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European Technical Assessment

ETA 23/0278 28/08/2023

English translation prepared by IETcc. Original version in Spanish language

General Part

Technical Assessment Body issuing the European Technical Assessment:

Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc)

Trade name of the construction product

PRFTHERM SATE

Product family to which the External Thermal Insulation Composite System with rendering for use on building walls

construction product belongs

PINTURAS RODA FUERTE, S.L.

Manufacturer

Camino Viejo de Minaya, 02630 La Roda, Albacete, Spain

Manufacturing plant(s)

Camino Viejo de Minaya, 02630 La Roda, Albacete,

Spain

This European Technical **Assessment contains**

10 pages including 2 Annex which form an integral part of this assessment.

Annex 3 contains confidential information and is not included in

the European Technical Assessment

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of

040083-00-0404:

External thermal insulation composite systems (ETICS) with renderings

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Specific parts

1 Technical description of the product

The External Thermal Insulation Composite System (from now on, referred to as ETICS) "PRFTHERM SATE" is designed and installed in accordance with the manufacturer, design and installation instructions, deposited at the IETcc(1). It is made up on site from these components. The manufacturer is ultimately responsible for the ETICS.

PRFTHERM SATE is defined as "bonded system with supplementary mechanical fixings" with is used with EPS-XPS panel and mechanically fixed ETICS with supplementary adhesive on MW panel, the minimum number of fasteners per square metres is 6 in all the insulations up to high of 8 m.

This ETICS comprises the following components, which are factory supplied by the manufacturer or a supplier.

	Components (trade names)						Thickness Aprox [mm]	
Insulation material	PANEL EPS- EPS Grafito. Insu (EN 13163) with supplementary	0,30 - 6,0	20 - 200					
with associated	PANEL XPS. Bonded Board of supplementary mechanical fixing	0,60 - 6,0	20 - 200					
method of fixing	PANEL MW: Mechanically fixed (minimum 6 fasteners/m²)	Mineral wo	ol (MW) (EN 1316	2) with supp	lementary adhesive	4.0 24,0	40 - 240	
Adhesive	MORTERO PRFTHERM. Minimum bonded surface: 60 % for EPS/XPS and 80 % /MW. Cement based mortar in powder requiring addition and mixing with 18,0 \pm 1.0 % water						≥ 2,50	
Base coat	MORTERO PRFTHERM. + glass	fibre mesh	160g or double gla	ass fibre me	sh 160g	1,2 - 1,5 (by mm)	4,0 - 7,0	
	PRFTHERM malla. Glass fibre	mesh resis	tant to the alkalis.			0,16	0,58	
	Characteristics			Values	3			
	Mesh size (mm)			3 - 6				
Glass fibre mesh	Tensile strength (N/m	m)		30 - 60)			
Olass libre lilesii	Elongación after ageing	g (%)		1 - 4				
	Mass per unit area (g/		≥ 150					
	Thickness (mm)		≤ 1					
	Organic content			≤ 20				
Primer	FONDO LISO FORTILOP LISO	. Acrylic bii	nder based ready	to use paste		0,21 L/m ²		
	MORTERO ACRILICO PRFTHERM (1 mm). Acrylic binder based ready to use paste						≥1	
	CUARZO FLEX POLISILOXANO. Acrylic binder based ready to use paste							
Finishing coat	PROYECOR SATE. Acrylic binder based ready to use paste with cork						≥ 1	
	REVEST. FOTOCATALITICO FORTISAN GOMA VERTICAL. Acrylic binder based ready to use paste						≥1	
	MICROCAL CAL AEREA (Textura fina). Acrylic binder based ready to use paste						≥ 1	
	Plastic anchors (expansion elem relation with thickness of insulation washer of 140 mm diameter.							
	Fasteners	ETA nº	Diameter Plate (mm)	Stiffness (kN/mm)	Minimum tension load (N)			
Fasteners	PRFTHERM SATE anclaje mecánico 16/0509 60 0.5 400*						Remain under the manufacturer responsibility	
	*These values show the minimum pull out of the fastener in the weakest support (enclosed in its ETA). Other higher values appear in their ETAs.						responsibility	
	Other plastic fasteners can be used with CE marking (EAD 330196-00-0604. When is used with MW, they have to have a plate dimension ≥ 60 mm diameter and Stiffness ≥ 0,5 kN/mm							
Ancillary elements	Base, corners, top and window sills, and its fixing devices							

