

European Technical Assessment

ETA 19/0604
of 16.07.2020



General part

Technical Assessment Body issuing the ETA: ITeC

ITeC has been designated according to Article 29 of Regulation (EU) No 305/2011 and is member of EOTA (European Organisation for Technical Assessment)

Trade name of the construction product

PRB THERMOBOIS

Product family to which the construction product belongs

Product Area Code: 04

External Thermal Insulation Composite Systems (ETICS) with rendering applied on wood fibre insulation boards for the use as external insulation of building walls.

Manufacturer

PRB SA

Rue de la Tour – CS 10018
FR-85150 LES ACHARDS
France

Manufacturing plant(s)

PRB SA

Rue de la Tour – CS 10018
FR-85150 LES ACHARDS
France

This European Technical Assessment contains

19 pages including 3 annexes which form an integral part of this assessment.

This European Technical Assessment is issued in accordance with Regulation (EU) 305/2011, on the basis of

ETAG 004, edition 2000, amended August 2011, amended February 2013, used as European Assessment Document (EAD).

General comments

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Specific parts of the European Technical Assessment

1 Technical description of the product

PRB THERMOBOIS is an External Thermal Insulation Composite System (ETICS) with rendering for external wall insulation. PRB THERMOBOIS comprises a prefabricated insulation product of wood fibres (WF) to be mechanically fixed onto a wall with supplementary adhesive. The insulation product is faced with a rendering system consisting of different layers (site applied), one of which (the base coat) contains reinforcement. The rendering is applied directly to the insulating panels, without any air gap or disconnecting layer. The methods of fixing and the relevant components are specified in the table below.

The ETICS system is composed by components which are factory-produced by the manufacturer (adhesives, base coat, key coats and rendering coats) or by component suppliers (meshes and fixings), and other components that are not part of the kit (insulation boards). The ETICS manufacturer is ultimately responsible for all components of the kit specified in this ETA.

The ETICS includes special fittings (e.g. base profiles, corner profiles...) to treat details of ETICS (connections, apertures, corners, parapets, sills...). The assessment and performance of these components is not addressed in this ETA, however the ETICS manufacturer is responsible for adequate compatibility and performance within the ETICS when the components are delivered as a part of the kit.

Composition of the ETICS:

Component	Description	Coverage (kg/m ²)	Thickness (mm)
Mechanically fixed ETICS with anchors with supplementary adhesive (pursuant to ETA holder's instructions, the minimal bonded surface shall be 20%. National application documents shall be taken into account.)			
Insulation product	Insulation product		
	Wood fibre insulation boards (WF), STEICO PROTECT DRY H. See Annex 1 for product characteristics.	--	40 to 60
	Wood fibre insulation boards (WF), STEICO PROTECT DRY M. See Annex 1 for product characteristics.	--	60 to 200
	Wood fibre insulation boards (WF), STEICO PROTECT DRY L. See Annex 1 for product characteristics.	--	100 to 240
Adhesive	PRB THERMICOL: grey cement-based powder requiring addition of 24% to 26% in weight of water.	2,3 to 2,6 [powder]	-
	PRB FONDISOL F: grey or white cement-based powder requiring addition of 19% to 22% in weight of water.	2,3 to 2,6 [powder]	-
Fixing	Plastic anchors: EJOT STRUG 2G and Fischer Termoz CS 8. See Annex 2.	-	-
Base coat	PRB FONDISOL F: grey or white powder requiring the addition of about 24% to 26% in weight of water, consisting of grey or white cement, hydraulic lime, mineral pigments, calcium carbonate and silica as particles and specific additives.	6,9 [paste]	3 (dry)
		AVN+ANV: 8,9	AVN+AVN: 4
		AVR+AVN: 9,4	AVR+AVN: 5
Mesh	Standard glass fibre meshes and reinforced mesh, see Annex 3.		
Key coat	PRB CRÉPIFOND G: ready to use coloured liquid to be mandatory applied before the finishing coats (dilution rate 0% to 10%):		
	- PRB CRÉPIMUR FR	0,2 to 0,3	-
	- PRB CRÉPIRIB FR		
	- PRB CRÉPOXANE FR		
	- PRB CRÉPILIS FR		

