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European Technical Assessment

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Technical Assessment Body issuing the European Technical Assessment: UBA^{tc}.
UBA^{tc} has been designated according to Article 29 of Regulation (EU) No 305/2011
and is member of EOTA (European Organisation for Technical Assessment)

Trade name of the construction product:

KNAUF WARM-WAND SYSTEM EPS/LUSTRO

Product family to which the construction product belongs:

04 – External thermal insulation composite systems with rendering system

Manufacturer:

Knauf Gips KG
Am Bahnhof 7
DE-97346 Iphofen

Manufacturing plant(s):

Knauf Gips KG (see overleaf)

Website:<http://www.knauf.com>

This European Technical Assessment is issued in accordance with Article 95(4) of Regulation (EU) No 2024/3110, on the basis of:

European Assessment Document (EAD): EAD 040083-01-0404

This version replaces :

ETA 13/0361 issued on 2016-03-01

This ETA contains:

15 pages, including 4 annexes



European Organisation for Technical Assessment

Legal bases and general conditions

- 1 This European Technical Assessment is issued by UBAtc (Union belge pour l'Agrément technique de la construction, i.e. Belgian Union for technical Approval in construction), in accordance with:
 - Article 95(4) of the Regulation (EU) No 2024/3110¹ of the European Parliament and of the Council of 27 November 2024 laying down harmonised conditions for the marketing of construction products and repealing Regulation (EU) No 305/2011
 - Commission Implementing Regulation (EU) No 1062/2013² of 30 October 2013 on the format of the European Technical Assessment for construction products.
 - European Assessment Document (EAD): EAD 040083-01-0404.
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- 13 Subject to the application introduced, this European Technical Assessment is issued in English and may be issued by the UBAtc in its official languages. The translations correspond fully to the English reference version circulated in EOTA.
- 14 This European Technical Assessment, ETA 13/0361 was first issued by UBAtc as a European Technical Approval on 17 August 2009 and revised on 27 June 2013. It was revised and converted to a European Technical Assessment on 01 March 2016. In current ETA, issued 27 May 2026, compared to the previous version, the reference to ETAG 004 has been replaced by EAD-040083-01-0404 with relevant changes.
- 15 Manufacturing plants (details available to UBAtc)

Component	Manufacturing plant(s)
Adhesive/base coats	
SM700	02, 03, 04, 05 and 07
SM700 Pro	01, 02, 03, 05 and 06
SM300	01 to 06
Lustro	01 to 05
Finishing coats (hydraulic)	
Mak3	02 and 03
Noblo	02 and 06
Noblo Filz	02
SP 260 Pro	02, 03 and 06
RP 240	02 and 06
SM700 Pro	01, 02, 03, 05 and 06
Finishing coats (organic)	
Conni S	08
Addi S	08
Insulation products	
IP01, IP02, IP03, IP04 and IP05	
Polyvinyl chloride (PVC) profiles	
PR01	

¹ OJEU, L series of 2024/12/18

² OJEU, L 289 of 2013/10/31

Technical Provisions

1 Technical description of the product

1.1 Definition 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 factory-made insulation product of expanded polystyrene (EPS) to be bonded (partially or fully) onto a wall, mechanically fixed with profiles and supplementary adhesive or mechanically fixed with anchors and supplementary adhesive. 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 base coat containing reinforcement and finishing coats (applied on-site). The rendering system is applied directly to the insulating panels, without any air gap or disconnecting layer.

The ETICS kit 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 are 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.

1.2 Composition of the ETICS

Table 1 – Composition of the Bonded ETICS (partially or fully bonded. National application documents shall be taken into account)

Components	Coverage	Thickness
(see Annexes for further description, characteristics and performances of the components)	[kg/m ²]	[mm]
Insulation materials with associated methods of fixing		
Bonded ETICS		
Insulation product: factory-made expanded polystyrene (EPS) according to EN 13163		
– Standard EPS	/	≤ 400
– Elastified EPS	/	≤ 200
Adhesive		
– Lusto – cement-based powder requiring addition of 36 - 40% water	2,0 - 3,0	/
– SM300 – cement-based powder requiring addition of 26 - 30% water	4,0 - 6,0	/
– SM700 – cement-based powder requiring addition of 26 - 30% water	3,5 - 6,0	/
– SM700 Pro – cement-based powder requiring addition of 26 - 30% water.	3,5 - 6,0	/
Mechanically fixed ETICS with profiles and supplementary adhesive		
Insulation product: factory-made expanded polystyrene (EPS) according to EN 13163		
– Standard EPS	/	60 to 200
Supplementary adhesive (see bonded ETICS)	/	/
Profiles (Halteleiste – Verbindungsleiste PVC): Polyvinyl chloride (PVC) profiles	/	/
Anchors for profiles		
– Knauf Schienen-Nageldübel	/	/
– Knauf Schienen-Schraubdübel	/	/
Mechanically fixed ETICS with anchors and supplementary adhesive		
Insulation product: factory-made expanded polystyrene (EPS) according to EN 13163		
– Standard EPS	/	60 to 400
– Elastified EPS	/	80 to 200
Supplementary adhesive (see bonded ETICS)	/	/
Anchors with ETA according to EAD 330196-01-0604	/	/
Base coat		
Lusto – CEM I based powder requiring addition of 36 - 40% water	5,0 - 7,0	5,0 - 7,0
Glass fibres meshes		
– ARMIERGEWEBE 4 x 4 (glass fibres mesh ca. 165 g/m ² ; 4,0 mm by 4,0 mm)	/	/
– ARMIERGEWEBE 5 x 5 (glass fibres mesh ca. 205 g/m ² ; 5,0 mm by 5,0 mm)	/	/

