



## European Technical Assessment

## ETA 23/0739 of 08/11/2023

### General Part

**Technical Assessment Body issuing the ETA:**

**TECNALIA RESEARCH & INNOVATION**

**Trade name of the construction product**

**FASSATHERM CLASSIC A96 100**

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

External Thermal Insulation Composite System with rendering on expanded polystyrene (EPS) for use as external thermal insulation to the wall of buildings.

**Manufacturer**

**FASSA srl**  
Via Lazzaris 3  
I-31027 Spresiano (TV), Italy

**Manufacturing plants**

Plant 1: Via Fornaci, 8  
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Plant 2: Autovía del Mediterráneo, Sal. 537  
E-04628 Antas (Almería), Spain

**This European Technical Assessment contains**

18 pages including 1 Annex which form an integral part of this assessment.

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

EAD 040083-00-0404 External Thermal Insulation Composite Systems (ETICS) with Rendering

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## Table of contents

1. Technical description of the product.....	3
2. Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD) .....	5
3. Performance of the product and references to the methods used for its assessment.....	7
4. Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base.....	16
5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD .....	16
ANNEX 1 CHARACTERISTICS OF THE COMPONENTS.....	17





## Specific parts

### 1. Technical description of the product

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 (European Technical Assessment).

The ETICS kit comprises a prefabricated insulation product of expanded polystyrene (EPS) to be bonded and mechanically fixed onto the wall. The methods 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 such as connections, apertures, corners, parapets, sills, etc. Assessment and performance of these components is not addressed on 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.

The components of the kit are:

	Components	Coverage (kg/m <sup>2</sup> )	Thickness (mm)
	<p><b>ETICS bonded with supplementary mechanical fixing or mechanically fixed with supplementary adhesive. According to ETA holder's prescriptions the minimal bonded surface shall be 50% and with minimum 6 supplementary mechanical fixings per m<sup>2</sup>.</b></p> <p><b>ETICS mechanically fixed with supplementary adhesive. According to ETA holder's prescriptions minimum 6 mechanical fixings per m<sup>2</sup> and the minimal bonded surface shall be 50%.</b></p> <p><b>National application documents shall be taken into account.</b></p>		
Insulation material with associated method of fixing	Insulation product:		
	<ul style="list-style-type: none"> <li>Factory prefabricated expanded polystyrene (EPS) board according to EN 13163.</li> </ul>	--	50-300
	Adhesive:		
	<ul style="list-style-type: none"> <li><b>A96</b> Cement based mortar in powder, according to EN 998-1, requiring addition of 22%-27% water.</li> </ul>	4.5-6.0	5-10 (dry)
	Mechanical fixings		
	<ul style="list-style-type: none"> <li>Nailed-in plastic anchor <b>FASSA COMBI FIX PLUS</b></li> </ul>		See Annex 1
	<ul style="list-style-type: none"> <li>Nailed-in plastic anchor <b>EJOTHERM H2 ECO</b></li> </ul>		See Annex 1
	<ul style="list-style-type: none"> <li>Screwed-in plastic anchor <b>FASSA TOP FIX 2G</b></li> <li>Screwed-in plastic anchor <b>EJOT STR-U 2G</b></li> </ul>		See Annex 1



	Components	Coverage (kg/m <sup>2</sup> )	Thickness (mm)
<b>Base coat</b>	<ul style="list-style-type: none"> <li><b>A96</b> Cement based mortar in powder, according to EN 998-1, requiring addition of 22%-27% water. .</li> </ul>	6-9	4-6 (dry)
<b>Glass fibre mesh</b>	<ul style="list-style-type: none"> <li><b>FASSANET 160</b> Alkali resistant glass fibre mesh with mass per unit area of about 160 g/m<sup>2</sup> and mesh size of about 3.8 x 3.5 mm.</li> </ul>	See Annex 1	
<b>Key coat</b>	<ul style="list-style-type: none"> <li><b>FX 526</b> Water solution of acryl-silicon resins.</li> </ul>	0.10-0.15 (l/m <sup>2</sup> )	0.1-0.12
<b>Finishing coat</b>	<ul style="list-style-type: none"> <li><b>RSR 421</b> Ready to use paste based on acryl-silicon resin. According to EN 15284. Particle size 1, 1.5 and 2 mm.</li> </ul>	2.2-3.4	1.0-2.0
	<ul style="list-style-type: none"> <li><b>RTA 549</b> Ready-to use paste based on acrylic resin. According to EN 15284. Particle size 1, 1.5 and 2 mm.</li> </ul>	2.2-3.4	1.0-2.0
	<ul style="list-style-type: none"> <li><b>RX 561</b> Ready-to use paste based on acryl-silicon resin. According to EN 15284. Particle size 1, 1.5, 2 and 3 mm.</li> </ul>	2.2-4.6	1.0-3.0
<b>Ancillary materials</b>	Supplementary profiles: <ul style="list-style-type: none"> <li>Polyvinyl chloride (PVC) or aluminium profiles for corners, expansion joints, junctions with doors and windows, balconies, etc.</li> </ul>	Remain under the ETA holder responsibility	

