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Ceramic tiles — Grouts and adhesives —

Part 6: Requirements, test methods, evaluation of conformity, classification and designation for waterproof membranes used with the installation of ceramic tiles

Carreaux céramiques – Mortiers de joints et colles —

Partie 6: Exigences, méthodes d'essai, évaluation de la conformité, classification et désignation des membranes d'étanchéité utilisées pour l'installation des carreaux céramiques

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

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

A list of all parts in the ISO 13007 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Ceramic tiles — Grouts and adhesives —

Part 6: Requirements, test methods, evaluation of conformity, classification and designation for waterproof membranes used with the installation of ceramic tiles

1 Scope

This document applies to all bonded sheet waterproofing membranes that are used beneath ceramic tiling for internal and external tile installations on walls and floors.

This document provides the terminology concerning the products and specifies the test methods and the values of performance requirements for bonded sheet waterproofing products associated with tile adhesives.

Furthermore, this document specifies the evaluation of conformity and the classification and designation of all bonded sheet waterproofing products beneath ceramic tiling.

NOTE 1 Bonded sheet waterproofing products can also be used beneath other types of tiles (natural and agglomerated stones etc.), where they do not adversely affect these materials.

NOTE 2 This document does not address crack isolation, decoupling, sound control, thermal properties, or any aspect of membranes apart from waterproofing.

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 13006, *Ceramic tiles — Definitions, classification, characteristics and marking*

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

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

ISO 15605, *Adhesives — Sampling*

EN 197-1, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

EN 480-1:2014, *Admixture for concrete, mortar and grout — Test methods — Part 1: Reference concrete and mortar for testing*

EN 1008, *Mixing water for concrete — Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete*

EN 1067, *Adhesives — Examination and preparation of samples for testing*

EN 1931, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of water vapour transmission properties*

EN 12390-2, *Testing hardened concrete — Part 2: Making and curing specimens for strength tests*

EN 12620, *Aggregates for concrete*

ASTM E96, *Standard Test Methods for Water Vapor Transmission of Materials*

3 Terms and definitions

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

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

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

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

3.1
bonded sheet waterproofing membrane
BM
single- or multi component waterproofing membrane applied as a preformed sheet in a uniform layer or layers, beneath ceramic tiling in such a manner as to be bonded to the substrate as well as the tile according to manufacturer's instructions

Note 1 to entry: The final waterproofing membrane may include a separately applied seam sealer.

Note 2 to entry: The bonded sheet waterproofing membrane can be flat or structured with a geometric configuration.

3.2
primer
liquid coating applied to the surface, prior to the application of a bonded sheet waterproofing product, to improve adhesion and durability of the bond between the substrate and the membrane

4 Requirements

The bonded sheet waterproofing membrane products shall comply with the characteristics specified in Table 1.

Table 2 gives the additional characteristics that might be required for special service conditions.

The tile adhesive used for evaluation should be the same for all testing performed in a series, a C2S1 adhesive being recommended. The amount of water and/or liquid admixture required for preparing the adhesives used to affix to the sheet membrane shall be the same for all tests.

Table 1 — Product requirements — Fundamental characteristics

Characteristic	Requirement	Test method
Initial tensile adhesion strength	≥0,2 N/mm^2	A.6.2
Tensile adhesion strength after water contact	≥0,2 N/mm^2	A.6.3 or A.6.4
Tensile adhesion strength after heat ageing	≥0,2 N/mm^2	A.6.5
Tensile adhesion strength after freeze-thaw cycles	≥0,2 N/mm^2	A.6.6
Tensile adhesion strength after contact with lime water	≥0,2 N/mm^2	A.6.9
Water permeability	No visual penetration below membrane and ≤3,0 g weight gain when tested at a seam	A.7
Fundamental characteristics are the characteristics that a bonded sheet waterproofing membrane product always needs to have.		

Table 2 — Product requirements — Optional characteristics

Characteristic	Requirement	Test method
Enhanced adhesion (BM2 rating) – All tensile strengths listed above	≥0,5 N/mm^2	
Low water vapour permeance (W rating)	<1,0 Perm	A.8
Tensile adhesion strength after contact with chlorinated water (P rating)	≥0,5 N/mm^2	A.6.7 or A.6.8
Optional characteristics are characteristics for specific service conditions where enhanced levels of performance are required, or which provide further information about its general performance.		

5 Classification and designation

The bonded sheet waterproofing membranes are classified according to the conformity with fundamental or optional characteristics from Tables 1 and 2:

BM1 Bonded sheet waterproofing membrane;

OR

BM2 Enhanced adhesion bonded sheet waterproofing membrane.

NOTE Membranes not meeting the minimum tensile adhesion requirements of Tables 1 and 2 are considered unbonded membranes.

It is possible to have different classes, related to the different optional characteristics given in Table 2. These classes are designated by the following abbreviations:

P resistant to contact with chlorinated water (i.e. for use in swimming pools);

W resistant to water vapour permeation.

The product is designated by the symbol BM1 or BM2, followed by the abbreviation of the optional characteristics it has. Table 3 describes the designation of the products types and classes which shall be used.

