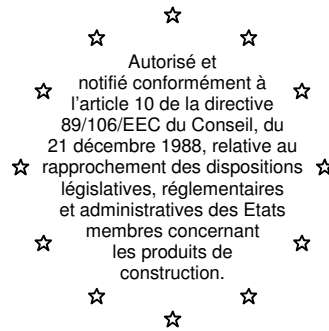


# Centre Scientifique et Technique du Bâtiment

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**CSTB**  
le futur en construction

MEMBRE DE L'EOTA

## European Technical Approval **ETA-04/0009**

(English translation prepared by CSTB - Original version in french language)

### Trade name:

Nom commercial :

**terratherm PPE**

### Holder of approval:

Titulaire :

**weber & broutin france**

**Rue de Brie**

**Servon - BP 84**

**F-77253 Brie Comte Robert Cedex**

### Generic type and use of construction product:

Type générique et utilisation prévue du  
produit de construction :

**External Thermal Insulation Composite Systems with  
rendering on polystyrene for the use as external insulation  
to the walls of buildings.**

Système d'isolation thermique extérieure par enduit sur polystyrène  
expansé destiné à l'isolation thermique extérieure des murs de  
bâtiments.

### Validity from / to:

Validité du :  
au :

**02.04.2007**

**20.03.2010**

### This version replaces:

Cette version remplace:

### Manufacturing plant:

Usine de fabrication :

**ETA-04/0009 valid from 21.03.2005 to 20.03.2010**

**ETA-04/0009 valide du 21.03.2005 au 20.03.2010**

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### This European Technical Approval contains:

Le présent Agrément Technique Européen  
contient :

**19 pages including 1 annexe which form an integral part of  
the document**

19 pages incluant 1 annexe faisant partie intégrante du document.



Organisation pour l'Agrément Technique Européen  
European Organisation for Technical Approvals

## I - LEGAL BASES AND GENERAL CONDITIONS

- 1 - This European Technical Approval is issued by the Centre Scientifique et Technique du Bâtiment (CSTB) in accordance with:
  - Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products<sup>1</sup>, modified by the Council Directive 93/68/EEC<sup>2</sup> and Regulation (EC) no. 1882/2003 of the European Parliament and of the Council<sup>3</sup>;
  - Décret n°92-647 du 8 juillet 1992<sup>4</sup> concernant l'aptitude à l'usage des produits de construction;
  - Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex to Commission Decision 94/23/EC<sup>5</sup>;
  - Guideline for European Technical Approval of "External Thermal Insulation Composite Systems with rendering" ETAG no. 004, edition 2000.
- 2 - The Centre Scientifique et Technique du Bâtiment is authorised to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.
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<sup>1</sup> Official Journal of the European Communities no. L 40, 11.2.1989, p. 12  
<sup>2</sup> Official Journal of the European Communities no. L 220, 30.8.1993, p. 1  
<sup>3</sup> Official Journal of the European Union no. L 284, 31.10.2003, p. 1.  
<sup>4</sup> Journal officiel de la République française du 14 juillet 1992  
<sup>5</sup> Official Journal of the European Communities no. L 17, 20.1.1994, p. 34.

## II - SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

**1 Definition of products and intended use**

The External Thermal Insulation Composite System “**terratherm PPE**” called ETICS in the following text, is designed and installed in accordance with the ETA-holder’s design and installation instructions, deposited with the “Centre Scientifique et Technique du Bâtiment”. The ETICS comprises the following components which are factory produced by the ETA-holder or a supplier.

## 1.1 Definition of the construction product (kit)

|   | <b>Components</b> (see § 2.3 for further description, characteristics and performances of the components)   | <b>Coverage (kg/m<sup>2</sup>)</b> | <b>Thickness (mm)</b> |
|---|---|------------------------------------|-----------------------|
| <b>Insulation materials with associated methods of fixing</b> | <b>Bonded ETICS (partially bonded or fully bonded. National application documents have to be taken into account)</b>  |                                    |                       |
|   | <ul style="list-style-type: none"> <li>• Insulation product:<br/>Expanded polystyrene panels</li> </ul>   | /                                  | 20 to 200             |
|   | <ul style="list-style-type: none"> <li>• Adhesives:               <ul style="list-style-type: none"> <li>- <b>terratherm motex 2</b> (paste consisting of a styrene acrylic binder requiring addition of about 30 % in weight grey cement CEM I 42.5 or CEM II A or B 32.5)</li> <li>- <b>terratherm PPE colle</b> (ready to use paste consisting of a vinylic binder, application at temperatures higher than 15°C)</li> </ul> </li> </ul> | 2.0 to 3.0<br>(prepared product)   | /                     |
|   |   | 2.0 to 3.0                         | /                     |
|   | <b>Mechanically fixed ETICS with profiles</b>   |                                    |                       |
|   | <ul style="list-style-type: none"> <li>• Insulation product:<br/>Expanded polystyrene panels</li> </ul>   | /                                  | 60 to 150             |
|   | <ul style="list-style-type: none"> <li>• Profiles:<br/>Polyvinyl chloride (PVC) profiles</li> </ul>   | /                                  | /                     |
|   | <ul style="list-style-type: none"> <li>• Anchors for profiles</li> </ul>  | /                                  | /                     |