Table 1: Components FASSATHERM CLASSIC A96 100

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

### **2.1. Intended use**

This ETICS is intended for use as external insulation of building walls. The walls are made of masonry (bricks, block, 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 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 its 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 could need preparation and shall be done in accordance with the national instructions.

The provisions made in this ETA are based on an assumed working life of 25 years as minimum, provided that the conditions laid down in the sections below (manufacturing, transport, installation, use, maintenance, etc) are met. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, 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.

### **2.2. Manufacturing**

The ETA is issued for the ETICS, on the basis of agreed data/information, deposited at Tecnalia Research & Innovation, which identifies the ETICS that has been assessed and judged. Changes to the ETICS or the components or their production process, which could result in this deposited data/information being incorrect, shall be notified to Tecnalia Research & Innovation before the changes are introduced. Tecnalia Research & Innovation 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.

### **2.3. Design and installation**

The ETICS is installed on site. 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 responsibility of the manufacturer to guarantee

that the information about design and installation are easily accessible to the concerned people.

#### **2.4. Packaging, transport and storage**

The information on packaging, transport and storage is given in the manufacturer's technical documentation. It is responsibility of the manufacturer to ensure that this information is easily accessible for the concerned people.

#### **2.5. Use, maintenance and repair**

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

Maintenance includes at least:

- Visual inspections of the ETICS.
- The repairing of localised damaged areas due to accidents.
- The application of various products or paints, 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 to ensure that this information is made know to the concerned people.



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

The identification tests and the assessment for the intended use of this ETICS according to the Basic Work Requirements, were carried out in compliance with the EAD 040083-00-0404 External Thermal Insulation Composite Systems (ETICS) with Rendering (hereinafter referred as “EAD”).

#### Safety in case of fire (BWR 2)

##### 3.1 Reaction to fire (EAD 040083-00-0404, Clause 2.2.1)

##### 3.1.1 Reaction to fire of ETICS (EAD 040083-00-0404, Clause 2.2.1.1)

Components	Max. organic content (%) / Max. heat of combustion (MJ/kg)	Flame retardant content
Adhesive A96	<5% / --	No flame retardant
Insulation EPS	--	
Base coat A96	<5% / --	
Glass fibre mesh FASSANET 160	-- / 6.41	
Key coat FX 526	-- / 1.06	
Finishing coat RSR 421	<8.3% / <3.0	
Finishing coat RTA 549		
Finishing coat RX 561		

Table 2: Organic content, heat of combustion and flame retardant content of FASSATHERM CLASSIC A96 100 components.

The reaction to fire according to EN 13501-1 of FASSATHERM CLASSIC A96 100 with granulometry of the finishing coats from 1 mm to 2 mm, is class B-s1, d0.

The reaction to fire according to EN 13501-1 of FASSATHERM CLASSIC A96 100 with finishing coat RX 561 and granulometry 3 mm, is class B-s2, 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 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.

##### 3.1.2 Reaction to fire of thermal insulation material (EAD 040083-00-0404, Clause 2.2.1.2)

Performance not assessed. See Annex 1 for thermal insulation product characteristics.

##### 3.2 Facade fire performance (EAD 040083-00-0404, Clause 2.2.2)

Performance not assessed.