Component	Description	Coverage (kg/m ²)	Thickness (mm)
Mechanically fixed ETICS with anchors with supplementary adhesive (pursuant to ETA holder's instructions, the minimal bonded surface shall be 20%. National application documents shall be taken into account.)			
Finishing coat	PRB CRÉPIFOND MINÉRAL: ready to use coloured liquid, optional application before the finishing coats:		
	- PRB CRÉPITAL	0,2 to 0,3	-
	- PRB CRÉPIXATE		
	Ready to use pastes - acrylic binder:		
	- PRB CRÉPIMUR F FR : particle size 1 mm. Floated finishing aspect.	2,0 to 2,2	Regulated by particle size
	- PRB CRÉPIMUR M FR : particle size 1,5 mm. Floated finishing aspect.	2,2 to 2,8	
	- PRB CRÉPIRIB F FR : particle size 2 mm. Ribbed finishing aspect.	2 to 2,6	
	Ready to use pastes - acryl-siloxane binder:		
	- PRB CRÉPOXANE F FR : particle size 1 mm. Floated finishing aspect.	2,0 to 2,2	Regulated by particle size
	- PRB CRÉPOXANE M FR : particle size 1,5 mm. Floated finishing aspect.	2,2 to 2,8	
Finishing coat	PRB CRÉPILIS FR: finishing coat composed of two coats of ready to use pastes – acrylic binder:		
	- PRB CRÉPILIS SC FR (particle size 0,7 mm) +	1,1 to 1,5	Regulated by particle size
	- PRB CRÉPILIS F FR : particle size 0,3 mm. Stippled finishing aspect.	0,6 to 1,0	
	Ready to use pastes – silicate binder:		
	- PRB CRÉPIXATE F : particle size 1 mm. Floated finishing aspect.	2,0 to 2,3	Regulated by particle size
	- PRB CRÉPIXATE M : particle size 1,5 mm. Floated finishing aspect.	2,4 to 2,8	
	Powder requiring addition of 23% to 26% wt. water - hydraulic binder:		
	- PRB THERMOLOOK GF: particle size 1,8 mm to 2 mm.	Rough or partially smoothed: 8,0 to 9,0 Scratched: 11 to 15	Rough or partially smoothed: 7 to 8 Scratched: 7 to 10
	- PRB THERMOLOOK GM: particle size 3,0 mm to 3,15 mm.		
	For both products: rough, scratched or partially smooth finishing aspect.		
Ancillary materials	Powder requiring addition of 25% to 27% wt. water - hydraulic binder:		
	- PRB CRÉPITAL : particle size 1,5 mm. Floated finishing aspect.	2,0 to 2,4	Regulated by particle size
Ancillary materials	Descriptions in accordance with section 3.2.2.5 of the ETAG 004. These components remain under the ETA-Manufacturer's responsibility.		

Table 1.1: ETICS components.

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

The PRB THERMOBOIS ETICS is intended for use as external insulation of buildings' walls. The walls are made of masonry (bricks, blocks, stones ...) or concrete (cast on site or as prefabricated panels). The characteristics of the walls shall be verified prior to use of the ETICS, especially regarding conditions for reaction to fire classification and for fixing of the ETICS either by bonding or mechanically. The ETICS is designed to give the wall to which it is applied satisfactory thermal insulation.

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

The 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.

The choice of the method of fixing depends on the characteristics of the substrate, which may need preparation (see section 7.2.1 of the ETAG 004 ¹) and shall be done in accordance with the national instructions.

The provisions made in this ETA are based on an assumed working life of at least 25 years for PRB THERMOBOIS system. These provisions are based upon the current state of the art and the available knowledge and experience.

