



**Institut de  
Tecnologia de la Construcció  
de Catalunya**

Wellington 19  
ES08018 Barcelona  
T +34 933 09 34 04  
qualprod@itec.cat  
itec.cat



Member of



www.eota.eu

# European Technical Assessment

**ETA 22/0477  
of 22.01.2024**



## General part

<b>Technical Assessment Body issuing the ETA: ITeC</b>	
ITeC has been designated according to Article 29 of Regulation (EU) No 305/2011 and is member of EOTA (European Organisation for Technical Assessment)	
<b>Trade name of the construction product</b>	<b>Alucobond® A2 and Alucobond® Plus Thin Metal Composite Sheets</b>
<b>Product family to which the construction product belongs</b>	Thin Metal Composite Sheet
<b>Manufacturer</b>	<b>3A COMPOSITES GmbH</b> Alusingen-Platz 1 78224 Singen (Hohentwiel) Germany
<b>Manufacturing plant(s)</b>	<b>3A COMPOSITES GmbH</b> Alusingen-Platz 1 78224 Singen (Hohentwiel) Germany
<b>This European Technical Assessment contains</b>	11 pages including 1 annex which forms an integral part of this assessment.
<b>This European Technical Assessment is issued in accordance with Regulation (EU) 305/2011, on the basis of</b>	EAD 210046-00-1201 Ed. February 2018 <i>Thin Metal Composite Sheet</i>

**General comments**

Translations of this European Technical Assessment in 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. However, partial reproduction may be made, with the written consent of issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

## Specific parts of the European Technical Assessment

### 1 Technical description of the product

The subject of this European Technical Assessment (ETA) are the thin metal composite sheets (hereafter TMCS) Alucobond® A2 and Alucobond® Plus. These TMCS consist of two thin layers of aluminium skin, which are sandwiching a core in a continuous coextrusion process. The external aluminium skin is always pre-treated or pre-coated and the bonding of the metal skins to the core is achieved by an adhesive applied to both faces of the core. The bond is formed by temperature and pressure under controlled conditions.

The TMCS are composed by:

- Faced skins made of aluminium alloy according to EN 485-2 or EN 573-3, surface treated (coil coated according to EN 1396) or not.
- Solid core made of polymer with  $\geq 90$  % mineral filler with polymeric binder (Alucobond® A2) or  $\geq 70$ % mineral content (Alucobond® Plus).
- Adhesive layer of bonding faced skins and core through a continuous industrial process.

The product is cut to a range of panel sizes going from 2000 mm to 4000 mm (-0 / +6 mm) and from 4001 mm to 8000 mm (-0 / +10 mm) and on widths of 1000 mm, 1250 mm, 1500 mm, and 2000 mm, enabling vertical or horizontal modulation of the cladding.

This ETA evaluates only the Alucobond® panels, all other components required for installation, such as fasteners, profiles, etc., are not covered in the scope of this ETA.

A film protects the painted side from possible knocks or scratches until the panel is placed on site, removal of the protective film should not be carried out at temperatures below 10°C.

Arrows indicate the direction of lamination, which must be respected during installation. The panels are identified by a printing system that encodes the plate with the date and time of manufacture on the inside face.

Physical characteristics of the TMCS are shown in Table 1.

ALUCOBOND® TMCS	A2	PLUS
Panel thickness [mm]	4	4
Aluminium skins thickness [mm]	0,50	
Weight [kg/m <sup>2</sup> ]	8	8
Section modulus (W) [cm <sup>3</sup> /m]	1,75	1,75
Rigidity (E.I) [kN cm <sup>2</sup> /m]	2400	2400
Alloy	EN AW-5005 (AlMg1(B)), EN AW-5005A (AlMg1(C)), EN AW-3003 (AlMn1Cu), EN AW-3005 (AlMn1Mg0,5), EN AW-1200 (Al99,0) or EN AW-3105 (AlMn0,5Mg0,5) according to EN 485-2 or EN 1396 ; or EN AW-1085 (Al99,85) according to EN 573-3 ; or an equivalent alloy that meet the specifications given below in terms of tensile strength and yield strength. All aluminium alloys mentioned shall be tempered with the adequate temper in order to meet the specifications given below. The folding of the TMCS (therefore, of the aluminium skins) is not considered in this ETA.	
	<b>Minimum specifications for the aluminium alloys:</b> Tensile strength: $R_m \geq 130$ MPa Yield strength: $R_{p0,2} \geq 90$ MPa	
Linear thermal expansion	2,4 mm/m at 100°C temperature difference	