Components	Coverage	Thickness
(see Annexes for further description, characteristics and performances of the components)	[kg/m ²]	[mm]
Finishing coats		
Ready to use paste – silicon-acrylate binder:		
– Conni S (particle size 1,0 - 1,5 – 2,0 – 3,0 mm)	1,4 – 3,7	/
– Addi S (particle size 1,5 – 2,0 and 3,0 mm)	2,0 – 3,9	/
Cement based powder requiring the addition of water:		
– Mak3 (addition of 24 - 30 % water - particle size 2,0 – 3,0 mm)	12 – 15	/
– Noblo (addition of 26 – 30 % water - particle size 1,5 – 2,0 – 3,0 mm)	2,3 – 3,7	/
– Noblo Filz (addition of 26% of water - particle size 1,0 mm)	4,4 – 4,8	/
– RP 240 (addition of 26- 33 % water - particle size 2,0 – 3,0 – 5,0 mm)	4 – 5	/
– SM700 Pro (addition of 26 - 30% water – particle size 1,0 mm)	4,2	/
– SP 260 Pro (addition of 24 - 32 % water - particle size 2,0– 3,0 – 5,0 mm)	3,2 – 5	/
Ancillary materials		
Description of the ancillary materials is to be in accordance with § 1.3.1.22 of the EAD 040083-01-0404		
The description and use of the appropriate materials remain under the kit manufacturers' responsibility.		

2 Specification of the intended use(s) in accordance with the applicable EAD

2.1 General

This ETICS is intended for use as external insulation of building 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. The ETICS is designed to give the wall to which it is applied satisfactory thermal insulation.

The ETICS is made of non-loadbearing construction elements. It does not contribute directly to the stability of the wall on which it is installed, but it may contribute to durability by providing enhanced protection from the effect of weathering.

The ETICS may be used on new or existing (retrofit) vertical walls. It may 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 ETICS belongs to Category S/W2, according to EOTA Technical Report No 034.

The provisions made in this European Technical Assessment are based on the assumed working life of 50 years³, provided that the ETICS is subject to appropriate installation, use and maintenance. These provisions are based upon the current state of the art and the available knowledge and experience.

Assumed intended working life means that it is expected that, when the working life has elapsed, the real working life may be, under normal use conditions, considerably longer without major degradation affecting the basic requirements for construction works.

2.2 Assumptions under which the fitness of the product(s) for the intended use was favourably assessed

2.2.1 Manufacturing directives

The European technical assessment is issued for the ETICS on the basis of agreed data/information, deposited with the approved body, which identifies the ETICS that has been assessed and judged.

Changes to the ETICS or production process, which could result in this deposited data/information being incorrect, should be notified to the approval body before the changes are introduced. The approval body will decide whether or not such changes affect the ETA and consequently the validity of the CE-marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

2.2.2 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. It is assumed that the ETICS will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals.

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 chapter 3 of EAD 040083-01-0404, which summarizes 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.

2.2.3 Packing, 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.

³ The indications given as to the working life of the products cannot be interpreted as a guarantee given by the ETA-holder or the assessment body. It should only be regarded

as a means for specifiers to choose the appropriate criteria for this product in relation to the expected, economically reasonable working life of the works.

2.2.4 Use, maintenance, repair

It is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the use, maintenance and repair of the product as he considers necessary.

The finishing coat shall normally be maintained in order to fully preserve the ETICS performance.

Maintenance includes at least:

- visual inspection of the ETICS,
- repair of localised damaged areas due to accidents,
- 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

3.1 General

The performances of the ETICS kit as described in this chapter are valid, provided that the components of the ETICS kit comply with annexes I to III.

