



EUROPEAN ASSESSMENT DOCUMENT

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ACOUSTIC SPRAY COATING BASED ON A WATER-BASED ORGANIC BINDER

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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) No 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
1.3	Specific terms used in this EAD	5
2	Essential characteristics and relevant assessment methods and criteria.....	6
2.1	Essential characteristics of the product	6
2.2	Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product	6
2.2.1	Reaction to fire	7
2.2.2	Content, emission and/or release of dangerous substance	7
2.2.3	Adhesion	8
2.2.4	Durability of the adhesion to the substrate.....	8
2.2.5	Sound absorption.....	9
2.2.6	Airflow resistance.....	9
3	Assessment and verification of constancy of performance	10
3.1	System(s) of assessment and verification of constancy of performance to be applied	10
3.2	Tasks of the manufacturer	10
3.3	Tasks of the notified body	11
4	Reference documents	12
	ANNEX A: Guidance for reaction to fire test.....	13
	ANNEX B: Guidance for adhesion test	16

1 SCOPE OF THE EAD

1.1 Description of the construction product

The EAD is applicable to factory-made acoustic spray coating, an internal plaster based on water-based organic binders. The products are manufactured as a dispersal, ready to use, and consisting of a mix of one or more organic binders, aggregates, additives/additions with water used for internal plastering.

The product is not fully covered by the following harmonised technical specification: EN 15824:2017 - Specifications for external renders and internal plasters based on organic binders. EN 15824:2017 does not provide for any assessment method in relation with the acoustics performance (BWR5) of the product

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)

The internal plaster, from this point forward denominated coating, is intended to be applied (sprayed) on site over mineral pre-coated ceiling panels.

Coating's features allow obtaining acoustic performance, sound absorption, together with the supporting panels (mineral pre-coated ceiling panels).

The mineral pre-coated ceiling panel consists of a tile of mineral wool covered in a factory by a first layer of mineral plaster, with or without an additional coating of mineral plaster (mineral aggregates and acrylic binder) applied on site.

The supporting panel is not subject of this EAD, but it shall be clearly defined in the ETA.

The present EAD considers indoors use only and in any type of buildings. Only application in dry rooms (Class A according to EN 13964) is considered. In exceptional cases it could be applied over wall panels (vertical panels) but not reachable by public.

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 the acoustic spray coating based on water-based organic binders for the intended use of 10 years when installed in the works (provided that the acoustic spray coating based on water-based organic binders is subject to appropriate installation). 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.

1.3 Specific terms used in this EAD

Unless otherwise stated, the terms used in EN 15824:2017 apply.

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 referred to above.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

Note. All undated references to standards or to EAD's in this chapter are to be understood as references to the dated versions listed in clause 4.

2.1 Essential characteristics of the product

Table 1 shows how the performance of acoustic spray coating based on water-based organic binders is assessed in relation to the essential characteristics.

Table 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 (level, class, description)
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	Content and/or release of dangerous substances	2.2.2	Level
Basic Works Requirement 4: Safety and accessibility in use			
3	Adhesion	2.2.3	Level
4	Durability of the adhesion to the substrate	2.2.4	Level
Basic Works Requirement 5: Protection against noise			
5	Sound absorption	2.2.5	Level
6	Airflow resistance	2.2.6	Level

2.2 Methods and criteria for assessing the performance 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

The product shall be tested according to the test method(s) referred to in EN 13501-1 and relevant for the corresponding reaction to fire class. The product shall be classified according to the Commission Delegated Regulation (EU) No 2016/364.

Detailed instructions for sample preparation, mounting and fixing are set in Annex A.

The class of reaction to fire of the product is stated in the ETA.

2.2.2 Content, emission and/or release of dangerous substance

The performance of the product related to the emissions and/or release and, where appropriate, the content of dangerous substances will be assessed on the basis of the information provided by the manufacturer² after identifying the release scenarios taking into account the intended use of the product and the Member States where the manufacturer intends his product to be made available on the market.

The identified intended release scenario for this product and intended use with respect to dangerous substances is:

- IA 1: Product with direct contact to indoor air

The following dangerous substances have to be considered:

2.2.2.1 Substance/s classified as EU-cat. Carc. 1A and/or 1B

It has to be determined whether a substance labelled with "Carcinogenic" (H350, H350i) in accordance with *Regulation (EC) No 1272/2008* in the currently valid version is actively used³. This information is obtained from a manufacturer's declaration and respectively stated in the ETA.

