BRITISH STANDARD

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13892-1:2002

Methods of test for screed materials —

Part 1: Sampling, making and curing specimens for test

The European Standard EN 13892-1:2002 has the status of a British Standard

ICS 91.100.10

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National foreword

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Prüfverfahren für Estrichmörtel und Estrichmassen - Teil 1: Probenahme, Herstellung und Lagerung der Prüfkörper

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COMITÉ EUROPÉEN DE NORMALISATION
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Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 13892-1:2002) has been prepared by Technical Committee CEN/TC 303, "Floor screeds and in-situ floorings in buildings", the secretariat of which is held by DIN.

It was prepared by Working Group 2 ”Screed material and floor screeds-Test methods“ taking into account the proposals submitted by Working Group 1 ”Screed material and floor screeds - Definitions, properties and requirements“.

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of an identical text or by endorsement, at the latest by May 2003, and conflicting national standards shall be withdrawn at the latest by May 2003.

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 method for sampling of screed materials, making and curing of specimens for subsequent testing.

This method applies to dry material (bagged or bulk) or to freshly mixed screed materials (ready mixed or site mixed) or to products supplied in pre-packaged form or in packs ready for mixing.

This standard applies to:

samples of pre-packaged screed materials taken by the manufacturer during production and/or before dispatch, by the contractor or client before or during the period of use and subsequently in cases of dispute by any interested party and samples of the fully mixed product before laying.

This method applies to mortars of cementitious-, calcium sulphate-, magnesite- and synthetic resin screed material. For mastic asphalt screed material see prEN 12697-20 and prEN 12697-21. Some methods according to manufacturers instructions may be necessary for special synthetic resin screed material.

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 196-1, *Methods of testing cement - Part 1 : Determination of strength.*

EN 196-7:1989, *Methods of testing cement - Part 7 : Methods of taking and preparing samples of cement.*

EN 13813, *Screed material and floor screeds - Screed material - Properties and requirements.*EN 13892-2, *Test methods for screed materials – Part 2: Determination of flexural and compressive strength.*

EN 13892-3, *Test Methods for screed materials – Part 3 : Determination of wear resistance-Böhme.*

EN 13892-4, *Test Methods for screed materials – Part 4 : Determination of wear resistance-BCA.*

prEN 13892-5, *Methods of test for screed materials – Part 5 : Determination of wear resistance to rolling wheel - Methods for screed material for wearing layer.* EN 13892-6,*Test Methods for screed materials – Part 6 : Determination of surface hardness.*

prEN 13892-7, *Test Methods for screed materials – Part 7 : Determination of resistance to rolling wheel – Methods for screed material with floor coverings.* EN 13892-8,*Test Methods for screed materials – Part 8 : Determination of bond strength.*

EN ISO 178, *Plastics - determination of flexural properties (ISO 178:1993).*

EN ISO 6272, *Paints and varnishes - Falling-weight test (ISO 6272:1993).*

3 Sampling

3.1 Apparatus

A metal or rigid plastics receptacle or scoop of not less than 1 l capacity; Clean, dry, airtight containers which shall be in that condition at the commencement of the sampling operation.

3.2 Procedure

The composition of samples shall always be representative of the average composition of the material. In the case of pre-packaged products, the manufacturer's recommendations for handling of the individual components should be followed.

The test report shall state whether the samples taken are spot samples or composite samples (see 3.6 and 3.7 of EN 196-7:1989)

The minimum amounts of sample material should be 5000 g. If a greater amount of screed material is required the sample should contain a full package of the material (e.g. a 25 kg sack).

Samples which are likely to change in air shall be placed in airtight containers, such as cans, immediately after they have been taken.

Wherever possible specimens should be prepared immediately after obtaining the sample, if necessary on site. The specimens shall be prepared within the manufacturer's stated working time.

If transportation of fresh samples cannot be avoided, they shall be supplied immediately for testing, accompanied by a written instruction stating which tests shall be carried out, and protected from changes, such as loss of water, entry of water etc., as may occur during transportation. Specimens shall be prepared immediately on receipt of the sample, after the sample has been mixed again manually.

4 Mixing

4.1 General

The mixing shall be carried out in strict accordance with the manufacturer's instructions, using the water or liquid content indicated. If a range of values is given for the water or liquid addition, the mean value shall be used. If the manufacturer declares the consistency of the mixed screed material then this value should be obtained. The temperature of the test room, the equipment and the materials (dry material, water) shall be (20 5)°C.

4.2 Apparatus

-Mortar mixer, in accordance with EN 196-1;

-Concrete mixer, (forced action pan mixer);

-Other mixer type, according to manufacturer's instructions;

4.3 Amount of mortar for making specimens

The solid content of a prepared mixed screed material , or the volume of the fresh mixed screed material, shall be within the range given in Table 1.

Table 1 - Solid content and volume of the mixed screed material

	Mixer according to EN 196-1	Concrete mixer
Solid content in kg	1,0 to 3,0	25 to 50
Volume in dm^3	1,5	50

It may be necessary to make multiple mixes.

4.4 Mixing with the mixer according to EN 196-1

All the solid materials shall be put into the mixer and blended. The specified quantity of liquids shall be added over a period of 15 seconds while the mixer is running at low speed. The mixing shall be continued at low speed for a further 45 seconds. The mixer shall be stopped and the sides of the mixing vessel shall be scraped with a blade. It shall be mixed for a further minute at low or high speed as recommended by the manufacturer.

For mixing calcium sulphate screed materials see prEN 13454-2 .

4.5 Mixing with a concrete mixer

The mixing process instructions shall be followed, set out by the manufacturer’s data sheet or on the product label. The solid content of dry mortar mix shall be added to the mixer as prescribed in Table 2 and subsequently, the water or liquid shall be added over a period of 15 seconds with the mixer running. Then the process shall be completed by mixing for a further 120 s to 180 s until it appears uniform.

