

**Organismo nazionale
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Italian Technical Assessment Body

ITAB/ITC-CNR
Via Lombardia 49 - 20098 San Giuliano Milanese – Italy
tel: +39-02-9806.1 – Telefax: +39-02-98280088
e-mail: segreteria.itab@itc.cnr.it



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l'évaluation technique

European Technical Assessment **ETA 07/0280** of 31/10/2024

GENERAL PART

Trade name of the construction product

FASSATHERM CLASSIC

Product family to which the construction product belongs

**PAC 04: THERMAL INSULATION PRODUCTS.
COMPOSITE INSULATING KITS/SYSTEMS
External Thermal Insulation Composite
Systems (ETICS) with renderings**

Manufacturer

**Fassa S.r.l.
via Lazzaris, 3
31027 Spresiano (TV) - Italy**

Manufacturing plant

**Plants: n. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
See Annex A1**

This European Technical Assessment contains:

**32 pages, including 25 annexes which form
an integral part of this assessment**

This European Technical Assessment is issued in accordance with Regulation (EU) n° 305/2011, on the basis of

**EAD 040083-00-0404 – External Thermal
Insulation Composite Systems (ETICS) with
renderings**

This version replaces

ETA 07/0280 (version 02) of 26/03/2020

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SPECIFIC PARTS

1. TECHNICAL DESCRIPTION OF THE PRODUCT

The product "FASSATHERM CLASSIC" is an External Thermal Insulation Composite System (ETICS) with renderings (rendering system) to be applied as external thermal insulation on the walls of buildings. The walls are made of masonry (bricks, blocks, stones) or concrete (cast on site or as prefabricated panels) with or without rendering systems.

The ETICS kit comprises prefabricated insulation products of expanded polystyrene (EPS) to be bonded to the wall with supplementary adhesive on 50% of the surface. The methods of fixing and the relevant components are specified in Table 1.

The insulation products are faced with a rendering system consisting of one or more layers (site applied), one of which contains reinforcement. The rendering system is applied directly to the insulating boards, without any air gap or disconnecting layer.

1.1 Components of the kit "FASSATHERM CLASSIC"

The components of the kit, as specified by the manufacturer, are reported in Table 1.

Table 1: Components of the kit

Components (see Annexes A3-A9 for further description, characteristics and performances of the components)		Quantity	Thickness [mm]
Bonded system with supplementary mechanical fixing and mechanically fixed ETICS with supplementary adhesive (according to manufacturer's instructions bonded surface is $\geq 50\%$). National application documents shall be taken into account.			
Insulation material with associated method of fixing	Insulation product 1: "EPS 80" expanded polystyrene white panel according to EN 13163 (see Annex A3)	//	40-300
	Insulation product 2: "EPS 100" expanded polystyrene white panel according to EN 13163 (see Annex A4)	//	40-300
	Insulation product 3: "EPS 120" expanded polystyrene white panel according to EN 13163 (see Annex A5)	//	40-300
	Insulation product 4: "EPS con grafite" expanded polystyrene panels with addition of graphite according to EN 13163 (see Annex A6)	//	40-300
	Insulation product 5: "EPS TR 100" expanded polystyrene white panel according to EN 13163 (see Annex A7)	//	40-300
	Insulation product 6: "EPS con grafite TR 100" expanded polystyrene panel with addition of graphite according to EN 13163 (see Annex A8)	//	40-300
	Adhesive 1: "A50" (cement based powder requiring addition of 22-24 % of water); particle size: 0.6 mm	all the surface: 3.0 - 5.0 points: 3.0 - 4.0	//
	Adhesive 2: "A96" (cement based powder requiring addition of 25-27 % of water) particle size: 1.2 mm	all the surface: 3.0 - 5.0 points: 3.0 - 4.0	//

	Adhesive 3: "AL88" (cement based powder requiring addition of 30-34 % of water); particle size: 1.2 mm	all the surface: 3.0 - 5.0 points: 3.0 - 4.0	//
	Anchors: "FASSA TOP FIX 2G"; "FASSA COMBI FIX PLUS"; Properties equal or higher than those reported in Table A9 of Annex A9	6/m ²	//
Base coat	Base coat 1: "A50" (cement based powder requiring addition of 22 - 24 % of water); particle size: 0.6 mm	5 - 6	3.0 - 5.0
	Base coat 2 "A96" (cement based powder requiring addition of 25 - 27 % of water); particle size: 1.2 mm	6 - 7	4.0 - 5.0
	Base coat 3 "AL88" (cement based powder requiring addition of 30 - 34 % of water); particle size: 1.2 mm	5 - 6	4.0 - 5.0
Reinforcement	Standard Glass fibre mesh "FASSANET 160" mesh size: 4.0 x 4,5 mm ± 0.5 mm. Mass per unit area: 160 g/m ²	//	//
Key coat	Key coat 1 (to be used with finishing coat 1): "FA 249" water based product.	30-50 g/m ²	100 - 120 µ
	Key coat 2 (to be used with finishing coat 2): "FS 412" water based product	100-150 g/m ²	100 - 120 µ
	Key coat 3 (to be used with finishing coat 3) "F 328" watery solution of potassium silicate and acrylic resins	100-150 g/m ²	100 - 120 µ
	Key coat 4 (to be used with finishing coat 4): "FX 526" White or pigmented filler	100-150 g/m ²	100 - 120 µ
Finishing coat	Ready to use paste - acrylic resin binder to be used with the key coat of the same number		
	Finishing coat 1: "RTA 549" acrylic co-polymer Particle size 1.2 mm; 1.5 mm; 2.0 mm; 3.0 mm	2.2 - 4.6 kg/m ²	1.0 - 3.0
	Finishing coat 2: "RSR 421" Acrylic copolymer-silicone resin bend Particle size 1.2 mm; 1.5 mm; 2.0mm; 3.0 mm	2.2 - 4.6 kg/m ²	1.0 - 3.0
	Finishing coat 3 "R 336" (ready to use paste based on potassium silicate and acryl resins); particle size: 1.0 mm; 1.5 mm; 2.0 mm; 3.0 mm	2.2 - 4.6 kg/m ²	1.0 - 3.0
	Finishing coat 4 "RX 561" Acrylic - polysiloxane copolymer blend" Particle size 1.2 mm; 1.5 mm; 2.0mm; 3.0 mm	2.2 - 4.6 kg/m ²	1.0 - 3.0
Decorative coat (Optional)	Desideri Velluto (Siloxane-enhanced smooth coating with a mineral appearance) Particle size 0.3 mm	Ca. 2.5 kg/m ²	Ca. 0.9

2. SPECIFICATION OF THE INTENDED USE IN ACCORDANCE WITH EUROPEAN ASSESSMENT DOCUMENT N°040083-00-0404 (hereinafter EAD)

The “FASSATHERM CLASSIC” is intended to be used on new or existing (retrofit) vertical building walls. The ETICS may also be used on horizontal or inclined surfaces which are not exposed to precipitation.