**Table 1:** General physical characteristics of Alucobond® TMCS.

## 2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

According to EAD 210046-00-1201 the Alucobond® A2 and Alucobond® Plus TMCS are intended to be used as:

- Cladding elements (cassettes/coffering, panels) in external and internal wall cladding kits.
- Parts (filling elements) of partition kits.
- Filling elements in external or internal supported ceilings.

The provisions made in this European Technical Assessment are based on an assumed working life 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.

This ETA is issued for Alucobond® TMCS based on the agreed data submitted by 3A Composites to ITeC, which identifies the products that have been assessed. Changes in the products or production process that may imply changes in the properties that have been assessed must be notified to ITeC before being implemented.

ITeC will decide whether such changes affect the ETA and, consequently, the validity of the CE marking based on the ETA, in case they affect, ITeC will decide whether new assessments will be necessary.

Information on use, maintenance, and repair of the TMCS is contained in the manufacturer's technical documentation. It is the manufacturer's responsibility to ensure that this information is made known to interested parts.

## 3 Performance of the product and reference to the methods used for its assessment

The assessment of the ALUCOBOND® TMCS panels for the intended use was performed following EAD 210046-00-1201 *Thin Metal Composite Sheet*.

Nr	Essential characteristic	Alucobond® TMCS	Performance		
			A2	Plus	
Basic Works Requirement 2: Safety in case of fire					
1	Reaction to fire		A2-s1,d0	B-s1,d0	
Basic Works Requirement 4: Safety in use					
2	Tensile performance	Core included	Tensile strength	Not assessed	
			Yield strength		
			Elongation		
			Tensile modulus of elasticity		
		Without core	Tensile strength		See Table A1 in Annex 1
			Yield strength		
Elongation					
3	Tensile strength perpendicular to face		Not assessed		
4	Flexural performance	Bending strength in four-point test arrangement	Table A2 in Annex 1	Table A3 in Annex 1	
		Bending modulus of elasticity in four-point test arrangement			
		Flexural strength in three-point test arrangement	Not assessed		
5	Shear performance	Shear strength	Not assessed		
		Shear modulus of elasticity			
6	Thickness	Total thickness of sheet	Not assessed		
		Thickness of skin	See Table A4 in Annex 1		
7	Apparent area density		See Table A5 in Annex 1		
8	Torque peel strength		Table A6 in Annex 1	Table A7 in Annex 1	

Nr	Essential characteristic	Alucobond® TMCS	Performance	
			A2	Plus
9	Hard body impact resistance		See Table A8 in Annex 1	
Basic Works Requirement 5: Protection against noise				
10	Dynamic stiffness		Not assessed	
Basic Works Requirement 6: Energy economy and heat retention				
11	Coefficient of thermal conductivity		Not assessed	
Basic Works Requirement 7: Sustainable use of natural resources (Durability)				
12	Decay of delamination resistance	After hygrothermal cycles	Not assessed	
13		After immersion 6h in boiling water at 90°C		
14		After immersion in water 500 h at 20°C		
15		After freeze-thaw cycles		
16		After long term exposure to heat (2500 h at hot dry air 80°C)		
17		Creep test		
18	Decay of bending strength	After hygrothermal cycles	Not assessed	
19		After immersion 6h in boiling water at 90°C	Not assessed	
20		After immersion in water 500 h at 20°C	Table A9 in Annex 1	Table A10 in Annex 1
21		After freeze-thaw cycles		
22		After long term exposure to heat (2500 h at hot dry air 80°C)	Not assessed	
23		Creep test		

**Table 3.1:** Essential characteristics and performance of the ALUCOBOND® TMCS panels.

#### 4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to the decisions of European Commission referred to in the EAD 210046-00-1201 (Decision 2003/640/EC<sup>1</sup>, as amended, and Decision 1998/437/EC<sup>2</sup>), the systems of AVCP (see EC delegated regulation (EU) No 568/2014 amending Annex V to Regulation (EU) 305/2011) given in the following table apply.

