



LABORATÓRIO NACIONAL  
DE ENGENHARIA CIVIL

LABORATÓRIO NACIONAL DE ENGENHARIA CIVIL, I. P.  
Av. do Brasil 101 • 1700-066 LISBOA • PORTUGAL  
phone: (351) 21 844 30 00  
e-mail: [lnec@lnec.pt](mailto:lnec@lnec.pt) • [www.lnec.pt](http://www.lnec.pt)



Member of



[www.eota.eu](http://www.eota.eu)

## European Technical Assessment

**ETA 24/0592**  
of 30/08/2024

English translation prepared by LNEC; original version in Portuguese language.

ISSN 2183-3362

Trade name of the construction product

*Designação comercial do produto de construção*

Product family to which the construction product belongs

*Família de produtos a que o produto de construção pertence*

Manufacturer

*Fabricante*

Manufacturing plant(s)

*Instalações de fabrico*

This European Technical Assessment contains

*A presente Avaliação Técnica Europeia contém*

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

*A presente Avaliação Técnica Europeia é emitida ao abrigo do Regulamento (UE) n.º 305/2011, com base no*

### DECOTHERM

External Thermal Insulation Composite System (ETICS) with rendering on expanded polystyrene for use as external insulation of building walls

*Sistema Compósito de Isolamento Térmico pelo Exterior com revestimento aplicado sobre isolante térmico de poliestireno expandido moldado destinado ao isolamento exterior de paredes de edifícios*

TSL PORTUGAL TINTAS, Lda.  
Avenida da Zona Industrial, n.º 90  
4505-222 Fiães VFR  
Portugal  
[www.tsl.pt](http://www.tsl.pt)

Avenida da Zona Industrial, n.º 90  
Zona Industrial Monte Grande  
4505-222 Fiães VFR  
Portugal

14 pages, including 2 annexes which form an integral part of this assessment

*14 páginas, incluindo 2 anexos que fazem parte desta avaliação*

European Assessment Document - EAD 040083-00-0404: External thermal insulation composite systems (ETICS) with renderings

*Documento de Avaliação Europeia - EAD 040083-00-0404: Sistemas compósitos de isolamento térmico pelo exterior (ETICS) com revestimento aplicado sobre isolante*

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 the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission according to Article 25, Paragraph 3, of Regulation (EU) No. 305/2011.

## 1. Technical description of the product

The External Thermal Insulation Composite System (from now on, referred to as ETICS) DECOTHERM is designed and installed in accordance with the manufacturer's design and installation instructions, deposited with LNEC<sup>1</sup>.

DECOTHERM is a bonded system with supplementary mechanical fixings used primarily to provide stability until the adhesive has dried and increase the adherence of the system, reducing the risk of detachment.

The ETICS comprises the components identified in Table 1, which are factory-produced by the manufacturer or component suppliers.

The ETICS is made up on site using these components. The ETA holder is ultimately responsible for the ETICS.

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

This ETICS is intended to be used as external thermal insulation of building walls. The walls are made of masonry (bricks or 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 it is applied satisfactory thermal insulation.

The ETICS is made of non-loadbearing construction elements. 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 thermal resistance of the ETICS shall be  $\geq 1.0 \text{ (m}^2\cdot\text{K)/W}$ .

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 air tightness of the building structure.

Design and installation of the ETICS should consider the principles laid down in the EAD 040083-00-0404 (see clause 1.1) and shall be done in accordance with national instructions.

This European Technical Assessment (ETA) covers the application of bonded ETICS where the concrete for testing of bond strength is representative for masonry or concrete. For bonded applications onto other substrates (e.g., organic paints or ceramic tiles), testing on the job site is necessary.

The provisions made in this ETA are based on an assumed intended working life of at least 25 years, provided that the conditions laid down for the installation, appropriate use, maintenance and repair are met.

The indications given as to the working life cannot be interpreted as a guarantee given by the manufacturer or the Technical Assessment Body, but are to be regarded only as a means for choosing the appropriate products 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 the design and the installation of the ETICS is effectively communicated to people responsible for the installation. 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 big enough to ensure that the ETICS is not subjected to deformations, which could lead to damage. The indications provided in the EAD 040083-00-0404 (see clause 1.3.1) should be considered.

