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European Technical Assessment

**ETA 17/1027
of 08/07/2019**

I General Part

Technical Assessment Body issuing the European Technical Assessment:
Technical and Test Institute for Construction Prague

Trade name of the construction product **SEMPRE TERM ST**

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)

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This European Technical Assessment contains 26 pages including 4 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. 4 Control Plan contains confidential information and is not included in the European Technical Assessment when that assessment is publicly disseminated.

This version replaces ETAG 004 used as EAD, 2013
External thermal Insulation Composite Systems (ETICS) with rendering
ETA 17/1027, version 01 issued on 10/09/2018

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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, 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 ²)	Thickness (mm)
Insulation products with associated methods of fixing	Bonded ETICS (fully or partially bonded) with or without supplementary anchors. National application documents shall be taken into account.		
	<ul style="list-style-type: none"> • Insulation product: EPS according to EN 13163 see Annex No. 1 for product characteristics 	/	50 - 300
	<ul style="list-style-type: none"> • Adhesives: min. bonded surface: 40 % - TESOROMONT START TS-100 - to be used with white EPS only - cement based powder requiring addition of water 0.18 - 0.22 l/kg - TESOROMONT UNIWERSALNY TU-200 - to be used with white or grey EPS - cement based powder requiring addition of water 0.20 - 0.24 l/kg 	4.0 - 4.5 (dry)	/

	Components	Coverage (kg/m ²)	Thickness (mm)
Insulation products with associated methods of fixing	Mechanically fixed ETICS with anchors and supplementary adhesive (see Cl. 3.3.5 and Annex No. 3 for possible associations EPS/anchors) National application documents shall be taken into account.		
	<ul style="list-style-type: none"> • Insulation product: EPS according to EN 13163 see Annex 1 and 2 for product characteristics 	/	50 - 300
	<ul style="list-style-type: none"> • Supplementary adhesives: min. bonded surface: 40 % <ul style="list-style-type: none"> - TESOROMONT START TS-100 - to be used with white EPS only - cement based powder requiring addition of water 0.18 - 0.22 l/kg - TESOROMONT UNIWERSALNY TU-200 - to be used with white or grey EPS - cement based powder requiring addition of water 0.20 - 0.24 l/kg 	4.0 - 4.5 (dry)	/
	<ul style="list-style-type: none"> • Anchors see Annex No. 3 for individual product characteristics. • In addition to the following list. Other anchors can be used provided that they comply with the requirements introduced in the Annex No. 3. 		
	<ul style="list-style-type: none"> - ejotherm STR U - ejotherm STR U 2G plastic screw-in anchor - EJOT SDM-T plus plastic screw-in anchor - KOELNER KI-10 - KOELNER KI-10PA - KOELNER KI-10M plastic nailed-in anchor - KI-10N - KI-10NS plastic nailed-in anchor - TFIX-8S - TFIX-8ST plastic screw-in anchor - LTX-8 - LMX-8 - LGX-8 - LTX-10 - LMX-10 - LGX-10 plastic anchor - eco-drive plastic screw-in anchor - WK THERM S plastic screw-in anchor - fischer termoz CN 8 plastic nailed-in anchor - BRAVOLL®PTH-KZ 60/8 plastic nailed-in anchor - EJOT H1 eco plastic nailed-in anchor - KOELNER KI-10, KI-10M plastic nailed-in anchor 	<p>ETA-04/0023</p> <p>ETA-04/0064</p> <p>ETA-07/0291</p> <p>ETA-07/0221</p> <p>ETA-11/0144</p> <p>ETA-16/0509</p> <p>ETA-13/0107</p> <p>ETA-13/0724</p> <p>ETA-09/0394</p> <p>ETA-05/0055</p> <p>ETA-11/0192</p> <p>ETA-07/0291</p>	

