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European Technical Assessment

ETA-20/1277
of 04/02/2021

General Part

Technical Assessment Body issuing the European Technical Assessment:
Łukasiewicz Research Network – Institute of Ceramics and Building Materials

Trade name of the construction product

TERMONIUM Termo Organika® Thermal
Insulation System

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

External Thermal Insulation Composite
Systems (ETICS) with renderings

Manufacturer

Termo Organika Sp. z o.o.
B. Prusa 33
30-117 Kraków, POLAND

Manufacturing plants

Plant A, Plant G, Plant M, Plant P,
Plant R, Plant S

**This European Technical Assessment
contains**

15 pages including 2 Annexes which form
an integral part of this assessment.

Annexes: No 3 Control Plan and No 4
Identification of manufacturing plants
contain confidential information and are not
included in the European Technical
Assessment when that assessment is
publicly available.

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

EAD 040083-00-0404

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Specific part

1. Technical description of the product

This product TERMONIUM Termo Organika® Thermal Insulation System is an ETICS (External Thermal Insulation Composite System with rendering) - a kit comprising components which are factory-produced by the owner/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 onto a wall. The method of fixing and the relevant components are specified in Table 1. The insulation product is faced with a rendering system consisting of one or more layers (site applied), one of which contains reinforcement. The rendering is applied directly to the insulating panels, without any air gap or disconnecting layer.

The ETICS may include special fittings (e.g. base profiles, corner profiles) to treat details of ETICS (connections, apertures, corners, parapets, sills). Assessment and performance of these components is not addressed in this ETA, however the ETICS manufacturer is responsible for adequate compatibility and performance within the ETICS when the components are delivered as a part of the kit.

Table 1.

	Components	Coverage (kg/m ²)	Thickness (mm)
Bonded ETICS; partially bonded with optional supplementary mechanical fixings. National application documents shall be taken into account.			
Insulation materials with associated methods of fixing	<ul style="list-style-type: none"> Insulation product: Panels of expanded polystyrene (EPS) according to EN 13163 TERMONIUM fasada TERMONIUM PLUS fasada <i>Product characteristics - see Annex No 1</i> 	-	20 to 300
	<ul style="list-style-type: none"> Adhesive: Universal adhesive TERMONIUM Cement based powder requiring addition of 0,20-0,24 l/kg of water 	4,0 to 5,0	-
	<ul style="list-style-type: none"> Supplementary mechanical fixings: Plastic anchors covered by relevant ETA 	-	-
Base coat	<ul style="list-style-type: none"> Universal adhesive TERMONIUM Cement based powder requiring addition of 0,20-0,24 l/kg of water 	4,0 to 5,0	3,0 to 5,0

Table 1. cont.

	Components	Coverage (kg/m ²)	Thickness (mm)
Reinforce- ment	<ul style="list-style-type: none"> • Standard glass fibre mesh TERMONIUM (Typ TO-S170/160) <i>Product characteristics - see Annex No 2</i> 	-	-
Key coat	Contact key coat TERMONIUM Ready to use liquid to be used with all finishing coats	0,20 to 0,30 l/m ²	-
Finishing coats	<ul style="list-style-type: none"> • Silicone finishing coats. Ready to use pastes – silicone-acrylic binder: Silicone finishing coat TERMONIUM Structure - particles size: floated - 1,0; 1,5; 2,0; 2,5; 3,0 mm ribbed - 1,0; 1,5; 2,0; 2,5; 3,0 mm Silicone finishing coat TERMONIUM M for mechanical application Structure - particles size: floated - 1,5; 2,0 mm 	1,5 to 4,7 1,5 to 4,7 1,8 to 2,7	Regulated by particles size
Ancillary materials	Remain under the manufacturer's responsibilities		

* the components listed in Table 1 of this ETA are compatible with the components of the Termo Organika® Thermal Insulation System covered by ETA-15/0660.

2. Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD)

This ETICS is intended for use as external insulation of buildings' walls. The walls are made of masonry (bricks, blocks, stones) or concrete (cast on site or as prefabricated panels).

The ETICS 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 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 is not intended to ensure the airtightness of the building structure.

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.

Design, installation, maintenance and repair of ETICS shall be in conformity with Member States' legislation requirements.

The instructions regarding packaging, transport, storage and installation of ETICS are specified in the manufacturer's technical documentation.

The ETICS belongs to Category S/W2 according to EOTA Technical Report No 034.

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 No 1+2.

3.1. Safety in case of fire (BWR 2)

3.1.1. Reaction to fire (EAD 040083-00-0404: clause 2.2.1, EN 13501-1)

Table 2.

