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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 THERMO XL

Product family to which the construction product belongs

Product Area Code: 04

External Thermal Insulation Composite Systems (ETICS) with rendering on EPS 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

23 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

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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Specific parts of the European Technical Assessment

1 Technical description of the product

PRB THERMO XL is an External Thermal Insulation Composite System (ETICS) with rendering for external wall insulation. The kit comprises components which are factory-produced by the manufacturer or component suppliers. The ETICS manufacturer is ultimately responsible for all components of the ETICS specified in this ETA.

The ETICS kit comprises a prefabricated insulation product of expanded polystyrene (EPS) to be bonded or mechanically fixed onto a wall. The methods of fixing and the relevant components are specified in the table below. 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 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.

The components of the system PRB THERMO XL are given in the following table.

Method of fixing	Component	Coverage (kg/m ²)	Thickness (mm)
Bonded ETICS (purely bonded or bonded with supplementary anchors. The minimal bonded surface shall be 30% ¹)	Insulation product		
	PRB.FACADE.TH31: Grey standard expanded polystyrene (EPS) board, see Annex 1. It contains graphite.	-	20 to 300
	PRB.FACADE.TH38: White standard expanded polystyrene (EPS) board, see Annex 1.		
	Or other standard expanded polystyrene (EPS) insulation boards according to EN 13163 and with the characteristics described in Annex 1.		
	Adhesives		
	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% wt. water.	2,3 to 2,6 [powder]	-
	PRB FONDI XL: grey or white cement-based powder requiring addition of 28% to 32% wt. water.	1,7 to 2,0 [powder]	-
	Supplementary fixings for insulation product		
	Plastic anchors, see Annex 2.	-	-
Mechanically fixed ETICS with anchors and supplementary adhesive	Insulation product		
	White or grey standard expanded polystyrene (EPS) boards, see Annex 1	-	60 to 300
	Adhesives		
	PRB THERMICOL: grey cement-based powder requiring addition of 24% to 26% wt. water.	2,3 to 2,6 [powder]	-
	PRB FONDISOL F: grey or white cement-based powder requiring addition of 19% to 22% wt. water.	2,3 to 2,6 [powder]	-
	PRB FONDI XL: grey or white cement-based powder requiring addition of 28% to 32% wt. water.	1,7 to 2,0 [powder]	-

¹ National application documents shall be taken into account.

Method of fixing	Component	Coverage (kg/m ²)	Thickness (mm)
	Fixings for insulation product		
	Plastic anchors, see Annex 2.	-	-
	Base coat		
	PRB FONDI XL: Grey or white powder requiring the addition of about 28% to 32% in weight of water, consisting of grey or white cement, hydraulic lime, mineral pigments, calcium carbonate and silica as particles and specific additives.	5,0 to 9,0 [powder]	5 ₊₂ ⁰ to 9 ₊₃ ⁰
	Meshes		
	Glass fibre meshes (standard and reinforced), see Annex 3.		
	Key coats		
	PRB CRÉPIFOND G: ready to use coloured liquid to be mandatory applied before the finishing coats:		
	- PRB CRÉPIMUR F FR, M FR, G FR		
	- PRB CRÉPIRIB F FR, G FR		
	- PRB CRÉPOXANE FR	0,2 to 0,3	-
	- PRB CRÉPISIX F FR, M FR		
	- PRB CRÉPILIS SC FR		
	- PRB CRÉPIMUR SOUPLE M FR		
	PRB CRÉPIFOND MINÉRAL G: ready to use coloured liquid, optional application before the finishing coats:		
	- PRB CRÉPITAL	0,2 to 0,3	-
	- PRB CRÉPIXATE F, M		
Every method of fixing	Finishing coats		
	Ready to use pastes - acrylic binder:		
	- PRB CRÉPIMUR F FR: particle size 1 mm. Floated finishing aspect.	2,0 to 2,2	
	- PRB CRÉPIMUR M FR: particle size 1,5 mm. Floated finishing aspect.	2,2 to 2,8	
	- PRB CRÉPIMUR G FR: particle size 2 mm. Floated finishing aspect.	3,3 to 3,7	Regulated by particle size
	- PRB CRÉPIRIB F FR: particle size 2 mm. Rilled finishing aspect.	2 to 2,6	
	- PRB CRÉPIRIB G FR: particle size 3 mm. Rilled finishing aspect.	2,8 to 3,5	
	Ready to use pastes - acrylo-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 1,8 mm. Floated finishing aspect.	2,2 to 2,8	
	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	

