

# European Technical Assessment

**ETA 13/0361**

Version 01

Date of issue: 2016-03-01



UBAtc Assessment Operator:  
Belgian Construction Certification Association  
Rue d'Arlon 53 - 1040 Brussels  
[www.bcca.be](http://www.bcca.be) - [info@bcca.be](mailto:info@bcca.be)



**Technical Assessment Body issuing the European Technical Assessment: UBAtc.**  
UBAtc has been designated according to Article 29 of Regulation (EU) No 305/2011  
and is member of EOTA (European Organisation for Technical Assessment)

|                                                                                                                      |                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Trade name of the construction product:</b>                                                                       | KNAUF WARM-WAND SYSTEM EPS/LUSTRO                                                                         |
| <b>Product family to which the construction product belongs:</b>                                                     | External Thermal Insulation Composite System with Rendering on polystyrene for use as external insulation |
| <b>Manufacturer:</b>                                                                                                 | Knauf Gips KG<br>Am Bahnhof 7<br>D-97346 Iphofen<br>Germany                                               |
| <b>Manufacturing plant:</b>                                                                                          | Knauf Gips KG (see overleaf)                                                                              |
| <b>Website:</b>                                                                                                      | <a href="http://www.knauf.de">http://www.knauf.de</a>                                                     |
| <b>This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:</b> | ETA-Guideline N° 004, amended November 2012, used as European Assessment Document (EAD)                   |
| <b>This version replaces:</b>                                                                                        | ETA13/0361 issued on 27 <sup>th</sup> of June 2013                                                        |
| <b>This European Technical Assessment contains:</b>                                                                  | 11 pages, including 4 annexes which form an integral part of this ETA                                     |



## European Organisation for Technical Assessment

## Legal bases and general conditions

1 This European Technical Assessment is issued by UBAtc (Union belge pour l'Agrément technique de la construction, i.e. Belgian Union for technical Approval in construction), in accordance with:

- Regulation (EU) N° 305/2011<sup>1</sup> of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC
- Commission Implementing Regulation (EU) N° 1062/2013<sup>2</sup> of 30 October 2013 on the format of the European Technical Assessment for construction products
- European Technical Approval Guideline (ETAG) 004, External Thermal Insulation Composite Systems with Rendering, used as European Assessment Document (EAD)

2 Under the provisions of Regulation (EU) No 305/2011, UBAtc is not authorized to check whether the provisions of this European Technical Assessment are met once the ETA has been issued.

3 The responsibility for the conformity of the performances of the products with this European Technical Assessment and the suitability of the products for the intended use remains with the holder of the European Technical Assessment.

4 Depending on the applicable Assessment and verification of constancy of performance (AVCP) system, (a) notified body(ies) may carry out third-party tasks in the process of assessment and verification of constancy of performance under this Regulation once the European Technical Assessment has been issued.

5 This European Technical Assessment allows the manufacturer of the construction product covered by this ETA to draw up a declaration of performance for the construction product.

6 CE marking should be affixed to all construction products for which the manufacturer has drawn up a declaration of performance.

7 This European Technical Assessment is not to be transferred to other manufacturers, agents of manufacturers, or manufacturing plants other than those indicated on page 1 of this European Technical Assessment.

8 The European Technical Assessment holder confirms to guarantee that the product(-s) to which this assessment relates, is/are produced and marketed in accordance with and comply with all applicable legal and regulatory provisions, including, without limitation, national and European legislation on the safety of products and services. The ETA-holder shall notify the UBAtc immediately in writing of any circumstance affecting the aforementioned guarantee. This assessment is issued under the condition that the aforementioned guarantee by the ETA-holder will be continuously observed.

9 According to Article 11(6) of Regulation (EU) No 305/2011, when making a construction product available on the market, the manufacturer shall ensure that the product is accompanied by instructions and safety information in a language determined by the Member State concerned which can be easily understood by users. These instructions and safety information should fully correspond with the technical information about the product and its intended use which the manufacturer has submitted to the responsible TAB for the issuing of the European Technical Assessment.

10 Pursuant to Article 11(3) of Regulation (EU) No 305/2011, manufacturers shall adequately take into account changes in the product-type and in the applicable harmonised technical specifications. Therefore, when the contents of the issued European Technical Assessment do not any longer correspond to the product-type, the manufacturer should refrain from using this European Technical Assessment as the basis for their declaration of performance.

11 All rights of exploitation in any form and by any means of this European Technical Assessment are reserved for UBAtc and the ETA-holder, subject to the provisions of the applicable UBAtc regulations.

12 Reproduction of this European Technical Assessment including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of UBAtc. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European Technical Assessment.

13 Subject to the application introduced, this European Technical Assessment is issued in English and may be issued by the UBAtc in its official languages. The translations correspond fully to the English reference version circulated in EOTA.