<sup>1</sup> The Laboratório Nacional de Engenharia Civil (LNEC) holds the technical documentation related to this European Technical Assessment (ETA). This documentation will be made accessible to the notified body(ies) involved in the assessment and verification of constancy of performance, to the extent that it is relevant to their tasks.

**TABLE 1**  
Definition of the components

Components	Trade name	Description <sup>1</sup>	Coverage (kg/m <sup>2</sup> )	Thickness (mm)
Insulation product	DECOTHERM EPS 100	Expanded polystyrene (EPS) Boards with 1000 mm × 500 mm and bulk density of 20 kg/m <sup>3</sup> , with CE marking	–	40 to 60
Adhesive	DECOFIX 1992	Mortar based on cement, resins and additives	6.5 to 7	–
Base coat	DECOFIX 1992	Mortar based on cement, resins and additives	with standard glass fibre mesh	5 a 5.5 (including regularization layer)
			with standard glass fibre mesh and reinforced glass fibre mesh	7.5 a 8 (including regularization layer)
Finishing coats	A1 PRIMÁRIO ACRÍLICO 1474 BRANCO	White watery dispersion key coat based on acrylic resins, pigments and fillers with selected granulometry	0.15 a 0.20	0,5 to 1
	BERACRYL 1898	Finishing coat based on 100% acrylic paint	0.30 a 0.40	
	A2 DECOPRIME 1462	Watery dispersion key coat with acrylic resins and pigments	0.20 a 0.25	1 to 2
	DECOTHERM 1852	Finishing coat based on acrylic resins	2 a 2.5	
Glass fibre meshes	DECOTHERM REDE NORMAL	Standard mesh, glass fibre mesh with mesh size 5 mm × 4 mm (in accordance with DH 957 by LNEC)	–	–
	DECOTHERM REDE REFORÇADA	Reinforced mesh, glass fibre mesh with mesh size 6 mm × 6 mm (in accordance with DH 957 by LNEC)	–	–
Anchors (supplementary mechanical fixings)	DECOTHERM BUCHA	Description in accordance with ETA 17/0450 following EAD 330196-01-0604 Remain under the manufacturer responsibility	–	–
Ancillary materials	Description in accordance with clause 1.3.13 of EAD 040083-00-0404 Remain under the manufacturer responsibility			

<sup>1</sup> See clause 3.2 for further description, characteristics and performances of components.

## Design

The user shall comply with the national regulations particularly concerning fire 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 (such as connections and joints) shall be designed in order to avoid water penetration behind the system. To bond the ETICS, the minimum surface area and the method of bonding shall comply with the characteristics of the ETICS (see 3.2.4 of this ETA) as well as the national regulations. In any case, the minimum bonded surface shall be at least 20%.

## Execution

The recognition and preparation of the substrate, as well as the generalities related to 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 in accordance with the manufacturer's prescriptions. In particular, it is suitable to comply with the quantities of rendering applied, the thickness regularity and the drying periods between layers.

## 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 repair of localized damaged areas due to accidents;
- the application of various products or paints, possibly after washing or surface 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

### 3.1 General

The identification tests and the assessment for the intended use of this ETICS according to the Basic Requirements were carried out in compliance with EAD 040083-00-0404, "External Thermal Insulation Composite Systems (ETICS) with Renderings" from January 2019.

### 3.2 ETICS characteristics

#### 3.2.1 Mechanical resistance and stability (BWR 1)

Not relevant.

#### 3.2.2 Safety in case of fire (BWR 2)

##### a) Reaction to fire (EAD 040083-00-0404 – clause 2.2.1.1)

The reaction to fire was tested according to EN 13823:2010 and EN 11925-2:2010 and classified according to EN 13501-1:2007+A1:2009.

The ETICS meets the requirements of class B-s2,d0 for the configuration with the finishing coat A1 (PRIMÁRIO ACRÍLICO 1474 BRANCO + BERACRYL 1898) and class C-s3,d0 for the configuration with the finishing coat A2 (DECOPRIME 1462 + DECOTHERM 1852).

Note: The classification of EN 13501-1:2007+A1:2009 might not be sufficient for the use of ETICS in some European Member States, and some additional assessments following national provisions might be mandatory.

##### b) Facade fire performance (EAD 040083-00-0404 – clause 2.2.2)

No performance assessed.

