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## European Technical Assessment

**ETA 15/0148  
of 27/01/2020**

### *I General Part*

**Technical Assessment Body issuing the ETA:**

Technical and Test Institute for Construction Prague

**Trade name of the construction product:** VITEXTHERM

**Product family to which the construction product belongs:**

Product area code: 4  
External Thermal Insulation Composite Systems (ETICS) with rendering, insulation product - expanded polystyrene (EPS)

**Manufacturer:**

**YANNIDIS BROTHERS S.A.**  
Aspropyrgos – Imeros Topos  
19300 Attica  
Greece

**Manufacturing plant(s):**

**YANNIDIS BROTHERS S.A.**  
Aspropyrgos – Imeros Topos  
19300 Attica  
Greece

**This European Technical Assessment contains:**

20 pages including 4 Annexes which form an integral part of this Assessment  
Annex No. 5 Control Plan contains confidential information and is not included in the European Technical assessment when that assessment is publicly disseminated.

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

ETAG 004, edition 2013, used as European Assessment Document (EAD)

**This ETA replaces**

ETA 15/0148, issued on 07/04/2015

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*II Specific part*

**1 Technical description of the product**

**1.1 Definition and composition of the kit**

This product is an ETICS (External Thermal Insulation Composite System) with rendering - 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 prefabricated insulation product of expanded polystyrene (EPS) to be bonded or mechanically fixed onto a wall. The methods of fixing and the relevant components are specified in the table below. The insulation product is faced with a rendering system consisting of one or more layers (site applied), one of which contains reinforcement. The rendering system is applied directly to the insulating boards, 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

Composition of the ETICS:

Table No. 1

	Components	Coverage (kg/m <sup>2</sup> )	Thickness (mm)
<b>Bonded ETICS (partially or fully bonded) with supplementary anchors. National application documents shall be taken into account.</b>			
<b>Insulation materials with associated methods of fixing</b>	<ul style="list-style-type: none"> <li><b>Insulation product</b></li> </ul>		
	Expanded polystyrene panels (EPS80) according to EN 13163+A2 with characteristics specified in clause 2.3.1 - see Annex No. 1 for product characteristics	/	50 – 400
	<ul style="list-style-type: none"> <li><b>Adhesive:</b></li> </ul>		
	<b>GNK10G</b> <b>Product as delivered:</b> powder requiring addition of specified amount of water (0,24 l/kg) <b>Base:</b> aggregates, inert filler, cement, specific additives	3 - 5 (powder)	3 - 20
	<b>GNK-FOAM</b> <b>Product as delivered:</b> polyurethane foam <b>Base:</b> polyurethane (foam adhesive based on polyurethane, ready to use product delivered in bottles)	/	2 - 20
<b>Mechanically fixed ETICS with anchors and supplementary adhesive (see CI.3.4.4 and Annex No. 2) for possible associations EPS/anchors)</b>			

Insulation materials with associated methods of fixing	<ul style="list-style-type: none"> <li>• <b>Insulation product</b></li> </ul>		
	Expanded polystyrene panels (EPS80) according to EN 13163+A2 with characteristics specified in clause 2.3.1 - see Annex No. 1 for product characteristics	/	50 – 400
	<ul style="list-style-type: none"> <li>• <b>Adhesive:</b></li> </ul>		
	<b>GNK10G</b> <b>Product as delivered:</b> powder requiring addition of specified amount of water (0,24 l/kg) <b>Base:</b> aggregates, inert filler, cement, specific additives	3-5 (powder)	3 - 20
	<b>GNK-FOAM</b> <b>Product as delivered:</b> polyurethane foam <b>Base:</b> polyurethane (foam adhesive based on polyurethane, ready to use product delivered in bottles)	/	2 - 20
	<ul style="list-style-type: none"> <li>• <b>Anchors:</b></li> </ul>		
	VITEX THERM PL	ETA 18/0007	/
	BRAVOLL PTH-KZ 60/8	ETA 05/0055	
	BRAVOLL PTH-X, PTH-EX	ETA 13/0951	
	Ejot H1 Eco	ETA 11/0192	
Ejotherm STR U, STR U 2G	ETA 04/0023		
Ejotherm NT U, NK U	ETA 05/0009		
Fischer TERMOZ PN	ETA 09/0171		
Base coat	<b>GNK20W</b> <b>Product as delivered:</b> powder requiring addition of specified amount of water (0,24 l/kg) <b>Base:</b> aggregates, inert filler, cement, specific additives	3 - 4,5	2 - 5
	<b>GNK ELASTIC</b> <b>Product as delivered:</b> fiber-reinforced acrylic paste, ready to use	2 - 4	2 - 3
Glass fiber mesh	Textile Glass Grid ES/S 015	160 g/m <sup>2</sup>	< 0,5
	R131 A 101	160 g/m <sup>2</sup>	< 0,5
Key coat	<b>GRANIKOT PRIMER</b> Ready to use liquid. For use with finishing coat GRANIKOT	0,100 - 0,125 l/m <sup>2</sup>	-

