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## European Technical Assessment

**ETA 16/0633**  
**of 28/02/2017**

(English language translation, the original version in Czech language)

### I General Part

#### Technical Assessment Body issuing the ETA:

Technical and Test Institute for Construction Prague

#### Trade name of the construction product

**SEMPRE TERM WM**

#### Product family to which the construction product belongs

Product area code: 4  
External Thermal Insulation Composite Systems (ETICS) with rendering insulation product – mineral wool (MW)

#### Manufacturer

SEMPRE Farby Sp. z o.o.  
ul. Gen. J. Kuźnia 60  
43-301 Bielsko-Biała,  
Poland

#### Manufacturing plant(s)

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SEMPRE Farby Sp. z o.o.  
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43-301 Bielsko-Biała,  
Poland

#### This European Technical Assessment contains

27 pages including 6 Annexes which form an integral part of this assessment.

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

Annex No. 7 Control Plan contains confidential information and is not included in the European Technical Assessment when that assessment is publicly disseminated.

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

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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 mineral wool (MW) to be 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 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.

Composition of the ETICS

Table No. 1

	Components	Coverage (kg/m <sup>2</sup> )	Thickness (mm)
Insulation materials with associated methods of fixing	<b>Bonded ETICS (fully bonded) with supplementary anchors. National application documents shall be taken into account.</b>		
	<ul style="list-style-type: none"><li>Insulation product: MW according to EN 13162  see Annex No. 1 Insulation product characteristics for bonded ETICS with additional mechanical fixing – MW lamella for product characteristics</li></ul>	/	50 - 250
	<ul style="list-style-type: none"><li>Adhesives: bonded surface area: 100 %<ul style="list-style-type: none"><li><b>Tesoromont WM 100</b></li><li><b>Tesoromont WM 200</b></li><li><b>Tesoromont WM 300</b></li><li>cement based powder requiring addition of water - 0.20 – 0.23 l/kg)</li></ul></li></ul>	4.0 (dry mixture)	5 - 10





	Components	Coverage (kg/m <sup>2</sup> )	Thickness (mm)
Base coat	<ul style="list-style-type: none"> <li>• <b>Tesoromont WM 200</b></li> <li>• <b>Tesoromont WM 300</b></li> <li>- cement based powder requiring addition of water - 0.20 – 0.23 l/kg)</li> </ul>	4.0 (dry mixture)	4.0 – 5.0
Reinforcement	<ul style="list-style-type: none"> <li>• Standard mesh applied in single layer see Annex No. 6 for product characteristics:</li> <li>- <b>SEMPRE 150</b></li> <li>- <b>AKE 145</b></li> </ul>	/	/
Key coat	<ul style="list-style-type: none"> <li>- <b>Tesoro Grunt</b> to be voluntarily used with TESORO finishing coats</li> <li>- ready to use liquid</li> <li>- <b>Azuro Grunt</b> to be voluntarily used with AZURO finishing coats</li> <li>- ready to use liquid</li> <li>- <b>Maresil Grunt</b> to be voluntarily used with MARESIL finishing coats</li> <li>- ready to use liquid</li> <li>- <b>Progresil Grunt</b> to be voluntarily used with PROGRESIL finishing coats</li> <li>- ready to use liquid</li> <li>- <b>Diamante Grunt</b> to be voluntarily used with DIAMANTE finishing coat</li> <li>- ready to use liquid</li> <li>- <b>Mineral Grunt</b> to be voluntarily used with TESORO MINERAL TM-300 finishing coats</li> <li>- ready to use liquid</li> <li>- <b>Multigrunt</b> to be voluntarily used with all types of finishing coats</li> <li>- ready to use liquid</li> </ul>	0.15	/
Finishing coats	<ul style="list-style-type: none"> <li>• Ready to use paste - acrylic binder:</li> <li>- <b>TESORO</b></li> <li>- <b>TESORO INVEST</b></li> <li>- floated structure (particle size 1.5; 2.0; 2.5; 3.0 mm)</li> <li>- <b>TESORO</b></li> <li>- ribbed structure (particle size 1.5; 2.0; 2.5 mm)</li> </ul>	2.3 - 4.5	Regulated by particle size