##### c) Propensity to undergo continuous smouldering of ETICS (EAD 040083-00-0404 – clause 2.2.3)

No performance assessed.

#### 3.2.3 Hygiene, health and environment (BWR 3)

##### a) Content, emission and/or release of dangerous substances – leachable substances (EAD 040083-00-0404 – clause 2.2.4)

A written declaration was submitted by the ETA holder stating that all ETICS components verify the established legal limits for products with some degree of toxicity.

In addition to the specific clauses relating to dangerous substances contained in this ETA, there may be other requirements applicable to the ETICS falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Regulation (EU) No. 305/2011, these requirements need also to be complied with, when and where they apply.

b) Water absorption (EAD 040083-00-0404 – clause 2.2.5)

The results of the water absorption test of the base coat (system with and without finishing) are presented in Table 2.

The results of Table 2 verify the following condition:

- water absorption after 1 hour < 1 kg/m<sup>2</sup>.

The system is therefore judged to have satisfactory performance concerning water absorption, regardless of the finishing coat considered.

**TABLE 2**  
**Water absorption (capillarity test)**

System specimens	Water absorption after 1 h (kg/m <sup>2</sup> )	Water absorption after 24 h (kg/m <sup>2</sup> )
EPS + base coat + standard mesh	Min.: 0.12 Average: 0.15	Min. 0.48 Average: 0.49
EPS + base coat + standard mesh + finishing coat A1 (PRIMÁRIO ACRÍLICO 1474 BRANCO + BERACRYL 1898)	Min.: 0.04 Average: 0.05	Min.: 0.22 Average: 0.25
EPS + base coat + standard mesh + finishing coat A2 (DECOPRIME 1462 + DECOTHERM 1852)	Min.: 0.06 Average: 0.06	Min.: 0.24 Average: 0.25

c) Water tightness of the ETICS: Hygrothermal behaviour (EAD 040083-00-0404 – clause 2.2.6)

The ETICS has been assessed on a rig.

During the heat-rain and the heat-cold cycles, none of the following defects occurred:

- blistering or peeling of the finishing coat, base coat or rendering system;
- failure or cracking associated with joints between the insulation product boards or in profiles incorporated within the system;
- detachment of the finishing coat, base coat or rendering system;
- cracking allowing water penetration towards the insulation layer.

The ETICS is therefore assessed as resistant to hygrothermal cycles.

d) Water tightness of the ETICS: Freeze-thaw behaviour (EAD 040083-00-0404 – clause 2.2.7)

The results of the water absorption of both the reinforced base coat and the rendering system verify the following condition:

- Water absorption after 24 hours < 0.5 kg/m<sup>2</sup>.

The system is therefore judged as freeze-thaw resistant without further testing.

e) Impact resistance (EAD 040083-00-0404 – clause 2.2.8)

The resistance to hard body impact (3 and 10 Joules) tests carried out on samples of systems compositions lead to the use categories presented in Table 3.

**TABLE 3**  
Impact resistance to hard body impacts

System	Hard body impact	Impact diameter (mm)	Presence of cracks	Use categories <sup>1</sup>
EPS + base coat + standard mesh + finishing coat A1 (PRIMÁRIO ACRÍLICO 1474 BRANCO + BERACRYL 1898)	3 J	Average: 25	Cracking and no penetration	III
	10 J	Average: 46	Cracking and penetration	
EPS + base coat + standard mesh + reinforced mesh + finishing coat A1 (PRIMÁRIO ACRÍLICO 1474 BRANCO + BERACRYL 1898)	3 J	Average: 21	No cracking	II
	10 J	Average: 27	Cracking and no penetration	
EPS + base coat + standard mesh + finishing coat A2 (DECOPRIME 1462 + DECOTHERM 1852)	3 J	Average: 22	Cracking and no penetration	III
	10 J	Average: 63	Cracking and penetration	
EPS + base coat + standard mesh + reinforced mesh + finishing coat A2 (DECOPRIME 1462 + DECOTHERM 1852)	3 J	Average: 18	Cracking and no penetration	III
	10 J	Average: 28	Cracking and penetration	

<sup>1</sup> Use categories:

Category I – zones readily accessible at ground level to the public and vulnerable to hard body impacts, but not subjected to abnormally rough use;  
Category II – zones liable to impacts from thrown or kicked objects, but in public locations where the height of the ETICS will limit the size of the impact; or at lower levels where access to the building is primarily to those with some incentive to exercise care;  
Category III – zones not likely to be damaged by normal impacts caused by people or by thrown or kicked objects.

f) Water vapour permeability (EAD 040083-00-0404 – clause 2.2.9)

Table 4 presents the resistance to water vapour diffusion of the rendering system (base coat and finishing coat) for different system configurations, expressed by the equivalent air thickness. The values do not exceed 2.0 m in any case.