Table 3 — Classification and designation of bonded sheet waterproofing membranes

SYMBOL		DESCRIPTION
TYPE	CLASS	
BM1 or 2		Normal or enhanced adhesion bonded sheet waterproofing membrane
BM1 or 2	P	Normal or enhanced adhesion bonded sheet waterproofing membrane resistant to contact with chlorinated water
BM1 or 2	W	Normal or enhanced adhesion bonded sheet waterproofing membrane with low water vapour permeance
BM1 or 2	PW	Normal or enhanced adhesion bonded sheet waterproofing membrane with low water vapour permeance and resistance to contact with chlorinated water

6 Marking and labelling

Products conforming with the requirements of this document shall be clearly marked with the following information:

a) name of the product;

b) manufacturer's mark and place of origin;

c) date or code of production, shelf life and conditions of storage;

d) number of this document, i.e. ISO 13007-6, and date of issue;

e) type of product according to Clause 6 (using symbols given in Clause 6);

f) instructions for use:

— substrate bonding materials required to adhere sheet membrane to substrate;

— mode of application (including recommended primer and/or surface preparation);

— minimum quantity or thickness of the adhesive product;

— maturing time for initial membrane bonding to substrate (where applicable);

— delay for installing ceramic tiles;

— suitable tile adhesive(s) (type and class in accordance with ISO 13007-1);

— field of application (internal, external, wall, floor etc.).

NOTE In the designation of a sheet waterproofing membrane, information about special properties can be included when the product is intended for use in specific applications.

This information shall be marked on the packaging and/or on the product's technical data sheet.

This does not remove the requirement that all manufacturers claiming conformity with this document should state declared values for the properties of their products, when required.

Annex A
(normative)

Test methods

A.1 Sampling

A.1.1 Tile adhesive

Take a sample of at least 2 kg of the product to be tested in accordance with ISO 15605 and EN 1067.

A.1.2 Membrane

Cut a sample of at least 1 m^2 of the membrane to be tested. Avoid using membrane material from too close to the edge of the sheet.

A.1.3 Other: membrane adhesive (if required), primer (if required), seam sealer (if required)

Obtain a full unit of any of these materials if required.

A.2 Test conditions

Standard conditions shall be (23 ± 2) °C and (50 ± 5) % relative humidity (RH) and a circulation of air in the working area less than 0,2 m/s.

When the test specimens have to be conditioned according to the test method, the tolerances in the time of conditioning for all test specimens shall be as follows:

Conditioning	Tolerance
24 h	±0,5 h
7 d	±3 h
14 d	±6 h
21 d	±9 h
28 d	±12 h

A.3 Test materials

A.3.1 General

Condition all test materials for at least 24 h under standard conditions. The materials to be tested shall be within their shelf life.

A.3.1.1 Sheet waterproofing membrane

The sheet waterproofing membrane is any self-bonded (peel and stick) or bonded sheet waterproofing membrane to be evaluated within this document.

A.3.1.2 Membrane adhesive

The membrane adhesive used is as recommended by the waterproofing membrane manufacturer.

A.3.1.3 Primer

The primer is used if applicable and requested by the manufacturer of the sheet waterproofing membrane.

A.3.1.4 Seam sealer

The seam sealer is used if applicable and requested by the manufacturer of the sheet waterproofing membrane.

A.3.1.5 Tile adhesive

The tile adhesive used for evaluation should be the same for all testing performed in a series, a C2S1 adhesive being recommended.

A.3.2 Ceramic tiles

The tiles shall be clean and dry.

The tiles used for this method shall be of:

— **type *BI*$_a$**: fully vitrified tile conforming to ISO 13006 with one side visually flat and no surface treatment, with a water absorption ≤0,5 % by mass, unglazed and with a plain adhering surface, with facial dimensions of (50 ± 1) mm × (50 ± 1) mm for testing flat membranes.

— **type *BI*$_a$**: fully vitrified tile conforming to ISO 13006 with one side visually flat and no surface treatment, with a water absorption ≤0,5 % by mass, unglazed and with a plain adhering surface, with facial dimension of (100 ± 1) mm × (100 ± 1) mm for testing geometrically configured membranes.

A.3.3 Test substrate

A.3.3.1 Concrete slab

The concrete slab shall comply with ISO 13007-2.

A.3.3.2 Other substrates (optional)

Other substrates may be used upon agreement if the substrate is recommended for the ceramic tile application by the membrane manufacturer. To demonstrate compatibility with other optional substrates, the product shall be applied to the selected substrate in accordance with the initial adhesion test method (A.6.2). When a result of more or equal to ≥0,2 N/mm^2 is achieved or cohesive failure occurs in the substrate, the requirement is considered satisfied.

A.3.4 Ceramic tile adhesive

The ceramic tile adhesive shall comply with ISO 13007-1.

A.3.5 Sodium hypochlorite

Analytical or technical grade sodium hypochlorite is used.

A.4 Apparatus

A.4.1 Weight

A weight with a cross sectional area less than or equal to 100 mm × 100 mm, capable of exerting a force of (20 ± 0,05) N.