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 mean for choosing the right products in relation to the expected economically reasonable working life of the works.

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

Performance of the system PRB THERMOBOIS related to the basic requirements for construction works (hereinafter BWR) were determined according to ETAG 004 for *External Thermal Insulation Composite Systems (ETICS) with Rendering*¹ used as EAD. Essential characteristics of PRB THERMOBOIS are indicated in the following sections.

3.1 Mechanical resistance and stability (BWR 1)

Not relevant.

3.2 Safety in case of fire (BWR 2)

The reaction to fire of PRB Thermoboïs has been assessed according to section 5.1.2.1 of ETAG.

The reaction to fire of PRB THERMOBOIS system (with the configurations described in table 1.1) according to EN 13501-1 is class **B-s1,d0**.

¹ ETAG 004 for *External Thermal Insulation Composite Systems (ETICS) with Rendering* (edition 2000, amended August 2011, amended February 2013).

Configuration (the combination of key coat + finishing coat is described in table 1.1)	Max. organic content declared (% weight)	Declared flame retardant content (% weight)
Adhesives: PRB THERMICOL PRB FONDISOL F	2,6 to 3,0	0
Insulation: STEICO PROTECT DRY H STEICO PROTECT DRY M STEICO PROTECT DRY L Note: According to the DoP the reaction to fire class is E.	--	--
Base coat: PRB FONDISOL F	2,6	0
Glass fibre mesh: PRB AVN (03-1 C+). This is the most calorific mesh; meshes with PCS lower than 1,3 MJ/m² can also be considered. PRB AVN (04-161 B) PRB AVN (0161-CA) PRB AVN (0161RA20) PRB AVN (SSA-1363 F+) PRB AVN (R 131 A 101 C+) PRB AVN (R 131 A 102 C+)	--	--
Key coat: PRB CRÉPIFOND G PRB CRÉPIFOND MINERAL	3,5 to 12,0	0
Finishing coat: PRB CRÉPIMUR F FR / M FR	2,5 to 7,8	0 to 20
PRB CRÉPIRIB F FR		
PRB CRÉPOXANE F FR / M FR		
PRB CRÉPILIS SC FR + PRB CRÉPILIS F FR		
PRB CRÉPIXATE F / M	2,5 to 7,8	0 to 20
PRB THERMOLOOK GF / GM		
PRB CRÉPITAL		

Table 3.1: Reaction to fire information of the PRB THERMOBOIS ETICS components.

Note: A European reference fire scenario has not been laid down for façades. In some Member States, the classification of external wall claddings according to EN 13501-1 might not be sufficient for the use in façades. An additional assessment of external wall claddings according to national provisions (e.g. on the basis of a large-scale test) might be necessary to comply with Member State regulations, until the existing European classification system has been completed

3.3 Hygiene, health and the environment (BWR 3)

3.3.1 Water absorption – capillarity test

ETAG 004, clause 5.1.3.1.

3.3.1.1 Water absorption of the base coat

- After 1 hour: water absorption < 1 kg/m²
- After 24 hours: water absorption < 0,5 kg/m²

3.3.1.2 Water absorption of the rendering system

- After 1 hour: water absorption < 1 kg/m²
- After 24 hours: see table 3.2.

Rendering system: Base coat (PRB Fondisol F) + key coat (if necessary) + finishing coat indicated below	Water absorption after 24 hours	
	< 0,5 kg/m ²	≥ 0,5 kg/m ²
Key coat: PRB CRÉPIFOND G Finishing coats:		
- PRB CRÉPIMUR F FR		
- PRB CRÉPIMUR M FR		
- PRB CRÉPIRIB F FR	X	
- PRB CRÉPOXANE F FR		
- PRB CRÉPOXANE M FR		
- PRB CRÉPILIS SC FR + PRB CRÉPILIS F FR		
Key coat: PRB CRÉPIFOND MINERAL Finishing coats:		
- PRB CRÉPIXATE F	X	
- PRB CRÉPIXATE M		
- PRB CRÉPITAL		
Without key coat Finishing coats:		
- PRB THERMOLOOK GF	X	
- PRB THERMOLOOK GM		

Table 3.2: Water absorption of the rendering system.

