



SLOVENSKI STANDARD

SIST EN 14617-1:2005

01-julij-2005

Agglomeriran kamen - Preskusne metode - 1. del: Ugotavljanje prostorninske mase in vpijanja vode

Agglomerated stone - Test methods - Part 1: Determination of apparent density and water absorption

Künstlich hergestellter Stein - Prüfverfahren - Teil 1: Bestimmung der Rohdichte und der Wasseraufnahme

Pierre agglomérée - Méthodes d'essai - Partie 1: Détermination de la masse volumique apparente et du coefficient d'absorption d'eau

Ta slovenski standard je istoveten z: EN 14617-1:2005

ICS:

91.100.15 Mineralni materiali in izdelki Mineral materials and products

SIST EN 14617-1:2005

en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 14617-1

March 2005

ICS 91.100.15

English version

Agglomerated stone - Test methods - Part 1: Determination of apparent density and water absorption

Pierre agglomérée - Méthodes d'essai - Partie 1:
Détermination de la masse volumique apparente et du
coefficient d'absorption d'eau

Künstlich hergestellter Stein - Prüfverfahren - Teil 1:
Bestimmung der Rohdichte und der Wasseraufnahme

This European Standard was approved by CEN on 3 February 2005.

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 Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 14617-1:2005) has been prepared by Technical Committee CEN/TC 246 "Natural stones", the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2005, and conflicting national standards shall be withdrawn at the latest by September 2005.

Test methods for agglomerated stones consist of the following:

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)*

prEN 14617-3, *Agglomerated stone - Test methods – Part 3: Determination of slipperiness*

EN 14617-4, *Agglomerated stone - Test methods – Part 4: Determination of the abrasion resistance*

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*

prEN 14617-7, *Agglomerated stone – Test methods – Part 7: Determination of ageing*

prEN 14617-8, *Agglomerated stone – Test methods – Part 8: Determination of resistance to fixing (dowel hole)*

EN 14617-9, *Agglomerated stone - Test methods – Part 9: Determination of impact resistance*

EN 14617-10, *Agglomerated stone – Test methods – Part 10: Determination of chemical resistance*

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 14617-13, *Agglomerated stone – Test methods – Part 13: Determination of electrical resistivity*

prEN 14617-14, *Agglomerated stone – Test methods – Part 14: Determination of surface hardness*

EN 14617-15, *Agglomerated stone – Test methods – Part 15: Determination of compressive strength*

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

prEN 14617-17, *Agglomerated stone – Test methods – Part 17: Determination of biological resistance*

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

EN 14617-1:2005 (E)

1 Scope

This document specifies a method for determining the apparent density and water absorption of agglomerated stone products.

2 Normative References

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

Not applicable.

3 Terms and definitions

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

3.1

apparent density (M_v)

ratio between mass (expressed in kg) and apparent volume (expressed in m^3) confined within the external surface of the body.

3.2

water absorption (C)

maximum amount of water absorbed by the material when soaked in deionized water at room temperature and pressure according to the procedure described below, expressed as a percentage of the dry mass of the sample.

4 Apparatus

4.1 A covered tank with a flat base comprising small non-oxidising and non-absorbent supports for the specimens.

4.2 A device able to maintain a constant water level in the tank, described in 4.1.

4.3 A time counter with an accuracy of 1 s.

4.4 A weighting instrument with an accuracy of 0,01% of the sample mass.

4.5 A hydrostatic balance accurate to at least 0,01% of the sample mass.

4.6 A ventilated oven capable of maintaining a temperature of $(70 \pm 5)^\circ\text{C}$.

5 Preparation of the specimens

5.1 Sampling

The sampling is not responsibility of the test laboratory except where especially requested. At least six specimens selected from a homogeneous batch consisting of the same material mixture, and of regular geometric shape (cube, cylindrical or parallelepiped) should be tested. The final finishing of the specimen should be the same of the end product (sand blasted, gauged or polished surface) but without chemical surface treatment. The sample sizes should be such that they guarantee and represent the mixture. In case of either slabs or modular tiles with thickness less than 12 mm samples shall be approximately squared to sizes higher than 100 mm. For slabs and modular tiles

with thickness larger than 12 mm and other sample shape the sizes shall be such as that the ratio between the surface and the geometric external volume should range 0,1 to 0,2 mm⁻¹.

5.2 Specimen conditioning

The specimens should be dried in a stove at (70 ± 5)°C until the difference between 2 successive weighings at (24 ± 2) h intervals is less than 0,1% of the sample mass. The specimens shall be kept in a desiccator until room temperature (20 ± 5)°C is attained.

6 Test procedure

After drying and weighing (M_o), place the specimens in a tank on 2 supports in order to reduce the support contact surface to a minimum.

Slowly pour the deionized water into a container until the specimens are completely immersed and covered by 2 cm of water. After about 1, 8, and 24 h from the beginning of the tests, and later at regular 24 h intervals, take the specimens out of the water, wipe with a damp cloth and weigh them in air. Continue to immerse the specimens in water and repeat the tests until the weight variation water saturated specimens (M_t) in 3 successive weighings is less than 0,1%.

Immediately after the final weighing of each sample, determine the apparent mass (M_a) by weighing the sample in water using a hydrostatic balance.

7 Expression of results

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7.1 The apparent density M_v , in Kg/m³ is given by

$$M_v = \frac{M_o \times \rho_{H_2O}}{(M_t - M_a)}$$

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where

M_o = sample mass weighed in air after drying, in Kg;

M_t = sample mass soaked in water (6) wiped by a damp cloth and weighed in air, in Kg;

M_a = sample mass soaked in water and weighed in water, in Kg;

ρ_{H_2O} = is the true density of water at the measuring temperature, in Kg/m³

7.2 Water absorption C in percentage (%) is given by

$$C = \frac{100 \times (M_t - M_o)}{M_o}$$

7.3 For a more complete documentation of water absorption of a material, the amount of water absorbed relative to 1, 8, 24 48, 72 hr etc. can be calculated. The amount of water absorbed (C_i in percent) at the generic time t_i is given by

$$C_i = \frac{100 \times (M_i - M_o)}{M_o}$$

where

M_i = sample mass weighed in air after t_i time of water absorption;

Porosities (open, closed and total) may be calculated according to EN 1936.

EN 14617-1:2005 (E)**8 Test report**

The test report shall contain the following information:

- a) unique identification number of the report;
- b) number, title and date of issue of this document;
- c) name and address of the test laboratory and the address where the test was carried out if different from the test laboratory;
- d) name and address of the client;
- e) it is the responsibility of the client to supply the following information:
 - name of the supplier;
 - name of the person or organization which carried out the sampling;
 - surface finish of the specimens (if relevant to the test);
 - nature of the binders;
- f) date of delivery of the sample or of the specimens;
- g) date when the test specimens were prepared (if relevant) and the date of testing;
- h) number of specimens in the sample;
- i) dimensions of the specimens;
- i) apparent density values of each specimen and the average value;
- k) water absorption value of each specimen and the average value;
- l) all deviations from the standard and their justification;
- m) remarks;

The test report shall contain the signature(s) and role(s) of the responsible(s) for the testing and the written consent of the test laboratory. It shall also state that the report shall not be partially reproduced without the written consent of the test laboratory.