|   | <b>Components</b> (see § 2.3 for further description, characteristics and performances of the components)  | <b>Coverage (kg/m<sup>2</sup>)</b>   | <b>Thickness (mm)</b>                        |
|---|--|--|--|
| <b>Insulation materials with associated methods of fixing</b> | <b>Mechanically fixed ETICS with anchors and supplementary adhesive (see § 2.2.8.3 b)) for possible associations EPS/anchors)</b>  |  |  |
|   | <ul style="list-style-type: none"> <li>• Insulation product:<br/>Expanded polystyrene panels</li> <br/> <li>• Supplementary adhesives:               <ul style="list-style-type: none"> <li>- <b>terratherm motex 2</b> (paste consisting of a styrene acrylic binder requiring addition of about 30% in weight grey cement CEM I 42.5 or CEM II A or B 32.5)</li> <li>- <b>weber.col plus</b> (cement based powder requiring addition of about 27% in weight water)</li> </ul> </li> <br/> <li>• Anchors:               <ul style="list-style-type: none"> <li>- Ejothem ST-U</li> <li>- Fischer TERMOZ 8 U</li> <li>- Fischer TERMOZ 8 N</li> <li>- Hilti SX-FV</li> <li>- Hilti SD-FV8</li> <li>- Spit ISO</li> </ul> </li> </ul> | /  | 40 to 200<br>(see § 2.2.8.3 b))              |
| <b>Base coat</b>  | <b>terraplast PPE</b> : ready to use paste without cement, consisting of a vinylic copolymer binder in watery dispersion, silica particles, fibres and specific additives.   | About<br>4.8   | Mean (dry):<br>2.4<br>Minimal<br>(dry) : 2.0 |
| <b>Glass fibres meshes</b>                                    | <ul style="list-style-type: none"> <li>• Standard meshes (glass fibres meshes with mesh size between 3 and 6 mm):               <ul style="list-style-type: none"> <li>- WG 45 G9</li> <li>- WG 50 G9</li> <li>- 3625/43</li> <li>- R131 A101</li> </ul> </li> <br/> <li>• Reinforced mesh (implemented in addition of the standard mesh to improve the impact resistance):<br/>ARS 208</li> </ul>   | /<br>/<br>/<br>/   | /<br>/<br>/<br>/                             |
|   | <b>Key coat</b>  | <b>régulateur de fond</b> : ready to use pigmented liquid (eventual application to adapt the color of the substrate in case of ribbed finishing coats ( <b>plastène ST</b> or <b>plastène ST ponctuel</b> ) or marble aggregates ( <b>plastène SG</b> )) | 0.200<br>to<br>0.300                         |

|                            | <b>Components</b> (see § 2.3 for further description, characteristics and performances of the components)   | <b>Coverage</b> (kg/m <sup>2</sup> )   | <b>Thickness</b> (mm)  |
|----------------------------|---|--|--|
| <b>Finishing coats</b>     | <ul style="list-style-type: none"> <li>• Ready to use pastes - vinylic binder:               <ul style="list-style-type: none"> <li>- <b>tramilor</b><br/>(particles size: 0.8 mm)</li> <li>- <b>plastène ST</b><br/>(particles size: 2.0 mm)</li> <li>- <b>plastène ST ponctuel</b><br/>(particles size: 2.0 mm)</li> <li>- <b>plastène XL</b><br/>(particles size: 2.0 mm)</li> <li>- <b>plastène XL+</b><br/>(particles size: 2.0 mm)</li> </ul> </li> <li>• Ready to use paste - acrylic binder:               <ul style="list-style-type: none"> <li>- <b>plastène SG</b><br/>(particles size 3.0 mm)</li> </ul> </li> <li>• Ready to use paste - vinylic binder:<br/>(application between 0 and +15°C)               <ul style="list-style-type: none"> <li>- <b>plastène HP</b><br/>(particles size 2.0 mm)</li> </ul> </li> </ul> | 2.0 to 3.0<br><br>2.5 to 3.0<br><br>2.5 to 3.0<br><br>2.5 to 3.0<br><br>2.5 to 3.0<br><br>5.5 to 6.5<br><br>2.5 to 3.0 | 2.0<br><br><br><br><br><br><br><br><br><br><br>Regulated by particles size |
| <b>Ancillary materials</b> | Descriptions in accordance with § 3.2.2.5 of the ETAG.<br>Remain under the ETA-holder responsibilities  |  |  |

## 1.2 Intended use

This 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 ETICS is designed to give the wall to which is applied satisfactory thermal insulation.

The ETICS is made of non load-bearing construction elements. It does not contribute directly to the stability of the wall on which it is installed, but it can contribute to 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 could need preparation (see § 7.2.1 of the ETAG no. 004) and shall be done in accordance with the national instructions.