3.2 Safety in case of fire (BWR2)

3.2.1 Reaction to fire of ETICS

Table 2 – Reaction to fire of ETICS

Configuration	Maximum declared organic content	Flame retardant content	Euroclass according to EN 13501-1
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Conni S, Addi S, Mak3, Noblo, Noblo Filz, RP 240, SM700 Pro, SP 260 Pro)	Base coat: ≤ 2,7%	Base coat: 0%	B – s2, d0
	Finishing coat: ≤ 8,4%	Finishing coat: ≤ 2%	

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.

Mounting and fixing (for all end use applications given in clause 2.2.2 of the ETA): the assessment of reaction to fire is based on tests with a maximum insulation layer thickness of 160 mm (testing according to EN 13823 – SBI-test), resp. 60 mm (testing according to EN ISO 11925-2) and a maximum insulation (EPS) density of 25,5 kg/m³ with the rendering system with the highest organic content.

3.2.2 Reaction to fire of the thermal insulation product

The reaction to fire of the thermal insulation product is Euroclass E according to EN 13501-1.

3.2.3 Façade fire performance

No performance assessed.

3.2.4 Propensity to undergo continuous smouldering

No performance assessed.

3.3 Hygiene, health and the environment (BWR3)

3.3.1 Content, emission and/or release of dangerous substances

No performance assessed.

3.3.2 Water absorption

3.3.2.1 Water absorption of the base coat and the rendering system

Table 3 – Water absorption of the base coat and the rendering system

Configuration	Mean water absorption	
	$W_{p,1h}$	$W_{p,24h}$
	[kg/m ²]	[kg/m ²]
Insulation (EPS) + Base coat (Lustro)	0,0	0,1
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Conni S)	0,1	0,5
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Addi S)	0,1	0,5
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Mak3)	0,3	0,5
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Noblo)	0,1	0,3
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Noblo Filz)	0,1	0,3
Insulation (EPS) + Base coat (Lustro) + Finishing coat (RP 240)	0,0	0,3
Insulation (EPS) + Base coat (Lustro) + Finishing coat (SM700 Pro)	0,0	0,2
Insulation (EPS) + Base coat (Lustro) + Finishing coat (SP 260 Pro)	0,0	0,2

3.3.2.2 Water absorption of thermal insulation product

See annex I.

3.3.3 Watertightness – Hygrothermal performance (HWCFT)

The ETICS is resistant to the hygrothermal cycles HWCFT, as defined in EAD 040083-01-0404 clause 2.2.6.

The finishing coats Conni S, Mak3 and Noblo have been tested on the rig. SM700 Pro and Noblo Filz are considered as the same type as Noblo.

None of the following occurred during testing on the rig:

- no blistering or peeling of any finishing coat,
- no failure or cracking of finishing coats, bigger than 0,2 mm, associated with joints between thermal insulation product boards or profiles fitted with ETICS,
- no detachment of the finishing layer/rendering system,
- no cracks in any layer with width bigger than 0,2 mm allowing water penetration to the thermal insulating layer.

3.3.4 Watertightness – Freeze-thaw resistance

The ETICS is freeze-thaw resistant, as defined in EAD 040083-01-0404 clause 2.2.7.

The test is not required for the rendering systems with the following finishing coats: Conni S, Noblo, Noblo Filz, RP 240, SM700 Pro and SP 260 Pro.

The rendering system with finishing coat Mak 3 has been tested on the rig.

The rendering system with finishing coat Addi S has been tested on small sample.

None of the following occurred during testing on rig/small sample:

- no blistering or peeling of any finishing coat/base coat/rendering system,
- no failure or cracking associated with joints between thermal insulation product boards or profiles fitted with ETICS,
- no detachment of the finishing coat/base coat/rendering system,
- no cracks in any layer with width bigger than 0,2 mm allowing water penetration to the thermal insulating layer.

3.3.5 Impact resistance

Table 4 – Impact resistance

Configuration	Impact resistance	
	Single mesh	Double mesh
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Conni S)	D _{3,w}	B _{3,w}
	D _{10,w}	B _{10,w}
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Addi S)	D _{3,w}	B _{3,w}
	D _{10,w}	B _{10,w}
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Mak3)	A _{3,w}	NPA
	D _{10,w}	NPA
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Noblo, Noblo Filz, SM700 Pro)	D _{3,w}	C _{3,w}
	D _{10,w}	D _{10,w}
Insulation (EPS) + Base coat (Lustro) + Finishing coat (RP 240)	D _{3,w}	D _{3,w}
	D _{10,w}	D _{10,w}
Insulation (EPS) + Base coat (Lustro) + Finishing coat (SP 260 Pro)	D _{3,w}	B _{3,w}
	D _{10,w}	D _{10,w}

