European Technical Assessment

SIEĆ BADAWCZA
ŁUKASIEWICZ

Institute of Ceramics
and Building
Materials

SIEĆ BADAWCZA ŁUKASIEWICZ
Institute of Ceramics and Building Materials

02-676 Warsaw, POLAND
Postępu Str. 9
Tel.: +48 22 843 74 21
info@icimb.pl
www.icimb.pl

Member of EOTA
www.eota.eu

European Technical Assessment

ETA-19/0231 of 17/04/2019

General Part

Technical Assessment Body issuing the European Technical Assessment: ICiMB

Trade name of the construction product	SOLTHERM DESIGN COLLECTION MW
Product family to which the construction product belongs	External Thermal Insulation Composite Systems (ETICS) with rendering
Manufacturer	BOLIX SA Stolarska 8 34-300 Żywiec, POLAND
Manufacturing plant	BOLIX SA Stolarska 8 34-300 Żywiec, POLAND
This European Technical Assessment contains	26 pages including 3 Annexes which form an integral part of this assessment. Annex No 4 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 used as EAD, 2013

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annex referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

Specific parts

1. Technical description of the product:

This product SOLTHERM DESIGN COLLECTION MW 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 bonded or mechanically fixed 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)
	Fully bonded ETICS or fully bonded ETICS with supplementary mechanical fixings. National application documents shall be taken into account.		
Insulation materials with associated methods of fixing	• **Insulation product:** mineral wool (MW) lamella according to EN 13162 *Product characteristics - see Annex No 1*	-	20 to 300
	• **Adhesives:** - **SOLTHERM MA** cement based powder requiring addition of 0,19-0,21 l/kg of water	about 4,0 (powder)	-
	- **SOLTHERM UB special** cement based powder requiring addition of 0,20-0,24 l/kg of water	about 4,0 (powder)	-
	• **Supplementary mechanical fixings:** Plastic anchors covered by relevant ETA with supplementary plates of diameter 140 mm	-	-

Table 1. cont.

	Components	Coverage (kg/m²)	Thickness (mm)
	Mechanically fixed ETICS (through insulation product) with supplementary adhesive. National application documents shall be taken into account.		
Insulation materials with associated methods of fixing	• **Insulation product:** mineral wool (MW) standard boards according to EN 13162 *Product characteristics - see Annex No 1*	-	50 to 300
	• **Anchors** *Products characteristics - see Annex No 2*	-	-
	• **Supplementary adhesives:** - **SOLTHERM MA** cement based powder requiring addition of 0,19-0,21 l/kg of water	about 4,0 (powder)	-
	- **SOLTHERM UB special** cement based powder requiring addition of 0,20-0,24 l/kg of water	about 4,0 (powder)	-
	Mechanically fixed ETICS (through reinforcement) with supplementary adhesive. National application documents shall be taken into account.		
Insulation materials with associated methods of fixing	• **Insulation product:** mineral wool (MW) standard boards according to EN 13162 *Product characteristics - see Annex No 1*	-	50 to 300
	• **Anchors** *Products characteristics - see Annex No 2*	-	-
	• **Supplementary adhesives:** - **SOLTHERM MA** cement based powder requiring addition of 0,19-0,21 l/kg of water	about 4,0 (powder)	-
	- **SOLTHERM UB special** cement based powder requiring addition of 0,20-0,24 l/kg of water	about 4,0 (powder)	-

Table 1. cont.

	Components	Coverage (kg/m²)	Thickness (mm)
Base coat	• Two-component adhesive [1)]		3,0 to 5,0
	- **SOLTHERM BC-P quick (component A)** cement based powder requiring addition of 0,18-0,22 l/kg of water	4,0 to 6,0 (powder)	
	- **SOLTHERM FLEX (component B)** ready to use liquid	0,32 to 0,48	
	• **SOLTHERM UB special** cement based powder requiring addition of 0,20-0,24 l/kg of water	4,0 to 6,0 (powder)	3,0 to 5,0
Reinforce-ment	• **Standard glass fibre meshes** applied in one or two layers		
	- **SOLTHERM HD 145/S**	-	-
	- **SOLTHERM HD 158/S**	-	-
	- **SOLTHERM HD 160/S**	-	-
	- **SOLTHERM HD 174/S**	-	-
	• **Reinforced glass fibre mesh** to be used with standard glass fibre meshes		
	- **SOLTHERM HD 335/P**	-	-
	Products characteristics - see Annex No 3		
Key coats	• **SOLTHERM AP colour** ready to use liquid to be used with finishing coats: SOLTHERM DECO, SOLTHERM AMC, SOLTHERM DECO AMC and SOLTHERM MTC 15	0,25 to 0,40	-
	• **SOLTHERM SNP colour** ready to use liquid to be used with finishing coat SOLTHERM SFC-P 10	0,25 to 0,40	-
	• **SOLTHERM T** ready to use liquid to be used with finishing coat SOLTHERM WS	0,10 to 0,20	-
	• **SOLTHERM STP** ready to use liquid to be used with finishing coat SOLTHERM SMP	0,10 to 0,20	-