3.3.2 Watertightness

3.3.2.1 Hygrothermal behaviour

ETAG 004, clause 5.1.3.2.1.

Heat-rain and heat-cold cycles have been performed on a rig. None of the following defects occurred during and after the tests on the assessed renderings and base coat:

- blistering or peeling of any finishing,
- failure or cracking associated with joints between insulation product boards or profiles fitted with system,

- detachment of render,
- cracking allowing water penetration to the insulation layer.

The ETICS is assessed as resistant to hygrothermal cycles.

3.3.2.2 Freeze-thaw behaviour

ETAG 004, clause 5.1.3.2.2.

All combinations are freeze-thaw resistant according to the water absorption test results.

3.3.3 Impact resistance

ETAG 004, clause 5.1.3.3.

Rendering system: Base coat (PRB Fondisol F) + key coat (if necessary) + finishing coat indicated below	Category of use	
	Single standard mesh (AVN)	Reinforced mesh + standard mesh (AVR + AVN)
PRB CRÉPIFOND G + PRB CRÉPIMUR F FR	III	II
PRB CRÉPIFOND G + PRB CRÉPIMUR M FR	III	II
PRB CRÉPIFOND G + PRB CRÉPIRIB F FR	III	II
PRB CRÉPIFOND G + PRB CRÉPOXANE F FR	II	II
PRB CRÉPIFOND G + PRB CRÉPOXANE M FR	II	II
PRB CRÉPIFOND G + PRB CRÉPILIS SC FR + PRB CRÉPILIS F FR	II	II
PRB CRÉPIFOND MINERAL + PRB CRÉPIXATE F	II	II
PRB CRÉPIFOND MINERAL + PRB CRÉPIXATE M	I*	I
PRB THERMOLOOK GF	I	I
PRB THERMOLOOK GM	I*	I
PRB CRÉPITAL	II	II

* Cases tested on the wall after hygrothermal ageing.

Table 3.3: Impact resistance of the rendering system.

3.3.4 Water vapour permeability – resistance to water vapour diffusion

ETAG 004, clause 5.1.3.4.

Rendering system: Base coat (PRB Fondisol F) + key coat (if necessary) + finishing coat indicated below	Maximum particle size (mm)	Equivalent air thickness S_d (m)
Base coat: PRB FONDISOL F	1,0 mm	$\leq 1,0$ (test result: 0,1)
PRB CRÉPIFOND G + PRB CRÉPIMUR F FR	1,0 mm	$\leq 1,0$ (test result: 0,5)
PRB CRÉPIFOND G + PRB CRÉPIMUR M FR*	1,5 mm	$\leq 1,0$ (test result: 0,6)
PRB CRÉPIFOND G + PRB CRÉPIRIB F FR*	2,0 mm	$\leq 1,0$ (test result: 0,5)
PRB CRÉPIFOND G + PRB CRÉPOXANE F FR PRB CRÉPIFOND G + PRB CRÉPOXANE M FR*	1,0 mm 1,5 mm	$\leq 1,0$ (test result: 0,7)
PRB CRÉPIFOND G + PRB CRÉPILIS SC FR + PRB CRÉPILIS F FR*	1,0 mm + 0,3 mm	$\leq 1,0$ (test result: 0,5)
PRB CRÉPIFOND MINERAL + PRB CRÉPIXATE F PRB CRÉPIFOND MINERAL + PRB CRÉPIXATE M*	1,0 mm 1,5 mm	$\leq 1,0$ (test result: 0,2)
PRB CRÉPIFOND MINERAL + PRB CRÉPITAL*	1,5 mm	$\leq 1,0$ (test result: 0,2)
PRB THERMOLOOK GF	2,0 mm	$\leq 1,0$ (test result: 0,3)
PRB THERMOLOOK GM*	3,15 mm	$\leq 1,0$ (test result: 0,2)
PRB CRÉPITAL	1,5 mm	$\leq 1,0$ (test result: 0,2)
PRB CRÉPIXATE M* PRB CRÉPIXATE F	1,0 mm 1,5 mm	$\leq 1,0$ (test result: 0,2)

* Finishing coat tested.