3.3.6 Water vapour permeability

3.3.6.1 Water vapour permeability of the rendering system (equivalent air thickness)

Table 5 – Equivalent air thickness

Configuration	Equivalent air thickness s_d
	[m]
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Conni S)	≤ 2,0 (Test result obtained with thickness of 3 mm: 0,4)
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Addi S)	≤ 2,0 (Test result obtained with a thickness of 5 mm: 0,2)
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Mak3)	≤ 2,0 (Test result obtained with particle size 3 mm: 0,2)
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Noblo)	≤ 2,0 (Test result obtained with particle size 3 mm: 0,1)
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Noblo Filz)	≤ 2,0 (Test result obtained with particle size 3 mm: 0,1)
Insulation (EPS) + Base coat (Lustro) + Finishing coat (RP 240)	≤ 2,0 (Test result obtained with particle size 5 mm: 0,1)
Insulation (EPS) + Base coat (Lustro) + Finishing coat (SM700 Pro)	≤ 2,0 (Test result obtained with thickness of 3 mm: 0,1)
Insulation (EPS) + Base coat (Lustro) + Finishing coat (SP 260 Pro)	≤ 2,0 (Test result obtained with particle size 5 mm: 0,1)

3.3.6.2 Water vapour permeability of thermal insulation product (water-vapour resistance factor)

See annex I.

3.4 Safety and accessibility in use (BWR4)

3.4.1 Bond strength

3.4.1.1 Bond strength between the base coat and the thermal insulation product

Table 6 – Bond strength between the base coat Lustro and the thermal insulation product

Configuration	Bond strength		
Under dry conditions	F _{B-I,min,dry}	F _{B-I,mean,dry}	Failure
Lustro	80 kPa	110 kPa	100 % cohesive
After hygrothermal cycles HWC	NPA	NPA	NPA
After freeze/thaw cycles	NPA	NPA	NPA

3.4.1.2 Bond strength between the adhesive and the substrate

Table 7 – Bond strength between the adhesive and the substrate (concrete)

Configuration	Bond strength		
Under dry conditions	$F_{A-S,min,dry}$	$F_{A-S,mean,dry}$	Failure
Lustro	410 kPa	580 kPa	100 % cohesive
SM300	346 kPa	401 kPa	100 % cohesive
SM700	444 kPa	514 kPa	90 % cohesive
SM700 Pro	499 kPa	597 kPa	100 % cohesive
After immersion of the adhesive in water for 2 days and 2 h drying at $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 5) \% \text{RH}$	$F_{A-S,min,2d,2h}$	$F_{A-S,mean,2d,2h}$	Failure
Lustro	130 kPa	160 kPa	100 % cohesive
SM300	239 kPa	334 kPa	100 % cohesive
SM700	323 kPa	389 kPa	100 % cohesive
SM700 Pro	303 kPa	355 kPa	100 % cohesive
After immersion of the adhesive in water for 2 days and at least 7 days drying at $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 5) \% \text{RH}$	$F_{A-S,min,2d,7d}$	$F_{A-S,mean,2d,7d}$	Failure
Lustro	420 kPa	470 kPa	$\geq 86 \% \text{ cohesive}$
SM300	618 kPa	718 kPa	100 % cohesive
SM700	478 kPa	625 kPa	100 % cohesive
SM700 Pro	595 kPa	744 kPa	100 % cohesive

3.4.1.3 Bond strength between the adhesive and the thermal insulation product

Table 8 – Bond strength between the adhesive and the thermal insulation product (EPS)

Configuration	Bond strength		
Under dry conditions	$F_{A-I,min,dry}$	$F_{A-I,mean,dry}$	Failure
Lustro	80 kPa	110 kPa	90 % adhesive
SM300	102 kPa	120 kPa	90 % adhesive
SM700	143 kPa	145 kPa	60 % adhesive
SM700 Pro	117 kPa	126 kPa	68 % cohesive
After immersion of the adhesive in water for 2 days and 2 h drying at $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 5) \% \text{RH}$	$F_{A-I,min,2d,2h}$	$F_{A-I,mean,2d,2h}$	Failure
Lustro	30 kPa	50 kPa	100 % adhesive
SM300	83 kPa	99 kPa	98 % adhesive
SM700	122 kPa	129 kPa	96 % adhesive
SM700 Pro	68 kPa	80 kPa	100 % adhesive
After immersion of the adhesive in water for 2 days and at least 7 days drying at $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 5) \% \text{RH}$	$F_{A-I,min,2d,7d}$	$F_{A-I,mean,2d,7d}$	Failure
Lustro	80 kPa	80 kPa	90 % adhesive failure
SM300	139 kPa	152 kPa	96 % cohesive failure
SM700	167 kPa	184 kPa	86 % cohesive failure
SM700 Pro	134 kPa	147 kPa	84 % cohesive failure