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⁽¹⁾ The technical documentation of this European Technical Assessment is deposited at the *Instituto de Ciencias de la Construcción Eduardo Torroja* (IETcc) and, as far as relevant for the tasks of the notified bodies involved in the attestation of conformity procedure, is handed over to the notified bodies.

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

2.1 Intended use(s)

This ETICS is intended to be used as external thermal insulation for building walls. The walls are made of masonry (bricks, blocks...) or concrete (cast on site or as prefabricated panels) with a reaction to fire classification A1 to A2-s2,d0 according to EN 13501-1 or A1 according to the EC decision 96/603/EC as amended. The ETICS is designed to give the wall to which is applied satisfactory thermal insulation.

This ETICS is made of non-load bearing construction elements. It does not contribute directly to the stability of the wall on which is installed, but it can contribute its durability by providing enhanced protection from the effect of weathering.

This ETICS can be used on new or existing (retrofit) vertical walls. It can also be used on horizontal or inclined surfaces which are not exposed to precipitation. The ETICS is not intended to ensure the airtightness of the building structure.

This ETA covers application of ETICS on supports of masonry or concrete.

2.2 Relevant general conditions for the use of the kit

The provisions made in this European Technical Assessment are based on an assumed working life of 25 years from installation in the works, according to EAD 040083-00-0404, provided that the conditions lay down for the installation, packaging, transport and storage as well as appropriate use, maintenance and repair are met. In this respect.

The indications given on the working life cannot be interpreted as a guarantee given neither by the product manufacturer nor by EOTA nor by the Technical Assessment Body issuing this ETA, but are regarded only as a means for choosing the right product in relation to the expected economically reasonable working life of the works.

Installation. The ETICS is installed on site. It is the responsibility of the manufacturer to guarantee that the information about design and installation of this ETICS is effectively communicated to the concerned people. This information can be given using reproductions of the respective parts of this ETA. Besides, all the data concerning the execution shall be clearly indicated on the packaging and/or the enclosed instruction sheets using one or several illustrations.

The wall on which the ETICS is applied shall be sufficiently stable and airtight. Its stiffness shall be large enough to ensure that ETICS is not subjected to deformations, which could lead to damage.

<u>Design</u>. In any case, the user shall comply with the national regulations and particularly concerning fires and wind load resistance. Only the components described in clause 1 with characteristics according to clause 3 of this ETA can be used for this ETICS.

The works including the details (connection, joint,..) shall be designed in order to avoid water penetration behind the system. The minimal surface area for the bonded ETICS, and the method of bonding shall comply with the characteristics of the ETICS as well as the national regulations. In any case, the minimal surface shall be at least 60 % for EPS/XPS and 80 % for MW. Besides, the numbers of fasteners used with MW must comply with the National requirements⁽²⁾.

<u>Execution</u>. The recognition and preparation of the substrate as well as the generalities about the execution of the ETICS shall be carried out in compliance with the manufacturer prescriptions and the corresponding national regulations.

The particularities in execution linked to the method of bonding and the application of the rendering system shall be handled in accordance with manufacturer prescriptions. In particular, it is suitable to comply with the quantities of rendering applied, the thickness regularity and the drying periods between layers.

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⁽²⁾ The value of the pull through to calculate the numbers of fasteners will be the minor value between the average value of pull through fastener-MW (defined in this ETA) and the average value pull out of the fastener-support (defined in its ETA).