The average water vapour diffusion resistance factor of the thermal insulation product is 52.2, considering an average tested thickness for the thermal insulation product of 40 mm.

**TABLE 4**  
Equivalent air thickness

System specimens	Equivalent air thickness (m)
Base coat + standard mesh + finishing coat A1 (PRIMÁRIO ACRÍLICO 1474 BRANCO + BERACRYL 1898)	Average: 1.97
Base coat + standard mesh + finishing coat A2 (DECOPRIME 1462 + DECOTHERM 1852)	Average: 1.48

### 3.2.4 Safety and accessibility in use (BWR 4)

a) Bond strength (EAD 040083-00-0404 – clause 2.2.11)

– Base coat onto EPS board (EAD 040083-00-0404 – clause 2.2.11.1)

Tests were performed on the system applied on the rig after hygrothermal cycles. The results are presented in Table 5.

In all cases, bond strength values are higher than 80 kPa and the failure mainly occurred within the insulation product (cohesive rupture).

TABLE 5

Bond strength between base coat and insulation product after hygrothermal cycles

System (rig) <sup>1</sup>	Bond strength (after hygrothermal ageing) (kPa / Failure pattern) <sup>2</sup>
EPS + base coat + standard mesh	Min.: 200 Average: 240 / FP: C
EPS + base coat + standard mesh + reinforced mesh	Min.: 230 Average: 250 / FP: C
EPS + base coat + standard mesh + finishing coat A1 (PRIMÁRIO ACRÍLICO 1474 BRANCO + BERACRYL 1898)	Min.: 280 Average: 300 / FP: C
EPS + base coat + standard mesh + reinforced mesh + finishing coat A1 (PRIMÁRIO ACRÍLICO 1474 BRANCO + BERACRYL 1898)	Min.: 230 Average: 250 / FP: C
EPS + base coat + standard mesh + finishing coat A2 (DECOPRIME 1464 + DECOTHERM 1852)	Min.: 200 Average: 260 / FP: C
EPS + base coat + standard mesh + reinforced mesh + finishing coat A2 (DECOPRIME 1464 + DECOTHERM 1852)	Min.: 200 Average: 220 / FP: A/C

<sup>1</sup> Rig – system applied on brick masonry with test dimensions of 3 m x 2 m. The system was subjected to hygrothermal cycles before the adhesion test.<sup>2</sup> Failure pattern (FP): A – adhesive rupture (failure between the base coat and the insulation product); C – cohesive rupture (failure only in the insulation product).

– Adhesive onto EPS board (EAD 040083-00-0404 – clause 2.2.11.3)

Tests were performed on samples of EPS insulation boards faced with the adhesive product. The results are presented in Table 6. In all cases, the results are within the limits defined by the EAD 040083-00-0404.

TABLE 6

Bond strength between adhesive and insulation product

Specimen	Bond strength (kPa / Failure pattern) <sup>1</sup>		
	Initial state	After conditioning	
		48 h immersion in water + 2 h at 23 °C/50% RH	48 h of immersion in water + 7 days at 23 °C/50% RH
Specimen	Min.: 250 Average: 280 / FP: C	Min.: 200 Average: 230 / FP: C	Min.: 250 Average: 310 / FP: C

<sup>1</sup> Failure pattern (FP): C – cohesive rupture (failure only in the insulation product).

– Adhesive onto substrate (EAD 040083-00-0404 – clause 2.2.11.2)

Tests were performed on samples of concrete slabs faced with the adhesive product. The results are presented in Table 7. In all cases, the results are within the limits defined by the EAD 040083-00-0404.