[1)] key coats to be used optionally onto base coat SOLTHERM BC-P quick + SOLTHERM FLEX

Table 1. cont.

	Components	Coverage (kg/m²)	Thickness (mm)
Finishing coats	• Mineral finishing coat **SOLTHERM WS** cement based powder requiring addition of 0,19-0,21 l/kg of water modelled structure max. particles size: 0,5 mm	4,5 to 15,0 (powder)	3,0 to 10,0
	• Mineral finishing coat **SOLTHERM MTC 15** cement based powder requiring addition of 0,22-0,24 l/kg of water; to be used in multi-layer coating with mineral finishing coat SOLTHERM SMP floated structure max. particles size: 1,5 mm	2,0 to 2,7 (powder)	1,5
	• Mineral finishing coat **SOLTHERM SMP** cement based powder requiring addition of 0,28-0,30 l/kg of water; to be used onto base coat or mineral finishing coat SOLTHERM MTC 15 spread structure max. particles size: 0,5 mm	1,4 to 3,2 (powder)	1,0 to 3,0
	• Mineral finishing coat **SOLTHERM TBR** cement based powder requiring addition of 0,18-0,22 l/kg of water; to be used in multi-layer coating with mineral finishing coat SOLTHERM BFC BRICK TOP COAT modelled structure max. particles size: 0,8 mm	9,5 to 14,0 (powder)	6,0 to 8,0
	• Mineral finishing coat **SOLTHERM BFC BRICK TOP COAT** cement based powder requiring addition of 0,16-0,20 l/kg of water; to be used onto mineral finishing coat SOLTHERM TBR modelled structure max. particles size: 0,8 mm	5,0 to 9,5 (powder)	3,0 to 5,0
	• Acrylic finishing coat **SOLTHERM DECO** ready to use paste – acrylic binder mosaic or modelled structure max. particles size: 0,5 ÷ 1,0; 0,5 ÷ 2,0 mm	2,5 to 3,5	1,5 to 3,0

Table 1. cont.

	Components	Coverage (kg/m²)	Thickness (mm)
Finishing coats	• Acrylic finishing coat **SOLTHERM AMC** ready to use paste – acrylic binder mosaic structure max. particles size: 0,8; 1,6 mm	2,0 to 4,0	Regulated by particles size
	• Acrylic finishing coat **SOLTHERM DECO AMC** ready to use paste – acrylic binder spread structure max. particles size: 0,8 mm	2,9 to 3,5	2,0 to 3,0
	• Silicone finishing coats: ready to use pastes – silicone and acrylic binder		
	SOLTHERM SFC-P 10 to be used in multi-layer coating with silicone finishing coat SOLTHERM SFC-P 03 floated structure max. particles size: 1,0 mm	1,7 to 2,2	1,0
	SOLTHERM SFC-P 03 to be used onto silicone finishing coat SOLTHERM SFC-P 10 floated structure max. particles size: 0,3 mm	1,5 to 2,5	1,0 to 2,0
Key coats	• **SOLTHERM T** ready to use liquid to be used onto finishing coat SOLTHERM WS	0,10 to 0,20	-
	• **SOLTHERM SNP** ready to use liquid to be used with decorative coats SOLTHERM STC-P / SOLTHERM STC-P eco-shield and SOLTHERM STC-P+	0,10 to 0,20	-
Decorative coats	• **SOLTHERM DECO LAZUR** ready to use pigmented liquid to be used obligatory with mineral finishing coat SOLTHERM WS	0,18 to 0,28	-

Table 1. cont.

