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European Technical Assessment

ETA-09/0282
of 15/10/2014

General part

Technical Assessment Body issuing the ETA

Österreichisches Institut für Bautechnik

Trade name of the construction product

FASSATHERM PLUS

Product family to which the construction product belongs

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

Manufacturer

FASSA SRL
Via Lazzaris, 3
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Italy

Manufacturing plant

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This European Technical Assessment contains

14 pages

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

ETAG 004, edition 2013, used as European Assessment Document (EAD)

This European Technical Assessment replaces

ETA-09/0282 with validity from 20.06.2012 to 14.10.2014

General part

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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 insulation product of mineral wool (MW) to be bonded or mechanically fixed onto a wall. The methods of fixing and the relevant components are specified in the table below. The insulation product is faced with a rendering system consisting of one or more layers (site applied), one of which contains reinforcement. The rendering 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 (see § 2.5 for further description, characteristics and performances of the components)	Coverage (kg/m ²)	Thickness (mm)
Insulation materials with associated methods of fixing Insulation materials with associated methods of fixing	Bonded ETICS (partially or fully bonded. National application documents shall be taken into account)		
	➤ Insulation product 1: Standard mineral wool (slabs)	/	50 to 240
	➤ Insulation product 2: Standard mineral wool (lamellas)	/	50 to 240
	➤ Adhesives: - A 96 Baukleber: white cement, lime sand, additives - AL 88 Baukleber: white cement, sand, polystyrene, additives	3,0 to 6,0 (powder) 3,0 to 6,0 (powder)	/ / /

	Components (see § 2.5 for further description, characteristics and performances of the components)	Coverage (kg/m ²)	Thickness (mm)
	<p>Mechanically fixed ETICS with anchors and supplementary adhesive (see § 2.3.3 a) for possible associations insulation product/anchors)</p> <ul style="list-style-type: none"> ➤ Insulation product 1: Standard mineral wool (slabs) ➤ Insulation product 2: Standard mineral wool (lamellas) ➤ Adhesives: <ul style="list-style-type: none"> - A 96 Baukleber: white cement, lime sand, additives - AL 88 Baukleber: white cement, sand, polystyrene, additives ➤ Anchors: Anchors with valid ETA acc. to ETAG 014 “Plastic Anchors For Fixing Of External Thermal Insulation Composite Systems With Rendering” 	/	50 to 240
		/	50 to 240
		3,0 to 6,0 (powder)	/
		3,0 to 6,0 (powder)	/
		/	/
Base coat	- A 96 Baukleber: white cement, lime sand, additives	3,0 to 6,0 (powder)	3,5 to 7,0
	- AL 88 Baukleber: white cement, sand, polystyrene, additives	3,0 to 6,0 (powder)	5,0 to 10,0
Glass fibre mesh	➤ Standard glass fibre mesh: - FASSANET 160: mesh size between 3,80 mm and 4,15 mm	/	/
Key coat	- FASSIL F 328 Silikat Tiefgrund: mineral fixing foundation, stabilized potassium silicate with particular binders	0,10 to 0,15 (liquid)	/
	- FA 249 Kunstharzgrundierung auf Wasserbasis: particular alkali resistant dispersion of synthetic resins	0,03 to 0,05 (liquid)	/
	- FS 412 Tiefgrund für Silikonharz-Zyklen: water-based primer composed of special acrylsilicone resins	0,10 to 0,15 (liquid)	/
Finishing coat	➤ Ready to use paste – silicate binder: - FASSIL R 336 Silikat-Linie: particle size 0,6/1,0/1,5/2,0/3,0 mm	2,0 to 4,2	Regulated by particle size
	➤ Ready to use paste – silicon resin: - RSR 421 Silikonharz-Linie: particle size 0,6/1,0/1,5/2,0/3,0 mm	2,0 to 4,2	
	➤ Ready to use paste – synthetic resin: - RTA 549 Kunstharz-Linie: particle size 1,0/1,5/2,0/3,0 mm	2,0 to 4,2	
Ancillary materials	Descriptions in accordance with § 3.2.2.5 of the ETAG 004 Remain under the ETA-holder responsibilities		

1.2.2 Characteristics of the insulation product

Descriptions and characteristics	MW lamellas	MW slabs
	Bonded ETICS	with supplementary mechanical fixings
Reaction to fire EN 13501-1:2007	Euroclass A1 - Thickness: 50 mm to 240 mm - density: 90 kg/m ³ to 130 kg/m ³	
Thermal resistance	Defined in the CE marking in reference to EN 13162	
Thickness EN 823	MW-EN 13162 – T5	
Water absorption EN 12086	≤ 1 kg/m ²	
Water vapour diffusion resistance factor (μ) EN 12086	≤ 5	
Tensile strength EN 1607	≥ 80 kPa (MW-EN 13162 – TR80)	≥ 10 kPa (MW-EN 13162 – TR10)
Shear strength EN 12090	≥ 0,02 N/mm ²	< 0,02 N/mm ²
Shear modulus EN 12090	≥ 1,0 N/mm ²	< 1,0 N/mm ²

1.2.3 Characteristics of the Anchors

Anchors used with valid ETA according to ETAG 014 “Plastic Anchors For Fixing Of External Thermal Insulation Composite Systems With Rendering”, shown in the Control Plan.