<p><b>Finishing coats</b></p>	<p><b>GRANIKOT ACRYLIC</b> max. particle size 1,5 - 2,0 - 2,5 mm - ribbed structure; max. particle size 1,0 - 1,5 mm floated structure</p> <p>Ready to use paste – silicone base: <b>GRANIKOT SILICONE</b> max. particle size 1,5 - 2,0 - 2,5 mm - ribbed structure; max. particle size 1,0 - 1,5 mm floated structure</p>	<p>1,8 – 3,4 regulated by max. particle size</p> <p>1,8 – 3,4 regulated by max. particle size</p>	<p>regulated by particle size</p>
<p><b>Ancillary materials</b></p>	<p>Descriptions in accordance with § 3.2.2.5 of the ETAG 004. Remain under the ETA-holder responsibilities.</p>		

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

### **2.1 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 characteristics of the walls shall be verified prior to use of the ETICS, especially regarding conditions for reaction to fire classification and for fixing of the ETICS either by bonding or mechanically. The ETICS is designed to give the wall to which it is applied satisfactory thermal insulation.

The ETICS is made of non load-bearing construction 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 may need preparation (see cl. 7.2.1 of the ETAG 004) and shall be done in accordance with the national instructions.

### **2.2 Manufacturing**

The European Technical Assessment is issued for the ETICS on the basis of agreed data/information, deposited with the Technical and Test Institute Prague, 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, shall be notified to the Technical and Test Institute Prague before the changes are introduced. The Technical and Test Institute Prague 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.

### **2.3 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 summarize 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.

## **2.4 Packaging, transport 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 know to the concerned people.

## **2.5 Use, maintenance and repair**

The provisions made in this European Technical Assessment are based on an assumed working life of the ETICS of at least 25 years, provided that the requirements for the packaging, transport, storage, installation as well as appropriate use, maintenance and repair are met. The indication given on the working life cannot be interpreted as a guarantee given by the manufacturer or the Technical Assessment 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.

The finishing coat shall normally be maintained in order to fully preserve the ETICS performance. Maintenance includes at least:

- visual inspection of the ETICS,
- 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 know to the concerned people.

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

The performances of the kit as described in this chapter are valid provided that the components of the kit comply with Annexes 1 - 4.

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

Not relevant

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

##### 3.2.1 Reaction to fire (ETAG 004 - clause 5.1.2.1, EN 13501-1+A1)

Table No. 2

Configuration	Organic content / heat of combustion	Flame retardant content	Euroclass according to EN 13501-1+A1
Adhesive: GNK 10G	4 %	no flame retardant	B-s1,d0
panels of expanded polystyrene (EPS) maximum density 16 kg/m <sup>3</sup> thickness 50 - 400 mm	in quantity ensuring Euroclass E according to EN 13501-1+A1	in quantity ensuring Euroclass E according to EN 13501-1+A1	
Anchors VITEX THERM PL BRAVOLL PTH-KZ 60/8 LTX-8	-	-	
base coat render: GNK 20W	4 %	no flame retardant	
glass fibre mesh: Textile Glass Grid ES/S 015	-	no flame retardant	
renderings with acrylic binder GRANIKOT ACRYLIC	10 %	no flame retardant	
Other types of components not stated above but included in the table No.1 of this ETA.	-	-	no performance assessed

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 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.