	Components	Coverage (kg/m²)	Thickness (mm)
Decorative coats	• **SOLTHERM STC-P / SOLTHERM STC-P eco-shield** ready to use pigmented liquid to be used obligatory (alternatively decorative coat SOLTHERM STC-P+) with mineral finishing coat SOLTHERM SMP and optionally (alternatively with decorative coat SOLTHERM STC-P+) with finishing coat SOLTHERM SFC-P 03	0,27 to 0,42	-
	• **SOLTHERM STC-P+** ready to use pigmented liquid to be used obligatory (alternatively decorative coat SOLTHERM STC-P / SOLTHERM STC-P eco-shield) with mineral finishing coat SOLTHERM SMP and optionally (alternatively decorative coat SOLTHERM STC-P / SOLTHERM STC-P eco-shield) with finishing coat SOLTHERM SFC-P 03	0,27 to 0,42	-
	• **SOLTHERM OM** ready to use pigmented liquid to be used optionally onto decorative coat SOLTHERM DECO LAZUR	0,10 to 0,30	-
	• **SOLTHERM IMP** ready to use pigmented liquid to be used optionally onto mineral finishing coat SOLTHERM BFC BRICK TOP COAT	0,10 to 0,50	-
Ancillary materials	• Setting accelerator **SOLTHERM 4 SEASONS**, ready to use liquid to be used optionally with finishing coats SOLTHERM SFC-P 10 and SOLTHERM SFC-P 03, coverage: 7 ml/kg of finishing coat • Other according to ETAG 004 Remain under the manufacturer's responsibility		

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 done in accordance with principles introduced in chapter 7 of ETAG 004, used as EAD, and 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.

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÷3.

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 2.

Configuration	Max. heat of combustion MJ/kg	Flame retardant content	Euroclass acc. to EN 13501-1
Adhesive	0,32	No flame retardant	A2-s1, d0
MW boards* *density ≤ 130 kg/m³*	-		
Base coat	0,49		
Glass fibre mesh - standard - reinforced	 8,61 6,70		
Key coat	31,95		
Finishing coat	3,33		
Key coat	31,95		
Decorative coat	26,55		
*organic content in quantity ensuring Euroclass A1 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. Water absorption (ETAG 004: clause 5.1.3.1)

- Base coat SOLTHERM BC-P quick + SOLTHERM FLEX:
  - Water absorption after 1 hour < 1 kg/m²;
  - Water absorption after 24 hours ≥ 0,5 kg/m².
- Base coat SOLTHERM UB special:
  - 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/m²	≥0,5 kg/m²
Rendering system: Base coat SOLTHERM BC-P quick + SOLTHERM FLEX + finishing coat + key coat + decorative coat indicated hereafter (if relevant):	SOLTHERM WS + SOLTHERM T + SOLTHERM DECO LAZUR	X	-
	SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	x	-
	SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	x	-
	SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	x	-
	SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	x	-
	SOLTHERM TBR + SOLTHERM BFC BRICK TOP COAT	x	-
	SOLTHERM DECO	-	x
	SOLTHERM AMC	-	x
	SOLTHERM DECO AMC	-	x
	SOLTHERM SFC-P 10 + SOLTHERM SFC-P 03	x	-

Table 3. cont.

		Water absorption after 24 hours	
		<0,5 kg/m²	≥0,5 kg/m²
Rendering system: Base coat SOLTHERM UB special + key coat + finishing coat + key coat + decorative coat indicated hereafter (if relevant):	SOLTHERM T + SOLTHERM WS + SOLTHERM T + SOLTHERM DECO LAZUR	x	-
	SOLTHERM AP colour + SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	x	-
	SOLTHERM AP colour + SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	x	-
	SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	x	-
	SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	x	-
	SOLTHERM TBR + SOLTHERM BFC BRICK TOP COAT	x	-
	SOLTHERM AP colour + SOLTHERM DECO	-	x
	SOLTHERM AP colour + SOLTHERM AMC	-	x
	SOLTHERM AP colour + SOLTHERM DECO AMC	-	x
	SOLTHERM SNP colour + SOLTHERM SFC-P 10 + SOLTHERM SFC-P 03	x	-

3.2.2. Watertightness (ETAG 004: clause 5.1.3.2)

3.2.2.1. Hygrothermal behaviour (ETAG 004: clause 5.1.3.2.1)

Pass (without defects).