3.3 Propensity to undergo continuous smouldering (EAD 040083-00-0404, Clause 2.2.3)

Not relevant.

**Hygiene, health and environment (BWR 3)**

3.4 Content, emission and/or release of dangerous substances (EAD 040083-00-0404, Clause 2.2.4)

Performance not assessed.

3.5 Water absorption (EAD 040083-00-0404, Clause 2.2.5)

3.5.1 Water absorption of the base coat and the rendering system

Base Coat	Rendering	Water absorption (kg/m <sup>2</sup> )	
		After 1 hour	After 24 hours
A96	Without rendering	0.134	0.394
	With rendering RSR 421	0.078	0.373
	With rendering RTA 549	0.035	0.174
	With rendering RX 561	0.046	0.239

Table 3: Water absorption (capillarity test)

3.5.2 Water absorption of the thermal insulation product.

Performance not assessed. See Annex 1 for thermal insulation product characteristics.

3.6 Hygrothermal behaviour (EAD 040083-00-0404, Clause 2.2.6)

The hygrothermal performance of the ETICS was tested on the rig.

None of the following defects occurred on the assessed external renderings or the base coat during and after the hygrothermal cycles:

- Blistering or peeling of any finishing coat.
- Failure or cracking associated with joints between insulation product boards or profiles fitted with ETICS.
- Detachment of the render coat.
- Cracking allowing water penetration to the insulating layer (normally ≤ 0.2 mm).

Therefore, the ETICS is considered resistant to hygrothermal cycles.





### 3.7 Freeze-thaw behaviour (EAD 040083-00-0404, Clause 2.2.7)

Water absorption of the base coat and the finishing coat is lower than 0.5 kg/m<sup>2</sup> after 1 hour and 24 hours. Based on these test results, the system can be considered freeze-thaw resistant and there is no need for further testing.

### 3.8 Impact resistance (EAD 040083-00-0404, Clause 2.2.8)

The impact resistance of the ETICS was tested on the rig.

Rendering system	Maximum Impact diameter (mm)/damage		Category of use
	3 J	10 J	
Base coat A96 + glass fibre mesh FASSANET 160 + key coat FX 526 + finishing coat RSR 421	22.65/no deterioration	33.11/cracks without reaching the thermal insulation product	II
Base coat A96 + glass fibre mesh FASSANET 160 + key coat FX 526 + finishing coat RTA 549	20.10/ no deterioration	30.15/cracks without reaching the thermal insulation product	II
Base coat A96 + glass fibre mesh FASSANET 160 + key coat FX 526 + finishing coat RX 561	18.50/ no deterioration	29.60/cracks without reaching the thermal insulation product	II

Table 4: Impact resistance

### 3.9 Water vapour permeability (resistance to water vapour diffusion) (EAD 040083-00-0404, Clause 2.2.9)

#### 3.9.1 Water vapour permeability of the rendering system

Composition of the system		Thickness (m)	Equivalent air thickness S <sub>d</sub> (m)
<b>Reinforced base coat+ finishing coat</b>	Base coat A96 + glass fibre mesh FASSANET 160 + key coat FX 526 + finishing coat RSR 421K	0.012	0.3
	Base coat A96 + glass fibre mesh FASSANET 160 + key coat FX 526 + finishing coat RTA 549	0.012	0.5
	Base coat A96 + glass fibre mesh FASSANET 160 + key coat FX 526 + finishing coat RX 561	0.013	0.6

Table 5: Water vapour permeability of the rendering system

#### 3.9.2 Water vapour permeability of thermal insulation product

Performance not assessed. See Annex 1 for thermal insulation product characteristics.

## Safety and accessibility in use (BWR 4)

### 3.10 Bond strength

#### 3.10.1 Bond strength between base coat and thermal insulation product (EAD 040083-00-0404, Clause 2.2.11.1)

Composition	Initial State		After hygrothermal cycles		After freeze/thaw cycles	
	Minimum value	Mean value	Minimum value	Mean value	Minimum value	Mean value
EPS panel + Base coat A96 + glass fibre mesh FASSANET 160	80 kPa	114 kPa	87 kPa	81 kPa	Test not performed (system is considered freeze thaw resistant)	

Table 6: bond strength between base coat and insulation product

Rupture type: cohesive break in the insulation material.