The ETICS can be installed on the substrate with application of the adhesive on the following minimal surface area (% of total) according to the following table:

Table 9 – Bond strength between the adhesive and the thermal insulation product (EPS)

Substrate			
Characteristics of the EPS			
Tensile strength perpendicular to the face of the insulation product	$\geq 80 \text{ kPa}$	$\geq 100 \text{ kPa}$	$\geq 150 \text{ kPa}$
Adhesive	minimal adhesion surface area (% of total)		
Lustro	40%	30%	25%
SM300			
SM700/SM700 Pro			

3.4.1.4 Bond strength of PU-foam adhesives

Not relevant.

3.4.2 Fixing strength transverse displacement test

No performance assessed.

3.4.3 Wind load resistance

The failure loads specified hereunder apply only for the following anchors with deep mounting under the given conditions of installation:

Table 10 – Conditions of installation of anchors

Anchor	Thickness EPS [mm]	Conditions of installation
ejotharm STR U 2G (ETA-04/0023)	≥ 80	Maximum installation depth of anchor plate: 15 mm Incision depth: 20 mm
	≥ 100	Maximum installation depth of anchor plate: 15 mm Incision depth: 35 mm
fischer TermoZ CS II 8 (ETA-14/0372)	≥ 80	Maximum installation depth of anchor plate: 15 mm Incision depth: 20 mm
fischer TermoZ CS II 8 DT 110 V (ETA-14/0372)	≥ 80	Maximum installation depth of anchor plate: 15 mm Incision depth: 20 mm

3.4.3.1 Wind load resistance – Pull-through resistance

Table 11 – Wind load resistance – pull-through resistance (standard EPS)

Configuration		Failure loads	
		Anchors not placed at the panel joints	Anchors placed at the panel joints
		R _{panel} [kN]	R _{joint} [kN]
Characteristics of the EPS (standard EPS)			
Thickness	≥ 60 mm		
Tensile strength perpendicular to the face of the EPS	≥ 100 kPa		
Shear modulus	≥ 1,0 MPa		
Characteristic of the anchor			
Plate stiffness	≥ 0,3 kN/mm		
Load resistance of the anchor plate	≥ 1,0 kN/mm		
Plate diameter	Ø 60 mm	Minimal: 0,56 Average: 0,57	Minimal: 0,40 Average: 0,43
	Ø 90 mm	Minimal: 0,79 Average: 0,81	Minimal: 0,43 Average: 0,47

Table 12 – Wind load resistance – pull-through resistance (elastified EPS)

Configuration		Failure loads	
		Anchors not placed at the panel joints	Anchors placed at the panel joints
		R _{panel} [kN]	R _{joint} [kN]
Characteristics of the EPS (elastified EPS)			
Thickness	≥ 80 mm		
Tensile strength perpendicular to the face of the EPS	≥ 80 kPa		
Shear modulus	≥ 0,4 MPa		
Characteristic of the anchor			
Plate stiffness	≥ 0,3 kN/mm		
Load resistance of the anchor plate	≥ 1,0 kN/mm		
Plate diameter	Ø 60 mm	Minimal: 0,45 Average: 0,47	Minimal: 0,31 Average: 0,32

3.4.3.2 Wind load resistance – Static foam block resistance

Table 13 – Wind load resistance – static foam block resistance (standard EPS and anchors)

Configuration		Failure loads	
		Anchors not placed at the panel joints	Anchors placed at the panel joints
		R_{panel} [kN]	R_{joint} [kN]
Characteristics of the EPS (standard EPS)			
Thickness	≥ 60 mm		
Tensile strength perpendicular to the face of the EPS	≥ 100 kPa		
Shear modulus	$\geq 1,0$ MPa		
Characteristic of the anchor			
Plate stiffness	$\geq 0,3$ kN/mm		
Load resistance of the anchor plate	$\geq 1,0$ kN/mm		
Plate diameter	$\varnothing 60$ mm	Minimal: 0,51 Average: 0,51	Minimal: 0,42 Average: 0,43
	$\varnothing 90$ mm	Minimal: 0,72 Average: 0,73	Minimal: 0,60 Average: 0,61

Table 14 – Wind load resistance – static foam block resistance (standard EPS and horizontal profiles)

Configuration		Failure loads
		[kN]
Characteristics of the EPS (standard EPS)		
Dimensions	500 mm x 500 mm	
Thickness	≥ 60 mm	
Tensile strength perpendicular to the face of the EPS	≥ 150 kPa	
Shear modulus	$\geq 1,0$ MPa	
Characteristic of profiles		
Horizontal profiles fixed every 30 cm		Minimum value: 0,95 Average value: 1,01

3.4.3.3 Wind load resistance – Dynamic wind uplift resistance

No performance assessed.

