



SLOVENSKI STANDARD
SIST EN 14617-4:2005

01-julij-2005

Aglomeriran kamen - Preskusne metode - 4. del: Ugotavljanje obrabne obstojnosti

Agglomerated stone - Test methods - Part 4: Determination of the abrasion resistance

Künstlich hergestellter Stein - Prüfverfahren - Teil 4: Bestimmung der Abriebbeständigkeit

Pierre agglomérée - Méthodes d'essai - Partie 4: Détermination de la résistance a l'usure

Ta slovenski standard je istoveten z: EN 14617-4:2005

ICS:

91.100.15 Mineralni materiali in izdelki Mineral materials and products

SIST EN 14617-4:2005

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 14617-4

March 2005

ICS 91.100.15

English version

Agglomerated stone - Test methods - Part 4: Determination of the abrasion resistance

Pierres agglomérée - Méthodes d'essai - Partie 4:
Détermination de la résistance à l'usure

Künstlich hergestellter Stein - Prüfverfahren - Teil 4:
Bestimmung der Abriebbeständigkeit

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

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Foreword

This document (EN 14617-4:2005) 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 14617-4:2005 (E)**1 Scope**

This document specifies a method for determining the abrasion resistance 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.

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

ISO 8486-1, *Bonded abrasives – Determination and designation of grain size distribution – Part 1: Macrogrits F4 to F220*

3 Principle of the test method

The test method is based on scraping off the upper face of the agglomerated stone specimen by an abrasive material under standard conditions.

4 Abrasive material

The abrasive required for this test is corundum (white fused aluminium oxide, i.e. alumina) with grit size of F80 according to standard ISO 8486-1. It shall not be used for more than three times.

5 Apparatus

The wearing machine is of the type of Figure 1, which consists of an abrasion rotating wheel, a storage hopper with one or two control valves to regulate the feed of the abrasive material into a flow guidance hopper, a clamping trolley, a counterweight and a device measuring the revolutions number.

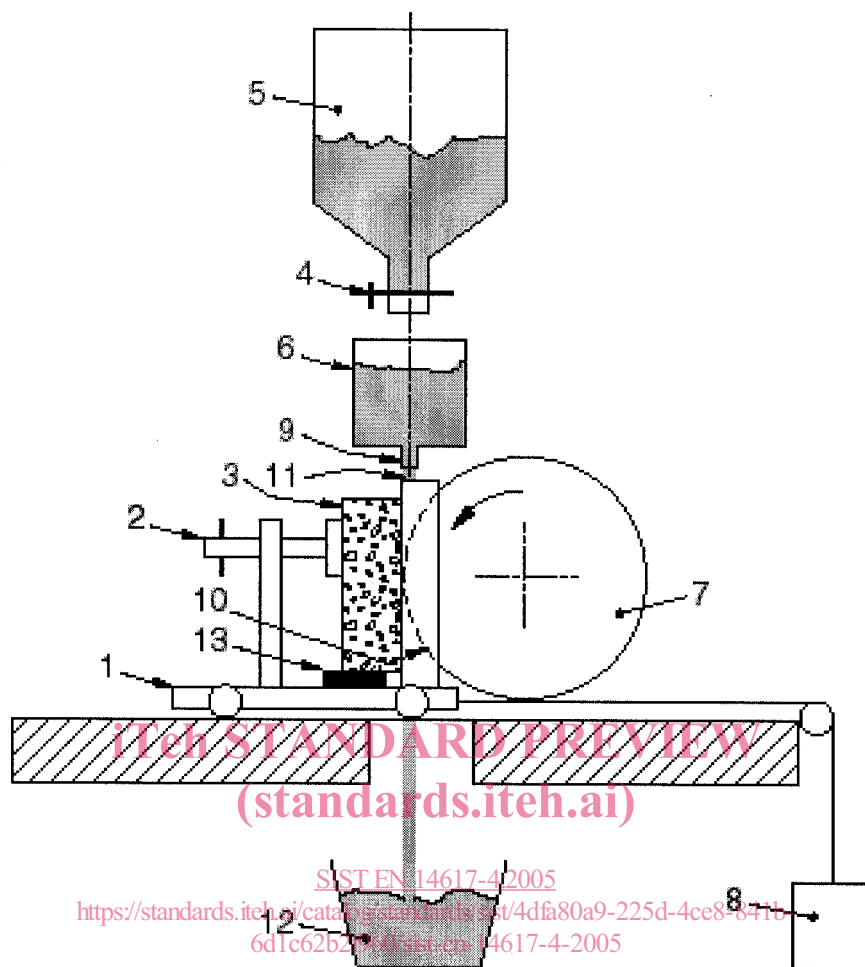
When two valves are used, one shall be used to control the flow rate of corundum and can be permanently set while the other one is used to turn the flow on and off.

