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European Technical Assessment

ETA-11/0130
of 28.06.2018

General part

Technical Assessment Body issuing the European Technical Assessment

Österreichisches Institut für Bautechnik
Austrian Institute of Construction Engineering

Trade name

Baumit Star System Nature TFB

Product family to which the construction product belongs

External Thermal Insulation Composite Systems with rendering on mineral wool (WF) for the use as external insulation to walls of buildings.

Manufacturer

Baumit Beteiligungen GmbH
Wopfing 156
2754 Waldegg
Austria

Manufacturing plant

Plants of
Baumit Beteiligungen GmbH
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This European Technical Assessment contains

11 pages

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

EAD 040089-00-0404 "ETICS with renderings for the use on timber frame buildings, edition May 2016"

This European Technical Assessment replaces

European technical approval ETA-11/0130,
with validity from 28.06.2013 to 27.06.2018

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Specific parts

1. Technical description of the product

1.1 General

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 wood fibre insulation product (WF) to be bonded or bonded and 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 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.

1.2 Composition of the kit

1.2.1 Composition of the ETICS

	Components	Coverage (kg/m ²)	Thickness (mm)
Insulation materials with associated methods of fixing	Mechanically fixed ETICS with and without supplementary adhesive		
	➤ Insulation product factory-prefabricated wood fibre (WF) in accordance with EN 13171	/	40 to 300
	➤ Anchors: tested in support with EN 1382 "Withdrawal capacity of timber fasteners"	/	/
Base coat	- Baumit SupraFix/Baumit SupraKleber: Sand, cement, dispersion powder, additives	5,0 to 8,0 (powder)	4,0 to 6,0
	- Baumit StarContact Forte/ Baumit DickschichtKlebespachtel Mineral powder, cement base with sand, dispersion powder, additives	5,0 to 8,0 (powder)	4,0 to 8,0
	- Baumit StarContactLight/ KlebeSpachtel Light: Mineral powder, cement base with sand, dispersion powder, additives	3,0 to 8,0 (powder)	2,0 to 8,0
	- Baumit PowerContact: Mineral powder, cement base with silica sand, dispersion powder, additives	2,5 to 7,5 (powder)	2,0 - 8,0
Glass fibre mesh	- Baumit TextilglasGitter Standard fibre mesh mesh size 3,0 mm x 5,0 mm	/	/
	- Baumit StarTex Standard fibre mesh mesh size 3,0 mm x 5,0 mm	/	/
Key coat	- Baumit UniPrimer: Ready to use pigmented liquid	0,20 to 0,25 (kg/m ²)	/
	- Baumit PremiumPrimer: Ready to use pigmented liquid	0,20 to 0,25 (kg/m ²)	/
Finishing coat for the use of key coat the manufacturers specification has to be followed	➤ Ready to use paste – silicate binder: - Baumit SilikatTop: particle size 1,5/2,0/3,0 mm	2,5 to 4,2	regulated by particle size
	- Baumit NanoporTop: particle size 1,5/2,0/3,0 mm	2,5 to 4,2	
	➤ Ready to use paste – polymeric binder: - Baumit SilikonTop: particle size 1,5/2,0/3,0 mm	2,5 to 4,2	regulated by particle size
	- Baumit SilikonTop: particle size 1,5/2,0/3,0 mm	2,5 to 4,2	
	- Baumit CreativTop: particle size S-Fine 0,1 mm, Fine 1,0 mm, Trend 3,0 mm, Max 4,0 mm, Pearl 0,5mm, Vario	1,5 to 6,2	

