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European Technical Assessment

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General Part

Nom commercial *Trade name*	**HYBRIS 31, ALVEOL'R 31, THERMO AIR 31**
Famille de produit *Product family*	**Produit composé de faces réfléchissantes utilisé dans des procédés d'isolation thermique de l'enveloppe d'un bâtiment.** **Product composed of reflective faces used in thermal insulation processes of a building envelope.**
Titulaire *Manufacturer*	**ACTIS SA** **Avenue de Catalogne** **11300 Limoux, France**
Usine de fabrication *Manufacturing plant*	**ACTIS SA** **Hameau de St Nestor** **09300 Villeneuve d'Olmes, France**
Cette evaluation contient: *This Assessment contains*	7 pages incluant 0 annexes qui font partie intégrante de cette évaluation *7 pages including 0 annexes which form an integral part of this assessment*
Base de l'ETE *Basis of ETA*	Document d'Evaluation Européen (DEE) (EAD-040007-00-1201) *European Technical Assessment* (DEE) (EAD-040007-00-1201)

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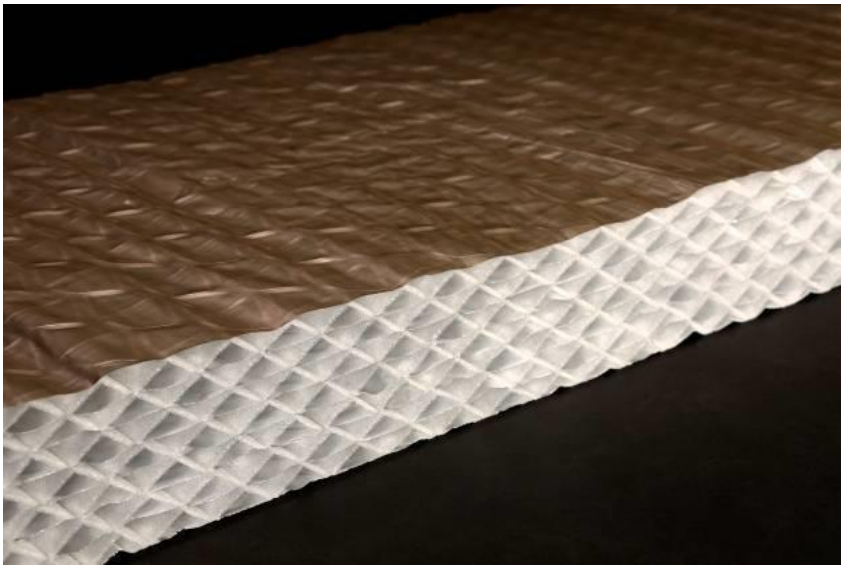
SPECIFIC PART

1. Technical: definition of the product and intended use

HYBRIS 31, ALVEOL'R 31, THERMO AIR 31 is a non-homogeneous insulating product. It is composed of an inner core of shaped polyethylene foam layers with outer surfaces of aluminium coated polyethylene foils. The inner foam layers are interspersed with aluminium coated foils creating triangular shaped air cavities. The layers are assembled by thermo–glueing.

The thickness of the product varies from 50 to 250 mm. The product is packaged in panels.

An PE silicone adhesive tape 100 mm or 200 mm wide with acrylate glue is used to seal joints between HYBRIS 31 sheets.



HYBRIS 31 product

2. Specification of the intended use in accordance with the APPLICABLE European Assessment Document (EAD)

HYBRIS 31, ALVEOL'R 31, THERMO AIR 31 is intended to be used in construction system as thermal insulation in roofs, walls and floors:

Application for roofs

- Pitched roof at rafter level
- Loft/attics application
- Suspended and exposed timber floors
- Cold and hot flat roofs (as used e.g. in the United Kingdom)

Application for walls

- Vertical walls in timber frame constructions
- Vertical masonry walls
- Vertical steel frame construction
- Distribution bulkheads

The HYBRIS 31, ALVEOL'R 31, THERMO AIR 31 shall be used in watertight and weatherproof constructions and the surfaces to be covered shall be firmly fixed, clean, dry and smooth. Storing loads on the HYBRIS 31 is not allowed.

Air gaps on the external surfaces can be installed to make use of the reflective faces of HYBRIS 31, ALVEOL'R 31, THERMO AIR 31 and thereby improving the thermal efficiency of the construction.