14 This European Technical Assessment, ETA 13/0361, was first issued by UBAtc as a European Technical Approval, on 17 August 2009 and revised on 27 June 2013. Compared with the previous version, the name of the holder has been modified, the production sites have been specified and the following components were added: SM 300 (adhesive), Armiergewebe 4 x 4 mm and, Addi S, Noblo Filz (Finishing coats). Pico der feine and Rolls (Finishing coats) have been deleted from the ETA.

15 Manufacturing plants (details available to UBAtc)

| Component                         | Manufacturing plant(s)    |
|-----------------------------------|---------------------------|
| Adhesive/base coats               |                           |
| SM 700                            | 02 to 07                  |
| SM 700 Pro                        | 02, 03, 05, 06 and 07     |
| SM 300                            | 01, 02, 03, 05, 06 and 07 |
| Lustro                            | 01,02,03 and 05           |
| Finishing coats (hydraulic)       |                           |
| Mak3                              | 02, 03 and 07             |
| Noblo                             | 02 and 07                 |
| Noblo Filz                        | 02 and 07                 |
| SP 260                            | 02 and 07                 |
| RP 240                            | 02 and 07                 |
| Carrara                           | 02 and 07                 |
| SM 700 Pro                        | 02, 03, 05, 06 and 07     |
| Finishing coats (organic)         |                           |
| Conni S                           | FC01                      |
| Addi S                            |                           |
| Insulation products               |                           |
| IP01, IP02, IP03, IP04 and IP05   |                           |
| Polyvinyl chloride (PVC) profiles |                           |
| PR01                              |                           |

<sup>1</sup> OJEU, L 88 of 2011/04/04

<sup>2</sup> OJEU, L 289 of 2013/10/31

## Technical Provisions

### 1 Technical description of the product

#### 1.1 Characteristics of the products

##### 1.1.1 General

This ETA is being issued for the products specified on the cover page on the basis of agreed data/information, deposited with the UBAtc, which identifies the products that have been assessed.

Changes to the product/production process, which could result in the deposited data/information being incorrect, should be notified to the UBAtc before the changes are introduced. The UBAtc 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/alterations to the ETA, shall be necessary.

##### 1.1.2 WARM-WAND SYSTEM EPS/Lustro

This European Technical Assessment specifies an ETICS (External Thermal Insulation Composite System with rendering), i.e. a kit comprising 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 factory-made insulation product of expanded polystyrene intended to be bonded onto a wall, mechanically fixed with profiles and supplementary adhesive or mechanically fixed with anchors and supplementary adhesive. The insulation product is faced with a rendering system consisting of several layers (site applied), one of which contains the reinforcement. The rendering is applied directly to the insulating panels, without any air gap or disconnecting layer.

The ETICS may include special fittings (e.g. base profiles, corner profiles) to treat details of ETICS (connections, apertures, corners, parapets, sills ...).

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.

