Technical and Test Institute for Construction Prague
Prosecká 811/76a
190 00 Praha
Czech Republic
eota@tzus.cz

Designated according to Article 29 of Regulation (EU) No 305/2011

Member of www.eota.eu

European Technical Assessment

ETA 18/0229 of 07/05/2018

I General Part

Technical Assessment Body issuing the European Technical Assessment: Technical and Test Institute for Construction Prague	
Trade name of the construction product	**HECK MW / L- MW**
Product family to which the construction product belongs	Product area code: 4 External Thermal Insulation Composite Systems (ETICS) with rendering insulation product – mineral wool (MW)
Manufacturer	HECK Wall Systems Thölauer Str. 25 95615 Marktredwitz Germany www.wall-systems.com
Manufacturing plant(s)	HECK Wall Systems Thölauer Str. 25 95615 Marktredwitz Germany
This European Technical Assessment contains	39 pages including 14 Annexes which form an integral part of this assessment. Annex No. 15 Control Plan contains confidential information and is not included in the European Technical Assessment when that assessment is publicly disseminated.
This European Technical Assessment is issued in accordance with regulation (EU) No. 305/2011 on the basis of	ETAG 004 used as EAD, 2013

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

II Specific part

1 Technical description of the product

1.1 Definition and composition of the kit

This product is an ETICS (External Thermal Insulation Composite System) with rendering - a kit comprising components which are factory-produced by the manufacturer or component suppliers. The ETICS manufacturer is ultimately responsible for all components of the ETICS specified in this ETA.

The ETICS kit comprises a prefabricated insulation product of mineral wool (MW) to be 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 system is applied directly to the insulating boards, 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.

Composition of the ETICS

Table No. 1

	Components	Coverage (kg/m^2)	Thickness (mm)
Insulation materials with associated methods of fixing	**Bonded ETICS with or without supplementary anchors.** **National application documents shall be taken into account.**		
	• Insulation product: MW according to EN 13162 see Annex No. 1 for product characteristics	/	50 - 200
	• Adhesives: bonded surface area: 100 % (uncoated lamella) min. 50 % (coated lamella) - **HECK BK** - cement based powder requiring addition of water - 0.25 l/kg	cca 4 (dry)	/
	- **HECK K+A** (grey/white) - cement based powder requiring addition of water - 0.25 l/kg	cca 4 (dry)	/

	Components	Coverage (kg/m^2)	Thickness (mm)
Insulation materials with associated methods of fixing	**Mechanically fixed ETICS with profiles and supplementary adhesive (see Cl. 3.3.5 and Annex No. 12 for possible associations MW/anchors) National application documents shall be taken into account.**		
	• Insulation product: MW according to EN 13162 min. TR14 see Annexes 2, 3, 4 for additional product characteristics	/	60 - 200
	• Adhesives: bonded surface area: min. 40 % but: 100 % (uncoated lamella) min. 50 % (coated lamella) - **HECK BK** cement based powder requiring addition of water - 0.25 l/kg - **HECK K+A** (grey/white) cement based powder requiring addition of water - 0.25 l/kg	cca 4 (dry) cca 4 (dry)	/ /
	• Profiles see Annex No. 14 - aluminium profiles - **HECK Halteleiste Alu** - **HECK Verbindungsschiene Alu**		
	• Anchors for profiles - **ejotherm SK U** - **WS 8 L** - **WS 8 N** - **ejotherm SDK U** - **IsoFux ND-8Z** - **SDF-K plus, SDF-S plus** - **ejotherm NK U**	/ / / / / / /	/ / / / / / /

	Components	Coverage (kg/m^2)	Thickness (mm)
Insulation materials with associated methods of fixing	**Mechanically fixed ETICS with anchors and supplementary adhesive (see Cl. 3.3.5 and Annex No. 12 for possible associations MW/anchors) National application documents shall be taken into account.**		
	• Insulation product: MW according to EN 13162 see Annexes 2, 3, 4 for product characteristics	/	50 - 340
	• Supplementary adhesives: min. bonded surface: 40 % - **HECK BK** - cement based powder requiring addition of water - 0.25 l/kg	cca 4 (dry)	/
	- **HECK K+A** (grey/white) - cement based powder requiring addition of water - 0.25 l/kg	cca 4 (dry)	/
	• Anchors, see Annex No. 12 for individual product characteristics. • In addition to the following list, other anchors can be used provided that they comply with the requirements introduced in the Annex No. 12.		
	- **KOELNER TFIX-8P** plastic nailed-in anchors	ETA-13/0845	
	- **ejotherm STR U** - **ejotherm STR U 2G** plastic screw-in anchors	ETA-04/0023	
	- **BRAVOLL® PTH-KZ 60/8** plastic nailed-in anchors	ETA-05/0055	
	- **BRAVOLL® PTH-S** - plastic nailed-in anchors	ETA-08/0267	
	- **Koelner TFIX-8S** plastic screw-in anchors	ETA-11/0144	
	- **Klimas Wkret-met screw-in plug eco-drive W** plastic screw-in anchors	ETA-13/0107	
	- **Hilti T-Save HTS-P und HTS-M** plastic nailed-in anchors	ETA -14/0400	
	- **Hilti-Dämmstoff-Befestigungselement XI-FV** powder actuated fastener	ETA-03/0004	
	- **HTR-P** plastic screw-in anchors	ETA-16/0116	
	- **ejotherm NTK U** plastic nailed-in anchors	ETA-07/0026	
Base coat	• **HECK K+A** (grey/white) - cement based powder requiring addition of water 0.22 – 0.26 l/kg	3.5 – 12.0 (dry mixture)	Minimal: 3.0 Maximal: 10.0