1.2.2 Characteristics of the insulation product

Designation code	WF-EN 13171-T4-CS(10/Y)70-TR10-WS1,0-MU5-AF100		
Reaction to fire according to EN 13501-1	Maximum density (kg/m³)	Maximum thickness (mm)	class
WF board d _w = 60 mm	185	200	E
Water absorption according EN 1609	approx. 1 kg/m² at a tested density of approx. 185kg/m ³		
Water vapour diffusion resistance factor (μ) / EN 12086	μ is less than 5 at a tested density of approx. 185 kg/m ³		
Bending strength	> BS 500		
Tensile test / EN 1607	Under dry conditions: ≥ 0,01 MPa		
Thermal resistance to be calculated according the following formula	R_{ins} = d_{ins} · λ_{ins}⁻¹	R_{ins}: thermal resistance of insulation product d_{ins}: thickness of the insulation product (m) λ_{ins}: 0,043 W/m.K	

1.2.3 Timber frame fasteners for insulation products:

The tests according to EN 1382 reached following pull-out strength:

Substrate	Thickness (mm)	Declared value
gypsum boards	≥ 10,0	0,03 kN
OSB	≥ 12,5	0,15 kN
Cement bonded boards	≥ 23,0	0,50 kN

Note: If the insulation product is installed on a substrate according to clause 2 the mechanically fixation shall be done with a minimum depth of anchoring 5 mm through this substrate into the wooden frame construction (solid).

1.2.4 Render

The average value of the crack width of the base coat with the glass fibre mesh, measured at a render strain value of 50% is about 0,1 mm.

1.2.5 Glass fibres meshes

	Alkalis resistance			
	Residual resistance after ageing (N/mm)		Relative residual resistance: % (after ageing) of the strength in the as delivered state	
	Warp	Weft	Warp	Weft
Baumit TextilglasGitter, Baumit StarTex Glass fibre mesh with mesh size between 3 and 5 mm	≥ 20	≥ 20	≥ 50	≥ 50

1.3 Manufacturing

The European Technical Assessment is issued for ETICS on the basis of agreed data / information, deposited with the Österreichisches Institut für Bautechnik, 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, shall be notified to the Österreichisches Institut für Bautechnik before the changes are introduced. The Österreichisches Institut für Bautechnik 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.

1.4 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 EAD 040089-00-0404 "EAD 040089-00-0404 - ETICS with renderings for the use on timber frame buildings, edition May 2016", 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.

1.5 Packaging, transport and storage

The information on packaging, transport and storage is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer(s) to ensure that this information is made known to the concerned people.

1.6 Use, maintenance and repair

The finishing coat shall normally be maintained in order to fully preserve the ETICS performance. Maintenance includes at least:

- visual inspection of the ETICS
- the repairing of localized damaged areas due to accidents,
- the aspect maintenance with products adapted and compatible with the ETICS (possibly after washing or ad hoc preparation).

Necessary repairs should be performed as soon as the need has been identified. It is important to be able to carry out maintenance as far as possible using readily available products and equipment, without spoiling appearance. Only products which are compatible with the ETICS shall be used.

The information on use, maintenance and repair is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer(s) to ensure that this information is made known to the concerned people.

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

The ETICS are designed to give the timber frame building wall to which they are applied additional thermal insulation and protection from effects of weathering.

The ETICS can be used on new or existing (retrofit) vertical timber frame building walls. They can also be used on horizontal or inclined surfaces which are not exposed to precipitation.

The surface for the application of ETICS can be a board substrate (wood based panels, solid wood panels, plasterboards, gypsum bonded boards, cement bonded boards, etc. according to Annex 1).

The substrate has to be strong, dry and free of loose material. It may be necessary to protect the substrate against wetting and weathering before the application of the ETICS.

The thickness of the panels has to be superior or equal to 10 mm.

The board substrate must be suitable for humid conditions as specified in EN 13986.

If the insulation layer of the ETICS is WF according to hEN 13171, the insulation product can also be mounted direct to the timber frame, but it must be guaranteed that penetrating humidity has no effect on the timber frame/second insulation layer.

ETICS are non load-bearing construction elements. They do not contribute directly to the stability of the timber frame building wall on which they are installed. The verification of the structural capacities of the wall and their suitability for the application of ETICS shall be in accordance with ETAG 007 (and its conversion into EAD), clause 5.1 using calculation methods (EN 1995-1-1, Eurocode 5 Part 1-1, etc) as well as verifications by testing (EN 380, EN 594, EN 595, EN 596, etc.) where the load bearing capacity is unable to calculate.

