA shall draw up and retain the EC Declaration of conformity, which entitles the manufacturer to affix the CE marking. This EC declaration of conformity shall include:

— name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;

NOTE 1 The manufacturer may also be the person responsible for placing the product onto the EEA market, if he takes responsibility for CE marking.

— description of the product (type, identification, use,...), and a copy of the information accompanying the CE marking;

NOTE 2 Where some of the information required for the declaration is already given in the CE marking information, it does not need to be repeated.

— provisions to which the product conforms (i.e. Annex ZA of this EN), and a reference to the ITT report(s) and factory production control records (if appropriate);

— particular conditions applicable to the use of the product, (e.g. provisions for use under certain conditions);

— name and address of the notified laboratory(ies), if relevant;

— name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or his authorised representative.

The above mentioned declaration shall be presented in the language or languages accepted in the Member State in which the product is intended to be used.

ZA.3 CE marking and labelling

The manufacturer or his authorised representative established within the EEA is responsible for the affixing of the CE marking. The CE-marking symbol to affix shall be in accordance with Directive 93/68/EEC and shall be shown on the packaging of the cladding slab or tile. In addition, it may be given in the commercial documents, accompanying the packaging (e.g. a delivery note).

The following information shall accompany the CE-marking symbol:

a) identification number of the notified certification body (*only for cladding slabs or tiles under AoC system 1*);

b) name or identifying mark and registered address of the manufacturer (see Note in ZA.2.2.1 or Note 1 in ZA.2.2.2);

c) last two digits of the year in which the marking was affixed;

d) number of the EC certificate of conformity (*only for cladding slabs or tiles under AoC system 1*);

e) reference to this European Standard and date of publication (i.e. EN 15286:2013);

f) description of the product:

   1) generic name: agglomerated stone cladding slabs (or tiles);

   2) type of the binder (see 3.3.1 of EN 14618:2009);

   3) mineral nature of the aggregate (see 3.3.2 of EN 14618:2009);

   4) maximum grain size of the aggregate: coarse (≥ 15 mm); medium (≥ 4 mm and < 15 mm), or small (< 4 mm);

5) intended use: external or/and internal application for wall finishes;

6) type of fixings: to be mechanically fixed and/or glued using adhesive and/or glued using mortar; or to be mechanically fixed only;

7) nominal dimensions: length *l*, width *b* and thickness *d*, (see 4.1.1 and 4.1.2);

g) information on those relevant essential characteristics listed in Tables ZA.1.1 and/or ZA.1.2 (see below), which are to be declared for the relevant intended use as classes or values, including "Pass" for pass/fail requirements (where necessary), or as "No Performance Determined" (i.e. NPD) for characteristic(s), where this is relevant, namely:

1) reaction to fire: declared class according to EN 13501-1 based on tests or CWT (see 4.2.3);

2) water permeability, declared as water absorption value, (see 4.2.4) *(for cladding slabs or tiles glued by adhesive or mortar only)*;

3) mechanical resistance, declared as flexural strength value (see 4.2.5) (*for cladding slabs and tiles used as external wall finishes only*);

4) thermal resistance, as thermal conductivity: declared value, (see 4.2.7) (for cladding slabs or *tiles glued by adhesive or mortar only)*; thermal shock resistance: declared value, (see 4.2.8);

5) thermal shock resistance, declared value, (see 4.2.8) (*for cladding slabs or tiles used as external wall finishes only*);

6) bond strength/adhesion, declared value, (see 4.2.10) for the applied type of adhesive and/or mortar*(for cladding slabs or tiles glued by adhesive or mortar only)*;

7) resistance to fixings, declared value, (see 4.2.11) *(for cladding slabs or tiles fixed mechanically only)*;

8) release of dangerous substances, (see 4.2.12) where relevant;

9) durability of flexural strength against freeze and thaw cycles, (see 4.2.13) (*for cladding slabs or tiles used as external wall finishes only*).

The "No performance determined" (NPD) option may be used when and where the characteristic, for a given intended use, is not subject to regulatory requirements in the Member State(s) of destination (e.g. for Class F for reaction to fire).