	Components	Coverage (kg/m^2)	Thickness (mm)
Reinforcement	• Standard mesh applied in single layer see Annex No. 13 for product characteristics: - **HECK AGG Fine** - single layer application only	/	/
Key coat	- **HECK UG** - see description of the particular finishing if the key coat shall or shall not be applied pigmented ready to use liquid	0.2 – 0.3 l/m^2	/
Finishing coats	• Powder to be mixed with water. Based on mineral binder: - **Rajasil EP WD** - grain structure (particle size 1.0: 2.5; 3.0; 4.0; 6.0; 8.0; 12.0 mm) - **HECK EP KR JURA** - grain structure (particle size 1.5: 2.5; 3.0 mm) - to be used without the key coat - **HECK ED** - grain structure (particle size 0.7 mm) - Structure Kratzputz KC (1.5; 2.0; 3.0; 4 mm) - Structure Rillenputz R (1.5; 2.0; 3.0; 4 mm) - Structure Waschelputz (0.5; 1.5 mm) to be used without the key coat - **HECK STR** - Structure Kratzputz KC (1.5, 2.0, 3.0,4.0) - Structure Rillenputz R (3.0; 4.0) - to be used with: key coat HECK UG allowed	3.5 – 25.0 23 – 25 3.0 – 4.5 3.0 – 4.5 4.0 – 11.0 3.0 – 4.5	3.0 – 12.0 11.5 – 12.5 regulated by the particle size 3.0 – 8.0 regulated by the particle size
	• Ready to use paste. Based on acrylic binder: - **HECK SIP** - Structure Kratzputz KC (1.5; 2.0; 3.0; 4 mm) - Structure Rillenputz R (2.0; 3.0 mm) - to be used with: key coat HECK UG allowed	2.8 – 5.0	regulated by the particle size
	• Ready to use paste Based on water-glass-based binder: - **HECK SHP** - Structure Kratzputz KC (1.5; 2.0; 3.0 mm) - Structure Rillenputz R (2.0; 3.0 mm) - to be used with: key coat HECK UG allowed	2.0 – 4.0	regulated by the particle size
Ancillary materials	Remain under the manufacturer's responsibility		

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 buildings' walls. The walls are made of masonry (bricks, blocks, stones …) or concrete (cast on site or as prefabricated panels). The characteristics of the walls shall be verified prior to use of the ETICS, especially regarding conditions for reaction to fire classification and for fixing of the ETICS 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 cl. 7.2.1 of the ETAG 004) and shall be done in accordance with the national instructions.

The ETICS belong to Category S/W2, according to EOTA Technical Report No 034.

2.2 Manufacturing

The European Technical Assessment is issued for the ETICS on the basis of agreed data/information, deposited with the Technical and Test Institute Prague, which identifies the ETICS that has been assessed and judged.

2.3 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 chapters 7.1 and 7.2 of ETAG 004 used as EAD, which summarize how information introduced in the ETA and related documents is intended to be used in the construction process and gives advice to all parties interested when normative documents are missing.

2.4 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.

2.5 Use, maintenance and repair

The provisions made in this European Technical Assessment are based on an assumed working life of the ETICS of at least 25 years, provided that the requirements for the packaging, transport, storage, installation as well as appropriate use, maintenance and repair are met. The indication given on the working life cannot be interpreted as a guarantee given by the manufacturer or the Technical Assessment Body, 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.

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

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

Necessary repairs should be performed as soon as the need has been identified.

It is important to be able to carry out maintenance as far as possible using readily available products and equipment, without spoiling appearance. Only products which are compatible with the ETICS shall be used.

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

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

The performances of the kit as described in this chapter are valid provided that the components of the kit comply with Annexes 1 – 14.

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire (ETAG 004 - clause 5.1.2.1, EN 13501-1)

Any combination of components not mentioned or not fulfilling the following requirements is assessed as (NPA) No Performance Assessed.

Table No. 2

Configuration	Organic content	Flame retardant content	Euroclass according to EN 13501-1
Adhesive	max. 2.5 %	No flame retardant	**A2 – s1, d0**
Boards of mineral wool MW Maximal density 125 kg/m^3	Max. heat of combustion 2.0 MJ/kg	/	
Rendering consisting of base coat: **HECK K+A** finishing coat: **Rajasil EP WD**	Base coat: max. 2.5 % Finishing coat: max. 3.5 %	No flame retardant	
Rendering consisting of base coat: **HECK K+A** finishing coat: **HECK SIP**	Base coat: max. 2.5 % Finishing coat: max. 3.0 %	No flame retardant	
Rendering consisting of base coat: **HECK K+A** finishing coat: **HECK SHP**	Base coat: max. 2.5 % Finishing coat: max. 6.5 %	No flame retardant	
Rendering consisting of base coat: **HECK K+A** finishing coat: **HECK ED** (thickness ≤ 2.0 mm) **HECK STR** (thickness ≤ 2.0 mm)	Base coat: max. 2.5 % Finishing coat: max. 2.15 %	No flame retardant	

Table No. 3

Configuration	Organic content	Flame retardant content	Euroclass according to EN 13501-1
Adhesive min. 1 mm thickness density: min. 900 kg/m^3 (dry condition in end use application)	max. 1.54 %	No flame retardant	**A1**
Boards of mineral wool MW	Max. heat of combustion 2.0 MJ/kg	/	
Rendering consisting of base coat: **HECK K+A** density: min. 1300 kg/m^3 (dry condition in end use application) key coat: **HECK UG** amount used: max. 0.241 kg/m^2 (dry condition in end use application) reinforcement: **HECK AGG Fine** heat of combustion: max. 1.386 MJ/m^2 finishing coats: density: min. 1200 kg/m^3 (dry condition in end use application) **HECK EP KR JURA** **HECK ED** (KC1.5, KC2, KC3, KC4, R3, R4) **HECK STR** (KC2, KC3, KC4, R3)	Base coat: max. 1.54 % Finishing coat: max. 2.20 %	No flame retardant	

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.