The ETICS gives the building wall to which it is applied additional thermal insulation and protection from effects of weathering. ETICS are non-load-bearing construction elements. They do not contribute directly to the stability of the building wall on which they are installed.

ETICS are not intended to ensure the air tightness of the building structure.

Concerning product packaging, transport and storage it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport and storage, as he considers necessary in order to reach the declared performances.

The information about installation is provided with the technical documentation from the Manufacturer and it is assumed that the product will be installed according to it or (in absence of such instructions) according to the usual practice of the building professionals.

The performances assessed in this European Technical Assessment, according to the applicable EAD, are based on an assumed intended working life of at least 25 years, provided that the conditions for packaging, transport, storage, installation as well as appropriate use, maintenance and repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3. PERFORMANCE OF THE PRODUCT AND REFERENCES TO THE METHODS USED FOR ITS ASSESSMENT

The tests for performance assessment of “FASSATHERM CLASSIC” were carried out in compliance with EAD 040083-00-04040 according to the test methods reported herein, as well for what concerns sampling, conditioning and testing provisions.

The performances of the kit as described in this chapter are valid provided that the components of the kit comply with Section 1 of the ETA and the relative Annexes A3–A9.

The numbering (#) in the following tables corresponds to the numbering of Table 1 of EAD 040083-00-0404

3.1 SAFETY IN CASE OF FIRE (BWR 2)

#	Essential characteristic	Performance
1	Reaction to fire	
	- Reaction to fire of ETICS (EPS max density $15 \pm 6\%$ kg/m ³)	Euroclass B – s1, d0 (see Annex B1, Tables B1 and B2).
	- Reaction to fire of ETICS (EPS max density $20 \pm 6\%$ kg/m ³)	Euroclass B – s2, d0 (see Annexes B1 and B2, Tables B1 and B2).
	- Reaction to fire of thermal insulation material	Euroclass E.
	- Reaction to fire of PU foam adhesive	Not applicable.
2	Façade fire performance	No performance assessed.
3	Propensity to undergo continuous smouldering of ETICS	No performance assessed.

3.2 HYGIENE, HEALTH AND THE ENVIRONMENT (BWR 3)

#	Essential characteristic	Performance
4	Content, emission and/or release of dangerous substances – leachable substances	No performance assessed.
5	Water absorption	
	- of the base coat and the rendering system	See Annexes B3 and B4; Tables B3 and B4
	- of the thermal insulation product	See Annex B12, Table B16.
6	Water-tightness of the ETICS: Hygrothermal behaviour	The ETICS passed the test without defects. The system FASSATHERM CLASSIC is resistant to hygrothermal cycles. <i>Hygrothermal cycles have been performed on a rig.</i>
7	Water-tightness: Freeze thaw performance	See Annex B4, Table B5.
8	Impact resistance	See Annex B5, Tables B6 and B7; Annex B6, Table B8.
9	Water vapour permeability	
	- of the rendering system	See Annex B7, Table B9 Annex B8, Table B10.
	- of the thermal insulation product	See Annex B8, Table B11.

3.3 SAFETY AND ACCESSIBILITY IN USE (BWR 4)

#	Essential characteristic	Performance
10	Bond strength	.
	- Bond strength between the base coat and the thermal insulation product	See Annex B9, Table B12.
	- Bond strength between the adhesive and the substrate	
	- Bond strength between the adhesive and the thermal insulation product	
	- Bond strength of foam adhesives	Not applicable.
11	Fixing strength (transverse displacement test)	Not applicable.
12	Wind load resistance of ETICS	
	- pull-through tests of fixings	See Annex B10, Table B13.
	- static foam block test	Not applicable.
	- dynamic wind uplift test	Not applicable.
13	Tensile test perpendicular to the faces of the thermal insulation product	
	- in dry conditions	See Annex B15, Table B20.
	- in wet conditions	Not applicable.
14	Shear strength and shear modulus of elasticity test of ETICS	See Annex B15, Table B21.

#	Essential characteristic	Performance
	- Shear strength	
	- Shear modulus of elasticity	
15	Pull-through resistance of fixings from profiles	Not applicable.
16	Render strip tensile test	FASSANET 160 with A 50 W_{rk} warp = 0.24 mm W_{rk} weft = 0.37 mm Simplified method.
		FASSANET 160 with A 96 W_{rk} warp = 0.23 mm W_{rk} weft = 0.17 mm Simplified method.
		FASSANET 160 with AL 88 W_{rk} warp = 0.14 mm W_{rk} weft = 0.20 mm Simplified method.
17	Shear strength and shear modulus of foam adhesive	Not applicable.
18	Post expansion behaviour of foam adhesives	Not applicable.
19	Bond strength after ageing	
	- bond strength after ageing of finishing coat tested on the rig	See Annex B11, Table B14. See Annex B12, Table B15. See Annex B13, Table B17.
	- bond strength after ageing of finishing coat not tested on the rig	See Annex B14, Table B18.
20	Mechanical and physical characteristics of the mesh	
	- Tensile strength of the glass fibre mesh	See Annex B15, Table B19.
	- Protection of metal mesh	Not applicable.

3.4 PROTECTION AGAINST NOISE (BWR 5)

#	Essential characteristic	Performance
21	Airborne sound insulation of ETICS	No performance assessed.
	Dynamic stiffness of the thermal insulation product	No performance assessed.
	Air flow resistance of the thermal insulation product	No performance assessed.

3.5 ENERGY ECONOMY AND HEAT RETENTION (BWR 6)

#	Essential characteristic	Performance
22	Thermal resistance and thermal transmittance of ETICS	See Annex B16, Table B22.

4. ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE

In accordance with the European Assessment Document EAD No. 040083-00-0404, the applicable European legal act is: **Commission Decision 97/556/EC**.

The system of assessment and verification of constancy of performance (AVCP) is **2+**.

In addition, with regard to reaction to fire for products, the applicable European legal act is **Commission Decision 97/556/EC**, as amended by **Commission Decision 2001/596/EC**.

The system of assessment and verification of constancy of performance (AVCP) is **2+**.

5. TECHNICAL DETAILS NECESSARY FOR THE IMPLEMENTATION OF THE AVCP SYSTEM, AS PROVIDED FOR IN EAD 040083-00-0404

Technical details necessary for the implementation of the AVCP system are laid down in the Control Plan deposited at ITAB/ITC-CNR.