3.2.2.2. Freeze-thaw behaviour (ETAG 004: clause 5.1.3.2.2)

ETICS is frost resistant according to water absorption test and freeze-thaw test.

3.2.3. Impact resistance (ETAG 004: clause 5.1.3.3)

Table 4.

		Single layer of standard mesh
	MW board acc. to Annex No 1	
Rendering system: Base coat SOLTHERM BC-P quick + SOLTHERM FLEX + finishing coat + key coat + decorative coat indicated hereafter (if relevant):	SOLTHERM WS + SOLTHERM T + SOLTHERM DECO LAZUR	Category II
	SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	Category II
	SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	Category II
	SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	Category III
	SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	Category III
	SOLTHERM TBR + SOLTHERM BFC BRICK TOP COAT	Category I
	SOLTHERM DECO	Category I
	SOLTHERM AMC	Category I
	SOLTHERM DECO AMC	Category II
	SOLTHERM SFC-P 10 + SOLTHERM SFC-P 03	Category II
	MW lamella acc. to Annex No 1	
	SOLTHERM WS + SOLTHERM T + SOLTHERM DECO LAZUR	Category III
	SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	Category III
	SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	Category II
	SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	Category III
	SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	Category III
	SOLTHERM TBR + SOLTHERM BFC BRICK TOP COAT	Category I
	SOLTHERM DECO	Category I
	SOLTHERM AMC	Category II
	SOLTHERM DECO AMC	Category II
	SOLTHERM SFC-P 10 + SOLTHERM SFC-P 03	Category II

Table 4. cont.

		Single layer of standard mesh
	MW board acc. to Annex No 1	
Rendering system: Base coat SOLTHERM UB special + key coat + finishing coat + key coat + decorative coat indicated hereafter (if relevant):	SOLTHERM T + SOLTHERM WS + SOLTHERM T + SOLTHERM DECO LAZUR	Category II
	SOLTHERM AP colour + SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	Category II
	SOLTHERM AP colour + SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	Category II
	SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	Category III
	SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	Category III
	SOLTHERM TBR + SOLTHERM BFC BRICK TOP COAT	Category I
	SOLTHERM AP colour + SOLTHERM DECO	Category I
	SOLTHERM AP colour + SOLTHERM AMC	Category I
	SOLTHERM AP colour + SOLTHERM DECO AMC	Category II
	SOLTHERM SNP colour + SOLTHERM SFC-P 10 + SOLTHERM SFC-P 03	Category I

Table 4. cont.

		Single layer of standard mesh
	MW lamella acc. to Annex No 1	
Rendering system: Base coat SOLTHERM UB special + key coat + finishing coat + key coat + decorative coat indicated hereafter (if relevant):	SOLTHERM T + SOLTHERM WS + SOLTHERM T + SOLTHERM DECO LAZUR	Category III
	SOLTHERM AP colour + SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	Category III
	SOLTHERM AP colour + SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	Category II
	SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	Category III
	SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	Category III
	SOLTHERM TBR + SOLTHERM BFC BRICK TOP COAT	Category I
	SOLTHERM AP colour + SOLTHERM DECO	Category I
	SOLTHERM AP colour + SOLTHERM AMC	Category II
	SOLTHERM AP colour + SOLTHERM DECO AMC	Category I
	SOLTHERM SNP colour + SOLTHERM SFC-P 10 + SOLTHERM SFC-P 03	Category I

3.2.4. Water vapour permeability (ETAG 004: clause 5.1.3.4)

Table 5.