Method of fixing	Component	Coverage (kg/m ²)	Thickness (mm)
	PRB COLOR ACRYLFLEX FR: finishing coat composed of two coats:		
	- PRB FONDISOL F: grey or white cement-based powder requiring addition of 19% to 22% wt. water +	1,2 to 2,0 +	Regulated by particle size
	- PRB COLOR ACRYLFLEX FR: Liquid with acrylic binder. Smooth finishing aspect.	0,6 in 2 layers (0,3 + 0,3)	
	PRB COLOR ACRYLFLEX FR: finishing coat composed of two coats:		
	- PRB FONDISOL F: grey or white cement-based powder requiring addition of 19% to 22% wt. water +	1,2 to 2,0 +	Regulated by particle size
	- PRB COLOR SILOFLEX FR: Liquid with siloxane binder. Smooth finishing aspect.	0,75 in 2 layers (0,375+0,375)	
	Ready to use paste – acrylo-siloxane binder:		
	- PRB CRÉPISIX FR (also named PRB CRÉPISIX M FR): particle size 1,5 mm. Floated finishing aspect.	2,4 to 2,8	Regulated by particle size
	Ready to use paste – acrylic binder:		
	- PRB CRÉPIMUR SOUPLE M FR: particle size 1,5 mm. Floated finishing aspect.	2,2 to 2,8	Regulated by particle size
	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 22% to 24% wt. water - hydraulic binder:		
	- PRB THERMOLOOK GF: particle size 1,8 mm to 2 mm.	Rough or partially smoothed: 8,0 to 9,0 Scatched: 11 to 15	Rough or partially smoothed: 7 to 8 Scatched: 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.		
	PRB CRÉPICHAUX: finishing coat composed of two coats of cement and lime-based powder requiring addition of about 24% wt. water:		
	- PRB CRÉPICHAUX SC (particle size 0,7 mm) +	1,25 to 2	Regulated by particle size
	- PRB CRÉPICHAUX F (particle size 0,3 mm). Floated finishing aspect.	0,7 to 1,2	
	Powder requiring addition of 25% to 27% wt. water - hydraulic binder:		
	- PRB CRÉPITAL: particle size 1,5 mm. Floated finishing aspect.	2,0 to 2,5	Regulated by particle size

Method of fixing	Component	Coverage (kg/m ²)	Thickness (mm)
	PRB COLOR MINERAL PLUS: finishing coat composed of two coats:		
	- PRB CRÉPICHOUX SC (cement and lime-based powder requiring addition of about 24% wt. water; particle size 0,7 mm) +	1,25 to 2,0	Regulated by particle size
	- PRB COLOR MINERAL PLUS: Liquid – silicate binder. Smooth finishing aspect. Optionally PRB CRÉPICHOUX F can be used before applying PRB COLOR MINERAL PLUS.	0,6 in 2 layers (0,3, with a 5% dilution, + 0,3)	
	Powder requiring addition of 28 % to 32% wt. water – hydraulic binder:		
	- PRB SLIMDÉCOR POUVRE (particle size 0,8 mm). Modelled/textured finishing coat.	4,5 to 5,5	3 to 5
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 THERMO XL 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 ²) 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 THERMO XL. 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.

² ETAG 004 for *External Thermal Insulation Composite Systems (ETICS) with Rendering* (edition 2000, amended August 2011, amended February 2013).

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

Performance of PRB THERMO XL 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*² used as EAD. Essential characteristics of PRB THERMO XL 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 THERMO XL has been assessed according to section 5.1.2.1 of ETAG 004.