TABLE 7

Bond strength between adhesive and substrate (concrete)

Specimen	Bond strength (kPa / Failure pattern) <sup>1</sup>		
	Initial state	After conditioning	
		48 h immersion in water + 2 h at 23 °C/50% RH	48 h immersion in water + 7 days at 23 °C/50% HR
Adhesive + substrate (concrete)	Min.: 840 Average: 940 / FP: B	Min.: 460 Average: 500 / FP: B	Min.: 740 Average: 850 / FP: B

<sup>1</sup> Failure pattern (FP): B – cohesive rupture (failure only in the adhesive).

The minimal bonded surface S is calculated as follows, with a minimum of 23%:

$$S (\%) = [30 \times 100] / B$$

where:

B minimum mean failure resistance of the adhesive to the insulation product in dry conditions (250 kPa);

30 kPa corresponds to the minimum requirement.

The minimum bonded surface area (S) calculated is 12%. Therefore, a minimum bonded surface area (S) of 20% shall be used.

b) Wind load resistance (EAD 040083-00-0404 – clause 2.2.13)

No performance assessed.

### 3.2.5 Protection against noise (BWR 5)

No performance assessed.

### 3.2.6 Energy economy and heat retention (BWR 6)

a) Thermal resistance (EAD 040083-00-0404 – clause 2.2.23)

The additional thermal resistance  $R_{ETICS}$  provided by the ETICS to the substrate wall is calculated in accordance with EN ISO 6946 from the nominal value of the insulation product's thermal resistance  $R_D$  given accompanied to the CE marking and from the thermal resistance of the rendering system  $R_{render}$  which is about  $0.02 \text{ (m}^2 \cdot \text{K)/W}$ :

$$R_{ETICS} = R_D + R_{render}$$

Thermal bridges caused by mechanical fixing devices influence the thermal transmittance of the entire wall and shall be taken into account.

The corrected thermal transmittance of the entire wall including ETICS and thermal bridges is calculated using the following equation:

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

where:

$U_c$  corrected thermal transmittance of the entire wall including ETICS and thermal bridges ( $\text{W}/(\text{m}^2 \cdot \text{K})$ );

$U$  thermal transmittance of the entire wall including ETICS without thermal bridges ( $\text{W}/(\text{m}^2 \cdot \text{K})$ );

$n$  number of anchors (through insulation product) per  $\text{m}^2$ ;

$\chi_p$  point thermal transmittance value of an anchor ( $\text{W}/\text{K}$ ). See EOTA Technical Report TR 025. If not specified in the anchor's ETA, the following values apply:

=  $0.002 \text{ W/K}$  for anchors with a stainless-steel screw with the head covered by plastic material and for anchors with an air gap at the head of the screw ( $\chi_p \cdot n$  negligible for  $n < 20$ );

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

The term  $\chi_p \cdot n$  has only to be taken into account if it is greater than  $0.04 \text{ W}/(\text{m}^2 \cdot \text{K})$ .

The thermal transmittance of the entire wall including ETICS without thermal bridges is determined as follows:

$$U = 1 / (R_i + R_{render} + R_{substrate} + R_{se} + R_{si})$$

where:

$R_i$  thermal resistance of the insulation product in  $\text{m}^2 \cdot \text{K}/\text{W}$ ;

$R_{render}$  thermal resistance of the render (about  $0.02 \text{ m}^2 \cdot \text{K}/\text{W}$ );

$R_{substrate}$  thermal resistance of the substrate (concrete, brick,...) in  $\text{m}^2 \cdot \text{K}/\text{W}$ ;

$R_{se}$  external surface resistance in  $\text{m}^2 \cdot \text{K}/\text{W}$ ;

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

Therefore,

$$R_i (40 \text{ mm}) = e/\lambda = 0.040 / 0.036 = 1.11 \text{ m}^2 \cdot \text{K}/\text{W} \text{ (minimum value);}$$

$$R_{\text{min system}} = R_i (40 \text{ mm}) + R_{render} = 1.11 + 0.02 = 1.13 \text{ m}^2 \cdot \text{K}/\text{W};$$

and

$$R_i (60 \text{ mm}) = e/\lambda = 0.060 / 0.036 = 1.67 \text{ m}^2 \cdot \text{K}/\text{W} \text{ (maximum value)}$$

$$R_{\text{min system}} = R_i (60 \text{ mm}) + R_{render} = 1.67 + 0.02 = 1.69 \text{ m}^2 \cdot \text{K}/\text{W}.$$

### 3.3 Component characteristics

#### 3.3.1 General

Detailed information on the chemical composition and other identifying characteristics of the components, following EAD 040083-00-0404, has been deposited with LNEC.