3.4.4 Tensile strength perpendicular to the faces of thermal insulation product in dry condition

See annex I.

3.4.5 Tensile strength perpendicular to the faces of thermal insulation product in wet condition

No performance assessed.

3.4.6 Shear strength and shear modulus of elasticity of thermal insulation product

See annex I.

3.4.7 Pull-through resistance of fixings from profiles

No performance assessed.

3.4.8 Render strip tensile strength

The characteristic crack width of the base coat with the glass fibre mesh ARMIERGEWEBE at $\epsilon_{rk} = 0,8\%$ deformation is:

Warp direction: 0,14 mm.

Weft direction: 0,13 mm.

3.4.9 Shear strength and shear modulus of the PU-foam adhesives

Not relevant.

3.4.10 Post expansion behaviour of the PU-foam adhesives

Not relevant.

3.5 Protection against noise (BWR5)

No performance assessed.

3.6 Energy economy and heat retention (BWR6)

3.6.1 Thermal resistance of ETICS without influence of mechanical fixing devices

The thermal resistance of the ETICS (R_{ETICS}) without thermal bridge shall be calculated in accordance with Clause 6.7.1.2 of EN ISO 6946 (see Eq. 1) without the internal and external surface resistances (R_{si} and R_{se}) and considering the following homogeneous layers:

- thermal resistance of the thermal insulation product ($R_{insulation}$) obtained in accordance with Clause 2.2.20.1 of the EAD 040083-01-0404,
- thermal resistance of the rendering system (R_{render}), obtained either in accordance with EN ISO 6946 Clause 6.7.1.1 Equation (3) where the thermal conductivity shall be obtained by tabulated values in accordance with Clause 8 of EN ISO 10456 (as default value, 0,02 (m².K)/W may be considered); or by testing in accordance with EN 12667 or EN 12664 (depending on expected thermal resistance).

$$R_{ETICS} = R_{insulation} + R_{render} \text{ [(m}^2\text{.K)/W]} \quad (\text{Eq. 1})$$

The thermal bridges caused by mechanical fixing (anchors, profiles) increases the thermal transmittance U. This influence had to take into account according to EN ISO 6946:2007

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

Where:

- U_c : corrected thermal transmittance [W/(m².K)].
 n : number of anchors per m².
 χ_p : local influence of thermal bridge caused by an anchor, see Clause 3.6.3 of this ETA.

The thermal bridges caused by profiles are negligible.

3.6.2 Thermal conductivity and thermal resistance of the thermal insulation product

See annex I.

3.6.3 Thermal transmittance of fixings devices

χ_p is the point thermal transmittance value of the anchor [W/K]. If not specified in the anchor's ETA, the following values apply (only when the number of anchors per square meter is 16 or less):

- 0,002 W/K for anchors with a plastic screw/nail, stainless steel screw/nail with the head covered by at least 15 mm plastic material, or with a minimum 15 mm air gap at the head of the screw/nail;
- 0,004 W/K for anchors with a galvanized carbon steel screw/nail with the head covered by at least 15 mm plastic material or a minimum 15 mm air gap at the head of the screw /nail;
- 0,008 W/K for all other anchors (worst case).

3.7 Aspects of durability

3.7.1 Bond strength after ageing of finishing layers tested on the rig

Table 15 – Bond strength after ageing of finishing layers tested on the rig

Configuration	Bond strength after ageing		
	$F_{min,HWCFT}$	$F_{mean,HWCFT}$	Failure type
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Conni S)	122 kPa	140 kPa	Cohesive failure
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Mak3)	73 kPa	91 kPa	Adhesive failure
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Noblo)	60 kPa	85 kPa	Adhesive failure

3.7.2 Bond strength after ageing of finishing layers not tested on the rig

Table 16 – Bond strength after ageing of finishing layers tested on the rig

Configuration	Bond strength after ageing		
	$F_{render,min,aged}$	$F_{render,mean,aged}$	Failure type
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Addi S)	135 kPa	142 kPa	Cohesive failure
Configuration	$F_{render,min,F-T}$	$F_{render,mean,F-T}$	Failure type
Insulation (EPS) + Base coat (Lustro) + Finishing coat (Addi S)	91 kPa	131 kPa	Cohesive failure
Insulation (EPS) + Base coat (Lustro) + Finishing coat (RP 240)	156 kPa	159 kPa	Cohesive failure
Insulation (EPS) + Base coat (Lustro) + Finishing coat (SP 260 Pro)	168 kPa	174 kPa	Cohesive failure

3.7.3 Tensile strength and elongation of the glass fibre mesh at initial state and after ageing in alkali conditions

No performance assessed (see annex IV).

