



SLOVENSKI STANDARD
SIST EN 15286:2013

01-september-2013

Aglomerirani kamen - Plošče in ploščice za zidne obloge (notranje in zunanje)

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

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

Pierre agglomérée - Dalles et carreaux pour finitions murales (intérieures et extérieures)

Ta slovenski standard je istoveten z: EN 15286:2013

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EUROPEAN STANDARD

EN 15286

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2013

ICS 91.100.15

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.

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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COMITÉ EUROPÉEN DE NORMALISATION
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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of an identical text or by endorsement, at the latest by December 2013, and conflicting national standards shall be withdrawn at the latest by December 2013.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

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

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EN 15286:2013 (E)**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)

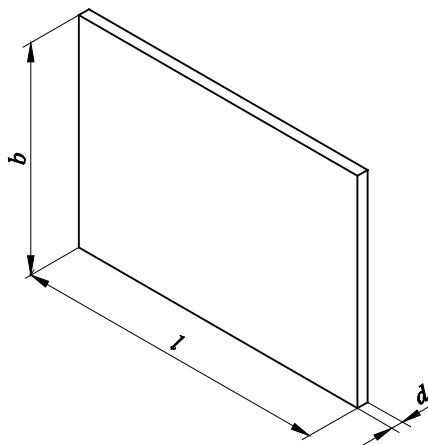


Figure 1 – Nominal dimensions of a cladding slab or a tile

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.

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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 (<i>l</i>) Width (<i>b</i>) | < 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 (<i>d</i>) | ± 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 (<i>l</i>) or width (<i>b</i>) (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.

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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 A1¹⁾, 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 homogeneously 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.

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:

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- 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.
- SIST EN 15286:2013
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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/>.