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AGGLOMERATED STONE - TEST METHODS - PART 5: DETERMINATION OF FREEZE AND THAW RESISTANCE

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Agglomerated stone - Test methods - Part 5: Determination of freeze and thaw resistance

Pierre agglomérée - Méthodes d'essai - Partie 5: Détermination de la résistance au gel et au dégel

Künstlich hergestellter Stein - Prüfverfahren - Teil 5: Bestimmung der Frost-Tau-Wechselbeständigkeit

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Contents

Foreword

This document (EN 14617-5:2005) 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of an identical text or by endorsement, at the latest by September 2005, and conflicting national standards shall be withdrawn at the latest by September 2005.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*

EN 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*

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1 Scope

The document specifies a method to assess the effect of freeze/thaw cycles on agglomerated stones. The standard contains provision for technological test to assess the effect of freeze/thaw cycles on the flexural strength characteristic.

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 14617-2:2004, Agglomerated stone – Test Methods – Part 2:Determination of flexural strength (bending)

3 Principle

The principle of this test method is the determination of the ratio between the flexural strength of specimens after 25 freeze/thaw cycles and that of unfrosted specimens. One freeze/thaw cycle includes freezing part, when water saturated specimen is loaded into freezer (temperature –20 °C ± 5 °C) and thaw part, when frosted specimen is immersed in tap water (temperature 20 °C ± 5 °C).

4 Terms, definitions and symbols

4.1 Terms and definitions

For the purposes of this document, the following term and definition applies.

4.1.1
freeze/thaw resistance
ability of the agglomerated stone product saturated by water to resist the effect of freeze/thaw cycling.

4.2 Symbols

$KM_{f\,25}$ coefficient of freeze/thaw resistance in flexural strength (after 25 freeze/thaw cycles);

R_f flexural strength average value (MPa) of dried, unfrosted specimens;

RM_f flexural strength average value (MPa) of specimens after 25 freeze/thaw cycles.

5 Apparatus

5.1 A freezing chamber of sufficient capacity to hold the required number of specimens, possibly with an automatic control system to programme the freezing and thawing cycles within the chamber, capable of maintaining the temperature at (-20 ± 5)°C.

5.2 A temperature recording system or thermometer capable of measuring temperature to $\pm$ 0,1 °C.

5.3 A linear measuring device with an accuracy of 0,5 mm (for the flexural measurement).

5.4 A desiccator.

5.5 A ventilated oven capable of maintaining a temperature of (70 $\pm$ 5) °C.