2.2.2.2 Substance/s classified as EU-cat. Muta. 1A and/or 1B

It has to be determined whether a substance labelled with "Mutagenic" (H340) in accordance with *Regulation (EC) No 1272/2008* in the currently valid version is actively used³. This information is obtained from a manufacturer's declaration and respectively stated in the ETA.

2.2.2.3 Substance/s classified as EU-cat. Acute Tox. 1, 2 and/or 3; Repr. 1A and/or 1B; STOT SE 1 and/or STOT RE 1

The use of substances labelled with "Acute Toxic" (H300, H301, H310, H311, H339 and/or H331), "Toxic for reproduction" (H360, H360F, H360D, H360FD) and "STOT SE 1" and/or "STOT RE 1" (H370 and/or H372) in accordance with *Regulation (EC) No 1272/2008* in the currently valid version with ≥ 0.1 wt.% has to be determined. This information is obtained from a manufacturer's declaration. Taking into account this information the Technical Assessment Body assesses the respective dangerous substance, whether it is completely reacted in the product, whether it is released by the final specific product and whether it is otherwise regarded as critical in the product, taking into account all possible release scenarios. If an assessment based on a manufacturer's declaration is not sufficient to clarify a potential release, an additional assessment method determined by the TAB has to take place. A respective statement has to be given in the ETA.

² The manufacturer may be asked to provide to the TAB the REACH related information which he must accompany the DoP with (cf. Article 6(5) of Regulation (EU) No 305/2011).

The manufacturer is **not** obliged:

- to provide the chemical constitution and composition of the product (or of constituents of the product) to the TAB, or
- to provide a written declaration to the TAB stating whether the product (or constituents of the product) contain(s) substances which are classified as dangerous according to Directive 67/548/EEC and Regulation (EC) No 1272/2008 and listed in the "Indicative list on dangerous substances" of the SGDS.

Any information provided by the manufacturer regarding the chemical composition of the products may not be distributed to EOTA or to TABs.

³ Active use is the targeted use of substances to achieve specific product characteristics. Not actively used substances are constituents being an impurity or an additional ingredient, except for the case they fully react to a chemical compound within the manufacturing process and thus do not pose any risk for indoor air quality and health

2.2.2.4 SVOC and VOC

For the intended use covered by the release scenario IA1 semi-volatile organic compounds (SVOC) and volatile organic compounds (VOC) shall be determined in accordance with EN 16516. The loading factor (m^2/m^3) used for emission testing can be taken from following table:

Intended use	Loading factor (m^2/m^3)
Walls	1,0
Floor, ceiling	0,4

The generation of the representative test specimen will be carried out according to ISO 16000-11. Test specimen shall be applied by projection over glass or stainless steel. Application rate (g/m^2) and drying time shall be according to manufacturer's application instructions.

Once the test specimen has been produced, as described above, it should immediately be placed in the emission test chamber. This time is considered the starting time of the emission test.

The test results have to be reported for the relevant parameters (e.g. chamber size, temperature and relative humidity, air exchange rate, loading factor, size of test specimen, edge sealing, conditioning, glue system, production date, arrival date, test period, test result) after 3 and/or 28 days testing.

The product performance shall be stated in the ETA [unit $\mu g/m^3$ or mg/m^3].

2.2.3 Adhesion

Adhesion of the product shall be determined in accordance with EN 1542.

The tests specimens shall be prepared according to annex B.

According to EN 15824, all measured values shall be not less than 0,3 MPa or failure at the substrate shall occur.

Each measured value, the nature of the failure and the average measured value shall be indicated in the ETA.

2.2.4 Durability of the adhesion to the substrate

The durability of the adherence of the product to the substrate is assessed by measuring the adhesion of the product test specimens exposed to artificial ageing.

The test specimen shall be prepared according to 2.2.3. Additionally to the drying, hardening and conditioning established in 2.2.3, the test specimen shall be placed in a vertical position into the test chamber and exposed to the following cycle:

4h at $(23\pm 3)^\circ C$ and $(80\pm 5)\%RH$

16h at $(40\pm 3)^\circ C$ and $(50\pm 5)\%RH$

4h at $(5\pm 3)^\circ C$ and $(50\pm 5)\%RH$

The product shall be exposed to 21 cycles without interruption. The chamber temperature change shall be at a rate of $1,5^\circ C/min \pm 0,5^\circ C/min$. During the period of temperature change the change of humidity is not controlled, but condensation should be avoided. The duration of temperature change is included in the duration of the 16 h cycle.