	Components	Coverage (kg/m ²)	Thickness (mm)
Base coat	<ul style="list-style-type: none"> • TESOROMONT UNIWERSALNY TU-200 cement based powder requiring addition of water 0.20 - 0.24 l/kg 	4.0 – 5.0 dry mixture	4 - 6
Reinforcement	<ul style="list-style-type: none"> • Standard mesh applied in one or two layers see Annex No. 4 for product characteristics: - SEMPRE 150 - AKE 145 	/	/
Key coat	<ul style="list-style-type: none"> - Tesoro Grunt - to be voluntarily used with TESORO finishing coats - ready to use liquid - Azuro Grunt - to be voluntarily used with AZURO finishing coats - ready to use liquid - Progresil Grunt - to be voluntarily used with PROGRESIL finishing coats - ready to use liquid - Mineral Grunt - to be voluntarily used with TESORO MINERAL TM-300 finishing coats - ready to use liquid - Multigrunt - to be voluntarily used with all types of finishing coats - ready to use liquid - BORDO ART G - to be voluntarily used with mineral finishing coat BORDO ART T - ready to use liquid 	0.15	/

	Components	Coverage (kg/m ²)	Thickness (mm)
Finishing coats	<ul style="list-style-type: none"> • Ready to use paste - acrylate binder: <ul style="list-style-type: none"> - TESORO - TESORO INVEST - floated structure (particle size 1.5; 2.0; 2.5; 3.0 mm) - TESORO - ribbed structure (particle size 1.5; 2.0; 2.5; 3.0 mm) 	2.3 - 4.5	Regulated by particle size
	<ul style="list-style-type: none"> • Ready to use paste - silicone binder: <ul style="list-style-type: none"> - AZURO - AZURO Invest - AZURO Premium Nanotechnology - floated structure (particle size 1.5; 2.0; 2.5; 3.0 mm) - AZURO - AZURO Invest - AZURO Premium Nanotechnology - ribbed structure (particle size 1.5; 2.0; 2.5; 3.0 mm) 	2.3 - 4.5	
	<ul style="list-style-type: none"> • Ready to use paste - polysilicate binder: <ul style="list-style-type: none"> - MARESIL - floated structure (particle size 1.5; 2.0; 2.5; 3.0 mm) - MARESIL - ribbed structure (particle size 1.5; 2.0; 2.5; 3.0 mm) 	2.3 - 4.5	
	<ul style="list-style-type: none"> • Ready to use paste - silicone-silicate binder: <ul style="list-style-type: none"> - PROGRESIL - floated structure (particle size 1.5; 2.0; 2.5; 3.0 mm) - PROGRESIL - ribbed structure (particle size 1.5; 2.0; 2.5; 3.0 mm) 	2.3 - 4.5	
	<ul style="list-style-type: none"> • Ready to use paste - silicate binder: <ul style="list-style-type: none"> - DIAMANTE - floated structure (particle size 1.5; 2.0; 2.5; 3.0 mm) 	2.3 - 4.5	
	<ul style="list-style-type: none"> • Powder to be mixed with water <ul style="list-style-type: none"> - mineral binder: - TESORO MINERAL TM-300 - floated structure (particle size 1.5; 2.0; 2.5; 3.0 mm) water consumption: 0.24 – 0.28 l/kg 	2.0 - 4.5	

	Components	Coverage (kg/m²)	Thickness (mm)
Finishing coats	<ul style="list-style-type: none"> - TESORO MINERAL TM-300 - ribbed structure (particle size 1.5; 2.0; 2.5; 3.0 mm) water consumption: 0.24 – 0.28 l/kg - BORDO ART T water consumption: 0.22 – 0.26 l/kg 	2.0 - 4.5	4 - 5
		6.0 – 10.0	
Protective coat	<ul style="list-style-type: none"> • Ready to use liquid – primer for MARESIL paint: - MARESIL GRUNT F - to be voluntarily used with TESORO MINERAL TM-300 	0.10 – 0.20 l/m ²	/
	<ul style="list-style-type: none"> • Ready to use liquid - paint: - MARESIL FARBA - to be voluntarily used with TESORO MINERAL TM-300 	0.17 – 0.25 l/m ²	/
	<ul style="list-style-type: none"> • Ready to use liquid – primer for BORDO ART L paint: - SEMPRE GRUNT GP - to be voluntarily used with BORDO ART T 	0.20 l/m ²	/
	<ul style="list-style-type: none"> • Ready to use liquid - paint: - BORDO ART L - to be voluntarily used with BORDO ART T 	0.30 l/m ²	/
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 S/W2, 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 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 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 0.40 MJ/kg	No flame retardant	B – s2, d0
Boards of expanded polystyrene EPS Maximal density of 15.4 kg/m ³	/	In quantity ensuring Euroclass E according to EN 13501-1	
Base coat render	Max 0.40 MJ/kg	No flame retardant	
Key coat	Max 0.54 MJ/m ²	No flame retardant	
Glass fibre mesh	Max 1.13 MJ/m ²	No flame retardant	
Finishing coats	Max 2.62 MJ/kg	No flame retardant	
Protective coats	No performance assessed for the use of protective coats		