Concerning the application of the thermal insulation products also the respective national regulations shall be observed.

The design value of the thermal conductivity or thermal resistance shall be laid down according to relevant national provisions.

This European Technical Approval does not cover the complete or finished system of insulation. As for the application of all products insulating, the national codes of practice and regulations must be respected for design and implementation of construction systems.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the thermal insulation products of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, 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 identification tests and the assessment for the intended use of this product according to the Essential Requirements were carried out in compliance with the European Assessment Document (EAD) Nº 040007-00-1201 for "Thermal insulation products for buildings with radiant heat reflective components", November 2015).

Statement of dangerous substances:

According to the manufacturer's declaration taking account of EOTA TR 034, the product installed does not contain and release any dangerous substance.

3.1. Dimensions

Length and width

Length and width are determined according to the standard EN 822.

Table 1a: Length and width of HYBRIS 31, ALVEOL'R 31, THERMO AIR 31 Insulation

	Length x Width
HYBRIS 31, ALVEOL'R 31, THERMO AIR 31	*2650 m x 1200 m (*)*

(*) Complementary dimensions can be proposed depending to the application: (such as: 2650x1300, 1800 x 1200, 2400 x 1200, 1145 x 1200, 610 x 1200, 410 x 1200)
The other technical characteristics remaining identical.

Deviation :

The deviation from the nominal length is not more than - 2% +5%.
The deviation from the nominal width does not exceed the value ±2%.

Thickness

The thickness of the product is determined according to the standard EN 823. The test is performed with a load of 25Pa.

Table 1b: thickness of HYBRIS 31, ALVEOL'R 31, THERMO AIR 31 Insulation

Thickness of HYBRIS 31, ALVEOL'R 31, THERMO AIR 31 Insulation (mm)
50
60
75
90
105
125
140
155
170
185
195
205
220
235
250

Deviation :

The deviation from the nominal thickness does not amount to be more than: - 2/+10 mm

3.2. Apparent density

The apparent density is determined according to the standard EN 1602.

Table 2: Apparent density

	Apparent density
HYBRIS 31, ALVEOL'R 31, THERMO AIR 31	7,2 ± 1 kg/m^3

3.3. ER.2 Safety in case of fire – Reaction to fire

The insulation product is tested according to EN 15715 and annex A of EAD 040007-00-1201: December 2015 for mounting and fixing.

The fire class of performance is determined according to EN 13501-1.

Fire class of product: class F

3.4. ER.3 Hygiene, health and environment

Resistance to water vapour

The water vapour diffusion resistance μ is determined according to the standard EN 12572, condition C (23°C, 50%/93% R.H.). The thickness of equivalent layer of air having an equivalent vapour diffusion resistance Sd is higher than 90 m.

3.5. ER. 6 Energy, economy and heat retention

- **Core thermal resistance**

The core thermal resistance is determined according to the standard EN 16012:2015 (at a mean temperature of 10°C). The fractile core thermal resistance R(10°C 90/90) representing at least 90% of the production with a confidence level of 90% has been calculated according EN 16012:2015.

The declared thermal resistance RD has been calculated by rounding R(10°C 90/90) downwards to the nearest 0.05 m².K/W according to EAD 040007-00-1201 : December 2015 (§2.2.9).

Table 3. Core thermal resistances HYBRIS 31

Thickness (mm)	Declared core thermal resistance (m².K/W)
50	*1,60*
60	*1,90*
75	*2,40*
90	*2,85*
105	*3,35*
125	*4,00*
140	*4,45*
155	*4,95*
170	*5,40*
185	*5,90*
195	*6,25*
205	*6,55*
220	*7,05*
235	*7,50*
250	*8,00*

- **Thermal resistance of HYBRIS 31, ALVEOL'R 31, THERMO AIR 31 with air gap**

According to EN16012, HYBRIS 31, ALVEOL'R 31, THERMO AIR 31 thermal resistance with air gaps can bedetermined by adding thermal resistance of the air gaps neighbouring product.

The thermal resistance of air gaps has been calculated for air gaps of 20mm, horizontal heat flow and room temperature of 20°C and external temperature of 0°C (table 2).

