BRITISH STANDARD

BS EN
13408:2002

Methods of test for hydraulic setting floor smoothing and/or levelling compounds — Determination of bond strength

The European Standard EN 13408:2002 has the status of a British Standard

ICS 91.100.99

National foreword

This British Standard is the official English language version of EN 13408:2002.

The UK participation in its preparation was entrusted to Technical Committee PRI/52, Adhesives, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

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This British Standard, having been prepared under the direction of the Materials and Chemicals Sector Policy and Strategy Committee, was published under the authority of the Standards Policy and Strategy Committee on 15 April 2002

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English version

Methods of test for hydraulic setting floor smoothing and/or levelling compounds - Determination of bond strength

Méthodes d'essai pour les mortiers de lissage et/ou d'égalisation à prise hydraulique - Détermination de la force de liaison

Prüfverfahren für hydraulisch erhärtende Boden-Spachtelmassen - Bestimmung der Haftzugfestigkeit

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Foreword

This document EN 13408:2002 has been prepared by Technical Committee CEN/TC 193 "Adhesives", the secretariat of which is held by AENOR.

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of an identical text or by endorsement, at the latest by September 2002, and conflicting national standards shall be withdrawn at the latest by September 2002.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies a test method for the determination of bond strength between a cured hydraulic setting smoothing and/or levelling compound which is referred to as "smoothing and/or levelling compound", and a standard substrate.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 1323, *Adhesives for tiles - Concrete slab for test.*

EN 1937, *Test method for hydraulic setting floor smoothing and/or levelling compounds - Standard mixing procedures.*

EN ISO 10365, *Adhesives - Designation of main failure patterns (ISO 10365:1992).*

ISO 554, *Standard atmospheres for conditioning and/or testing - Specifications.*

3 Terms and definitions

For the purposes of this European Standard, the following term and definition, and those given in EN 1937 apply.

3.1
bond strength
force per unit area which has to be applied perpendicularly and centrally to the bonded area in order to produce a failure

4 Principle

This test method is carried out to assess the bond strength between a smoothing and/or levelling compound and a standard concrete test slab. The tensile strength of a defined area between the compound and the supporting test slab is measured. For this purpose, metal plates are bonded to the smoothing and /or levelling compound test specimen using a suitable adhesive and pulled off perpendicularly and centrally using a tensile tester.

5 Safety

Persons using this standard shall be familiar with normal laboratory practice.

This standard does not purport to address all the safety problems, if any, associated with its use.

It is the responsibility of the user to establish safety and health practices and to ensure compliance with any European or national regulatory conditions.

6 Standard test conditions

The standard test conditions shall be (23 ± 2) °C and (50 ± 5) % relative humidity in accordance with ISO 554.

All test materials and apparatus shall be stored under these conditions for the duration of the test.

The tests shall be carried out in an area where the air circulation is less than 0,2 m/s.

7 Apparatus and material

7.1 Tensile testing machine, with suitable connector for the metal plates.

7.2 Concrete slab, in accordance with EN 1323.

7.3 Flexible moulding sheets, approx. 400 mm x 400 mm with up to 16 square cavities of (50 ± 1) mm x (50 ± 1) mm made from silicon rubber or other suitable material. The thickness of the moulding sheets shall be (5,0 ± 0,5) mm or the maximum applicaton thickness of the smoothing and/or levelling compound recommended by the manufacturer, if this is lower than 5 mm.

7.4 Fast setting reactive resin adhesive, e. g. epoxy, polyurethane or methyl methacrylate type.

7.5 Rigid metal plates, approx. 50 mm x 50 mm with a central connection fitting for the tensile tester. Minimum thickness:

- steel: 5 mm,
- aluminium: 10 mm.

7.6 Smoothing and/or levelling compound mixture, in accordance with EN 1937.

7.7 Primer, if specified for the smoothing and/or levelling compound by the manufacturer.

8 Procedure

8.1 Preconditioning

Precondition concrete slabs and moulding sheets for at least 24 h in the standard test conditions (clause 6).

8.2 Test procedure

Eight test areas per smoothing and/or levelling compound are required.

If a primer is specified, prime the surface of the concrete slab as recommended by the manufacturer.

Place the moulding sheet evenly on to the concrete slab. Ensure good contact by applying pressure using weights.

Fill the cavities of the moulding sheet with the smoothing and/or levelling compound mixture immediately after the mixing procedure. Remove any surplus with a metal float in order to obtain completely filled in moulds with an even surface. Store the whole system in the standard atmosphere.

Remove the moulding sheet within three days taking care not to damage the testing areas.

In the 24 hours prior to testing, bond a metal plate to each of the testing areas to form eight test specimens. Ensure the adhesive is fully cured before the test is carried out.

Test 14 days after mixing the smoothing and/or levelling compound.

Test each test specimen using the tensile testing machine (7.1) at a force increasing rate of (250 ± 50) N/s.

Report the breaking load in Newton (N) and mode of failure following EN ISO 10365 ("Cohesive failure in smoothing and/or levelling compound", "Cohesive failure in substrate" or "Adhesive failure").

9 Evaluation and expression of results

Bond strength σ_b expressed in Megapascal (MPa), is calculated as follows:

$$\sigma_b = \frac{F}{A}$$

where

F breaking load in Newton;

A bonded area (= 2 500 mm^2).

Calculate the arithmetic mean of the eight results. If one or more values differ > 20 % from the arithmetic mean, discard the value which differs most and recalculate the mean. If necessary repeat this procedure. If less than four results remain, the whole test shall be repeated. Record the results of the eight test specimens, the final arithmetic mean and the number of test results used.

10 Test report

The test report shall include:

a) a reference to this European Standard;

b) the designation of the smoothing and/or levelling compound under test, the date of manufacture and/or batch number, if known;

c) the details of the primer, if used;

d) the proportions of the liquid components in relation to 100 parts of powder component;

e) the method of mixing the compound and the total time in minutes in accordance with EN 1937;

f) the thickness used, the bond strength and mode of failure;

g) any deviations from the specified test method;

h) date of test.

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