



SLOVENSKI STANDARD

SIST EN 16954:2018

01-julij-2018

**Aglomeriran kamen - Plošče in po meri izdelani proizvodi za tla in stopnice
(notranje in zunanje)**

Agglomerated stone - Slabs and cut-to-size products for flooring and stairs (internal and external)

Künstlich hergestellter Stein - Platten und zugeschnittene Produkte für Boden- und Stufenbeläge (innen und außen)

Pierre agglomérée - Plaques et produits coupés sur mesure pour revêtements de sols et escaliers (intérieurs et extérieurs)

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ICS:

91.100.15	Mineralni materiali in izdelki	Mineral materials and products
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 16954

May 2018

ICS 91.100.15

English Version

**Agglomerated stone - Slabs and cut-to-size products for
flooring and stairs (internal and external)**

Pierre agglomérée - Plaques et produits coupés sur
mesure pour revêtements de sols et escaliers
(intérieurs et extérieurs)

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zugeschnittene Produkte für Boden- und Stufenbeläge
(innen und außen)

This European Standard was approved by CEN on 27 December 2017.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 16954:2018) 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of an identical text or by endorsement, at the latest by November 2018 and conflicting national standards shall be withdrawn at the latest by February 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN 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.

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

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

- EN 15285, *Agglomerated stone — Modular tiles for flooring and stairs (internal and external)*
- EN 16954, *Agglomerated stone — Slabs and cut-to-size products for flooring and stairs (internal and external)* [the present document]
- 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 An overview on standards for agglomerated stone products is given below.

Standards for agglomerated stone products			
<i>Harmonized product standards</i>	EN 15285 <i>Modular tiles for flooring and stairs (int. and ext.) (under M/119)</i>	EN 16954 <i>Slabs and cut-to-size products for flooring and stairs (int. and ext.) (under Mandate M/119)</i>	EN 15286 <i>Cladding slabs and tiles for wall finishes (int. and ext.) (under Mandate M/121)</i>
<i>Non-harmonized 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>	

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

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1 Scope

This European Standard specifies characteristics and appropriate test methods for slabs and cut to size products (cut to size slabs, special pieces, treads and risers) of agglomerated stones, which are made for use as flooring and stairs in pedestrian areas for internal and external uses including those in enclosed public transport premises. It also provides for the assessment and verification of constancy of performance (AVCP) and marking of the products to the requirements of this European Standard.

This European Standard covers tactility but only for products the intended use of which requires this performance.

This European Standard does not cover visibility requirements. Rough slabs are excluded from the scope of this European Standard.

Products covered by the standards EN 15285, EN 13198, EN 13748-1 and EN 13748-2 are also excluded from the scope of the present European Standard.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

EN 14617 (all parts), *Agglomerated stone - Test methods*

EN 14618, *Agglomerated stone - Terminology and classification*

CEN/TS 15209, *Tactile paving surface indicators produced from concrete, clay and stone*

CEN/TS 16165:2016, *Determination of slip resistance of pedestrian surfaces - Methods of evaluation*

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 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

rough slab

semi-finished agglomerated stone product with edges obtained either by sawing from a block or by moulding, the size of which is given by nominal dimensions (length - width -, thickness, in this order), expressed in millimetres and the surface of which may or may not be the finished surface

Note 1 to entry: Examples are given in Figure 1.

