Istituto per le Tecnologie della Costruzione
Consiglio Nazionale delle Ricerche
Via Lombardia 49 - 20098 San Giuliano Milanese – Italy
tel: +39-02-9806.1 – Telefax: +39-02-98280088
e-mail: segreteria.itab@itc.cnr.it

Designated according to Article 29 of Regulation (EU) N° 305/2011.

EOTA Member
www.eota.eu
European Organisation for Technical Assessment
Organisation Européenne pour l'évaluation technique

European Technical Assessment ETA 20/0562 of 16/07/2020

GENERAL PART

Trade name of the construction product	**AMAGEL A2**
Product family to which the construction product belongs	**PAC 04: THERMAL INSULATION PRODUCTS. COMPOSITE INSULATING KITS/SYSTEMS. Low lambda composite boards made of mineral wool fibres and aerogel additives**
Manufacturer	**AMA Composites srl Via Repubblica, 7 - 41011 Campogalliano (MO) - Italy**
Manufacturing plant	**AMA Composites srl Via Repubblica, 7 - 41011 Campogalliano (MO) - Italy**
This European Technical Assessment contains:	**8 pages, including 3 annexes which form an integral part of this assessment**
This European Technical Assessment is issued in accordance with Regulation (EU) n° 305/2011, on the basis of	**EAD 040037-00-1201 ed. December 2014– Low lambda composite boards made of mineral wool fibres and aerogel additives**

The European Technical Assessment is issued by ITC-CNR in Italian and English language. Translations of this European Technical Assessment into other languages shall fully correspond to the original issued document and should be identified as such. Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annex(es) referred to above). However, partial reproduction can be made with the written consent of ITC-CNR (issuing Technical Assessment Body). In this case partial reproduction has to be designated as such.

SPECIFIC PARTS

1. TECHNICAL DESCRIPTION OF THE PRODUCT

The *AMAGEL A2* consists of a composite board with a flexible insulating matrix, based on glass fibers, and a high concentration of nanoporous aerogel. The product is delivered in rolls or in panels. The nominal thickness is 10 mm.

The product description is given in Annex A.

2. SPECIFICATION OF THE INTENDED USE IN ACCORDANCE WITH EUROPEAN ASSESSMENT DOCUMENT N° 040037-00-1201 (hereinafter EAD)

The *AMAGEL A2* is intended to be mainly used for thermal insulation of buildings, compatibly with the product installation/working conditions and temperatures. It can be applied as coating, in the wall cavity or in dry installations.

The installation specifications given by the manufacturer are summarized in Annex B.

Concerning product packaging, transport and storage it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport and storage, as he considers necessary in order to reach the declared performances.
The information about installation is provided with the technical documentation from the Manufacturer and it is assumed that the product will be installed according to it or (in absence of such instructions) according to the usual practice of the building professionals.

Concerning the installation conditions of the product, the manufacturer specifies minimum temperature of 5°C and maximum temperature of 30°C. Concerning the working conditions of the product, the manufacturer specifies minimum temperature of -50°C and maximum temperature of +450°C.

The performances assessed in this European Technical Assessment, according to the applicable EAD, are based on an assumed intended working life of at least 50 years, provided that the conditions for the installation, packaging, transport, storage, installation as well as appropriate use, maintenance and repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3. PERFORMANCE OF THE PRODUCT AND REFERENCES TO THE METHODS USED FOR ITS ASSESSMENT

The tests for performance assessment of *AMAGEL A2* were carried out in compliance with EAD 040037-00-1201 according to the test methods reported herein, as well for what concerns sampling, conditioning and testing provisions.

3.1 SAFETY IN CASE OF FIRE (BWR 2)

#	Essential characteristic	Performance
1	Reaction to fire	A2 – s1, d0
2	Continuous glowing combustion	According to information reported in Annex C1, the test has been passed: the product does not show propensity for continuous smouldering combustion

3.2 HYGIENE, HEALTH AND THE ENVIRONMENT (BWR 3)

#	Essential characteristic	Performance
3	Water vapour permeability – Water vapour transmission	Water vapour transmission is stated as water diffusion resistance factor, μ, and it results $\mu \leq 8$
4	Water absorption	The short-term water absorption by partial immersion, W_p,, is determined, and it results W_p [kg/m^2] ≤ 0.33

3.3 SAFETY AND ACCESSIBILITY IN USE (BWR 4)

#	Essential characteristic	Performance
5	Compressive stress or compressive strength	**No performance assessed.**
6	Compressive creep for boards exposed to compression loads	**No performance assessed.**
7	Bending strength	**No performance assessed.**
8	Behaviour under point load for boards exposed to compression loads	The point load, F_p, at 5mm deformation results $F_p \geq 2482$ kN
9	Dimensional stability under specified temperature and humidity	Dimensional stability is stated in terms of dimensional relative reduction for: - Panel base $\Delta\varepsilon_b \leq 0.02$ % - Panel length $\Delta\varepsilon_l \leq 0.02$ % - Panel thickness $\Delta\varepsilon_d \leq 0.2$ % (0.02 mm)
10	Tensile strength perpendicular to faces	Tensile strength perpendicular to faces is determined and it results σ [MPa] ≥15.32
11	Shear strength and shear modulus of elasticity of the composite product for use with rendering	**No performance assessed.**

