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EOTA

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European Technical Assessment

ETA-14/0405 of 08.12.2020

GENERAL PART

Technical Assessment Body issuing the European Technical Assessment	**ZAG Ljubljana**
Trade name of the construction product	**BEKATHERM Prestige**
Product family to which the construction product belongs	**04: External Thermal Insulation Composite Systems with rendering (ETICS) on mineral wool (MW) for use as external insulation on walls of buildings**
Manufacturer	**BANJA KOMERC BEKAMENT d.o.o.** **Arandjelovac** **34304 Banja** **Srbija** www.bekament.com
Manufacturing plant	**BANJA KOMERC BEKAMENT d.o.o.** **Arandjelovac** **34304 Banja** **Srbija**
This European Technical Assessment contains	**19 pages including 1 annex which form an integral part of the document.**
This European Technical Assessment is issued in according to Regulation (EU) No. 305/2011, on the basis of	**EAD 040083-00-0404; January 2019**
This version replaces	**ETA-14/0405 issued on 03. 01. 2019**

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SPECIFIC PART

1 Technical description of the product

1.1 General

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

The ETICS kit comprises a prefabricated insulation product of mineral wool (MW) to be mechanically fixed and additional bonded onto a wall. The methods of fixing and the relevant components are specified in the table below. The insulation product is faced with a rendering system consisting of one or more layers (site applied), one of which contains reinforcement. The rendering is applied directly to the insulating panels, without any air gap or disconnecting layer.

The ETICS may include special fittings (e.g. base profiles, corner profiles, ...) to treat details of ETICS (connections, apertures, corners, parapets, sills, ...). Assessment and performance of these components is not addressed in this ETA, however the ETICS manufacturer is responsible for adequate compatibility and performance within the ETICS when the components are delivered as a part of the kit.

1.2 Composition of the kit

1.2.1 Composition of the ETICS

The ETICS comprises the following: adhesive or mechanical fixings (anchors), insulation core, base coat reinforced with glass fibre mesh, key coat applied on the base coat, finishing coat and ancillary materials. The definition of the product and description of the components is following:

	Components (see § 2.5 for further description, characteristics and performances of the components)	**Coverage (kg/m²)**	**Thickness (mm)**
Insulation materials with associated methods of fixing	**Mechanically fixed ETICS using anchors with supplementary adhesive** • *Insulation product* mineral wool boards ROCKWOOL - Frontrock Max Plus MW-EN13162-T5-DS (70, -)-DS(79, 90)-CS(10)15-TR7,5-PL(5)200-WS-WL(P)-MU 1, ROCKWOOL -Frontrock Max E MW-EN 13162-T5-DS(T+)-DS(TH)-CS(10)20-TR10-PL(5)250-WS-WL(P)-MU1, Knauf Insulation – FKD-S Thermal MW-EN 13162-T5- CS(10)30-TR10- WS-WL(P)-MU1, and Knauf Insulation – FKD-N Thermal MW-EN 13162-T5- CS(10)25-TR7,5- WS-WL(P)-MU1, thermal conductivity 0,034 – 0,036 W/mK	/	50 to 300

	Components (see § 2.5 for further description, characteristics and performances of the components)	**Coverage (kg/m²)**	**Thickness (mm)**
Insulation materials with associated methods of fixing	• *Adhesives* **BK-StirolFix Special** – dry mix cement based adhesive requiring addition of water (28 % - 7.0 l per 25 kg), applied on edges and spots in the middle of the surface **BK-StirolFix 1** – dry mix cement based adhesive requiring addition of water (28 % - 7.0 l per 25 kg), applied on edges and spots in the middle of the surface **BK-StirolFix WDVS** – dry mix cement based adhesive requiring addition of water (28 % = 7.0 l per 25 kg), applied on edges and spots in the middle of the surface • *Anchors* **Fischer** : WS 8L, TERMOZ 8U, TERMOZ 8 UZ, TERMOZ 8 N, TERMOZ PN 8, TERMOZ Ecotwist **Ejot Baubefestigungen**: ejot H1 eco, ejotherm STRU U, ejotherm NT U	5.5 – 6.0 (powder)	/
Base coat	**BK-StirolFix Special** – dry mix cement based adhesive requiring addition of water (28 % - 7.0 l per 25 kg), applied in two layers. **BK-StirolFix 1** – dry mix cement based adhesive requiring addition of water (28 % - 7.0 l per 25 kg), applied in two layers	6.0 – 7.0 (powder) 6.5– 9.0 (powder)	4-5
Glass fibre mesh	**Bekament mrežica 160 (** (Keltex - Primafas 160) Standard mesh (glass fibres mesh 160 g/m², 3.6 mm by 3.3 mm)	1.1 m²/m²	/
	Bekament mrežica 145 ((Keltex - Primafas 145) Standard mesh (glass fibres mesh 145 g/m², 3.6 mm by 4.6 mm)		
Key coat	**BK-Grund Universal,** applied as delivered, or diluted with water up to 20 %	0.20 – 0.25	/
	BK-Grund Silicat, applied as delivered, or diluted with water up to 15 %		
Finishing coats	Ready to use paste –**BK-Plast** .....acrylic based finishing coat **floated structure** (1.0 mm / 1.5 mm / 2.0 mm) **ribbed structure** (1.0 mm / 1.5 mm / 2.0 mm)	2.2 – 3.3	Regulated by particles size
	Ready to use paste –**BK-Sil** ..... silicone based finishing coat **floated structure** (1.0 mm / 1.5 mm / 2.0 mm) **ribbed structure** (1.0 mm / 1.5 mm / 2.0 mm)	2.2 – 3.3	
	Ready to use paste –**BK-S Plast** .....silicate based finishing coat **floated structure** (1.0 mm / 1.5 mm / 2.0 mm) **ribbed structure** (1.0 mm / 1.5 mm / 2.0 mm)	2.2 – 3.4	
	Ready to use paste –**BK-Sil Si&Si** .....silicate-silicone based finishing coat **floated structure** (1.0 mm / 1.5 mm / 2.0 mm) **ribbed structure** (1.0 mm / 1.5 mm / 2.0 mm)	2.2 – 3.4	
	Dry mix –**BK-Briv Special** .....mineral based finishing coat requiring addition of water (25-26 % - 6.25-6.50 l per 25 kg). **floated structure** (1.0 mm / 1.5 mm / 2.0 mm) **ribbed structure** (1.0 mm / 1.5 mm / 2.0 mm)	2.5 – 3.5	
Ancillary materials	Descriptions of the ancillary materials shall be in accordance with cl. 1.3.13 of the EAD 040083-00-0404. The description and use of the appropriate materials remains under the ETA-holder's responsibility.		