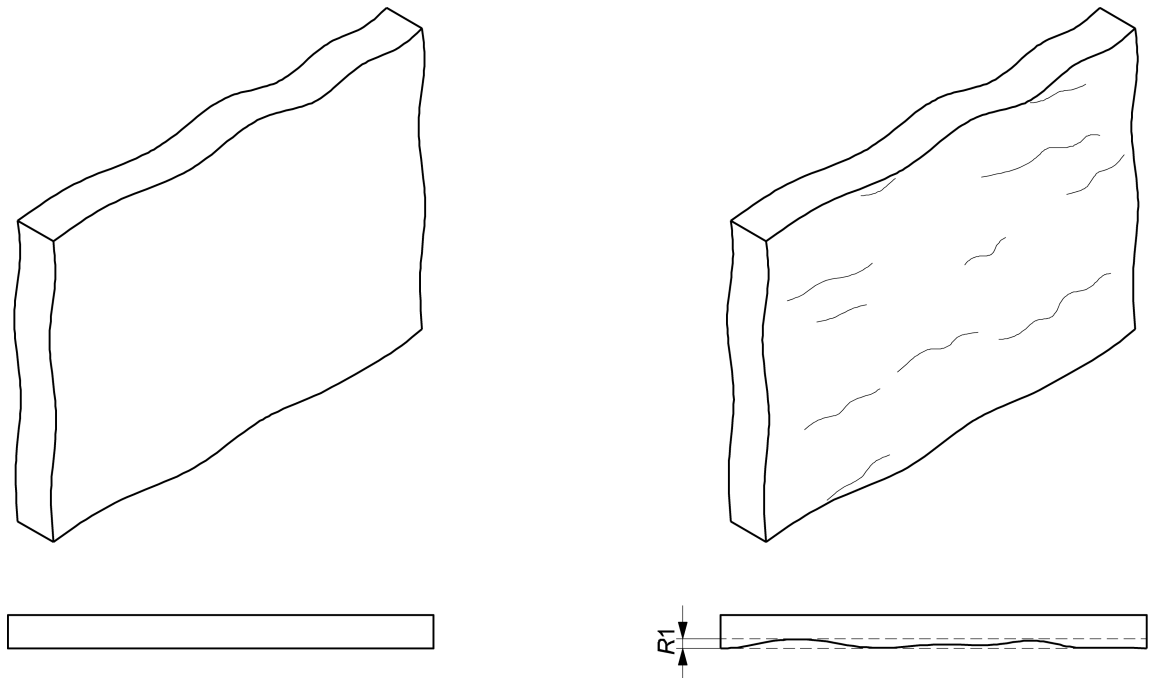


Figure 1 — Examples of rough slabs

3.2 slab

finished agglomerated product obtained from rough slabs, the dimensions of which are given by length - width - thickness (in this order), expressed in millimetres according to defined tolerances and the surface of which is a finished surface ready to use

3.3

cut-to-size product

finished agglomerated product obtained from a rough slab or a slab, the dimensions of which need to be referred to a template or a drawing

Note 1 to entry: Examples are given in Figure 2.

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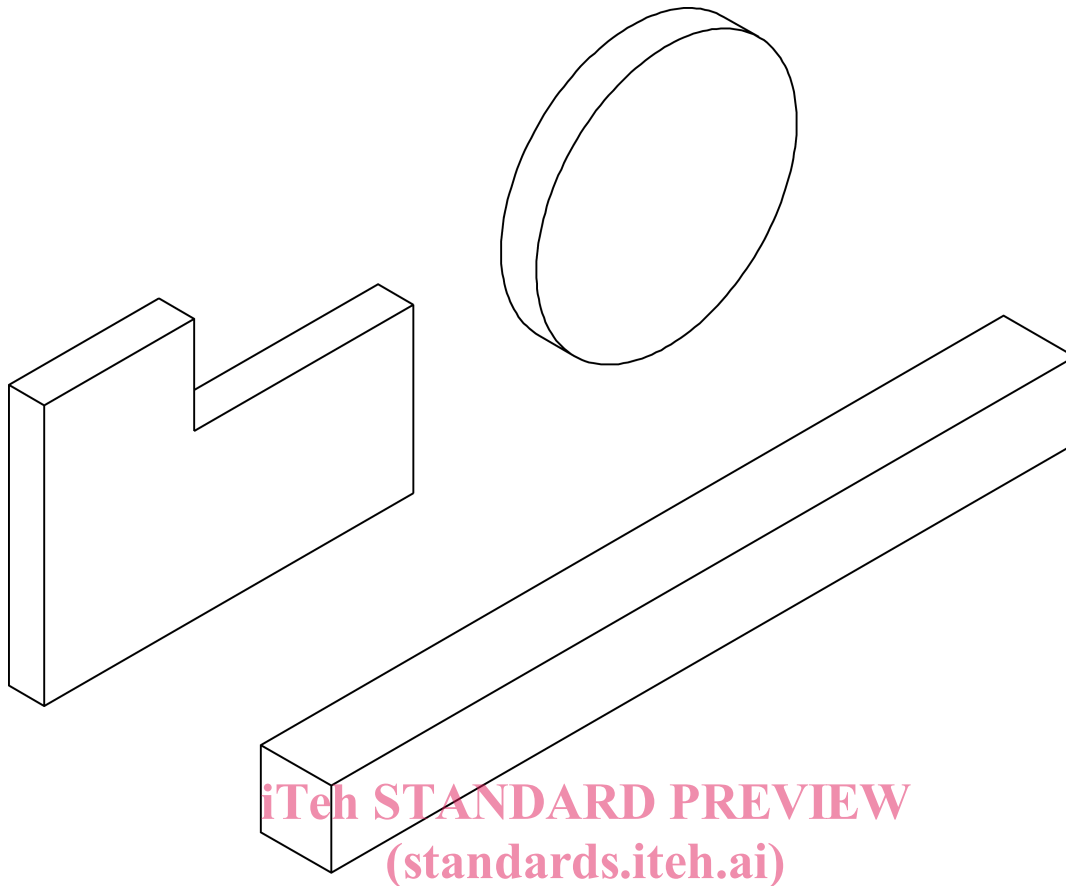


Figure 2 — Examples of cut-to-size products

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4 Characteristics

4.1 Geometric characteristics

4.1.1 Dimensions

The dimensions (length l , width b and thickness d , in this order, expressed in millimetres) of a slab and a cut-to-size product may be declared by the manufacturer.

The dimensions of cut to size products shall be referred to a template or a drawing.

