

Natural stone test methods - Determination of flexural strength under concentrated load

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12372:2001 sisaldab Euroopa standardi EN 12372:1999+AC:2002 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 18.06.2001 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12372:2001 consists of the English text of the European standard EN 12372:1999+AC:2002.</p> <p>This document is endorsed on 18.06.2001 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This European Standard specifies a test method for determination of flexural strength under a concentrated load for natural stone. Both an identification and a technological product testing procedure are included.</p>	<p>Scope:</p> <p>This European Standard specifies a test method for determination of flexural strength under a concentrated load for natural stone. Both an identification and a technological product testing procedure are included.</p>
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ICS 73.020, 91.100.15

Võtmesõnad: bend tests, flexural strength, natural stone, tensile strength, tension tests

ICS 73.020; 91.100.15

English version

Natural stone test methods

Determination of flexural strength under concentrated load

Méthodes d'essai pour pierres
naturelles – Détermination de la
résistance à la flexion sous charge
centrée

Prüfverfahren für Naturstein –
Bestimmung der Biegefestigkeit unter
Mittellinienlast

This European Standard was approved by CEN on 1999-01-12.

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 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
prEN 12371	Natural stone test methods - Determination of frost resistance
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 prENs should call up this EN 12372 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).

This European standard has an annex A (normative).

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 test method for determination of flexural strength under a concentrated load for natural stone. Both an identification and a technological product testing procedure are included.

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 revision 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 12390	Testing concrete - Determination of compressive strength - Specification for compression testing machines
prEN 12670	Natural stones - Terminology
prEN 12359:1996	Testing concrete - Determination of flexural strength of test specimens
prEN 12440	Denomination of natural stone

3 Principle

The principle of this method is to place a specimen on two rollers and to progressively load the specimen in the middle. The breaking load is measured and the flexural strength calculated.

4 Symbols

R_{ff}	flexural strength, in Megapascals
F	breaking load, in newtons
l	distance between the supporting rollers, in millimetres
b	width of the specimen adjacent to the plane of fracture, in millimetres
h	thickness of the specimen adjacent to the plane of fracture, in millimetres
L	total length of the specimen, in millimetres

5 Apparatus

5.1 A balance capable of weighing the specimen with a precision of 0,01% of the mass of the specimen.

5.2 A ventilated oven capable of maintaining a temperature of $(70 \pm 5)^{\circ}\text{C}$.

5.3 A linear measuring device with an accuracy of 0,05 mm.

5.4 A testing machine of appropriate force, in accordance with prEN 12390 and calibrated according to this standard.

5.5 A device for applying loads on the specimen by a centre-point load, in accordance with annex A of prEN 12359:1996. It consists of two lower rollers (supporting rollers) and one upper roller (load-applying roller) which shall be centered exactly in the middle between the two