#### 3.10.2 Bond Strength between adhesive and substrate (EAD 040083-00-0404, Clause 2.2.11.2)

Composition	Initial State		Immersion in water for 2 days and 2h drying		Immersion in water for 2 days and 7 days drying	
	Minimum value	Mean value	Minimum value	Mean value	Minimum value	Mean value
Concrete slab + adhesive A96 (3-5 mm thickness)	851 kPa	906 kPa	786 kPa	791 kPa	870 kPa	913 kPa

Table 7: Bond strength between adhesive and substrate

Rupture type: cohesive break in the adhesive.

#### 3.10.3 Bond Strength between adhesive and insulation product (EAD 040083-00-0404, Clause 2.2.11.3)

Composition	Initial State		Immersion in water for 2 days and 2 h drying		Immersion in water for 2 days and 7 days drying	
	Minimum value	Mean value	Minimum value	Mean value	Minimum value	Mean value
EPS panel + adhesive A96 (3-5 mm thickness)	80 kPa	87 kPa	71 kPa	80 kPa	68 kPa	84 kPa

Table 8: bond strength between adhesive and insulation product

Rupture type: 100% cohesive rupture in the support for initial state and after immersion in water and 2 h drying. 80% cohesive rupture in the support and 20% cohesive rupture in adhesive after immersion in water and 7 days drying.



The minimal bonded surface S is calculated as follows:

$$S (\%) = [0.03 \times 100] / B$$

Where:

B= minimum mean failure resistance of the adhesive to the insulation product in dry conditions (MPa)

0.03 MPa correspond to the minimum requirements.

3.11 Fixing strength (transverse displacement strength) (EAD 040083-00-0404, Clause 2.2.12)

Not relevant.

3.12 Wind load resistance of ETICS (EAD 040083-00-0404, Clause 2.2.13)

3.12.1 Pull-through test (EAD 040083-00-0404, Clause 2.2.13.1)

Characteristics of components				
<b>Anchors</b>	Trade name	Apply to all anchors listed in Table 1		
	Plate diameter	≥ 60 mm		
<b>EPS panels</b>	Thickness (mm)	≥ 50		
	Tensile strength perpendicular to the faces (kPa)	≥ 100		
Pull-through test				
<b>Failure loads (N)</b>	Anchors not placed at the panel joints	<b>R<sub>panel</sub></b>	In dry conditions	Minimum: 678 N Average: 697 N
	Anchors placed at the panel joints	<b>R<sub>joint</sub></b>		Minimum: 527 N Average: 586 N

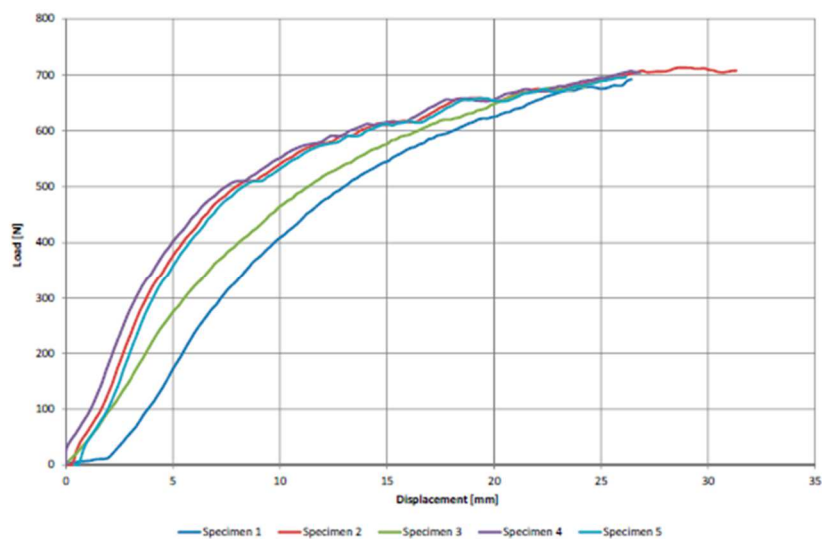


Figure 1: Load displacement graph of pull through tests at the body of the panel.