**Issued in San Giuliano Milanese, Italy on 31/10/2024
by ITAB / ITC-CNR**

Coordinator of ITAB Technical Committee
Eng. Annalisa Franco, PhD

Director of ITAB
Professor Antonio Occhiuzzi

Table A1: Manufacturing plants

N. Manufacturing plant	Manufacturing plants	Address
1	Spresiano	31027 - Spresiano (Treviso) via Fornaci, 8 - Italy
2	Mazzano	25080 - Mazzano (Brescia) via S. Rocco, 23 - Italy
3	Sala al Barro	23851 - Sala al Barro (Lecco) via Giuseppe Verdi, 20 - Italy
4	Bagnasco	12071 - Bagnasco (Cuneo) via del Molino, 87 - Italy
5	Molazzana	55020 - Molazzana (Lucca) Località Molino Di Sassi - Italy
6	Ravenna	48100 - Ravenna (Ravenna) via del Cimitero, 131 - Italy
7	Popoli	65026 - Popoli (Pescara) Strada Provinciale per Vittorito s.n.c - Italy
8	Bitonto	70032 - Bitonto (Bari) via dei Fiordalisi, 22 Z.I.A. S.I. - Italy
9	FASSALUSA LDA (PORTOGALLO)	FASSALUSA LDA 2495-036 - Batalha - Zona Industrial de São Mamede Portugal
10	FASSA HISPANIA SL (SPAGNA)	FASSA HISPANIA SL 04628 - Antas (Almería) – Autovía del Mediterráneo, Sal. 537 España

FASSATHERM CLASSIC

Manufacturing plants

**Annex A1
of ETA N° 07/0280**

Table A2: Alternative configurations

FASSATHERM CLASSIC					
Adhesive	Thermal insulation	Base coat	Reinforcement	Key coat and finishing coat	Decorative coat (OPTIONAL)
A50	1) EPS 80 2) EPS 100 3) EPS 120 4) EPS con grafite	A 50	Fassanet 160	FA249 RTA 549 1; 1.5; 2; 3 mm	-
				FS412 RSR 421 1; 1.5; 2; 3 mm	Desideri di velluto
				F328 R336 1; 1.5; 2; 3 mm	-
				FX526 RX 561 1; 1.5; 2; 3 mm	-
A96	1) EPS 80 2) EPS 100 3) EPS 120 4) EPS con grafite 5) EPS TR100 6) EPS con grafite TR100	A 96	“Fassanet 160”	FA249 RTA 549 1; 1.5; 2; 3 mm	-
				FS412 RSR 421 1; 1.5; 2; 3 mm	Desideri di velluto
				FX 526 RX 561 1; 1.5; 2; 3 mm	-
				F328 R336 1; 1.5; 2; 3 mm	-
AL88	1) EPS 80 2) EPS 100 3) EPS 120 4) EPS con grafite	AL 88	“Fassanet 160”	Key coat FX526 RX 561 1; 1.5; 2; 3 mm	-
				Key coat FA249 RTA 549 1; 1.5; 2; 3 mm	-
				Key coat FS412 RSR 421 1; 1.5; 2; 3 mm	Desideri di velluto
				Key coat F328 R336 1; 1.5; 2; 3 mm	-

FASSATHERM CLASSIC		Annex A2 of ETA N° 07/0280
Product Description – Alternative configurations		

Table A3: Thermal insulation product characteristics

Descriptions and characteristics	Reference standard	EPS 80
Reaction to fire	EN 13501-1	Euroclass E Max. density: 15 ($\pm 6\%$) kg/m ³
Water absorption by partial immersion	EN 1609 Method A	WL(P) ≤ 1 kg/m ²
Water vapour permeability (water – vapour resistance factor, μ)	EN 12086	$\mu = 20 - 40$
Tensile strength	EN 1607	EPS-EN 13163 -TR 150
Shear strength	EN 12090	≥ 20 kPa
Shear modulus of elasticity	EN 12090	≥ 1000 kPa
Compression resistance	EN 826	-
Conductivity (λ_D)	EN 12667	0.037 W/mK
Thermal resistance for the minimum thickness (40 mm)	EN 12667	1.08 m ² K/W
Thickness	EN 823	T1 (EN 13163)
Length	EN 822	L2 (EN 13163)
Width	EN 822	W2 (EN 13163)
Squareness	EN 824	S2 (EN 13163)
Flatness	EN 825	P5 (EN 13163)
Surface conditions	-	Cut surface
Dimensional stability (23 $\pm$ 2°C, 50 $\pm$ 5% RH)	EN 1603	DSN(2) (EN 13163)
Dimensional stability (70 $\pm$ 2°C , 90 $\pm$ 5% RH for 48 hours)	EN 1604	DS(70,-)1 (EN 13163)

FASSATHERM CLASSIC

Product Description – Thermal insulation product - EPS 80

**Annex A3
of ETA N° 07/0280**

Table A4: Thermal insulation product characteristics

Descriptions and characteristics	Reference standard	EPS 100
Reaction to fire	EN 13501-1	Euroclass E Max. density: 18 ($\pm 6\%$) kg/m ³
Water absorption by partial immersion	EN 1609 Method A	WL(P) ≤ 1 kg/m ²
Water vapour permeability (water – vapour resistance factor, μ)	EN 12086	$\mu = 30 - 70$
Tensile strength	EN 1607	EPS-EN 13163 -TR 150
Shear strength	EN 12090	≥ 20 kPa
Shear modulus of elasticity	EN 12090	≥ 1000 kPa
Compression resistance	EN 826	-
Conductivity (λ_D)	EN 12667	0.036 W/mK
Thermal resistance for the minimum thickness (40 mm)	EN 12667	1.11 m ² K/W
Thickness	EN 823	T1 (EN 13163)
Length	EN 822	L2 (EN 13163)
Width	EN 822	W2 (EN 13163)
Squareness	EN 824	S2 (EN 13163)
Flatness	EN 825	P5 (EN 13163)
Surface conditions	-	Cut surface
Dimensional stability (23 $\pm$ 2°C, 50 $\pm$ 5% RH)	EN 1603	DSN(2) (EN 13163)
Dimensional stability (70 $\pm$ 2°C , 90 $\pm$ 5% RH for 48 hours)	EN 1604	DS(70,-)1 (EN 13163)