##### 1.1.3 Composition of the ETICS

|                                                        | Components (see §2.3 for further description, characteristics and performances of the components)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Coverage (kg/m²)                                                                                | Thickness (mm)         |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------|
| Insulation materials with associated methods of fixing | <b>BONDED ETICS (partially or fully bonded. National application documents shall be taken into account)</b><br>Insulation product: Factory-made expanded polystyrene (EPS) according to EN 13163 <ul style="list-style-type: none"> <li>Standard EPS</li> <li>Elastified EPS</li> </ul> Adhesives <ul style="list-style-type: none"> <li>Lustro (cement based powder requiring addition of 36 - 40% water)</li> <li>SM 300 (cement based powder requiring addition of 26 - 30% water)</li> <li>SM 700 (cement based powder requiring addition of 26 - 30% water)</li> <li>SM 700 Pro (cement based powder requiring addition of 26 - 30% water)</li> </ul>                                                                                                                                                                                                   | 2,0 - 3,0<br>4,0 - 6,0<br>3,5 - 6,0<br>3,5 - 6,0                                                | ≤ 400<br>≤ 200         |
| Insulation materials with associated methods of fixing | <b>MECHANICALLY FIXED ETICS WITH PROFILES</b><br>Insulation product: Factory-made expanded polystyrene (EPS) according to EN 13163: Standard EPS<br>Supplementary adhesives: (see bonded ETICS)<br>Profiles (Halteleiste – Verbindungsleiste PVC): Polyvinyl chloride (PVC) profiles<br>Anchors for profiles: <ul style="list-style-type: none"> <li>Knauf Schienen-Nageldübel</li> <li>Knauf Schienen-Schraubdübel</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                 | 60 to 200              |
| Insulation materials with associated methods of fixing | <b>MECHANICALLY FIXED ETICS WITH ANCHORS AND SUPPLEMENTARY ADHESIVE</b><br>Insulation product: Factory-made expanded polystyrene (EPS) according to EN 13163 <ul style="list-style-type: none"> <li>Standard EPS</li> <li>Elastified EPS</li> </ul> Supplementary adhesives: (see bonded ETICS)<br>Anchors for EPS: Anchors with ETA according to ETAG 014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                 | 60 to 400<br>80 to 200 |
| Base coat                                              | Lustro (CEM I based powder requiring addition of 40% water)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5,0 - 7,0                                                                                       | 5 - 7                  |
| Glass fibres meshes                                    | ARMIERGEWEBE - Mesh size: 5,0 x 5,0 mm²<br>ARMIERGEWEBE - Mesh size: 4,0 x 4,0 mm²                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Approx. 0,205<br>Approx. 0,165                                                                  |                        |
| Finishing coats                                        | Ready to use paste – silicon-acrylate binder: <ul style="list-style-type: none"> <li>Conni S (particle size 1,0 - 1,5 - 2,0 - 3,0 mm)</li> <li>Addi S (particle size 1,5 - 2,0 and 3,0 mm)</li> </ul> Cement based powder requiring the Addition of water: <ul style="list-style-type: none"> <li>Carrara (addition of 24 - 27 % water - particle size 1,0 mm)</li> <li>Mak3 (addition of 24 - 30 % water - particle size 2,0 - 3,0 - 4,0 mm)</li> <li>Noblo (addition of 26 - 30 % water - particle size 1,5 - 2,0 - 3,0 mm)</li> <li>Noblo Filz (addition of 26% of water - particle size 1,0 - 1,5 mm)</li> <li>RP 240 (addition of 26- 33 % water - particle size 2,0 - 3,0 - 5,0 mm)</li> <li>SM 700 Pro (addition of 26 - 30% water – particle size 1,0 mm)</li> <li>SP 260 (addition of 24 - 32 % water - particle size 2,0- 3,0 - 5,0 mm)</li> </ul> | 1,4 - 3,7<br>2,0 - 3,9<br>3 - 8<br>12 - 15<br>2,3 - 3,7<br>4,4 - 4,8<br>4 - 5<br>4,2<br>3,2 - 5 |                        |
| Ancillary materials                                    | Description in accordance with § 3.2.2.5 of the ETAG 004 and decorative coatings compatible with the ETICS to be applied to the finishing coat.<br>Remains under the ETA-holder responsibilities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                 |                        |

## 2 Specification of the intended use(s) in accordance with the applicable EAD

### 2.1 General

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 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 by. 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 elements. It does not contribute directly to the stability of the wall on which it is installed, but it may contribute to durability by providing enhanced protection from the effect of weathering.

The ETICS may be used on new or existing (retrofit) vertical walls. It may 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 ETICS belongs to Category S/W2, according to EOTA Technical Report No 034.

The provisions made in this European Technical Assessment are based on the assumed working life of 25 years, provided that the ETICS is subject to appropriate installation, use and maintenance. These provisions are based upon the current state of the art and the available knowledge and experience.

The assumed working life of a system cannot be taken as a guarantee given by the producer, but is to be used as a means for selecting the appropriate product in relation to the expected economically reasonable working life of the works.

Assumed intended working life means that it is expected that, when the working life has elapsed, the real working life may be, under normal use conditions, considerably longer without major degradation affecting the Basic requirements for construction works.

### 2.2 Provisions related to manufacturing, packaging, transportation and storage

#### 2.2.1 Manufacture

The product is applied on site according to the procedure laid down in the technical file deposited with the UBAtc.

#### 2.2.2 Packaging, transportation and storage

The information on packaging, transport and storage is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer(s) to ensure that this information is made known to the concerned people.

### 2.3 Provisions related to the design and use of the product

#### 2.3.1 Design and installation

The installation instructions including special installation techniques and provisions for the qualification of the personnel are given in the manufacturer's technical documentation.

Design, installation and execution of ETICS are to be in conformity with national documents. Such documents and the level of their implementation in Member States' legislation are different. Therefore, the assessment and declaration of performance are done taking into account general assumptions introduced in the chapters 7.1 and 7.2 of ETAG 004 used as EAD, which summarizes how information introduced in the ETA and related documents is intended to be used in the construction process and gives advice to all parties interested when normative documents are missing.

#### 2.3.2 Use, maintenance and repair

The finishing coat shall normally be maintained in order to fully preserve the ETICS performance.

Maintenance includes at least:

- Visual inspection of the ETICS,
- The repairing of localized 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 performed as soon as the need has been identified.

It is important to be able to carry out maintenance as far as possible using readily available products and equipment, without spoiling appearance. Only products which are compatible with the ETICS shall be used.

The information on use, maintenance and repair is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer(s) to ensure that this information is made available to the concerned people.

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

#### 3.1 General

The performances of the kit as described in this chapter are valid provided that the components of the kit comply with Annexes 1 and 2.