	Components	Coverage (kg/m <sup>2</sup> )	Thickness (mm)
Finishing coats	<ul style="list-style-type: none"> <li>Ready to use paste - silicone binder:               <ul style="list-style-type: none"> <li><b>AZURO</b></li> <li>floatated structure (particle size 1.5; 2.0; 2.5; 3.0 mm)</li> </ul> </li> <li><b>AZURO</b></li> <li>ribbed structure (particle size 1.5; 2.0; 2.5; 3.0 mm)</li> </ul>	2.3 - 4.5	Regulated by particle size
	<ul style="list-style-type: none"> <li>Ready to use paste - polysilicate binder:               <ul style="list-style-type: none"> <li><b>MARESIL</b></li> <li>floatated structure (particle size 1.5; 2.0; 2.5; 3.0 mm)</li> </ul> </li> <li><b>MARESIL</b></li> <li>ribbed structure (particle size 1.5; 2.0; 2.5; 3.0 mm)</li> </ul>	2.3 - 4.5	
	<ul style="list-style-type: none"> <li>Ready to use paste - silicone-silicate binder:               <ul style="list-style-type: none"> <li><b>PROGRESIL</b></li> <li>floatated structure (particle size 1.5; 2.0; 2.5; 3.0 mm)</li> </ul> </li> <li><b>PROGRESIL</b></li> <li>ribbed structure (particle size 1.5; 2.0; 2.5; 3.0 mm)</li> </ul>	2.3 - 4.5	
	<ul style="list-style-type: none"> <li>Ready to use paste - silicate binder:               <ul style="list-style-type: none"> <li><b>DIAMANTE</b></li> <li>floatated structure (particle size 1.5; 2.0; 2.5; 3.0 mm)</li> </ul> </li> </ul>	2.3 - 4.5	
	<ul style="list-style-type: none"> <li>Powder to be mixed with water               <ul style="list-style-type: none"> <li>mineral binder:                   <ul style="list-style-type: none"> <li><b>TESORO MINERAL TM-300</b></li> <li>floatated structure (particle size 1.5; 2.0; 3.0 mm) water consumption: 0.24 – 0.28 l/kg</li> </ul> </li> <li><b>TESORO MINERAL TM-300</b></li> <li>ribbed structure (particle size 1.5; 2.0; 3.0 mm) water consumption: 0.24 – 0.28 l/kg</li> </ul> </li> </ul>	2.0 - 4.5	
Protective coat	<ul style="list-style-type: none"> <li>Ready to use liquid - primer:               <ul style="list-style-type: none"> <li><b>MARESIL GRUNT F</b></li> <li>to be voluntarily used with TESORO MINERAL TM-300</li> </ul> </li> </ul>	0.10 – 0.20 l/m <sup>2</sup>	/
	<ul style="list-style-type: none"> <li>Ready to use liquid - paint:               <ul style="list-style-type: none"> <li><b>MARESIL</b></li> <li>to be voluntarily used with TESORO MINERAL TM-300</li> </ul> </li> </ul>	0.17 – 0.25 l/m <sup>2</sup>	/
Ancillary materials	Remain under the manufacturer's responsibility		



## **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.

The ETICS belong to Category SW2, according to EOTA Technical Report No 034.

### **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.

### **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 known 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 known 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 – 6.