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 UNIWERSALNY TU-200:**

Water absorption after 1 hour < 1 kg/m²

Water absorption after 24 hours < 0.5 kg/m²

- Rendering system:

Table No. 3

		Water absorption after 24 hours	
		< 0.5 kg/m ²	≥ 0.5 kg/m ²
Rendering system: Base coat TESOROMONT UNIWERSALNY TU-200 + finishing coats indicated hereafter:	TESORO TESORO INVEST	X	
	AZURO AZURO Invest AZURO Premium Nanotechnology	X	
	MARESIL	X	
	PROGRESIL	X	
	DIAMANTE	X	
	TESORO MINERAL TM-300	X	
	BORDO ART T	X	

3.2.2 Watertightness (ETAG 004 - clause 5.1.3.2)

3.2.2.1 Hygrothermal behaviour

Pass (without 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 TESOROMONT UNIWERSALNY TU-200 + reinforcement and finishing coats indicated hereafter:	Insulation product: EPS (TR100)
	Single standard mesh: AKE 145 or SEMPRE 150
TESORO TESORO INVEST	Category III
AZURO AZURO Invest AZURO Premium Nanotechnology	Category III
MARESIL	Category III
PROGRESIL	Category III
DIAMANTE	Category III
TESORO MINERAL TM-300	Category III
BORDO ART T	Category II

Table No. 5

Rendering system: base coat TESOROMONT UNIWERSALNY TU-200 + reinforcement and finishing coats indicated hereafter:	Insulation product: EPS (TR80)
	Single standard mesh: AKE 145 or SEMPRE 150
TESORO TESORO INVEST	Category III
AZURO AZURO Invest AZURO Premium Nanotechnology	Category III
MARESIL	Category III
PROGRESIL	Category III
DIAMANTE	Category III
TESORO MINERAL TM-300	Category III
BORDO ART T	Category III

3.2.4 Water vapour permeability (ETAG 004 - clause 5.1.3.4)

Table No. 6

Rendering system: base coat TESOROMONT UNIWERSALNY TU-200 + reinforcement + and finishing coats indicated hereafter	Equivalent air thickness s_d
TESORO TESORO INVEST	≤ 0.85 m
AZURO AZURO Invest AZURO Premium Nanotechnology	≤ 0.72 m
MARESIL	≤ 0.38 m
PROGRESIL	≤ 0.87 m
DIAMANTE	≤ 0.33 m
TESORO MINERAL TM-300	≤ 0.37 m
BORDO ART T	≤ 0.52 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)

- **TESOROMONT UNIWERSALNY TU-200**
 - Initial state: bond strength ≥ 0.104 MPa and a cohesive failure in the insulation product
 - After hygrothermal cycles: bond strength ≥ 0.107 MPa and 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 hrs. immersion in water + 2 hrs. 23°C/50% RH	48 hrs. immersion in water + 7 days 23°C/50% RH
TESOROMONT START TS-100	Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa
	Expanded polystyrene (EPS)	≥ 0.08 MPa	≥ 0.03 MPa	≥ 0.08 MPa
TESOROMONT UNIWERSALNY TU-200	Expanded polystyrene (EPS)	≥ 0.08 MPa	≥ 0.03 MPa	≥ 0.08 MPa

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

- After ageing by hygrothermal cycles: bond strength ≥ 0.099 MPa and cohesive failure in the insulation product
- After 7 days of immersion in water and 7 days of drying : ≥ 0.117 MPa and cohesive failure in 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)

Table No. 8

Anchor description	Trade name		See Annex No. 3	
	Assembly:		Surface assembly	Countersunk assembly
	Plate diameter (mm)		60 or more	60 or more
EPS characteristics	Thickness (mm)		≥ 50	≥ 100
	Tensile strength perpendicular to faces (kPa)		≥ 116 (in dry condition)	
Maximal load	Anchors placed at the body of the insulation product	R_{panel}	min. value: 0.55 kN mean value: 0.58 kN	
	Anchors placed at joints of the insulation product	R_{joint}	min. value: 0.44 kN mean value: 0.47 kN	