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

Configuration (the combination of key coat + finishing coat is described in table 1.1)	Max. organic content declared (% weight)	Declared flame retardant content (% weight)
<ul style="list-style-type: none"> Adhesives: PRB THERMICOL PRB FONDISOL F PRB FONDI XL 	2,6 to 3,5	0
<ul style="list-style-type: none"> Insulation: PRB.FACADE.TH31 and EPS boards with reaction to fire class E, thickness < 300 mm and density ≤ 18 kg/m³. 	---	---
<ul style="list-style-type: none"> Base coat: PRB FONDI XL 	3,5	0
<ul style="list-style-type: none"> 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+) 	--	--
<ul style="list-style-type: none"> Key coat: PRB CRÉPIFOND G PRB CRÉPIFOND MINERAL 	3,5 to 12,0	0
<ul style="list-style-type: none"> Finishing coat: PRB CRÉPIMUR F FR / M FR / G FR PRB CRÉPIRIB F FR / G FR PRB CRÉPOXANE F FR / M FR PRB CRÉPILIS SC FR + PRB CRÉPILIS F FR PRB FONDISOL F + PRB COLOR ACRYLFLEX FR PRB FONDISOL F + PRB COLOR SILOFLEX FR 	2,5 to 23,5	0 to 20

Configuration (the combination of key coat + finishing coat is described in table 1.1)	Max. organic content declared (% weight)	Declared flame retardant content (% weight)
PRB CRÉPISIX FR		
PRB CRÉPIMUR SOUPLE M FR		
PRB CRÉPIXATE F / M		
PRB THERMOLOOK GF / GM	2,5 to 23,5	0 to 20
PRB CRÉPICHAUX SC + PRB CRÉPICHAUX F		
PRB CRÉPITAL		
PRB CRÉPICHAUX SC + PRB COLOR MINERAL PLUS		
PRB SLIMDÉCOR POWDRE		

Table 3.1: Reaction to fire information of the PRB THERMO XL 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 Fondi XL) + 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 CRÉPIMUR G FR		
- PRB CRÉPIRIB F FR		
- PRB CRÉPIRIB G FR	X	
- PRB CRÉPOXANE F FR		
- PRB CRÉPOXANE M FR		
- PRB CRÉPILIS SC FR + PRB CRÉPILIS F FR		
- PRB CRÉPISIX FR		
- PRB CRÉPIMUR SOUPLE M FR		
Without key coat		
Finishing coats:		
- PRB FONDISOL F + PRB COLOR ACRYLFLEX FR	X	
- PRB FONDISOL F + PRB COLOR SILOFLEX FR		
Without key coat		
Finishing coats:		
- PRB CRÉPIXATE F		X
- PRB CRÉPIXATE M		
Without key coat		
Finishing coats:		
- PRB THERMOLOOK GF		
- PRB THERMOLOOK GM		
- PRB CRÉPICHAUX SC + PRB CRÉPICHAUX F	X	
- PRB CRÉPITAL		
- PRB CRÉPICHAUX SC + COLOR MINERAL PLUS		
- PRB SLIMDECOR POUFRE		

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. 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 assessed as freeze-thaw resistant:

- For all combinations of finishing coats with the exception of PRB CRÉPIXATE F and PRB CRÉPIXATE M: test not required (see water absorption test results).

- PRB CRÉPIXATE F and PRB CRÉPIXATE M: freeze-thaw behaviour test has been carried out on samples with PRB CRÉPIXATE M. No defects occurred in the samples after the cycles. The bond strength values after the freeze-thaw cycles are shown in the table below.

Rendering system: Base coat + + finishing coat indicated below	Bond strength (MPa)	Failure typology
PRB FONDI XL (5 mm) + PRB CRÉPIXATE M	≥ 0,08	A/C
PRB FONDI XL (9 mm) + PRB CRÉPIXATE M	≥ 0,08	C

Failure typology: A: adhesive rupture; B: cohesive rupture in the rendering; C: cohesive rupture in insulation product.

Required value (average): ≥ 0,08 (A, B rupture) or < 0,08 (C rupture)

Table 3.2 bis: Bond strength average values after the freeze-thaw cycles.

3.3.3 Impact resistance

ETAG 004, clause 5.1.3.3.

