



National Standards Authority of Ireland

IRISH STANDARD

**I.S. EN 14617-11:2005**

ICS 91.100.15

**AGGLOMERATED STONE - TEST METHODS -  
PART 11: DETERMINATION OF LINEAR  
THERMAL EXPANSION COEFFICIENT**

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*This Irish Standard was  
published under the  
authority of the National  
Standards Authority of  
Ireland and comes into  
effect on:  
June 3, 2005*

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EUROPEAN STANDARD

**EN 14617-11**

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2005

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ICS 91.100.15

English version

## Agglomerated stone - Test methods - Part 11: Determination of linear thermal expansion coefficient

Pierre agglomérée - Méthodes d'essai - Partie 11:  
Détermination du coefficient linéaire de dilatation thermique

Künstlich hergestellter Stein - Prüfverfahren - Teil 11:  
Bestimmung des linearen thermischen  
Ausdehnungskoeffizienten

This European Standard was approved by CEN on 3 February 2005.

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 14617-11:2005) 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of an identical text or by endorsement, at the latest by September 2005, and conflicting national standards shall be withdrawn at the latest by September 2005.

Test methods for agglomerated stones consist of the following:

EN 14617-1, *Agglomerated stone - Test methods – Part 1: Determination of apparent density and water absorption*

EN 14617-2, *Agglomerated stone – Test methods – Part 2: Determination of flexural strength (bending)*

prEN 14617-3, *Agglomerated stone - Test methods – Part 3: Determination of slipperiness*

EN 14617-4, *Agglomerated stone - Test methods – Part 4: Determination of the abrasion resistance*

EN 14617-5, *Agglomerated stone - Test methods – Part 5: Determination of freeze and thaw resistance*

N 14617-6, *Agglomerated stone - Test methods – Part 6: Determination of thermal shock resistance*

prEN 14617-7, *Agglomerated stone – Test methods – Part 7: Determination of ageing*

prEN 14617-8, *Agglomerated stone – Test methods – Part 8: Determination of resistance to fixing (dowel hole)*

EN 14617-9, *Agglomerated stone - Test methods – Part 9: Determination of impact resistance*

EN 14617-10, *Agglomerated stone – Test methods – Part 10: Determination of chemical resistance*

EN 14617-11, *Agglomerated stone – Test methods – Part 11: Determination of linear thermal expansion coefficient*

EN 14617-12, *Agglomerated stone – Test methods – Part 12: Determination of dimensional stability*

EN 14617-13, *Agglomerated stone – Test methods – Part 13: Determination of electrical resistivity*

prEN 14617-14, *Agglomerated stone – Test methods – Part 14: Determination of surface hardness*

EN 14617-15, *Agglomerated stone – Test methods – Part 15: Determination of compressive strength*

EN 14617-16, *Agglomerated stone – Test methods – Part 16: Determination of dimensions, geometric characteristics and surface quality of modular tiles*

prEN 14617-17, *Agglomerated stone – Test methods – Part 17: Determination of biological resistance*

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

## EN 14617-11:2005 (E)

### 1 Scope

The present document specifies a test method to determine the linear thermal expansion coefficient of agglomerated stones used for internal/external flooring or walling in building.

### 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.

Not applicable.

### 3 Principle

The principle of the determination of the linear thermal expansion coefficient consists of measuring the variation in length of a sample of agglomerated stone during a temperature change. The temperature change is achieved by heating or cooling the sample through a programmed cycle. A suitable dilatometer measures the expansion or the shrinkage of the sample, relatively to the initial length.

### 4 Symbols and definitions

$\alpha$  = linear thermal expansion coefficient of the material ( $^{\circ}\text{C}^{-1}$ )

$L_0$  = length of the test sample at any initial temperature (mm)

$\Delta L$  = expansion or shrinkage of the sample during heating/cooling in a temperature range (mm)

$\Delta T$  = temperature range over which the change in length of the sample is measured ( $^{\circ}\text{C}$ )

### 5 Apparatus

**5.1** A dilatometer consisting of a frame holding the expansion sensor, the sample holder and the moving slide for the furnace shift.

**5.2** A furnace, compatible with the moving slide of the dilatometer and governed by a personal computer, able to cover a temperature range between room temperature and at least  $+150^{\circ}\text{C}$ .

**5.3** A measuring system consisting of a sample holder and a push rod, used to transfer the length change of the material out of the heated zone to the connected measuring device.

**5.4** A temperature sensor that measures the temperature directly in contact with the sample.

**5.5** A personal computer connected to the instrument for the data acquisition and elaboration.

**5.6** A manual linear measuring device with an accuracy of 0,05 mm.

### 6 Dimensions of the specimens

The shape and dimensions of the test specimen must be suitable for the dimensions of the dilatation sample holders. A length of the specimen not smaller than 10 mm is necessary to get sufficient representativeness for agglomerated stones with maximum grit size up to 6 mm. For samples of agglomerated stone materials with maximum grit size between 2 mm and 6 mm the measure has to be repeated on at least three different samples in

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