Use, maintenance and repair of the works. It is accepted that the finishing coats shall normally be maintained in order to fully preserve the system's performance. Maintenance will include at least:

- The repairing of localised damaged areas due to accidents
- The application of various products or paints, possibly after washing or ad hoc preparation.

Necessary repairs should be done rapidly. It is important to be able to carry out maintenance as far as possible using readily available products and equipment, without spoiling appearance.

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 ETICS according to the Basic Work Requirements (BWR) were carried out in compliance with EAD 040083-00-0404, The characteristics of each system shall correspond to the respective values laid down in following tables of this ETA, checked by IETcc.

Methods of verification and of assessing and judging are listed afterwards.

3.1 Safety in case of fire (BWR 2)

Basic requirement for construction works 2: Safety in case of fire						
Essential characteristic	Relevant clause in EAD	Performance				
Reaction to fire	2.2.1					
- reaction to fire of ETICS	2.2.1.1	NPA				
- reaction to fire of thermal insulation material	2.2.1.2	EPS: E XPS: E MW : A1				
Facade fire performance	2.2.2	NPA				
Propensity to undergo continuous smouldering of ETICS	2.2.3	NPA				

3.2 Hygiene, health and environment (BWR 3)

Basic requirement for construction works 3: Hygiene, health, and the environment							
Essential characteristic	Relevant clause in EAD	Performance					
Content, emission and/or release of dangerous substances. Leachable substances	2.2.4	NPA. The leachable substances are not determined in accordance with this EAD					
Water absorption	2.2.5						
		Rei	ndering		After 1h	After 24h	
		MORTERO PRF THE	RM		0.24	0.92	
		MORTERO ACRILICO	O PRFTHERM 1	mm	0.018	0.15	
- of the base coat and rendering system (kg/m²)	2.2.5.1	CUARZO FLEX POLI	SILOXANO		0.027	0.16	
	2.2.3.1	PROYECOR SATE.			0.028	0.17	
		REVESTIMIENTO FOTOCATALITICO FORTISAN GOMA VERTICAL			0.005	0.05	
		MICROCAL CAL AEF	REA		0.012	0.08	
		PANEL EPS: EN ISO 29767: ≤ 1 kg/m ²					
- of the thermal insulation	2.2.5. 2	PANEL XPS: EN ISO	O 29767: ≤ 1 kg/r	n ²			
		PANEL MW: EN ISO 29767: ≤ 1 kg/m ²					
Water-tightness of the ETICS Hygrothermal behaviour	2.2.6	The ETICS is assessed resistant to hygrothermal cycles on a rig, passed the test without defects and without pass through of water					
Water tightness of the ETICS: Freeze-thaw behaviour	2.2.7	NPA. The water abso	rption of the base	coat high	er than 0.5 l	kg/m²	
		Renderi	ng	1	60	Double 160	
		EPS / XPS* / MW + base coat + finishi (diameter impact (mm) at 3J and 10 J) (0					
		MORTERO PRE	EPS	III (2	0 / 40)	NPA	
Impact resistance	2.2.8	THERM	MW	II (5	5 / 25)	NPA	
		I I ILIXIVI	XPS	N	IPA	NPA	
		MORTERO	EPS	III (2	0 / 40)	I (6 / 25)	
		ACRILICO	MW	II (5 / 25)	I (4 / 12)	
		PRFTHERM 1 mm	XPS	N	IPA	NPA	