#### 3.2 Mechanical resistance and stability

Not relevant

#### 3.3 Safety in case of fire – Reaction to fire (ETAG 004 – clause 5.1.2.1, EN 13501-1)

| Rendering system:<br>Base coat with finishing coat indicated hereafter                      | Maximum declared organic content                      | Flame retardant content                      | Euroclass according to EN 13501-1 |
|---------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------|-----------------------------------|
| Addi S<br>Carrara<br>Conni<br>Mak3<br>Noblo<br>Noblo Filz<br>RP 240<br>SM 700 Pro<br>SP 260 | Base coat:<br>≤ 2,7%<br><br>Finishing coat:<br>≤ 8,4% | Base coat:<br>0%<br><br>Finishing coat: ≤ 2% | B – s2, d0                        |

Mounting and fixing (for all end use applications given in clause 1.2 of the ETA): The assessment of reaction to fire is based on tests with a maximum insulation layer thickness of 160 mm (testing according to EN 13823 – SBI-test), resp. 60 mm (testing according to EN ISO 11925-2) and a maximum insulation (EPS) density of 25,5 kg/m<sup>3</sup> the rendering system with the highest organic content.

Note: A European reference fire scenario has not been laid down for facades. In some Member States, the classification of ETICS according to EN 13501-1 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.

#### 3.4 Hygiene, health and environment

##### 3.4.1 Water absorption (capillarity test)

###### 3.4.1.1 Base coat Lustro

| Base coat | Water absorption after 1 h | Water absorption after 24 h |
|-----------|----------------------------|-----------------------------|
| Lustro    | < 1 kg/m <sup>2</sup>      | < 0,5 kg/m <sup>2</sup>     |

##### 3.4.1.2 Rendering system

| Rendering system:<br>Base coat with finishing coat indicated hereafter | Water absorption after 24h |                         |
|------------------------------------------------------------------------|----------------------------|-------------------------|
|                                                                        | < 0.5 kg/m <sup>2</sup>    | ≥ 0.5 kg/m <sup>2</sup> |
| Addi S                                                                 |                            | X                       |
| Carrara                                                                | X                          |                         |
| Conni                                                                  | X                          |                         |
| Mak3                                                                   |                            | X                       |
| Noblo                                                                  | X                          |                         |
| Noblo Filz                                                             | X                          |                         |
| RP 240                                                                 | X                          |                         |
| SM 700 Pro                                                             | X                          |                         |
| SP 260                                                                 | X                          |                         |

##### 3.4.2 Water tightness (ETAG 004 – clause 5.1.3.2)

###### 3.4.2.1 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 ETICS;
- detachment of render;
- cracking allowing water penetration to the insulation layer.

The ETICS is therefore assessed resistant to hygrothermal cycles.

###### 3.4.2.2 Freeze-thaw behaviour

Rendering systems with finishing coats Carrara, Conni, Noblo, Noblo Filz, RP 240, SM 700 Pro and SP 260: 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 corresponding configurations of the ETICS are assessed as freeze/thaw

Rendering systems with finishing coats Addi S and Mak3: the ETICS has been assessed as freeze / thaw resistant according to the freeze / thaw behaviour test.

##### 3.4.3 Impact resistance

The resistance to hard body impact (3 Joules and 10 Joules) leads to the following categories.

| Rendering system:<br>Base coat with finishing coat | Single mesh<br>ARMIERGEWEBE | Double mesh<br>ARMIERGEWEBE |
|----------------------------------------------------|-----------------------------|-----------------------------|
| Addi S                                             | II                          | I                           |
| Carrara                                            | II                          | NPA                         |
| Conni                                              | II                          | I                           |
| Mak3                                               | II                          | NPA                         |
| Noblo                                              | II                          | I                           |
| Noblo Filz                                         | II                          | I                           |
| RP 240                                             | II                          | I                           |
| SM 700 Pro                                         | II                          | I                           |
| SP 260                                             | II                          | I                           |
| NPA: No Performance Assessed                       |                             |                             |

### 3.4.4 Water vapour permeability

| Rendering system:<br>Base coat with finishing coat | Equivalent air thickness $s_d$ (m)                                                |
|----------------------------------------------------|-----------------------------------------------------------------------------------|
| Addi S                                             | $\leq 2,0$ m<br>(Test result obtained with thickness of 3 mm: 0,4 m)              |
| Carrara                                            | $\leq 2,0$ m<br>(Test result obtained with a thickness of Carrara of 5 mm: 0,2 m) |
| Conni                                              | $\leq 2,0$ m<br>(Test result obtained with particle size 5 mm: 0,3 m)             |
| MAK3                                               | $\leq 2,0$ m<br>(Test result obtained with particle size 3 mm: 0,2 m)             |
| Noblo                                              | $\leq 2,0$ m<br>(Test result obtained with particle size 3 mm: 0,1 m)             |
| Noblo Filz                                         | $\leq 2,0$ m<br>(Test result obtained with particle size 3 mm: 0,1 m)             |
| RP 240                                             | $\leq 2,0$ m<br>(Test result obtained with particle size 5 mm: 0,1 m)             |
| SM 700 Pro                                         | $\leq 2,0$ m<br>(Test result obtained with thickness of 3 mm: 0,1 m)              |
| SP 260                                             | $\leq 2,0$ m<br>(Test result obtained with particle size 5 mm: 0,1 m)             |

### 3.4.5 Release of dangerous substances (ETAG 004 - clause 5.1.3.5, EOTA TR034)

According to the written declaration on dangerous substances submitted by the ETA-holder to the Technical Assessment Body the kit does not contain any dangerous substances. In addition to the specific clauses relating to dangerous substances contained in this European Technical Assessment, there may be other requirements applicable to the kit 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.