3.3.3.1 Base coat: PRB FONDI XL with a mean thickness of 5 mm

Rendering system: Base coat (PRB Fondi XL) + key coat (if necessary) + finishing coat indicated below	Category of use		
	Single standard mesh (AVN)	Double standard mesh (AVN + AVN)	Reinforced mesh + standard mesh (AVR + AVN)
PRB CRÉPIFOND G + PRB CRÉPIMUR F FR	III	III	II
PRB CRÉPIFOND G + PRB CRÉPIMUR M FR	III	III	II
PRB CRÉPIFOND G + PRB CRÉPIMUR G FR	III	III	II
PRB CRÉPIFOND G + PRB CRÉPIRIB F FR	III	III	III
PRB CRÉPIFOND G + PRB CRÉPIRIB G FR	III	III	III
PRB CRÉPIFOND G + PRB CRÉPOXANE F FR	III	III	II
PRB CRÉPIFOND G + PRB CRÉPOXANE M FR	III	II	II
PRB CRÉPIFOND G + PRB CRÉPILIS SC FR + PRB CRÉPILIS F FR	III	III	III
PRB FONDISOL F + PRB COLOR ACRYLFLEX FR	III	II	II
PRB FONDISOL F + PRB COLOR SILOFLEX FR	I	I	I
PRB CRÉPIFOND G + PRB CRÉPISIX FR	III	III	III
PRB CRÉPIFOND G + PRB CRÉPIMUR SOUPLE M FR	I	I	I
PRB CRÉPIXATE F	III	III	II
PRB CRÉPIXATE M	III	III	II

Rendering system: Base coat (PRB Fondi XL) + key coat (if necessary) + finishing coat indicated below	Category of use		
	Single standard mesh (AVN)	Double standard mesh (AVN + AVN)	Reinforced mesh + standard mesh (AVR + AVN)
PRB THERMOLOOK GF / GM	I	I	I
PRB CRÉPICHAUX SC + PRB CRÉPICHAUX F	III	II	II
PRB CRÉPITAL	II	II	II
PRB CRÉPICHAUX SC + PRB COLOR MINERAL PLUS	III	III	II
PRB SLIMDECOR POUDRE	III	III	II

Table 3.3: Impact resistance of the rendering system (base coat with a mean thickness of 5 mm).

3.3.3.2 Base coat: PRB FONDI XL with a mean thickness of 9 mm

Rendering system: Base coat (PRB Fondi XL) + key coat (if necessary) + finishing coat indicated below	Category of use		
	Single standard mesh (AVN)	Double standard mesh (AVN + AVN)	Reinforced mesh + standard mesh (AVR + AVN)
PRB CRÉPIFOND G + PRB CRÉPIMUR F FR	III	---	II
PRB CRÉPIFOND G + PRB CRÉPIMUR M FR	---	---	II
PRB CRÉPIFOND G + PRB CRÉPIMUR G FR	---	---	II
PRB CRÉPIFOND G + PRB CRÉPIRIB F FR	---	---	II
PRB CRÉPIFOND G + PRB CRÉPIRIB G FR	---	---	II
PRB CRÉPIFOND G + PRB CRÉPOXANE F FR	---	---	I
PRB CRÉPIFOND G + PRB CRÉPOXANE M FR	---	---	II
PRB CRÉPIFOND G + PRB CRÉPILIS SC FR + CRÉPILIS F FR	---	---	II
PRB FONDISOL F + PRB COLOR ACRYLFLEX FR	---	---	I
PRB FONDISOL F + PRB COLOR SILOFLEX FR	I	I	I
PRB CRÉPIFOND G + PRB CRÉPISIX FR	---	---	II
PRB CRÉPIFOND G + PRB CRÉPIMUR SOUPLE M FR	I	I	I
PRB CRÉPIXATE F	---	---	I
PRB CRÉPIXATE M	II	---	I
PRB THERMOLOOK GF / GM	I	---	---

Rendering system: Base coat (PRB Fondi XL) + key coat (if necessary) + finishing coat indicated below	Category of use		
	Single standard mesh (AVN)	Double standard mesh (AVN + AVN)	Reinforced mesh + standard mesh (AVR + AVN)
PRB CRÉPICHAUX SC + PRB CRÉPICHAUX F	---	---	II
PRB CRÉPITAL	---	---	II
PRB CRÉPICHAUX SC + PRB COLOR MINERAL PLUS	---	---	II
PRB SLIMDECOR POWDRE	II	---	II

Table 3.4: Impact resistance of the rendering system (base coat with a mean thickness of 9 mm).