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

##### 3.1.1 Reaction to fire (ETAG 004 - clause 5.1.2.1, EN 13501-1)

Table No. 2

Configuration	Heat of combustion	Flame retardant content	Euroclass according to EN 13501-1
Adhesive	max 0.34 MJ/kg	No flame retardant	A2 – s1, d0
Panels of mineral wool MW maximal density 103 kg/m <sup>3</sup>	In quantity ensuring Euroclass A1 or A2 according to 13501-1 Max. 2.0 MJ/kg	/	
Base coat render	Max. 0.34 MJ/kg	No flame retardant	
Glass fibre mesh	Max 7.81 MJ/kg	No flame retardant	
Finishing coats with acrylic binder Finishing coats with silicone binder Finishing coats with polysilicate binder Finishing coat with silicone-silicate binder Finishing coat with silicate binder Finishing coat with mineral binder	Max 2.62 MJ/kg	No flame retardant	

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.



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

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

- Base coat **Tesoromont WM 200 / 300**

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 <b>Tesoromont WM 200 / 300</b> + reinforcement + finishing coats indicated hereafter:	<b>TESORO</b>	X	
	<b>TESORO INVEST</b>		
	<b>AZURO</b>	X	
	<b>MARESIL</b>	X	
	<b>PROGRESIL</b>	X	
	<b>DIAMANTE</b>	X	
	<b>TESORO MINERAL TM-300</b>	X	

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

##### 3.2.2.1 Hygrothermal behaviour

Pass (without significant defects).

##### 3.2.2.2 Freeze-thaw behaviour

Freeze-thaw resistant - according to the water absorption test result.

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

Table No. 4

Rendering system:  Base coat <b>Tesoromont WM 200 / 300</b> + reinforcement and finishing coats indicated hereafter:	Single standard mesh: <b>AKE 145 or SEMPRE 150</b>
<b>TESORO</b> <b>TESORO INVEST</b>	Category III
<b>AZURO</b>	Category III
<b>MARESIL</b>	Category III
<b>PROGRESIL</b>	Category III
<b>DIAMANTE</b>	Category III
<b>TESORO MINERAL TM-300</b>	Category III

Table No. 5

Rendering system:  base coat <b>Tesoromont WM 200 / 300</b> + reinforcement and finishing coats indicated hereafter:	Insulation product: <b>MW (TR10)</b>
	Single standard mesh: <b>AKE 145 or SEMPRE 150</b>
<b>TESORO</b> <b>TESORO INVEST</b> + key coat <b>Tesoro Grunt</b>	Category II
<b>AZURO</b> + key coat <b>Azuro Grunt</b>	Category II
<b>DIAMANTE</b> + key coat <b>Diamante Grunt</b>	Category II
<b>TESORO MINERAL TM-300</b> + key coat <b>Mineral Grunt</b>	Category II

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

Table No. 6

<b>Rendering system:</b> base coat <b>Tesoromont WM 200 / 300</b> + reinforcement + and finishing coats indicated hereafter	<b>Equivalent air thickness <math>s_d</math></b>
<b>TESORO</b> <b>TESORO INVEST</b>	$\leq 0.74$ m
<b>AZURO</b>	$\leq 0.76$ m
<b>MARESIL</b>	$\leq 0.19$ m
<b>PROGRESIL</b>	$\leq 0.73$ m
<b>DIAMANTE</b>	$\leq 0.22$ m
<b>TESORO MINERAL TM-300</b>	$\leq 0.22$ m

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

Kit not assessed according to EOTA TR 034.

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

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

- Initial state: cohesive failure in the insulation product
- After hygrothermal cycles: bond strength  $\geq 0.005$  MPa but with cohesive failure in the insulation product
- After freeze-thaw cycles: test not required (see Cl. 3.2.2.2 of this ETA)



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

Table No. 7

		Initial state	48 hours immersion in water + 2 hours. 23°C/50% RH	48 hours immersion in water + 7 days 23°C/50% RH
<b>Tesoromont WM 100 / 200 / 300</b>	Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa
	MW lamella	≥ 0.08 MPa and failure in the insulation product	≥ 0.03 MPa and failure in the insulation product	≥ 0.08 MPa and failure in the insulation product

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

- After ageing: bond strength ≥ 0.004 MPa but with cohesive failure in the insulation product
- After freeze-thaw cycles: test not required (see Cl. 3.2.2.2 of this ETA)

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

Test not required (no limitation of ETICS length).