3.4 PROTECTION AGAINST NOISE (BWR 5)

#	Essential characteristic	Performance
14	Sound absorption	**No performance assessed.**
15	Airflow resistivity	**No performance assessed.**

3.5 ENERGY ECONOMY AND HEAT RETENTION (BWR 6)

#	Essential characteristic	Performance
16	Thermal conductivity	Thermal conductivity is determined and it results $\lambda_{10,dry,90/90}$ [W/mK]= 0.016
17	Thickness	Thickness is determined and it results d [mm]= 11.62 ±0.27
18	Length and width	**No performance assessed.**
19	Squareness	**No performance assessed.**
20	Flatness	**No performance assessed.**

4. ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE

In accordance with the European Assessment Document EAD No. 040037-00-1201 the applicable European legal act is: **Decision 1999/91/EC** as amended by **Decision 2001/596/EC**.
The AVCP system to be applied is: **3**

In addition, with regard to reaction to fire for products, the applicable European legal act is **Decision 1999/91/EC** as amended by **Decision 2001/596/EC.**
The AVCP system is **3.**

5. TECHNICAL DETAILS NECESSARY FOR THE IMPLEMENTATION OF THE AVCP SYSTEM, AS PROVIDED FOR IN EAD 040037-00-1201

Technical details necessary for the implementation of the AVCP system are laid down in the Control Plan deposited at ITC-CNR.

Issued in San Giuliano Milanese, Italy on 16/07/2020
by ITC – CNR

Professor Antonio Occhiuzzi
Director of ITC-CNR

OCCHIUZZI
ANTONIO
16.07.2020
10:27:22 UTC

Product description

Technical data	Value	Unit	Test method
Dimensions	1500 x 3500	[mm]	[-]
Specific heat*	1,011 ÷ 1,508	[J/g°C]	ASTM E 826
Nominal density	200±10%	[kg/m^3]	[-]
Color	white	[-]	[-]

*Mean specific heat, in the range of temperature [+20; +450] °C

AMAGEL A2	**Annex A1** **of ETA N° 20/0562**
Product Description	

INSTALLATION INSTRUCTIONS

Exterior cladding application

Preliminary operations: The existing plaster layer, perfectly prepared, is the fundamental requirement to obtain the proper flatness of the support. It is essential to prepare a cohesive and dust-free base in order to allow perfect adhesion of the adhesive. If necessary, it is advisable to proceed with the application of a surface fixative primer.

Application of adhesive: The adhesive must be applied on the back of the panel: the part with the rigid crust must remain external and receive the subsequent finishing smoothing. Use a toothed spatula (teeth of 6-8 mm), applying adequate pressure. No air must circulate between the insulating panel and the support, so the insulating panel must be fixed to the support uniformly by evenly applying the adhesive over the entire surface of the panel itself. The adhesive must not enter inside the joints, otherwise they should be filled with the same insulating material to prevent the formation of thermal bridges and possible cracks. To ensure greater adhesion, a layer of adhesive can also be applied to the support (use the same toothed spatula. Subsequently, apply the panel to the support, taking care to properly adhere each area (if necessary proceed to a superficial beating of the panel with a plastic plastering towel); verify the perfect adhesion and flatness by using an aluminium straight edge.

Fixing: The mechanical fixing of the insulating plates by plugs is complementary to the fixing by adhesive. The plugging scheme and the number of anchors vary according to the type of the supporting structure but should always respect a minimum of 6 plugs per square meter. The choice of the most suitable fixing system is based on the length and type of support. The length of the plugs will depend on the anchoring depth, the thickness of the old plaster, of the adhesive layer and of the insulating material. The mechanical fixing must be performed after the hardening of the adhesive, taking care to maintain a minimum distance of 15 cm from the corners of the panel. Use exclusively plastic plugs for exterior cladding applications.

Smoothing: The same product used for gluing can be used for smoothing. This step necessarily requires 2 coats.
- The first layer should create 2/3 of the total final thickness and must be applied with a 5mm American toothed spatula
- After applying the first layer, the reinforcing mesh should be applied in order to avoid the formation of cracks in the joints between two adjacent panels
- The second layer must be applied with a smooth spatula.
- Total thickness of the two smoothing layer should be approximatively 4-6 mm.
- An application of at least 1.5 kg per mm of thickness is recommended.

Reinforcing mesh: The fiberglass mesh is used to prevent the cracks that could be created on the façade, due to the mechanical forces and heat fluctuations, or between the joints of the different panels. The fiberglass mesh must be prepared: it should undergo a protection treatment from the alkalis contained in the smoothing material. It is recommended to apply a mesh between 160-220 g/m2. The mesh must be positioned in the third external of the smoothing layer. The inner angles of architraves-soffits must be reinforced with mesh strips and at all opening angles a sweepback will have to be placed on the mesh.