The back and perimetral edges of the test specimen shall be sealed to expose only the front face to the environment conditions.

After exposure the adhesion of the specimen shall be determined in accordance with 2.2.3.

All measured values shall be not less than 0,3 MPa or failure at the substrate shall occur.

Each measured value, the nature of the failure and the average measured value shall be indicated in the ETA.

2.2.5 Sound absorption

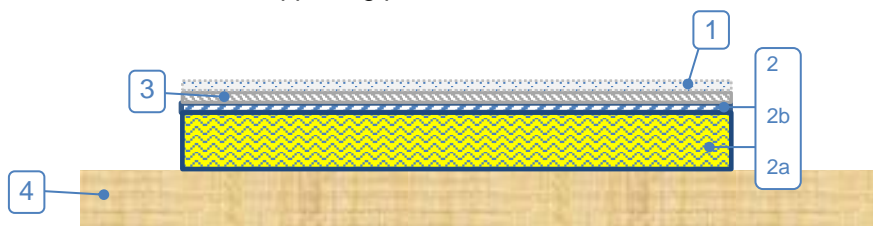
The sound absorption coefficient of the acoustic coating applied on the supporting panels (mineral pre-coated ceiling panels) shall be performed according to EN ISO 354.

The test specimen shall be mounted directly against a room surface, such as the floor of the reverberation room, according to the TYPE A mounting of ISO 354.

The test specimen shall be composed by the elements show in Figure 1.

The sound absorption coefficients measured α_s shall be expressed in a diagram or a table in third octave bands, and into a single value α_w with shape indicator in accordance with EN ISO 11654.

The contribution of the product (final covering) to the sound absorption depends on the system is applied on (supporting panels). This contribution cannot be dissociated from the end use application. ETA shall indicate the characteristics of the supporting panels used for the test.



1	Product: Spray coating	-----
2	Pre-coated panel: Mineral wool (2b)+ Layer of mineral plaster(2a)	Supporting panel where product is applied on
3	Additional coating, if exists	
4	Reverberation room floor	-----

Supporting panel characteristics	
2a-	Thickness/ density/material
2b-	Thickness/ density/material
3-	Thickness/ density/material

Figure 1: Details of the test specimen mounting in the reverberation room

2.2.6 Airflow resistance

The determination of the specific airflow resistance is carried out according to EN 29053 ISO 9053-1.

The test specimen shall be prepared on a support before its installation in the sample holder of the measurement equipment. The support should be a perforated thin sheet that allows spraying the product on and do not interfere with its airflow resistance. One metallic perforated sheet or an acrylic perforated sheet with a rigid perimeter ring could be suitable.

The shape of the support shall be according to the sample holder shape. The seal between support, sample holder and product shall be guaranteed.

The samples shall be test once they are dried according to the manufacturer's specifications

The result remains valid for lower thickness of product.

The specific airflow resistance is given in the ETA in levels using steps of 1 Pa s/m.

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 1997/740/EC as amended by EC decision 2001/596/EC.

The systems is: 4

In addition, with regard to reaction to fire for products covered by this EAD the applicable European legal act is: Decision 1997/740/EC as amended by EC decision 2001/596/EC

The systems are: 1, 3 or 4

3.2 Tasks of the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 2.

Table 2 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) [including testing of samples taken at the factory in accordance with a prescribed test plan]					
1	Reaction to fire	EN 13501-1	Acc. to the Control Plan	See clause 2.2.1	Every 5 years
2	Adhesion	See clause 2.2.3	See clause 2.2.3	See clause 2.2.3	Every 5 years
3	Airflow resistance	See clause 2.2.6	Acc. to the Control Plan	1	Every 10th batch
4	Density	EN ISO 2811-1		1	Each batch
5	Ash content	EN ISO 3451-1		1	Every 10th batch or once every two weeks or each 1000t (the highest frequency one)
6	Non-volatile-matter content	EN ISO 3251		1	
7	Viscosity	EN ISO 2555		1	Each batch
8	Granulometry of aggregated-granulated component	Supplier certificates or supplier tests.	Conformity with the order	Testing is not required	Each batch

3.3 Tasks of the notified body

The cornerstones of the actions to be undertaken by the notified body in the procedure of assessment and verification of constancy of performance for acoustic spray coatings based on water-based organic binders are laid down in Table 3.