Table 3.5: Resistance to water vapour diffusion (PRB FONDISOL F with a thickness a 3 mm).

3.3.5 Release of dangerous substances

Not assessed.

3.4 Safety and accessibility in use (BWR 4)

3.4.1 Bond strength

3.4.1.1 Bond strength of the base coat (PRB FONDISOL F) onto insulation product

ETAG 004, clause 5.1.4.1.1.

Bond strength between base coat and insulation product: < 0,08 MPa (cohesive rupture in the insulation product).

3.4.1.2 Bond strength of adhesives onto substrate and insulation product

ETAG 004, clauses 5.1.4.1.2 and 5.1.4.1.3.

Test not mandatory because the system is defined as “mechanically fixed ETICS with supplementary adhesive”.

3.4.2 Fixing strength (transverse displacement)

ETAG 004, clause 5.1.4.2.

Test not required because the ETICS fulfils the following criteria:

$$E \cdot d < 50.000 \text{ N/mm}$$

E modulus of elasticity of the base coat without mesh

d mean dry thickness of the base coat

3.4.3 Wind load resistance of mechanically fixed ETICS

ETAG 004, clause 5.1.4.3.

See Annex 2.

3.4.4 Dynamic wind uplift test

ETAG 004, clause 5.1.4.3.3.

Not assessed.

3.5 Protection against noise (BWR 5)

ETAG 004, clause 5.1.5.

Not assessed.

3.6 Energy economy and heat retention (BWR 6)

ETAG 004, clause 5.1.6.1.

Thermal resistance of the ETICS system is shown in table 3.13.

Insulation product	Thermal conductivity (W/m·K)	Thickness ¹ (mm)	Thermal resistance (m ² ·K/W) ⁽²⁾		
			R _{insulation}	R _{render}	R _{ETICS}
STEICO PROTECT DRY H	0,043	40	0,93	0,02	0,95
		60	1,40		1,42
STEICO PROTECT DRY M	0,040	60	1,50		1,52
		200	5,00		5,02
STEICO PROTECT DRY L	0,037	100	2,70		2,72
		240	6,50		6,52

(1) Minimum and maximum thickness considered in the ETA.

(2) R_{insulation}: Thermal resistance of the insulation panel (in accordance with the Declaration of Performance of the insulation panels).

R_{render}: Thermal resistance of the render (base coat + key coat + finishing coat). See section 5.1.6.1 of ETAG 004.

R_{ETICS}: Thermal resistance of the ETICS (R_{ETICS} = R_{insulation} + R_{render}).

Table 3.13: Thermal resistance of the ETICS.

The thermal transmittance of the substrate wall covered by the ETICS is calculated in accordance with the standard EN ISO 6946:

$$U_c = U + \chi_p \cdot n$$

Where:

$\chi_p \cdot n$: has to be taken into account only if it is greater than 0,04 W/(m²·K).

U_c: global (corrected) thermal transmittance of the covered wall W/(m²·K).

n: number of anchors (through insulation product) per m².

χ_p : local influence of thermal bridge caused by anchor. The values listed below can be taken into account if not specified in the anchor's ETA:

= 0,002 W/K for anchors with a stainless-steel screw covered by plastic material and for anchors with an air gap at the head of the screw ($\chi_p \cdot n$ negligible for n < 20).