3.2 Hygiene, health and environment (BWR 3)

3.2.1 Water absorption (ETAG 004 - clause 5.1.3.1)

- Base coat **HECK K+A**

Water absorption after 1 hour < 1 kg/m^2

Water absorption after 24 hours < 0.5 kg/m^2

- Rendering system:

Table No. 4

		Water absorption after 24 hours	
		< 0.5 kg/m^2	**≥ 0.5 kg/m^2**
Rendering system: Base coat **HECK K+A** + finishing coats indicated hereafter:	**Rajasil EP WD**	X	
	HECK EP KR JURA	X	
	HECK ED		X
	HECK STR	X	
	HECK SIP	X	
	HECK SHP	X	

3.2.2 Watertightness (ETAG 004 - clause 5.1.3.2)

3.2.2.1 Hygrothermal behaviour

Pass (without defects).

3.2.2.2 Freeze–thaw behaviour

Finishing coats that proved to have water absorption value, in accordance with the water absorption test, after 24 hours lower than 0.5 kg/m^2 were assessed as freeze-thaw resistant.

Finishing coats that proved to have water absorption value, in accordance with water absorption test, after 24 hours higher than 0.5 kg/m^2 were subjected to the freeze-thaw test and are assessed as freeze-thaw resistant.

Pass (without defects, satisfactory bond strength).

3.2.3 Impact resistance (ETAG 004 - clause 5.1.3.3)

Table No. 5

Rendering system: base coat **HECK K+A** + reinforcement and finishing coats indicated hereafter:	**Single standard mesh**
Rajasil EP WD	Category I
HECK EP KR JURA	Category I
HECK ED	Category II
HECK STR	Category II
HECK SIP	Category II
HECK SHP	Category I

3.2.4 Water vapour permeability (ETAG 004 - clause 5.1.3.4)

Table No. 6

Rendering system: base coat **HECK K+A** + reinforcement and finishing coats indicated hereafter	**Equivalent air thickness s_d**
Rajasil EP WD (max. 10 mm)	≤ 0.4 m
HECK EP KR JURA (max. 10 mm)	≤ 0.4 m
HECK ED (max. 4 mm)	≤ 0.1 m
HECK STR (max. 4 mm)	≤ 0.2 m
HECK SIP (max. 3 mm)	≤ 0.2 m
HECK SHP (max. 3 mm)	≤ 0.3 m

3.2.5 Release of dangerous substances (ETAG 004 - clause 5.1.3.5, EOTA TR034)

Kit not assessed according to EOTA TR 034.

3.3 Safety and accessibility in use (BWR 4)

3.3.1 Bond strength between base coat and insulation product (ETAG 004 - clause 5.1.4.1.1)

- Initial state: bond strength < 0.080 MPa but cohesive failure in the insulation product
- After hygrothermal cycles: < 0.080 MPa but cohesive failure in the insulation product
- After freeze-thaw cycles: test not required (see Cl. 3.2.2.2 of this ETA)

3.3.2 Bond strength between adhesive and substrate / insulation product (ETAG 004 - clauses 5.1.4.1.2, 5.1.4.1.3)

Table No. 7

		Initial state	**48 hours immersion in water + 2 hours. 23°C/50% RH**	**48 hours immersion in water + 7 days 23°C/50% RH**
HECK BK **HECK K+A** (grey/white)	Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa
	MW panel	≤ 0.08 MPa and failure in insulation product	< 0.03 MPa and failure in insulation product	≤ 0.08 MPa and failure in insulation product
	MW lamella	≤ 0.08 MPa and failure in insulation product	≥ 0.03 MPa failure in the insulation product	≤ 0.08 MPa and failure in insulation product

3.3.3 Bond strength after ageing (ETAG 004 - clauses 5.1.7.1)

- After ageing: bond strength < 0.080 MPa but a cohesive failure in the insulation product
- After freeze-thaw cycles: test not required (see Cl. 3.2.2.2 of this ETA) or < 0.080 MPa and cohesive failure in insulation product

3.3.4 Fixing strength (ETAG 004 - clause 5.1.4.2)

Test not required (no limitation of ETICS length).

3.3.5 Wind load resistance (ETAG 004 - clause 5.1.4.3)

Tensile strength requirements marked as (wet) are measured in accordance with ETAG 004, Cl. 5.2.4.1.2, 28 days of heat-moisture actions and apply as requirement for R_{panel} and R_{joint} values in wet condition.

- **ETICS with profiles**

Table No. 8

Profiles description	Dimensions	**See Annex No. 14**
	Fixing of the profiles	Horizontal profiles with a vertical distance of 625 mm, fixed every 300 mm and vertical connection profiles
Anchor description	Trade name	**See Annex No. 12**
	No additional anchors in MW panel	
MW characteristics	Dimensions	625 mm × 800 mm
	Thickness (mm)	≥ 60
	Tensile strength perpendicular to faces (kPa)	≥ 14 (dry)
Maximal load	Defined by static foam block test	min. value: **1.20 kN** mean value: **1.25 kN**

Table No. 9

Profiles description	Dimensions	**See Annex No. 14**
	Fixing of the profiles	Horizontal profiles with a vertical distance of 625 mm, fixed every 300 mm and vertical connection profiles
Anchor description	Trade name	**See Annex No. 12**
	Two additional anchors per MW panel (see Annex No. 12) surface assembly method	
MW characteristics	Dimensions	625 mm × 800 mm
	Thickness (mm)	≥ 60
	Tensile strength perpendicular to faces (kPa)	≥ 14 (dry)
Maximal load	Defined by static foam block test	min. value: **1.20 kN** mean value: **1.25 kN**