1.2.4 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
FASSANET 160 Glass fibre mesh with mesh size between 3,80 mm and 4,15 mm	≥ 20	≥ 20	≥ 50	≥ 50

1.3 Manufacturing

The European Technical Assessment is issued for the 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 chapter 7 of ETAG 004 used as EAD, 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 localised 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)

This ETICS is intended for use as external insulation of buildings' walls. The walls are made of masonry (bricks, blocks, stones,...) or concrete (cast on site or as prefabricated panels). The characteristics of walls shall be verified prior to use of the ETICS, especially regarding conditions for reaction to fire classification and for fixing of the ETICS either by bonding or mechanically. The ETICS is designed to give the wall to which it is applied satisfactory thermal insulation.

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

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

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

The choice of the method of fixing depends on the characteristics of the substrate, which may need preparation (see § 7.2.1 of the ETAG 004) and shall be done in accordance with the national instructions.

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

3.1 Reaction to fire

Configuration according to clause 1.1	Maximum declared organic content of the rendering system	Minimum declared flame retardant content of the rendering system	Class according to EN 13501-1:2007
FASSATHERM PLUS	Base coat: 5,0 % Finishing coat: 9,4 %	Base coat: 0 % Finishing coat: 0 %	A2-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 coat:
 - Water absorption after 1 hour < 1 kg/m²
 - Water absorption after 24 hours < 0,5 kg/m²
- Rendering system:

		Water absorption after 24 hours	
		< 0,5 kg/m ²	≥ 0,5 kg/m ²
Rendering systems: base coat (including key coat according to clause 1) + finishing coats indicated hereafter:	FASSIL R 336	X	
	RSR 421	X	
	RTA 549	X	

3.2 Watertightness

Passed without defects

3.3 Impact resistance

		Single standard layer	Double standard layer
Rendering systems: base coat A 96 Baukleber (including key coat) + finishing coats indicated hereafter:	FASSIL R 336 on MW slabs	Category II	Category II
	FASSIL R 336 on MW lamellas	Category III	Category III
	RSR 421 on MW slabs	Category II	Category II
	RSR 421 on MW lamellas	Category III	Category III
	RTA 549 on MW slabs	Category II	Category II
	RTA 549 on MW lamellas	Category II	Category II

		Single standard layer	Double standard layer
Rendering systems: base coat AL 88 Baukleber (including key coat) + finishing coats indicated hereafter:	FASSIL R 336 on MW slabs	Category II	Category II
	FASSIL R 336 on MW lamellas	Category II	Category II
	RSR 421 on MW slabs	Category III	Category II
	RSR 421 on MW lamellas	Category III	Category II
	RTA 549 on MW slabs	Category II	Category II
	RTA 549 on MW lamellas	Category II	Category II

3.4 Water vapour permeability

		Equivalent air thickness (m)
Rendering systems: base coat A 96 Baukleber (including key coat) + finishing coats indicated hereafter:	FASSIL R 336	$\leq 1,0$ m (test result obtained with particle size 2,0 mm: 0,3 m)
	RSR 421	$\leq 1,0$ m (test result obtained with particle size 2,0 mm: 0,5 m)
	RTA 549	$\leq 1,0$ m (test result obtained with particle size 2,0 mm: 0,3 m)

		Equivalent air thickness (m)
Rendering systems: base coat AL 88 Baukleber (including key coat) + finishing coats indicated hereafter:	FASSIL R 336	$\leq 1,0$ m (test result obtained with particle size 2,0 mm: 0,2 m)

3.5 Dangerous substances

A written declaration was submitted by the ETA-holder.

In addition to the specific clauses relating to dangerous substances contained in this ETA, there may be other 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 Construction Product Directive, these requirements need also to be complied with, when and where they apply.