= 0,004 W/K for anchors with a galvanized steel screw with the head covered by a plastic material ($\chi_p \cdot n$ negligible for n < 10).

= negligible for anchors with plastic nails (reinforced or not with glass fibres...).

U: thermal transmittance of the normal part of the covered wall (excluding thermal bridges) (W/(m²·K)) determined as follows:

$$U = \frac{1}{R_{insulation} + R_{render} + R_{substrate} + R_{se} + R_{si}}$$

Where:

R_{insulation}: thermal resistance of the insulation product (according to declaration in reference to EN 13171) in (m²·K)/W.

R_{render}: thermal resistance of the render (about 0,02 (m²·K)/W) or determined by test according to EN 12667 or EN 12664 in (m²·K)/W.

R_{substrate}: thermal resistance of the substrate of the building (concrete, brick...) in (m²·K)/W.

R_{se} external surface thermal resistance in $(m^2 \cdot K)/W$.

R_{si} internal surface thermal resistance in $(m^2 \cdot K)/W$.

The value of thermal resistance of each insulation product shall be given in the manufacturer's documentation along with the possible range or thicknesses. In addition, the point thermal conductivity of anchors shall be given when anchors are used in the ETICS.

3.7 Aspects of durability and serviceability

Bond strength after ageing (ETAG 004, clauses 5.1.7.1.1 and 5.1.7.1.2).

Rendering system: Base coat (PRB Fondisol F) + key coat (if necessary) + finishing coat indicated below	Bond strength (MPa)
Key coat: PRB CRÉPIFOND G Finishing coats: - PRB CRÉPIMUR F FR - PRB CRÉPIMUR M FR - PRB CRÉPIRIB F FR - PRB CRÉPOXANE F FR - PRB CRÉPOXANE M FR - PRB CRÉPILIS SC FR + PRB CRÉPILIS F FR	< 0,08
Without key coat Finishing coats: - PRB CRÉPIXATE F - PRB CRÉPIXATE M* - PRB CRÉPITAL - PRB THERMOLOOK GF - PRB THERMOLOOK GM+	< 0,08

All ruptures have occurred in the insulation product.

* Finishing coats tested on the rig.

Table 3.14: Bond strength after ageing.

3.7.1 Width of crack – Render Strip Tensile Test

ETAG 004, clause 5.5.4.1.

Not assessed.

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 amended by Decision 2001/596/EC, as amended of the European Commission², the systems of AVCP (see EC delegated regulation (EU) No 568/2014 amending Annex V to Regulation (EU) 305/2011) given in the table 4.1 applies.

Trade name of the system	Intended use(s)	Level or class	AVCP system
PRB THERMOBOIS	External thermal insulation composite system/kits (ETICS) with rendering in externals wall subject to fire regulations.	A1 ⁽¹⁾ , A2 ⁽¹⁾ , B ⁽¹⁾ , C ⁽¹⁾	1
		A1 ⁽²⁾ , A2 ⁽²⁾ , B ⁽²⁾ , C ⁽²⁾ , D, E, F or A1 ⁽³⁾ to E ⁽³⁾	2+
	External thermal insulation composite system/kits (ETICS) with rendering in externals wall not subject to fire regulations.	Any	2+

Note:

- (1) Products/material for which as clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).
- (2) Products/materials not covered by footnote 1.
- (3) Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of classes A1 according to Commission Decision 96/603/EC).

Table 4.1: Applicable AVPC system.

5 Technical details necessary for the implementation of the AVCP system, as provided for 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 ITeC³, with which the factory production control shall be in accordance.

Products not manufactured by the kit manufacturer shall also be controlled according to the Control Plan. Where materials/components are not manufactured and tested by the supplier in accordance with agreed methods, then they shall be subject to suitable checks/tests by the kit manufacturer before acceptance.

Any change in the manufacturing procedure which may affect the properties of the product shall be notified and the necessary type-testing revised according to the *Control Plan*.

