SLOVENSKI STANDARD
oSIST prEN 13454-1:2017

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Veziva in industrijsko pripravljene mešanice za estrihe na osnovi kalcijevega sulfata - 1. del: Definicije in zahteve

Binders and factory made mixtures for floor screeds based on calcium sulphate - Part 1: Definitions and requirements

Calciumsulfat-Binder und Werkmörtel für Estriche - Teil 1: Begriffe und Anforderungen

Liants et mélanges fabriqués en usine à base de sulfate de calcium pour chapes de sol - Partie 1 : Définitions et exigences

Ta slovenski standard je istoveten z: **prEN 13454-1**

ICS:

01.040.91	Gradbeni materiali in gradnja (Slovarji)	Construction materials and building (Vocabularies)
91.100.10	Cement. Mavec. Apno. Malta	Cement. Gypsum. Lime. Mortar
91.100.50	Veziva. Tesnilni materiali	Binders. Sealing materials

oSIST prEN 13454-1:2017 **en,fr,de**

EUROPEAN STANDARD

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EUROPÄISCHE NORM

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English Version

Binders and factory made mixtures for floor screeds based on calcium sulphate - Part 1: Definitions and requirements

Liants et mélanges fabriqués en usine à base de sulfate de calcium pour chapes de sol - Partie 1 : Définitions et exigences

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 241.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Page

European foreword

This document (prEN 13454-1:2017) has been prepared by Technical Committee CEN/TC 241 “Gypsum and gypsum based products”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13454-1:2004.

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 Regulation (EU) No. 305/2011.

For relationship with Regulation (EU) No. 305/2011, see informative Annex ZA, which is an integral part of this document.

Compared with the previous version the following changes have been made:

a) differentiation between binders for stiff and flowing mixtures;

b) modification of the strength classes for binders;

c) Clause 7 and Annex ZA updated in line with the CPR.

This document specifies binders and factory made mixtures where the principal active constituent is calcium sulphate.

The requirements in EN 13454-1 on binders are based on the results of tests according to EN 13454-2.

The requirements on factory made mixtures for floor screeds based on calcium sulphate are in accordance with EN 13813.

This document for binders and factory made mixtures for floor screeds based on calcium sulphate consists of two parts:

— *Part 1: Definitions and requirements*

— *Part 2: Test methods*

1 Scope

This document applies to binders made of calcium sulphate used for the manufacture of floor screeds for interior use in buildings. It also includes requirements for factory made mixtures made of calcium sulphate used for the manufacture of floor screeds which are given in EN 13813. This document does not cover the application of floor screeds. Floor screeds made with products covered by this document can contribute to thermal and sound insulation and fire protection of the floor.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12086:2013, *Thermal insulating products for building applications - Determination of water vapour transmission properties*

prEN 13454-2:2017, *Binders, composite binders and factory made mixtures for floor screeds based on calcium sulphate — Part 2: Test methods*

EN 13501-1:2007+A1:2009, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

EN 13813:2002, *Screed material and floor screeds - Screed material - Properties and requirements*

EN 13892-2:2002, *Methods of test for screed materials - Part 2: Determination of flexural and compressive strength*

EN ISO 10140 (all parts), *Acoustics - Laboratory measurement of sound insulation of building elements - (ISO 10140-1)*

3 Terms and definitions

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

3.1
calcium sulphate constituent
calcium sulphate in its various dehydration phases

EXAMPLE hemihydrate and anhydrite

3.2
additive
material added to calcium sulphate binder or mixture by the manufacturer to influence the chemical and/or the physical properties

Note 1 to entry: Additives are, for example, fillers, pozzolans, pigments and artificial resins

3.3
admixture
material added to the binder or mixture in small quantities and which, by chemical or physical action or both, change the properties of the calcium sulphate constituent like its workability, hardening or setting

Note 1 to entry: Admixtures are, for example accelerators, retarders and plasticizers.

3.4
aggregate
material consisting of uncrushed and/or crushed mineral material with particle sizes and shapes suitable for the production of floor screeds

3.5
screed
layer of screed material laid in situ, directly onto a base, bonded or unbonded, or onto an intermediate layer or insulating layer, to obtain one or more of the following purposes:

— to obtain a defined level;

— to carry the final flooring;

— to provide a wearing surface.