The provisions made in this European Technical Approval (ETA) are based on an assumed intended working life of at least 25 years, provided that the conditions laid down in sections 4.2, 5.1 and 5.2 for the packaging, transport, storage and installation as well as 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 Approval Body, but should only be regarded as a means for choosing the appropriate products in relation to the expected economically reasonable working life of the works.

## 2 Characteristics of products and methods of verification

### 2.1 General

The identification tests and the assessment of the fitness for use of this ETICS according to the Essential Requirements were carried out in compliance with the "ETA Guidance no. 004" concerning External Thermal Insulation Composite Systems with rendering - edition March 2000 (called ETAG no. 004 in this ETA).

### 2.2 ETICS characteristics

#### 2.2.1 Reaction to fire

Euroclass according to EN 13501-1: 2002: F (no performance determined).

Note: An European reference fire scenario has not been laid down for facades. In some Member States, the classification of ETICS according to EN 13501-1: 2002 might not be sufficient for the use in facades. An additional assessment of ETICS 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.

#### 2.2.2 Water absorption (capillarity test)

- Base coat: **terraplast PPE**
  - Water absorption after 1 hour < 1 kg/m<sup>2</sup>
  - Water absorption after 24 hours < 0.5 kg/m<sup>2</sup>

- Rendering systems:

|   |   | Water absorption after 24 hours |                         |
|---|---|---------------------------------|-------------------------|
|   |   | < 0.5 kg/m <sup>2</sup>         | ≥ 0.5 kg/m <sup>2</sup> |
| Rendering systems:<br>Base coat<br>+ finishing coats<br>indicated hereafter:                | tramilor<br>plastène ST<br>plastène ST ponctuel<br>plastène XL<br>plastène XL + | X                               |                         |
|   | plastène SG   | X                               |                         |
|   | plastène HP   | X                               |                         |
| Rendering systems:<br>Base coat<br>+ key coats<br>+ finishing coats<br>indicated hereafter: | plastène ST<br>plastène ST ponctuel   | X                               |                         |
|   | plastène SG   |                                 | X                       |

#### 2.2.3 Hygrothermal behaviour

Hygrothermal cycles have been performed on a rig.

None of the following defects occur during the testing:

- 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 **so assessed resistant to hygrothermal cycles**.

#### 2.2.4 Freeze / thaw behaviour

- Rendering system with key coat + **plastène SG**: the freeze/thaw cycles have not been performed.
- Rendering systems with the other finishing coat(s): the water absorptions of both base coat and the rendering systems are less than 0.5 kg/m<sup>2</sup> after 24 hours and **so the ETICS is assessed as freeze/thaw resistant**.

#### 2.2.5 Impact resistance

The resistances to hard body impacts (3 Joules and 10 Joules) and to perforation lead to the following categories:

|  |   | Single standard mesh | Double standard mesh | Reinforced mesh + standard mesh |
|--|---|----------------------|----------------------|---------------------------------|
| Rendering systems:<br>Base coat + finishing coats indicated hereafter: | tramilor<br>plastène ST<br>plastène ST ponctuel<br>plastène XL<br>plastène XL + | Category II          |                      | Category I                      |
|  | plastène SG<br>plastène HP  | Category II          | Category I           |                                 |

#### 2.2.6 Water vapour permeability

|   |   | Equivalent air thickness (m)   |
|---|---|--|
| Rendering systems:<br>Base coat + finishing coats indicated hereafter:            | tramilor<br>plastène ST<br>plastène ST ponctuel<br>plastène XL<br>plastène XL + | ≤ 1.0<br>(Test result obtained with <b>plastène ST</b> : 0.6)          |
|   | plastène SG<br>plastène HP  | ≤ 1.0 (Test result obtained: 0.6)<br>≤ 2.0 (Test result obtained: 1.5) |
| Rendering systems:<br>Base coat + key coat + finishing coats indicated hereafter: | plastène ST<br>plastène ST ponctuel   | ≤ 1.0<br>(Test result obtained with <b>plastène ST</b> : 1.0)          |
|   | plastène SG   | ≤ 1.0<br>(Test result obtained: 0.7)                                   |

#### 2.2.7 Dangerous substances

A written declaration was submitted by the ETA-holder.

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 Construction Product Directive, these requirements need also to be complied with, when and where they apply.