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

3.6 Bond strength between base coat and insulation product

- Base coats onto insulation product 1

Conditionings		
Initial state	After the hygrothermal cycles (on the rig)	After the freeze/thaw cycles (on samples)
≥ 0,08 MPa	≤ 0,08 MPa but failure into insulation product	Test not required because freeze/thaw cycles not necessary

- Base coats onto insulation product 2

Conditionings		
Initial state	After the hygrothermal cycles (on the rig)	After the freeze/thaw cycles (on samples)
≥ 0,08 MPa	≥ 0,08 MPa	Test not required because freeze/thaw cycles not necessary

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

		Conditionings		
		Initial state	48 h immersion in water + 2 h 23 °C/50 % RH	48 h immersion in water + 7 days 23 °C/50 % RH
A 96 Baukleber	Concrete	≥ 0,25 MPa	≥ 0,08 MPa	≥ 0,25 MPa
	Insulation product 1	< 0,08 MPa but failure into insulation product	< 0,03 MPa but failure into insulation product	< 0,08 MPa but failure into insulation product
	Insulation product 2	≥ 0,08 MPa	≥ 0,03 MPa	< 0,08 MPa but failure into insulation product
AL 88 Baukleber	Concrete	≥ 0,25 MPa	≥ 0,08 MPa	≥ 0,25 MPa
	Insulation product 1	< 0,08 MPa but failure into insulation product	< 0,03 MPa but failure into insulation product	< 0,08 MPa but failure into insulation product
	Insulation product 2	≥ 0,08 MPa	≥ 0,03 MPa	< 0,08 MPa but failure into insulation product

The ETICS shall be installed on the substrate with application of the adhesive on the following **minimal surfaces**:

	Tensile strength perpendicular to the face of the insulation product (MW slabs)	Tensile strength perpendicular to the face of the insulation product (MW lamellas)
	≥ 10 kPa	≥ 80 kPa
A 96 Baukleber	50 %	100 %
AL 88 Baukleber	50 %	100 %

3.8 Fixing strength (displacement test)

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

3.9 Wind load resistance

Safety in use of mechanically fixed ETICS **using anchors**

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

Anchors for which the following failure loads apply and characteristics:		All anchors according to clause 1.1		
		Plate diameter of anchor		$\geq \varnothing 60$ mm
Characteristic of the insulation product for which the following failure loads apply		Thickness		≥ 50 mm
		Tensile strength perpendicular to the face		≥ 10 kPa
Failure load [kN]	Anchors not placed at the panel joints (pull through test; wet conditions)	R_{panel}	Minimum:	$\geq 0,15$
			Average:	$\geq 0,20$
	Anchors placed at the panel joints (pull through test; wet conditions)	R_{joint}	Minimum:	$\geq 0,15$
			Average:	$\geq 0,20$

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

- valid ETA according to ETAG 014
- plate stiffness of anchors $\geq 0,3$ kN/mm
- load resistance of anchor plate $\geq 1,0$ kN
- anchors mounted on the insulation panel surface or with the minimal residual thickness of the insulation product as stated above

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

$$R_d = (R_{\text{panel}} \times n_{\text{panel}} + R_{\text{joint}} \times n_{\text{joint}}) / \gamma$$

where:

- n_{panel} : number (per m^2) of anchors not placed at the panel joint
 n_{joint} : number (per m^2) of anchors placed at the panel joint
 γ : national safety fact

3.10 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.

3.11 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: product 1: MW slabs product 2: MW lamellas both types: Range of thickness: 50 to 240 mm maximum dynamic stiffness: NPD air flow resistance: NPD	minimum mass of the rendering system: depending on ETICS-thickness	mechanical fixing type: anchors acc. to ETAG 014 maximum number per m ² : depending on calculation bonding by adhesives maximum bonded surface area: see clause 3.7	type: heavy wall - mass per unit: depending on wall construction	$\Delta R_w = \text{NPD}$ $\Delta R_w + C = \text{NPD}$ $\Delta R_w + C_{tr} = \text{NPD}$

3.12 Bond strength after ageing

3.12.1 Base coat + finishing coat after ageing onto insulation product 1

		after hygrothermal cycles (on the rig) or after 7 days immersion in water + 7 days 23 °C/50 % RH
Rendering systems: base coat (including key coat according to clause 1) + finishing coats indicated hereafter:	FASSIL R 336	$< 0,08 \text{ MPa}$ but failure into insulation product
	RSR 421	
	RTA 549	

3.12.2 Base coat + finishing coat after ageing onto insulation product 2

		after hygrothermal cycles (on the rig) or after 7 days immersion in water + 7 days 23 °C/50 % RH
Rendering systems: base coat (including key coat according to clause 1) + finishing coats indicated hereafter:	FASSIL R 336	$< 0,08 \text{ MPa}$ but failure into insulation product
	RSR 421	
	RTA 549	

3.13 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.

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 15.10.2014

Rainer Mikulits
Managing Director

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