3.6
binder
material used for the purpose of holding solid particles together in a coherent mass

3.7
consistency
fluidity of fresh screed material which characterises its ease of use

3.8
flow diameter
dimension for consistency of stiff factory made mixtures

3.9
spread
dimension for consistency of flowing and highly plastic mixtures

4 Types of binders and factory made mixtures

4.1 Calcium sulphate binders (CAB)

Calcium sulphate binders (CAB) consist of calcium sulphate constituents binding by hydration and may contain admixtures and additives (see 5.2 a).

4.2 Calcium sulphate binders for flowing mixtures (CAB-F)

Calcium sulphate binders (CAB-F) consist of calcium sulphate constituents binding by hydration and contain admixtures and/or additives (see 5.2 a). CAB-F is exclusively used for the manufacture of self-levelling floor screeds.

4.3 Calcium sulphate composite binders (CAC)

Calcium sulphate composite binders (CAC) consist of calcium sulphate binders (CAB) and contain additional additives (see 5.2 b).

4.4 Calcium sulphate composit binders for flowing mixtures (CAC-F)

Calcium sulphate composite binders (CAC-F) consist of calcium sulphate constituents binding by hydration and contain admixtures and/or additives (see 5.2 a). CAC-F is exclusively used for the manufacture of self-levelling floor screeds.

4.5 Factory made mixtures (CA)

Factory made mixtures consist of binders and aggregates and may contain admixtures and additives with or with-out water. The means of determining the suitability of the aggregates for use in factory made mixtures shall be recorded in the manufacturer's documentation of the factory production control.

With respect to the manufacturing methods, factory made mixtures shall be suitable for application in one of the three consistencies: stiff, highly plastic or flowing (see 6.9).

If calcium sulphate binders or calcium sulphate composite binders, as specified in this document, are used for the manufacture of factory made mixtures, the tests specified in prEN 13454-2 for determination of the pH-value and for determination of shrinkage and swelling need not to be carried out.

Factory made mixtures can be produced and delivered as:

a) *prebatched* (dry) in a factory and mixed on the construction site in factory specified proportions and conditions;

b) *premixed* (dry) in a factory and mixed on the construction site by adding water;

c) *ready mixed* (wet) which is supplied to the construction site in a pre-mixed and gauged condition.

5 Requirements for binders

5.1 General

5.1.1 Reaction to fire

Binders are reaction to fire Class $A1_{fl}$ without testing according to Commission Decision 96/603/EC as amended, provided that they contain ≤ 1 % by mass or volume of organic material, whichever is the more onerous. For products which contain > 1 % of organic material, the product shall be tested and classified in accordance with EN 13501-1.

5.1.2 Dangerous substances

Where required the release of dangerous substances shall be declared.

5.2 Content of calcium sulphate ($CaSO_4$)

The content of calcium sulphate in the following materials shall be:

a) calcium sulphate binders (CAB, CAB-F): ≥ 85 % calcium sulphate by mass;

b) calcium sulphate composite binders (CAC, CAC-F): ≥ 50 % and < 85 % calcium sulphate by mass.

The content of calcium sulphate shall be determined as specified in prEN 13454-2:2017.

5.3 pH-value

The pH-value of binders shall be ≥ 7,0.

The pH-value shall be determined as specified in prEN 13454-2.

5.4 Setting time

The initial setting time shall be ≥ 30 min.

The initial setting time for CAB and CAC shall be determined as specified in prEN 13454-2:2017, 4.3.1.

The initial setting time for CAB-F and CAC-F shall be determined as specified in prEN 13454-2:2017, 4.3.2.

5.5 Strength

The strength of binders shall comply with the requirements of Table 1.

Table 1 — Strengths of binders defined as characteristics values

Binder	Minimum flexural strength N/mm^2		Minimum compressive strength N/mm^2	
	Tested after			
	3 days	28 days	3 days	28 days
CAB/CAC	2,0	5,0	12,0	30,0
CAB-F/CAC-F	2,0	5,0	10,0	25,0

The strength of Cab and CAC shall be determined as specified in prEN 13454-2:2017, 4.5.1.

The strength of CAB-F and CAC-F shall be determined as specified in prEN 13454-2:2017, 4.5.2.

5.6 Shrinkage and swelling

The values for shrinkage and swelling shall not exceed 0,2 mm/m.

Shrinkage and swelling shall be determined as specified in prEN 13454-2.

6 Requirements for factory made mixtures

6.1 General

NOTE Factory made mixtures placed on the market of the European Economic Area, and therefore subject to conformity with the Construction Products Regulation, are covered by EN 13813; tests performed to prEN 13454-2 can, however, be taken into account to demonstrate conformity to EN 13813. Factory made mixtures are, though, marked in accordance with EN 13813.