- **ETICS with anchors**
- Insulation product MW lamella (TR80)

Table No. 10

Anchor description	Trade name		**see Annex No. 12**
	Assembly method		Surface assembly
	Plate diameter (mm)		140 or more
Insulation product description	Tensile strength (kPa)		≥ 80.0 (dry)
	Thickness (mm)		≥ 60
Maximal load	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min. value: **0.62 kN** mean value: **0.66 kN**
		R_{joint} in wet conditions	min. value: **0.51 kN** mean value: **0.57 kN**

- Insulation product MW panel, single density panels

Table No. 11

Anchor description	Trade name		**see Annex No. 12**
	Assembly method		Surface
	Plate diameter (mm)		≥ 60
Insulation product description	Thickness (mm)		≥ 60
	Tensile strength (kPa)		≥ 14.0 (dry)
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min.: **0.64 kN** mean: **0.69 kN**
		R_{panel} in wet conditions	min.: **0.36 kN** mean: **0.39 kN**
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min.: **0.59 kN** mean: **0.61 kN**
		R_{joint} in wet conditions	No performance assessed

Table No. 12

Anchor description	Trade name		**see Annex No. 12**	
	Assembly method		Surface	
	Plate diameter (mm)		≥ 90	≥ 140
Insulation product description	Thickness (mm)		≥ 80	
	Tensile strength (kPa)		≥ 5.0 (dry)	
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min.: **0.48 kN** mean: **0.49 kN**	min.: **0.56 kN** mean: **0.69 kN**
		R_{panel} in wet conditions	min.: **0.40 kN** mean: **0.46 kN**	No performance assessed
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min.: **0.38 kN** mean: **0.39 kN**	min.: **0.44 kN** mean: **0.54 kN**
		R_{joint} in wet conditions	No performance assessed	No performance assessed

- Insulation product MW board (TR15)

Table No. 13

Anchor description	Trade name		**see Annex No. 12**	
	Assembly method		Surface assembly	Countersunk assembly
	Plate diameter (mm)		60 or more	
Insulation product description	Thickness (mm)		≥ 50	≥ 100
	Tensile strength (kPa)		≥ 15.0 (dry) ≥ 11.0 (wet)	
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min. value: **0.44 kN** mean value: **0.49 kN**	
		R_{panel} in wet conditions	min. value: **0.32 kN** mean value: **0.34 kN**	
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min. value: **0.41 kN** mean value: **0.42 kN**	
		R_{joint} in wet conditions	min. value: **0.24 kN** mean value: **0.26 kN**	

- Insulation product MW panel (TR10), single density panels

Table No. 14

Anchor description	Trade name		**see Annex No. 12**		**see Annex No. 12**	
	Plate stiffness (kN/mm)		**≥ 0.3**		**≥ 0.5**	
	Assembly method		Surface	Countersunk	Surface	Countersunk
	Plate diameter (mm)		≥ 60		≥ 60	
Insulation product description	Thickness (mm)		≥ 60	≥ 100	≥ 50	≥ 100
	Tensile strength (kPa)		≥ 13.4 (dry) ≥ 6.1 (wet)		≥ 9.9 (dry)	
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min.: **0.40 kN** mean: **0.41 kN**		min.: **0.48 kN** mean: **0.55 kN**	
		R_{panel} in wet conditions	min.: **0.20 kN** mean: **0.24 kN**		No performance assessed	
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min.: **0.29 kN** mean: **0.34 kN**		min.: **0.39 kN** mean: **0.43 kN**	
		R_{joint} in wet conditions	min.: **0.19 kN** mean: **0.21 kN**		No performance assessed	

Table No. 15

Anchor description	Trade name		**BRAVOLL PTH-60/8 + BRAVOLL® IT PTH 100**	**BRAVOLL PTH-60/8 + BRAVOLL® IT PTH 140**	**Koelner TFIX - 8 S + Koelner KWL 090**
	Assembly method		Surface	Surface	Surface
	Plate diameter (mm)		100	140	90
Insulation product description	Thickness (mm)		≥ 100	≥ 100	≥ 80
	Tensile strength (kPa)		≥ 15.2 (dry)		≥ 17.0 (dry)
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min.: **0.68 kN** mean: **0.78 kN**	min.: **0.90 kN** mean: **0.93 kN**	min.: **0.64 kN** mean: **0.67 kN**
		R_{panel} in wet conditions	No performance assessed		
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min.: **0.50 kN** mean: **0.64 kN**	min.: **0.63 kN** mean: **0.69 kN**	min.: **0.56 kN** mean: **0.59 kN**
		R_{joint} in wet conditions	No performance assessed		

Table No. 16

Anchor description	Trade name		**BRAVOLL PTH-60/8 + BRAVOLL® ZT 100**	**EJOT STR U 2G + VT 2G**	**Klimas Wkret-met screw-in plug eco-drive W**
	Assembly method		Countersunk		
	Plate diameter (mm)		100	112.5	≥ 110
Insulation product description	Thickness (mm)		≥ 100	≥ 100	≥ 100
	Tensile strength (kPa)		≥ 15.2 (dry)	≥ 5.3 (dry)	≥ 14.5 (dry)
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min.: **0.71 kN** mean: **0.81 kN**	min.: **0.78 kN** mean: **0.91 kN**	min.: **0.70 kN** mean: **0.72 kN**
		R_{panel} in wet conditions	No performance assessed		
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min.: **0.65 kN** mean: **0.74 kN**	min.: **0.60 kN** mean: **0.70 kN**	min.: **0.52 kN** mean: **0.56 kN**
		R_{joint} in wet conditions	No performance assessed		