Table No. 8

Anchor description	Trade name		See Annex No. 3	
			Surface assembly	Countersunk assembly
	Plate diameter (mm)		60 or more	60 or more
EPS characteristics	Thickness (mm)		≥ 50	≥ 100
	Tensile strength perpendicular to faces (kPa)		≥ 109 (in dry condition)	
Maximal load	Anchors placed at the body of the insulation product	R_{panel}	min. value: 0.44 kN mean value: 0.46 kN	
	Anchors placed at joints of the insulation product	R_{joint}	min. value: 0.44 kN mean value: 0.47 kN	

3.3.6 Render strip tensile test (Cl. 5.5.4.1)

- Base coat **TESOROMONT UNIWERSALNY TU-200**

Table No. 9

		Glass fibre mesh SEMPRE 150 and AKE 145 (manufacturer: SAINT-GOBAIN ADFORS CZ s.r.o.)					
		Crack width W_{typ} [mm]/ number of cracks at relative elongation ϵ					
Load direction		$\epsilon = 0.3 \%$	$\epsilon = 0.5 \%$	$\epsilon = 0.8 \%$	$\epsilon = 1.0 \%$	$\epsilon = 1.5 \%$	$\epsilon = 2.0 \%$
Plane side of the test specimen							
Warp	Sample No. 1	$\leq 0.05/8$	$\leq 0.05/15$	$\leq 0.05/23$	$\leq 0.05/27$	Not reached	Not reached
	Sample No. 2	$\leq 0.05/10$	$\leq 0.05/20$	$\leq 0.05/26$	$\leq 0.05/29$	Not reached	Not reached
	Sample No. 3	$\leq 0.05/10$	$\leq 0.05/18$	$\leq 0.05/24$	$\leq 0.05/27$	Not reached	Not reached
Weft	Sample No. 1	$\leq 0.05/14$	$\leq 0.05/23$	$\leq 0.05/25$	$\leq 0.05/30$	$\leq 0.05/31$ $\leq 0.10/1$	Not reached
	Sample No. 2	$\leq 0.05/12$	$\leq 0.05/22$	$\leq 0.05/28$	$\leq 0.05/30$	$\leq 0.05/31$	Not reached
	Sample No. 3	$\leq 0.05/13$	$\leq 0.05/23$	$\leq 0.05/27$	$\leq 0.05/29$	$\leq 0.05/30$ $\leq 0.10/1$	Not reached
Coarse side of the test specimen							
Warp	Sample No. 1	$\leq 0.05/10$	$\leq 0.05/14$	$\leq 0.05/21$	$\leq 0.05/23$	Not reached	Not reached
	Sample No. 2	$\leq 0.05/13$	$\leq 0.05/19$	$\leq 0.05/24$	$\leq 0.05/27$	Not reached	Not reached
	Sample No. 3	$\leq 0.05/12$	$\leq 0.05/16$	$\leq 0.05/22$	$\leq 0.05/25$	Not reached	Not reached
Weft	Sample No. 1	$\leq 0.05/12$	$\leq 0.05/17$	$\leq 0.05/18$ $\leq 0.10/2$	$\leq 0.05/16$ $\leq 0.10/5$	$\leq 0.05/12$ $\leq 0.10/11$ $\leq 0.15/1$	Not reached
	Sample No. 2	$\leq 0.05/10$	$\leq 0.05/14$	$\leq 0.05/15$ $\leq 0.10/2$	$\leq 0.05/16$ $\leq 0.10/5$	$\leq 0.05/12$ $\leq 0.10/10$ $\leq 0.15/2$	Not reached
	Sample No. 3	$\leq 0.05/12$	$\leq 0.05/16$	$\leq 0.05/17$ $\leq 0.10/1$	$\leq 0.05/15$ $\leq 0.10/5$	$\leq 0.05/13$ $\leq 0.10/10$ $\leq 0.15/1$	Not reached

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. 10

	Characteristic width of cracks W_{rk} [mm] at render strain value of 0.8%			
	Warp direction		Weft direction	
	Plane side	Coarse side	Plane side	Coarse side
SEMPRE 150	0.05	0.05	0.05	0.10
AKE 145	0.05	0.05	0.05	0.10

The width of cracks in reinforced base coat at 2% elongation was not measured, test specimens have failed before the 2% elongation was tested.