## 2.2.8 Safety in use

### 2.2.8.1 Bond strength

- Base coat **terraplast PPE** onto expanded polystyrene

| Conditionings |  |   |
|---------------|--|---|
| Initial state | After the hygrothermal cycles (on the rig) | After the freeze/thaw test (on samples) |
| ≥ 0.08 MPa    | ≥ 0.08 MPa                                 | Test not performed                      |

- Adhesives onto substrate and expanded polystyrene (safety in use of the bonded ETICS)

|  |                      | Conditionings |   |  |
|--|----------------------|---------------|---|--|
|  |                      | Initial state | 48 h immersion in water + 2 h 23°C/50% RH | 48 h immersion in water + 7 days 23°C/50% RH |
| - terratherm motex 2<br>- terratherm PPE colle | Concrete             | ≥ 0.25 MPa    | ≥ 0.08 MPa                                | ≥ 0.25 MPa                                   |
|  | Expanded polystyrene | ≥ 0.08 MPa    | ≥ 0.03 MPa                                | ≥ 0.08 MPa                                   |
| terratherm PPE colle                           | Bricks               | ≥ 0.25 MPa    | ≥ 0.08 MPa                                | ≥ 0.25 MPa                                   |

The ETICS can so be installed on the substrate with application of the adhesive on a **minimal surface of 20%**.

### 2.2.8.2 Fixing strength (displacement test)

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 dried thickness of the base coat).



## 2.2.8.3 Wind load resistance

a) Safety in use of mechanically fixed ETICS **using profiles**

|  |  |                      |          |      |
|--|--|----------------------|----------|------|
| <b>Characteristics of the EPS panels for which the following failure loads apply</b>                                 | Thickness (mm)   |                      | ≥ 60     |      |
|  | Tensile strength perpendicular to the face (kPa)   |                      | ≥ 180    |      |
|  | Shear strength (N/mm <sup>2</sup> )  |                      | ≥ 0.05   |      |
|  | Shear modulus (N/mm <sup>2</sup> )   |                      | ≥ 1.5    |      |
| <b>Failure loads (N) (Static Foam Block Test)</b>  | Horizontal profiles fixed every 30 cm + 43 to 49 cm long connection profiles                           | 500 x 500 mm panels  | Minimal: | 1250 |
|  |  | 1000 x 500 mm panels | Average: | 1320 |
|  | Horizontal profiles fixed every 30 cm + 20 cm long vertical fixed profiles with a fixing in the middle | 500 x 500 mm panels  | Minimal: | 1440 |
|  |  |                      | Average: | 1710 |
| Horizontal profiles fixed every 30 cm + 40 cm to 43 cm long vertical fixed profiles with 2 fixings at 30 cm interval | 1000 x 600 mm panels   | Minimal:             | 1850     |      |
|  |  | Average:             | 1890     |      |
|  |  | Minimal:             | 1810     |      |
|  |  | Average:             | 2310     |      |

b) Safety in use of mechanically fixed ETICS **using anchors**

The following values only apply for the combination (anchor's trade name) / (EPS panel's characteristics) mentioned in the first lines of each table.

|  |  |             |  |
|--|--|-------------|--|
| <b>Anchors for which the following failure loads apply</b>                           | Trade name   |             | <b>Ejotherm ST-U<br/>Hilti SX-FV<br/>Hilti SD-FV 8</b> |
|  | Plate diameter (mm)  |             | 60   |
| <b>Characteristics of the EPS panels for which the following failure loads apply</b> | Thickness (mm)   |             | ≥ 60   |
|  | Tensile strength perpendicular to the face (kPa)                         |             | ≥ 100  |
| <b>Failure loads (N)</b>   | Anchors not placed at the panel joints ( <i>Static Foam Block Test</i> ) | $R_{panel}$ | Minimal: 510<br>Average: 520                           |
|  | Anchors placed at the panel joints ( <i>Pull-through test</i> )          | $R_{joint}$ | Minimal: 400<br>Average: 430                           |

|  |   |             |  |
|--|---|-------------|--|
| <b>Anchors for which the following failure loads apply</b>                           | Trade name  |             | <b>Fischer TERMOZ 8U<br/>Fischer TERMOZ 8N</b> |
|  | Plate diameter (mm)   |             | 60   |
| <b>Characteristics of the EPS panels for which the following failure loads apply</b> | Thickness (mm)  |             | ≥ 50   |
|  | Tensile strength perpendicular to the face (kPa)                    |             | ≥ 150  |
| <b>Failure loads (N)</b>   | Anchors not placed at the panel joints ( <i>Pull-through test</i> ) | $R_{panel}$ | Minimal: 440<br>Average: 460                   |
|  | Anchors placed at the panel joints ( <i>Pull-through test</i> )     | $R_{joint}$ | Minimal: 400<br>Average: 410                   |

|  |   |             |                      |                 |            |
|--|---|-------------|----------------------|-----------------|------------|
| <b>Anchors for which the following failure loads apply</b>                           | Trade name  |             |                      | <b>Spit ISO</b> |            |
|  | Plate diameter (mm)   |             |                      | 50              |            |
| <b>Characteristics of the EPS panels for which the following failure loads apply</b> | Thickness (mm)  |             |                      | ≥ 40            | ≥ 60       |
|  | Tensile strength perpendicular to the face (kPa)                    |             |                      | ≥ 180           |            |
| <b>Failure loads (N)</b>   | Anchors not placed at the panel joints ( <i>Pull-through test</i> ) | $R_{panel}$ | Minimal:<br>Average: | 400<br>420      | 470<br>490 |
|  | Anchors placed at the panel joints ( <i>Pull-through test</i> )     | $R_{joint}$ | Minimal:<br>Average: | 360<br>370      | 400<br>410 |