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

In accordance with Regulation (EU) N° 3110/2024, Article 94, Regulation (EU) N° 305/2011 is repealed, but references to the repealed Regulation shall be construed as references to the Regulation.

In accordance with the European Assessment Document EAD 040083-01-0404, the applicable European legal act is Commission Decision 97/556/EC ⁽⁴⁾, amended by the Commission Decision 2001/596/EC.

The systems to be applied for the products covered by this EAD have been specified in Table 17.

Table 17 – System of assessment and verification of constancy of performance

Intended use(s)	Level(s) or class(es)	AVCP system(s) ^a
In external wall not subject to fire regulations	Any	2+
In external wall subject to fire regulations	A1*, A2*, B*, C*	1
	A1**, A2**, B**, C**, D, E, F	2+
	(A1 to F)***, NPD****	2+

- ^a See Annex V to Regulation (EU) N° 305/2011
- * 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)
- ** Products/materials not covered by footnote (*)
- *** Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A1 according to Commission Decision 96/603/EC)
- **** 'No Performance Declared' in accordance with Regulation (EU) N° 305/2011, Article 6(f)

4 : Commission Decision 97/556/EC of 14 July 1997 on the procedure for attesting the conformity of construction products pursuant to Article 20 (2) of Council Directive 89/106/EEC as regards external thermal insulation composite systems/kits with rendering (ETICS) (OJ L 229, 20.8.1997, p. 14-16)

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

5.1 Tasks of the manufacturer

5.1.1 Factory production control (FPC)

The manufacturer shall set up a production control system at his factory and perform regular controls of the production process according to the control plan ⁽⁵⁾.

This ensures that the product shows the properties stated in this ETA.

The manufacturer may only use incoming materials according to the material data sheets. He shall control the incoming materials according to the provisions specified in the factory production control plan.

The results of the factory production control shall be recorded and evaluated. The records shall include at least the following information:

- Name of the product,
- Date of manufacturing of the product, batch nr. if needed, and date of inspection or control of the product,
- Result of inspections or controls and, as far as applicable, comparison with the requirements,
- Signature of the person responsible for the factory production control.

The records shall be kept for at least five years. On request they shall be presented to UBAtc.

Details concerning extent, type and frequency of the tests or inspections to be performed within the scope of the factory production control shall correspond to the factory production control plan.

5.2 Tasks for the Notified Body

5.2.1 Assessment of the construction product

Assessment of the product has been conducted under the responsibility by the Technical Assessment Body (UBAtc) in accordance with EAD 040083-01-0404, clause 3.3.

These assessment results should be used for the purposes of assessment of the performance of the construction product in accordance with Regulation (EU) N° 305/2011, Annex V, clause 1.6.

5.2.2 Initial inspection and continuous surveillance of the factory production

Assessment of the FPC is the responsibility of a Notified Body.

An assessment shall be carried out on the required manufacturing steps of each manufacturing plant to demonstrate that the factory production control is in conformity with the ETA and any subsidiary information. This assessment is based on an initial inspection of the factory.

Subsequently continuous surveillance of factory production control is necessary to ensure continuing conformity with the ETA.

5 : The control plan is a confidential part of the technical file and deposited with UBAtc and contains the required information on the factory production control and on the initial type-testing.

6 Bibliography

EAD 040083-01-0404 External thermal insulation composite system with rendering system (2024)

EOTA TR 034 General BWR3 Checklist for EADs/ETAs Dangerous substances (2015)

EN 822 Thermal insulating products for building applications - Determination of length and width (2013)

EN 823 Thermal insulating products for building applications - Determination of thickness (2013)

EN 824 Thermal insulating products for building applications - Determination of squareness (2013)

EN 825 Thermal insulating products for building applications - Determination of flatness (2013)

EN 1603 Thermal insulating products for building applications - Determination of dimensional stability under constant normal laboratory conditions (2013)

EN 1604 Thermal insulating products for building applications - Determination of dimensional stability under specified temperature and humidity conditions (2013)

EN 1607 Thermal insulating products for building applications - Determination of tensile strength perpendicular to faces (2013)

EN 1609 Thermal insulating products for building applications - Determination of short-term water absorption (2013)

EN 12086 Thermal insulating products for building applications - Determination of water vapour transmission properties (2013)

EN 12090 Thermal insulating products for building applications - Determination of shear behaviour (2013)

EN 12664 Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products of medium and low thermal resistance (2001)

EN 12667 Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance (2001)

EN 13163 Thermal insulation products for buildings - Factory made expanded polystyrene (EPS) products - Specification (2012+A1:2015)

EN 13501-1 Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests (2018)

EN ISO 6946 Building components and building elements - Thermal resistance and thermal transmittance - Calculation method (2017)

NOTE: The editions of reference documents given above are those which have been adopted by the UBAtc for its specific use when establishing this ETA. When new editions become available, these supersede the editions mentioned only when confirmed by the UBAtc.