FASSATHERM CLASSIC

Product Description – Thermal insulation product - EPS 100

**Annex A4
of ETA N° 07/0280**

Table A5: Thermal insulation product characteristics

Descriptions and characteristics	Reference standard	EPS 120
Reaction to fire	EN 13501-1	Euroclass E Max. density: 20 ($\pm 10\%$) kg/m ³
Water absorption by partial immersion	EN 1609 Method A	WL(P) ≤ 1 kg/m ²
Water vapour permeability (water – vapour resistance factor, μ)	EN 12086	$\mu = 30 - 70$
Tensile strength	EN 1607	EPS-EN 13163 -TR 200
Shear strength	EN 12090	≥ 20 kPa
Shear modulus of elasticity	EN 12090	≥ 1000 kPa
Compression resistance	EN 826	-
Conductivity (λ_D)	EN 12667	0.034 W/mK
Thermal resistance for the minimum thickness (40 mm)	EN 12667	1.18 m ² K/W
Thickness	EN 823	T1 (EN 13163)
Length	EN 822	L2 (EN 13163)
Width	EN 822	W2 (EN 13163)
Squareness	EN 824	S2 (EN 13163)
Flatness	EN 825	P5 (EN 13163)
Surface conditions	-	Cut surface
Dimensional stability (23 $\pm$ 2°C, 50 $\pm$ 5% RH)	EN 1603	DSN(2) (EN 13163)
Dimensional stability (70 $\pm$ 2°C , 90 $\pm$ 5% RH for 48 hours)	EN 1604	DS(70,-)1 (EN 13163)

FASSATHERM CLASSIC

Product Description – Thermal insulation product - EPS 120

**Annex A5
of ETA N° 07/0280**

Table A6: Thermal insulation product characteristics

Descriptions and characteristics	Reference standard	EPS con grafite
Reaction to fire	EN 13501-1	Euroclass E Max. density: 20 ($\pm 10\%$) kg/m ³
Water absorption by partial immersion	EN 1609 Method A	WL(P) ≤ 1 kg/m ²
Water vapour permeability (water – vapour resistance factor, μ)	EN 12086	$\mu = 30 - 70$
Tensile strength	EN 1607	EPS-EN 13163 -TR 150
Shear strength	EN 12090	≥ 20 kPa
Shear modulus of elasticity	EN 12090	≥ 1000 kPa
Compression resistance	EN 826	-
Conductivity (λ_D)	EN 12667	0.031 W/mK
Thermal resistance for the minimum thickness (40 mm)	EN 12667	1.29 m ² K/W
Thickness	EN 823	T1 (EN 13163)
Length	EN 822	L2 (EN 13163)
Width	EN 822	W2 (EN 13163)
Squareness	EN 824	S2 (EN 13163)
Flatness	EN 825	P5 (EN 13163)
Surface conditions	-	Cut surface
Dimensional stability (23 $\pm$ 2°C, 50 $\pm$ 5% RH)	EN 1603	DSN(2) (EN 13163)
Dimensional stability (70 $\pm$ 2°C , 90 $\pm$ 5% RH for 48 hours)	EN 1604	DS(70,-)1 (EN 13163)

FASSATHERM CLASSIC

Product Description – Thermal insulation product - EPS con grafite

**Annex A6
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Table A7: Thermal insulation product characteristics

Descriptions and characteristics	Reference standard	EPS TR100
Reaction to fire	EN 13501-1	Euroclass E Max. density: 15 ($\pm 6\%$) kg/m ³
Water absorption by partial immersion	EN 1609 Method A	WL(P) ≤ 0.5 kg/m ²
Water vapour permeability (water – vapour resistance factor, μ)	EN 12086	$\mu = 20 - 40$
Tensile strength	EN 1607	EPS-EN 13163 -TR 100
Shear strength	EN 12090	- ¹
Shear modulus of elasticity	EN 12090	- ¹
Compression resistance	EN 826	-
Conductivity (λ_D)	EN 12667	0.036 W/mK
Thermal resistance for the minimum thickness (40 mm)	EN 12667	1.11 m ² K/W
Thickness	EN 823	T1 (EN 13163)
Length	EN 822	L2 (EN 13163)
Width	EN 822	W2 (EN 13163)
Squareness	EN 824	S2 (EN 13163)
Flatness	EN 825	P3 (EN 13163)
Surface conditions	-	Cut surface
Dimensional stability (23 $\pm$ 2°C, 50 $\pm$ 5% RH)	EN 1603	DSN(2) (EN 13163)
Dimensional stability (70 $\pm$ 2°C , 90 $\pm$ 5% RH for 48 hours)	EN 1604	DS(70,-)1 (EN 13163)

1) Performance not declared by the manufacturer but measured in Table B21 of Annex B15.

FASSATHERM CLASSIC

Product Description – Thermal insulation product - EPS TR100

**Annex A7
of ETA N° 07/0280**

Table A8: Thermal insulation product characteristics

Descriptions and characteristics	Reference standard	EPS con grafite TR100
Reaction to fire	EN 13501-1	Euroclass E Max. density: 15 ($\pm 6\%$) kg/m ³
Water absorption by partial immersion	EN 1609 Method A	WL(P) ≤ 0.5 kg/m ²
Water vapour permeability (water – vapour resistance factor, μ)	EN 12086	$\mu = 20 - 40$
Tensile strength	EN 1607	EPS-EN 13163 -TR 100
Shear strength	EN 12090	- ¹
Shear modulus of elasticity	EN 12090	- ¹
Compression resistance	EN 826	-
Conductivity (λ_D)	EN 12667	0.031 W/mK
Thermal resistance for the minimum thickness (40 mm)	EN 12667	1.29 m ² K/W
Thickness	EN 823	T1 (EN 13163)
Length	EN 822	L2 (EN 13163)
Width	EN 822	W2 (EN 13163)
Squareness	EN 824	S2 (EN 13163)
Flatness	EN 825	P3 (EN 13163)
Surface conditions	-	Cut surface
Dimensional stability (23 $\pm$ 2°C, 50 $\pm$ 5% RH)	EN 1603	DSN(2) (EN 13163)
Dimensional stability (70 $\pm$ 2°C , 90 $\pm$ 5% RH for 48 hours)	EN 1604	DS(70,-)1 (EN 13163)

1) Performance not declared by the manufacturer but measured in Table B21 of Annex B15.

FASSATHERM CLASSIC

Product Description – Thermal insulation product - EPS con grafite TR100

**Annex A8
of ETA N° 07/0280**

Table A9: Anchors product characteristics

Trade name ⁽¹⁾	ETA reference	Description	Size [mm]	Plate stiffness [kN/mm]	Minimum characteristic resistance to tension loads (pull-out from substrate) ⁽²⁾ [kN]
EJOT STR U 2G	ETA-04/0023 (5/06/2023)	Screw-in high-density polyethylene (HDPE) anchor with the pin made of galvanized steel	Plate diameter: 60 Ø nail: 8	0.60	0.6
EJOTHERM H2 ECO	ETA-15/0740 (01/12/2016)	Screw-in high-density polyethylene (HDPE) anchor with the pin made of galvanized steel	Plate diameter: 60 Ø nail: 8	0.97	0.5

- (1) Other anchors can be used, provided they have plate dimension and stiffness equal or higher than those reported in this table.
- (2) These values show the minimum characteristic resistance to tension loads (pull-out from substrate) of the anchor in the weakest support (enclosed in the relative ETA). Other higher values appear in the relative ETAs.