The hardness of the steel shall be 203 HB to 245 HB. Its diameter shall be 200 mm \pm 1 mm and its edge thickness 10 mm \pm 1 mm. It shall be driven to a rotation speed of 75 rotations in (60 \pm 3) s.

A mobile clamping trolley is mounted on bearings and forced to press the test specimen against the wheel by a counterweight of constant mass.

The storage hopper containing the abrasive material feeds a flow guidance hopper.

The flow guidance hopper (cylindrical or rectangular) shall have a slotted outlet: the length of the slot shall be 9 mm \pm 1 mm and the width shall be adjustable. The body of the flow guidance hopper shall be at least 10 mm bigger than the slot in all directions not required in the case of a rectangular hopper with at least one of the sides inclined down to the length (see Figure 2, Example 2).



Key

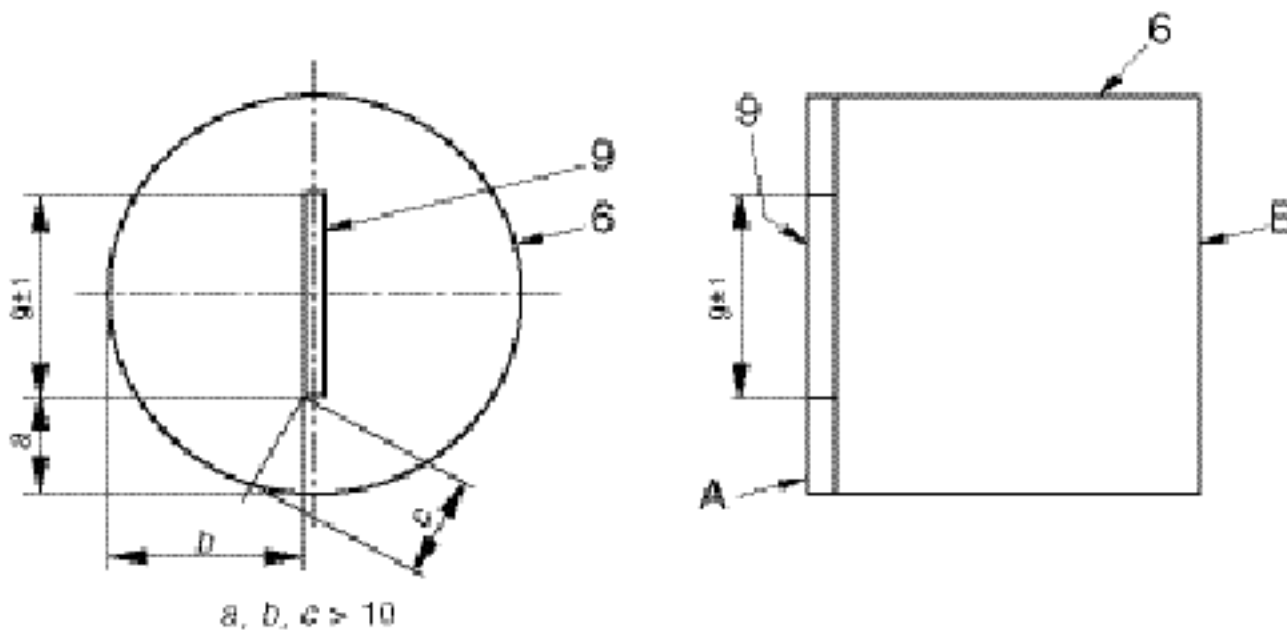
- 1 Clamping trolley
- 2 Fixing screw
- 3 Specimen
- 4 Control valve
- 5 Storage hopper
- 6 Flow guidance hopper
- 7 Abrasion wheel
- 8 Counterweight
- 9 Flow guidance slot
- 10 Groove
- 11 Abrasive material flow
- 12 Abrasive collector
- 13 Wedge.

Figure 1 — Principle of wearing machine

The distance of the fall between the slot and the axle of the abrasion wheel shall be $100 \text{ mm} \pm 5 \text{ mm}$ and the flow of abrasive material shall be $1 \text{ mm} \div 5 \text{ mm}$ behind the leading edge of the wheel (see Figure 3).

The minimum flow rate of the abrasive material through the flow guidance slot shall be of $100 \text{ g}/100$ revolutions onto the abrasion wheel. The flow rate of abrasive material shall be constant and the minimum level of the abrasive in the flow guidance hopper shall be 25 mm (see Figure 3).

In addition, the following apparatuses are needed: a magnifying glass preferably equipped with a light; a steel ruler; a digital callipers.