Issued in Barcelona on 16 July 2020 by the Catalonia Institute of Construction Technology.



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² Official Journal of the European Union (OJEU) L229/15 of 20/08/1997.

Official Journal of the European Union (OJEU) L209/33 of 02/08/2011.

³ 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: Insulation product characteristics

Descriptions and characteristics		Wood fibre insulation board		
Trade name		STEICO PROTECT DRY H	STEICO PROTECT DRY M	STEICO PROTECT DRY L
Board designation		WF – EN 13171 – T5 – WS1,0 – MU3 – CS(10\Y)200 – DS(70,90)3 – TR30	WF – EN 13171 – T5 – WS1,0 – MU3 – CS(10\Y)100 – DS(70,90)3 – TR20	WF – EN 13171 – T5 – WS1,0 – MU3 – CS(10\Y)50 – DS(70,90)3 – TR10
Description		Factory-prefabricated uncoated boards STEICO PROTECT made of wood fibres (WF) according to EN 13171.		
Colour		Light brown		
Density (kg/m ³) EN 1602		180	140	110
Reaction to fire class* EN 13501-1		E		
Thermal conductivity* (W/m·K) EN 12667		0,043	0,040	0,037
Thickness* (mm) EN 823		See thicknesses declared on table 1.1.		
Thickness tolerance* EN 823		T5		
Dimensional stability* under	specified temperature and humidity EN 1604: 48h at 70 °C	DS (70,90)3		
	specified temperature and humidity EN 1604: 48h at 70 °C and 90% RH			
	laboratory conditions EN 1603			
Compression strength* (kPa) EN 826		≥ 200 CS(10\Y)200	≥ 100 CS(10\Y)100	≥ 50 CS(10\Y)50
Tensile strength* (kPa) EN 1607		≥ 30 TR30	≥ 20 TR20	≥ 10 TR10
Water absorption* (kg/m ²) EN 1609 - method A		WS1,0		
Water vapour transmission* EN 12086		MU3		
Shear strength (N/mm ²) EN 12090		≥ 0,02	≥ 0,02	≥ 0,02
Shear modulus (N/mm ²) EN 12090		≥ 1,0	≥ 1,0	≥ 0,9

* Characteristics declared by the manufacturer in the DoP.

Table A1.1: Characteristics of the insulation product (wood fibre insulation boards).

ANNEX 2: Characteristics of the fixings for the insulation products

Trade name	ETA reference	Mounting / Assembly	Plate stiffness (kN/mm)
Ejotharm STR U 2G	ETA 04/0023	Surface	≥ 0,6
Fischer Termoz CS 8	ETA 14/0372	Surface	≥ 0,6

Anchors with an ETA according to ETAG 014 used as EAD or according to EAD 330196-01-0604. Validity of the anchor's ETA shall be checked before using the anchor.

The anchors are composed of a plastic expansion sleeve with a plate with a diameter of 60 mm, and a plastic or metallic nail or screw.

Use categories and characteristic resistances in the substrate are given in each anchor's ETA.

Table A2.1: Anchors for insulation products characteristics.

Anchors	Plate diameter (mm)	≥ 60	
	Plate stiffness (kN/mm)	≥ 0,6	
Insulation product	Type	STEICO PROTECT DRY H	
	Tensile strength perpendicular to the faces (kPa)	43,3 (dry conditions) 31,0 (wet conditions)	
	Thickness (mm)	≥ 40	
Pull-through test			
Anchors placed at the body of the insulation product	R _{panel} (N) in dry conditions	Minimal: 1140	Average: 1190
	R _{panel} (N) in wet conditions	Minimal: 930	Average: 990
Anchors placed at joints of the insulation product	R _{panel} (N) in dry conditions	Minimal: 950	Average: 1060
Static foam block test			
	R _{panel} (N) in dry conditions	Minimal: 770	Average: 880

Table A2.2: Test results for anchors with a plate stiffness ≥ 0,6 kN/mm and with STEICO PROTECT DRY H insulation board.