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

- Insulation product MW panel (TR15)

Table No. 8

Anchor description	Trade name		see Annex No. 5	
	Assembly method		Surface assembly	Countersunk assembly
	Plate diameter (mm)		60 or more	
Insulation product description	Thickness (mm)		≥ 50	≥ 100
	Tensile strength (kPa)		≥ 15	
Maximal load	Anchors placed at the body of the insulation product	$R_{\text{panel}}$ in dry conditions	min. value: <b>0.44 kN</b> mean value: <b>0.49 kN</b>	
		$R_{\text{panel}}$ in wet conditions	min. value: <b>0.32 kN</b> mean value: <b>0.34 kN</b>	
	Anchors placed at joints of the insulation product	$R_{\text{joint}}$ in dry conditions	min. value: <b>0.41 kN</b> mean value: <b>0.42 kN</b>	
		$R_{\text{joint}}$ in wet conditions	min. value: <b>0.24 kN</b> mean value: <b>0.26 kN</b>	

- Insulation product MW panel (TR10), single density panels

Table No. 9

Anchor description	Trade name		see Annex No. 5		see Annex No. 5	
	Plate stiffness (kN/mm)		≥ 0.3		≥ 0.5	
	Assembly method		Surface	Countersunk	Surface	Countersunk
	Plate diameter (mm)		≥ 60	≥ 60	≥ 60	≥ 60
Insulation product description	Thickness (mm)		≥ 60	≥ 100	≥ 50	≥ 100
	Tensile strength (kPa)		≥ 10			
Maximal load	Anchors placed at the body of the insulation product	R <sub>panel</sub> in dry conditions	min.: 0.37 kN mean: 0.39 kN		min.: 0.48 kN mean: 0.55 kN	
		R <sub>panel</sub> in wet conditions	min.: 0.19 kN mean: 0.22 kN		No performance assessed	
	Anchors placed at joints of the insulation product	R <sub>joint</sub> in dry conditions	min.: 0.27 kN mean: 0.32 kN		min.: 0.39 kN mean: 0.43 kN	
		R <sub>joint</sub> in wet conditions	min.: 0.18 kN mean: 0.19 kN		No performance assessed	

Table No. 10

Anchor description	Trade name		Koelner TFIX - 8 S + Koelner KWL 090	EJOT STR U 2G + Ejotherm VT 90 plus 2G	Klimas Wkret- met screw-in plug eco-drive
	Assembly method		Surface	Countersunk	
	Plate diameter (mm)		90	112.5	≥ 110
Insulation product description	Thickness (mm)		≥ 80	≥ 100	≥ 100
	Tensile strength (kPa)		≥ 10		
Maximal load	Anchors placed at the body of the insulation product	R <sub>panel</sub> in dry conditions	min.: 0.54 kN mean: 0.56 kN	min.: 0.78 kN mean: 0.91 kN	min.: 0.63 kN mean: 0.65 kN
		R <sub>panel</sub> in wet conditions	No performance assessed		
	Anchors placed at joints of the insulation product	R <sub>joint</sub> in dry conditions	min.: 0.47 kN mean: 0.49 kN	min.: 0.60 kN mean: 0.70 kN	min.: 0.47 kN mean: 0.51 kN
		R <sub>joint</sub> in wet conditions	No performance assessed		



