SLOVENSKI STANDARD
SIST EN 14617-6:2012

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SIST EN 14617-6:2005

Aglomeriran kamen - Preskusne metode - 6. del: Ugotavljanje odpornosti proti temperaturnemu šoku

Agglomerated stone - Test methods - Part 6: Determination of thermal shock resistance

Künstlich hergestellter Stein - Prüfverfahren - Teil 6: Bestimmung der Temperaturwechselbeständigkeit

Pierre agglomérée - Méthodes d'essai - Partie 6: Détermination de la résistance au choc thermique

Ta slovenski standard je istoveten z: **EN 14617-6:2012**

ICS:

91.100.15	Mineralni materiali in izdelki	Mineral materials and products

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EUROPEAN STANDARD

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English Version

Agglomerated stone - Test methods - Part 6: Determination of thermal shock resistance

Pierre agglomérée - Méthodes d'essai - Partie 6: Détermination de la résistance au choc thermique

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This European Standard was approved by CEN on 9 March 2012.

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Foreword

This document (EN 14617-6:2012) 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of an identical text or by endorsement, at the latest by October 2012, and conflicting national standards shall be withdrawn at the latest by October 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14617-6:2005.

6.3 has been modified since the last edition of this European Standard.

This European Standard is one of a series of standards for test methods for agglomerated stones which includes 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)*

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*

EN 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*

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*

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, 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 a method to assess possible modifications of agglomerated stones under the effect of sudden changes in temperature (thermal shock) by immersion in hot water.

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 14617-2:2008, *Agglomerated stone — Test methods — Part 2: Determination of flexural strength (bending)*

3 Symbols

For the purposes of this document, the following symbols apply.

m_0 mass of the dried specimen before the test, in g;

m_f mass of the dried specimen after the test, in g;

Δm % change in the mass of the dried specimens, as a percentage;

R_f flexural strength average value of dried, reference specimens, in MPa;

R_{sf} flexural strength average value of specimens after 20 cycles, in MPa;

$\Delta R_{f,\,20}$ coefficient of thermal shock resistance as change in flexural strength (as a percentage after 20 cycles).

4 Principle

After drying at (40 ± 5) °C until constant mass is attained, the specimens are subjected to successive cycles, each formed by thermal shock at (70 ± 5) °C followed by immediate immersion in water at (15 ± 5) °C. After 20 cycles, the specimens are visually inspected and compared with the reference specimen, and all visible alterations recorded. Finally, the mass and flexural strength changes of specimens after 20 cycles will be determined in comparison with the values of the same quantities of reference specimens.

NOTE The selected test temperature of 70 °C is for flooring and wall applications.

5 Apparatus

5.1 A ventilated oven capable of maintaining a temperature of (70 ± 5) °C.

5.2 A tank equipped with a cooling system capable of maintaining a temperature of (15 ± 5) °C and a flat base comprising small non-oxidising and non-absorbent supports for the specimens.

5.3 A weighing instrument with an accuracy of at least 0,01 % of the mass to be weighed.

5.4 A desiccator.

5.5 Demineralised water.

5.6 A linear measuring device with an accuracy of 0,5 mm (for the flexural measurement).

6 Preparation of specimen

6.1 Sampling

Sampling is not the responsibility of the test laboratory except where specially requested.

Two sets of at least 7 test specimens which are considered representative of the body of agglomerated stone being tested shall be selected from a homogeneous batch. One specimen set is used as a control: both the mass and flexural strength according to EN 14617-2 are determined before the thermal shock test. For the other specimen set, both the mass and flexural strength according to EN 14617-2 shall be determined after the thermal shock cycles. The specimens should be carefully observed and all alterations, such as cracks, holes, etc., noticed before and after the thermal shock cycles..

6.2 Dimensions of the test specimens

The test specimens shall be randomly selected from a homogeneous batch, having surface finish, dimension and tolerances according to EN 14617-2:2008, 6.2.2.

6.3 Drying the specimens

The specimens shall be conditioned at room temperature (20 ± 5) °C for (24 ± 2) h.

For agglomerated stones with cement or cement and polymer as binder, the specimens shall be dried at (40 ± 5) °C to a constant mass.

Constant mass is reached when the difference between two weighings carried out (24 ± 2) h apart is no greater than 0,1 % of the first of the two masses.

After drying and prior to testing, the specimens shall be stored at (20 ± 5) °C. Once thermal equilibrium is reached, the test shall be performed within 24 h.

7 Procedure

7.1 Control measurements before cycling

The dried specimens shall be visually inspected and compared to the reference specimen. All alterations, such as cracks, holes, etc., shall be recorded. Then, their mass (m_0) shall be measured and the flexural strength determined according to EN 14617-2. This is to be regarded as the initial value (R_f).

7.2 Specification of the cycles

The dried specimens shall be subjected to changes of temperature according to the following procedure:

(18 ± 1) h in a ventilated oven at (70 ± 5) °C, followed immediately by (6 ± 0,5) h completely submerged in distilled or demineralised water with a temperature of (15 ± 5) °C.

Both in the oven and in the water container, the specimens shall be placed on the supports at a distance of at least 50 mm from one another and from the wall.

In the water container, the specimens shall be placed on supports located at the bottom of the container which has been filled with distilled or demineralised water to such a height that the water level above the specimens is (60 ± 10) mm.

The procedure described above which constitutes one cycle shall be repeated for 20 cycles.

7.3 Control measurements after cycling

After the 20th cycle, the specimens shall be dried to constant mass at (40 ± 5) °C according to 6.3 and weighed (m_f). They shall then be visually inspected and compared to the reference specimen. All alterations shall be recorded. Finally, the mass (m_f) shall be measured and the flexural strength (R_{sf}) determined according to EN 14617-2.

8 Expression of results

For each specimen:

8.1 Describe the modifications observed visually by comparison with the reference specimen, such as:

— change of colour, appearance of spots;

— swelling;

— cracking;

— scaling or exfoliation.

8.2 Calculate the change in mass for each sample and then calculate the mean value to the nearest 0,01 % according to the following formula:

$$\Delta m\,\% = \frac{m_0 - m_f}{m_0} \times 100 \quad (1)$$

8.3 Calculate the change in flexural strength for each sample and then calculate the mean value to the nearest 0,1 % according to the following formula:

$$\Delta R_{f,20}\,\% = \frac{R_f - R_{sf}}{R_f} \times 100 \quad (2)$$

9 Test report

The test report shall contain the following information:

a) unique identification number of this report;

b) number and year of issue of this European Standard, i.e. EN 14617-6:2012;

c) name and address of testing laboratory, and the address where the test was carried out if it is different from the test laboratory;

d) name and address of client;

e) date of delivery of the samples;

f) date when the specimens were prepared and the date of testing;

g) number of specimens in the sample;

h) dimensions of the specimens;

i) selected test temperature (70 °C);

j) any observed alteration for each specimen;

k) percentage change in mass for each specimen and the mean percentage change in mass;

l) percentage change in flexural strength for each specimen and the mean percentage change in flexural strength;

m) statement on measurement uncertainty (where appropriate);

n) all deviation from the standard and their justification;

o) remarks.

The test report shall contain the signatures and roles of those responsible for the testing and the date of issue of the report. It shall also state that the report shall not be partially reproduced without written consent of the test laboratory.

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.