Primer: The use of a primer prepares and uniforms the surface that will be subsequently covered with the finishing coating, in order to avoid colour irregularities due to different reactions between the materials and/or different absorption possibilities.

Finishing: The system must be protected from the weather agents with thick finishing coatings or through painting. There are now various types of products offered by the market: silicates, siloxanes, acrylic, vinyl, quartz, etc. Between all of these alternative products, we always recommend using good-quality products with high transpiration.

AMAGEL A2	**Annex B1/1** **of ETA N° 20/0562**
Intended Use – Installation instructions	

INSTALLATION INSTRUCTIONS

Interior cladding application

Preliminary operations: The gluing of AMAGEL A2® with plasterboard can be done only on walls that are exempt from traces of dust, humidity and fats. In case of very porous surfaces, such as visible brickwork, it will be appropriate to soak the surface or to apply a coat of a special treatment with resins with water dispersion to prevent the subtraction of water from the adhesive before the adhesion. Smooth surfaces, such as concrete walls or prefabricated manufacts obtained with a metallic formwork, must be treated with a specific gripping bottom made of quartz dust. Brickworks plastered with a hydraulic mortar without a treatment of superficial finishing must be probed on the entire surface to individuate cavities and eventual areas detached from the plaster, which will have to be removed and substituted. Generically covered walls must be deprived of the coverage in correspondence of the gluing points, which has to be guaranteed directly on the brickwork.

Gluing of the panels: To fix the AMAGEL A2® with plasterboard panels we use adhesives made of gypsum, which will be prepared following the specific instruction of use. Always verify, in any case, that the chosen adhesive is suitable to the use of the support. Using a toothed spatula (teeth of 6-8 mm) apply the “full bed” adhesive on the entire surface of the panel on the side of the insulating material. Indicative waste of adhesive 4/6 kg/m² in alternative it is possible to use polyurethane adhesives in cylinder, specific for insulant panels and therefore with a very low expansion.

Application of the panels: Trace on the floor and on the ceiling the fake wire of the extern surface and lay on the ground, against the wall that has to be covered, an eventual separative tape to detach the slabs from the floor and the ceiling. Lean against the wall the AMAGEL A2® with plasterboard slabs, which will be lifted in relation to the floor plan. The slabs must be beat with light hits of hand or with a metallic ruler of an appropriate length to obtain the perfect alignment with the floor and the ceiling. Accurately lean the adjoining panels to prevent the leakage of the adhesive mortar and in that way eliminate thermal and/or acoustic bridges. Wait for the grip of the adhesive and then proceed with the application of the mechanic fastening in the measure of 5 plugs every square meter; in presence of straight border panels, preventively proceed with the formation of a countersink at 45° on the border of the adjoining slabs to permit the insertion of the plaster and prevent the creation of possible cracks.

Grouting of the panels: The grouting of the seams must be done with the use of suitable stucco and of tape covered with micro-perforated paper. Distribute an even and abundant coat of stucco for the joints along the border of the panels until the level of the surface of the panel. Lay the tape with micro-perforated mesh with the rough side towards the panel, centred in the centre of the joint; apply an appropriate pression with the spatula to remove the excess of stucco under and on the sides of the tape, taking care of avoiding the formation of bubbles of air. Before proceeding with the second and third coat, it is appropriate to ensure that the previous coat has adhered and is completely dry, so that every phenomena of withdrawal has ended. When it is completely dry, verify that there aren’t any imperfections or micro-irregularities along the plastered joint. Apply the second layer of stucco which will extend itself to a sufficient thickness to bring the plastered surface on the same level of the cardboard surface. Wait again for it to be completely dry before proceeding with the sanding if necessary and therefore the third coat of finishing, which will be very thin. Trim the excess protruding from the tape and proceed with the finishing just like a normal wall made of covered gypsum panels. Indicative waste of stucco 0,4/0,5 kg/ m².

AMAGEL A2	Annex B1/2 of ETA N° 20/0562
Intended Use – Installation instructions	

Table C1: Continuous glowing combustion – test results

Sustained flaming at the top or either vertical side of the specimen [s]	Not observed
Re-ignition of the specimen after 5 min or more	Not observed
After the maximum test duration of 6 h any of the thermocouples registers more than 50 °C or increasing temperatures for at least 60 min	Not observed
[*]Thermocouple 1 maximum temperature [°C]	139.1
[*]Thermocouple 2 maximum temperature [°C]	76.8
[*]Thermocouple 3 maximum temperature [°C]	52.9
[*]Thermocouple 4 maximum temperature [°C]	51.6
[*]Thermocouple 5 maximum temperature [°C]	40.2
[*]Thermocouple 6 maximum temperature [°C]	42.5
Substained flaming [s]	Not observed
Application of extinguishing board in the 5 minutes	Not observed

[*]Maximum value recorded over the considered experimental sample, described in ER

AMAGEL A2	**Annex C1** **of ETA N° 20/0562**
Performances – BWR 2	