



SLOVENSKI STANDARD
SIST EN 14157:2017

01-december-2017

Nadomešča:
SIST EN 14157:2004

Preskusne metode za naravni kamen - Ugotavljanje odpornosti proti obrabi

Natural stone test methods - Determination of the abrasion resistance

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Pierres naturelles - Détermination de la résistance à l'usure

Ta slovenski standard je istoveten z: ~~ST EN 14157:2017~~ EN 14157:2017

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ICS:

73.020	Rudarstvo in kamnolomsko izkopavanje	Mining and quarrying
91.100.15	Mineralni materiali in izdelki	Mineral materials and products

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EUROPEAN STANDARD

EN 14157

NORME EUROPÉENNE

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October 2017

ICS 73.020; 91.100.15

Supersedes EN 14157:2004

English Version

Natural stone test methods - Determination of the abrasion resistance

Pierres naturelles - Détermination de la résistance à l'usure

This European Standard was approved by CEN on 20 July 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.

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 CEN-CENELEC Management Centre has the same status as the official versions.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents	Page
European foreword.....	3
1 Scope	5
2 Normative references	5
3 Method A – Wide Wheel Abrasion Test	5
3.1 Principle.....	5
3.2 Abrasive material.....	5
3.3 Apparatus.....	5
3.3.1 The ‘wearing’ machine.....	5
3.3.2 Magnifying glass.....	8
3.3.3 Ruler.....	8
3.3.4 Calliper.....	8
3.4 Calibration.....	9
3.5 Preparation of test specimens.....	9
3.6 Test procedure.....	10
3.6.1 Test Method.....	10
3.6.2 Measuring the groove.....	10
3.7 Test results.....	11
4 Method B – Böhme Abrasion Test	11
4.1 Principle.....	11
4.2 Abrasive material.....	11
4.3 Apparatus.....	11
4.3.1 Thickness measuring device.....	11
4.3.2 Disc abrader.....	11
4.3.3 Test Track.....	11
4.3.4 Specimen holder.....	12
4.3.5 Loading device.....	12
4.4 Preparation of test specimens.....	12
4.5 Test Procedure.....	13
4.6 Test results.....	13
5 Test report	14
Bibliography	16

European foreword

This document (EN 14157:2017) 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 April 2018, and conflicting national standards shall be withdrawn at the latest by April 2018.

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 14157:2004.

The main technical changes compared to EN 14157:2004 are the following:

- 1) Method C AMSLER is deleted;
- 2) For Method B Böhme only 3 specimen are used instead of 6.

This document is one of the series of draft documents for tests on natural stone.

Test methods for natural stone consist of the following parts:

EN 1925, *Natural stone test methods – Determination of water absorption coefficient by capillarity*

EN 1926, *Natural stone test methods – Determination of uniaxial compressive strength*

EN 1936, *Natural stone test methods – Determination of real density and apparent density, and of total and open porosity*

EN 12370, *Natural stone test methods – Determination of resistance to salt crystallization*

EN 12371, *Natural stone test methods – Determination of frost resistance*

EN 12372, *Natural stone test methods – Determination of flexural strength under concentrated load*

EN 12407, *Natural stone test methods – Petrographic examination*

EN 13161, *Natural stone test methods – Determination of flexural strength under constant moment*

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

EN 13755, *Natural stone test methods – Determination of water absorption at atmospheric pressure*

EN 14066, *Natural stone test methods – Determination of resistance to ageing by thermal shock*

EN 14147, *Natural stone test methods – Determination of resistance to ageing by salt mist*

EN 14231, *Natural stone test methods – Determination of the slip resistance by means of the pendulum tester*

EN 14157:2017 (E)

EN 14158, *Natural stone test methods – Determination of rupture energy*

EN 14579, *Natural stone test methods – Determination of sound speed propagation*

EN 14580, *Natural stone test methods – Determination of static elastic modulus*

EN 14581, *Natural stone test methods – Determination of linear thermal expansion coefficient*

It is intended that other ENs should call up this EN 14157 as the basis of evaluation of conformity. Nevertheless it is not intended that all natural stones products should be subjected regularly to all the listed tests. Specifications in other documents should call up only relevant test methods.

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 two test methods to determine the abrasion resistance of natural stones used for flooring in buildings.

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 10025 (all parts), *Hot rolled products of structural steels*

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

EN ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method (ISO 6506-1)*

3 Method A – Wide Wheel Abrasion Test

3.1 Principle

The test is carried out by abrading the face of a specimen which will be exposed in use with an abrasive material under standard conditions.

3.2 Abrasive material

The abrasive required for this test is corundum (white fused alumina) with grit size of 80 in accordance with technical document FEPA 42-1:2006. It shall not be used for more than three times.