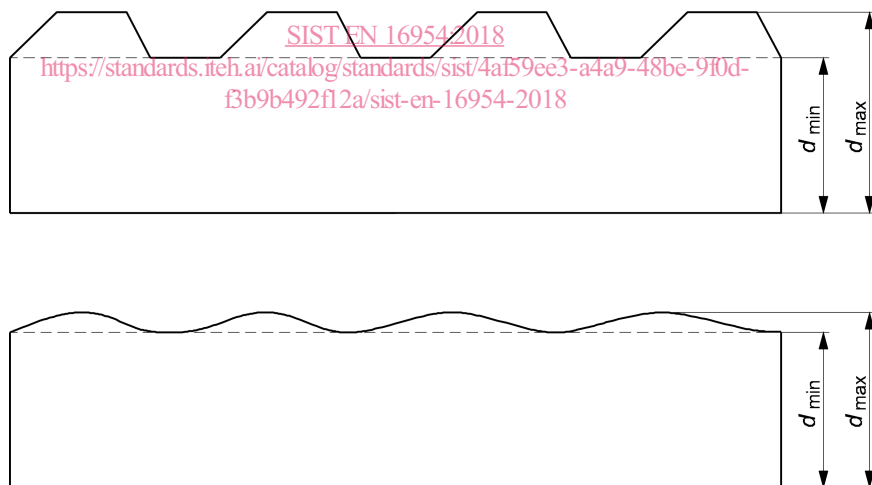
4.1.2 Tolerances for dimensions for slabs and cut-to-size products

Tolerances in dimensions of slabs and cut to size products shall be as given in Table 1. The dimensions (i.e. length, width and thickness) of slabs and cut to size products shall be determined according to EN 13373.

Stricter deviations may be declared by the manufacturer.

Table 1 — Tolerances in dimensions for slabs and cut to size products

Characteristics	Tolerances on dimensions of		
	slabs		cut-to-size products
Length and width	< 1 000 mm ±1 mm	> 1 000 mm - 10 mm/+20 mm	±0,5 mm ^a
Other dimensions with reference to the template	-		±0,5 mm
Thickness ^b	±0,7 mm		
Squareness	±0,2 % ^a		
Flatness: – centre curvature – edge curvature – warping	±0,4 %		
^a For rectangular products.			
^b Tolerances for thickness (<i>d</i>) should not apply for slabs and cut-to-size products with textured upper surface where $d_{max} - d_{min} > 1$ mm (see Figure 3).			

**Key**

d_{min} minimum thickness
 d_{max} maximum thickness

Figure 3 — Cross section examples of the textured upper surface slabs and cut-to-size products**4.1.3 Surface finish**

Surface finishes shall extend uniformly to the edges of slabs and cut-to-size products.

Surfaces of slabs and cut-to-size products shall have a regular appearance as a result of the finishing process and may be worked to meet the finish declared.

4.2 Physical and mechanical characteristics

4.2.1 General

The values for the characteristics in 4.2.2 to 4.2.14 shall be assessed when relevant.

The performance of slabs and cut-to-size products for flooring and stairs according to water absorption, flexural strength, abrasion resistance and chemical resistance shall be expressed with letters corresponding to their values as indicated in Table 2.

Table 2 — Performance list of slabs and cut-to-size products according to their characteristics

Reference	Characteristics	Performance			
4.2.4	Water absorption (%)	$W_1 > 2,0$	$2,0 \geq W_2 > 0,5$	$0,5 \geq W_3 > 0,05$	$W_4 \leq 0,05$
4.2.5	Flexural strength (MPa)	$F_1 < 12,0$	$12,0 \leq F_2 < 25,0$	$25,0 \leq F_3 < 40,0$	$F_4 \geq 40,0$
4.2.9	Abrasion resistance (mm)	$A_1 > 36,5$	$36,5 \geq A_2 > 33,0$	$33,0 \geq A_3 > 29,0$	$A_4 \leq 29,0$
4.2.10	Chemical resistance ^a	C_1	C_2	C_3	C_4
^a Refer to EN 14617-10.					

Contractual specifications can be used to establish reference values, e.g. stated in design or supplier data sheet.

4.2.2 Visual appearance

When required, the colour, roughness, of the slabs and cut-to size products shall be identified visually, e.g. by a range of samples selected following the criteria given in EN 14617-16.

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 any performance of the other characteristics of the slabs and cut-to-size products.

Reference sample, visual inspection and acceptance criteria shall be described in accordance with Annex A.

4.2.3 Reaction to fire

When slabs or cut-to-size products are intended to be used in areas subjected to reaction to fire, the reaction to fire performance shall be declared according to the following:

A slab or a cut-to-size product may be classified without the need for testing (CWT) as the reaction to fire Class A1_{FL}, when it is made of an agglomerated stone containing:

- an organic material as a binder, if any, of not more than 0,1 % by mass or volume, whichever is the most onerous, and
- 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 slab or a cut-to-size product made of 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 in accordance with EN 13501-1 after being tested in accordance with the test standards given therein.

NOTE For materials to be considered as reaction to fire Classes A1 and A1_{FL}, see the Commission Decision 96/603/EC amended by the Decisions 2000/605/EC and 2003/424/EC.