The ETICS can contribute to the durability of a timber frame building by providing enhanced protection from the effects of weathering.

ETICS are not intended to ensure the air tightness of the timber frame building structure. The timber frame building wall as such has therefore to be airtight to:

- a) reduce the thermal transmittance of the wall
- b) avoid interstitial condensation due to convection.

3. Performance of the product and references to the methods used for its assessment

3.1 Reaction to fire

Configuration acc. to cl. 1.2.1	Maximum declared organic content of the rendering system	Minimum declared flame retardant content of the rendering system	Euroclass according to EN 13501-1 : 2002
Baumit Star System Nature TFB	Base coat: 6,8 % Finishing coat: 8,5 %	Base coat: 0 % Finishing coat: 0 %	B – s1, d0

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: 2002 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 Water absorption (capillarity test)

- Base coats:
 - Water absorption after 1 hour < 1 kg/m²
 - Water absorption after 24 hours < 0.5 kg/m²
- Rendering system:

Rendering systems: Base coat (incl. key coat) + finishing coats indicated hereafter:		Water absorption after 24 hours	
		< 0,5 kg/m ²	≥ 0,5 kg/m ²
	Baumit SilikatTop		X
	Baumit SilikonTop	X	
	Baumit NanoporTop	X	
	Baumit CreativTop	X	

3.3 Watertightness

3.3.1 Moisture content and gradient

moisture content (% by mass): < 20 (< 15)
moisture gradient (% by mass): < 3

3.3.2 Hygrothermal behaviour

The hygrothermal performance has been passed without defects

3.3.3 Freeze/Thaw-Resistance

All render systems with a water absorption $> 0,5 \text{ kg/m}^2$ the freeze/thaw resistance has been tested and has passed without defects.

3.4 Impact resistance

3.4.1 Hard body impact

		Single standard layer	Double standard layer
Rendering systems: Base coat (incl. key coat) + finishing coats indicated hereafter:	Baunit SilikatTop	Category II	Category I
	Baunit SilikonTop		
	Baunit NanoporTop		
	Baunit CreativTop		

3.4.2 Soft body impact

Resistance to soft body impact for ETICS directly mounted to the timber frame

Level	deflection	result
A	500 Nm	No penetration
B	300 Nm	No collapse
C	100 Nm	No projection

3.5 Water vapour permeability

		Equivalent air thickness (m)
Rendering systems: Base coat (incl. key coat) + finishing coats indicated hereafter:	Baunit SilikatTop	$\leq 1,0 \text{ m}$ (test result with particle size 3,0 mm: 0,3 m)
	Baunit SilikonTop	$\leq 1,0 \text{ m}$ (test result with particle size 3,0 mm: 0,5 m)
	Baunit NanoporTop	$\leq 1,0 \text{ m}$ (test result with particle size 3,0 mm: 0,1 m)
	Baunit CreativTop	$\leq 1,0 \text{ m}$ (test result with particle size 3,0 mm: 0,3 m)

3.6 Dangerous substances

According to the manufacturer's declaration this assessed system does not contain dangerous substances detailed in Council Directive 67/548/EEC and Regulation (EC) no 1272/2008 as well as EOTA TR 034, edition March 2012.

A written declaration in this respect was submitted by the ETA-holder.