- Insulation product MW panel (TR10), multi-layered panels

Table No. 17

Anchor description	Trade name		**see Annex No. 12**	**see Annex No. 12**
	Plate stiffness (kN/mm)		**≥ 0.4**	**≥ 0.6**
	Assembly method		Surface	Surface
	Plate diameter (mm)		≥ 60	≥ 60
Insulation product description	Thickness (mm)		≥ 80	≥ 100
	Tensile strength (kPa)		≥ 10.0 (dry)	≥ 15.9 (dry)
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min.: **0.38 kN** mean: **0.41 kN**	min.: **0.48 kN** mean: **0.56 kN**
		R_{panel} in wet conditions	No performance assessed	
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min.: **0.32 kN** mean: **0.37 kN**	min.: **0.39 kN** mean: **0.42 kN**
		R_{joint} in wet conditions	No performance assessed	

Table No. 18

Anchor description	Trade name		**BRAVOLL® PTH-KZ/S + BRAVOLL® IT PTH 100**	**BRAVOLL® PTH-KZ/S + BRAVOLL® IT PTH 140**
	Assembly method		Surface	Surface
	Plate diameter (mm)		100	140
Insulation product description	Thickness (mm)		≥ 100	≥ 100
	Tensile strength (kPa)		≥ 15.6 (dry)	
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min.: **0.76 kN** mean: **0.79 kN**	min.: **0.90 kN** mean: **0.95 kN**
		R_{panel} in wet conditions	No performance assessed	
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min.: **0.52 kN** mean: **0.62 kN**	min.: **0.69 kN** mean: **0.81 kN**
		R_{joint} in wet conditions	No performance assessed	

Table No. 19

Anchor description	Trade name		**BRAVOLL® PTH-S + BRAVOLL® ZT 100**	**BRAVOLL® PTH-S + BRAVOLL® ZP**	**Klimas Wkret-met screw-in plug eco-drive W**
	Assembly method		Countersunk		
	Plate diameter (mm)		100	65	≥ 110
Insulation product description	Thickness (mm)		≥ 100	≥ 100	≥ 100
	Top layer apparent density (dry)		≥ 150 kg/m³	≥ 150 kg/m³	≥ 150 kg/m³
	Top layer thickness		≥ 15 mm	≥ 15 mm	≥ 15 mm
	Bottom layer apparent density (dry)		≥ 90 kg/m³	≥ 90 kg/m³	≥ 90 kg/m³
	Tensile strength (kPa)		≥ 15.9 (dry)	≥ 15.6 (dry)	≥ 13.7 (dry)
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min.: **0.79 kN** mean: **0.85 kN**	min.: **0.35 kN** mean: **0.41 kN**	min.: **1.39 kN** mean: **1.44 kN**
		R_{panel} in wet conditions	No performance assessed		
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min.: **0.66 kN** mean: **0.73 kN**	min.: **0.33 kN** mean: **0.36 kN**	min.: **0.89 kN** mean: **1.03 kN**
		R_{joint} in wet conditions	No performance assessed		

3.3.6 Render strip tensile test

No performance assessed.

3.4 Protection against noise (BWR 5)

3.4.1 Airborne sound insulation

No performance assessed.

3.5 Energy economy and heat retention (BWR 6)

3.5.1 Thermal resistance

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

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

Where:

$\chi_p \times n$ has only to be taken into account if it is greater than 0.04 W/(m^2.K)

U_c global (corrected) thermal transmittance of the covered wall (W/ (m^2.K)

n number of anchors (through insulation product) per 1 m^2

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
($\chi_p \times n$ negligible for n < 20)

= 0.004 W/K for anchors with a galvanized steel screw with the head covered by a plastic material
($\chi_p \times n$ negligible for n < 10)

= negligible for anchors with plastic nails (reinforced or not with glass fibres …)

U thermal transmittance of the current part of the covered wall (excluding thermal bridges) (W/ (m^2.K)) determined as follows:

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

Where:

R_i thermal resistance of the insulation product (according to declaration in reference to EN 13162) in (m^2.K)/W

R_{render} thermal resistance of the rendering system (about 0.02 in (m^2.K)/W) or determined by test according to EN 12667 or EN 12664

$R_{substrate}$ 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 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.

3.6 Sustainable use of natural resources (BWR 7)

No performance assessed.

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 European Commission decision 2001/596/EC, the AVCP systems 1 and 2+ are valid (further described in Annex V to Regulation (EU) No. 305/2011).

Table No. 20

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 he 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) 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 the 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 Technical and Test Institute for Construction Prague have agreed a Control Plan which is deposited with the Technical and Test Institute for Construction Prague 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 referring to the Control Plan once again.

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 Technical and Test Construction Institute Prague without delay.

Issued in Prague on 07/05/2018

By

Ing. Mária Schaan

Head of the Technical Assessment Body (TAB)

Annexes:

Annex No. 1	General requirements for insulation products
Annex No. 2	Insulation product characteristics for bonded ETICS with additional mechanical fixing – MW lamella (TR80)
Annex No. 3	Insulation product characteristics for mechanically fixed ETICS with additional bonding – MW board (TR15)
Annex No. 4	Insulation product characteristics for mechanically fixed ETICS with additional bonding – MW board (TR10)
Annex No. 5	Insulation product characteristics for mechanically fixed ETICS with additional bonding – MW board of multi-layered (TR10)
Annex No. 6	Insulation product characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW board RockSATE DUO (TR7.5)
Annex No. 7	Insulation product characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW board ECOROCK (TR7.5)
Annex No. 8	Insulation product characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW board FASROCK MAX (TR7.5)
Annex No. 9	Insulation product characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW boards Frontrock Max Plus / RockSATE DUO Plus / ECOROCK DUO (TR7.5)
Annex No. 10	Insulation product characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW boards Coverrock, Coverrock II, Coverrock 036, Coverock Plus, Coverrock BR (TR5)
Annex No. 11	Insulation product characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW boards FRONTROCK CASA (TR5)
Annex No. 12	Anchors, description of individual product characteristics contained in the ETA
Annex No. 13	Description of glass fibre mesh
Annex No. 14	Aluminium profiles

Annex No. 1 General requirements for insulation products

In addition to the requirements stated in the following annexes Annex No. 2 - Annex No. 11 the requirements in Annex No. 1 shall always be fulfilled.