Where a cladding slab or a tile is intended for both internal and external uses, the information for both uses may be combined into a single CE marking.

Figure ZA.1 gives an example of the CE marking to be given on the packaging of agglomerated stone cladding slabs to be mechanically fixed or glued using adhesive used as internal wall finishes (*under AoC system 4*) or, in addition, in commercial documents, accompanying this packaging.

CE		*CE marking, consisting of the "CE"-symbol given in Directive 93/68/EEC.* *Identification number of the certification body (where relevant)*
AnyCo Ltd, PO Box 21, B-1050 **13**		*Name or identifying mark and registered address of the producer* *Last two digits of the year in which the marking was affixed* *EC Certificate of conformity number (where relevant)*
EN 15286:2013 Agglomerated stone marble-resin small grain size cladding slabs for internal wall finishes to be mechanically fixed or glued using adhesive (300 × 450 × 30) mm		*No. of European Standard* *Description of product:* *its intended use, type of fixings and its nominal dimensions*
Reaction to fire	Class A1	*Information on Essential Characteristics:*
Bond strength/adhesion for:		
- cementitious adhesives - dispersion adhesives	1,0 N/mm^2 1,0 N/mm^2	
Resistance to fixings	500 N	
Water permeability, as: - water absorption	0,1 %	
Thermal resistance as: - thermal conductivity	1,5 W/(m.K)	
Release of dangerous substances	(1)	*(1) To be declared only if there are one or more dangerous substances in the MMSS of destination. In this case the name(s) of the substance(s) shall be mentioned.*
Durability	NPD	

Figure ZA.1 — Example of the CE marking to be given on the packaging of the agglomerated stone cladding slabs to be mechanically fixed or glued using adhesive used as internal wall finishes (*under AoC system 4*)

Figure ZA.2 gives a similar example for agglomerated stone tiles to be mechanically fixed or glued using adhesive, used both as internal or external wall finishes.

CE		*CE marking, consisting of the "CE"-symbol given in Directive 93/68/EEC.* *Identification number of the certification body (where relevant)*
AnyCo Ltd, PO Box 21, B-1050 **13**		*Name or identifying mark and registered address of the producer* *Last two digits of the year in which the marking was affixed* *EC Certificate of conformity number (where relevant)*
EN 15286:2013 Agglomerated stone marble-mortar small grain size cladding tiles for internal or external wall finishes to be mechanically fixed or glued using adhesive (1000 × 500 × 45) mm		*No. of European Standard* *Description of product: its intended use, type of fixings and its nominal dimensions*
Reaction to fire	Class A1	*Information on Essential Characteristics:*
Mechanical resistance, as: - flexural strength	12,0 MPa	
Bond strength/adhesion for:		
- cementitious adhesives - dispersion adhesives	1,0 N/mm^2 1,0 N/mm^2	
Resistance to fixings	500 N	
Water permeability, as: - water absorption	0,1 %	
Thermal resistance, as: - thermal conductivity	1,1W/(m.K)	
Thermal shock resistance	95 %	
Release of dangerous substances	(1)	*(1) To be declared only if there are one or more dangerous substances in the MMSS of destination. In this case the name(s) of the substance(s) shall be mentioned.*
Durability of flexural strength against freeze and thaw cycles	95 %	

Figure ZA.2 — Example of the CE marking to be given on the packaging of the agglomerated stone tiles to be mechanically fixed or glued using adhesive used both, as internal or external wall finishes
(*under AoC system 4*)

Figure ZA.3 gives a similar example for agglomerated stone cladding slab to be mechanically fixed only, used both as external and internal wall finishes.

