



SLOVENSKI STANDARD

SIST EN 13813:2003

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Estrihi - Materiali za estrihe - Lastnosti in zahteve

Screed material and floor screeds - Screed material - Properties and requirements

Estrichmörtel, Estrichmassen und Estriche - Estrichmörtel und Estrichmassen - Eigenschaften und Anforderungen

Matériaux de chapes et chapes - Matériaux de chapes - Propriétés et exigences

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ICS:

91.100.10 Cement. Mavec. Apno. Malta Cement. Gypsum. Lime.
Mortar

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ICS 91.100.10

English version

Screed material and floor screeds - Screed material - Properties and requirements

Matériaux de chapes et chapes - Matériaux de chapes -
Propriétés et exigences

Estrichmörtel, Estrichmassen und Estriche - Estrichmörtel
und Estrichmassen - Eigenschaften und Anforderungen

This European Standard was approved by CEN on 14 September 2002.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document EN 13813:2002 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.

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of an identical text or by endorsement, at the latest by April 2003, and conflicting national standards shall be withdrawn at the latest by July 2004.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this document.

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.

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Introduction

The properties required of a screed are related to its use.

They are considered in two groups: those relating to the fresh, unhardened screed material and those relating to the hardened screed material.

The properties achieved depend essentially on the type or types of binder used and their respective proportions. The type of aggregates, admixtures and/or additions used can achieve special properties.

1 Scope

This European Standard specifies requirements for screed material for use in floor construction internally.

To support the aim of achieving a performance related standard, as far as practicable this standard refers only to the properties of the product and not to its method of manufacture, except when this is unavoidable in the description of the characteristics of the product.

It defines for fresh screed material the performance related to setting time, consistency, pH value and for the hardened screed material, compressive strength, flexural strength, wear resistance, surface hardness, resistance to indentation, resistance to rolling wheel, shrinkage and swelling, modulus of elasticity, bond strength, impact resistance, reaction to fire, acoustic performance, thermal resistance and chemical resistance.

It provides for the evaluation of conformity of the product to this European Standard.

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The marking requirements for products covered by this European Standard are included.

This standard covers screed materials as defined in EN 13318.

Structural screeds, i.e. those that contribute to the load bearing capacity of the structure, are excluded from this standard.

NOTE This standard can be used in conjunction with codes of application and national specifications for site made screed material produced and laid by the same contractor.

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 1062-3, *Paints and varnishes - Coating materials and coating systems for exterior masonry and concrete - Part 3: Determination and classification of liquid-water transmission rate (permeability)*.

EN 1081, *Resilient floor coverings – Determination of the electrical resistance*.

prEN 1504-2, *Products and systems for the protection and repair of concrete structures – Definitions, requirements, quality control and evaluation of conformity – Part 2: Surface protection systems*.

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EN 12086, *Thermal insulating products for building applications - Determination of water vapour transmission properties.*

prEN 12354-6, *Building acoustics - Estimation of acoustic performance of buildings from the performance of elements - Part 6: Sound absorption in enclosed spaces.*

EN 12524, *Building materials and products - Hygrothermal properties - Tabulated design values.*

EN 12664, *Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products of medium and low thermal resistance.*

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

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

EN 12706, *Adhesives - Test methods for hydraulic setting floor smoothing and/or levelling compounds - Determination of flow characteristics.*

EN 13318, *Screed materials and floor screeds – Definitions.*

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

EN 13501-1, *Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests.*

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prEN 13529, *Products and systems for the protection and repair of concrete structures - Test method - Resistance to high chemical attack.*

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prEN 13872, *Methods of test for hydraulic setting floor smoothing and/or levelling compounds - Determination of dimensional change.*

prEN 13892-1, *Methods of test for screed materials - Part 1: Sampling, making and curing specimens for test.*

prEN 13892-2, *Methods of test for screed materials - Part 2: Determination of flexural and compressive strength.*

prEN 13892-3, *Methods of test for screed materials - Part 3: Determination of wear resistance-Böhme.*

prEN 13892-4, *Method of test 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.*

prEN 13892-6, *Methods of test for screed materials - Part 6: Determination of surface hardness.*

prEN 13892-7, *Methods of test for screed materials - Part 7: Determination of resistance to rolling wheel - Methods for screed material with floor coverings.*

prEN 13892-8, *Methods of test for screed materials - Part 8: Determination of bond strength.*

EN ISO 140-6, *Acoustics - Measurement of sound insulation in buildings and of building elements - Part 6: Laboratory measurements of impact sound insulation of floors (ISO 140-6:1998).*

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

EN ISO 354, *Acoustics - Measurement of sound absorption in a reverberation room (ISO 354:1985).*

EN ISO 354/A1, *Acoustics - Measurement of sound absorption in a reverberation room - Amendment 1: Test specimen mountings for sound absorption tests (ISO 354:1985/AMD1:1997)*.