3.3.4 Water vapour permeability – resistance to water vapour diffusion

ETAG 004, clause 5.1.3.4.

3.3.4.1 Base coat PRB FONDI XL (thickness = 5 mm)

Rendering system: Base coat (PRB Fondi XL) + key coat (if necessary) + finishing coat	Characteristics	Equivalent air thickness s_d (m)
PRB CRÉPIFOND G + PRB CRÉPIMUR F FR PRB CRÉPIFOND G + PRB CRÉPIMUR M FR PRB CRÉPIFOND G + PRB CRÉPIMUR G FR*	Particle size max. 1,0 mm Particle size max. 1,5 mm Particle size max. 2,0 mm Floated finishing aspect	$\leq 2,0$ (Test result obtained: 1,19)
PRB CRÉPIFOND G + PRB CRÉPIRIB F FR PRB CRÉPIFOND G + PRB CRÉPIRIB G FR*	Particle size max. 2,0 mm Particle size max. 3,0 mm Rilled finishing aspect	$\leq 1,0$ (Test result obtained: 0,94)
PRB CRÉPIFOND G + PRB CRÉPOXANE F FR PRB CRÉPIFOND G + PRB CRÉPOXANE M FR*	Particle size max. 1,0 mm Particle size max. 1,8 mm Floated finishing aspect	$\leq 1,0$ (Test result obtained: 0,99)
PRB CRÉPIFOND G + PRB CRÉPILIS SC FR + PRB CRÉPILIS F FR*	Particle size max. 1,0 mm + 0,3 mm Stippled finishing aspect	$\leq 1,0$ (Test result obtained: 0,13)
PRB FONDISOL F + PRB COLOR ACRYLFLEX FR*	Smooth finishing aspect	$\leq 1,0$ (Test result obtained: 0,36)
PRB FONDISOL F + PRB COLOR SILOFLEX FR*	Smooth finishing aspect	$\leq 1,0$ (Test result obtained: 0,26)
PRB CRÉPIFOND G + PRB CRÉPISIX FR*	Particle size max. 1,5 mm Floated finishing aspect	$\leq 1,0$ (Test result obtained: 0,50)
PRB CRÉPIFOND G + PRB CRÉPIMUR SOUPLE M FR*	Particle size max. 1,5 mm Floated finishing aspect	$\leq 1,0$ (Test result obtained: 0,59)
PRB CRÉPIXATE F PRB CRÉPIXATE M*	Particle size max. 1,0 mm Particle size max. 1,5 mm Floated finishing aspect	$\leq 1,0$ (Test result obtained: 0,07)

Rendering system: Base coat (PRB Fondi XL) + key coat (if necessary) + finishing coat	Characteristics	Equivalent air thickness s_d (m)
PRB THERMOLOOK GF PRB THERMOLOOK GM*	Particle size max. 2,0 mm Particle size max. 3,15 mm Partially smoothed finishing aspect	$\leq 1,0$ (Test result obtained: 0,08)
PRB CRÉPICHAUX SC + PRB CRÉPICHAUX F*	Particle size max. 0,7 mm + 0,3 mm Floated finishing aspect	$\leq 1,0$ (Test result obtained: 0,08)
PRB CRÉPITAL*	Smooth finishing aspect	$\leq 1,0$ (Test result obtained: 0,09)
PRB CRÉPICHAUX SC + PRB COLOR MINERAL PLUS*	Particle size max. 0,7 mm Smooth finishing aspect	$\leq 1,0$ (Test result obtained: 0,10)
PRB SLIMDECOR POWDRE*	Particle size max. 0,8 mm Modelled finishing aspect	$\leq 1,0$ (Test result obtained: 0,10)
PRB CRÉPIFOND MINERAL + PRB CRÉPIXATE F PRB CRÉPIFOND MINERAL + PRB CRÉPIXATE M*	Particle size max. 1,0 mm Particle size max. 1,5 mm Floated finishing aspect	$\leq 1,0$ (Test result obtained: 0,11)
PRB CRÉPIFOND MINERAL + PRB CRÉPITAL*	Smooth finishing aspect	$\leq 1,0$ (Test result obtained: 0,09)

* Finishing coat tested.