- Insulation product MW panel (TR10), multi-layered panels

Table No. 11

<b>Anchor description</b>	Trade name		<b>see Annex No. 5</b>	<b>see Annex No. 5</b>	<b>Klimas Wkret-met screw-in plug eco-drive</b>
	Plate stiffness (kN/mm)		<b>≥ 0.4</b>	<b>≥ 0.6</b>	<b>0.6</b>
	Assembly method		Surface	Surface	Countersunk
	Plate diameter (mm)		≥ 60	≥ 60	≥ 110
<b>Insulation product description</b>	Thickness (mm)		≥ 80	≥ 100	≥ 100
	Tensile strength (kPa)		≥ 10		
<b>Maximal load</b>	Anchors placed at the body of the insulation product	R <sub>panel</sub> in dry conditions	min.: <b>0.38 kN</b> mean: <b>0.41 kN</b>	min.: <b>0.42 kN</b> mean: <b>0.48 kN</b>	min.: <b>1.29 kN</b> mean: <b>1.34 kN</b>
		R <sub>panel</sub> in wet conditions	No performance assessed		
	Anchors placed at joints of the insulation product	R <sub>joint</sub> in dry conditions	min.: <b>0.32 kN</b> mean: <b>0.37 kN</b>	min.: <b>0.34 kN</b> mean: <b>0.37 kN</b>	min.: <b>0.83 kN</b> mean: <b>0.96 kN</b>
		R <sub>joint</sub> in wet conditions	No performance assessed		

### 3.3.6 Render strip tensile test

Table No. 12

		Glass fibre mesh <b>SEMPRE 150</b> and <b>AKE 145</b> (manufacturer: SAINT-GOBAIN ADFORS CZ s.r.o.)					
		Crack width $W_{typ}$ [mm]/ number of cracks at relative elongation $\epsilon$					
Load direction		$\epsilon = 0.3 \%$	$\epsilon = 0.5 \%$	$\epsilon = 0.8 \%$	$\epsilon = 1.0 \%$	$\epsilon = 1.5 \%$	$\epsilon = 2.0 \%$
Warp	Sample No. 1	$\leq 0.05/7$	$\leq 0.05/12$	$\leq 0.05/21$	$\leq 0.05/23$	$\leq 0.05/27$	$\leq 0.05/30$ $\leq 0.10/2$
	Sample No. 2	$\leq 0.05/8$	$\leq 0.05/13$	$\leq 0.05/23$	$\leq 0.05/26$	$\leq 0.05/28$	$\leq 0.05/28$ $\leq 0.10/5$
	Sample No. 3	$\leq 0.05/8$	$\leq 0.05/11$	$\leq 0.05/23$	$\leq 0.05/24$	$\leq 0.05/27$	$\leq 0.05/29$ $\leq 0.10/3$
Weft	Sample No. 1	$\leq 0.05/7$	$\leq 0.05/12$	$\leq 0.05/18$	$\leq 0.05/25$	$\leq 0.05/30$	$\leq 0.05/27$ $\leq 0.10/6$
	Sample No. 2	$\leq 0.05/9$	$\leq 0.05/13$	$\leq 0.05/21$	$\leq 0.05/26$	$\leq 0.05/26$ $\leq 0.10/3$	$\leq 0.05/22$ $\leq 0.10/11$
	Sample No. 3	$\leq 0.05/9$	$\leq 0.05/12$	$\leq 0.05/20$	$\leq 0.05/27$	$\leq 0.05/27$ $\leq 0.10/2$	$\leq 0.05/27$ $\leq 0.10/8$

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

	Characteristic width of cracks $W_{rk}$ [mm] at render strain value of 0.8%	
	Warp direction	Weft direction
<b>SEMPRE 150</b>	0.050	0.050
<b>AKE 145</b>	0.050	0.050

The width of cracks in reinforced base coat at 2% elongation is equal or lower than 0.10 mm.

## 3.4 Protection against noise (BWR 5)

### 3.4.1 Airborne sound insulation

No performance assessed.

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

#### 3.5.1 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:

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

Where:

- $R_i$  thermal resistance of the insulation product (according to declaration in reference to EN 13162) 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.



### 3.6 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 systems 1 and 2+ are valid (further described in Annex V to Regulation (EU) No. 305/2011).