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

#### 3.3.1 Water absorption (ETAG 004 - clause 5.1.3.1)

- **Base coat GNK 20W:**

Water absorption after 1 hour < 1 kg/m<sup>2</sup>

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

- **Rendering system:**

Table No. 3

		Water absorption after 24 hours	
		< 0.5 kg/m <sup>2</sup>	≥ 0.5 kg/m <sup>2</sup>
<b>Rendering system:</b> base coat GNK ELASTIC + key coat GRANICOT PRIMER + finishing coat as indicated here:	<b>GRANIKOT ACRYLIC</b>	X	
	<b>GRANIKOT SILICONE</b>	X	

- **Base coat GNK ELASTIC:**

Water absorption after 1 hour < 1 kg/m<sup>2</sup>

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

- **Rendering system:**

Table No. 4

		Water absorption after 24 hours	
		< 0.5 kg/m <sup>2</sup>	≥ 0.5 kg/m <sup>2</sup>
<b>Rendering system:</b> base coat GNK ELASTIC + key coat GRANICOT PRIMER + finishing coat as indicated here:	<b>GRANIKOT ACRYLIC</b>	X	
	<b>GRANIKOT SILICONE</b>	X	

#### 3.3.2 Watertightness (ETAG 004 - clause 5.1.3.2)

##### 3.3.2.1 Hygrothermal behaviour

Pass (without defects).

##### 3.3.2.2 Freeze–thaw behaviour

The water absorption of the rendering systems is no more than 0,5 kg/m<sup>2</sup> after 24 hours and **the ETICS has not been assessed as freeze / thaw resistant** according to simulated method.



Base coats **GNK 20 W** and **GNK ELASTIC** and rendering systems with finishing coats **GRANIKOT ACRYLIC** and **GRANIKOT SILICONE**: freeze-thaw resistant - according to the water absorption test results.

### 3.3.3 Impact resistance (ETAG 004 - clause 5.1.3.3)

Table No. 5

Rendering system: base coat <b>GNK 20 W</b> + key coat + reinforcement and finishing coat listed hereafter:	Single standard mesh
<b>GRANIKOT ACRYLIC</b>	Category III
<b>GRANIKOT SILICONE</b>	Category III

Table No. 6

Rendering system: base coat <b>GNK ELASTIC</b> + key coat + reinforcement and finishing coat listed hereafter:	Single standard mesh
<b>GRANIKOT ACRYLIC</b>	Category I
<b>GRANIKOT SILICONE</b>	Category I

### 3.3.4 Water vapour permeability (ETAG 004 - clause 5.1.3.4)

Table No. 7

Rendering system: <b>Basecoat GNK 20 W</b> + key coat + reinforcement and finishing coat listed hereafter:	Equivalent air layer thickness $s_d$
	Single standard mesh
<b>GRANIKOT ACRYLIC</b>	$\leq 0.25$ m
<b>GRANIKOT SILICONE</b>	$\leq 0.22$ m

Table No. 8

Rendering system: <b>Basecoat GNK ELASTIC</b> + key coat + reinforcement and finishing coat listed hereafter:	Equivalent air layer thickness $s_d$
	Single standard mesh
<b>GRANIKOT ACRYLIC</b>	$\leq 0.49$ m
<b>GRANIKOT SILICONE</b>	$\leq 0.45$ m

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

Kit not assessed according to EOTA TR 034.

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

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

- Base coat **GNK 20 W** and **GNK ELASTIC**
- Initial state: bond strength  $\geq 0.08$  MPa
- After hygrothermal cycles: bond strength  $\geq 0.080$  MPa and cohesive failure in the insulation product.
- After freeze-thaw cycles: test not required (see Cl. 3.3.1 of this ETA).

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

Table No. 9

		Initial state	48 hrs. immersion in water + 2 hrs. 23°C/50% RH	48 hrs. immersion in water + 7 days 23°C/50% RH
<b>GNK10G</b>	Concrete	$\geq 0.25$ MPa	$\geq 0.08$ MPa	$\geq 0.25$ MPa
	Expanded polystyrene EPS	$\geq 0.08$ MPa	$\geq 0.03$ MPa	$\geq 0.08$ MPa

Table No. 10

		Initial state	modified thickness (15 mm)	maximum open time (9 minutes)	modified temperature (5 °C, 35 °C)
<b>GNK-FOAM</b>	Concrete and insulation product	$\geq 0,08$ MPa	$\geq 0,08$ MPa	$\geq 0,08$ MPa	$\geq 0,08$ MPa