Configuration	Max. organic content / Max. heat of combustion	Flame retardant content	Euroclass acc. to EN 13501-1
TERMONIUM Termo Organika® Thermal Insulation System			
Adhesive	100 % / -	No flame retardant	B-s1, d0
EPS panels* density ≤ 25 kg/m³	- / -		
Base coat	1,5 % / -		
Glass fibre mesh	- / 1,93 MJ/m²		
Key coat	15,0 % / -		
Finishing coat	20,0 % / 12,1 MJ/m²		
*flame retardant content in quantity ensuring Euroclass E according to EN 13501-1			

Note: 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 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. Content, emission and/or release of dangerous substances – leachable substances (EAD 040083-00-0404: clause 2.2.4, EOTA TR034)

No performance assessed.

Note: There may be requirements applicable to the ETICS falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Regulation (EU) No 305/2011, these requirements need to be complied with, when and where they apply.

3.2.2. Water absorption (EAD 040083-00-0404: clause 2.2.5)

3.2.2.1. Water absorption of the base coat and the rendering system (EAD 040083-00-0404: clause 2.2.5.1)

- Base coat Universal adhesive TERMONIUM:
 - Water absorption after 1 hour < 1 kg/m²;
 - Water absorption after 24 hours < 0,5 kg/m².
- Rendering systems: Table 3.

Table 3.

		Water absorption after 24 hours	
		<0,5 kg/m ²	≥0,5 kg/m ²
Rendering system: Base coat: Universal adhesive TERMONIUM + Contact key coat TERMONIUM + finishing coat indicated hereafter:	Silicone finishing coat TERMONIUM	-	x
	Silicone finishing coat TERMONIUM M	-	x

3.2.2.2. Water absorption of the thermal insulation product (EAD 040083-00-0404: clause 2.2.5.2)

No performance assessed.

3.2.3. Water-tightness of the ETICS: Hygrothermal behaviour (EAD 040083-00-0404: clause 2.2.6)

Pass (without defects).

3.2.4. Water-tightness: Freeze-thaw performance (EAD 040083-00-0404: clause 2.2.7)

ETICS is frost resistant according to water absorption test.

3.2.5. Impact resistance (EAD 040083-00-0404: clause 2.2.8)

Table 4.

		Single layer of mesh TERMONIUM (Typ TO-S170/160)
Rendering system: Base coat: Universal adhesive TERMONIUM + Contact key coat TERMONIUM + finishing coat indicated hereafter:	Silicone finishing coat TERMONIUM	Category II
	Silicone finishing coat TERMONIUM M	Category II

3.2.6. Water vapour permeability (EAD 040083-00-0404: clause 2.2.9)

3.2.6.1. Water vapour permeability of the rendering system (equivalent air thickness s_d) (EAD 040083-00-0404: clause 2.2.9.1)

Table 5.

		Equivalent air thickness s_d
Rendering system: Base coat: Universal adhesive TERMONIUM + Contact key coat TERMONIUM + finishing coat indicated hereafter:	Silicone finishing coat TERMONIUM	≤ 2 m, result: 0,20 m
	Silicone finishing coat TERMONIUM M	≤ 2 m, result: 0,20 m

3.2.6.2. Water vapour permeability of the thermal insulation product (water-vapour resistance factor) (EAD 040083-00-0404: clause 2.2.9.2)

See Annex No 1.

3.3. Safety and accessibility in use (BWR 4)

3.3.1. Bond strength (EAD 040083-00-0404: clause 2.2.11)

3.3.1.1. Bond strength between the base coat and the thermal insulation product (EAD 040083-00-0404: clause 2.2.11.1)

Bond strength between base coat Universal adhesive TERMONIUM
and insulation product ≥ 80 kPa

3.3.1.2. Bond strength between the adhesive and the substrate (EAD 040083-00-0404: clause 2.2.11.2)

Table 6.

	Initial state	48 h immersion in water + 2 hours 23°C/50% RH	48 h immersion in water + 7 days 23°C/50% RH
Universal adhesive TERMONIUM	≥ 250 kPa	≥ 80 kPa	≥ 250 kPa

3.3.1.3. Bond strength between the adhesive and the thermal insulation product (EAD 040083-00-0404: clause 2.2.11.3)

Table 7.

	Initial state	48 h immersion in water + 2 hours 23°C/50% RH	48 h immersion in water + 7 days 23°C/50% RH
Universal adhesive TERMONIUM*	≥ 80 kPa	≥ 30 kPa	≥ 80 kPa
* minimal bonded surface area S: 38 %			

3.3.2. Fixing strength (transverse displacement test) (EAD 040083-00-0404: clause 2.2.12)

No performance assessed.

3.3.3. Render strip tensile test (EAD 040083-00-0404: clause 2.2.17)

No performance assessed.

3.3.4. Bond strength after ageing (EAD 040083-00-0404: clause 2.2.20)

Table 8.

