



EUROPEAN ASSESSMENT DOCUMENT

EAD 190019-00-0502

May 2020

**CEMENT-BASED FLOOR SCREEDS
FOR INTERNAL AND EXTERNAL
APPLICATIONS**

The reference title and language for this EAD is English. The applicable rules of copyright refer to the document elaborated in and published by EOTA.

This European Assessment Document (EAD) has been developed taking into account up-to-date technical and scientific knowledge at the time of issue and is published in accordance with the relevant provisions of Regulation (EU) 305/2011 as a basis for the preparation and issuing of European Technical Assessments (ETA).

Contents

1	Scope of the EAD	4
1.1	Description of the construction product	4
1.2	Information on the intended use(s) of the construction product	4
1.2.1	Intended use(s)	4
1.2.2	Working life/Durability	4
2	Essential characteristics and relevant assessment methods and criteria	5
2.1	Essential characteristics of the product	5
2.2	Methods and criteria for assessing the essential characteristics of the product in relation to essential characteristics of the product	5
2.2.1	Reaction to fire	6
2.2.2	Flexural and compressive strength after freeze-thaw cycles	6
3	Assessment and verification of constancy of performance	7
3.1	System(s) of assessment and verification of constancy of performance to be applied	7
3.2	Tasks of the manufacturer	7
3.3	Special methods of control and testing used for the assessment and verification of constancy of performance	7
3.3.1	Density	7
3.3.2	Ash content	8
4	Reference documents	9

1 SCOPE OF THE EAD

1.1 Description of the construction product

This European Assessment Document applies to screed material intended for internal and external applications, produced as dry mix of cement, mineral fillers and additives. The dry mix has to be mixed with appropriate amount of water (water / dry mix ratio) until homogenous.

The screed material contains no more than 1,0% (by weight or by volume) of homogeneously distributed organic material.

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

The product is not fully covered by the following harmonised technical specification: hEN 13813:2002. EN 13813:2002 specifies requirements for screed material for internal application only. In order to cover external applications of screeds by this EAD, the essential characteristic: “Flexural and compressive strength after freeze-thaw cycles” is added.

Concerning product packaging, transport, storage, maintenance, replacement and repair, it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

It is assumed that the product will be installed according to the manufacturer’s instructions or (in absence of such instructions) according to the usual practice of the building professionals.

Relevant manufacturer’s stipulations having influence on the performance of the product covered by this European Assessment Document shall be considered for the determination of the performance and detailed in the ETA.

1.2 Information on the intended use(s) of the construction product

1.2.1 Intended use(s)

Cement-based floor screeds are intended for internal and external applications.

Layers of screeds may contain underfloor heating system.

The screed may be used as wearing surface or covered by finishing layer (e.g., ceramic or stone tiles, epoxy screed, fitted carpet, PVC flooring, parquet, floor panels).

1.2.2 Working life/Durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer’s request to take into account a working life of for cement-based floor screeds for the intended use of 25 years when installed in the works (provided that cement-based floor screeds are subject to appropriate installation, see 1.2.1). These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product, the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works¹.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

¹ The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than the assumed working life.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 2.1.1 shows how the performance of cement-based floor screeds for internal and external applications is assessed in relation to the essential characteristics.

Table 2.1.1: Essential characteristics of the product and methods and criteria for assessing the performance of the product in relation to those essential characteristics

No	Essential characteristic	Assessment method	Type of expression of product performance
Basic Works Requirement 2: Safety in case of fire			
1	Reaction to fire	2.2.1	Class
Basic Works Requirement 3: Hygiene, health and the environment			
2	Water permeability	EN 13813:2002, clause 5.3.8	Level
3	Water vapour permeability	EN 13813:2002, clause 5.3.6	Level
Basic Works Requirement 4: Safety and accessibility in use			
4	Compressive strength	EN 13813:2002, clause 5.2.1	Class
5	Flexural strength	EN 13813:2002, clause 5.2.2	Class
6	Wear resistance (for wearing surface)	EN 13813:2002, clause 5.2.3	Class
7	Flexural and compressive strength after freeze-thaw cycles	2.2.2	Level
8	Chemical resistance	EN 13813:2002, clause 5.3.3	Description
Basic Works Requirement 5: Protection against noise			
9	Sound insulation	EN 13813:2002, clause 5.3.9	Level
10	Sound absorption	EN 13813:2002, clause 5.3.10	Level
Basic Works Requirement 6: Energy economy and heat retention			
11	Thermal resistance	EN 13813:2002, clause 5.3.7	Level

2.2 Methods and criteria for assessing the essential characteristics of the product in relation to essential characteristics of the product

This chapter is intended to provide instructions for TABs. Therefore, the use of wordings such as “shall be stated in the ETA” or “it has to be given in the ETA” shall be understood only as such instructions for TABs on how results of assessments shall be presented in the ETA. Such wordings do not impose any obligations for the manufacturer and the TAB shall not carry out the assessment of the performance in relation to a given essential characteristic when the manufacturer does not wish to declare this performance in the Declaration of Performance.