The wind load resistance of the ETICS  $R_d$  is calculated as follows :

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

$n_{panel}$ : Number (per m<sup>2</sup>) of anchors not placed at the panel joints

$n_{joint}$ : Number (per m<sup>2</sup>) of anchors placed at the panel joint

$\gamma$ : National safety factor

#### 2.2.9 Thermal resistance

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

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

Where:

$\chi_p \cdot n$ : Has only to be taken into account if it is greater than 0.04 (W/(m<sup>2</sup>.K))

$U$ : Global thermal transmittance of the covered wall (W/ (m<sup>2</sup>.K))

$n$ : Number of anchors (through insulation product) per m<sup>2</sup>

$\chi_p$ : Local influence of thermal bridge caused by an 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 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  $n < 20$ )

= 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 ...)

$U_c$ : Thermal transmittance of the current part of the covered wall (excluding thermal bridges) (W/ (m<sup>2</sup>.K)) determined as follows:

$$U_c = \frac{1}{R_i + R_{render} + R_{substrate} + R_{se} + R_{si}}$$

Where:

$R_i$ : Thermal resistance of the insulation product (see CE marking in reference to EPS EN 13163) in (m<sup>2</sup>.K)/W.

$R_{render}$ : Thermal resistance of the render (about 0.02 (m<sup>2</sup>.K)/W)

$R_{substrate}$ : Thermal resistance of the substrate of the building (concrete, brick ...) in (m<sup>2</sup>.K)/W.

$R_{se}$ : External superficial thermal resistance in (m<sup>2</sup>.K)/W.

$R_{si}$ : Internal superficial thermal resistance in (m<sup>2</sup>.K)/W.

The impact of the PVC profiles is negligible.

## 2.2.10 Aspect of durability and serviceability : Bond strength after ageing

|   |  |                 |
|---|--|-----------------|
| <b>Rendering systems:</b><br><br>Base coat<br>+<br>finishing coat<br>indicated hereafter: | <b>tramilor</b><br><b>plastène ST</b><br><b>plastène ST ponctuel</b><br><b>plastène XL</b><br><b>plastène XL +</b> | $\geq 0.08$ MPa |
|   | <b>plastène SG</b><br><b>plastène HP</b>   |                 |

## 2.3 Components' characteristics

## 2.3.1 Insulation product

Factory-prefabricated, uncoated boards made of expanded polystyrene (EPS) according to EN 13163 and having the description and characteristics defined in the table below.

1. Expanded polystyrene panels for bonded ETICS or mechanically fixed ETICS with anchors:
  - a. Even EPS panels
  - b. Curved EPS panels  
Panels, cut case by case with a suitable radius of curvature to adjust them to curved surface. The cutting of these panels is executed in the manufacture in the same blocks of EPS as the even panels.
2. Expanded polystyrene panels for mechanically fixed ETICS with profiles:  
Even panels with grooved edges.

| Description and characteristics  |  | For bonded ETICS   | For mechanically fixed ETICS  |               |
|--|--|--|---|---------------|
|  |  |  | with anchors  | with profiles |
|  |  | EPS panels <b>PSE motec C2</b> certified ACERMI*   | EPS panels <b>PSE motex FM2</b> certified ACERMI*   |               |
|  |  | - or another EPS certified ACERMI<br>- or another EPS specifically designated by the ETA-holder  |   |               |
| Reaction to fire / EN 13501-1  |  | Defined in the CE marking in reference to EN 13163 "Thermal insulation products for buildings" - Factory made products of expanded polystyrene |   |               |
| Thermal resistance ((m <sup>2</sup> .K)/W)                                   |  |  |   |               |
| Thickness (mm) / EN 823  |  | ± 1.5  |   |               |
| Length (mm) / EN 822   |  | EPS-EN 13163 - L2  | ± 1   |               |
| Width (mm) / EN 822  |  | ± 1  |   |               |
| Squareness (mm) / EN 824   |  | EPS-EN 13163 – S2  |   |               |
| Flatness (mm) / EN 825   |  | EPS-EN 13163 – P4  |   |               |
| Surface condition  |  | Cut surface (homogeneous and without "skin")   |   |               |
| Dimensional stability under:   | specified temperature and humidity / EN 1604 | EPS-EN 13163-DS (70,-) 1 DS(70,90)1  | 48h/70 °C<br>- 500 x 500 mm panels: ≤ 0.30 % and no value > 0.35 %<br>- 1000 x 600 mm panels and 1000 x 500 mm panels: ≤ 0.25 % |               |
|  | laboratory condition / EN 1603               | EPS-EN 13163-DS(N)2  | ≤ 0.15 %  |               |
| Water absorption (partial immersion) / EN 1609                               |  | EPS-EN 13163 - WL(T)1  |   |               |
| Water vapour diffusion resistance factor (μ) / EN 12086 – EN 13163           |  | 20 to 60   |   |               |
| Tensile strength perpendicular to the faces in dry conditions / EN 1607(kPa) |  | ≥ 100 (EPS-EN-13163 - TR 100, TR 150 and TR 200)   | ≥ 180   |               |
| Shear strength (N/mm <sup>2</sup> ) / EN 12090                               |  | ≥ 0.02   |   |               |
| Shear modulus (N/mm <sup>2</sup> ) / EN 12090                                |  | ≥ 1.0  |   |               |