		After hygrothermal cycles
Rendering system: Base coat: Universal adhesive TERMONIUM + Contact key coat TERMONIUM + finishing coat indicated hereafter:	Silicone finishing coat TERMONIUM	≥ 80 kPa
	Silicone finishing coat TERMONIUM M	≥ 80 kPa

3.3.5. Mechanical and physical characteristics of the mesh (EAD 040083-00-0404: clause 2.2.21)

See Annex No 2.

3.4. Protection against noise (BWR 5)

3.4.1. Airborne sound insulation of ETICS (EAD 040083-00-0404: clause 2.2.22)

No performance assessed.

3.5. Energy economy and heat retention (BWR 6)

3.5.1. Thermal resistance and thermal transmittance of ETICS (EAD 040083-00-0404: clause 2.2.23)

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

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

where:

$\chi_p \cdot n$ has only to be taken into account if it is greater than 0,04 W/(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

($\chi_p \cdot n$ negligible for $n < 20$)

= 0,004 W/K for anchors with a galvanized steel screw with the head covered by a plastic material ($\chi_p \cdot n$ negligible for $n < 10$)

= negligible for anchors with plastic nails (reinforced or not with glass fibres)

U : thermal transmittance of the current part of the covered wall (excluding thermal bridges) (W/ (m²·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 13163) in (m²·K)/W

R_{render} : thermal resistance of the render (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 depending on thicknesses. In addition, the point thermal conductivity of anchors shall be given when anchors are used in the ETICS.

3.5.2. Thermal resistance of the thermal insulation product (EAD 040083-00-0404: clause 2.2.23.1)

See Annex No 1.

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 (further described in Annex V to Regulation (EU) No 305/2011) 1 and 2+ apply.

Table 9.

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)

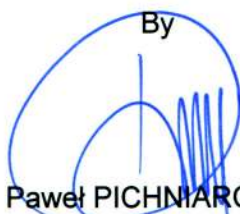
5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

The manufacturer shall perform a permanent internal factory production control based on the Control Plan.

The Control Plan for the manufacturer is specified in clause 3.2 of EAD 040083-00-0404 *External Thermal Insulation Composite Systems (ETICS) with renderings*.

The manufacturer and Łukasiewicz Research Network – Institute of Ceramics and Building Materials TAB have agreed a Control Plan which is deposited at Łukasiewicz Research Network – Institute of Ceramics and Building Materials TAB in documentation which accompanies ETA.

Issued in Krakow on 04.02.2021

By


Paweł PICHNIARCZYK

Director of Łukasiewicz Research Network – Institute of Ceramics and Building Materials

Annexes:

Annex No 1 – Insulation product characteristics

Annex No 2 – Glass fibre meshes characteristics

Annex No 1 – Insulation product characteristics

		EPS panels, produced by Termo Organika Sp. z o.o.
Reaction to fire / EN 13501-1		Euroclass – E max. density: 25 kg/m ³
Thermal resistance		Defined in the CE marking in reference to EN 13163 (m ² ·K)/W
Thickness / EN 823		± 2 mm [EN 13163 - T(2)]
Length / EN 822		± 2 mm [EN 13163 - L(2)]
Width / EN 822		± 2 mm [EN 13163 - W(2)]
Squareness / EN 824		± 5 mm/m [EN 13163 - S(5)]
Flatness / EN 825		10 mm [EN 13163 - P(10)]
Dimensional stability under specified conditions	EN 1603	± 0,2 % [EN 13163 - DS(N)2]
	EN 1604	2 % [EN 13163 - DS(70,-)2]
Bending strength / EN 12089		≥ 75 kPa [EN 13163 – BS75]
Water vapour permeability, diffusion factor (μ) / EN 12086 - EN 13163		20 to 40
Tensile strength perpendicular to the faces in dry conditions / EN 1607		≥ 80 kPa [EN 13163 - TR80]
Shear strength / EN 12090 - EN 13163		≥ 35 kPa
Shear modulus / EN 12090 – EN 13163		≥ 1000 kPa

Annex No 2 – Glass fibre meshes characteristics

Mesh trade name		Description	Alkalis resistance	
			Residual resistance after ageing (N/mm)	Relative residual resistance: % (after ageing) of the strength in the as delivered state
TERMONIUM (Typ TO-S170/160)	03-1	Mass per unit area: $165 \text{ g/m}^2 \pm 5 \%$; Mesh size: 4,0 x 3,7 mm	≥ 20	≥ 50
	122	Mass per unit area: $160 \text{ g/m}^2 \pm 5 \%$; Mesh size: 3,5 x 3,9 mm	≥ 20	≥ 50
	TEXTOLAN TG 15	Mass per unit area: $160 \text{ g/m}^2 \pm 5 \%$; Mesh size: 3,9 x 5,0 mm	≥ 20	≥ 50
	SSA-1363-160	Mass per unit area: $160 \text{ g/m}^2 \pm 5 \%$; Mesh size: 4,0 x 3,9 mm	≥ 20	≥ 50

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