Description and characteristics	MW panel	MW panel	MW lamella
Reaction to fire EN 13501-1	Class A1		
Gross heat of combustion EN ISO 1716	PCS ≤ 1.1 MJ/kg		
Tensile strength perpendicular to the faces EN 1607	$\sigma_{mt} \geq 14$ kPa	$\sigma_{mt} \geq 5$ kPa	$\sigma_{mt} \geq 80$ kPa
Tensile strength perpendicular to the faces ETAG Cl. 5.2.4.1.2, series 2	≥ 33 % of average value in dry conditions		
Tensile strength perpendicular to the faces ETAG Cl. 5.2.4.1.2, series 3	≥ 50 % of average value in dry conditions		
Compressive strength EN 826	$\sigma_m \geq 40$ kPa	$\sigma_m \geq 4$ kPa	$\sigma_m \geq 40$ kPa
Apparent density EN 1602	$120 \leq \rho_a \leq 150$ kg/m³	$100 \leq \rho_a \leq 150$ kg/m³	$80 \leq \rho_a \leq 150$ kg/m³
Shear strength - minimal of all single values measured EN 12090	$20 \leq f_{\tau k} \leq 100$ kPa	$6 \leq f_{\tau k} \leq 100$ kPa	$20 \leq f_{\tau k} \leq 100$ kPa
Shear modulus EN 12090	$1.0 \leq G_m \leq 2.0$ MPa	$0.3 \leq G_m \leq 2.0$ MPa	$1.0 \leq G_m \leq 2.0$ MPa

Annex No. 2 Insulation product characteristics for bonded ETICS with additional mechanical fixing – MW lamella (TR80)

Description and characteristics		Regulation	Declared characteristics MW lamella (TR80)	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501	A1	Apparent density ≤ 125 kg/m^3
Thermal resistance		Defined in CE mark in accordance with EN 13162		
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	No additional treatment (homogenous, without coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m^2
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m^2
Diffusion factor (μ)		EN 12086 EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR80	≥ 80 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 50 kPa
Shear strength		EN 12090	---	≥ 20 kPa
Shear modulus of elasticity		EN 12090	---	≥ 1000 kPa

* - highest value applies

Note: Classes and levels for individual characteristics comply with EN 13162:2012+A1:2015. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.

Annex No. 3 Insulation product characteristics for mechanically fixed ETICS with additional bonding – MW board (TR15)

Description and characteristics		Regulation	Declared characteristics MW board (TR15)	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501	A1	Apparent density ≤ 125 kg/m^3
Thermal resistance		Defined in CE mark in accordance with EN 13162		
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	No additional treatment (homogenous, without coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m^2
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m^2
Diffusion factor (μ)		EN 12086 EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR15	≥ 15 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 6 kPa
Shear strength		EN 12090	---	---
Shear modulus of elasticity		EN 12090	---	---

* - highest value applies

Note: Classes and levels for individual characteristics comply with EN 13162:2012+A1:2015. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.

Annex No. 4 Insulation product characteristics for mechanically fixed ETICS with additional bonding – MW board (TR10)

Description and characteristics		Regulation	Declared characteristics MW board (TR10)	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501	A1	Apparent density ≤ 125 kg/m^3
Thermal resistance		Defined in CE mark in accordance with EN 13162		
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	No additional treatment (homogenous, without coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m^2
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m^2
Diffusion factor (μ)		EN 12086 EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR10	≥ 10 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 5 kPa
Shear strength		EN 12090	---	---
Shear modulus of elasticity		EN 12090	---	---

* - highest value applies

Note: Classes and levels for individual characteristics comply with EN 13162:2012+A1:2015. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.

Annex No. 5 Insulation product characteristics for mechanically fixed ETICS with additional bonding – MW board of multi-layered (TR10)

Description and characteristics		Regulation	Declared characteristics MW board multi-layered (TR10)	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501	A1	Apparent density ≤ 125 kg/m^3
Thermal resistance		Defined in CE mark in accordance with EN 13162		
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	No additional treatment (homogenous, without coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m^2
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m^2
Diffusion factor (μ)		EN 12086 EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR10	≥ 10 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 5 kPa
Shear strength		EN 12090	---	---
Shear modulus of elasticity		EN 12090	---	---
Top layer apparent density (dry)		---	---	≥ 150 kg/m^3
Top layer thickness		---	---	≥ 15 mm
Bottom layer apparent density (dry)		---	---	≥ 90 kg/m^3

* - highest value applies

Note: Classes and levels for individual characteristics comply with EN 13162:2012+A1:2015. Only insulation products of the same or better declared characteristics, as stated in the table above, can be used in this ETICS.