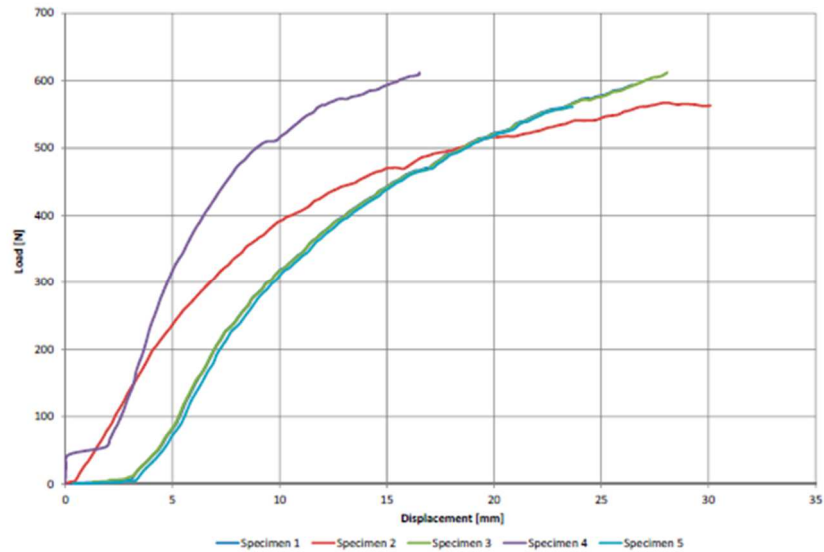


Figure 2: Load displacement graph of pull through tests at the joint of the panel

3.12.2 Static foam block test (EAD 040083-00-0404, Clause 2.2.13.2)

Not relevant.

3.12.3 Dynamic wind uplift (EAD 040083-00-0404, Clause 2.2.13.3)

Not relevant.

3.13 Tensile test perpendicular to the faces of thermal insulation product (EAD 040083-00-0404, Clause 2.2.14)

Performance not assessed. See Annex 1 for thermal insulation product characteristics.

3.14 Shear strength and shear modulus of elasticity test of ETICS (EAD 040083-00-0404, Clause 2.2.15)

Performance not assessed. See Annex 1 for thermal insulation product characteristics.

3.15 Pull-through resistance of fixing from profiles (EAD 040083-00-0404, Clause 2.2.16)

Not relevant.

3.16 Render strip tensile test (EAD 040083-00-0404, Clause 2.2.17)

Performance not assessed.

3.17 Shear strength and shear modulus of foam adhesive (EAD 040083-00-0404, Clause 2.2.18)

Not relevant.

3.18 Post expansion behaviour of foam adhesives (EAD 040083-00-0404, Clause 2.2.19)

Not relevant.

3.19 Bond strength after ageing (EAD 040083-00-0404, Clause 2.2.20)

Bond strength after ageing of finishing coat tested on the rig.

Rendering system	After hygrothermal cycles		After freeze/thaw cycles	
	Individual value/type of failure <sup>(1)</sup>	Mean value	Minimum value	Mean value
Base coat A96 + glass fibre mesh FASSANET 160 + key coat FX 526 + finishing coat RSR 421	92 kN/m <sup>2</sup> / CS	93 kN/m <sup>2</sup>	Test not performed (system is considered freeze thaw resistant)	
	97 kN/m <sup>2</sup> / CS			
	88 kN/m <sup>2</sup> / CS			
	102 kN/m <sup>2</sup> / CS			
	86 kN/m <sup>2</sup> / CS			
Base coat A96 + glass fibre mesh FASSANET 160 + key coat FX 526 + finishing coat RTA 549	109 kN/m <sup>2</sup> / CS	98 kN/m <sup>2</sup>	Test not performed (system is considered freeze thaw resistant)	
	104 kN/m <sup>2</sup> / CS			
	101 kN/m <sup>2</sup> / CS			
	95 kN/m <sup>2</sup> / CS			
	81 kN/m <sup>2</sup> / CS			
Base coat A96 + glass fibre mesh FASSANET 160 + key coat FX 526 + finishing coat RX 561	103 kN/m <sup>2</sup> / CS	103 kN/m <sup>2</sup>	Test not performed (system is considered freeze thaw resistant)	
	101 kN/m <sup>2</sup> / CS			
	97 kN/m <sup>2</sup> / CS			
	106 kN/m <sup>2</sup> / CS			
	108 kN/m <sup>2</sup> / CS			

Table 9: Bond strength after ageing of finishing coats tested on the rig

<sup>(1)</sup> CS: cohesive failure in insulation material.