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	1	1			1		
		CUARZO FLEX	EPS	III (20 / 40)	I (6 / 25)		
		POLISILOXANO	MW	II (5 / 25)	I (4 / 12)		
		FOLISILOXANO	XPS	NPA	NPA		
		PROYECOR SATE	EPS	II (20 / 35)	I (15 / 35)		
			MW	I (10 / 13)	I (0 / 7)		
			XPS	III (15 / 30)	NPA		
		REVEST.	EPS	I (15 / 28)	I (15 / 25)		
Impact resistance	2.2.8	FOTOCATALITICO	MW	I (8 / 15)	I (7 / 16)		
		FORTISAN GOMA VERTICAL	XPS	II (18 / 30)	NPA		
		MICROCAL CAL AEREA	EPS	III (25 / 40)	II (16 / 35)		
			MW	III (12 / 18)	II (10 / 20)		
			XPS	III (17 / 30)	NPA		
		*This test was performed in individual samples on XPS after 9 days in water.					
Water vapour permeability	2.2.9	,		'	,		
		Base coat + finis	shing coat	(S _d , m)	Required		
		MORTERO PRETHER		1.5			
		MORTERO ACRILIC	O PRFTHERM	0.0			
		1 mm		0.2			
- of the rendering system	2.2.9.1	CUARZO FLEX POLI	SILOXANO	0.2			
		PROYECOR SATE.		0.25	<1		
		REVEST. FOT	OCATALITICO	0.2			
		FORTISAN GOMA VE	ERTICAL				
		MICROCAL CAL AER	REA	0.5			
		PANEL EPS: EN 1208	PANEL EPS: EN 12086: μ = 30 - 70				
- of the thermal insulation	2.2.9.2	PANEL XPS: EN 1208	36: μ = 80 - 100				
		PANEL MW: EN 120					
		PANEL MW: EN 120	86: μ = 1				

3.3 Safety and accessibility in use (BWR 4)

В	asic require	ement for constr	uctio	n works 4:	Safety and acc	essibility in use		
Essential characteristic	Clause EAD	Performance						
Bond strength	2.2.11	(minimum /			mum / mean value	mean value) (kPa)		
- between base coat		Base Coat		Thermal insulation	Initial state	After hydrothermal cycles	After 9 days' water immersion (on samples)	
and insulation	2.2.11.1	MORTERO		EPS	126 / 140 ≥ 80	90 / 120 ≥ 80		
product	2.2.11.1	PRFTHERM		XPS	185 / 193	NPA	308 / 330	
product		FIXITILIXIVI		MW	9 / 17	8/8		
		The breakage loc between the insula				ard MW and EPS, or	n XPS was adhesive	
- between adhesive	2.2.11.2	Adhesive)	In	itial state	Immersion 48 h and 2 h drying	Immersion 48 h and 7 d drying	
and substrate		MORTERO PRF1	THERN	VI 1411	/ 1490 ≥ 250	644 / 672 ≥ 80	992 / 1084 ≥ 250	
- between adhesive	2.2.11.3	Adhesive	Thermal insulation		Initial state	Immersion 48h and 2 h drying	Immersion 48 h and 7 d drying	
and insulation		MODTEDO		EPS	126 / 140 ≥ 80	112 / 126 ≥ 30	87 / 127 ≥ 80	
product	2.2.11.5	MORTERO PRFTHERM		XPS	185 / 193	132 / 160	194 / 220	
product		PRFINERIVI		MW	9 / 17	8 / 10	10 / 12	
		The breakage location was 100 % on the insulation board MW and EPS, on XPS was adhesive between the insulation and the base coat.						
Fixing strength (transverse displacement test)	2.2.12	The test is not re where the bonde				ETICS with supple	mentary adhesive,	
Wind load resistance of ETICS	2.2.13							
		In the middle of PANEL MW of 6 cm with TR ≥ 7,5 (Rpanel) These test results limited to insulation with TR ≥ 7.5 (minimum / mean value) (kN/fixing)					,	
				(Center)		Wet condition (Center)		
		0.3	23 / 0	.26		0.18 / 0.24		
 pull-through test of fixings. 	2.2.13.1	80 mm				(i) 100 100 20 30 40		