FASSATHERM CLASSIC

Product Description – Anchors product characteristics

**Annex A9
of ETA N° 07/0280**

Table B1: Reaction to fire of ETICS

Configuration FASSATHERM CLASSIC:	Organic content of the rendering system [%]	Flame retardant content of the rendering system [%]	Maximum thickness [mm]	Class
With adhesive A96 +EPS max density 15 (+1) kg/m ³ + key coat: FX 526 + finishing coat RX 561 1 - 1.5 - 2 mm	Base coat: 5 Finishing coat: 9.4 ¹	No flame retardant	300	B – s1, d0
1) Organic content declared by the manufacturer				
With adhesive A96 + EPS con grafite max density 20 kg/m ³ + base coat A96 + key coat FA249 + finishing coat RTA549	base coat: 5 finishing coat: 9.4	No flame retardant	300	B – s2, d0
With adhesive A96 + EPS con grafite max density 20 kg/m ³ + base coat A96 + key coat FA249 + finishing coat RTA549	base coat: 5 finishing coat: 9.4			
With adhesive A50 + EPS con grafite max density 20 kg/m ³ + base coat A50 + key coat FA249 + finishing coat RTA549,	base coat: 6 finishing coat: 9.4			
With adhesive AL88 + EPS 120 max density 20 kg/m ³ + base coat AL88 + key coat FA249 + finishing coat RTA549	base coat: 5 finishing coat: 9.4			

FASSATHERM CLASSIC

Performances – Reaction to fire 1/2

**Annex B1
of ETA N° 07/0280**

Table B2: Reaction to fire of ETICS extended application

According to EN 13501-1, test results (Table B1) cover configurations with insulation materials (EPS) of a lower density, and with finishing coats with a lower organic content, as is the case with the following configurations. - For other configurations option NPA apply.

Configuration FASSATHERM CLASSIC	Organic content of the rendering system [%]	Flame retardant content of the rendering system [%]	Maximum thickness [mm]	Class
in the following alternative: - Alternative with adhesive A96 + EPS 120 + base coat A96 + key coat FS412 + finishing coat RSR421, - Alternative with adhesive A96 + EPS 120 + base coat A96 + key coat F328 + finishing coat R336, - Alternative with adhesive A96 + EPS 120 + base coat A96 + key coat FX526 + finishing coat RX561, Alternative with adhesive A96 + EPS con grafite + base coat A96 + key coat FS412 + finishing coat RSR421, - Alternative with adhesive A96 + EPS con grafite + base coat A96 + key coat F328 + finishing coat R336, - Alternative with adhesive A96 + EPS con grafite + base coat A96 + key coat FX526 + finishing coat RX561. - Alternative with adhesive A50 + EPS con grafite + base coat A50 + key coat FS412 + finishing coat RSR421, - Alternative with adhesive A50 + EPS con grafite + base coat A50 + key coat F328 + finishing coat R336, - Alternative with adhesive A50 + EPS con grafite + base coat A50 + key coat FX526 + finishing coat RX561. Alternative with adhesive AL88 + EPS 120 + base coat AL88 + key coat FA249 + finishing coat RTA549.	Base coat: 6 Finishing coat: 9.4	No flame retardant	300	B – s2, d0
With adhesive A96 + EPS max density 15 (+1) kg/m³ + key coat: FX 526 + finishing coat RX 561 3 mm	Base coat: 5 Finishing coat: 9.4	No flame retardant	300	B – s2, d0
FASSATHERM CLASSIC			Annex B2 of ETA N° 07/0280	
Performances – Reaction to fire 2/2				

Table B3: Water absorption of the base coat and the rendering system

Water absorption	after 1 hour		after 24 hours	
	< 1.0 kg/m ²	≥ 1.0 kg/m ²	< 0.5 kg/m ²	≥ 0.5 kg/m ²
Base coat "A 50"	0.024	not applicable	0.207	
Rendering system made of: - base coat "A 50" - key coat "FA 249" - finishing coat "RTA 549"	0.025	not applicable	0.152	not applicable
Rendering system made of: - base coat "A 50" - key coat "FS 412" - finishing coat "RSR 421"	0.024	not applicable	0.178	not applicable
Rendering system made of: - base coat "A 50" - key coat "F 328" - finishing coat "R 336"	0.035	not applicable	0.179	not applicable
Rendering system made of: - base coat "A 50" - key coat "FX 526" - finishing coat "RX 561"	0.040	not applicable	0.113	not applicable
Base coat "A 96"	0.058	not applicable	0.339	not applicable
Rendering system made of: - base coat "A 96" - key coat "FA 249" - finishing coat "RTA 549"	0.014	not applicable	0.160	not applicable
Rendering system made of: - base coat "A 96" - key coat "FS 412" - finishing coat "RSR 421"	0.022	not applicable	0.218	not applicable
Rendering system made of: - base coat "A 96" - key coat "F 328" - finishing coat "R 336"	0.018	not applicable	0.211	not applicable
Rendering system made of: - base coat "A 96" - key coat "FX 526" - finishing coat "RX 561"	0.01	not applicable	0.14	not applicable

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Performances – Water absorption of the rendering system

**Annex B3
of ETA N° 07/0280**

Table B4: Water absorption of the base coat and the rendering system

Water absorption	after 1 hour		after 24 hours	
	< 1.0 kg/m ²	≥ 1.0 kg/m ²	< 0.5 kg/m ²	≥ 0.5 kg/m ²
Base coat "AL 88"	0.121	not applicable	not applicable	0.635
Rendering system made of: - base coat "AL 88" - key coat "FA 249" - finishing coat "RTA 549"	0.22	not applicable	0.209	not applicable
Rendering system made of: - base coat "AL 88" - key coat "FS 412" - finishing coat "RSR 421"	0.021	not applicable	0.217	not applicable
Rendering system made of: - base coat "AL 88" - key coat "F 328" - finishing coat "R 336"	0.027	not applicable	0.431	not applicable
Rendering system made of: - base coat "AL 88" - key coat "FX 526" - finishing coat "RX 561"	0.037	not applicable	0.318	not applicable

Table B5: Freeze–thaw behaviour of ETICS

Product/Configuration	Results
Rendering system made of: - base coat A50 - finishing coat: RTA 549, 421, R 336, RX 561	Freeze thaw resistant without any further testing.
Rendering system made of: - base coat A96 finishing coat: RTA 549, 421, R 336, RX 561	Freeze thaw resistant without any further testing.
Rendering system made of: - base coat AL 88 - finishing coat: RTA 549, 421, R 336, RX 561,	Freeze thaw resistant without any further testing.