The minimal bonded surface S, which shall exceed 20% (40 % for foam adhesives), is calculated as follows:

$$S (\%) = [0,03 * 100] / B$$

Where:

- B: minimum mean failure resistance of the adhesive to the insulation product in dry conditions expressed in MPa
- 0,03 MPa correspond to the minimum requirements

### 3.4.3 Bond strength after ageing (ETAG 004 - clauses 5.1.7.1)

- After ageing by hygrothermal cycles: bond strength  $\geq 0.08$  MPa (cohesive failure in the insulation product)
- After freeze-thaw cycles: - not needed for finishing coats **GRANIKOT ACRYLIC, GRANIKOT SILICONE** (see Cl. 3.2.2.2 of this ETA)

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

Test not required (no limitation of ETICS length).

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

Table No. 11

<b>Anchor description</b>	Trade name		see Annex No. 2
			surface assembly
	Plate diameter (mm)		60 or more
<b>EPS characteristics</b>	Thickness (mm)		$\geq 50$
	Tensile strength (kPa)		$\geq 150$
Maximal load	Anchors placed at the body of the insulation product	$R_{\text{panel}}$	minimal value: <b>0.57 kN</b> mean value: <b>0.62 kN</b>
	Anchors placed at joints of the insulation product	$R_{\text{joint}}$	minimal value: <b>0.49 kN</b> mean value: <b>0.53 kN</b>

### 3.4.6 Render strip tensile test

- Base coat **GNK 20W** + glass fibre mesh **Textile Glass Grid ES/S 015**

Table No. 12

		<b>glass fibre mesh – Textile Glass Grid ES/S 015</b>					
		<b>crack width <math>W_{typ}</math> [mm]/ number of cracks</b>					
<b>load direction</b>		<b>at relative elongation <math>\epsilon</math></b>					
		$\epsilon = 0.3 \%$	$\epsilon = 0.5 \%$	$\epsilon = 0.8 \%$	$\epsilon = 1.0 \%$	$\epsilon = 1.5 \%$	$\epsilon = 2.0 \%$
weft	sample No. 1	$\leq 0.05/15$	$\leq 0.05/36$	$\leq 0.05/56$	$\leq 0.05/75$ $\leq 0.10/2$	$\leq 0.05/76$ $\leq 0.10/12$	$\leq 0.05/70$ $\leq 0.10/27$ $\leq 0.15/1$
	sample No. 2	$\leq 0.05/14$	$\leq 0.05/38$	$\leq 0.05/64$	$\leq 0.05/78$	$\leq 0.05/82$ $\leq 0.10/6$	$\leq 0.05/77$ $\leq 0.10/19$
	sample No. 3	$\leq 0.05/11$	$\leq 0.05/38$	$\leq 0.05/62$	$\leq 0.05/76$	$\leq 0.05/80$ $\leq 0.10/7$	$\leq 0.05/82$ $\leq 0.10/23$
warp	sample No. 1	$\leq 0.05/9$ $\leq 0.10/1$	$\leq 0.05/34$ $\leq 0.10/1$	$\leq 0.05/29$ $\leq 0.10/16$	$\leq 0.05/19$ $\leq 0.10/32$	$\leq 0.05/14$ $\leq 0.10/50$ $\leq 0.15/4$	$\leq 0.05/9$ $\leq 0.10/43$ $\leq 0.15/17$ $\leq 0.20/1$
	sample No. 2	$\leq 0.05/16$	$\leq 0.05/34$ $\leq 0.10/1$	$\leq 0.05/34$ $\leq 0.10/20$	$\leq 0.05/17$ $\leq 0.10/33$	$\leq 0.05/12$ $\leq 0.10/43$ $\leq 0.15/4$	$\leq 0.05/9$ $\leq 0.10/33$ $\leq 0.15/19$ $\leq 0.20/3$
	sample No. 3	$\leq 0.05/12$	$\leq 0.05/32$ $\leq 0.10/3$	$\leq 0.05/29$ $\leq 0.10/22$	$\leq 0.05/18$ $\leq 0.10/40$ $\leq 0.15/1$	$\leq 0.05/13$ $\leq 0.10/44$ $\leq 0.15/7$	$\leq 0.05/5$ $\leq 0.10/41$ $\leq 0.15/19$ $\leq 0.20/1$

The characteristic crack width  $W_{rk}$  [mm] at a render strain value of 0.8%, determined with simple Method II pursuant to ETAG 004, cl. 5.5.4.1.

