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IRISH STANDARD

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91.100.15

**NATURAL STONE TEST METHODS -  
DETERMINATION OF REAL DENSITY AND  
APPARENT DENSITY, AND OF TOTAL AND  
OPEN POROSITY**

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English Version

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

Méthodes d'essai des pierres naturelles - Détermination des masses volumiques réelle et apparente et des porosités ouvertes et totale

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

This European Standard was approved by CEN on 25 October 2006.

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.

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 Central Secretariat has the same status as the official versions.

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## **Foreword**

This document (EN 1936:2006) 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of an identical text or by endorsement, at the latest by June 2007, and conflicting national standards shall be withdrawn at the latest by June 2007.

This document supersedes EN 1936:1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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.

## EN 1936:2006 (E)

### 1 Scope

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

### 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 12670:2001, *Natural stone - Terminology*

ISO 3507, *Laboratory glassware - Pyknometers*

### 3 Principle

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

### 4 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12670:2001 and the following apply.

- 4.1**  
**apparent density ( $\rho_b$ )**  
ratio between the mass of the dry specimen and its apparent volume
- 4.2**  
**apparent volume**  
volume limited by the external surface of the specimen, including any voids
- 4.3**  
**volume of the solid part**  
difference between the apparent volume of the specimen and the volume of the voids (open and closed pores)
- 4.4**  
**real density ( $\rho_r$ )**  
ratio between the mass of the dry specimen and the volume of its solid part
- 4.5**  
**open porosity**  
ratio (as a percentage) between the volume of the open pores and the apparent volume of the specimen
- 4.6**  
**total porosity**  
ratio (as a percentage) between the volume of pores (open and closed) and the apparent volume of the specimen

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