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

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 13919

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ICS 73.020; 91.100.15

English version

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

Méthodes d'essai pour éléments en pierre naturelle -
Détermination de la résistance au vieillissement accéléré
au SO₂ en présence d'humidité

Prüfverfahren für Naturstein - Bestimmung der
Beständigkeit gegen Alterung durch SO₂ bei und
Feuchteeinwirkung

This European Standard was approved by CEN on 5 August 2002.

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This document (EN 13919:2002) 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of an identical text or by endorsement, at the latest by June 2003, and conflicting national standards shall be withdrawn at the latest by June 2003.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 standards:

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 description.*

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 a dowel hole.*

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

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

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

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

prEN 14581, *Natural stone test methods - Determination of thermal dilatation coefficient.*

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

prEN 14157, *Natural stone test methods – Determination of the abrasion resistance.*

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 14580, *Natural stone test methods - Determination of static elastic modulus.*

prEN ... (WI 00246030), *Natural stone test methods - Determination of surface finishes (rugosity).*

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

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

EN 13919:2002 (E)

1 Scope

The European Standard specifies a method to assess the relative resistance of natural stones to damage by sulphur dioxide in the presence of humidity.

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).

EN 12440, *Natural stone - Denomination criteria*

EN 12670, *Natural stone - Terminology*

3 Principle

The resistance of natural stone units to a combination of temperature, humidity and sulphur dioxide is determined by placing test specimens in two containers for 21 with two different sulphur dioxide concentrations. After this period, mass loss and alterations to the test specimens are determined.

4 Symbols

m_0 is the mass of the dry specimen before the test, in grams;

m_1 is the mass of the dry specimen after the test, in grams;

Δm is the change in mass, in percent.

5 Reagents and materials

5.1 Sulphurous acid: a solution that contains between a mass fraction of 5 % and 6 % of sulphur dioxide in water;

5.2 De-mineralised or de-ionised water;

5.3 Abrasive paste (6 μm to 15 μm);

5.4 For each 50 l of container volume:

- Solution A: Dilute (500 \pm 10) ml of sulphurous acid (H_2SO_3) in (150 \pm 10) ml of de-mineralised or de-ionised water;
- Solution B: Dilute (150 \pm 10) ml of sulphurous acid (H_2SO_3) in (500 \pm 10) ml of de-mineralised or de-ionised water.

The solution shall be renewed before each test.

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