The intervention of the notified body under AVCP system 1 is only necessary for reaction to fire for products for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).

The cornerstones of the tasks to be undertaken by the notified body under AVCP system 1 are laid down in Table 3.

Table 3 Tasks for the notified body; cornerstones

Subject/type of control (<i>product, raw/constituent material, component - indicating characteristic concerned</i>)	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Initial inspection of the manufacturing plant and of factory production control				
Initial inspection of the manufacturing plant and of factory production control carried out by the manufacturer regarding the constancy of performance related to reaction to fire and taking into account a limiting of organic material and/or the addition of fire retardants.	As defined in clause 2.2.1 of the EAD	As defined in clause 2.2.1 of the EAD	As defined in clause 2.2.1 of the EAD	When starting the production
Continuous surveillance, assessment and evaluation of factory production control				
Continuous surveillance, assessment and evaluation of the factory production control carried out by the manufacturer regarding the constancy of performance related to reaction to fire and taking into account a limiting of organic material and/or the addition of fire retardants.	As defined in clause 2.2.1 of the EAD	As defined in clause 2.2.1 of the EAD	As defined in clause 2.2.1 of the EAD	2 times per year

4 REFERENCE DOCUMENTS

EN 15824:2017	Specifications for external renders and internal plasters based on organic binders
EN 13964:2014	Suspended ceilings - Requirements and test methods
EN 13501-1:2018	Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests
ISO 16000-11:2006	Indoor air -- Part 11: Determination of the emission of volatile organic compounds from building products and furnishing -- Sampling, storage of samples and preparation of test specimens
EN 16516:2017	Construction products - Assessment of release of dangerous substances - Determination of emissions into indoor air
EN 1542:1999	Products and systems for the protection and repair of concrete structures. Test methods. Measurement of bond strength by pull-off
EN ISO 354:2003	Acoustics - Measurement of sound absorption in a reverberation room
EN ISO 11654:1997	Acoustics. Sound absorber for use in buildings rating of sound absorption
EN ISO 9053-1:2018	Acoustics. Determination of airflow resistance. Part 1:Static airflow method(ISO 9053-1:2018)
EN ISO 2811-1:2016	Paints and varnishes - Determination of density - Part 1: Pycnometer method.
EN ISO 3451-1:2000	Plastics - Determination of ash - Part 1: General methods
EN ISO 2555:2000	Plastics —Resins in the liquid state or in emulsions or dispersions— Determination of apparent viscosity by Brookfield method
EN ISO 1182:2010	Reaction to fire tests for products - Non-combustibility test
EN ISO 1716:2010	Reaction to fire tests for products - Determination of the gross heat of combustion (calorific value)
EN 13238:2001+A1:2014:2010	Reaction to fire tests for building products - Conditioning procedures and general rules for selection of substrates
EN 13823:2001+A1:2014	Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item
EN ISO 11925-2:2010	Reaction to fire tests - Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test

ANNEX A: GUIDANCE FOR REACTION TO FIRE TEST

A.1 Conditioning

All specimens shall be conditioned according to the provisions given in EN 13238 before testing.

A.2 Testing according to EN ISO 1182 and EN ISO 1716

These methods are relevant for classes A1 and A2.

All the components described in the test specimen of figure A.2 except the substrate shall be considered.

If the product contains flame retardant, the composition with the lowest amount of the flame retardant shall be tested.

The test result reminds valid for products with:

- the same chemical composition,
- equal thickness or less of final product,
- lower amounts of organic content, and
- higher amounts of the same type of flame retardant, if any.

A.3 Testing according to EN 13823 (SBI)

This method is relevant for classes A2, B, C and D as well as for the additional classifications s1, s2, s3, d0, d1 and d2 regarding smoke production and flaming droplets.

The end use applications have to be taken into account according to EN 13823.

The product (1) is sprayed onto mineral pre-coated panel (2) consists of a tile of mineral wool (2a) covered in a factory by a first layer of mineral plaster(2b), with or without an additional coating of mineral plaster (3- Additional coating) (mineral aggregates and acrylic binder) applied on site. (Figure A.1.)

