



SLOVENSKI STANDARD

SIST EN 14066:2003

01-november-2003

Preskušanje naravnega kamna – Ugotavljanje odpornosti proti staranju s temperaturnim šokom

Natural stone test methods - Determination of resistance to ageing by thermal shock

Prüfverfahren für Naturstein - Bestimmung des Widerstandes gegen Alterung durch Wärmeschock

Méthodes d'essai pour pierres naturelles - Détermination de la résistance au vieillissement accéléré par chocs thermiques

iTeh STANDARD PREVIEW

(standards.iteh.ai)

[SIST EN 14066:2003](https://standards.iteh.ai/catalog/standards/sist/a5c50a0a-5882-4d2f-9de4-51bca1dad04b/sist-en-14066-2003)

Ta slovenski standard je istoveten z: [EN 14066:2003](https://standards.iteh.ai/catalog/standards/sist/a5c50a0a-5882-4d2f-9de4-51bca1dad04b/sist-en-14066-2003)

ICS:

91.100.15 Mineralni materiali in izdelki Mineral materials and products

SIST EN 14066:2003

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 14066:2003](#)

<https://standards.iteh.ai/catalog/standards/sist/a5c50a0a-5882-4d2f-9de4-5fba1dad04b/sist-en-14066-2003>

EUROPEAN STANDARD

EN 14066

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2003

ICS 73.020; 91.100.15

English version

Natural stone test methods - Determination of resistance to ageing by thermal shock

Méthodes d'essai pour pierres naturelles - Détermination de la résistance au vieillissement accéléré par chocs thermiques

Prüfverfahren für Naturstein - Bestimmung des Widerstandes gegen Alterung durch Wärmeschock

This European Standard was approved by CEN on 20 February 2003.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

[SIST EN 14066:2003](https://standards.iteh.ai/catalog/standards/sist/a5c50a0a-5882-4d2f-9de4-5fba1dad04b/sist-en-14066-2003)

<https://standards.iteh.ai/catalog/standards/sist/a5c50a0a-5882-4d2f-9de4-5fba1dad04b/sist-en-14066-2003>



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	5
2 Normative references	5
3 Principle	5
4 Symbols and abbreviations	5
5 Apparatus	5
6 Preparation of the specimens.....	5
6.1 Sampling	5
6.2 Dimensions of the test specimens.....	6
6.3 Putting reference marks on the specimens	6
6.4 Drying the specimens.....	6
7 Test procedure	6
7.1 Control measurements before cycling	6
7.2 Description of the cycles	6
7.3 Control measurements after cycling	7
8 Expression of results	7
9 Test report	7

[SIST EN 14066:2003](https://standards.iteh.ai/catalog/standards/sist/a5c50a0a-5882-4d2f-9de4-5fba1dad04b/sist-en-14066-2003)

<https://standards.iteh.ai/catalog/standards/sist/a5c50a0a-5882-4d2f-9de4-5fba1dad04b/sist-en-14066-2003>

Foreword

This document EN 14066:2003 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 2003, and conflicting national standards shall be withdrawn at the latest by October 2003.

This draft standard is one of the series of draft 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 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 crystallisation*

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 13364, *Natural stone test methods – Determination of the breaking load at dowel hole*

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

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

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

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

prEN 14146, *Natural stone test methods - Determination of the dynamic modulus of elasticity (by measuring the 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 the abrasion resistance*

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

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

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

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

EN 14066:2003 (E)

prEN 14580 , *Natural stone test methods – Determination of static elastic modulus* prEN 14581 , *Natural stone test methods – Determination of thermal expansion coefficient*

No existing European Standard is superseded.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovak Republic, Spain, Sweden, Switzerland and the United Kingdom.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 14066:2003](#)

<https://standards.iteh.ai/catalog/standards/sist/a5c50a0a-5882-4d2f-9de4-5fba1dad04b/sist-en-14066-2003>

1 Scope

This European Standard specifies a method to assess possible modifications of natural stones under the effect of sudden changes in temperature (thermal shock).

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

prEN 14146, *Natural stone test methods - Determination of the dynamic modulus of elasticity (by measuring the fundamental resonance frequency)*.

3 Principle

After drying at (105 ± 5) °C until constant mass is attained, the specimens are subjected to successive cycles, each formed by drying at (105 ± 5) °C followed by immediate immersion in water at (20 ± 5) °C.

