



EUROPEAN ASSESSMENT DOCUMENT

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MINERAL PRE-COATED CEILING PANELS

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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).

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1. Scope of the EAD

1.1. Description of the construction product

This EAD covers the multi-layers panels (thickness 20 mm – 100 mm) with a covering layer of mineral plaster. The covering layer is executed on site and may be coloured. The supporting panel is glued on the background (board or concrete), the glue is part of the kit.

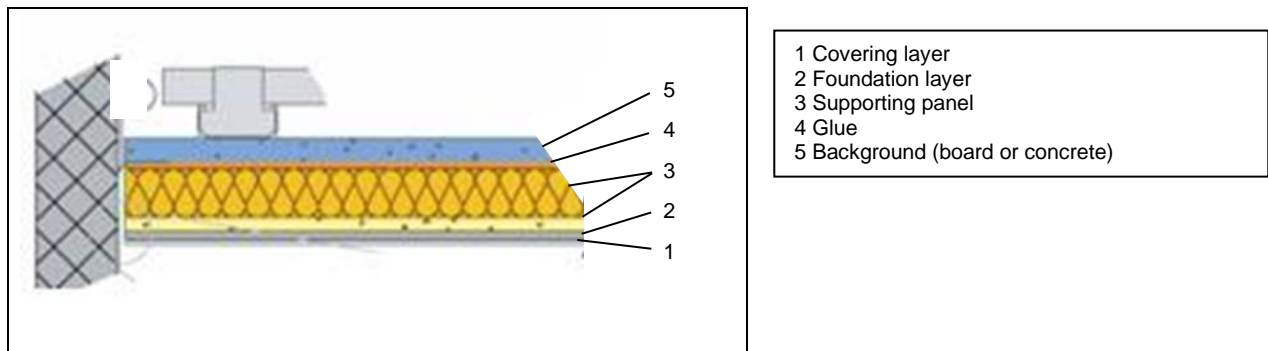


fig.1: example of panel on plasterboard

Kit includes the supporting panel, the foundation and the covering layers and the glue. The supporting panel consists of a tile made of mineral wool covered in a factory by a first layer of mineral plaster. The four edges of the tile are bevelled. Metal claws could be used in the edges in order to reinforce the bond strength. The covering layer is made of mineral powder and acrylic binder.

The product is not fully covered by a harmonised European standard (hEN) because EN 13964 only covers the ceiling but not the multi-layers panel.

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 system is intended to be glued underfloor as sound absorbing material for ceiling. The present EAD considers only applications in dry rooms (class A according to EN 13964:2014) and in any type of buildings.

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 Mineral Pre-coated Ceiling Panels for the intended use of 25 years when installed in the works (provided that the Mineral Pre-coated Ceiling Panels is subject to appropriate installation (see 1.1)) 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.

1.2.3. Specific terms used in this EAD

Unless otherwise stated, the terms used in EN 13964:2014 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

2.1. Essential characteristics of the product

Table 1 shows how the performance of Mineral Pre-coated Ceiling Panels is assessed in relation to the essential characteristics.

Table 1 Essential characteristics of the product and assessment methods and criteria for 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	See 2.2.1	Class
Basic Works Requirement 3: Hygiene, health and the environment			
2	Content and/or release of dangerous substances	See 2.2.2	Class
Basic Works Requirement 4: Safety and accessibility in use			
3	Bonding strength	See 2.2.3	Level
Basic Works Requirement 5: Protection against noise			
4	Sound absorption	See 2.2.4	Level

2.2. Assessment methods and criteria for 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.

If for any components covered by harmonised standards or European Technical Assessments the manufacturer of the component has included the performance regarding the relevant essential characteristic in the Declaration of Performance, retesting of that component for issuing the ETA under the current EAD is not required.

2.2.1. Reaction to fire

The ceiling panels shall be tested, using the test method(s) referred to in EN 13501-1+A1:2013 and relevant for the corresponding reaction to fire class. The product shall be classified according to Commission Delegated Regulation (EU) No 2016/364 (Euroclass A1 to F).