Table No. 13

	<b>Characteristic width of cracks <math>W_{rk}</math> [mm] at render strain value of 0.8%</b>	
	<b>Weft direction</b>	<b>Warp direction</b>
<b>base coat GNK 20W + glass fibre mesh Textile Glass Grid ES/S 015</b>	0.05	0.15
<b>base coat GNK 20W + glass fibre mesh R131 A 101</b>	No performance assessed	

The width of cracks in reinforced base coat at 2 % elongation is equal or lower than 0.2 mm.

- Base coat **GNK Elastic** + glass fibre mesh **Textile Glass Grid ES/S 015**

Table No. 14

		<b>glass fibre mesh – Textile Glass Grid ES/S 015</b>					
		<b>crack width <math>W_{typ}</math> [mm]/ number of cracks at relative elongation <math>\epsilon</math></b>					
<b>load direction</b>		<b><math>\epsilon = 0.3\%</math></b>	<b><math>\epsilon = 0.5\%</math></b>	<b><math>\epsilon = 0.8\%</math></b>	<b><math>\epsilon = 1.0\%</math></b>	<b><math>\epsilon = 1.5\%</math></b>	<b><math>\epsilon = 2.0\%</math></b>
warp	sample No. 1	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0
	sample No. 2	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0
	sample No. 3	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0
weft	sample No. 1	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0
	sample No. 2	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0
	sample No. 3	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0	≤ 0.05/0

The characteristic crack width  $W_{rk}$  [mm] at a render strain value of 0.8%, determined with simple Method II pursuant to ETAG 004, cl. 5.5.4.1.

Table No. 15

	<b>Characteristic width of cracks <math>W_{rk}</math> [mm] at render strain value of 0.8%</b>	
	<b>Warp direction</b>	<b>Weft direction</b>
base coat <b>GNK Elastic</b> + glass fibre mesh <b>Textile Glass Grid ES/S 015</b>	0.00	0.00
base coat <b>GNK Elastic</b> + glass fibre mesh <b>R131 A 101</b>	No performance assessed	

The width of cracks in reinforced base coat at 2 % elongation is equal or lower than 0.2 mm.

### 3.5 Protection against noise (BWR 5)

#### 3.5.1 Airborne sound insulation

No performance assessed.

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

#### 3.6.1 Thermal resistance

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

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

Where:

- $\chi_p \times n$  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 1 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  
( $\chi_p \times n$  negligible for  $n < 20$ )
  - = 0.004 W/K for anchors with a galvanized steel screw with the head covered by a plastic material  
( $\chi_p \times n$  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:

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

Where:

- $R_i$  thermal resistance of the insulation product (according to declaration in reference to EN 13163+A2) in (m<sup>2</sup>.K)/W
- $R_{render}$  thermal resistance of the rendering system (about 0.02 in (m<sup>2</sup>.K)/W) or determined by test according to EN 12667 or EN 12664
- $R_{substrate}$  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 value of thermal resistance of each insulation product shall be given in the manufacturer's documentation along with the possible range of thicknesses. In addition, the point thermal conductivity of anchors shall be given when anchors are used in the ETICS.

### 3.7 Sustainable use of natural resources (BWR 7)

No performance assessed.

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

According to the European Commission decision 97/556/EC amended by the European Commission decision 2001/596/EC, the AVCP system 2+ is valid (further described in Annex V to Regulation (EU) No. 305/2011).

Table No. 16

Product(s)	Intended use(s)	Level(s) or class(es) (Reaction to fire)	System(s)
External thermal insulation composite systems/kits (ETICS) with rendering	in external wall subject to fire regulations	A1 <sup>(1)</sup> , A2 <sup>(1)</sup> , B <sup>(1)</sup> , C <sup>(1)</sup>	1
		A1 <sup>(2)</sup> , A2 <sup>(2)</sup> , B <sup>(2)</sup> , C <sup>(2)</sup> , D, E, (A1 to E) <sup>(3)</sup> , F	2+
	in external wall not subject to fire regulations	any	2+

<sup>(1)</sup> 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)

<sup>(2)</sup> Products/materials not covered by footnote (1)

<sup>(3)</sup> Products/materials that do not require to be tested for reaction to fire (e.g. Products/materials of Classes A1 according to Commission Decision 96/603/EC)

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

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:

### 1) ETA

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

### 2) Basic manufacturing process

The basic manufacturing process is described in sufficient detail to support the proposed FPC methods.