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

3 Terms and definitions, symbols and abbreviations

3.1 Terms and definitions

For the purpose of this European Standard, the terms and definitions described in EN 13318 apply.

3.2 Symbols and abbreviations

The following abbreviations are used in this European Standard for screeds in relation to the binder used:

CT	cementitious screeds
CA	calcium sulfate screeds
MA	magnesite screeds
AS	mastic asphalt screeds
SR	synthetic resin screeds

The following abbreviations are used in this standard for designation of the properties:

C	for compressive strength
F	for flexural strength
A	for wear resistance "Böhme" SIST EN 13813:2003
RWA	for wear resistance to rolling wheel SIST EN 13813:2003
AR	for wear resistance "BCA" SIST EN 13813:2003
SH	for surface hardness
IC	for resistance to indentation on cubes
IP	for resistance to indentation on plates
RWFC	for resistance to rolling wheel with floor covering
E	for modulus of elasticity
B	for bond strength
IR	for impact resistance

4 Materials

Binders, aggregates, admixtures, additives and water with established suitability for screed material shall be used.

5 Classification and requirements

5.1 General

The requirements and properties specified in this standard shall be defined in terms of the test methods and procedures referred to in this standard. For these tests the screed material shall be sampled and the test specimens made and cured in accordance with prEN 13892-1.

Where flooring systems are used to protect or reinstate the integrity of a concrete structure, the requirements according to prEN 1504-2 shall also be fulfilled in addition to the requirements of this standard.

The conformity criteria given in the following subclauses relate to initial type tests and production control. The production control system shall be detailed in the Quality Manual.

NOTE The screed properties under site conditions cannot always be directly comparable with the screed material properties obtained under laboratory conditions, due for instance to variations of mixing, compaction or curing.

5.2 Properties and classification

The properties to be tested are listed in Table 1.

Table 1 — Screed materials and tests which apply to each type

Screed materials based on	compressive strength	flexural strength	wear resistance "Böhme"	wear resistance "BCA"	wear resistance to rolling wheel	surface hardness	resistance to indentation	resistance to rolling wheel with floor covering	setting time	shrinkage and swelling	consistency	pH value	modulus of elasticity	Impact resistance	bond strength
Cement	N	N	N ^a (one of three)		O	–	O	O	O	O	O	O	O	O ^a	O
Calcium sulfate	N	N	O	O	O	O	–	O	–	O	O	N	O	–	O
Magnesite	N	N	O	O	O	N ^a	–	O	–	O	O	O	O	–	O
Mastic asphalt	–	–	O	O	O	–	N	O	–	O	O	–	–	–	–
Synthetic resin	O	O	–	N ^a (one of two)		O	–	O	–	O	O	–	O	N ^a	N

Key

N Normative

O Optional, where relevant

– not relevant

^a only for screed material intended for wearing surfaces

For each type of binder, the age where the performances shall be achieved is defined in prEN 13892-1. Where the manufacturer can demonstrate that the required classes of properties can be achieved at an earlier age, this age may be included in the designation provided all declared class values are achieved at this age.

5.2.1 Compressive strength

The compressive strength, for cementitious screed, calcium sulfate screed and magnesite screed materials, shall be declared by the manufacturer, and may be declared for synthetic resin screed materials. The compressive strength shall be determined in accordance with prEN 13892-2.

The compressive strength shall be designated by a "C" (for Compression) followed by the compressive strength class in N/mm², in accordance with Table 2.

