



SLOVENSKI STANDARD

SIST EN 13755:2002

01-maj-2002

Preskušanje naravnega kamna – Ugotavljanje vpijanja vode pri atmosferskem tlaku

Natural stone test methods - Determination of water absorption at atmospheric pressure

Prüfverfahren für Naturstein - Bestimmung der Wasseraufnahme unter atmosphärischem Druck

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Méthodes d'essai pour pierres naturelles - Détermination de l'absorption d'eau a la pression atmosphérique

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Ta slovenski standard je istoveten z: EN 13755:2001

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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en

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ICS 73.020; 91.100.15

English version

Natural stone test methods - Determination of water absorption at atmospheric pressure

Méthodes d'essai pour pierres naturelles - Détermination
de l'absorption d'eau à la pression atmosphérique

Prüfverfahren für Naturstein - Bestimmung der
Wasseraufnahme unter atmosphärischem Druck

This European Standard was approved by CEN on 21 October 2001.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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

Contents

	page
Foreword.....	3
1 Scope	4
2 Normative references	4
3 Principle	4
4 Symbols	4
5 Apparatus	4
6 Preparation of the specimens.....	5
6.1 Sampling	5
6.2 Test specimens	5
6.3 Drying the specimens.....	5
7 Test procedure	5
8 Expression of results	6
9 Test report	6
Bibliography	8

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Foreword

This European Standard 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 June 2002, and conflicting national standards shall be withdrawn at the latest by December 2002.

This European Standard is one of the series of standards 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 compressive strength*

EN 12370, *Natural stone test methods - Determination of resistance to salt crystallisation*

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

EN 12407, *Natural stone test methods - Petrographic description*

prEN 12371, *Natural stone test methods - Determination of frost resistance*

prEN 13161, *Natural stone test methods - Determination of flexural strength under constant moment*

prEN 13364, *Natural stone test methods - Determination of the breaking load at a dowel hole*

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

prEN 13919, *Natural stone test methods - Determination of resistance to ageing by SO₂ action in the presence of humidity*

prEN 14066, *Natural stone test methods - Determination of resistance to ageing thermal shock*

prEN(WI 00246011), *Natural stone test methods - Determination of thermal dilatation coefficient*

prEN(WI 00246012), *Natural stone test methods - Determination of sound - speed propagation*

prEN 14146, *Natural stone test methods - Determination of dynamic elastic modulus (by fundamental resonance frequency)*

prEN 14147, *Natural stone test methods - Determination of resistance to ageing by salt mist*

prEN 14157, *Natural stone test methods - Determination of abrasion resistance*

prEN 14158, *Natural stone test methods - Determination of rupture energy*

prEN 14205, *Natural stone test methods - Determination of Knoop hardness*

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

prEN ...(WI 00246018), *Natural stone test methods - Determination of static elastic modulus*

It is intended that other ENs should call up this European Standard 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 standards 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies a method for determining the water absorption of natural stone – see EN 12670 for terminology and EN 12440 for denomination - by immersion in water at atmospheric pressure.

2 Normative references

None.

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3 Principle

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After drying to a constant mass, each specimen is weighted and then immersed in water at atmospheric pressure for a specified period of time. The ratio of the mass of water absorbed by each specimen when constant mass is reached.

4 Symbols

m_d mass of the dry specimen, in grams;

m_i successive masses of the specimen during testing, in grams;

m_s mass of the saturated specimen (after immersion in water until constant mass is reached), in grams;

A_b water absorption at atmospheric pressure, expressed as a percentage.

5 Apparatus

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

5.2 A ventilated oven which can maintain a temperature of (70 ± 5) °C.

5.3 A weighing instrument with an accuracy of 0,01 g.

6 Preparation of the specimens

6.1 Sampling

The sampling is not under the responsibility of the test laboratory except where especially requested.

At least six specimens shall be selected from a homogenous batch.

6.2 Test specimens

The test specimens shall have the form of a cylinder, cube or prism (70 ± 5) mm or (50 ± 5) mm and shall be obtained by diamond sawing or coring. Their apparent volume calculated by geometrical measurements shall be at least 60 ml. In addition, the surface area to volume ratio shall be between $0,10 \text{ mm}^{-1}$ and $0,20 \text{ mm}^{-1}$.

NOTE The specimens prepared for the determination of compressive or flexural strength can be used if they satisfy the surface/volume ratio.

6.3 Drying the specimens

The test specimens are to be dried to constant mass at a temperature of $(70 \pm 5) ^\circ\text{C}$. Constant mass is reached when the difference between two successive weighings at an interval of (24 ± 2) h is not greater than 0,1 % of the mass of the specimen.

The specimens shall be kept in a desiccator until room temperature $(20 \pm 5) ^\circ\text{C}$ is attained.

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7 Test procedure

Weigh the specimens after drying (m_d) to an accuracy of 0,01 g. Place the specimens in the tank on the supports provided. Each specimen needs to be at least 15 mm from adjacent specimens. Then add tap water at $(20 \pm 10) ^\circ\text{C}$ up to half the height of the specimens (time t_0). At time $t_0 + (60 \pm 5)$ min add tap water until the level of the water reaches three-quarter of the height of the specimens.

At time $t_0 + (120 \pm 5)$ min add tap water until the specimens are completely immersed to a depth of (25 ± 5) mm of water.

Water shall be free from any impurity (for example dissolved air) that could significantly affect its density. Dissolved air can be removed by boiling or applying a vacuum.

At time $t_0 + (48 \pm 2)$ h the specimens are taken out of the water, quickly wiped with a damp cloth and then weighed within 1 min to an accuracy of 0,01 g (m_i).

Immerse the specimens again in water and continue the test. Every (24 ± 2) h the specimens are taken out of the water, quickly wiped with a damp cloth and then weighed within 1 min to an accuracy of 0,01 g.

Note the successive masses of the specimens (m_i).

Continue the test up to constant mass of the specimens. Constant mass is reached when the difference between two successive weighings is not greater than 0,1 % of the mass of the specimen.

The result of the last weighing is the mass of the saturated specimen (m_s).

8 Expression of results

The water absorption at atmospheric pressure A_b of each specimen is calculated by the equation:

$$A_b = \frac{m_s - m_d}{m_d} \cdot 100$$

The result shall be expressed as a percentage to the nearest 0,1 %.

9 Test report

The test report shall contain the following information:

- a) unique identification number of the report;
- b) the number, title and date of issue of this European Standard;
- c) the name and address of the test laboratory and the address where the test was carried out if different from the test laboratory;
- d) the name and address of the client;
- e) it is the responsibility of the client to supply the following information:
 - the petrographic name of the stone;
 - the commercial name of the stone;
 - the country and region of extraction;
 - the name of the supplier;
 - the direction of any existing plane of anisotropy (if relevant to the test) to be clearly indicated on the sample or on each specimen by means of two parallel lines;
 - the name of the person or organisation which carried out the sampling;
 - the surface finish of the specimen (if relevant to the test);
- f) the date of delivery of the sample or of the specimens;
- g) the date when the specimens were prepared (if relevant) and the date of testing;
- h) the number of specimens in the sample;
- i) the dimensions of the specimens;
- j) for each specimen the water absorption at atmospheric pressure to the nearest 0,1 %;
- k) the arithmetic mean of the individual values of water absorption at atmospheric pressure expressed to the nearest 0,1 %;
- l) all deviations from the standard and their justification;

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m) remarks.

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

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