Product	Intended use	System	
Thin Metal Composite Sheet	Internal and external wall and ceiling finishes	Reaction to fire	1
		For external façade cladding	2+
		All remaining uses and characteristics	3

**Table 4.1:** Systems of assessment and verification of constancy of performance to be applied.

<sup>1</sup> 2003/640/EC – Commission Decision of date 4 September 2003, published in the Official Journal of the European Union (OJEU) L226/21 of 10/09/2003.

<sup>2</sup> 1998/437/EC – Commission Decision, published in the Official Journal of the European Union (OJEU) L194 of 10/07/1998.

## 5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

All the necessary technical details for the implementation of the AVCP system are laid down in the *Control Plan* deposited with the ITeC<sup>3</sup>, with which the factory production control shall be in accordance.

Issued in Barcelona on 22 January 2024

by the Catalonia Institute of Construction Technology.



Ferran Bermejo Nualart  
Technical Director, ITeC

---

<sup>3</sup> The *Control Plan* is a confidential part of the ETA and is only handed over to the notified certification body involved in the assessment and verification of constancy of performance.

## ANNEX 1: Performance of the ALUCOBOND® TMCS panels

### A1.1 Tensile performance

	Tensile strength	Yield strength	Elongation
	$\sigma_t$ [MPa]	$\sigma_m$ [MPa]	$\epsilon$ [%]
Mean value [MPa]	143,2	119,0	10,6
Standard deviation	1,83	0,63	1,23
Characteristic value	138,9	117,5	--
Two-sided confidence interval ( $\epsilon_{0,975}$ ) [%]	--	--	(7,7 - 13,4)

**Table A1:** Tensile performance of the ALUCOBOND® sheets (without core), according to EAD 210046-00-1201 Cl. 2.2.2.

### A1.2 Bending strength in four-point test arrangement

	Bending strength	Modulus of elasticity	Failure mode
	$R_{mi}$ [MPa]	E [GPa]	
Bending strength ( $R_{bend,INI}$ )	Average value ( $R_{bend,INI,av}$ ) [MPa]	149,7	--
	Standard deviation $\sigma_n$ [MPa]	1,07	--
	Characteristic value ( $R_{bend,INI,k}$ ) [MPa]	147,2	--
Bending modulus of elasticity ( $E_{bend}$ )	Average value ( $E_{bend,av}$ ) [GPa]	--	52,03
	Standard deviation $\sigma_n$ [GPa]	--	1,76
	One-sided bottom confidence level ( $E_{bend,0,95}$ ) [GPa]	--	50,35

**Table A2:** Bending performance in four-point test arrangement of the ALUCOBOND® A2 panel, according to EAD 210046-00-1201 Cl. 2.2.4.1.

		Bending strength	Modulus of elasticity	Failure mode
		$R_{ini}$ [MPa]	E [GPa]	
Bending strength ( $R_{bend,INI}$ )	Average value ( $R_{bend,INI,av}$ ) [MPa]	126,2	--	--
	Standard deviation $\sigma_n$ [MPa]	0,70	--	--
Bending modulus of elasticity ( $E_{bend}$ )	Characteristic value ( $R_{bend,INI,k}$ ) [MPa]	124,5	--	
	Average value ( $E_{bend,av}$ ) [GPa]	--	47,38	
	Standard deviation $\sigma_n$ [GPa]	--	0,45	
	One-sided bottom confidence level ( $E_{bend,0,95}$ ) [GPa]	--	46,95	

**Table A3:** Bending performance in four-point test arrangement of the ALUCOBOND® PLUS panel, according to EAD 210046-00-1201 Cl. 2.2.4.

### A1.3 Thickness

	A2			PLUS		
	Width [m]	Length [m]	Thickness [m]	Width [m]	Length [m]	Thickness [m]
Mean value (mm)	0,10496	0,147928	0,004112	0,104966	0,14802	0,00406
Standard deviation	1,41E-05	6,61E-05	3,83E-05	1,14E-05	7,25E-05	1,22E-05
Median ( $d_{0,975}$ ) [mm]	0,105	0,148	0,004	0,105	0,148	0,004

**Table A4:** Skin thicknesses of the ALUCOBOND® A2 and ALUCOBOND® PLUS panels, according to EAD 210046-00-1201 Cl.2.2.6.