4.6 Mixing with other mixers

Materials for which none of the above mentioned mixing procedures is suitable, should be mixed according to the manufacturer's instructions.

5 Making test specimens

5.1 Apparatus

Moulds for test specimens shall generally be manufactured from steel or a comparable material which is non reactive to screed material; the size and shape of which are particular to the test to be undertaken and are given in Table 2. Moulds may be such as to produce single or multiple specimens.

Table 2 - Size of the mould or the specimens

Test	Specimen/Mould size l w d^a	Number of specimens Required
Flexural and Compressive Strength EN13892-2 EN ISO 178	160 mm x 40 mm x 40 mm 80 mm x 10 mm x 4 mm	3
Wear resistance Böhme EN 13892-3	71 mm x 71 mm x *d*	3
Wear resistance BCA EN 13892-4	500 mm x 500 mm x *d*	1
Wear resistance to rolling wheel prEN 13892-5	500 mm x 500 mm x *d*	1+1
Surface hardness EN13892-6	160 mm x 40 mm x 40 mm	3
Shrinkage/Swelling EN 13454-2	160 mm x 40 mm x 40 mm	3
Resistance to rolling wheel with floor covering prEN 13892-7	350 mm x 350 mm x *d*	3+3
Bond strength EN 13892-8	300 mm x 300 mm x *d*	2
Modulus of elasticity EN ISO 178	80 mm x 10 mm x 4 mm(preferred)	3
Impact resistance EN ISO 6272	300 mm x 300 mm x *d*	1

[a] For some products, the thickness *d* may be the intended applied thickness only or the intended applied thickness onto a support slab

The mould for the 160 mm x 40 mm x 40 mm prisms shall fulfil the following requirements:

a) Dimensional accuracy

The dimensional accuracy of the mould shall be 0,25 % on the relevant dimension. This shall be based on the average of a minimum of four symmetrically placed measurements with no single reading beyond 0,5 %

b) Flatness

The surface of each internal face shall lie between two parallel planes 0,03 mm apart.

c) Squareness

The internal angles of the mould shall be 90° $\tan^{-1}$ (0,005).

d) Surface Texture

The surface texture of each internal surface shall not be greater than 3,2 m Ra.

5.2 Concrete substrate

In those cases where screed materials are to be tested on a concrete substrate, this concrete should have a surface tensile strength of at least 1,5 N/mm². A bonding agent should be used, if the manufacturer of the screed material prescribes this. If the screed thickness is more than 30 mm, a substrate will be unnecessary. Additional requirements for the substrate may be found in the test method standard (e.g. EN 13892-8 Determination of bond strength)

5.3 Procedure

The moulds shall be cleaned using accessories made from a material less hard than that of the mould (eg. copper or wood). The internal faces of the assembled moulds shall be lubricated with a separating material to prevent adhesion of the mortar. If the screed material is to be cast on a concrete substrate, the mould should be such that leaking is prevented.

The mould shall be filled and compacted in one of the following methods:

a) For flowing screed material, the mould shall be filled in one pour.

b) For other screed material, the mould shall be filled in two approximately equal layers, each layer being fully compacted by a suitable tamper, the shocktable or the vibrationtable according to EN 196-1. Excess mortar shall be skimmed off, leaving the mortar surface plane, and it shall be levelled with the top of the mould.

c) If neither of the above methods is applicable the mould shall be filled following the manufacture's instructions

6 Curing

6.1 Apparatus

Storage Chambers shall be capable of maintaining a temperature of (20 2) °C or (23 2) °C and a relative humidity of either (95 5) % or (65 5) % or (50 5) % (see 6.2).

6.2 Storage

The test specimens shall be stored until required for general testing as shown in Table 3.

Table 3 - Storage temperature and storage time of the test specimens

screed materials based on	Storage temperature °C	Storage time (days)					
		In the mould			Out of the mould		
		Humidity chamber (95 5)% R_H	(65 5)% R_H	(50 5)% R_H	(95 5)% R_H	(65 5)% R_H	(50 5)% R_H
Cement[a)]	20 2	2	-	-	5	21	-
Calcium Sulphate[b)]	20 2	2	-	-	-	26	-
Magnesite	20 2	-	1	-	-	27	-
Synthetic resin	23 2	-	-	1[c)]	-	-	27[c)]

[a)] Cementitious screed materials, which are designated by the manufacturer as polymer modified, should be stored as for synthetic resin materials.

[b)] Samples for the determination of shrinkage and swelling should be cured following the method given in prEN 13454-2.

[c)] Or shorter period as designated by the manufacturer.

7 Test Report

The report shall contain the following information:

a) the number, title and date of issue of this European Standard;

b) names of people and organisations represented during sampling and specimen preparation;

c) identification number of the test report

d) product name;

e) name and address of supplier;

f) supplier's batch reference-production number;

g) date of supply of the product

h) place, date and time of sampling;

i) method of sampling;

j) identification of the mortar samples, including type, origin and designation of the mortar by reference to the relevant product standard EN 13813;

k) preparation (mixing, casting), mass of sample and storage (curing) conditions;

l) the date and time of preparing samples for test (i. e. date and time of any mixing, casting, moulding or demoulding procedure, if appropriate);

m) date of test report and signature.

Bibliography

prEN 12697-20 *Bituminous mixtures - Test methods for hot mix asphalt - Part 20: Indentation using cube or marshall specimen*

prEN 12697-21 *Bituminous mixtures - Test methods for hot mix asphalt - Part 21: Indentation using plate specimens*

prEN 13454-2 *Binders, composite binders and factory made mixtures for floor screeds based on calcium sulfate - Part 2 : Test methods*

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