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Performances – Water absorption of the base coat and of the rendering system and Freeze–thaw behaviour

**Annex B4
of ETA N° 07/0280**

Table B6: Impact test with base coat A 50 not tested on the rig

Configuration	Key coat and finishing coat	Results			
		Impact Energy [J]	Maximum impact diameter [mm]	Damage	Impact resistance category
Reinforced base coat A 50 with finishing coats	key coat FA 249 finishing coat "RTA 549"	3	-	No Cracks	I
		10	-	No Cracks	
	key coat FS 412 finishing coat "RSR 421"	3	-	No Cracks	II
		10	40	No Cracks	
	key coat F 328 finishing coat R 336	3	-	No Cracks	I
		10	-	No Cracks	
	key coat "FX 526" finishing coat "RX 561"	3	-	No Cracks	I
		10	-	No Cracks	

Table B7: Impact test with base coat A 96 tested on the rig

Configuration	Key coat and finishing coat	Results			
		Impact Energy [J]	Maximum impact diameter [mm]	Damage	Impact resistance category
Reinforced base coat A 96 with finishing coats	- key coat “FA 249” - finishing coat “RTA 549”	3	20.	No Cracks	II
		10	29	Cracks	
	- key coat “FS 412” - finishing coat “RSR 421”	3	20	No Cracks	II
		10	33	Cracks	
	- key coat “FX 526” - finishing coat “RX 561	3	18	No Cracks	II
		10	30	Cracks	
	- key coat “F 328” - finishing coat “R 336”	No performance assessed			

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Performances – Impact resistance

**Annex B5
of ETA N° 07/0280**

Table B8: Impact test with base coat AL88 not tested on the rig

Configuration	Key coat and finishing coat	Results			
		Impact Energy [J]	Maximum impact diameter [mm]	Damage	Impact resistance category
Reinforced base coat “AL 88 with finishing coats	- key coat “FA 249” - finishing coat “RTA 549”	3	-	No crack	II
		10	35	Cracks	
	Key coat - key coat “FS 412” - finishing coat “RSR 421”	3	-	No crack	II
		10	33	Cracks	
	- key coat “F 328” - finishing coat “R 336”	3	21	No Cracks	II
		10	40	Cracks	
	- key coat “FX 526” - finishing coat “RX 561”	No performance assessed			

FASSATHERM CLASSIC		Annex B6 of ETA N° 07/0280
Performances – Impact resistance		

Table B9: Water vapour permeability of the rendering system

Configuration	Key coat and finishing coat	Render system thickness [mm]	Equivalent air thickness s_d (mean value) [m]	
Base coat A50 finishing coats	- key coat "FA 249" - finishing coat "RTA 549" (1.0 mm)	4.0	$0.5 \leq 2.0$	
	- key coat "FA 249" - finishing coat "RTA 549" (1.5 mm)	4.5	$0.5 \leq 2.0$	
	- key coat "FA 249" - finishing coat "RTA 549" (2.0 mm)	5.0	$0.5 \leq 2.0$	
	- key coat "FA 249" - finishing coat "RTA 549" (3.0 mm)	6.0	$0.6 \leq 2.0$	
	- key coat "FS 412" - finishing coat "RSR 421" (1.0 mm)	4.0	$0.4 \leq 2.0$	
	- key coat "FS 412" - finishing coat "RSR 421" (1.5 mm)	4.5	$0.4 \leq 2.0$	
	- key coat "FS 412" - finishing coat "RSR 421" (2.0 mm)	5.0	$0.4 \leq 2.0$	
	- key coat "FS 412" - finishing coat "RSR 421" (3.0 mm)	6.0	$0.5 \leq 2.0$	
	- key coat "F 238" - finishing coat "R 336" (3.0 mm)	6.0	$0.3 \leq 2.0$	
	- key coat "FX 526" - finishing coat "RX 561" (3.0 mm)	6.0	$0.7 \leq 2.0$	
	Base coat A96 finishing coats	- key coat "FA 249" - finishing coat "RTA 549" (1.0 mm)	5.0	$0.3 \leq 2.0$
		- key coat "FA 249" - finishing coat "RTA 549" (1.5 mm)	5.5	$0.3 \leq 2.0$
- key coat "FA 249" - finishing coat "RTA 549" (2.0 mm)		6.0	$0.4 \leq 2.0$	
- key coat "FS 412" - finishing coat "RSR 421" (1.0 mm)		5.0	$0.4 \leq 2.0$	
- key coat "FS 412" - finishing coat "RSR 421" (1.5 mm)		5.5	$0.3 \leq 2.0$	
- key coat "FS 412" - finishing coat "RSR 421" (2.0 mm)		6.0	$0.3 \leq 2.0$	
- key coat "FS 412" - finishing coat "RSR 421" (3.0 mm)		7.0	$0.3 \leq 2.0$	
- key coat "F 238" - finishing coat "R 336" (3.0 mm)		7.0	$0.4 \leq 2.0$	
- key coat "FX 526" - finishing coat "RX 561" (3.0 mm)		7.0	$0.2 \leq 2.0$	
FASSATHERM CLASSIC			Annex B7 of ETA N° 07/0280	
Performances – Water vapour permeability of the rendering system				

Table B10: Water vapour permeability of the rendering system

Configuration	Key coat and finishing coat	Render system thickness [mm]	Equivalent air thickness s_d (mean value) [m]
Base coat AL88 finishing coats	- key coat "FA 249" - finishing coat "RTA 549" (1.0 mm)	5.0	$0.3 \leq 2.0$
	- key coat "FA 249" - finishing coat "RTA 549" (1.5 mm)	5.5	$0.3 \leq 2.0$
	- key coat "FA 249" - finishing coat "RTA 549" (2.0 mm)	5.0	$0.4 \leq 2.0$
	- key coat "FA 249" - finishing coat "RTA 549" (3.0 mm)	7.0	$0.4 \leq 2.0$
	- key coat "FS 412" - finishing coat "RSR 421" (1.0 mm)	5.0	$0.3 \leq 2.0$
	- key coat "FS 412" - finishing coat "RSR 421" (1.5 mm)	5.5	$0.3 \leq 2.0$
	- key coat "FS 412" - finishing coat "RSR 421" (2.0 mm)	5.0	$0.3 \leq 2.0$
	- key coat "FS 412" - finishing coat "RSR 421" (3.0 mm)	7.0	$0.3 \leq 2.0$
	- key coat "F 238" - finishing coat "R 336" (3.0 mm)	7.0	$0.2 \leq 2.0$
	- key coat "FX 526" - finishing coat "RX 561" (3.0 mm)	7.0	$0.50 \leq 2.0$