Annex No. 6 Insulation product characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW board RockSATE DUO (TR7.5)

Description and characteristics		Regulation	Declared characteristics MW board RockSATE DUO (TR7.5) (dual density board, longitudinal fibre orientation)	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501 -1+A1:2009	A1	Apparent density ≤ 125 kg/m^3
Thermal resistance		EN 12667 EN 12939	Defined in CE mark in accordance with EN 13162	
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	No additional treatment (homogenous, without coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m^2
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m^2
Diffusion factor (μ)(-)		EN 12086 – EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR7.5	≥ 7.5 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 3 kPa
Shear strength		EN 12090	---	---
Shear modulus of elasticity		EN 12090	---	---

* higher value applies

Note: Classes and levels for individual characteristics comply with EN 13162+A1:2015

Annex No. 7 Insulation product characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW board ECOROCK (TR7.5)

Description and characteristics		Regulation	Declared characteristics MW board ECOROCK (TR7.5) (dual density board, longitudinal fibre orientation)	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501 -1+A1:2009	A1	Apparent density ≤ 125 kg/m^3
Thermal resistance		EN 12667 EN 12939	Defined in CE mark in accordance with EN 13162	
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	No additional treatment (homogenous, without coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m^2
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m^2
Diffusion factor (μ)(-)		EN 12086 – EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR7.5	≥ 7.5 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 3 kPa
Shear strength		EN 12090	---	---
Shear modulus of elasticity		EN 12090	---	---

* higher value applies

Note: Classes and levels for individual characteristics comply with EN 13162+A1:2015

Annex No. 8 Insulation product characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW board FASROCK MAX (TR7.5)

Description and characteristics		Regulation	Declared characteristics MW board FASROCK MAX (TR7.5) (dual density board, longitudinal fibre orientation)	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501 -1+A1:2009	A1	Apparent density ≤ 125 kg/m^3
Thermal resistance		EN 12667 EN 12939	Defined in CE mark in accordance with EN 13162	
Thickness		EN 823	T4	-3 % or -3 mm*, +5 % or +5 mm**,
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	No additional treatment (homogenous, without coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m^2
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m^2
Diffusion factor (μ)(-)		EN 12086 - EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR7.5	≥ 7.5 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 3 kPa
Shear strength		EN 12090	---	---
Shear modulus of elasticity		EN 12090	---	---

* higher value applies

** lower value applies

Note: Classes and levels for individual characteristics comply with EN 13162+A1:2015

Annex No. 9 Insulation product characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW boards Frontrock Max Plus / RockSATE DUO Plus / ECOROCK DUO (TR7.5)

Description and characteristics		Regulation	Declared characteristics MW board Frontrock Max Plus/ RockSATE DUO Plus / ECOROCK DUO (dual density board, longitudinal fibre orientation)	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501	A1	Apparent density ≤ 125 kg/m^3
Thermal resistance		EN 12667 EN 12939	Defined in CE mark in accordance with EN 13162	
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	No additional treatment (homogenous, without coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m^2
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m^2
Diffusion factor (μ)(-)		EN 12086 EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR7.5	≥ 7.5 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 3 kPa
Shear strength		EN 12090	---	---
Shear modulus of elasticity		EN 12090	---	---

* higher value applies

Note: Classes and levels for individual characteristics comply with EN 13162+A1:2015

Annex No. 10 Insulation product characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW boards Coverrock, Coverrock II, Coverrock 036, Coverock Plus, Coverrock BR (TR5)

Description and characteristics	Regulation	Declared characteristics MW boards Coverrock (TR5) (dual density board, longitudinal fibre orientation)	
		Class, level according to EN 13162	Value
Reaction to fire	EN 13501 -1+A1:2009	A1	Apparent density ≤ 125 kg/m^3
Thermal resistance	EN 12667 EN 12939	Defined in CE mark in accordance with EN 13162	
Thickness	EN 823	T5	-1 % or -1 mm*, +3 mm
Length	EN 822	---	± 2 %
Width		---	± 1.5 %
Squareness	EN 824	---	≤ 5 mm/m
Flatness	EN 825	---	≤ 6 mm
Surface	ETAG 004	With or without additional treatment (one side or both sides sprayed coating)	
Dimensional stability under defined temperature and humidity	EN 1604	DS(70,-)	1 %
Water absorption – Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m^2
Diffusion factor (μ)(-)	EN 12086 - EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions	EN 1607	TR5	≥ 5.0 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions	ETAG 004	---	≥ 1 kPa
Shear strength	EN 12090	---	---
Shear modulus of elasticity	EN 12090	---	---
Air flow resistance (kPa.s/m^2)	EN 29053	AF$_r$30	≥ 30 kPa.s/m^2
Dynamic stiffness	EN 29052-1	---	5 – 15 MN/m^3**

* higher value applies

** specific value depends on a thickness and product type – always see the related DoP

Note: Classes and levels for individual characteristics comply with EN 13162+A1:2015

Annex No. 11 Insulation product characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW boards FRONTROCK CASA (TR5)

Description and characteristics		Regulation	Declared characteristics MW FRONTROCK CASA (TR5) (dual density board, longitudinal fibre orientation)	
			Class, level according to EN 13162	Value
Reaction to fire		EN 13501	A1	Apparent density ≤ 125 kg/m^3
Thermal resistance		EN 12667 EN 12939	Defined in CE mark in accordance with EN 13162	
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	± 2 %
Width			---	± 1.5 %
Squareness		EN 824	---	≤ 5 mm/m
Flatness		EN 825	---	≤ 6 mm
Surface		ETAG 004	With or without additional treatment (one side or both sides sprayed coating)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	≤ 1.0 kg/m^2
	Long term water absorption	EN 12087	WL(P)	≤ 3.0 kg/m^2
Diffusion factor (μ)(-)		EN 12086 EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR5	≥ 5.0 kPa
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	≥ 1 kPa
Shear strength		EN 12090	---	---
Shear modulus of elasticity		EN 12090	---	---

* higher value applies

Note: Classes and levels for individual characteristics comply with EN 13162+A1:2015

Annex No. 12 Anchors, description of individual product characteristics contained in the ETA