3.3.7 Airborne sound insulation

No performance assessed.

3.4 Energy economy and heat retention (BWR 6)

3.4.1 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/(m².K)
- U_c global (corrected) thermal transmittance of the covered wall (W/ (m².K))
- n number of anchors (through insulation product) per 1 m²
- χ_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/ (m².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) in (m².K)/W
- R_{render} thermal resistance of the rendering system (about 0.02 in (m².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 (m².K)/W
- R_{se} external superficial thermal resistance in (m².K)/W
- R_{si} internal superficial thermal resistance in (m².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.

3.5 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. 11

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 ⁽¹⁾ , A2 ⁽¹⁾ , B ⁽¹⁾ , C ⁽¹⁾	1
		A1 ⁽²⁾ , A2 ⁽²⁾ , B ⁽²⁾ , C ⁽²⁾ , D, E, (A1 to E) ⁽³⁾ , F	2+
	In external wall not subject to fire regulations	Any	2+

⁽¹⁾ 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)

⁽²⁾ Products/materials not covered by footnote (1)

⁽³⁾ 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 08/07/2019


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Head of the Technical Assessment Body

Annexes:

- Annex No. 1 Insulation product characteristics for bonded ETICS
- Annex No. 2 Insulation product characteristics for mechanically fixed ETICS
- Annex No. 3 Anchors, description of individual product characteristics contained in the ETA
- Annex No. 4 Description of glass fibre mesh

Annex No. 1 Insulation product characteristics for bonded ETICS

Description and characteristics		Regulation	Declared characteristics of EPS boards for bonded ETICS	
			Class, level according to EN 13163	Value
Reaction to fire		EN 13501	E	Apparent density $\leq 15.4 \text{ kg/m}^3$
Thermal resistance		EN 12667	Defined in CE mark in accordance with EN 13163	
Thickness		EN 823	T(2)	$\pm 2 \text{ mm}$
Length		EN 822	L(2)	$\pm 2 \text{ mm}$
Width			W(2)	$\pm 2 \text{ mm}$
Squareness		EN 824	S(5)	$\pm 5 \text{ mm/m}$
Flatness		EN 825	P(5)	5 mm
Bending strength		EN 12089	BS100	$\geq 100 \text{ kPa}$
Surface		ETAG 004	Cut surface (homogenous, without coating)	
Addition of graphite (colour)		---	Allowed (grey or white)	
Dimensional stability	Under defined temperature and humidity conditions	EN 1604	DS(70,-)2	2%
	Under constant laboratory conditions	EN 1603	DS(N)2	0.2%
Short term water absorption at partial immersion		EN 1609	---	$< 1 \text{ kg/m}^2$
Diffusion factor (μ)		EN 13163	MU 20 – 40 MU 30 – 70	20 - 70
Tensile strength perpendicular to the faces of insulation product		EN 1607	TR100	$\geq 100 \text{ kPa}$
Shear strength		EN 12090	SS20	$\geq 20 \text{ kPa}$
Shear modulus of elasticity			GM1000	$\geq 1000 \text{ kPa}$

Note: Classes and levels for individual characteristics comply with EN 13163:2012+A1:2015. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.

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

Annex No. 2 Insulation product characteristics for mechanically fixed ETICS

Description and characteristics		Regulation	Declared characteristics of EPS boards for mechanically fixed ETICS	
			Class, level according to EN 13163	Value
Reaction to fire		EN 13501	E	Apparent density $\leq 15.4 \text{ kg/m}^3$
Thermal resistance		EN 12667	Defined in CE mark in accordance with EN 13163	
Thickness		EN 823	T(2)	$\pm 2 \text{ mm}$
Length		EN 822	L(2)	$\pm 2 \text{ mm}$
Width			W(2)	$\pm 2 \text{ mm}$
Squareness		EN 824	S(5)	$\pm 5 \text{ mm/m}$
Flatness		EN 825	P(5)	5 mm
Bending strength		EN 12089	BS75	$\geq 75 \text{ kPa}$
Surface		ETAG 004	Cut surface (homogenous, without coating)	
Addition of graphite (colour)		---	Allowed (grey or white colour)	
Dimensional stability	Under defined temperature and humidity conditions	EN 1604	DS(70,-)2	2%
	Under constant laboratory conditions	EN 1603	DS(N)2	0.2%
Short term water absorption at partial immersion		EN 1609	---	$< 1 \text{ kg/m}^2$
Diffusion factor (μ)		EN 13163	MU 20 – 40 MU 30 – 70	20 - 70
Tensile strength perpendicular to the faces of insulation product		EN 1607	TR80	$\geq 80 \text{ kPa}$

Note: Classes and levels for individual characteristics comply with EN 13163:2012+A1:2015. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.