		Average equivalent air thickness s_d
Rendering system: Base coat SOLTHERM BC-P quick + SOLTHERM FLEX or SOLTHERM UB special + key coat + finishing coat + key coat + decorative coat indicated hereafter (if relevant):	SOLTHERM T + SOLTHERM WS + SOLTHERM T + SOLTHERM DECO LAZUR + SOLTHERM OM	≤ 1 m, result: 0,3 m
	SOLTHERM AP colour + SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield + SOLTHERM SNP + SOLTHERM STC-P+	≤ 1 m, results: 0,2 m 0,2 m
	SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield + SOLTHERM SNP + SOLTHERM STC-P+	≤ 1 m, results: 0,2 m 0,2 m
	SOLTHERM TBR + SOLTHERM BFC BRICK TOP COAT + SOLTHERM IMP	≤ 1 m, result: 0,2 m
	SOLTHERM AP colour + SOLTHERM DECO	≤ 1 m, result: 0,3 m
	SOLTHERM AP colour + SOLTHERM AMC	≤ 1 m, result: 0,5 m
	SOLTHERM AP colour + SOLTHERM DECO AMC	≤ 1 m, result: 0,3 m
	SOLTHERM SNP colour + SOLTHERM SFC-P 10 + SOLTHERM SFC-P 03 + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield + SOLTHERM SNP + SOLTHERM STC-P+	≤ 1 m, results: 0,5 m 0,6 m

3.2.5. Release of dangerous substances (ETAG 004: clause 5.1.3.5, 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.

3.3. 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)

Base coat: SOLTHERM BC-P quick + SOLTHERM FLEX

- Initial state, after hygrothermal cycles and freeze-thaw cycles:
  ≥ 0,08 MPa or failure into mineral wool

Base coat: SOLTHERM UB special

- Initial state and after hygrothermal cycles and freeze-thaw cycles:
  ≥ 0,08 MPa or failure into mineral wool

3.3.2. Bond strength between adhesive and substrate (ETAG 004: clause 5.1.4.1.2)

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
SOLTHERM MA	≥ 0,80 MPa	≥ 0,60 MPa	≥ 0,90 MPa
SOLTHERM UB special	≥ 0,80 MPa	≥ 0,60 MPa	≥ 0,80 MPa

3.3.3. Bond strength between adhesive and insulation product (ETAG 004: clause 5.1.4.1.3)

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
SOLTHERM MA	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa
SOLTHERM UB special	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa

3.3.4. Bond strength after ageing (ETAG 004: clause 5.1.7.1)

Table 8.

		After hygrothermal cycles
Rendering system: Base coat SOLTHERM BC-P quick + SOLTHERM FLEX + finishing coat + key coat + decorative coat indicated hereafter (if relevant):	SOLTHERM WS + SOLTHERM T + SOLTHERM DECO LAZUR	≥ 0,08 MPa or failure into mineral wool
	SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	
	SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	
	SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	
	SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	
	SOLTHERM TBR + SOLTHERM BFC BRICK TOP COAT	
	SOLTHERM DECO	
	SOLTHERM AMC	
	SOLTHERM DECO AMC	
	SOLTHERM SFC-P 10 + SOLTHERM SFC-P 03	

Table 8. cont.

		After hygrothermal cycles
Rendering system: Base coat SOLTHERM UB special + key coat + finishing coat + key coat + decorative coat indicated hereafter (if relevant):	SOLTHERM T + SOLTHERM WS + SOLTHERM T + SOLTHERM DECO LAZUR	≥ 0,08 MPa or failure into mineral wool
	SOLTHERM AP colour + SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	
	SOLTHERM AP colour + SOLTHERM MTC 15 + SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	
	SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P / SOLTHERM STC-P eco-shield	
	SOLTHERM STP + SOLTHERM SMP + SOLTHERM SNP + SOLTHERM STC-P+	
	SOLTHERM TBR + SOLTHERM BFC BRICK TOP COAT	
	SOLTHERM AP colour + SOLTHERM DECO	
	SOLTHERM AP colour + SOLTHERM AMC	
	SOLTHERM AP colour + SOLTHERM DECO AMC	
	SOLTHERM SNP colour + SOLTHERM SFC-P 10 + SOLTHERM SFC-P 03	

3.3.5. Fixing strength (ETAG 004, clause 5.1.4.2)

Test not required. ETICS fulfils the criteria $E \cdot d \leq 50\,000$ N/mm.

3.3.6. Wind load resistance (ETAG 004, clause 5.1.4.3)

Table 9.