3.20 Mechanical and physical characteristics of the mesh (EAD 040083-00-0404, Clause 2.2.21)

		Tensile strength in as delivered state (N/mm)	Residual tensile strength after ageing (N/mm)	Relative residual strength after ageing, of the strength in the as delivered state (%)	Elongation in as-delivered state (%)	Elongation after ageing (%)
<b>FASSANET 160</b>	Warp	43	26	60	3.6	2.3
	Weft	45	29	64	3.9	2.6

Table 10: Mechanical and physical characteristics of the mesh

**Protection against noise (BWR 5)**

3.21 Airborne sound insulation of ETICS (EAD 040083-00-0404, Clause 2.2.22)

No performance assessed.

**Energy economy and heat retention (BWR 6)**

3.22 Thermal resistance and thermal transmittance of ETICS (EAD 040083-00-0404, Clause 2.2.23)

The additional thermal resistance provided by the ETICS ( $R_{etics}$ ) to the substrate wall is calculated from the thermal resistance of the insulation product ( $R_{insulation}$ ), determined as described in the appropriate harmonized standard (EN 13163 for EPS insulation), and the tabulated  $R_{render}$  value of the render system ( $R_{render}$  is about 0.02 m<sup>2</sup>K/W).

$$R_{etics} = R_{insulation} + R_{render} \text{ [(m}^2\text{K)/W]}$$

The thermal bridges caused by mechanical fixing devices influence the thermal transmittance of the entire wall and shall be taken into account using the following calculation:

$$U_c = U + \Delta U \text{ [W/(m}^2\text{K)]}$$

With:

$U_c$  = corrected thermal transmittance of the entire wall, including thermal bridges.

$U$  = thermal transmittance of the entire wall, including ETICS, without thermal bridges.

$$U = \frac{1}{R_{etics} + R_{substrate} + R_{se} + R_{si}}$$

$R_{etics}$  = thermal resistance of the ETICS [(m<sup>2</sup>K)/W]

$R_{substrate}$  = thermal resistance of the substrate wall [(m<sup>2</sup>K)/W]

$R_{se}$  = external surface thermal resistance [(m<sup>2</sup>K)/W]

$R_{si}$  = internal surface thermal resistance [(m<sup>2</sup>K)/W]

$\Delta U$  = correction term of the thermal transmittance for mechanical fixing devices.

$$\Delta U = X_p * n \text{ (for anchors)} + \sum \psi_i * \ell_i \text{ (for profiles)}$$

$X_p$  = point thermal transmittance value of the anchor [W/K]. See Technical Report no 25. If not specified in the anchors ETA, the following values apply:

= 0.002 W/K for anchors with a plastic screw/nail, stainless steel screw/nail with the head covered by plastic material, and for anchors with an air gap at the head of the screw/nail.

= 0.004 W/K for anchors with a galvanized steel screw/nail with the head covered by a plastic material.

= 0.008 W/K for all other anchors (worst case).

$n$  = number of anchors per m<sup>2</sup>

$\psi_i$  = linear thermal transmittance value of the profile [W/(mK)]

$\ell_i$  = length of the profile per m<sup>2</sup>

Thermal resistance of ETICS is  $\geq 1.0$  (m<sup>2</sup>.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.

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

According to the European Commission Decision 1997/556/EC, amended by the European Commission Decision 2001/596/EC, system AVCP 2+ applies.

In addition, for uses subject to regulations on reaction to fire and according to the European Commission Decision 1997/556/EC, amended by the European Commission Decision 2001/596/EC, system AVCP 2+ applies.

The AVCP systems are described in Annex V of Regulation (EU) N° 305/2011, as amended by Delegated Regulation (EU) N° 568/2014.