Table 3.5: Resistance to water vapour diffusion (PRB FONDI XL with a thickness of 5 mm).

3.3.4.2 Base coat PRB Fondi XL (thickness = 9 mm)

Rendering system: Base coat (PRB Fondi XL) + key coat (if necessary) + finishing coat	Characteristics	Equivalent air thickness s_d (m)
PRB CRÉPIFOND G + PRB CRÉPIMUR F FR PRB CRÉPIFOND G + PRB CRÉPIMUR M FR PRB CRÉPIFOND G + PRB CRÉPIMUR G FR*	Particle size max. 1,0 mm Particle size max. 1,5 mm Particle size max. 2,0 mm Floated finishing aspect	$\leq 1,0$ (Test result obtained: 0,56)
PRB FONDISOL F + PRB COLOR ACRYLFLEX FR*	Smooth finishing aspect	$\leq 1,0$ (Test result obtained: 0,32)
PRB CRÉPIFOND G + PRB CRÉPIMUR SOUPLE M FR*	Particle size max. 1,5 mm Floated finishing aspect	$\leq 1,0$ (Test result obtained: 0,59)

* Finishing coat tested.

Table 3.6: Resistance to water vapour diffusion (PRB FONDI XL with a thickness of 9 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 FONDI XL) onto insulation product

ETAG 004, clause 5.1.4.1.1.

Base coat: PRB FONDI XL. Test results:

- Initial strength: bond strength $\geq 0,08$ MPa
- After ageing: bond strength $\geq 0,08$ MPa

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.

Adhesives: PRB THERMICOL, PRB FONDISOL F and PRB FONDI XL.

Substrate / Insulation	Bond strength (MPa)		
	Initial state	48 h immersion in water + 2 h in 23°C – 50% RH	48 h immersion in water + 7 days in 23°C – 50% RH
CONCRETE	$\geq 0,25$ MPa	$\geq 0,08$ MPa	$\geq 0,25$ MPa
EPS	$\geq 0,08$ MPa	$\geq 0,03$ MPa	$\geq 0,08$ MPa

Table 3.7: Bond strength of adhesives onto substrate and insulation product.

The minimum bonded surface area for ETICS bonded systems (partially or totally) according section 6.1.4.1.3 of ETAG 004 is 20%.

The ETICS can be installed on the substrate with application of the adhesive on the following minimal surfaces:

Adhesive	Minimum bonded surface area		
	Tensile strength perpendicular to the faces of EPS		
	≥ 100 kPa	≥ 120 kPa	≥ 150 kPa
PRB THERMICOL	30%	25%	20%
PRB FONDISOL F	30%	25%	25%
PRB FONDI XL	Not assessed	22 %	22%

Table 3.8: Minimum bonded surface areas for the PRB THERMO XL system.

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 (MPa)

d mean dry thickness of the base coat (mm)

3.4.3 Wind load resistance of mechanically fixed ETICS

ETAG 004, clause 5.1.4.3.1.

Anchors	Plate diameter (mm)	≥ 60		
	Plate stiffness (kN/mm)	≥ 0,3		
Insulation product	Type	EPS boards		
	Tensile strength perpendicular to the faces (kPa)	≥ 120		
	Thickness (mm)	≥ 60	≥ 80	≥ 100
Maximum load (Pull-through test)	Anchors not placed at the panel joints: R_{panel} (N)	Minimal: 506	Minimal: 649	Minimal: 658
		Average: 512	Average: 657	Average: 688
	Anchors placed at the panel joints: R_{joint} (N)	Minimal: 429	Minimal: 554	Minimal: 611
		Average: 455	Average: 570	Average: 616

Table 3.9: Pull-through test results for anchors with a plate stiffness ≥ 0,3 kN/mm.

Anchors	Plate diameter (mm)	≥ 60		
	Plate stiffness (kN/mm)	≥ 0,6		
Insulation product	Type	EPS boards		
	Tensile strength perpendicular to the faces (kPa)	≥ 120		
	Thickness (mm)	≥ 60	≥ 80	≥ 100
Maximum load (Pull-through test)	Anchors not placed at the panel joints: R_{panel} (N)	Minimal: 509	Minimal: 707	Minimal: 949
		Average: 520	Average: 720	Average: 968
	Anchors placed at the panel joints: R_{joint} (N)	Minimal: 433	Minimal: 610	Minimal: 806
		Average: 464	Average: 617	Average: 821

Table 3.10: Pull-through test results for anchors with a plate stiffness ≥ 0,6 kN/mm.