\* The EPS panels certified ACERMI with the following minimal classification satisfy the above requirements:

- bonded ETICS and mechanically fixed ETICS with anchors and supplementary adhesive:

I ≥ 2 - S ≥ 4 - O = 3 - L = 4 - E ≥ 2

- mechanically fixed ETICS with profiles:

I ≥ 2 - S = 5 - O = 3 - L = 4 - E ≥ 2

### 2.3.2 Anchors

- Anchors for profiles:

Anchors made of a plastic expansion sleeve with a collar and a galvanized or stainless screw or nail with flat head with dimensions adapted to the profile's perforation diameter.

Characteristic resistance in the substrate: according to corresponding ETA of the anchors.

- Anchors for expanded polystyrene panels:

Anchors made of a plastic expansion sleeve with a plate and of a plastic or galvanized/stainless steel nail or galvanized/stainless steel screw.

| Trade name        | Plate diameter (mm) | Description and characteristic resistances in the substrate |
|-------------------|---------------------|---|
| Ejothem ST-U      | 60                  | See ETA-02/0018   |
| Fischer TERMOZ 8U |                     | See ETA-02/0019   |
| Fischer TERMOZ 8N |                     | See ETA-03/0019   |
| Hilti SX-FV       |                     | See ETA-03/0005   |
| Hilti SD-FV 8     |                     | See ETA-03/0028   |
| Spit ISO          | 50                  | See ETA-04/0076   |

### 2.3.3 Profiles

- Polyvinyl chloride (PVC) profiles (see Annex 1)
  - horizontal fixed profiles
  - vertical connection profiles: 0.43 to 0.49 m long
  - vertical fixed profiles: 0.20 or 0.40 to 0.43 m long
- Pull-through resistance of fixings from profile  $\geq 500$  N.

### 2.3.4 Render

Width of crack (Render Strip Tensile Test): Test not performed.

## 2.3.5 Glass fibres meshes

| Characteristics (alkalis resistance): Pass | Alkalis resistance                      |      |  |      |
|--|---|------|--|------|
|  | Residual resistance after ageing (N/mm) |      | Relative residual resistance: % (after ageing) of the strength in the as delivered state |      |
|  | Warp                                    | Weft | Warp   | Weft |
| WG 50 G9                                   | ≥ 25                                    | ≥ 25 | ≥ 60   | ≥ 60 |
| 3625/43                                    | ≥ 25                                    | ≥ 25 | ≥ 60   | ≥ 60 |
| WG 45 G9                                   | ≥ 20                                    | ≥ 20 | ≥ 50   | ≥ 50 |
| R 131 A 101                                | ≥ 20                                    | ≥ 25 | ≥ 50   | ≥ 60 |

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| <b>3 Evaluation and attestation of Conformity and CE marking</b> |
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## 3.1 System of attestation of conformity

According to the decision 97/556/EC of the European Commission, the system 2+ of attestation of conformity applies.

In addition, according to the decision 2001/596/EC of the European Commission, the system 1 and 2+ of attestation of conformity apply with regard to reaction to fire.

Considering the Euroclasses F for the reaction to fire, the system of attestation of conformity, **regarding other characteristics than reaction to fire**, is system 2+. This system is described in the Council Directive 89/106/EEC Annex III, 2 (ii), First possibility as follows:

Declaration of conformity of the ETICS by the manufacturer on the basis of:

- a) Tasks for the manufacturer:
  - 1 - Initial type-testing of the ETICS and the components
  - 2 - Factory Production Control
  - 3 - Testing of samples taken at the factory in accordance with a prescribed test plan.
- b) Tasks for the Notified Body:
  - 4 - Certification of factory production control on the basis of:
    - Initial inspection of factory and of factory production control
    - Continuous surveillance, assessment and approval of factory production control.

## 3.2 Responsibilities

### 3.2.1 Tasks of the manufacturer

#### 3.2.1.1 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 insure that the product is in conformity with this European Technical Approval.

The manufacturer may only use components stated in the technical documentation of this European Technical Approval.

For the components of the ETICS which the ETA-holder does not manufacture by himself, he shall make sure that factory production control carried out by the other manufacturers gives the guaranty of the components compliance with the European Technical Approval.