2.2.2. Content and/or release of dangerous substances

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 (in accordance with EOTA TR 034) 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 scenarios for this product and intended use with respect to dangerous substances are:

IA1: Product with direct contact to indoor air.

IA2: Product with indirect contact to indoor air (e.g. covered products) but possible impact on indoor air.

SVOC and VOC

For the intended use covered by the release scenarios IA1 and IA2 semi-volatile organic compounds (SVOC) and volatile organic compounds (VOC) are to be determined in accordance with EN 16516:2017.

The respective loading factor [m^2/m^3] used for emission testing can be taken from the following table:

Table 2 Loading factor L, depending on the product type (in accordance with EN 16516:2017)

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

The preparation of the test specimen is performed as follows: For the rendering kit, all possible materials and components of the kit are to be installed in accordance with the manufacturer's product installation instructions or (in absence of such instructions) the usual practice of installation.

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 relevant test results shall be expressed in [mg/m^3] and stated 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.

2.2.3. Bonding strength

The bonding strength shall be tested for each type of tiles and for each type of support in accordance with Annex A.1. The tensile strength of the craws shall be tested in accordance with annex A.2. Each test is performed on 5 specimens. The mean value shall be stated.

Tolerances

The tolerance of panels for length, width, thickness and squareness deviation shall be stated in the ETA. If no particular tolerances are applicable, the following given into EN 13964:2014 can be taken into account:

Dimensions tolerances:

- Length (mm): $\pm 1,5$ mm
- Width (mm): $\pm 1,5$ mm
- Thickness (mm): $\pm 1,5$ mm
- Squareness deviation from 90°: 1/500

2.2.4. Sound absorption

Sound absorption is measured according to EN ISO 354:2004. 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 11654:1997.

ETA must indicate the relevant details of the product implementation and execution for the test (such as, for instance, fixing, kind of floor, glue, etc.).

3. Assessment and verification of constancy of performance

3.1. System(s) of assessment and verification of constancy of performance

For the products covered by this EAD the applicable European legal act is: Decision 1998/437/EC

The system to be applied is: **3 for any use except for uses subject to regulations on reaction to fire.**

In addition, with regard to reaction to fire for products covered by this EAD the applicable systems to be applied are: **1, 3 and 4** depending on the conditions defined in the said Decision.

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 (product, raw/constituent material, component - indicating characteristic concerned)	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	Density of the insulation	EN 1602:2013	Nominal value +5;-5%	3	Minimum 1 per delivery and per batch
2	Density of the foundation layer	Annex A3	Nominal value +5;-5%	1	1 per shift and production line
3	Density of the covering layer	Annex A3	Nominal value +5;-5%	1	1 per shift and production line
4	Tolerances of dimensions	See 2.2.3	See 2.2.3	3 (≥ 1 per shift and production line)	1 per day
5	Permanent control of the chemical composition of the product and the constituents	-	-	1	1 per batch and production line

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 mineral pre coated ceiling panels are laid down in Table 3.

The intervention of a notified body is required only under the conditions defined in Decision 1998/437/EC, in case of reaction to fire classes A1, A2, B and C of the product for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. a limiting of organic material and/or the addition of fire retardant).

Table 3 Control plan for the notified body; cornerstones

No	Subject/type of control (product, raw/constituent material, component - indicating characteristic concerned)	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 (for systems 1 only : for uses subject to regulations on reaction to fire)					
1	Initial inspection of the manufacturing plant and sampling	See section 2 of this EAD	According to control plan	-	--
2	Assessment of the technical conditions in the factory, including the assessment of the factory production control system. Special attention at density insulation controls and final product controls stages of production, Check internal production control documents of the factory.	-	According to control plan	-	--
Continuous surveillance, assessment and evaluation of factory production control (for system 1 only)					
1	Subsequent continuous surveillance of factory production control to ensure continuing conformity with the performance stated in the ETA.	See section 2 of this EAD	According to control plan	-	twice per year (It is possible to reduce the number of visits to the factory to once a year if the manufacturer has proven good quality over a long period of time)