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

Annex No. 3 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)
Surface assembly				
ejotherm STR U ejotherm STR U 2G - EJOT Baubefestigungen GmbH - additional slip-on washer: SBL 140 plus VT 90	60	See ETA-04/0023	0.60	2.08
EJOT SDM-T plus - EJOT Baubefestigungen GmbH - additional slip-on washer: SBL 140 plus SBL 110 plus VT 90	60	See ETA-04/0064	0.70	2.24
KOELNER KI-10 KOELNER KI-10PA KOELNER KI-10M (values in brackets apply) - RAWLPLUG S.A. - additional slip-on washer: KWL-90 KWL-110 KWL-140	60	See ETA-07/0291	0.50 (0.40)	2.1 (2.6)
KI-10N KI-10NS - RAWLPLUG S.A. - additional slip-on washer: KWL-90 KWL-110 KWL-140	60	See ETA-07/0221	0.5	1.23
TFIX-8S - KOELNER S.A. - additional slip-on washer: KWL 90 KWL 110 KWL 140	60	See ETA-11/0144	0.6	2.04

Trade name	Plate diameter (mm)	Characteristic pull-out resistance	Plate stiffness (kN/mm)	Load at plate rupture (kN)
LTX-8 LMX-8 LGX-8 LTX-10 KLIMAS Sp. z o. o - additional slip-on washer: TDX-P-90/TDX-90 TDX-P-140/TDX-140	60	See ETA-16/0509	0.5	1.09 (1.02)
LTX-10 LMX-10 LGX-10 - KLIMAS Sp. z o. o - additional slip-on washer: TDX-P-90/TDX-90 TDX-P-140/TDX-140	60	See ETA-16/0509	0.5	1.02
eco-drive - Klimas Wkret-met Sp. z o. o.	60	See ETA-13/0107	0.6	2.8
WK THERM S - Klimas Wkret-met Sp. z o. o. - additional slip-on washer: TDX-90 TDX-140	60	See ETA-13/0724	0.6	4.3
fischer termoz CN 8 - fischerwerke GmbH & Co. KG - additional slip-on washer: DT 90 DT 110 DT 140	60	See ETA-09/0394	0.6	1.7
BRAVOLL® PTH-KZ 60/8 - ITW Construction Products CZ s.r.o. - additional slip-on washer: BRAVOLL® IT PTH 100 BRAVOLL® IT PTH 140	60	See ETA-05/0055	0.7	2.1

Trade name	Plate diameter (mm)	Characteristic pull-out resistance	Plate stiffness (kN/mm)	Load at plate rupture (kN)
Countersunk assembly				
ejotherm STR U ejotherm STR U 2G - EJOT Baubefestigungen GmbH - additional slip-on washer: SBL 140 plus VT 90	60	See ETA-04/0023	0.6	2.08
TFIX-8ST - KOELNER S.A.	60	See ETA-11/0144	0.6	2.04
LTX-8 LMX-8 LGX-8 LTX-10 KLIMAS Sp. z o. o - additional slip-on washer: TDX-P-90/TDX-90 TDX-P-140/TDX-140	60	See ETA-16/0509	0.5	1.09 (1.02)
LTX-10 LMX-10 LGX-10 - KLIMAS Sp. z o. o - additional slip-on washer: TDX-P-90/TDX-90 TDX-P-140/TDX-140	60	See ETA-16/0509	0.5	1.02

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	≥ 60 mm	
Plate stiffness	Surface assembly:	≥ 0.5 kN/mm
	Countersunk assembly:	≥ 0.5 kN/mm
Rupture force of anchor's plate	≥ 1.02 kN and ≥ Higher of figures R_{panel} and R_{joint} in relevant table in Cl. 3.3.5	
Countersunk depth	≤ 50 mm	

Annex No. 4 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	≥ 20	≥ 50
AKE 145	4.0 x 4.5 mm		