Table No. 14

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 28/02/2017



By  
**Ing. Mária Schaán**

Head of the Technical Assessment Body (TAB)

*Annexes:*

- |             |  |
|-------------|--|
| Annex No. 1 | Insulation product characteristics for bonded ETICS with additional mechanical fixing – MW lamella                         |
| Annex No. 2 | Insulation product characteristics for mechanically fixed ETICS with additional bonding – MW panel (TR15)                  |
| Annex No. 3 | Insulation product characteristics for mechanically fixed ETICS with additional bonding – MW panel (TR10)                  |
| Annex No. 4 | Insulation product characteristics for mechanically fixed ETICS with additional bonding – MW panel of multi-layered (TR10) |
| Annex No. 5 | Anchors, description of individual product characteristics contained in the ETA  |
| Annex No. 6 | Description of glass fibre mesh  |



**Annex No. 1 Insulation product characteristics for bonded ETICS with additional mechanical fixing – MW lamella**

Description and characteristics		Regulation	Declared characteristics MW lamella	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501	A1	Apparent density ≤ 103 kg/m³
Thermal resistance		Defined in CE mark in accordance with EN 13162		
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	No additional treatment (homogenous, without coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m²
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m²
Diffusion factor (μ)		EN 12086 EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR80	≥ 80 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 50 kPa
Shear strength		EN 12090	---	≥ 20 kPa
Shear modulus of elasticity		EN 12090	---	≥ 1000 kPa

\* - highest value applies

**Note:** Classes and levels for individual characteristics comply with EN 13162:2012+A1:2015. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.

**Annex No. 2 Insulation product characteristics for mechanically fixed ETICS with additional bonding – MW panel (TR15)**

Description and characteristics		Regulation	Declared characteristics MW panel (TR15)	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501	A1	Apparent density ≤ 103 kg/m³
Thermal resistance		Defined in CE mark in accordance with EN 13162		
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	No additional treatment (homogenous, without coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m²
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m²
Diffusion factor (μ)		EN 12086 EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR15	≥ 15 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 6 kPa
Shear strength		EN 12090	---	---
Shear modulus of elasticity		EN 12090	---	---

\* - highest value applies

**Note:** Classes and levels for individual characteristics comply with EN 13162:2012+A1:2015. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.

**Annex No. 3 Insulation product characteristics for mechanically fixed ETICS with additional bonding – MW panel (TR10)**

Description and characteristics		Regulation	Declared characteristics MW panel (TR10)	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501	A1	Apparent density ≤ 103 kg/m³
Thermal resistance		Defined in CE mark in accordance with EN 13162		
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	No additional treatment (homogenous, without coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m²
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m²
Diffusion factor (μ)		EN 12086 EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR10	≥ 10 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 5 kPa
Shear strength		EN 12090	---	---
Shear modulus of elasticity		EN 12090	---	---

\* - highest value applies

**Note:** Classes and levels for individual characteristics comply with EN 13162:2012+A1:2015. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.



**Annex No. 4 Insulation product characteristics for mechanically fixed ETICS with additional bonding – MW panel of multi-layered (TR10)**

Description and characteristics		Regulation	Declared characteristics MW panel of multi-layered (TR10)	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501	A1	Apparent density ≤ 103 kg/m³
Thermal resistance		Defined in CE mark in accordance with EN 13162		
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	No additional treatment (homogenous, without coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m²
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m²
Diffusion factor (μ)		EN 12086 EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR10	≥ 10 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 5 kPa
Shear strength		EN 12090	---	---
Shear modulus of elasticity		EN 12090	---	---
Top layer apparent density (dry)		---	---	≥ 150 kg/m³
Top layer thickness		---	---	≥ 15 mm
Bottom layer apparent density (dry)		---	---	≥ 90 kg/m³

\* - highest value applies

**Note:** Classes and levels for individual characteristics comply with EN 13162:2012+A1:2015. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.