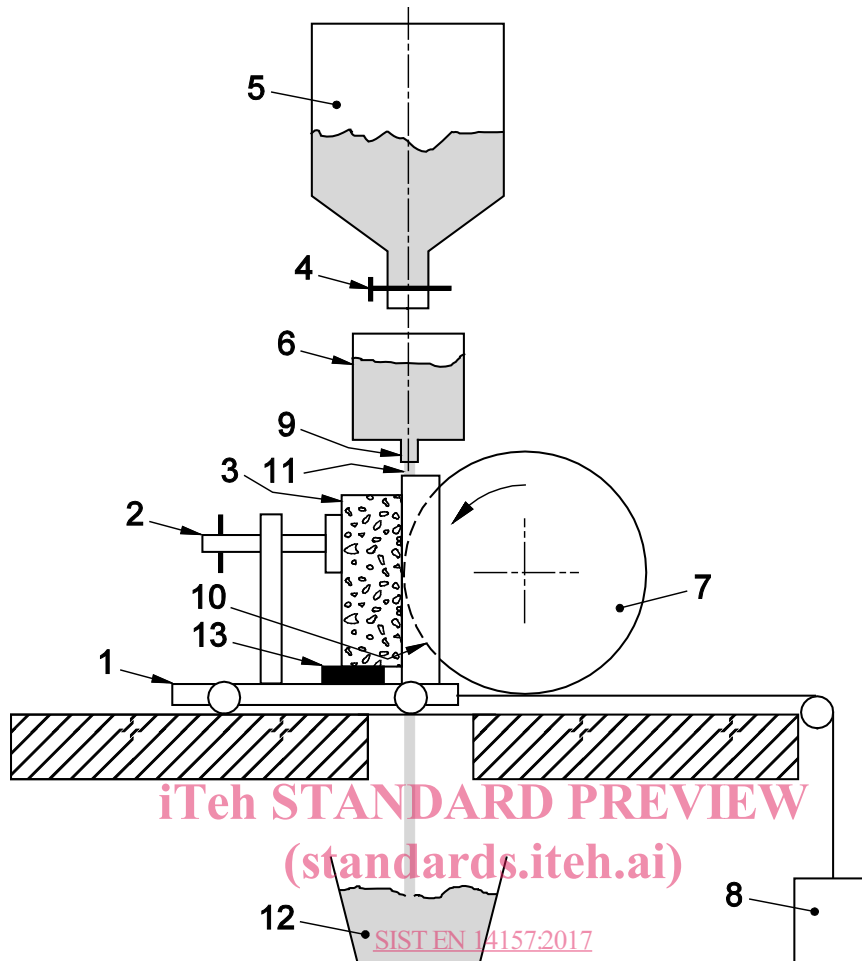
3.3 Apparatus

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3.3.1 The 'wearing' machine

The wearing machine (see Figure 1) is essentially made of a wide abrasion wheel, a storage hopper with one or two control valves to regulate the output of the abrasive material, a flow guidance hopper, a clamping trolley and a counterweight.

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

**Key**

1	clamping trolley	8	counterweight
2	fixing screw	9	slot
3	specimen	10	groove
4	control valve	11	abrasive material flow
5	storage hopper	12	abrasive collector
6	flow guidance hopper	13	wedge
7	wide abrasion wheel		

Figure 1 — Principle of the wearing machine

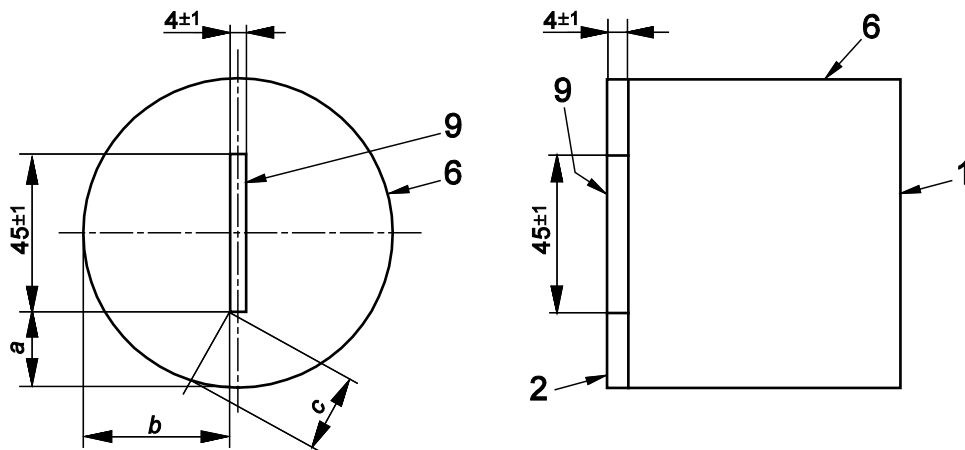
The wide abrasion wheel shall be made of steel Fe 690 according to EN 10025. The hardness of the steel shall be between 203 HB and 245 HB. Its diameter shall be (200 ± 1) mm and its width shall be (70 ± 1) mm. It shall be driven to rotate 75 revolutions in (60 ± 3) s.

A mobile clamping trolley is mounted on bearings and forced to move forwards to the wheel by a counterweight having a mass of $(14 \pm 0,01)$ kg.

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

The flow guidance hopper may have a cylindrical or rectangular cross-section and shall have a slotted outlet. The length of the slot shall be (45 ± 1) mm and the width shall be (4 ± 1) mm. The body of the flow guidance hopper shall be at least 10 mm bigger than the slot in all directions. In the case of a hopper with a rectangular cross section and at least one of the sides inclined down to the length of the slot, these dimensional limitations are not necessary (see Figure 2).

Dimensions in millimetres



Key

- 1 inclined side
- 2 vertical side
- a, b, c ≥ 10
- 6 flow guidance hopper
- 9 slot

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Figure 2 — Position of the slot at the base of the flow guidance hopper in case of cylindrical cross section (left) and of rectangular cross section (right)

The distance of the fall between the slot and the axle of the wide abrasion wheel shall be (100 ± 5) mm and the flow of abrasive shall be (1 to 5) mm behind the leading edge of the wheel (see Figure 3).