In addition to the specific clauses relating to dangerous substances contained in this European Technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

3.7

Bond strength between all base coat and insulation product

Conditionings		
Initial state	After the hygrothermal cycles (on the rig)	After the freeze/thaw cycles (on samples)
$\geq 0,08 \text{ MPa}$	$< 0,08 \text{ MPa}$ but failure into insulation product	$< 0,08 \text{ MPa}$ but failure into insulation product

3.8 Adhesives onto substrate and insulation product (safety in use of the bonded ETICS)

		Initial state	After conditioning at (23 ± 2) °C and (95 ± 5) %RH for 7 days (humid conditions)	After conditioning at (23 ± 2) °C and (95 ± 5) % RH for 7 days + 7 days drying at (23 ± 2) °C and (50 ± 5) %RH
All adhesives according to clause 1.2.1	OSB	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa
	chipboard	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa
	Insulation product	≥ 0,08 MPa	< 0,08 MPa but failure into insulation product	< 0,08 MPa but failure into insulation product

3.9 Fixing strength (displacement test)

U_e (displacement corresponding to the elasticity limit) = 2,5 mm

3.10 Wind load resistance

3.10.1 Safety in use of mechanically fixed ETICS using timber frame fasteners

The following values only apply for the combination (anchor plate characteristics) / (insulation product characteristics) mentioned in this table. All anchors which shall be used are shown in the control plan and the declaration of performance.

Anchors for which the following failure loads apply and characteristics:		timber frame fasteners		
		Plate diameter of anchor		≥ Ø 60 mm
Characteristic of the insulation product for which the following failure loads apply		Thickness (Surface assembly)		≥ 60 mm
		Thickness (Countersunk assembly)		≥ 100 mm
		Tensile strength perpendicular to the face		≥ 5 kPa
Failure load [N]	Anchors not placed at the panel joints (pull through test; dry conditions)	R_{panel}	Minimum:	0,46 kN
	Anchors placed at the panel joints (pull through test; dry conditions)	R_{joint}	Average:	0,65 kN
			Minimum:	0,51 kN
			Average:	0,53 kN

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

$$R_d = \frac{Q_1 \times C_s \times C_a}{m} = \frac{2,0 \text{ kPa}}{m}$$

$$R_d \geq S_d$$

Where:

R_d design resistance

S_d wind load suction

Q_1 test result

C_s statical correction factor

C_a geometric factor

m national safety factor of resistance for normal materials (partial safety factor to be chosen in function of the type of failure which occurred and the ageing of material properties concerned).

The above given loads apply for all anchors if they meet the following criteria:

- plate diameter of anchor ≥ 60 mm
- plate stiffness of anchor ≥ 0,5 kN/mm
- load resistance of anchor plate ≥ 1,0 kN

3.11 Thermal resistance

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

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

Where: $\chi_p \cdot n$ has only to be taken into account if it is greater than 0,04 W/(m²·K)

U: global thermal transmittance of the covered wall (W/ (m²·K))

n: number of anchors (through insulation product) per 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_c: 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 render (about 0.02 in (m²·K)/W)

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 Declaration of performance 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.

3.12 Airborne sound insulation

Single improvement values determined by testing, ETICS configuration and substrate characteristics for which the values are valid:

Insulation product	Rendering system	ETICS fixing	Substrate description	ETICS performance
Insulation type: WF Thickness: 200 mm maximum dynamic stiffness: NPA air flow resistance: NPA	minimum mass of the rendering system: depending on ETICS- thickness	mechanical fixing type: anchors and clips acc. to clause 1.2 maximum number per m ² : depending on calculation	type: heavy wall - mass per unit: depending on wall construction	$\Delta R_w = \text{NPA}$ $\Delta R_w + C = \text{NPA}$ $\Delta R_w + C_{tr} = \text{NPA}$

3.13 Bond strength after ageing

		after hygrothermal cycles (on the rig) or after 7 days immersion in water + 7 days 23 °C/50 % RH
Rendering systems: Base coat (incl. key coat) + finishing coats indicated hereafter:	Baumit SilikatTop	≥ 0,08 MPa
	Baumit SilikonTop	
	Baumit NanoporTop	
	Baumit CreativTop	

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 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.

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) The 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 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 Österreichisches Institut für Bautechnik have agreed a Control Plan which is deposited with the Österreichisches Institut für Bautechnik 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 before acceptance.

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 Österreichisches Institut für Bautechnik without delay.

Issued in Vienna, on 28.06.2018

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