Table B11: Water vapour permeability of the insulation products

Product	Water-vapour resistance factor, μ
EPS 80	20-40
EPS 100	30-70
EPS 120	30-70
EPS con grafite	30-70
EPS TR 100	20-40
EPS con grafite TR 100	20-40

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Performances – Water vapour permeability of the rendering system,
and of the thermal insulation products

**Annex B8
of ETA N° 07/0280**

Table B12: Bond strength

Configuration	Tested thickness of adhesive [mm]	Failure mode ⁽¹⁾ [%]	Mean value [kPa]	Minimum value [kPa]
Bond strength between base coat A50 and insulation product TR150				
under dry conditions	3-5	100 Cs	140	140
Bond strength between base coat A96 and insulation product TR100				
under dry conditions	3-5	100 Cs	114	80
Bond strength between base coat AL88 and insulation product TR150				
under dry conditions	3-5	80 Aa-s 20 Cs	120	110
Bond strength adhesive A50 and insulation product TR 150				
- under dry conditions	3-5	100 Cs	140	140
- 2 days of water immersion + 2 hours drying	3-5	100 Cs	140	140
- 2 days of water immersion + 7 days drying	3-5	100 Cs	150	130
Bond strength adhesive A 96 and insulation product TR 100				
- under dry conditions	3-5	100 Cs	114	80
- 2 days of water immersion + 2 hours drying	3-5	100 Cs	83	80
- 2 days of water immersion + 7 days drying	3-5	100 Cs	131	128
Bond strength adhesive AL 88 and insulation product TR 150				
- under dry conditions	3-5	100 Cs	160	160
- 2 days of water immersion + 2 hours drying	3-5	80 Cs 20 Aa-s	130	130
- 2 days of water immersion + 7 days drying	3-5	100 Cs	150	150
Bond strength between adhesive A50 and substrate (concrete)				
- under dry conditions	3-5	100 Ca	1130	1090
- 2 days of water immersion + 2 hours drying			530	480
- 2 days of water immersion + 7 days drying			1930	1830
Bond strength between adhesive A96 and substrate (concrete)				
- under dry conditions	3-5	100 Ca	880	760
- 2 days of water immersion + 2 hours drying		20 Aa-s 80 Ca	1090	1030
- 2 days of water immersion + 7 days drying		20 Aa-s 80 Ca	1900	1470
Bond strength between adhesive AL 88 and substrate (concrete)				
- under dry conditions	3-5	100 Ca	350	310
- 2 days of water immersion + 2 hours drying			610	550
- 2 days of water immersion + 7 days drying			1190	1100

- ⁽¹⁾ Cs Cohesive failure into substrate (concrete or insulation)
Aa-s Adhesive failure between adhesive and insulation
Ca Cohesive failure into adhesive

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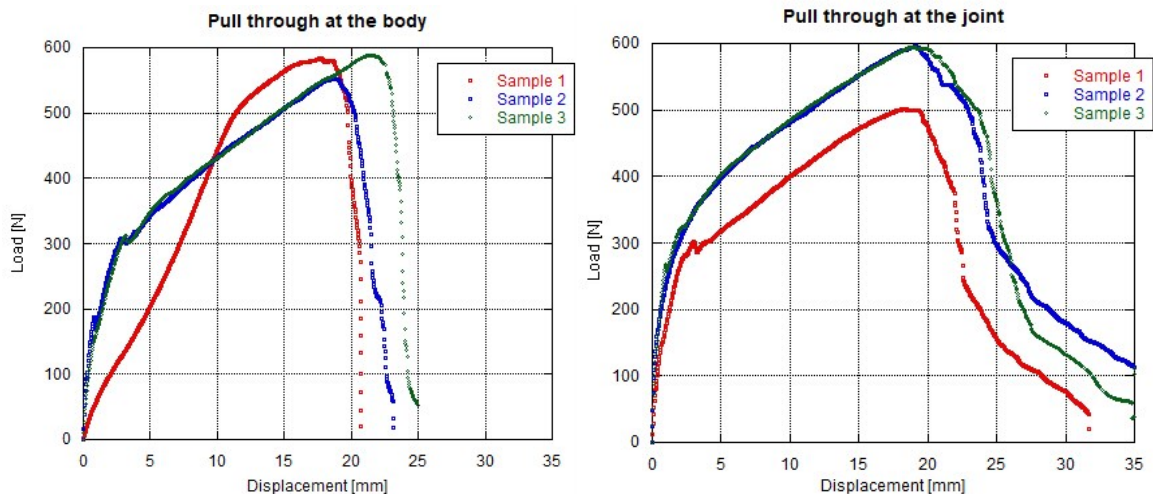
Performances – Bond strength

**Annex B9
of ETA N° 07/0280**

Table B13: Pull-through tests of fixings

Characteristics of components				
Anchors	Trade name		Apply to all anchors listed in the Annex A3	
	Plate diameter [mm]		60	
	Plate stiffness [kN/mm]		≥ 0.6	
Characteristics of EPS panels	Thickness [mm]		≥ 60	
	Tensile strength perpendicular to the face [kPa] in dry condition		≥ 100	
Pull-through test in dry condition				
Failure load [N]	Anchors not placed at the panel joints	R _{panel} Minimum: 553 Average: 575	Anchors placed at the panel joints	R _{joint} Minimum: 501 Average: 564

Figure B1 – Load-displacement graph of pull-through tests in dry conditions at the body and at the joint



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Performances – Pull-through tests of fixings

**Annex B10
of ETA N° 07/0280**

Table B14: Bond strength after ageing of finishing coats with base coat A50 tested on the rig

Configuration	Failure mode ⁽¹⁾ [%]	Individual value [kPa]	Mean Value [kPa]
Rendering system made of: - base coat "A 50" - key coat "FA 249" - finishing coat "RTA 549" on thermal insulation TR 150	100 Cs	160	160
		160	
		170	
		150	
		160	
Rendering system made of: - base coat "A 50" - key coat "FS 412" - finishing coat "RSR 421" on thermal insulation TR 150	100 Cs	160	160
		180	
		150	
		130	
		150	
Rendering system made of: - base coat "A 50" - key coat "F 328" - finishing coat "R 336" on thermal insulation TR 150	100 Cs	160	170
		160	
		180	
		170	
		160	

(1) Cs Cohesive failure into substrate (concrete or insulation)

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Performances – Bond strength after ageing

Annex B11
of ETA N° 07/0280

Table B15: Bond strength after ageing of finishing coats with base coat A96 tested on the rig