4 Symbols and abbreviations

m_0 - Mass of the dried specimen before the test, in grams,
<https://standards.iteh.ai/catalog/standards/sist/a5c50a0a-5882-4d2f-9de4-5fba1dad04b/sist-en-14066-2003>

m_f - Mass of the dried specimen after the test, in grams,

Δm % - Change in mass of the dried specimen, expressed as a percentage,

Ed_0 - Dynamic elastic modulus before the test, in Megapascals,

Ed_f - Dynamic elastic modulus after the test, in Megapascals,

ΔEd % - Change in dynamic elastic modulus of the dried specimen, expressed as a percentage.

5 Apparatus

5.1 A ventilated oven capable of maintaining a temperature of (105 ± 5) °C.

5.2 A covered tank with 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 device for measuring dynamic elastic modulus in accordance with prEN 14146.

6 Preparation of the specimens

6.1 Sampling

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

EN 14066:2003 (E)

At least 7 specimens shall be selected from an homogeneous batch. One specimen is used as reference specimen and is not subjected to any tests. Carefully observe the specimens and note all alterations, such as cracks, holes, etc. In cases where the final use of the stone is known the major faces of the specimens shall have the same orientation of the face as in use.

6.2 Dimensions of the test specimens

The test specimens shall be $(200 \times 200 \times 20 \text{ mm}) \pm 2\text{mm}$. In cases where changes in visual appearance are important other specimen sizes may be used.

At least one of the faces shall be either polished or at least finished as smoothly as can be achieved in normal processing if polishing is not possible. The surface finish of the other face and sides shall be sawn, honed or polished.

6.3 Putting reference marks on the specimens

To ensure that the measurements of the dynamic elastic modulus performed before and after the thermal shock test are done at the same points, indelible marks in the form of points are made on the relevant faces of the specimens, to show the location of emitter and receiver.

Indelible lines are traced to show the location of the axis of the two supports on which the specimens will be placed during the determination of the dynamic elastic modulus.

6.4 Drying the specimens

The specimens are dried at a temperature of $(105 \pm 5) ^\circ\text{C}$ until a constant mass (m_0) is reached. This is attained when the difference in mass between two successive weighings performed at an interval of $(24 \pm 2) \text{ h}$ is less than 0,1% of the first of these two masses. The dry mass is determined after the specimens have been cooled at room temperature in a desiccator. This is to be regarded as the initial value (m_0).

7 Test procedure**7.1 Control measurements before cycling**

The dried specimens are visually inspected and compared to the reference specimen. All differences between specimens such as cracks, holes, etc. are recorded. Then the dynamic elastic modulus of each specimen is measured according to prEN 14146. This is to be regarded as the initial value (Ed_0).

7.2 Description of the cycles

The dried specimens are subjected to changes of temperature according to the following procedure : $(18 \pm 1) \text{ h}$ in a ventilated oven at $(105 \pm 5) ^\circ\text{C}$; immediately followed by $(6 \pm 0,5) \text{ h}$ completely submerged in distilled or demineralised water, whose temperature before the immersion of the specimens is $(20 \pm 5) ^\circ\text{C}$.

Both in the oven and in the water container, the specimens are 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 are 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 $(60 \pm 10) \text{ mm}$. The procedure described above constitutes one cycle. If the test is to be interrupted at anytime, other than for testing, then the specimens are to be immersed in water at $(20 \pm 5) ^\circ\text{C}$.

7.3 Control measurements after cycling

After the 20th cycle the specimens are dried to constant mass at (105 ± 5) °C and weighed (m_f). Then they are visually inspected and compared with the reference specimen. All alterations are recorded. Finally the dynamic elastic modulus is measured (Ed_f).

8 Expression of results

For each specimen:

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

- oxidation
- change of colour, appearance of spots
- swelling
- cracking
- scaling or exfoliation

8.2 Calculate the change in mass to the nearest 0,01% according to the formula:

$$\Delta m \% = \frac{m_f - m_0}{m_0} \times 100$$

SIST EN 14066:2003

8.3 Calculate the change in dynamic elastic modulus to the nearest 0,1% according to the formula:

$$\Delta E_d \% = \frac{Ed_0 - Ed_f}{Ed_0} \times 100$$

9 Test report

The test report shall contain the following information :

- a) unique identification number of this 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 it is different from the test laboratory;
- d) the name and address of the client;
- e) it is the responsibility of the client to give 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;