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Ceramic tiles —

Part 24: Tensile adhesion strength of fibre-combined multilayer ceramic tile and tile adhesive

Carreaux et dalles céramiques —

Partie 24: Résistance à la traction des carreaux céramiques à fibres combinées multicouches et de la colle à carrelage

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Foreword

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This document was prepared by Technical Committee ISO/TC 189, *Ceramic tile*.

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Ceramic tiles —

Part 24:
Tensile adhesion strength of fibre-combined multilayer ceramic tile and tile adhesive

1 Scope

This document describes a method for determining the tensile adhesion strength of fibre-combined multilayer ceramic tiles, in particular the adhesion between the back of the fibre-combined multilayer ceramic tiles and the cementitious adhesive used for installation.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 13007-1, *Ceramic tiles — Grouts and adhesives — Part 1: Terms, definitions and specifications for adhesives*

ISO 13007-2:2013, *Ceramic tiles — Grouts and adhesives — Part 2: Test methods for adhesives*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
multilayer ceramic tile
ceramic tile with a surface area equal or greater than (7 × 7) cm^2 combined with a material attached to its back

3.2
fibre-combined multilayer ceramic tile
multilayer ceramic tile in which the coupling material is a mesh of glass fibre

Note 1 to entry: Fibre-combined multilayer ceramic tiles are also defined as “back layered ceramic tiles” or “reinforced ceramic tiles”.

3.3
notched trowel
toothed tool that facilitates the application of the adhesive as a series of ribs of a uniform thickness

3.4
mass
mass capable of exerting a force of (20 ± 0,05) N with a cross-sectional area of (50 ± 1) mm × (50 ± 1) mm

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3.5
pull-head plate
plate consisting of square metallic plates with dimensions of (50 ± 1) mm × (50 ± 1) mm and a minimum thickness of 8 mm with a suitable fitting for connection to the test machine

3.6
tensile testing apparatus
apparatus consisting of a test machine for the direct pull tensile force test, with suitable capacity and sensitivity for the test

Note 1 to entry: The machine shall be capable of applying the load to the pull-head plate at a rate of (250 ± 50) N/s through a suitable fitting that does not exert any bending force.

3.7
air circulating oven
drying oven capable of being operated up to (70 ± 3) °C

4 Test conditions and procedures

4.1 Sampling

Fibre-combined multilayer ceramic tiles and relevant specimens shall not contain any visible damage or cracks prior to testing and shall not have been tested previously. The fibre reinforcement on the back shall be not removable by hand.

The number of test specimens for each fibre-combined multilayer ceramic tile is reported in Table 1. Test specimens dimensions shall be (50 ± 1) mm × (50 ± 1) mm resulting from the cutting in any position of the original sample. Avoid areas of tile samples with deep face structure that can interfere with the bonding of the pull-head plates.

Table 1 — Total number of test specimens for fibre-combined multilayer ceramic tiles

Area A mm^2	**Number of specimens to be tested**	**Total number of fibre-combined multilayer ceramic tiles**	**Total number of specimens**
$2\,500 \leq A \leq 10\,000$	1	10	10
$10\,000 < A \leq 360\,000$	2	5	10
$A > 360\,000$	4	3	12

A representative sample of cementitious tile adhesive shall be used (at least 2 kg). The cementitious tile adhesive shall be classified minimum C2S1 in accordance with ISO 13007-1. The same tile adhesive shall be used to conduct all the tests for consistency of testing results.

4.2 Test conditioning

Standard test conditions shall be (23 ± 2) °C and (50 ± 5) % relative humidity. The speed of air in the testing area shall be less than 0,2 m/s.

Condition all test materials, including water, for at least 24 h at (23 ± 2) °C and (50 ± 5) % relative humidity.

4.3 Mixing procedures

Adhesive preparation shall be as stated by the manufacturer. A minimum quantity of 2 kg shall be prepared.

4.4 Test substrate

Concrete test substrate shall be prepared in accordance with ISO 13007-2:2013, Annex A.

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