6.2 Reaction to fire

Factory made mixtures (CA) are reaction to fire Class $A1_{fl}$ without testing according to Commission Decision 96/603/EC as amended, provided that they contain ≤ 1 % by mass or volume of organic material, whichever is the more onerous. Products which contain > 1 % of organic material shall be tested and classified in accordance with EN 13501-1.

6.3 Dangerous substances

Where required the release of dangerous substances shall be declared.

6.4 Water vapour permeability

Where the intended use of a factory made mixture is for moisture diffusion control, the permeability to water vapour of the factory made mixture shall be determined in accordance with EN 12086.

6.5 Impact sound insulation

Impact sound insulation is a property of the assembled system and not of the product itself.

When relevant, the impact sound insulation of a system including factory made mixtures shall be determined in accordance with the EN ISO 10140 series.

6.6 Thermal resistance

This requirement is defined in EN 13813.

6.7 Chemical resistance

This requirement is defined in EN 13813.

NOTE Floor screeds based on calcium sulphate are not used as wearing surfaces and, consequently, they are not ex-posed to chemical influences. A chemical resistance test is, therefore, not necessary.

6.8 pH-value

For factory made mixtures based on calcium sulphate the pH-value shall be ≥ 7 when determined in accordance with prEN 13454-2.

NOTE The test is not necessary for factory made mixtures produced exclusively from binder as defined in 4.1 to 4.4 and aggregates as defined in 3.4 and controlled as specified in 4.3.

6.9 Consistency

6.9.1 General

A manufacturer of screed materials may declare the consistency in mm determined in accordance with EN 13454-2. Where the consistency value is greater than 300 mm, it may be determined in accordance with EN 12706.

For premixed and prebatched mixtures the consistency is determined with a given water to solid ratio as specified by the supplier.

6.9.2 Flowing mixtures

The spread shall be ≥ 220 mm.

The spread shall be determined as specified in prEN 13454-2.

With this consistency the mixtures shall not segregate (no visual sedimentation, no visual development of layers).

6.9.3 Highly plastic mixtures

The spread shall be between 150 mm and less than 220 mm and determined as specified in

prEN 13454-2.

6.9.4 Stiff mixtures

The flow diameter shall be 110 mm to 140 mm.

The flow diameter shall be determined as specified in prEN 13454-2.

6.10 Working time

The minimum working time for flowing, highly plastic and stiff mixtures shall be ≥ 30 min.

The working time shall be determined as specified in prEN 13454-2.

The working time for ready mixed products begins when the product is loaded (including water).

NOTE In EN 13813 the term “setting time” is used for “working time”.

6.11 Strength

6.11.1 Compressive strength

The compressive strength of factory made mixtures (CA) shall be designated by a "C" (for Compression) followed by the compressive strength class in N/mm^2, given in Table 2 in accordance with EN 13813.

Table 2 — Compressive strength of factory made mixtures (CA) defined as characteristic values

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

[a] For calcium sulphate the classes C12 to C60 are recommended.

The compressive strength shall be determined as specified in EN 13892-2.

NOTE A description of the test is given in prEN 13454-2.

6.11.2 Flexural strength

The flexural strength is designated with "F" (for Flexural) followed by the flexural strength in N/mm^2 given in Table 3 (in accordance with EN 13813).

Table 3 — Flexural strength of factory made mixtures (CA) defined as characteristic values

Class[a]	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

[a] For calcium sulphate the classes F3 to F20 are recommended.

The flexural strength shall be determined as specified in EN 13892-2.

NOTE A description of the test is given in prEN 13454-2.

6.12 Shrinkage and swelling

A manufacturer of screed materials may declare the shrinkage value and swelling value of the screed material in mm/m, determined in accordance with prEN 13454-2 or in accordance with EN 13872 where the product is intended to be applied at a thickness less than 10 mm.

The values for shrinkage and swelling shall not exceed 0,2 mm/m.

NOTE This requirement is not applicable for factory made mixtures produced exclusively from binder as defined in 4.1 to 4.4 and aggregates as defined in 3.4 and controlled as specified in 4.3.

6.13 Other characteristics

For other characteristics (i.e. surface hardness, resistance to rolling wheel, water permeability, bond strength, sound absorption, modulus of elasticity in flexure and electrical resistance) see EN 13813.