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static foam block test	2.2.13.2	NPA						
Tensile perpendicular								
to the faces of	2.2.14							
thermal insulation								
		PANEL EPS: EN 1607, TR = 100 kPa						
- in dry conditions	2.2.14.1	PANEL XPS: EN 1607, TR = 200 kPa						
		PANEL MW: EN 1607, TR = 7.5 kPa						
- in wet conditions	2.2.14.2	NPA						
Shear strength and		PANEL EPS: EN 12090: Shear strength(kPa)): 50; Shear modulus	(kPa):1000				
shear modulus of	2.2.15	PANEL XPS: EN 12090: Shear strength(kPa	a): 50: Shear modulus	(kPa):1000				
elasticity.Insulation		TAIVEE XI G. EIV 12030. Griedi Strengtri(Ki a	ij. 50, Onear modulus	s (Ki a).1000				
Pull-through resistance of fixing	2.2.16	NPA						
from profiles	2.2.10	NFA						
Rendering strip								
tensile test: base	2.2.17	NPA						
coat	,	11171						
Bond strength after	0.0.00							
ageing	2.2.20							
			EPS	XPS	MW			
		Rendering						
		-	(minimum / mean value) (kPa)					
		MORTERO ACRILICO PRFTHERM 1 mm	90 / 120	NPA	8/8			
 of finishing coat 	2.2.20.1	CUARZO FLEX POLISILOXANO	90 / 120	NPA	8/8			
tested on the rig	2.2.20.1	PROYECOR SATE.	134 / 151	NPA	8/8			
		REVEST. FOTOCATALITICO FORTISAN		ND.				
		GOMA VERTICAL	111 / 140	NPA	8/8			
		MICROCAL CAL AEREA	140 / 160	NPA	8/8			
		The breakage location was	as 100% on the insul	ation board				
		MORTERO ACRILICO PRFTHERM 1 mm		308 / 330				
		CUARZO FLEX POLISILOXANO		308 / 330				
- of finishing coat no		PROYECOR SATE.		287 / 340				
tested on the rig	2.2.20.2	REVEST. FOTOCATALITICO FORTISAN GOMA VERTICAL		192 / 240				
		MICROCAL CAL AEREA	160 / 192					
		The breakage location was 1	00% on the union XF	PS – base coat				
Mechanical and		<u> </u>						
physical mesh	2.2.21							
characteristics								
- tensile strength of		Status			/eft			
the glass fibre		3, 3, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,			/ 35			
mesh		Deference (%) ≤ 50						
		Elongation after ageing (%)		2 - 4				

3.4 Energy economy and heat retention (BWR 6)

Basic requirement for construction works 6: Energy economy and heat retention					
Essential characteristic Relevant clause in EAD Performance					
Thermal resistance and thermal		PANEL EPS $\lambda_D = 0.030 \text{ W/mK}$			
transmittance of ETICS	2.2.23.1	PANEL XPS $\lambda_D = 0.033 - 0.037 \text{ W/mK}$			
transmittance of ETICS		PANEL MW $\lambda_D = 0.035 \text{ W/mK}$			

The additional thermal resistance provided by the ETICS ($R_{\rm ETICS}$) to the substrate wall is calculated from the thermal resistance of the thermal insulation product ($R_{\rm insulation}$), determined in accordance with 2.2.23.1, and from either the tabulated R render value of the render system ($R_{\rm render}$ is about 0.02 m²K/W) or $R_{\rm render}$ determined by test according to EN 12667 or EN 12664 (depending on expected thermal resistance).

$$R_{ETICS} = R_{insulation} + R_{render} [(m^2 \cdot K)/W]$$

as described in EN ISO 10456.

The thermal bridges caused by mechanical fixing devices influence the thermal transmittance of the entire wall and shall be taken into account using the following calculation:

 $U_c = U + \Delta U [W/(m^2 \cdot K)]$

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With: Uc corrected thermal transmittance of the entire wall, including thermal bridges

U thermal transmittance of the entire wall, including ETICS, without thermal bridges

$$\label{eq:energy} \mathsf{U} = \frac{1}{\mathsf{R}_{\mathtt{ETICS}} + R_{\mathit{substrate}} + R_{\mathit{se}} + R_{\mathit{si}}}$$