For the use of anchors mounted countersunk, the above indicated values apply for insulation thickness greater or equal to 80 mm and plate diameter equal to 60 mm.

Anchors which can be used are described in Annex 2 of this ETA.

Anchors	Trade name	Termoz SV 2 Ecotwist
	Helix dimensions (mm)	Diameter: 66; Height: 27
Insulation product	Type	EPS boards
	Tensile strength perpendicular to the faces (kPa)	≥ 100
	Thickness (mm)	≥ 100
Maximum load (Pull-through test)	Anchors not placed at the panel joints: R_{panel} (N)	Minimal: 510
		Average: 520
	Anchors placed at the panel joints: R_{joint} (N)	Minimal: 390
		Average: 430

Note: Anchor Termoz SV 2 Ecotwist can only be used as mounted countersunk (see Annex 2).

Table 3.11: Pull-through test results for Termoz SV 2 Ecotwist.

Anchors	Trade name	TermoScrew TS U8 Gecko
	Helix dimensions (mm)	Diameter: 67; Height: 30
Insulation product	Type	EPS boards
	Tensile strength perpendicular to the face (kPa)	≥ 100
	Thickness (mm)	≥ 100
Maximum load (Pull-through test)	Anchors not placed at the panel joints: R_{panel} (N)	Minimal: 633
		Average: 656

Note: Anchor TermoScrew TS U8 Gecko can only be used as mounted countersunk (see Annex 2).

Table 3.12: Pull-through test results for TermoScrew TS U8 Gecko.

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

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

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

3.4.4 Width of crack – Render Strip Tensile Test

ETAG 004, clause 5.5.4.1.

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.

Insulation product	Thermal conductivity (W/m·K)	Thickness ¹ (mm)	Thermal resistance (m ² ·K/W) ⁽²⁾		
			R _{insulation}	R _{render}	R _{ETICS}
PRB.FACADE.TH31	0,031	20	0,6	0,02	0,62
		300	9,65		9,67
PRB.FACADE.TH38	0,038	20	0,5	0,02	0,52
		300	7,9		7,92

(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:

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

Where:

$\chi_p * n$: 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 13163) 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 (m²·K)/W.
- R_{si} internal surface thermal resistance in (m²·K)/W.

The value of thermal resistance of each insulation product shall be given in the manufacturer's documentation along with the possible range of 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 Fondi XL) + 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 CRÉPIMUR G FR - PRB CRÉPIRIB F FR - PRB CRÉPIRIB G FR - PRB CRÉPOXANE F FR - PRB CRÉPOXANE M FR - PRB CRÉPILIS SC FR + PRB CRÉPILIS F FR	≥ 0,08

Rendering system: Base coat (PRB Fondi XL) + key coat (if necessary) + finishing coat indicated below	Bond strength (MPa)
Key coat: PRB CRÉPIFOND G Finishing coats: - PRB CRÉPISIX FR - PRB CRÉPIMUR SOUPLE M FR	≥ 0,08
Without key coat Finishing coats: - PRB FONDISOL F + PRB COLOR ACRYLFLEX FR - PRB FONDISOL F + PRB COLOR SILOFLEX FR - PRB CRÉPIXATE F - PRB CRÉPIXATE M* - PRB THERMOLOOK GF* - PRB THERMOLOOK GM - PRB CRÉPICH AUX SC + PRB CRÉPICH AUX F - PRB CRÉPITAL - PRB CRÉPICH AUX SC + COLOR MINERAL PLUS - PRB SLIMDECOR POWDRE*	≥ 0,08

* Finishing coats tested on the rig (two rigs tested: one with a base coat -PRB FONDI XL- 5 mm thick and the other 9 mm thick).

Table 3.14: Bond strength after ageing.

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 of the European Commission³, 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 THERMO XL	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+

³ 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.

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 ITeC⁴, 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*.