Annex I – Insulation product characteristics – EPS panels

Descriptions and characteristics	For bonded ETICS	For mechanically fixed ETICS	
		with anchors and additional bonding	with profiles and additional bonding
Reaction to fire / EN 13501-1	Euroclass E		
Thermal resistance ((m ² .K)/W)	Defined in the CE marking in reference to EN 13163 Thermal insulation products for buildings - Factory made products of expanded polystyrene		
Thickness (mm) / EN 823	(EPS-EN 13163 – T2)	(EPS-EN 13163 - T2)	± 1,5
Length (mm) / EN 822	(EPS-EN 13163 - L2)		± 1
Width (mm) / EN 822	(EPS-EN 13163 - W2)		± 1
Squareness (mm) / EN 824	EPS-EN 13163 – S2		
Flatness (mm) / EN 825	EPS-EN 13163 – P4		
Surface condition	Cut surface (homogeneous and without skin)		
Dimensional stability under laboratory condition (EN 1603)	± 0,2 % - DS(N)2		≤ 0,15 %
Dimensional stability under specified temperature and humidity (EN 1604)	DS (70,-)1		48h/70°C
			500 x 500 mm panels: – ≤ 0,30% – no value > 0,35% 1000 x 500 mm panels: – ≤ 0,25%
Water absorption by long term immersion (W _{lt}) / EN 12087	WL(T) _i ≤ 0,5 %		
Water vapour diffusion resistance factor (μ) / EN 12086	20 - 78		
Tensile strength perpendicular to the faces in dry conditions (kPa) / EN 1607			
– Standard EPS	σ _{mt} ≥ 80	σ _{mt} ≥ 100	σ _{mt} ≥ 150
– Elastified EPS	σ _{mt} ≥ 80	σ _{mt} ≥ 80	Not used
Shear strength (kPa) / EN 12090	20 ≤ f _{tk} ≤ 100		
Shear modulus (MPa) / EN 12090			
– Standard EPS		1,0 ≤ G _m ≤ 2,0	
– Elastified EPS	0,3 ≤ G _m ≤ 1,0	0,3 ≤ G _m ≤ 1,0	Not used

Annex II – Anchors

Trade name	Plate diameter	Characteristic resistance in the substrate
	[mm]	
Knauf Schienen-Nageldübel	≥ 60	See valid ETA according to EAD 330196-01-0604
Knauf Schienen-Schraubdübel	≥ 60	See valid ETA according to EAD 330196-01-0604

Annex III – Profiles

Polyvinyl chloride (PVC) profiles: PVC-U, E GLC, 078-05-T33 to EN ISO 1163-1 (see Annex 1)

- Horizontal fixed profiles each 30 cm
- Vertical connection profiles: 49,4 cm

Pull-through resistance of fixings from profile: ≥ 500 N.

Annex IV – Description and characteristics of the glass fibre mesh

Mesh trade name	Alkali resistance			
	Residual resistance after ageing		Relative residual resistance after ageing of the strength in the as delivered state	
	Warp	Weft	Warp	Weft
	[N/mm]	[N/mm]	[%]	[%]
KNAUF ARMIERGEWEBE Mesh size 5,0 x 5,0 mm	≥ 20	≥ 20	≥ 50	≥ 50
KNAUF ARMIERGEWEBE Mesh size 4,0 x 4,0 mm	≥ 20	≥ 20	≥ 50	≥ 50

UBAtc asbl is a non-profit organization according to Belgian law. It is a Technical Assessment Body notified by the Belgian notifying authority, the Federal Public Services Economy, SMEs, Self-Employed and Energy, on 17 July 2013 in the framework of Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC. As a transitional provision this notification shall be deemed to apply to the Regulation (EU) No 2024/3110 of the European Parliament and of the Council of 27 November 2024 laying down harmonised conditions for the marketing of construction products and repealing Regulation (EU) No 305/2011.

UBAtc asbl is member of the European Organisation for Technical Assessment, EOTA (www.eota.eu).

This European Technical Assessment has been issued by UBAtc asbl, in Sint-Stevens-Woluwe, on the basis of the technical work carried out by the Assessment Operators, Buildwise and SECO Belgium.

On behalf of UBAtc asbl,



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On behalf of the Assessment Operator,
Buildwise and SECO Belgium, responsible for the
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The most recent version of this European Technical Assessment may be consulted on the UBAtc website (www.butgb-ubadc.be).