Table 2 — Compressive strength classes for screed materials

Class	C5	C7	C12	C16	C20	C25	C30	C35	C40	C50	C60	C70	C80
Compressive strength in N/mm ²	5	7	12	16	20	25	30	35	40	50	60	70	80

5.2.2 Flexural strength

The flexural strength, for cementitious screed, calcium sulfate screed and magnesite screed materials, shall be declared by the manufacturer. The flexural strength shall be determined in accordance with prEN 13892-2.

The manufacturer may declare the flexural strength for synthetic resin screed materials. The flexural strength of synthetic resin screed shall be determined in accordance with EN ISO 178 for screed materials intended to be applied at a thickness of 5 mm or less, or with prEN 13892-2 for other screed materials.

The flexural strength is designated with "F" (for Flexural) followed by the flexural strength in N/mm², in accordance with Table 3.

Table 3 — Flexural strength classes for screed materials

Class	F1	F2	F3	F4	F5	F6	F7	F10	F15	F20	F30	F40	F50
Flexural strength in N/mm ²	1	2	3	4	5	6	7	10	15	20	30	40	50

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5.2.3 Wear resistance

The wear resistance for cementitious screed materials and for synthetic resin screed materials, to be used as wearing surfaces, shall be determined in accordance with prEN 13892-3 (wear resistance Böhme) or with prEN 13892-4 (wear resistance BCA) or with prEN 13892-5 (wear resistance to rolling wheel) and shall be declared by the manufacturer. To declare the wear resistance for cementitious screed materials, the manufacturer may choose between the three test methods and for synthetic resin screed materials between the wear resistance BCA and the wear resistance to rolling wheel.

A manufacturer of a screed material other than cementitious or synthetic resin screed material to be used as a wearing surface may choose to determine and declare the appropriate wear class utilising these methods.

Another test method may be used, if a correlation with prEN 13892-3, with prEN 13892-4 or with prEN 13892-5 is proved with the screed material.

The wear resistance Böhme is designated by "A" (for Abrasion) followed by the abrasion quantity in cm³/50 cm², in accordance with Table 4.

Table 4 — Wear resistance Böhme classes for cementitious and other screed materials

Class	A22	A15	A12	A9	A6	A3	A1,5
Abrasion quantity in cm ³ /50 cm ²	22	15	12	9	6	3	1,5

The wear resistance BCA is designated by an "AR" (for Abrasion Resistance) followed by the maximum wear depth in 100 µm, in accordance with Table 5.

Table 5 — Wear resistance BCA classes for cementitious and other screed materials

Class	AR6	AR4	AR2	AR1	AR0,5
Maximum wear depth in μm	600	400	200	100	50

The wear resistance to rolling wheel is designated by "RWA" (for Rolling Wheel Abrasion) followed by the abrasion quantity in cm^3 , in accordance with Table 6.

Table 6 — Wear resistance to rolling wheel classes for cementitious and other screed materials

Class	RWA300	RWA100	RWA20	RWA 10	RWA1
Abrasion quantity in cm^3	300	100	20	10	1

5.2.4 Surface hardness

The surface hardness for magnesite screed materials, to be used as wearing surfaces, shall be declared by the manufacturer and as an option may be declared for other screed materials with fine aggregates (< 4 mm). The surface hardness shall be determined in accordance with prEN.13892-6.

The surface hardness is designated with "SH" (for Surface Hardness) followed by the surface hardness in N/mm^2 , in accordance with Table 7.

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Table 7 — Surface hardness for magnesite and other screed materials

Class	SH30	SH40	SH50	SH70	SH100	SH150	SH200
Surface hardness in N/mm^2	30	40	50	70	100	150	200

5.2.5 Resistance to indentation

The manufacturer shall declare the resistance to indentation of mastic asphalt screed materials. The resistance to indentation shall be determined on cubes in accordance with prEN 12697-20 or on plates in accordance with prEN 12697-21.

The resistance to indentation of mastic asphalt screed materials shall be designated by "I" (for Indentation), "C" or "P" (for Cube or Plate) to indicate the test method applied, followed by the maximum indentation value in 0,1 mm, in accordance with Tables 8a and 8b.

For tests of mastic asphalt screed materials on plates with a cross sectional area of the indentation pin of $31,7 \text{ mm}^2$, with indentation also measured in 0,1 mm, classes are designated by IP and Roman numerals I to IV, in accordance with Table 8c.

The designation "H" signifies material for use in heated screeds.