Further information can be observed from the product data sheets, which are part of the Technical Documentation for this ETA.

#### 3.3.2 Insulation product

Factory-prefabricated boards made of expanded polystyrene (EPS), having the description, characteristics and performance defined in Table 8 (EN 13163:2012+A1:2015).

#### 3.3.3 Render

– Render strip tensile resistance (EAD 040083-00-0404 – clause 2.2.17)

Fatigue tests were performed on specimens to determine the rupture stress of the reinforced render. The results are presented in Table 9.

**TABLE 8**  
Characteristics of the insulation boards

Component	Trade name	Characteristics	Declared values and classes
Insulation product	DECOTHERM EPS 100	Reaction to fire (EN 13501-1+A1)	Euroclass E (EAD 040083-00 0404 – clause 2.2.1.2) Density (EN 1602): $19 \pm 1 \text{ kg/m}^3$ Thickness: 40 to 60 mm
		Thermal conductivity (EN 12667)	0.036 W/m.K
		Classes of dimensional tolerances (EN 13163)	Thickness T(2)
			Length L(3)
			Width W(3)
			Squareness S(5)
			Flatness P(10)
		Compressive strength at 10% deformation (EN 13163)	CS(10)100
		Flexural strength (EN 13163)	BS150
		Water absorption (partial immersion) (EN 1609)	$0.02 \pm 0.01 \text{ kg/m}^2$
		Tensile strength perpendicular to the faces (EN 1607)	$\geq 200 \text{ kPa}$
		Shear strength (EN 12090)	$130 \pm 10 \text{ kPa}$
		Shear modulus of elasticity (EN 12090)	$2600 \pm 200 \text{ kPa}$

**TABLE 9**  
Results of render strip tensile test

System specimen	Characteristics	Test results
Base coat + standard mesh	Characteristic crack width – wrap (mm)	0.06
	Characteristic crack width – weft (mm)	0.02

### 3.3.4 Glass fibre meshes

The characteristics of the glass fibre meshes are presented in Table 10 (EAD 040083-00-0404 – clause 2.2.21).

### 3.3.5 Anchors

Anchors for expanded polystyrene (EPS) boards act as supplementary fixing if required. They are covered by the ETA 17/0450, according to EAD 330196-01-0604.

Their main characteristics and design data are presented in Table 11.

**TABLE 10**  
Results of meshes tensile test

Component	Trade name	Characteristics	Test results
Standard mesh	DECOTHERM REDE NORMAL	Tensile strength after accelerated artificial ageing (N/mm)	22 ( $\geq 20$ )
		Relative residual resistance: % (after ageing) of the strength in the as-delivered state	58 ( $> 50$ )
		Mass per surface unit (g/m <sup>2</sup> )	156 ( $\pm 10\%$ )
		Mesh dimensions (mm $\times$ mm)	5 $\times$ 4 ( $\pm 10\%$ )
Reinforced mesh	DECOTHERM REDE REFORÇADA	Tensile strength after accelerated artificial ageing (N/mm)	64 ( $> 20$ )
		Relative residual resistance: % (after ageing) of the strength in the as-delivered state	81 ( $> 50$ )
		Mass per surface unit (g/m <sup>2</sup> )	330 ( $\pm 10\%$ )
		Mesh dimensions (mm $\times$ mm)	6 $\times$ 6 ( $\pm 10\%$ )

**TABLE 11**  
Description and characteristics of anchors

Component	Trade name	Characteristics	Declared values and design data
Anchor	DECOTHERM BUCHA	Anchor type	See dimensional characteristics in Annexes A3 to A5 of ETA 17/0450
		Materials	Anchor sleeve: polyethylene Nail: polyamide
		Resistance to tension loads (kN)	0.30 – 0.90 (see Annex C2 of ETA 17/0450)
		Spacing (mm)	$\geq 100$
		Edge distance (mm)	$\geq 100$
		Thickness of the substrate (mm)	$\geq 100$

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

According to the decision 97/556/EC of the European Commission of 14 July 1997<sup>2</sup>, as amended by the decision 2001/596/EC<sup>3</sup> of 8 January of 2001, and considering the classes B and C for the reaction to fire of the ETICS and that no stage in the production process has been identified that could result in an improvement of the reaction to fire characteristic, the system of assessment and verification of constancy of performance (see Annex V, as amended by Commission Delegated Regulation no. 568/2014 of 18 February 2014, and article 65, paragraph 2 of Regulation (EU) No. 305/2011) given in Table 12 applies.