Anchors (fixed through insulation product or through reinforcement) for which the following failure loads apply	**Anchors according to Annex No 2**		
	Plate diameter (mm)		≥ 60
Characteristics of the **MW boards** for which the following failure loads apply	Thickness (mm)		≥ 50
	Tensile strength perpendicular to the faces (kPa)		≥ 10
Failure loads (N)	Anchors not placed at the panel joints (*Pull-through test*) dry conditions	R_{panel}	Minimum: 263 Average: 317
	Anchors not placed at the panel joints (*Pull-through test*) wet conditions	R_{panel}	Minimum: 288 Average: 336
	Anchors placed at the panel joints (*Pull-through test*) dry conditions	R_{joint}	Minimum: 182 Average: 277
	Anchors placed at the panel joints (*Pull-through test*) wet conditions	R_{joint}	Minimum: 155 Average: 215
	Anchors placed at the panel joints* (*Static foam block test*)	R_{joint}	Minimum: 1120 Average: 1170

*Plate stiffness of anchors fixed through reinforcement shall be equal to or higher than 0,6 kN/mm

Table 10.

Anchors (fixed through insulation product) for which the following failure loads apply	**Anchors according to Annex No 2***		
	Plate diameter (mm)		≥ 60
Characteristics of the **MW boards** for which the following failure loads apply	Thickness (mm)		≥ 110
	Tensile strength perpendicular to the faces (kPa)		≥ 10
Failure loads (N)	Anchors not placed at the panel joints (*Pull-through test*) dry conditions	R_{panel}	Minimum: 518 Average: 545
	Anchors not placed at the panel joints (*Pull-through test*) wet conditions	R_{panel}	Minimum: 379 Average: 400
	Anchors placed at the panel joints (*Pull-through test*) dry conditions	R_{joint}	Minimum: 582 Average: 605
	Anchors placed at the panel joints (*Pull-through test*) wet conditions	R_{joint}	Minimum: 360 Average: 382

*Plate stiffness of anchors to be used shall be equal to or higher than 0,6 kN/mm

The wind load resistance of the ETICS R_d is calculated as follows:

$$R_d = \frac{R_{panel} x\, n_{panel} + R_{joint}\, x\, n_{joint}}{\gamma m}$$

where:

n_{panel}: number (per m^2) of anchors not placed at the panel joints
n_{joint}: number (per m^2) of anchors placed at the panel joints
γm: national safety factor

3.3.7. Render strip tensile test (ETAG 004: clause 5.5.4.1)

No performance assessed.

3.4. Protection against noise (BWR 5)

3.4.1. Airborne sound insulation (ETAG 004: clause 5.1.5.1)

No performance assessed.

3.5. Energy economy and heat retention (BWR 6)

3.5.1. Thermal resistance (ETAG 004: clause 5.1.6.1)

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

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

where:

$\chi_p \cdot n$ has only to be taken into account if it is greater than 0,04 W/(m^2·K)

U_c: global (corrected) thermal transmittance of the covered wall (W/ (m^2·K))

n: number of anchors (through insulation product) per 1 m^2

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/ (m^2·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^2·K)/W

R_{render}: thermal resistance of the render (about 0,02 in (m^2·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^2·K)/W

R_{se}: external superficial thermal resistance in (m^2·K)/W

R_{si}: internal superficial thermal resistance in (m^2·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 (further described in Annex V to Regulation (EU) No 305/2011) 1 and 2+ apply.

Table 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:

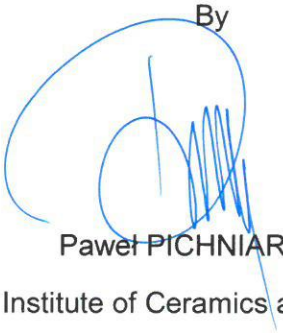
The manufacturer shall exercise permanent control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures. The production control system shall ensure performance constancy of the product covered by this European Technical Assessment.

The manufacturer may only use materials stated in the technical documentation of this European Technical Assessment. The factory production control shall be performed in accordance with the Control Plan which is a confidential part of the European Technical Assessment. The Control Plan was developed as a part of factory production control system.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

Issued in Krakow on 17.04.2019

By



Paweł PICHNIARCZYK

Director of Institute of Ceramics and Building Materials

Annexes:

Annex No 1 – Insulation products characteristics

Annex No 2 – Anchors characteristics for mechanically fixed ETICS with supplementary adhesive