Note: For dangerous substances falling under the scope of the CPR for which:

- No assessment and verification methods are given (or cannot be found in TR 034); or
- "No performance assessed" is declared; or
- The chosen verification and assessment method does not comply with the regulatory requirement of a particular Member State

There might be the necessity for an Additional assessment.

## 3.5 Safety and accessibility in use

### 3.5.1 Bond strength between base coat and insulation product (ETAG 004 - clause 5.1.4.1.1)

| Initial state   | After the hygrothermal cycles (on the rig) | After the freeze/thaw cycles (on samples) |
|-----------------|--------------------------------------------|-------------------------------------------|
| $\geq 0,08$ MPa | $\geq 0,08$ MPa                            | $\geq 0,08$ MPa                           |

### 3.5.2 Bond strength between adhesive and substrate / insulation product (ETAG 004 - clauses 5.1.4.1.2, 5.1.4.1.3).

|                      |                    | Initial state   | 48 h immersion in water + 2 h 23°C/50% RH | 48 h immersion in water+ 7 days 23°C/50% RH |
|----------------------|--------------------|-----------------|-------------------------------------------|---------------------------------------------|
| SM 700<br>SM 700 Pro | Concrete           | $\geq 0,25$ MPa | $\geq 0,08$ MPa                           | $\geq 0,25$ MPa                             |
|                      | Insulation product | $\geq 0,08$ MPa | $\geq 0,03$ MPa                           | $\geq 0,08$ MPa                             |
| Lustro               | Concrete           | $\geq 0,25$ MPa | $\geq 0,08$ MPa                           | $\geq 0,25$ MPa                             |
|                      | Insulation product | $\geq 0,08$ MPa | $\geq 0,03$ MPa                           | $\geq 0,08$ MPa                             |
| SM 300               | Concrete           | $\geq 0,25$ MPa | $\geq 0,08$ MPa                           | $\geq 0,25$ MPa                             |
|                      | Insulation product | $\geq 0,08$ MPa | $\geq 0,03$ MPa                           | $\geq 0,08$ MPa                             |

The ETICS can be installed on the substrate with application of the adhesive on the following minimal surface area (% of total) according to the following table:

|                     |  | Tensile strength perpendicular to the face of the insulation product |           |           |
|---------------------|--|----------------------------------------------------------------------|-----------|-----------|
|                     |  | ≥ 80kPa                                                              | ≥ 100 kPa | ≥ 150 kPa |
| SM 700 / SM 700 Pro |  | 40%                                                                  | 30%       | 25%       |
| Lustro              |  |                                                                      |           |           |
| SM 300              |  |                                                                      |           |           |

### 3.5.3 Fixing strength (ETAG 004 - clause 5.1.4.2)

Test not required because the ETICS fulfils the following criteria:  $E \times d < 50.000$  N/mm ( $E$  = modulus of elasticity of the base coat –  $d$  = mean dried thickness of the base coat).

### 3.5.4 Wind load resistance (ETAG 004 - clause 5.1.4.3)

#### 3.5.4.1 Safety in use of mechanically fixed ETICS using profiles

| Characteristics of the EPS panels for which the following failure loads apply | Dimensions (mm)                                  |                                    | 500 x 500                                 |
|-------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------|-------------------------------------------|
|                                                                               | Thickness (mm)                                   |                                    | $\geq 60$                                 |
|                                                                               | Tensile strength perpendicular to the face (kPa) |                                    | $\geq 150$                                |
|                                                                               | Shear modulus (MPa)                              |                                    | $\geq 1,0$                                |
| Failure loads (N)<br>(Static Foam Block Test)                                 | Horizontal profiles fixed every 30 cm            | (500 x 500) mm <sup>2</sup> panels | Minimum value: 950<br>Average value: 1010 |

### 3.5.4.2 Safety in use of mechanically fixed ETICS using anchors

The following values apply only for the combination of the anchors and panels mentioned in the first lines of each table.