2.2.1 Reaction to fire

Cement-based floor screeds which contain no more than 1,0% (by weight or by volume) of homogeneously distributed organic material are considered to satisfy the requirements for performance class A1_{FL} of the characteristic reaction to fire, in accordance with the Decision 96/603/EC amended by the Decision 2000/605/EC without the need for testing on the basis of it fulfilling the conditions set out in that Decision and its intended use being covered by that Decision.

Therefore, the performance of the product is class A1_{FL} according to EN 13501-1:2018.

2.2.2 Flexural and compressive strength after freeze-thaw cycles

Flexural and compressive strength after freeze-thaw cycles shall be determined on the basis of EN 12808-3:2008 with at least 3 test samples exposed to freeze-thaw cycles.

Deviating from EN 12808-3:2008 (clause 7.2) the samples preparation according to EN 13892-1:2002 (clause 5.3) shall be used.

Test samples shall be conditioned for one day at $(23 \pm 2)^{\circ}\text{C}$ and relative humidity $(50 \pm 5)\%$ in mould covered with a plate glass sheet. After 24 hours shall be carefully removed from the mould and conditioned for 6 days at $(23 \pm 2)^{\circ}\text{C}$ and relative humidity $(50 \pm 5)\%$.

Deviating from EN 12808-3:2008 (clause 7.5) the following test conditions shall be used (for each freeze-thaw cycle):

- the minimum temperature for freeze cycle shall be $(-20 \pm 3)^{\circ}\text{C}$;
- the maximum temperature for thaw cycle shall be $(+20 \pm 3)^{\circ}\text{C}$.

After freeze-thaw cycles samples shall be conditioned at $(23 \pm 2)^{\circ}\text{C}$ and relative humidity $(50 \pm 5)\%$ for 3 days.

The average flexural and compressive strength samples after freeze-thaw cycles shall be calculated. The flexural and compressive strength after freeze-thaw cycles shall be expressed in MPa and shall be stated in the ETA.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of assessment and verification of constancy of performance to be applied

For the products covered by this EAD the applicable European legal act is: Decision 97/808/EC amended by the Decision 2006/190/EC.

The system is: 4.

3.2 Tasks of the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of cement-based floor screeds in the procedure of assessment and verification of constancy of performance are laid down in Table 3.2.1.

Table 3.2.1: Control plan for the manufacturer, cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC)					
1	Raw material	According to delivery documents	According to delivery documents	–	Every delivery
2	Density	3.3.1	Laid down in the control plan	According to test or control methods	Every batch
3	pH value	EN 13813:2002, clause 5.2.10	Laid down in the control plan	According to test or control methods	Every batch
4	Ash content	3.3.2	Laid down in the control plan	According to test or control methods	At least once per three months
5	Compressive strength	EN 13813:2002, clause 5.2.1	Laid down in the control plan	According to test or control methods	At least once a year
6	Flexural strength	EN 13813:2002, clause 5.2.2	Laid down in the control plan	According to test or control methods	At least once a year

3.3 Special methods of control and testing used for the assessment and verification of constancy of performance

3.3.1 Density

Density shall be determined at $(23 \pm 2)^\circ\text{C}$ in a 500 cm³ cylinder.

Method of operation:

The results are recorded after maximum packing down on a vibrating table (manual and/or automatic) and vibration time 30 s and levelling of the surface.

The results are expressed in kg/m³ (mean value of 3 tests).

3.3.2 Ash content

The ash content shall be determined at 450°C on a sample of approximately 5 g pre-dried at $(200 \pm 5)^\circ\text{C}$ to constant mass. The mass is regarded as constant if the difference in mass between two successive weightings, one hour apart, does not exceed 0.1 g.

Method of operation:

- the sample is placed in a tared crucible either fitted with a lid or enclosed in a leak-tight container and the whole is weighed,
- after the lid has been removed, where necessary, the crucible is placed in the oven maintained at ambient temperature,
- the temperature of the oven is then raised to $(450 \pm 20)^\circ\text{C}$ (ash content at 450°C) and maintained at that temperature for 5 hours,
- the crucible is allowed to cool down to room temperature in the desiccators before being weighed.

The results are expressed as a percentage relative to the initial mass after drying (mean value of 3 tests).

4 REFERENCE DOCUMENTS

- EN 12808-3:2008 Grouts for tiles. Part 3: Determination of flexural and compressive strength
- EN 13501-1:2018 Fire classification of construction products and building elements. Part 1: Classification using data from reaction to fire tests
- EN 13813:2002 Screed material and floor screeds. Screed material. Properties and requirements
- EN 13892-1:2002 Methods of test for screed materials. Part 1: Sampling, making and curing specimens for test