4. Reference documents

EN ISO 354:2004	Acoustics — Measurement of sound absorption in a reverberation room
EN 13964:2014	Suspended ceilings — Requirements and test methods
EN 13501-1+A1:2013	Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests
EN 13823+A1:2015	Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item
EN ISO 1716:2018	Reaction to fire tests for building products – Determination of the heat of combustion
EN 13238:2012	Reaction to fire tests for building products — Conditioning procedures and general rules for selection of substrates
EN 1602:2013	Thermal insulating products for building applications -Determination of the apparent density
EOTA TR 034 (2015)	General BWR 3 Checklist for EADs/ETAs – Content and/or release of dangerous substances in construction products

Annex A - Details of assessment methods

A.1: Determination of the bonding strength

The determination of the bonding strength may be carried out using the following test method.

Specimens:

The specimens are the tiles bonded on their support. The dimensions are 100 mm X 100 mm for a thickness corresponding to the actual thickness of the tile. The specimens shall be tested for 21 and 42 days old after bonding operation.

Environmental conditions:

Before commencing the test the specimens shall pass through the following conditioning:

Bring to equilibrium with one of the limit conditions: $(20 \pm 2)^{\circ}\text{C}$, $(50 \pm 5)\%$ HR; $(20 \pm 2)^{\circ}\text{C}$, $(95 \pm 5)\%$ HR. This is considered to have been accomplished when the difference in weight (mass) between two successive weighings 24 hours apart is not greater than 1 %.

Load:

The load shall be applied with a rate of loading of 100 mm/min.

Results

The test report shall include the following information:

- Description and physical characteristics of the sample tested;
- Number of tests executed;
- The failure mode;
- Each individual value of ultimate load in N;
- Average value of ultimate load in N;
- Load-displacement curves.

A.2: Determination of the tensile strength

The determination of the traction strength of the panels supported by the craws may be carried out using the following test method.

Specimens:

The specimens are made of two tiles with a craw between them. The craw is fixed on the support. The dimensions are at least 400 mm X 400 mm for a thickness corresponding to the actual thickness of the tile.

Environmental conditions:

Before commencing the test the specimens shall pass through the following conditioning:

Bring to equilibrium with the limit conditions: $(20 \pm 2)^{\circ}\text{C}$, $(50 \pm 5)\%$ HR. This is considered to have been accomplished when the difference in weight (mass) between two successive weighings 24 hours apart is not greater than 1 %.

Load:

The load shall be applied with a rate of loading of 100 mm/min.

Results

The test report shall include the following information:

- Description and physical characteristics of the sample tested;
- Number of tests executed;
- The failure mode;
- Each individual value of ultimate load in N;
- Average value of ultimate load in N;
- Load-displacement curves.

A.3: Determination of the bulk density

The determination of the bulk density of the mineral layers material may be carried out using the following test method.

Specimens:

One mineral layer material shall be filled in a measuring vessel with a capacity of 1L (V_v) determined with an accuracy of 1% and its mass determined with an accuracy of 1g (m_1). The fresh mineral layer shall have a minimum volume of 1,5 times the quantity to perform the test.

Filling method:

Fill the measuring vessel with the mineral layer material in such a way that the material flows from the centre of the vessel to its outer surface. Add material until it projects above the edge. Skim off any excess material living the surface plane and level with the top edge of the vessel. Wipe the edge clean with a damp cloth.

Weighting:

Determine the total mass (m_2) of the vessel filled with mineral layer material to the nearest 1g.

Results

Calculate the bulk density of fresh mineral layer material (ρ_m) from the following:

$$\rho_m = \frac{m_2 - m_1}{V_v}$$