| Characteristics of the EPS | Thickness (mm)                                              |                    |                              | ≥ 60                         |
|----------------------------|-------------------------------------------------------------|--------------------|------------------------------|------------------------------|
|                            | Tensile strength perpendicular to the face of the EPS (kPa) |                    |                              | ≥ 100                        |
|                            | Shear modulus (MPa)                                         |                    |                              | ≥ 1,0                        |
| Plate diameter anchor      | Ø 60 mm                                                     |                    |                              | Ø 90 mm                      |
| Failure loads (N)          | Anchors not placed at the panel joints (Static Foam Block)  | R <sub>panel</sub> | Minimal: 510<br>Average: 520 | Minimal: 720<br>Average: 730 |
|                            | Anchors placed at the panel joints                          | R <sub>joint</sub> | Minimal: 400<br>Average: 430 | Minimal: 430<br>Average: 470 |

| Characteristics of the EPS (elastified EPS) | Thickness (mm)                                              |                    |                              | ≥ 80  |
|---------------------------------------------|-------------------------------------------------------------|--------------------|------------------------------|-------|
|                                             | Tensile strength perpendicular to the face of the EPS (kPa) |                    |                              | ≥ 80  |
|                                             | Shear modulus (MPa)                                         |                    |                              | ≥ 0,4 |
| Plate diameter anchor                       | Ø 60 mm                                                     |                    |                              |       |
| Failure loads (N)                           | Anchors not placed at the panel joints (Static Foam Block)  | R <sub>panel</sub> | Minimal: 450<br>Average: 470 |       |
|                                             | Anchors placed at the panel joints                          | R <sub>joint</sub> | Minimal: 310<br>Average: 320 |       |

The failure loads specified above apply only for the following anchors with deep mounting under the given conditions of installation:

| Anchor                      | Thickness EPS (mm) | Conditions of installation                                                       |
|-----------------------------|--------------------|----------------------------------------------------------------------------------|
| Ejothrm STR U (ETA-04/0023) | 80 ≤ d < 100       | Maximum installation depth of anchor plate: 15 mm<br>Maximum depth of die: 5 mm  |
|                             | ≥ 100              | Maximum installation depth of anchor plate: 15 mm<br>Maximum depth of die: 20 mm |
| IsoFux NDT8LZ (ETA-05/0080) | ≥ 80               | Maximum depth of countersink: 20 mm                                              |
| TERMOZ 8 SV (ETA-06/0180)   | ≥ 80               | Maximum installation depth of anchor plate: 15 mm                                |

The wind load resistance is calculated as follows:

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

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

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

$\gamma$ : national safety factor

### 3.5.5 Render strip tensile test

The average value of the crack width of the base coat with the glass fibre mesh ARMIERGEWEBE measured at a render strain value of 1,0 % is about 0,12 mm.

### 3.6 Protection against noise - Airborne sound insulation

No performance assessed.

### 3.7 Energy economy and heat retention - Thermal resistance

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

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

Where:

- $\chi_p \cdot n$  has only to be taken into account if it is greater than 0,04 W/(m<sup>2</sup>.K)
- $U_c$ : global (corrected) 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 covered by plastic anchors 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 current part of the covered wall (excluding thermal bridges) (W/ (m<sup>2</sup>.K)) determined as follows:

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

Where:

- $R_i$ : thermal resistance of the insulation product (according to declaration in reference to EN 13163) in (m<sup>2</sup>.K)/W
- $R_{\text{render}}$ : thermal resistance of the render (about 0,02 in (m<sup>2</sup>.K)/W or determined by test according to EN 12667 or EN 12664)
- $R_{\text{substrate}}$ : thermal resistance of the substrate of the building (concrete, brick ...) in (m<sup>2</sup>.K)/W
- $R_{\text{se}}$ : external superficial thermal resistance in (m<sup>2</sup>.K)/W
- $R_{\text{si}}$ : internal superficial thermal resistance in (m<sup>2</sup>.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.

3.8 Aspects of durability and serviceability - Bond strength after ageing

| Rendering system:<br>Base coat with<br>finishing coat<br>indicated hereafter | After<br>hygrothermal<br>cycles | After freeze/thaw<br>cycles |
|------------------------------------------------------------------------------|---------------------------------|-----------------------------|
| Addi S                                                                       | ≥ 0,08 MPa                      | ≥ 0,08 MPa                  |
| Carrara                                                                      |                                 |                             |
| Conni                                                                        |                                 |                             |
| MAK3                                                                         |                                 |                             |
| Noblo                                                                        |                                 |                             |
| Noblo Filz                                                                   |                                 |                             |
| RP 240                                                                       |                                 |                             |
| SM 700 Pro                                                                   |                                 |                             |
| SP 260                                                                       |                                 |                             |

3.9 Sustainable use of natural resources

No performance assessed.

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

In accordance with Regulation (EU) N° 305/2011, Article 65, Directive 89/106/EEC is repealed, but references to the repealed Directive shall be construed as references to the Regulation.

According to the Commission Decision 97/556/EC<sup>3</sup>, amended by the Commission Decision 2001/596/EC<sup>4</sup>, the following system(s) of assessment and verification of constancy of performance apply.