**Annex No. 5 Anchors, description of individual product characteristics contained in the ETA**

Trade name, additional data	Plate diameter (mm)	Characteristic pull-out resistance	Plate stiffness (kN/mm)	Load at plate rupture (kN)
<b>Surface assembly</b>				
<b>ejotherm STR U</b> <b>ejotherm STR U 2G</b> - EJOT Baubefestigungen GmbH - possible additional plates: <b>SBL 140 plus</b> <b>VT 90</b>	60	See ETA-04/0023	0.60	2.08
<b>KOELNER KI-10</b> <b>KOELNER KI-10PA</b> <b>KOELNER KI-10M</b> - KOELNER S.A. - possible additional plates: <b>KWL 140</b> <b>KWL 110</b> <b>KWL 090</b>	60	See ETA 07/0291	0.39	0.81
<b>KOELNER KI-10N</b> <b>KOELNER KI-10NS</b> - KOELNER S.A. - possible additional plates: <b>KWL 140</b> <b>KWL 110</b> <b>KWL 090</b>	60	See ETA 07/0221	0.50	1.23
<b>KOELNER TFIX-8S</b> <b>KOELNER TFIX-8ST</b> - RAWPLUG S.A. - possible additional plates: <b>KWL 140</b> <b>KWL 110</b> <b>KWL 090</b>	60	See ETA 11/0144	0.60	2.04
<b>LMXØ8</b> - Klimas Wkret-met Sp. z o.o. - possible additional plates: <b>TDX-140</b> <b>TDX-90</b>	60	See ETA 09/0001	0.50	1.53

Trade name, additional data	Plate diameter (mm)	Characteristic pull-out resistance	Plate stiffness (kN/mm)	Load at plate rupture (kN)
<b>WK THERM S</b> - Klimas Wkret-met Sp. z o.o. - possible additional plates: <b>TDX-140</b> <b>TDX-90</b>	60	See ETA 13/0724	0.60	4.30
<b>fischer termoz CN 8</b> - fischerwerke GmbH & Co. KG - possible additional plates: <b>DT 90</b> <b>DT 110</b> <b>DT 140</b>	60	See ETA 09/0394	0.60	1.70
<b>BRAVOLL® PTH-KZ 60/8</b> - BRAVOLL spol. s.r.o. - possible additional plates: <b>BRAVOLL® IT PTH 100</b> <b>BRAVOLL® IT PTH 140</b>	60	Viz ETA-05/0055	0,70	2,10
<b>BRAVOLL® PTH 60/8</b> - BRAVOLL spol. s.r.o. - possible additional plates: <b>BRAVOLL® IT PTH 100</b> <b>BRAVOLL® IT PTH 140</b>	60	Viz ETA-05/0055	0,60	1,63
<b>Countersunk assembly</b>				
<b>ejotharm STR U</b> <b>ejotharm STR U 2G</b> - EJOT Baubefestigungen GmbH - additional plate: <b>VT 90 plus 2G</b>	60	See ETA-04/0023	0.60	2.08
<b>KOELNER TFIX-8ST</b> - RAWPLUG S.A.	60	See ETA 11/0144	0.60	2.04
<b>Klimas Wkret-met screw-in plug eco-drive</b> - Klimas Wkret-met Sp. z o.o.	60	See ETA-13/0107	0.60	2.80



In addition to this list, anchors assessed in accordance with EAD 330196-00-0604 or ETAG 014 can be used provided that such anchors meet the following requirements:

	Requirements	
Plate diameter	$\geq 140$ mm	
Plate stiffness	Surface assembly:	$\geq 0.5$ kN/mm
	Countersunk assembly:	$\geq 0.6$ kN/mm
Rupture force of anchor's plate	$\geq 1.23$ kN and $\geq$ Higher of figures $R_{\text{panel}}$ and $R_{\text{joint}}$ in relevant table of Cl. 3.3.5	
Nail of the anchor	Made out of metal	

#### Annex No. 6 Description of glass fibre mesh

	Description	Strength after ageing	
	Standard fibre mesh applied in one or two layers with aperture size	Absolute strength after ageing (N/mm)	Relative residual strength after ageing, of the strength in the as-delivered state (%)
SEMPRE 150	4.0 x 4.5 mm	$\geq 20$	$\geq 50$
AKE 145	4.0 x 4.5 mm		