Anchors	Plate diameter (mm)	≥ 60	
	Plate stiffness (kN/mm)	$\geq 0,6$	
Insulation product	Type	STEICO PROTECT DRY M	
	Tensile strength perpendicular to the faces (kPa)	41,8 (dry conditions) 29,6 (wet conditions)	31,2 (dry conditions)
	Thickness (mm)	≥ 60	≥ 200
<i>Pull-through test</i>			
Anchors placed at the body of the insulation product	R_{panel} (N) in dry conditions	Minimal: 910 Average: 2070	Minimal: 870 Average: 1370
	R_{panel} (N) in wet conditions	Minimal: 1380 Average: 1410	---
Anchors placed at joints of the insulation product	R_{panel} (N) in dry conditions	Minimal: 950 Average: 1190	---
<i>Static foam block test</i>			
	R_{panel} (N) in dry conditions	Minimal: 800 Average: 1310	---

Table A2.2: Test results for anchors with a plate stiffness $\geq 0,6$ kN/mm and with STEICO PROTECT DRY M insulation board.

Anchors	Plate diameter (mm)	≥ 60
	Plate stiffness (kN/mm)	≥ 0,6
Insulation product	Type	STEICO PROTECT DRY L
	Tensile strength perpendicular to the faces (kPa)	23,7 (dry conditions) 14,0 (wet conditions)
	Thickness (mm)	≥ 60
<i>Pull-through test</i>		
Anchors placed at the body of the insulation product	R _{panel} (N) in dry conditions	Minimal: 900 Average: 1110
	R _{panel} (N) in wet conditions	Minimal: 730 Average: 760
Anchors placed at joints of the insulation product	R _{panel} (N) in dry conditions	Minimal: 740 Average: 760
<i>Static foam block test</i>		
	R _{panel} (N) in dry conditions	Minimal: 600 Average: 650

Table A2.3: Test results for anchors with a plate stiffness ≥ 0,6 kN/mm and with STEICO PROTECT DRY L insulation board.

The design load resistance of the ETICS fixed with anchors is determined as follows:

$$R_d = \frac{R_{panel} \cdot n_{panel} + R_{joint} \cdot n_{joint}}{\gamma}$$

Where:

- n_{panel} number of anchors not placed at the panel joint, per m²
n_{joint} number of anchors placed at the panel joint, per m²
γ national safety factor

ANNEX 3: Glass fibre mesh characteristics

Trade name	Mass per unit area (g/m²)	Residual resistance after ageing in alkaline solution (N/mm)		Relative residual resistance: % of the strength value after ageing in alkaline solution in relation to the as-delivered state	
		Warp	Weft	Warp	Weft
Standard meshes					
PRB AVN (04-161 B)	156	≥ 20	≥ 20	≥ 50	≥ 50
PRB AVN (0161-CA)	156	≥ 20	≥ 20	≥ 50	≥ 50
PRB AVN (0161RA20)	160	≥ 20	≥ 20	≥ 50	≥ 50
PRB AVN (03-1 C+)	160	≥ 20	≥ 20	≥ 50	≥ 50
PRB AVF (R 131 A 102 C+)	161	≥ 20	≥ 20	≥ 50	≥ 50
PRB AVN (SSA-1363 F+)	167	≥ 20	≥ 20	≥ 50	≥ 50
PRB AVN (R 131 A 101 C+)	167	≥ 20	≥ 20	≥ 50	≥ 50
Reinforced meshes					
PRB AVR (0510-A)	516	≥ 20	≥ 20	≥ 40	≥ 40
PRB AVR (R 585 A 101)	696	≥ 20	≥ 20	≥ 40	≥ 40
PRB AVR (G-weave 660L 55AB X 100CM)	710	≥ 20	≥ 20	≥ 40	≥ 40

Table A3: Glass fibre mesh characteristics.