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Natural stone test methods - Determination of real density and apparent density, and of total and open porosity

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 1936:2001 sisaldab Euroopa standardi EN 1936:1999 ingliskeelset teksti. Käesolev dokument on jõustatud 18.06.2001 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 1936:2001 consists of the English text of the European standard EN 1936:1999. This document is endorsed on 18.06.2001 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This European Standard specifies methods of determining the real density, the apparent density, and the open and total porosity of natural stone.	**Scope:** This European Standard specifies methods of determining the real density, the apparent density, and the open and total porosity of natural stone.

ICS 73.020, 91.100.15

Võtmesõnad: bulk density, density (mass/volume), determination, natural stone, porosity, procedures, specimen preparation, tests

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Eesti Standardikeskusele kuulub standardite reprodutseerimis- ja levitamisõigus

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1936

March 1999

ICS 73.020; 91.100.15

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English version

Natural stone test methods

Determination of real density and apparent density, and of total and open porosities

Méthodes d'essai pour pierres naturelles – Détermination des masses volumiques réelle et apparente et des porosités ouverte et totale

Prüfverfahren für Naturstein – Bestimmung der Reindichte, der Rohdichte, der offenen Porosität und der Gesamtporosität

This European Standard was approved by CEN on 1999-02-13.

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.

The European Standards exist 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, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

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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 September 1999, and conflicting national standards shall be withdrawn at the latest by September 1999.

This European 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 12370	Natural stone test methods - Determination of resistance to salt crystallisation
prEN 12371	Natural stone test methods - Determination of frost resistance
EN 12372	Natural stone test methods - Determination of flexural strength under concentrated load
prEN 12407	Natural stone test methods - Petrographic description
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 ....(WI 00246011)	Natural stone test methods - Determination of thermal dilatation coefficient
prEN ....(WI 00246012)	Natural stone test methods - Determination of sound - speed propagation
prEN ....(WI 00246014)	Natural stone test methods - Determination of abrasion resistance
prEN ....(WI 00246015)	Natural stone test methods - Determination of Knoop hardness
prEN ....(WI 00246016)	Natural stone test methods - Determination of thermal shock resistance
prEN ....(WI 00246017)	Natural stone test methods - Determination of slip coefficient
prEN ....(WI 00246018)	Natural stone test methods - Determination of static elastic modulus
prEN ....(WI 00246019)	Natural stone test methods - Determination of rupture energy
prEN ....(WI 00246030)	Natural stone test methods - Determination of surface finishes (rugosity)
prEN 13373	Natural stone test methods - Determination of geometric characteristics on units
prEN ....(WI 00246032)	Natural stone test methods - Determination of resistance to ageing by salt mist
prEN ....(WI 00246033)	Natural stone test methods - Determination of resistance to ageing by humidity, temperature, SO_2 action
prEN ....(WI 00246035)	Natural stone test methods - Determination of dynamic elastic modulus (by fundamental resonance frequency)
prEN ....(WI 00246036)	Natural stone test methods - Determination of water absorption at atmospheric pressure

It is intended that other ENs should call up this EN 1936 as the basis of evaluation of conformity. (Nevertheless it is not intended that all natural stone 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.

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1 Scope

This European standard specifies methods of determining the real density, the apparent density, and the open and total porosity of natural stone.

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.

prEN 12670 Natural stones - Terminology

ISO/DIS 3507 Laboratory glassware - Pyknometers

prEN 12440 Denomination of natural stone

3 Principle

After drying to constant mass, the apparent density and the open porosity are determined by vacuum assisted water absorption and submerged weighing of specimens. The real density and the total porosity require the specimen to be pulverised.

4 Definitions

For the purposes of this standard the following definitions and the definitions in accordance with prEN 12670 apply:

4.1 apparent density (ρ_b): The ratio between the mass of the dry specimen and its apparent volume

4.2 apparent volume: The volume limited by the external surface of the specimen, including any voids

4.3 volume of the solid part: The difference between the apparent volume of the specimen and the volume of the voids (open and closed pores)

4.4 real density (ρ_r): The ratio between the mass of the dry specimen and the volume of its solid part

4.5 open porosity: The ratio (as a percentage) between the volume of the open pores and the apparent volume of the specimen

4.6 total porosity: The ratio (as a percentage) between the volume of pores (open and closed) and the apparent volume of the specimen

5 Symbols

m_d mass of the dry specimen, in grams
m_h mass of the specimen immersed in water, in grams
m_s mass of the saturated specimen, in grams
m_e mass of the specimen ground and dried (for the tests using the pycnometer or the volumenometer), in grams
m_1 mass of the pycnometer filled with water and the ground specimen, in grams
m_2 mass of the pycnometer filled with water, in grams
V_b apparent volume of the specimen, in millilitres

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