CE		*CE marking, consisting of the "CE"-symbol given in Directive 93/68/EEC.* *Identification number of the certification body (where relevant)*
AnyCo Ltd, PO Box 21, B-1050 **13**		*Name or identifying mark and registered address of the producer* *Last two digits of the year in which the marking was affixed* *EC Certificate of conformity number (where relevant)*
EN 15286:2013 Agglomerated stone marble-mortar small grain size cladding slab for internal or external wall finishes to be mechanically fixed only (1000 × 500 × 45) mm		*No. of European Standard* *Description of product:* *its intended use, type of fixings and its nominal dimensions*
Reaction to fire	Class A1	*Information on Essential Characteristics:*
Mechanical resistance, as: - flexural strength	11,0 MPa	
Bond strength/adhesion	NPD	
Resistance to fixings	500 N	
Water permeability, as: - water absorption	3,0 %	
Thermal resistance, as: - thermal conductivity	1,1W/(m.K)	
Thermal shock resistance	95 %	
Release of dangerous substances	(1)	*(1) To be declared only if there are one or more dangerous substances in the MMSS of destination. In this case the name(s) of the substance(s) shall be mentioned.*
Durability of flexural strength against freeze and thaw cycles	95 %	

Figure ZA.3 — Example of the CE marking to be given on the packaging of the agglomerated stone cladding slab to be mechanically fixed only used both, as external and internal wall finishes (*under AoC system 4*)

Figure ZA.4 gives example for similar agglomerated stone adhesive glued tiles, used both as internal or external finishes. However, in this case their intended use as the flooring/stair finishes, assessed according to EN 15285:2008, and the intended use as the wall finishes, assessed according to this European Standard.

<table>
<tr><td colspan="3">CE</td></tr>
<tr><td colspan="3">AnyCo Ltd

13</td></tr>
<tr><td>EN 15285:2008</td><td colspan="2">EN 15286:2013</td></tr>
<tr><td colspan="3">Agglomerated stone marble-mortar small grain size tiles
for internal or external floorings/stairs and wall finishes uses
to be glued using adhesive
(600 × 400 × 12) mm</td></tr>
<tr><td>Floorings/stairs</td><td colspan="2">Wall finishes</td></tr>
<tr><td rowspan="8">As relevant,
in accordance with EN 15285</td><td>Reaction to fire</td><td>Class A1</td></tr>
<tr><td>Mechanical resistance:
- flexural strength</td><td>
15,0 MPa</td></tr>
<tr><td>Bond strength/adhesion for:

Adhesives
- cementitious
- dispersion adhesives</td><td>

1,0 N/mm^2
1,0 N/mm^2</td></tr>
<tr><td>Resistance to fixings</td><td>NPD</td></tr>
<tr><td>Thermal resistance, as:
- thermal conductivity</td><td>
1,1 W/(m.K)</td></tr>
<tr><td>Release of dangerous substances</td><td>(1)</td></tr>
<tr><td>Thermal shock resistance</td><td>95 %</td></tr>
<tr><td>Durability of flexural strength against freeze/thaw resistance</td><td>95 %</td></tr>
<tr><td colspan="3">Information on Essential Characteristics:
(1) To be declared only if there are one or more dangerous substances in the MMSS of destination. In this case the name(s) of the substance(s) shall be mentioned.</td></tr>
</table>

Figure ZA.4 — Example of the CE marking to be given on the packaging of the agglomerated stone adhesive glued tiles used as internal or external floorings/stairs acc. to EN 15285:2008 and as internal or external wall finishes acc. to this EN (*under AoC system 4*)

Bibliography

[1] 96/603/EC, Commission Decision of 1996-10-04 *(see OJEU L267 of 1996-10-19)*, as amended twice by 2000/605/EC of 2000-09-26 *(see OJEU L258 of 2000-10-12)* and by 2003/424/EC of 2003-06-06 *(see OJEU L144 of 2003-06-12)*

[2] EN 14992, *Precast concrete products — Wall elements*

[3] EN 13198, *Precast concrete products — Street furniture and garden products*

[4] EN 13748-1, *Terrazzo tiles — Part 1: Terrazzo tiles for internal use*

[5] EN 13748-2, *Terrazzo tiles — Part 2: Terrazzo tiles for external use*

[6] EN 15285, *Agglomerated stone — Modular tiles for flooring and stairs (internal and external)*

[7] EN 15388, *Agglomerated stone — Slabs and cut-to-size products for vanity and kitchen tops*

[8] EN ISO 9001:2008, *Quality management systems — Requirements (ISO 9001:2008)*

[9] EN ISO 13787, *Thermal insulation products for building equipment and industrial installations — Determination of declared thermal conductivity (ISO 13787)*

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