The factory production control and the provisions taken by the ETA-holder for components not produced by himself shall be in accordance with the "Control plan relating to this European Technical Approval" which is part of the technical documentation of this European Technical Approval. The "Control plan<sup>1)</sup>" is laid down in the context of the factory production control system operated by the manufacturer and deposited at the Centre Scientifique et Technique du Bâtiment.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the "control plan<sup>1)</sup>".

#### 3.2.1.2 Other tasks of 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 3.1 in the field of ETICS in order to undertake the actions laid down in section 3.3. For this purpose, the "control plan<sup>1)</sup>" referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the Notified Body or Bodies involved.

For initial type testing (in case of system 2+), the results of the tests performed as part of the assessment for the European Technical Approval can be used unless there are changes in the production line or plant. In such cases, the necessary initial type testing has to be agreed between the "Centre Scientifique et Technique du Bâtiment" and the Notified Bodies involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this European Technical Approval. The initial type-testing mentioned above could be taken over by the manufacturer for this declaration.

### 3.2.2 Tasks of Notified Bodies

The Notified Body (Bodies) shall perform the:

- initial inspection of factory and of factory production control

The Notified Body (Bodies) shall ascertain that the factory (in particular the

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<sup>1)</sup> The control plan is a confidential part of the European Technical Approval and only handed over to the notified body or bodies involved in the procedure of attestation of conformity. See section 3.2.2.

employees and the equipment) and the factory production control are suitable to ensure continuous and orderly manufacturing of the components according to the specifications mentioned in clause 2 of this ETA.

- continuous surveillance, assessment and approval of factory production control. The Notified Body (Bodies) shall visit the factory at least one a year for surveillance of this manufacturer having a FPC system complying with EN ISO 9001 covering the manufacturing of the ETICS components. It has to be verified that the system of factory production control and the specified automated manufacturing process are maintained.

These tasks shall be performed in accordance with the provisions laid down in the “control plan<sup>1)</sup>” relating to this European Technical Approval.

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 (reports).

- In the case of Attestation of Conformity system 2+:

The Notified Body involved by the manufacturer shall issue an EC certificate of conformity of the factory production control stating the conformity with the provisions of this European Technical Approval.

In cases where the provisions of the European Technical Approval and its “control plan<sup>1)</sup>” are no longer fulfilled, the Notified Body shall withdraw the certificate of conformity and inform the Centre Scientifique et Technique du Bâtiment without delay.

### 3.3 CE marking

The CE marking shall be affixed either on the product itself, on a label attached to it, on its packaging or on the commercial documents accompanying the components of the ETICS. The letters “CE” shall be followed by the identification number of the Notified Body involved and be accompanied by the following additional information:

- the name or identifying mark and address of the ETA-holder,
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate of conformity of Factory Production Control (system 2+),
- the number of the European Technical Approval,
- the ETICS trade name,
- the number of the ETAG.

|  |
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| <b>4 Assumptions under which the fitness of the product for the intended use was favourably assessed</b> |
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#### 4.1 Manufacturing

The European Technical Approval is issued for the ETICS on the basis of agreed data/information, deposited with the Centre Scientifique et Technique du Bâtiment, which identifies the ETICS that has been assessed and judged. Changes to the ETICS or production process, which could result in this deposited data/information being incorrect, should be notified to the Centre Scientifique et Technique du Bâtiment before the changes are introduced. The Centre

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<sup>1)</sup> The control plan is a confidential part of the European Technical Approval and only handed over to the notified body or bodies involved in the procedure of attestation of conformity. See section 3.2.2.



Scientifique et Technique du Bâtiment will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

## 4.2 Installation

### 4.2.1 General

It is the responsibility of the ETA-holder to guarantee that the information about design and installation of this ETICS are easily accessible to the concerned people. These information can be given using reproductions of the respective parts of the European Technical Approval. 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.

In any case, the user shall comply with the national regulations and particularly concerning fires and wind load resistance.

Only the components described in clause 1.1 with characteristics according to clause 2 of this ETA can be used for the ETICS.

The requirements given in ETAG 004, chapter 7 as well as the information of paragraphs 4.2.2 and 4.2.3, have to be considered.

### 4.2.2 Design

- To bond the ETICS, the minimal surface area and the method of bonding shall comply with characteristics of the ETICS (see § 2.2.8.1 of this ETA) as well as the national regulations. In any case, the minimal surface shall be at least 20%.
- To mechanically fix the ETICS, the choice and the rate of the fixings shall be determined considering:
  - the design wind load suction and the national regulations (taking into account the national safety factors, the design rules, ...),
  - the characteristic resistance of the anchors into the considered substrate (see installation parameters - effective anchorage depth, characteristics resistance - ... in the ETA of the anchor),
  - the safety in use of the ETICS (cf. § 2.2.8), according to the method of fixing.

### 4.2.3 Execution

The recognition and preparation of the substrate as well as the generalities about the execution of the ETICS shall be carried out in compliance with:

- chapter 7 of the ETAG no. 004 **with imperative removal of any existing paint finishes and any organic renders for bonded application,**
- national regulations in effect.