R_{substrate} thermal resistance of the substrate wall [(m²-K)/W]
R_{se} external surface thermal resistance [(m²-K)/W]
R_{ei} internal surface thermal resistance [(m²-K)/W]

 $\begin{array}{ll} R_{si} & \text{internal surface thermal resistance } \left[(m^2 \cdot K)/W \right] \\ \Delta U & \text{correction term of the thermal transmittance for mechanical fixing devices} \end{array}$

= χ_p * n (for anchors) + $\Sigma \psi i$ * ℓi (for profiles) (formula x)

 χ_p point thermal transmittance value of the anchor [W/K]. If not specified in ETA for anchors, the following values apply:

= 0.002 W/K for anchors with a plastic screw/nail, stainless steel screw/nail with the head covered by at least 15 mm plastic material, or with a minimum 15 mm air gap at the head of the screw/nail.

= 0.004 W/K for anchors with a galvanized carbon steel screw/nail with the head covered by at least 15 mm a plastic material or

a minimum 15 mm air gap at the head of the screw/nail. = 0.008 W/K for all other anchors (worst case)

n number of anchors per m². In case n is more than 16, the formula (x) is not applied.

ψi linear thermal transmittance value of the profile [W/(m·K)]

length of the profile per m².

The influence of thermal bridges can also be calculated as described in EN ISO 10211.

It shall be calculated according to this standard if there are more than 16 anchors per m^2 foreseen. The declared χ_p -values do not apply in this case.

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

According to the decision 97/556/EC of the European Commission amended by 2001/596/EC, a system 2+ of assessment and verification of constancy of performance (see EC delegated regulation (EU) No 568/2014 amending Annex V to Regulation (EU) No 305/2011) applies.

	Product	Intended uses	Level or Classes	System
PRFT	THERM SATE	External Thermal Insulation Composite System with rendering for use on building walls	Any	2+

This system of attestation of conformity +2 is defined as follows:

<u>Tasks for the manufacturer</u>. Initial type-testing of the product, Factory production control and Testing of samples taken at the factory in accordance with a prescribed test plan.

Tasks for the notified body: Certification of factory production control on the basis of:

- Initial inspection of factory and of factory production control.
- Continuous surveillance (annual), assessment and assessment of factory production control.

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 which is deposited at IETcc⁽³⁾.

5.1 Tasks of the manufacturer

Factory production control. The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall ensure that the product is in conformity with this ETA.

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⁽³⁾ The Control Plan is a confidential part of the ETA and only handed over to the notified certification body involved in the assessment and verification of constancy of performance.

The manufacturer may only use components stated in the technical documentation of this ETA including Control Plan. The incoming raw materials are subjected to verifications by the manufacturer before acceptance.

The factory production control shall be in accordance with the Control Plan. The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

For the components of the ETICS, which the manufacturer does not manufacture by himself, he shall make sure that factory production control carried out by the other manufacturers gives the guarantee of the components compliance with the ETA.

Initial type-testing of the product. The initial type-testing have been conducted by the IETcc to issued this ETA in accordance with the EAD 040083-00-0404 "External thermal insulation composite systems (ETICS) with renderings". The verifications underlying this ETA have been furnished on samples from the current production.

Other tasks of the manufacturer. The manufacturer shall, on the basis of a contract, involve a body which is notified for the tasks referred to in section 4 in order to undertake the actions laid down in this clause. For this purpose, the control plan shall be handed over by the manufacturer to the notified bodies involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this ETA.

5.2 Tasks of notified bodies.

Initial inspection of factory and of factory production control. The Notified Body shall ascertain that, in accordance with the Control Plan, the factory (in particular the employees and the equipment) and the factory production control are suitable to ensure continuous and orderly manufacturing of the components according to the specifications mentioned in clause 2 of this ETA.

Continuous surveillance, assessment and assessment of factory production control, in accordance with the provisions laid down in the control plan, at least one per year.

The notified body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report. The notified certification body involved by the manufacturer shall issue an EC Certificate of factory production control stating the conformity of the provisions of this ETA.