Table 4a. Thermal resistances of the HYBRIS 31, ALVEOL'R 31, THERMO AIR 31 – with 1 air gap – Application for WALLS

Thickness (mm)	Thermal Resistance with 1 air gap in horizontal heat flow (m².K/W)	
	Core	***Core + 1 air gap****
50	1,60	2,20
60	1,90	2,55
75	2,40	3,00
90	2,85	3,50
105	3,35	4,00
125	4,00	4,60
140	4,45	5,10
155	4,95	5,60
170	5,40	6,05
185	5,90	6,55
195	6,25	6,85
205	6,55	7,20
220	7,05	7,65
235	7,50	8,15
250	8,00	8,65

(*) *Air gap of 20mm minimum, horizontal heat flow and room temperature of 20°C and external temperature of 0°C*

Table 4b. Thermal resistances of the HYBRIS 31, ALVEOL'R 31, THERMO AIR 31 – with 1 air gap – Application for ROOFS

Thickness (mm)	***Core (m².K/W)***	***Thermal Resistance with 1 air gap with upward vertical heat flow (m².K/W)***	***Thermal Resistance with 1 air gap with downward vertical heat flow (m².K/W)***
		Core + 1 air gap*	***Core + 1 air gap*** **
50	1,60	2,00	2,45
60	1,90	2,35	2,80
75	2,40	2,80	3,25
90	2,85	3,30	3,75
105	3,35	3,80	4,20
125	4,00	4,40	4,85
140	4,45	4,90	5,35
155	4,95	5,40	5,80
170	5,40	5,85	6,30
185	5,90	6,35	6,80
195	6,25	6,65	7,10
205	6,55	7,00	7,45
220	7,05	7,45	7,90
235	7,50	7,95	8,40
250	8,00	8,45	8,85

(*) *Air gap of 20mm minimum, upward vertical heat flow and room temperature of 20°C and external temperature of 0°C*

(**) *Air gap of 30mm minimum, downward vertical heat flow and room temperature of 20°C and external temperature of 0°C*

Note: Other calculations for other configurations such as upwards and downwards heat flow can be made according to EN 6946.

3.6. Emissivity

The emissivity is determined on a single metalized external film of the HYBRIS 31, ALVEOL'R 31, THERMO AIR 31 according to the standard EN 16012:2015.

- For the metallized external film of product who is installed inside the building (warm side):
  - The emissivity of the inner metalized face after the ageing test is 0.035.
  - The fractile value of emissivity is 0.043, representing at least 90% of the production with a confidence level of 90%.
  - The declared value of emissivity is **0.06**.

3.7. Durability aspects

Corrosion resistance:

Test according to ISO 9227, T3: "Corrosion tests in artificial atmospheres – Salt spray tests".

The test results concerning the measure of loss of mass and the visual check of the state of surface of the product show that there is no sensitive loss of material.

3.8. Peel strength

The peel strength of the HYBRIS TAPE adhesive tape on the external outer film of the product is tested according tothe standard EN ISO 11339, before and after ageing 28 days at + 70°C/90 % RH.

Product	Mean value before ageing (N/100 mm)	After ageing (N/100 mm)
Adhesive tape	28	42

3.9. Tensile strength

The tensile strength parallel to faces is determined according to the standard EN 1608.

Product	Longitudinal direction (kPa)	Transverse direction (kPa)
HYBRIS (Product alone)	> 45	> 30

3.10. Resistance to tearing (nail shank)

The resistance to tearing (nail shank) is determined according to the standard EN 12310-1, before andafter ageing 28 days at + 70°C/90 % RH.

Product	Before ageing (N)		After ageing (N)	
HYBRIS (Product alone)	Longitudinal direction	Transverse direction	Longitudinal direction	Transverse direction
	> 150	> 150	> 150	> 150

3.11. Sustainable use of natural resources (BWR7)

For the sustainable use of natural resources, no performance was investigated for this product.

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 040007-00-1201, the applicable European legal act is: 1999/91/EC.

The system to be applied is 4 for the Reaction to fire and 3 for all other characteristics.

5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with CSTB.

The classification of reaction to fire being F, no control is carried out on this characteristic.

The diffusion resistance of water vapour μ is checked directly every year. Indirect tests are also carried out regularly throughout the year to check this characteristic.

The original French version is signed By

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