<sup>2</sup> Official Journal of the European Communities L229/14 of 20.08.1997.

<sup>3</sup> Official Journal of the European Communities L229/33 of 02.08.2001.

**TABLE 12**  
**AVCP systems**

Product(s)	Intended use(s)	Level(s) or class(es)	System(s)
DECOTHERM	External thermal insulation composite system with rendering for use on building walls	Any	2+

This system of assessment and verification of constancy of performance +2 is defined as follows:

System 2+: Declaration of the performance of the essential characteristics of the construction product by the manufacturer on the basis of:

- a) Tasks for the manufacturer:
  - (1) factory production control;
  - (2) testing of samples taken at the factory in accordance with the prescribed test plan.
- b) Tasks for the notified certification body concerning factory production control:
  - (3) decision on the issuing, restriction, suspension or withdrawal of the certificate of conformity of the factory production control on the basis of the outcome of the following assessments and verifications carried out by that body:
    - initial inspection of the manufacturing plant and of factory production control;
    - continuous surveillance, assessment and evaluation of factory production control.

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

### 5.1 General

The ETA is issued on the basis of agreed data/information, deposited with LNEC, which identifies the product that has been assessed and judged. It is the manufacturer's responsibility to make sure that all those who use the kit are appropriately informed of the specific conditions laid down in this ETA, including its annexes.

### 5.2 Tasks for 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.

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

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

The factory production control shall be in accordance with the Control Plan<sup>4</sup>, which is part of the Technical Documentation of this ETA. The control plan has been agreed between the manufacturer and the LNEC and is laid down in the context of the factory production control system operated by the manufacturer and deposited within LNEC. The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

#### Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a body (bodies) which is (are) notified for the tasks referred to in section 4 in the field of ETICS 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 body (bodies) involved.

For assessing the ETICS and the components, the results of the tests performed as part of the assessment for this ETA shall be used, unless there are changes in the production line or plant. In such cases, the necessary testing has to be agreed with LNEC.

<sup>4</sup> The Control Plan is a confidential part of this European Technical Assessment and is only handed over to the notified body or bodies involved in the procedure of assessment and verification of constancy of performance. See section 5.3.

The Performance Declaration of the ETICS to be drawn up by the manufacturer following the issuing of this ETA shall include its reference number and issuing date.

Changes to the ETICS, the components or their production process should be notified to LNEC before the changes are introduced. LNEC will decide whether or not such changes affect the ETA and, if so, whether further assessment or alterations to the ETA shall be necessary.

### 5.3 Tasks for the notified body (bodies)

Within the scope of the initial inspection of factory and of factory production control, the notified body (bodies) 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 this ETA.

Within the scope of continuous surveillance, assessment and evaluation of factory production control, the notified body (bodies) shall visit the factory at least once a year for surveillance. It has to be verified that the factory production control is maintained in suitable conditions.

These tasks shall be performed in accordance with the provisions laid down in the Control Plan.

The notified body (bodies) shall retain the essential points of its (their) actions referred to above and state the results obtained and conclusions drawn in a written report.

The notified body involved by the manufacturer shall issue a certificate of conformity of the factory production control stating the conformity with the provisions of this ETA.

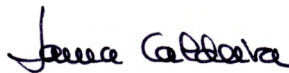
In cases where the provisions of the ETA and its control plan are no longer fulfilled, the notified certification body shall withdraw the certificate of conformity and inform LNEC without further delay.