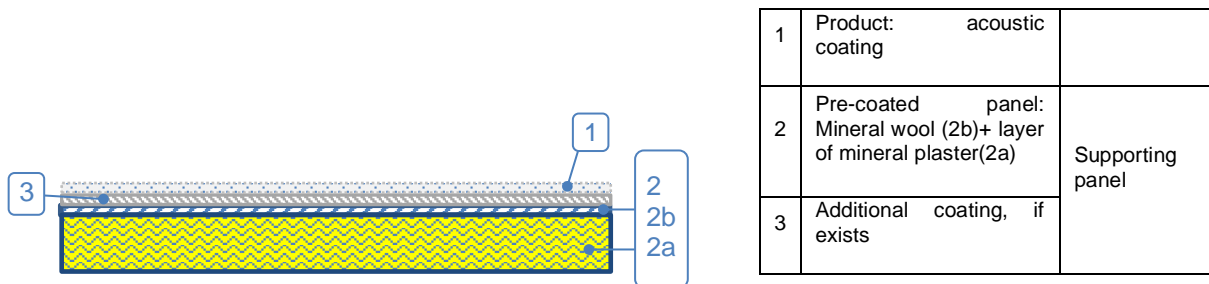


Figure A.1

The test arrangement shall be as described in **EN 13823** taking into account:

- Due to spraying process no external joint exists, but internal joints between panels shall be considered when preparing the long wing of the SBI specimens (see figure A.2).
- The specimen shall be mounted on a gypsum plasterboard to consider the application of the supporting ceiling panels over gypsum plasterboard. If other substrates are possible in the end use application, it would be required other standard substrates according to EN 13238.
- The samples shall be fixed on the substrate by adhesive, with the same yield that is used in its end application.

1	Product: Spray coating	-----
2	Pre-coated panel:Mineral wool (2b)+Layer of mineral plaster(2a)	Supporting panel
3	Additional coating, if exists	
4	Adhesive	-----
5	Substrate according to EN 13823	Gypsum plaster board