Table 1 : Systems of assessment and verification of constancy of performance

| Product(s)                                                                | Intended uses                                    | Level(s) or class(es) (reaction to fire) | Assessment and verification of constancy of performance system(s) <sup>a</sup> |
|---------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------|
| External thermal insulation composite systems/kits (ETICS) with rendering | In external wall not subject to fire regulations | Any                                      | 2+                                                                             |
|                                                                           | In external wall subject to fire regulations     | (A1,A2,B,C)*                             | 1                                                                              |
|                                                                           |                                                  | (A1,A2,B,C)** ,D,E (A1 to E)***,F        | 2+                                                                             |

<sup>a</sup>Systems 1 and 2+ :See Regulation (EU) N° 305/2011, Annex V

\*Products/materials for which a 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)

\*\*Products/materials not covered by footnote (\*)

\*\*\*Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of class A1 according to Commission Decision 96/603/EC, as amended)

<sup>3</sup> O JEU, L229, 20/08/1997

<sup>4</sup> O JEU, L209, 02/08/2001

## 5. Technical details necessary for the implementation of the AVCP system

### 5.1 General

In order to help the Notified Body to make an evaluation of conformity, the Technical Assessment Body issuing the ETA shall supply the information detailed below. This information together with the requirements given in EC Guidance Paper B will generally form the basis on which the factory production control (FPC) is assessed by the Notified Body.

This information shall initially be prepared or collected by the Technical Assessment Body and shall be agreed with the manufacturer. The following gives guidance on the type of information required:

### 5.2 The ETA

Where confidentiality of information is required, this ETA makes reference to the manufacturer's technical documentation which contains such information.

### 5.3 Basic manufacturing process

The basic manufacturing process is described in sufficient detail to support the proposed FPC methods. The different components of ETICS are generally manufactured using conventional techniques. Any critical process or treatment of the components which affects performance are highlighted in the manufacturer's documentation.

### 5.4 Product and materials specifications

The manufacturer's documentation includes:

- Detailed drawings (possibly including manufacturing tolerances);
- Incoming (raw) materials specifications and declarations;
- References to European and/or international standards;
- Technical data sheets.

### 5.5 Control Plan (as a part of FPC)

The manufacturer and the "name of the Technical Assessment Body" have agreed a Control Plan which is deposited with the "UBA<sub>tc</sub>" in documentation which accompanies the ETA. The Control Plan specifies the type and frequency of checks/tests conducted during production and on the final product. This includes the checks conducted during manufacture on properties that cannot be inspected at a later stage and for checks on the final product.

Products not manufactured by the ETICS manufacturer shall also be tested according to the Control Plan. It must be demonstrated to the Notified Body that the FPC system contains elements securing that the ETICS manufacturer takes products conforming to the Control Plan from his supplier(s).

Where materials/components are not manufactured and tested by the supplier in accordance with agreed methods, then where appropriate they shall be subject to suitable checks/tests by the ETICS manufacturer before acceptance.

In cases where the provisions of the European Technical Assessment and its Control Plan are no longer fulfilled, the Notified Body shall withdraw the certificate and inform the UBA<sub>tc</sub> without delay.

## 6. References

EN 822 Thermal insulating products for building applications - Determination of length and width

EN 823 Thermal insulating products for building applications - Determination of thickness

EN 824 Thermal insulating products for building applications - Determination of squareness

EN 825 Thermal insulating products for building applications - Determination of flatness

EN 1604 Thermal insulating products for building applications - Determination of dimensional stability under specified temperature and humidity conditions

EN 1609 Thermal insulating products for building applications - Determination of short term water absorption

EN 12086 Thermal insulating products for building applications - Determination of water vapour transmission properties

EN 12087 Thermal insulating products for building applications - Determination of long term water absorption by immersion

EN 12090 Thermal insulating products for building applications - Determination of shear behaviour

EN 12664 Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products of medium and low thermal resistance

EN 12667 Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance

EN 13501-1 Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

EN 13163 Thermal insulation products for buildings - Factory made expanded polystyrene (EPS) products - Specification

EN ISO 1163-1 Plastics - Unplasticized poly(vinyl chloride) (PVC-U) moulding and extrusion materials - Part 1: Designation system and basis for specifications

EN ISO 6946 Building components and building elements - Thermal resistance and thermal transmittance - Calculation method