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

Technical details necessary for the implementation of the Assessment and Verification of Constancy of Performance (AVCP) system are laid down in the control plan deposited at Tecnalia Research & Innovation.

The Control Plan is a confidential part of the ETA and is only handed over to the notified body involved in the assessment and verification of constancy of performance.

Issued in Azpeitia, on 08/11/2023



Miguel Mateos

Innovation and Conformity Assessment Point

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## ANNEX 1 CHARACTERISTICS OF THE COMPONENTS

Detailed information on the chemical composition and other identifying characteristics of the components has been deposited at Tecnalia Research & Innovation. Further information can be observed from the product data sheets, which are part of the Technical Documentation for this ETA.

### Insulation product

Expanded polystyrene panels (EPS) according to EN 13163 “Thermal insulation products for buildings. Factory made products of expanded polystyrene (EPS)”

Description and characteristics	Standard	Value	
Density (kg/m <sup>3</sup> )		15 (±1 kg/m <sup>3</sup> )	
Thickness		50-300 mm	
Reaction to fire	EN 13501-1	Euroclass E	
Thickness (mm)	EN 823	T1	±1
Length (mm)	EN 822	L2	±2
Width (mm)	EN 822	W2	±2
Squareness (mm/m)	EN 824	S2	±2
Flatness (mm)	EN 825	P3	±3
Dimensional stability under specified temperature	EN 1603	DS (N) 2	
Water absorption (partial immersion)	EN 12087	WL(P)0.5	
Water vapour permeability – diffusion factor	EN 12086	20-40	
Tensile strength perpendicular to the faces in dry conditions (kPa)	EN 1607	≥100	
Shear Strength (kPa)	EN 12090	≥ 20	
Shear Modulus of elasticity (kPa)	EN 12090	≥ 1000	
Thermal conductivity (W/mK)	EN 12667	Standard	≤ 0.036
		With graphite	≤ 0.031
Thermal resistance (m <sup>2</sup> K/W)		Defined in the declaration according to EN 13163	

## Mesh

**FASSANET 160** Alkali resistant glass fibre mesh with mass per unit area of about 160 g/m<sup>2</sup> and mesh size of about 3.8 x 3.5 mm.

Characteristics	Reference	Value
Mass per unit area (g/m <sup>2</sup> )	EAD 040016-00-0404	160 (± 10%)
Mesh size (mm)		3.8 x 3.5 (± 5%)
Thickness (mm)		0.5 (± 0.2)
Organic content (%)		20 (± 4 %)
Heat of combustion (PCS-value) (MJ/kg)		6.41

## Plastic fixings

**FASSA COMBI FIX PLUS** Nailed-in plastic anchor for fixing of external thermal insulation composite systems with render on concrete and masonry. Use categories: A, B, C, D and E.

GENERAL CHARACTERISTICS	
Plate diameter (mm)	60
Load resistance of the anchor plate (kN)	1.5
Plate stiffness (kN/mm)	0.7
Characteristic resistance to tension loads (kN)	See ETA 18/0006

**EJOTERM H2 ECO** Nailed-in plastic anchor for fixing of external thermal insulation composite systems with render on concrete and masonry. Use categories: A, B, C, D and E.

GENERAL CHARACTERISTICS	
Plate diameter (mm)	60
Load resistance of the anchor plate (kN)	1.5
Plate stiffness (kN/mm)	0.97
Characteristic resistance to tension loads (kN)	ETA 15/0740

**EJOT STR-U 2G** and **FASSA TOP FIX 2G** Screwed-in plastic fixing for external thermal insulation composite systems with render on concrete and masonry, use categories: A, B, C, D and E

GENERAL CHARACTERISTICS	
Plate diameter (mm)	60
Load resistance of the anchor plate (kN)	2.08
Plate stiffness (kN/mm)	0.6
Characteristic resistance to tension loads (kN)	ETA 04/0023

In addition to the list, other fixings can be used provided with the following requirements:

Plate diameter (mm)	≥ 60
Load resistance of the anchor plate (kN)	≥ 1.5
Plate stiffness (kN/mm)	≥ 0.6
Characteristic resistance to tension loads (kN)	See relevant ETA