Trade name, additional data	Plate diameter (mm)	Characteristic pull-out resistance	Plate stiffness (kN/mm)	Load at plate rupture (kN)
Surface assembly				
KOELNER TFIX-8P - RAWLPLUG S.A. - possible additional plates: **KWL 140** **KWL 110** **KWL 090**	60	See ETA-13/0845	0.30	1.38
ejotherm STR U **ejotherm STR U 2G** - EJOT Baubefestigungen GmbH - possible additional plates: **SBL 140 plus** **VT 90**	60	See ETA-04/0023	0.60	2.08
BRAVOLL® PTH-KZ 60/8 - ITW Construction Products CZ s.r.o. - possible additional plates: **BRAVOLL® IT PTH 100** **BRAVOLL® IT PTH 140**	60	See ETA-05/0055	0.70	2.10
BRAVOLL® PTH-S - ITW Construction Products CZ s.r.o. - possible additional plates: **BRAVOLL® IT PTH 100** **BRAVOLL® IT PTH 140**	60	See ETA-08/0267	0.90	2.60
KOELNER TFIX-8S - RAWLPLUG S.A. - possible additional plates: **KWL 140** **KWL 110** **KWL 090**	60	See ETA-11/0144	0.60	2.04

Trade name, additional data	Plate diameter (mm)	Characteristic pull-out resistance	Plate stiffness (kN/mm)	Load at plate rupture (kN)
Countersunk assembly				
ejotherm STR U **ejotherm STR U 2G** - EJOT Baubefestigungen GmbH - possible additional plate: **VT 90 plus 2G**	60	See ETA-04/0023	0.60	2.08
BRAVOLL® PTH-KZ 60/8 - ITW Construction Products CZ s.r.o. - possible additional plates: **BRAVOLL® ZT 100** **BRAVOLL® ZP**	60	See ETA-05/0055	0.70	2.10
Klimas Wkret-met screw-in plug eco-drive W - Klimas Wkret-met Sp. z o.o.	60	See ETA-13/0107	0.60	2.80

In addition to this list, anchors assessed In accordance with EAD 330196-00-0604 or ETAG 014 can be used provided that such anchors meet the following requirements:

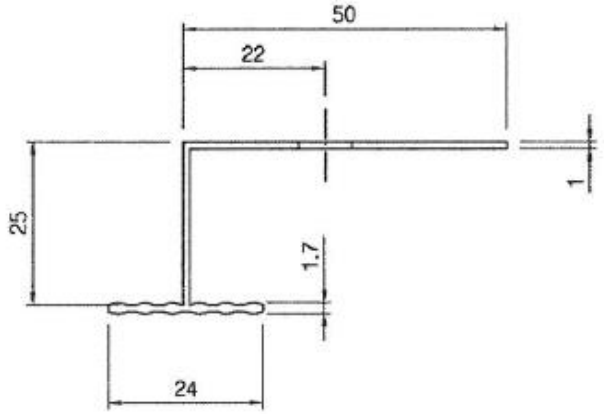
	Requirements	
Plate diameter	≥ 60 mm	
Plate stiffness	Surface assembly:	≥ 0.3 kN/mm
	Countersunk assembly:	≥ 0.6 kN/mm
Rupture force of anchor´s plate	≥ Higher of figures R_{panel} and R_{joint} in relevant table in Cl. 3.3.5	
Nail of the anchor	Made out of metal	

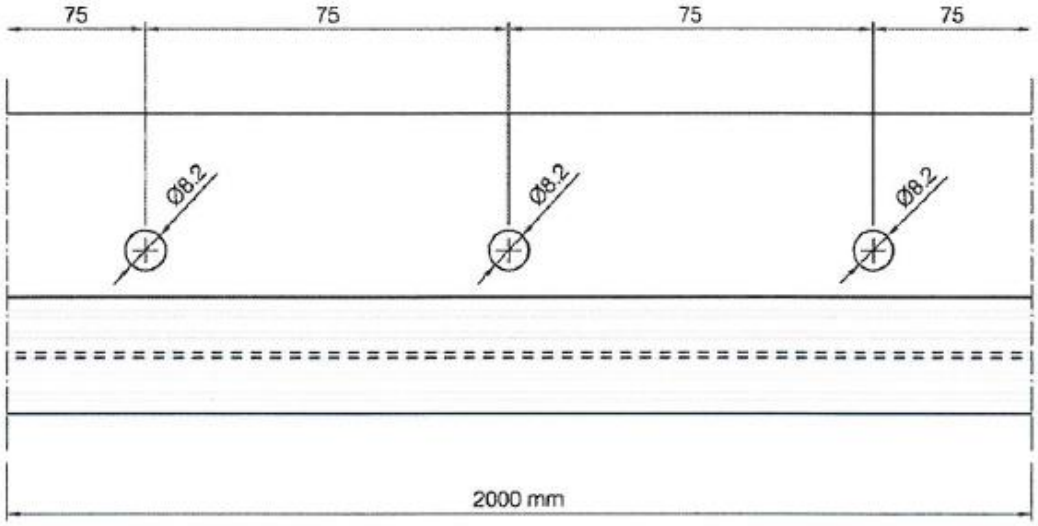
Annex No. 13 Description of glass fibre mesh

	Description	Strength after ageing	
	Standard fibre mesh applied in one or two layers with aperture size	Absolute strength after ageing (N/mm)	Relative residual strength after ageing, of the strength in the as-delivered state (%)
HECK AGG Fine	4.0 × 4.0 mm	≥ 20	≥ 50

Annex No. 14 Aluminium profiles

Horizontal profile – "Halteleiste Alu"





Vertical connection profile – "Verbindungsleiste Alu"

Length: 470 mm