Annex No 3 – Glass fibre meshes characteristics

Annex No 1 – Insulation products characteristics

		Factory made mineral wool (MW) products according to EN 13162	
		MW board	**MW lamella**
Reaction to fire / EN 13501-1		Euroclass – A1 max. density: 130 kg/m^3	
Thermal resistance		Defined in the CE marking in reference to EN 13162 (m^2·K)/W	
Thickness / EN 823		- 3 % or - 3 mm + 5 % or + 5 mm [EN 13162 - T4]	-
		- 1 % or - 1 mm + 3 mm [EN 13162 – T5]	- 1 % or - 1 mm + 3 mm [EN 13162 – T5]
Dimensional stability under specified conditions	EN 1604	1 % [EN 13162 – DS(70,-)]	1 % [EN 13162 – DS(70,-)]
	EN 1604	-	1 % [EN 13162 – DS(70,90)]
Short-term water absorption (partial immersion) / EN 1609		EN 13162 – WS	
Long-term water absorption (partial immersion) / EN 12087		EN 13162 – WL(P)	
Water vapour diffusion resistance factor (μ) / EN 12086		EN 13162 – 1	
Tensile strength perpendicular to the faces in dry conditions / EN 1607		≥ 10 kPa [EN 13162 – TR10]	≥ 80 kPa [EN 13162 – TR80]
Shear strength / EN 12090		-	≥ 0,02 MPa
Shear modulus / EN 12090		-	≥ 1,0 MPa

Annex No 2 – Anchors characteristics for mechanically fixed ETICS with supplementary adhesive

Anchor trade name	Plate stiffness (kN/mm) / diameter (mm)	Characteristic resistance in the substrate
EJOT H1 eco EJOT H4 eco	0,6 / 60	ETA 11/0192
Ejotherm STR U 2G	0,6 / 60	ETA 04/0023
Insulation anchor Koelner TFIX-8S, Koelner TFIX-8ST	0,6 / 60	ETA 11/0144
Insulation suport TFIX-8M	1,0 / 60	ETA 07/0336
Rawlplug Facade Insulation Fixing R-TFIX-8M	1,0 / 60	ETA 17/0592
RAWLPLUG Insulation System R-TFIX-8S	0,6 / 60	ETA 17/0161
Koelner KI-10M	0,4 / 60	ETA-07/0291
KI-10N KI-10NS	0,5 / 60	ETA 07/0221
WKTHERMø8	0,6 / 60	ETA 11/0232
WKTHERM S	0,6 / 60	ETA 13/0724
fischer TERMOZ 8 U fischer TERMOZ 8 UZ	0,5 / 60	ETA-02/0019
fischer termoz CN 8 fischer termoz CN 8 R fischer termoz CNplus 8	0,6 / 60	ETA-09/0394
fischer termoz CS 8	0,6 / 60	ETA-14/0372

Additionally, other anchors covered by relevant ETA can be used, provided that they meet the following requirements:

	Requirement	
	Anchors fixed through insulation product	**Anchors fixed through reinforcement**
Plate diameter	≥ 60 mm	≥ 60 mm
Plate stiffness	≥ 0,4 kN/mm	≥ 0,6 kN/mm

Annex No 3 – 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
SOLTHERM HD 145/S	R 117 A101*	Mass per unit area: 152 g/m² Mesh size: 4,0 x 4,5 mm	≥ 20	≥ 50
SOLTHERM HD 158/S	ST 2924-100/7 KM	Mass per unit area: 155 g/m² Mesh size: 4,8 x 3,7 mm	≥ 20	≥ 50
SOLTHERM HD 160/S	03-1	Mass per unit area: 160 g/m² Mesh size: 3,5 x 3,8 mm	≥ 20	≥ 50
	SSA-1363-160 SM0.5A	Mass per unit area: 160 g/m² Mesh size: 3,6 x 3,8 mm		
SOLTHERM HD 174/S	ST 112-100/7KM	Mass per unit area: 170 g/m² Mesh size: 4,0 x 3,7 mm	≥ 20	≥ 50
SOLTHERM HD 335/P	REDNET E335	Mass per unit area: 335 g/m² Mesh size: 6,0 x 9,0 mm	≥ 20	≥ 50

*mesh covered by ETA 13/0392

SIEĆ BADAWCZA
ŁUKASIEWICZ

Institute of Ceramics
and Building
Materials

Division of Glass and Building
Materials in Krakow

31-983 Krakow
Cementowa 8 Str.
www.icimb.pl