**A1.4 Apparent area density**

	A2		PLUS	
	Weight [kg]	Apparent Area Density <sup>(1)</sup> $\rho$ [kg/m <sup>3</sup> ]	Weight [kg]	Apparent Area Density <sup>(1)</sup> $\rho$ [kg/m <sup>3</sup> ]
Average value	0,11644	1824	0,11808	1871
Standard deviation	0,001321	8,79	0,00046	4,72
Two-sided confidence interval ( $g_{0,975}$ ) [kg/m <sup>2</sup> ]	Minimum	0,113	0,117	1860
	Maximum	0,120	0,119	1882

Notes:

<sup>(1)</sup> Apparent Area Density refers to the density of the whole sandwich panel, including the metal composite sheets and the core.

**Table A5:** Apparent area density of the ALUCOBOND® A2 and ALUCOBOND® PLUS panels, according to EAD 210046-00-1201 Cl. 2.2.7.

**A1.5 Torque peel strength (at initial state)**

Torque peel strength (at initial state, without ageing) [N·m/m]	
<b>Average value</b> ( $T_{INI,av}$ )	<b>84,5</b>
Standard deviation $\sigma_n$	1,29
Confidence interval of ( $T_{INI,0,975}$ )	Min value
	Max value
Description of defects	Without defects

**Table A6:** Torque peel strength test of the ALUCOBOND® A2 panels, according to EAD 210046-00-1201 Cl. 2.2.8.

Torque peel strength (at initial state, without ageing) [N·m/m]		
<b>Average value (<math>T_{INI,av}</math>)</b>	<b>81,8</b>	
Standard deviation $\sigma_n$	1,94	
Confidence interval of ( $T_{INI,0,975}$ )	Min value	77,3
	Max value	86,4
Description of defects	Without defects	

**Table A7:** Torque peel strength test of the ALUCOBOND® PLUS panels, according to EAD 210046-00-1201 Cl. 2.2.8.

#### A1.6 Hard body impact resistance

Sample Nr.	Impact energy E [N·m]	Test 1 (CSTB)	Test 2 (IFBT)
1	10	Satisfactory	Fall protection function still given
2	10	Satisfactory	Fall protection function still given
3	10	Satisfactory	Fall protection function still given
4	10	Satisfactory	Fall protection function still given
5	10	Satisfactory	Fall protection function still given

**Table A8:** Hard body impact resistance of ALUCOBOND® panels, according to EAD 210046-00-1201 Cl. 2.2.9.

### A1.7 Four-point bending strength (at initial state and after ageing)

	4-point bending strength [N/mm <sup>2</sup> ]					
	In initial state T <sub>INI</sub>	After hygrothermal cycles	After 6h immersion in boiling water (90 °C)	After immersion for 500 hours in water at 20 °C	After freeze – thaw cycles T f/t	After long term exposure to heat TIt,80°C
Average value	149,7	--	--	147,6	148,0	142,6
Standard deviation $\sigma_n$	1,07	--	--	1,90	1,34	3,91
Relative change $\Delta T$ [%]	--	--	--	98,6	98,9	95,3
Description of defects	Without defects	--	--	Without defects	Without defects	Without defects

**Table A9:** 4-point bending strength of the ALUCOBOND® A2 panels, according to EAD 210046-00-1201 Cl. 2.2.12.

	4-point bending strength [N/mm <sup>2</sup> ]					
	In initial state T <sub>INI</sub>	After hygrothermal cycles	After 6h immersion in boiling water (90 °C)	After immersion for 500 hours in water at 20 °C	After freeze – thaw cycles T f/t	After long term exposure to heat TIt,80°C
Average value	126,2	--	--	128,5	125,2	124,0
Standard deviation $\sigma_n$	0,70	--	--	1,44	0,52	1,23
Relative change $\Delta T$ [%]	--	--	--	101,8	99,2	98,3
Description of defects	Without defects	--	--	Without defects	Without defects	Without defects

**Table A10:** 4-point bending strength of the ALUCOBOND® PLUS panels, according to EAD 210046-00-1201 Cl. 2.2.12.