Configuration	Failure mode ⁽¹⁾ [%]	Individual value [kPa]	Mean Value [kPa]
Rendering system made of: - base coat "A 96" - key coat "FA 249" - finishing coat "RTA 549" on TR 100	100 Cs	92	93
		97	
		88	
		102	
		86	
Rendering system made of: - base coat "A 96" - key coat "FS 412" - finishing coat "RSR 421" on TR 100	100 Cs	109	98
		104	
		101	
		95	
		81	
Rendering system made of: - base coat "A 96" - key coat "F 328" - finishing coat "R 336" on TR 200	100 Cs	100	130
		130	
		140	
		130	
		140	
Rendering system made of: - base coat "A 96" - key coat "FX 526" - finishing coat "RX 561" on TR 150	100 Cs	140	130
		172	
		53	
		165	
		136	

(1) Cs Cohesive failure into substrate (concrete or insulation)

Table B16: Water absorption of the thermal insulation products

Product	Water absorption by partial immersion [kg/m ²]
EPS 80	WL(P) ≤ 1
EPS 100	WL(P) ≤ 1
EPS 120	WL(P) ≤ 1
EPS con grafite	WL(P) ≤ 1
EPS TR 100	WL(P) ≤ 0.5
EPS con grafite TR 100	WL(P) ≤ 0.5

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Performances – Bond strength after ageing and water absorption of the insulation products

**Annex B12
of ETA N° 07/0280**

Table B17: Bond strength after ageing of finishing coats with base coat AL88 tested on the rig

Configuration	Failure mode ⁽¹⁾ [%]	Individual value [kPa]	Mean Value [kPa]
Rendering system made of: - base coat "AL 88" - key coat "FA 249" - finishing coat "RTA 549" on insulation TR 200	20 Aa-s 80 Cs	140	150
		160	
		160	
		150	
		160	
Rendering system made of: - base coat "AL88" - key coat "FS 412" - finishing coat "RSR 421" on insulation TR 200	20 Aa-s 80 Cs	180	190
		200	
		190	
		160	
		200	
Rendering system made of: - base coat "AL 88" - key coat "F 328" - finishing coat "R 336" on insulation TR 200	100 Cs	190	170
		160	
		180	
		170	
		160	
Rendering system made of: - base coat "AL88" - key coat "FX 526" - finishing coat "RX 561"	100 Cs	127	127
		127	
		127	
		127	
		127	

- (1) Cs Cohesive failure into substrate (concrete or insulation)
Aa-s Adhesive failure between adhesive and insulation

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Performances – Bond strength after ageing

**Annex B13
of ETA N° 07/0280**

Table B18: Bond strength after ageing of base coats and finishing coats NOT tested on the rig

Configuration of base coat with insulation TR150	Failure mode ⁽¹⁾ [%]	Individual value [kPa]	Mean Value [kPa]
Rendering system made of: - base coat “A96” - on EPS TR150	100 Cs	170	190
		180	
		200	
		200	
		210	
Rendering system made of: - base coat “AL88” - on EPS TR150	100 Cs	200	190
		180	
		180	
		190	
		190	
Configuration of finishing coats with insulation TR100			
Rendering system made of: - base coat “A 50” - key coat “FX 526” - finishing coat “RX 561”	100 Cs	103	97.5
		98	
		95	
		90	
		101.5	

(1) Cs Cohesive failure into substrate (concrete or insulation)

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Performances – Bond strength after ageing

**Annex B14
of ETA N° 07/0280**

Table B19: Tensile strength of the glass fibre mesh

Tensile strength of the glass fibre mesh										
Product	As-delivered state				After ageing					
	Tensile strength [N/mm]		Elongation [%]		Tensile strength [N/mm]		Residual tensile strength [%]		Elongation [%]	
FASSANET 160	warp	weft	warp	weft	warp	weft	warp	weft	warp	weft
	44	55	3.7	4.4	36	46	82	84	3.1	3.5

Table B20: Tensile strength of the insulation product

Product	Tensile strength [kPa]
EPS 80	TR 150
EPS 100	TR 150
EPS 120	TR 200
EPS con grafite	TR 150
EPS TR 100	TR 100
EPS con grafite TR 100	TR 100

Table B21: Shear strength and shear modulus of elasticity of thermal insulation product

Product	Shear Modulus [MPa]	Shear strength [kPa]	
	Minimum value	Minimum value	Mean value
EPS 80	1.00	-	20.0
EPS 100	1.00	-	20.0
EPS 120	1.00	-	20.0
EPS con grafite	1.00	-	20.0
EPS TR 100	1.87	47.2	59.6
EPS con grafite TR 100	1.83	60.9	74.1

FASSATHERM CLASSIC

Performances – Tensile strength of the glass fibre mesh, tensile strength, shear strength and shear modulus of elasticity of thermal insulation products

**Annex B15
of ETA N° 07/0280**

Table B22: Thermal resistance and thermal transmittance of ETICS

Product	Minimum thickness [mm]	Thermal resistance [m²K/W]
EPS 80	40	1.08
EPS 100	40	1.11
EPS 120	40	1.18
EPS con grafite	40	1.29
EPS TR 100	40	1.11
EPS con grafite TR 100	40	1.29

The additional thermal resistance provided by the ETICS (R_{ETICS}) to the substrate wall is calculated from the thermal resistance of the thermal insulation product ($R_{insulation}$), determined in accordance with 2.2.23.1, and from either the tabulated R_{render} value of the render system (R_{render} is about 0.02 m²K/W) or R_{render} determined by test according to EN 12667 or EN 12664 (depending on expected thermal resistance).

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

as described in EN ISO 10456.

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:

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

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

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

$R_{substrate}$ thermal resistance of the substrate wall [(m²·K)/W]

R_{se} external surface thermal resistance [(m²·K)/W]

R_{si} internal surface thermal resistance [(m²·K)/W]

ΔU correction term of the thermal transmittance for mechanical fixing devices

= $\chi_p \cdot n$ (for anchors) + $\Sigma \psi_i \cdot l_i$ (for profiles) (formula for U_c)

χ_p point thermal transmittance value of the anchor [W/K]. If not specified in ETA for anchors, the following values apply:

= 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 a 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)

n number of anchors per m². In case n is more than 16, the formula for U_c is not applied.

ψ_i linear thermal transmittance value of the profile [W/(m·K)]

l_i length of the profile per m².

The influence of thermal bridges can also be calculated as described in EN ISO 10211.

It shall be calculated according to this standard if there are more than 16 anchors per m² foreseen. The declared χ_p -values do not apply in this case.

FASSATHERM CLASSIC

Performances – Thermal resistance and thermal transmittance of ETICS

Annex B16
of ETA N° 07/0280