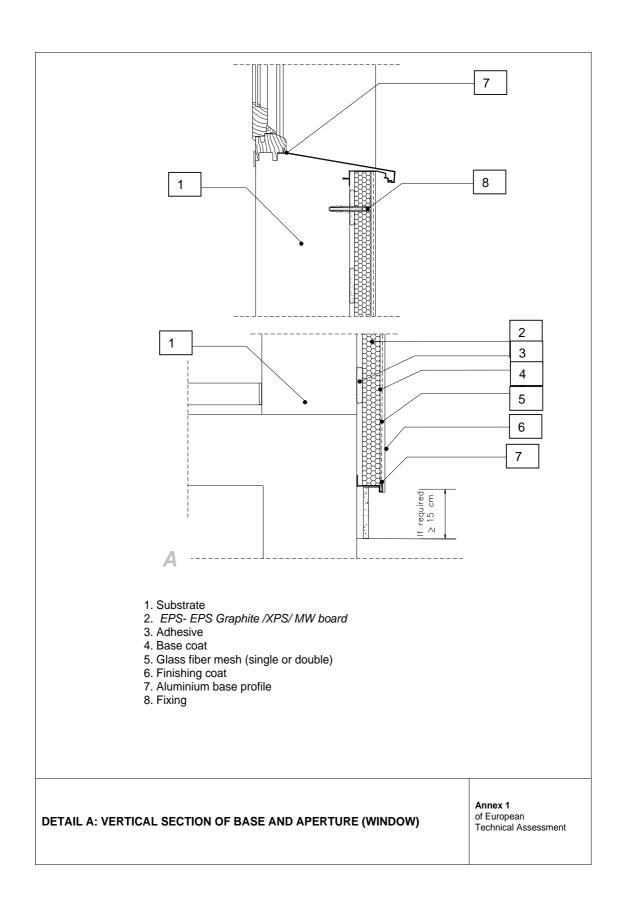
In cases where the provisions of the ETA and its control plan are no longer fulfilled the notified certification body shall withdraw the certificate of conformity and inform to IETcc without delay.

Issued in Madrid on 28 of August 2023

Director on behalf of Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc – CSIC)

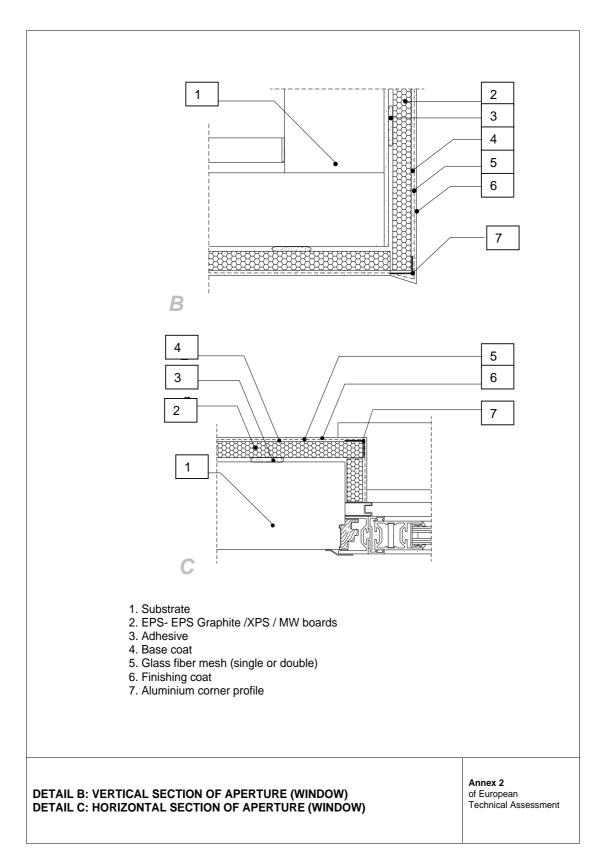
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