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by the Catalonia Institute of Construction Technology.



Ferran Bermejo Nualart
Technical Director, ITeC

⁴ 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		EPS panels	
Trade name*		PRB.FACADE.TH38	PRB.FACADE.TH31
Description	Factory-prefabricated uncoated boards with straight edges for bonded ETICS, made of expanded polystyrene (EPS) according to EN 13163. The surface of the board is homogeneous and without "skin".		
Color		White	Grey <i>(It contains graphite)</i>
Density EN 1602 (kg/m ³)		16 (-3; +3)	17 (-3; +3)
Reaction to fire EN 13501-1		E	
Thermal conductivity EN 12667 (W/m·K)		0,038	0,031
Thickness EN 823 (mm)		± 2.0 – T2	
Length EN 822 (mm)		± 2.0 – L2	
Width EN 822 (mm)		± 2.0 – W2	
Squareness EN 824 (mm)		± 2 – S2	
Flatness EN 825 (mm)		± 3 – P3	
Dimensional stability under	specified temperature and humidity EN 1604: 48h at 70 °C	≤ 1% – DS (70,-)1	
	specified temperature and humidity EN 1604: 48h at 70 °C and 90% RH	≤ 1% – DS (70,90)1	
	laboratory conditions EN 1603	± 0,2% – DS(N)2	
Tensile strength (kPa) EN 1607		≥ 120 (EN 13163 - TR120)	
Water absorption (partial immersion) EN 1609 - method A (kg/m ²)		< 0,2	
Water vapour diffusion resistance factor (μ) EN 12086		30 to 70	
Shear strength EN 12090 (N/mm ²)		≥ 0,02	
Shear modulus EN 12090 (N/mm ²)		≥ 1,0	

* Other standard expanded polystyrene (EPS) insulation boards can be used if their declared characteristics are in accordance with the levels stated in this table.

Table A1: Characteristics of insulation product (EPS panels).

ANNEX 2: Anchors for insulation products characteristics

Trade name	ETA reference	Mounting ⁽¹⁾	Plate stiffness (kN/mm)
Bravoll PTH-S	ETA 08/0267	a,b	≥ 0,6
Bravoll PTH-EX	ETA 13/0951	a	≥ 0,6
Bravoll PTH-X	ETA 13/0951	a	≥ 0,6
Ejot H1 eco	ETA 11/0192	a	≥ 0,6
Ejot H3	ETA 14/0130	a	≥ 0,6
Ejotharm NTK U	ETA 07/0026	a	≥ 0,3
Ejotharm STR U	ETA 04/0023	a,b	≥ 0,6
Ejotharm STR U 2G	ETA 04/0023	a,b	≥ 0,6
Ejot SDF-S plus 8 UB + Rosace TE	ETA 04/0064	a	≥ 0,6
Fischer Termofix CF 8	ETA 07/0287	a	≥ 0,3
Fischer TERMOZ SV2 Ecotwist	ETA 12/0208	b	---
Fischer TERMOZ PN 8	ETA 09/0171	a	≥ 0,3
Fischer TERMOZ CN 8	ETA 09/0394	a	≥ 0,3
THERMOScrew TS U8 Gecko	ETA 16/0100	b	---
Koelner TFIX-8S	ETA 11/0144	a	≥ 0,6
Koelner TFIX-8ST	ETA 11/0144	b	≥ 0,6
Koelner TFIX-8M	ETA 07/0336	a	≥ 0,6
Koelner KI-10	ETA 07/0291	a	≥ 0,3
Koelner KI-10N	ETA 07/0221	a	≥ 0,3
Koelner KI-10NS	ETA 07/0221	a	≥ 0,3
Koelner KI-10M	ETA 07/0291	a	≥ 0,3
Spit ISO	ETA 04/0076	a	≥ 0,3
Spit ISO-S	ETA 13/0560	a,b	≥ 0,6

⁽¹⁾ a: surface mounting; b: countersunk mounting

Anchors with an ETA according to ETAG 014 used as EAD, according to EAD 330196-00-0604 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: Anchors for insulation products characteristics.

ANNEX 3: Glass fibre mesh characteristics

Trade name and description	Mass per unit area (g/m ²)	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.