



NSAI
Standards

Irish Standard
I.S. EN 12371:2010

Natural stone test methods - Determination of frost resistance

I.S. EN 12371:2010

Incorporating amendments/corrigenda/National Annexes issued since publication:

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Údarás um Chaighdeáin Náisiúnta na hÉireann

English Version

Natural stone test methods - Determination of frost resistance

Méthodes d'essai pour pierres naturelles - Détermination
de la résistance au gel

Prüfverfahren für Naturstein - Bestimmung des
Frostwiderstandes

This European Standard was approved by CEN on 20 February 2010.

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 CEN 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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This document (EN 12371:2010) 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of an identical text or by endorsement, at the latest by September 2010, and conflicting national standards shall be withdrawn at the latest by September 2010.

This document supersedes EN 12371:2001.

This European Standard is one of the series of standards for tests on natural stone.

Test methods for natural stone consist of the following European Standards:

- EN 1925 Natural stone test methods – Determination of water absorption coefficient by capillarity
- EN 1926 Natural stone test methods – Determination of uniaxial 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 13373 Natural stone test methods – Determination of geometric characteristics on units
- EN 13755 Natural stone test methods – Determination of water absorption at atmospheric pressure
- EN 14066 Natural stone test methods – Determination of resistance to ageing by thermal shock
- EN 14146 Natural stone test methods – Determination of the dynamic modulus of elasticity (by measuring the fundamental resonance frequency)
- EN 14147 Natural stone test methods – Determination of resistance to ageing by salt mist
- EN 14157 Natural stone test methods – Determination of the abrasion resistance
- EN 14158 Natural stone test methods – Determination of rupture energy
- EN 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
- EN 14579 Natural stone test methods – Determination of sound speed propagation
- EN 14580 Natural stone test methods – Determination of static elastic modulus
- EN 14581 Natural stone test methods – Determination of linear thermal expansion coefficient

It is intended that other ENs should call up this European Standard as the basis of evaluation of conformity.

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NOTE 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, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard specifies a method to assess the effect of freeze/thaw cycles on natural stones (see EN 12670 for terminology, and EN 12440 for denomination). The standard contains provision for both a shorter technological test (Test A) to assess the effect of freeze/thaw cycles on the relevant performance characteristics and an identification test (Test B).

NOTE Some marbles, as defined in EN 12440, undergo changes in physical properties as a result of the test conditions rather than the freeze/thaw cycles. In these cases, additional tests (for example EN 14066) should be applied.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1926, *Natural stone test methods — Determination of uniaxial compressive strength*

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

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

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

3 Principle

The frost resistance of natural stone units is determined by a test comprising cycles of freezing in air and thawing in water.

4 Symbols

M_{d0} mass of the dry specimen before immersion in water and before starting the cycles, in grams

M_{s0} mass of the saturated specimen after immersion in water and before starting the cycles, in grams

M_{h0} apparent mass of the specimen in water before starting the cycles, in grams

M_{dn} mass of the dry specimen at N_c cycles, in grams

M_{sn} mass of the saturated specimen at N_c cycles, in grams

M_{hn} apparent mass of the specimen in water at n cycles, in grams

V_{b0} apparent volume of the specimen before freezing, in millilitres

V_{bn} apparent volume of the specimen at N_c cycles, in millilitres

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