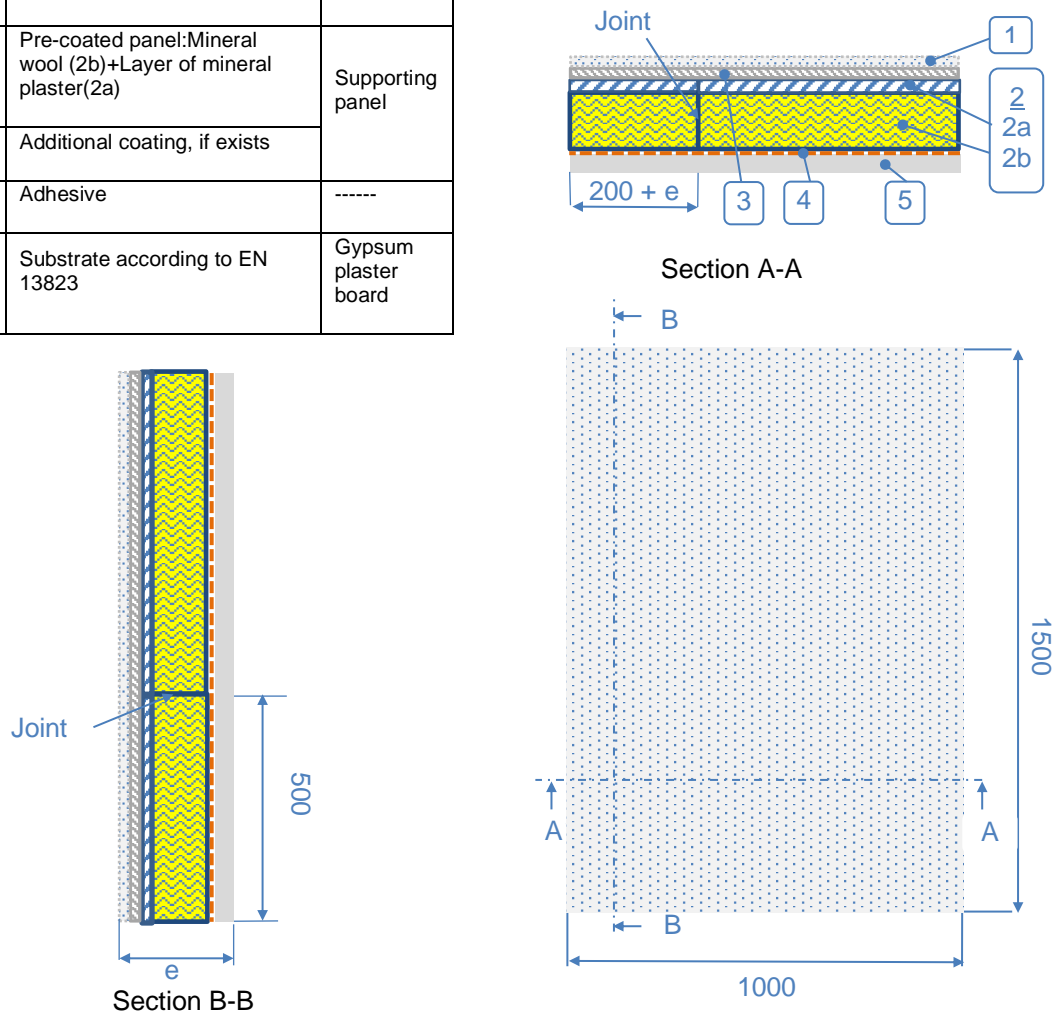


Figure A.2: Sections of long wings (mm)

The results of the tests are valid for:

- Product with the same chemical composition and lower mass per unit area applied onto the same supporting panel
- Product applied onto supporting panel with:
 - Mineral wool of:
 - higher thickness
 - equal or lower density
 - First mineral layer with:
 - lower mass per unit area
 - equal or lower PCS (Calorific Value)
 - Additional coating with:
 - lower mass per unit area
 - equal or lower PCS
 - Adhesive with equal or lower PCS

A.4 Testing according to EN ISO 11925-2

This method is relevant for classes B, C, D, E and F of EN 13501-1.

All the components describe in the test specimen of figure A.2, except the substrate, shall be considered.

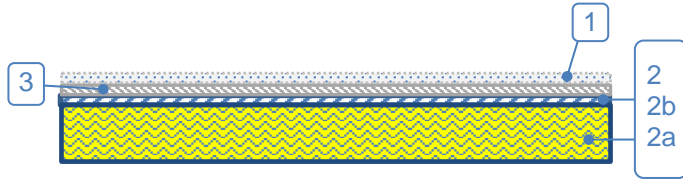
When preparing the specimens, for total thickness greater than 60 mm, thickness of mineral wool shall be reduce.

The test results are valid for products with:

- the same chemical composition,
- higher densities,
- lower thickness
- lower organic content,
- higher amounts of the same type of flame retardant and
- higher thickness of mineral wool, if thickness of 60 mm was tested.

ANNEX B: GUIDANCE FOR ADHESION TEST

The test is intended to determinate the adhesion of the product to the supporting panel on which is sprayed. (Figure B.1)

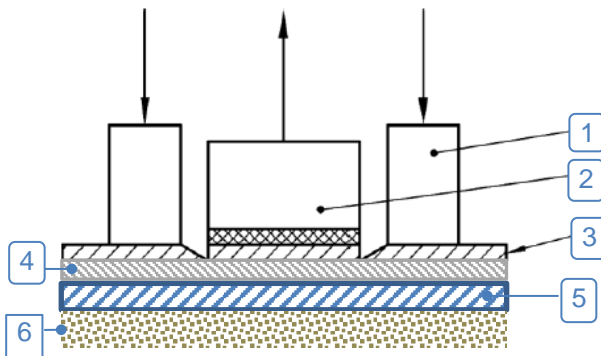


1	Product: acoustic coating	
2	Pre-coated panel: Mineral wool (2b)+ layer of mineral plaster(2a)	Supporting ceiling panel
3	Additional coating, if exists	

Figure B.1

Due that mineral pre-coated ceiling panel presents a mineral wool layer and to avoid failure at mineral wool, test specimen shall be prepared according to the following instructions:

- The substrate shall be composed by the supporting panel without the back mineral wool (See figure B.2). The dimensions of substrate shall be of 400 mm x 400 mm.
- The product shall be applied on a surface of 300 mm x 300 mm onto the substrate, following the manufacturer’s stipulations
- The product shall be drilled until the top of substrate using a rotating bore with a hollow trephine and a diamond-impregnated cutting ring of (50 ± 1) mm. See figure B.2.
- The sample (product + substrate) shall be placed on the bench of the dynamometer and fixed to avoid its movement.
- The test shall be done according to EN 1524 after drying, hardening and conditioning for 14 days at (21 ± 2) °C and (60 ± 10) % relative humidity.



1	External ring for fixing sample to the dynamometer
2	Dolly+adhesive
3	Product: Acoustic coating
4	Additional coating, if exists
5	Top part of pre-coated panel: layer of mineral plaster. (Panel without the mineral wool)
6	Bech of dynamometer

Figure B.2: Illustration of sample arrangement