The particularities in execution linked to the different methods of fixing and the application of the rendering system shall be handled in accordance with ETA-holder prescriptions. In particular it is suitable to comply with the quantities of rendering applied, the thickness regularity and the drying periods between 2 layers.

**5 Indications to the manufacturers**

## 5.1 Packaging, transport and storage

Packaging of the components has to be such that the products are protected from moisture during transport and storage, unless other measures are foreseen by the manufacturer for this purpose.

The components have to be protected against damage.

It is the responsibility of the manufacturers to ensure that these provisions are easily accessible to the concerned people.

## 5.2 Use, maintenance and repair

The finishing coat shall normally be maintained in order to fully preserve the ETICS's performances.

Maintenance includes at least:

- the repairing of localised damaged areas due to accidents,
- the aspect maintenance with products adapted and compatible with the ETICS (possibly after washing or ad hoc preparation).

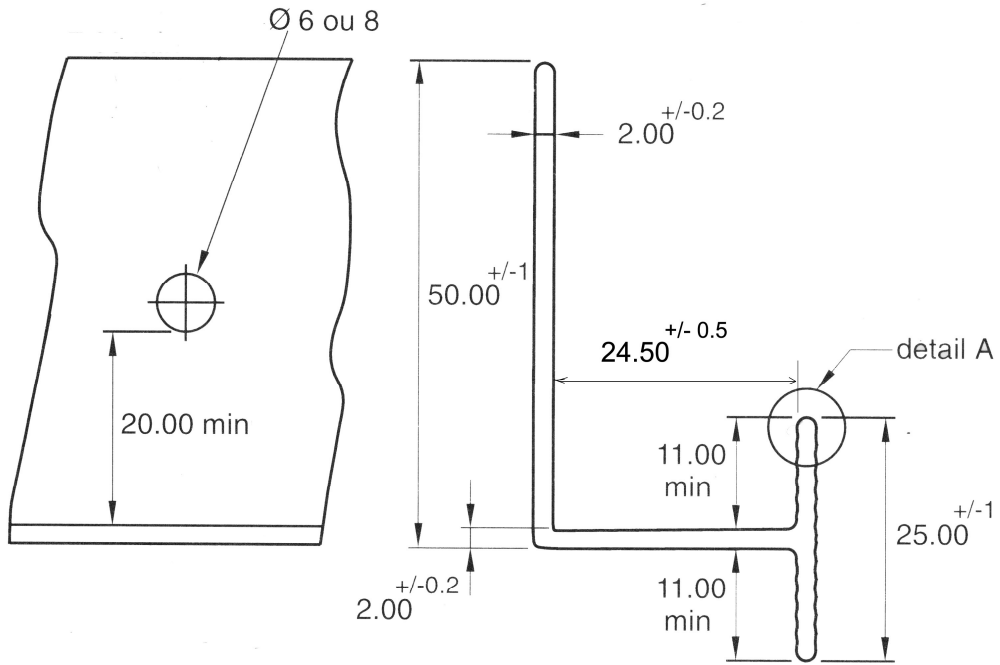
Necessary repairs should be done rapidly.

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

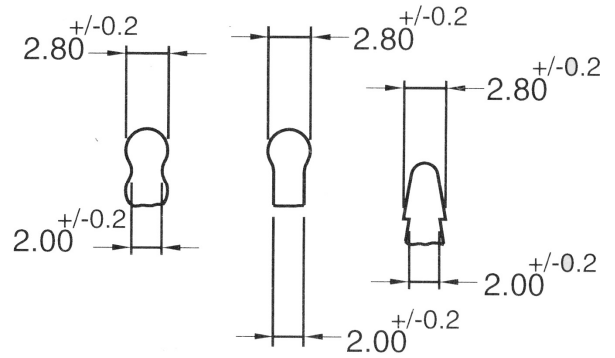
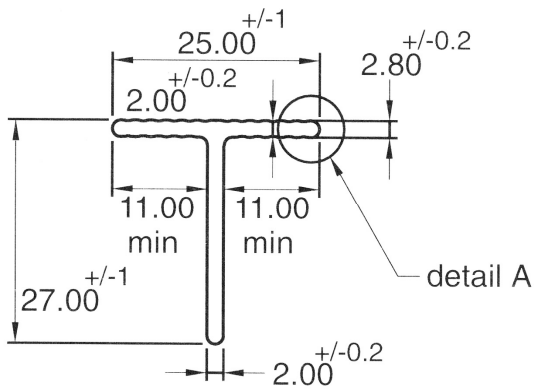
It is the responsibility of the manufacturers to ensure that these provisions are easily accessible to the concerned people.

**The original French version is signed by  
the Technical Director  
H. BERRIER**

**Dimensions in millimeters**



**Horizontal and vertical fixed profiles**



**Vertical connection profiles**

**Detail A**

**ETICS terratherm PPE**

**Polyvinyl chloride profiles**

**Annex 1**

of European  
Technical Approval  
**ETA-04/0009**