## Annex I

### Insulation product characteristics

| Descriptions and characteristics                                                                |                                              | EPS panels                                                                                                                                        |                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                 |                                              | for bonded ETICS                                                                                                                                  | For mechanically fixed ETICS                                                                                                                    |
|                                                                                                 |                                              |                                                                                                                                                   | with anchors<br>and Additional bonding                                                                  with profiles<br>and Additional bonding |
| Reaction to fire / EN 13501-1                                                                   |                                              | Euroclass E                                                                                                                                       |                                                                                                                                                 |
| Thermal resistance ((m <sup>2</sup> .K)/W)                                                      |                                              | Defined in the CE marking in reference to EN 13163<br>"Thermal insulation products for buildings" - Factory made products of expanded polystyrene |                                                                                                                                                 |
| Thickness (mm) / EN 823                                                                         |                                              | (EPS-EN 13163 –T2)                                                                                                                                | ± 1,5                                                                                                                                           |
| Length (mm) / EN 822                                                                            |                                              | (EPS-EN 13163 - L2)                                                                                                                               | ± 1                                                                                                                                             |
| Width (mm) / EN 822                                                                             |                                              | (EPS-EN 13163 - W2)                                                                                                                               | ± 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                                                                     | laboratory condition / EN 1603               | ± 0,2 - DS(N)2                                                                                                                                    | ≤ 0.15 %                                                                                                                                        |
|                                                                                                 | specified temperature and humidity / EN 1604 | DS (70,-)1<br>DS (70,-)2                                                                                                                          | 48h/70°C<br>- 500 x 500 mm panels: ≤ 0,30%<br>and no value > 0,35%<br>500 x 500 mm: ≤ 0,25%                                                     |
| Water absorption (long term immersion) / EN 12087                                               |                                              | W <sub>ip</sub> ≤ 0,5                                                                                                                             |                                                                                                                                                 |
| Water vapour diffusion resistance factor (μ) / EN 12086                                         |                                              | 20 - 78                                                                                                                                           |                                                                                                                                                 |
| Tensile strength perpendicular to the faces in dry conditions (kPa) / EN 1607<br>- Standard EPS |                                              | σ <sub>mt</sub> ≥ 80                                                                                                                              | σ <sub>mt</sub> ≥ 100                                                                                                                           |
|                                                                                                 |                                              | σ <sub>mt</sub> ≥ 150                                                                                                                             | Not used                                                                                                                                        |
| - Elastified EPS                                                                                |                                              | σ <sub>mt</sub> ≥ 80                                                                                                                              | σ <sub>mt</sub> ≥ 80                                                                                                                            |
| Shear strength (kPa) / EN 12090                                                                 |                                              | 20 ≤ f <sub>tk</sub> ≤ 100                                                                                                                        |                                                                                                                                                 |
| Shear modulus (MPa) / EN 12090<br>- Standard EPS                                                |                                              | 1,0 ≤ G <sub>m</sub> ≤ 2,0                                                                                                                        |                                                                                                                                                 |
| - Elastified EPS                                                                                |                                              | 0,3 ≤ G <sub>m</sub> ≤ 1,0                                                                                                                        | 0,3 ≤ G <sub>m</sub> ≤ 1,0                                                                                                                      |
|                                                                                                 |                                              | Not used                                                                                                                                          |                                                                                                                                                 |

## Annex II

### Description of anchors for profiles

| Trade name                  | Characteristic resistance in the substrate |
|-----------------------------|--------------------------------------------|
| Knauf Schienen-Nageldübel   | ETA 03/0019                                |
| Knauf Schienen-Schraubdübel | ETA 02/0019                                |

## Annex III

### Description of profiles

Polyvinyl chloride (PVC) profiles: PVC-U, E GLC, 078-05-T33 to EN ISO 1163-1 (see Annex 1)

- Horizontal fixed profiles each 30 cm
  - Vertical connection profiles: 49,4 cm
- Pull-through resistance of fixings from profile:  $\geq 500$  N.

## Annex IV

### Description and characteristics of the reinforcement

|                                                                                          | ARMIERGEWEBE<br>Mesh size 5,0 x 5,0 mm |           | ARMIERGEWEBE<br>Mesh size 4,0 x 4,0 mm |           |
|------------------------------------------------------------------------------------------|----------------------------------------|-----------|----------------------------------------|-----------|
|                                                                                          | Alkali resistance                      |           | Alkali resistance                      |           |
|                                                                                          | Warp                                   | Warp      | Weft                                   | Weft      |
| Residual strength after ageing (N/mm)                                                    | $\geq 20$                              | $\geq 20$ | $\geq 20$                              | $\geq 20$ |
| Relative residual resistance: % (after ageing) of the strength in the as delivered state | $\geq 50$                              | $\geq 50$ | $\geq 50$                              | $\geq 50$ |

UBAtc asbl is a non-profit organization according to Belgian law. It is a Technical Assessment Body notified by the Belgian notifying authority, the Federal Public Services Economy, SMEs, Self-Employed and Energy, on 17 July 2013 in the framework of Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC and is member of the European Organisation for Technical Assessment, EOTA ([www.eota.eu](http://www.eota.eu)).

This European Technical Assessment has been issued by UBAtc asbl on the basis of the technical work carried out by the Assessment Operator, BCCA.

On behalf of UBAtc asbl,

On behalf of the Assessment Operator, BCCA, responsible  
for the technical content of the ETA,



Peter Wouters,  
Director



Benny De Blagere,  
Director general

The most recent version of this European Technical Assessment may be consulted on the UBAtc website ([www.ubatc.be](http://www.ubatc.be)).