Issued in Lisbon on 30/08/2024

By

Laboratório Nacional de Engenharia Civil (LNEC)

THE BOARD OF DIRECTORS



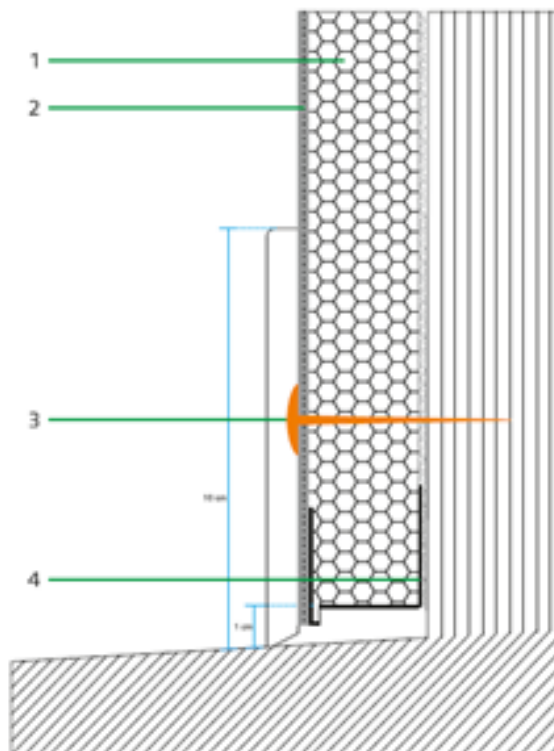
Laura Caldeira  
President

## Annex 1



- 1 End profile
- 2 Adhesive DECOFIX 1992
- 3 Insulation DECOTHERM EPS 100
- 4 Anchors DECOTHERM BUCHA
- 5 Mesh DECOTHERM REDE NORMAL
- 6 Key coat (PRIMÁRIO ACRÍLICO 1474 BRANCO or DECOPRIME 1462)
- 7 Finishing coat (BERACRYL 1898 or DECOTHERM 1852)

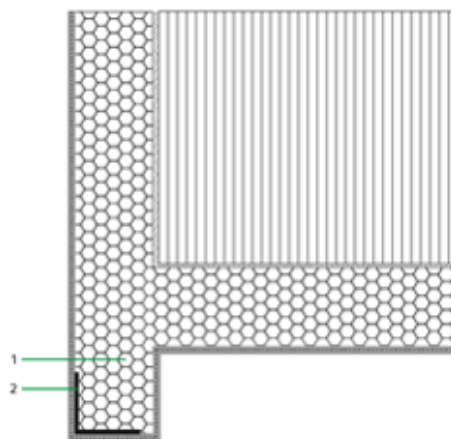
General aspect of ETICS and its components



- 1 Insulation DECOTHERM EPS 100
- 2 Rendering system (reinforced base coat + finishing coat)
- 3 Anchor DECOTHERM BUCHA
- 4 Start profile DECOTHERM

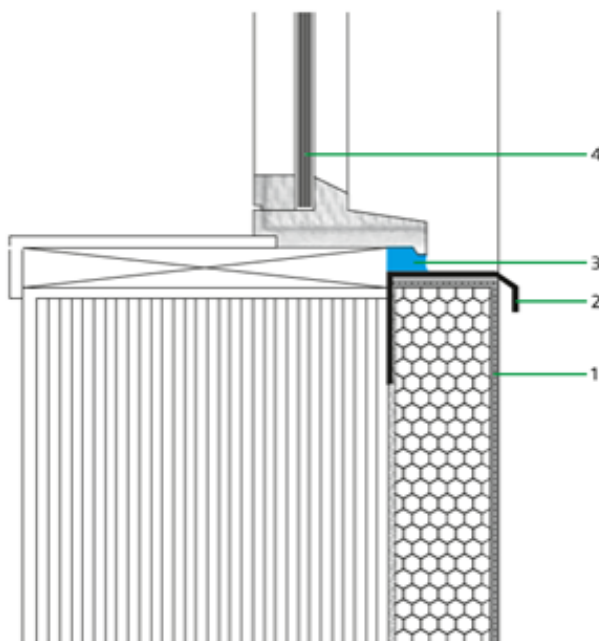
Vertical section of ETICS start

## Annex 2



- 1 Insulation DECOTHERM EPS 100
- 2 Corner profile DECOTHERM

Horizontal section of corner with profile



- 1 Rendering system (reinforced base coat + finishing coat)
- 2 Accessories/cappings
- 3 Polyurethane mastic
- 4 Glass frame

Vertical section of a window opening

CDU	693.695:699.86(4)	Descriptors:	Wall coating / External wall / Expanded polystyrene / Thermal insulation / Composite material /
	692.23:699.86(4)		/ Europe
ISSN	2183-3362	Descritores:	Revestimento de paredes / Parede exterior / Poliestireno expandido / Isolamento térmico /
			/ Material compósito / Europa