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Key

1 Inclined side

2 Vertical side (for key see Figure 1).

Figure 2 — Slot position in the flow guidance hopper

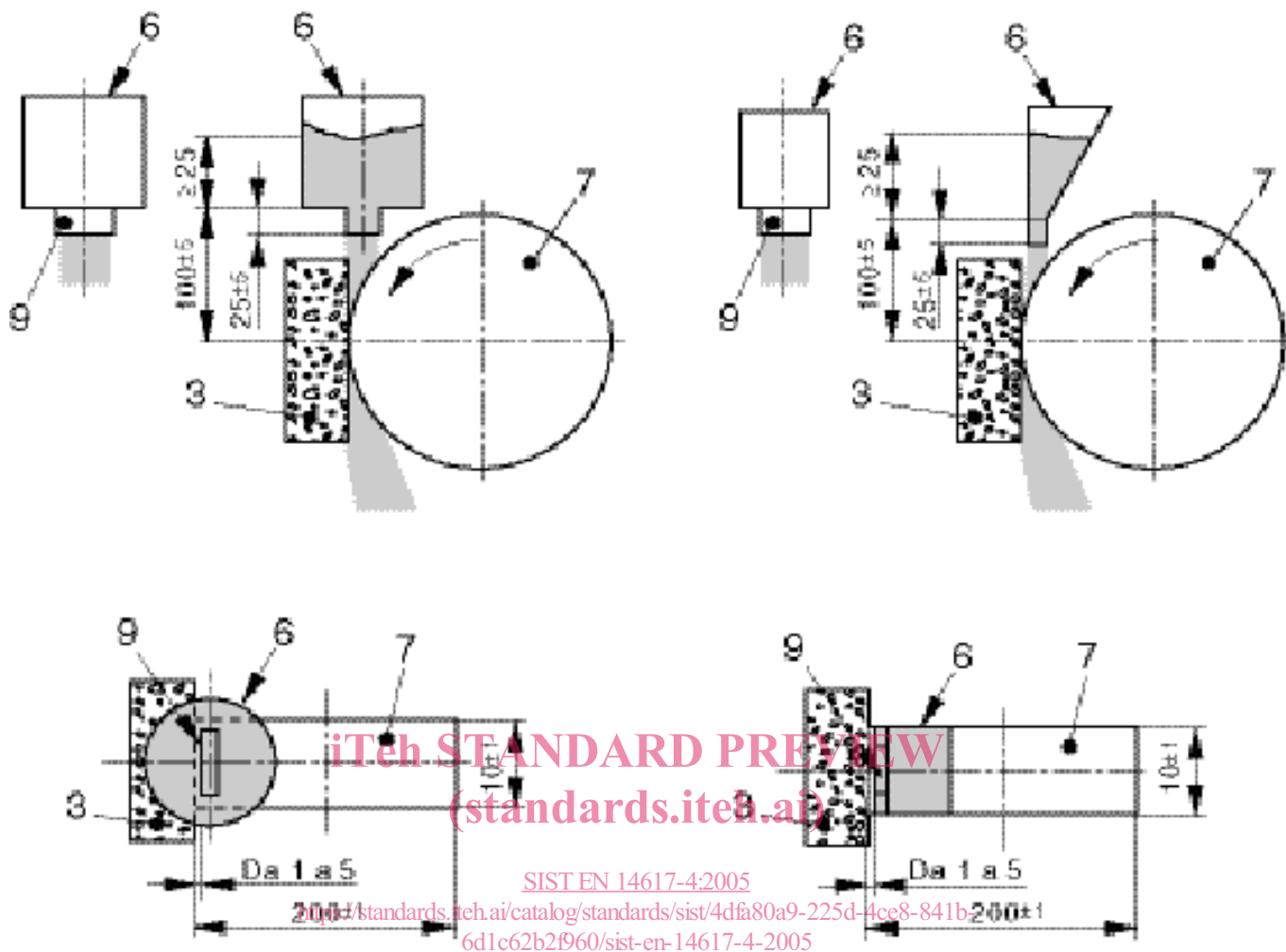


Figure 3 — Position slot relative to abrasion wheel (for key see Figure 1).

6 Calibration

The apparatus shall be calibrated after grinding 400 grooves or every two months whichever is the lesser and every time there is a new operator, a new abrasive batch or a new abrasion wheel.

The abrasive flow rate shall be verified by pouring the abrasive material from a height of approximately 100 mm into a pre-weighed rigid container with a smooth rim of height $90 \text{ mm} \pm 10 \text{ mm}$ and of known volume (approximately 1 litre). As the container fills, the pourer shall be raised to approximately maintain the 100 mm fall. When the container is filled, the top shall be struck off level and weighed to determine the mass of abrasive for a known volume, i.e. the density. Abrasive shall then be run through the wearing machine and collected below the abrasion wheel in a pre-weighed container checking the regularity of the corundum flow during the test as approximately 100g/100 revolutions.

The apparatus shall be calibrated against a reference sample of "Austrian granite" using the procedure in 8.1 and the counterweight adjusted so that after 300 revolutions of the wheel in $60 \text{ s} \pm 3 \text{ s}$ the length of the groove produced is $32,0 \text{ mm} \pm 0,5 \text{ mm}$. The counterweight should be increased or decreased to increase or decrease the groove length respectively. The clamping trolley/counterweight assembly should be checked for undue friction.