The different components of the 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.

### 3) 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.

4) Control Plan (as a part of FPC)

The manufacturer and the Technical and Test Institute for Construction Prague have agreed a Control Plan which is deposited with the Technical and Test Institute for Construction Prague 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 referring to the Control Plan once again.

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 Technical and Test Construction Institute Prague without delay.

Issued in Prague on 27/01/2020



**Ing. Mária Schaan**

Head of the Technical Assessment Body



## Annex No. 1 Insulation product characteristics

Description and characteristics		Regulation	Declared characteristics of EPS boards	
			Class, level according to EN 13163+A2	Value
Reaction to fire		EN 13501	E	---
Thermal resistance		EN 12667	Defined in CE mark in accordance with EN 13163+A2	
Thickness		EN 823	T(2)	± 2 mm
Length		EN 822	L(2)	± 2 mm
Width			W(2)	± 2 mm
Squareness		EN 824	S(2)	± 2 mm/m
Flatness		EN 825	P(3)	3 mm
Surface		ETAG 004	Cut surface (homogenous, without coating)	
Dimensional stability	Under defined temperature and humidity conditions	EN 1604	DS(70,-)1	1%
	Under constant laboratory conditions	EN 1603	DS(N)2	0.2%
Short term water absorption at partial immersion		EN 1609	---	≤ 0,1 kg/m <sup>2</sup>
Diffusion factor (μ)		EN 13163	MU 20 - 40	20 - 40
Tensile strength perpendicular to the faces of insulation product		EN 1607	TR150	≥ 150 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 7.5 kPa
Shear strength		EN 12090	SS60	≥ 60 kPa
Shear modulus of elasticity			GM1648	≥ 1648 kPa

**Note:** Classes and levels for individual characteristics comply with EN 13163: 2012+A2:2017. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.

Reaction to fire E has to be proved for every insulation product also at 10 mm products thickness.

**Annex No. 2 Anchors, description of individual product characteristics contained in the ETA**

Trade name	Plate diameter (mm)	Characteristic pull-out resistance	Plate stiffness (kN/mm)	Load at plate rupture (kN)
<b>Surface assembly</b>				
VITEXTHERM PL	60	see ETA 18/0007	0,6	1,7
BRAVOLL PTH-KZ 60/8	60	see ETA 05/0055	0,6	1,6
BRAVOLL PTH-X, PTH-EX	60	see ETA 13/0951	0,6	1,5
Ejot H1 Eco	60	see ETA 11/0192	0,6	1,4
Ejotharm STR U, STR U 2G	60	see ETA 04/0023	0,6	2,08
Ejotharm NT U, NK U	60	see ETA 05/0009	0,6	2,43
Fisher TERMOZ PN 8	60	see ETA 09/0171	0,6	1,7

In addition to this list, anchors assessed in accordance with ETAG 014 can be used provided that such anchors meet the following requirements:

	<b>Requirements</b>	
Plate diameter	≥ 60 mm	
Plate stiffness	Surface assembly:	≥ 0.6 kN/mm
Rupture force of anchor's plate	≥ higher of figures $R_{panel}$ and $R_{joint}$ in relevant table in Cl. <b>Chyba! Nenalezen zdroj odkazů.</b>	

### Annex No. 3 Description of glass fibre mesh

	Description	Strength after ageing	
	Standard fibre mesh applied in one layer with aperture size	Absolute strength after ageing (N/mm)	Relative residual strength after ageing, of the strength in the as-delivered state (%)
<b>Textile Glass Grid ES/S 015</b>	(4,5 x 4,5) mm	≥ 20	≥ 50
<b>R 131 A101</b>	(3,5 x 3,8) mm	≥ 20	≥ 50

#### **Annex No. 4 Description of the foam adhesive**

- Shear strength and shear modulus: 121 kPa and 474 kPa.
- Post expansion behaviour: 0,59 mm