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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 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 air-tightness of the building structure.

The choice of the method of fixing depends on the characteristics of the substrate, which may need preparation (see cl. 1.3.1 of the EAD 040083-00-0404) and shall be done in accordance with the national instructions.

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

The provisions made in this European Technical Assessment (ETA) are based on an assumed intended working life of at least 25 years, provided that the conditions laid down in the following sections 2.2 – 2.5 for the packaging, transport, storage, installation are met and that the installed ETICS is subjected to an appropriate use, maintenance and repair as well. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right product in relation to the expected economically reasonable working life of the works.

2.2 Manufacturing

The European Technical Assessment is issued for the ETICS on the basis of agreed data/information, deposited with the Zavod za gradbeništvo Slovenije (ZAG Ljubljana), which identifies the ETICS that has been assessed and judged. Changes to the ETICS or production process, which could result in the deposited data/information being incorrect should be notified to the ZAG Ljubljana before the changes are introduced. The ZAG Ljubljana will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

2.3 Design and installation

The 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 if performance are done taking into account general assumptions introduced in the chapters 1.1 and 1.2 of EAD 040083-00-0404, which summarizes how information introduced in the ETA and related documents is

intended to be used in the construction process and gives advice to all parties interested when normative documents are missing.

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 know to the concerned people.

2.5 Use, maintenance and repair

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

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

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

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

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

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

The identification tests and the assessment for the intended use of this ETICS according to the Essential Requirements were carried out in compliance with EAD 040083-00-0404.

The performances of the kit as described in this chapter are valid, provided that the components of the kit comply clauses 3.8.1, 3.8.2 and 3.8.3.

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

Configuration	Maximum declared organic content of the rendering system (dry)	Declared flame retardant content of the rendering system	Thickness of the ETICS [mm]	Reaction to fire class acc. to SIST EN 13501-1
ETICS **BEKATHERM Prestige** (including all claddings as described in Clause 3.)	*base coat* ***< 3.0 %*** *finishing coat* ***< 9.0 %***	***0 %***	**50 – 300**	**A2 – s1, d0**

Mounting and fixing

The assessment of reaction to fire is based on two tests (SIST EN 13823 and SIST EN ISO 1716). The *SBI* test (SIST EN 13823) is done on a sample with insulation layer thickness 180 mm, (overall ETICS thickness 200 mm) and with insulation material type MW (Frontrock MAX E) according to SIST EN 13162, consisting of two layers; outer layer 17 mm thick and density of 150 kg/m^3 and inner layer with density of 80 kg/m^3. Selected rendering system is the one including finishing coat with maximum organic content, established.

For the SBI test this ETICS is mounted directly to a calcium silicate substrate (A2-s1, d0) with a minimum density of 820 kg/m^3.

The installation of the ETICS was carried out by the manufacturer, following the manufacturer's specifications (instruction sheet) using a single layer of the glass fibre mesh all over the test specimen (no overlapping glass fibre mesh).

The test specimens were prefabricated and did not include any joints. The panel edges were rendered. Anchors were not included in the tested ETICS as they have no influence on the test result.

Please note that in some member states the classification on the basis of SBI test is not accepted. Additional tests might be required e.g. large scale tests to demonstrate compliance with a member state's fire regulation.

Note: An European reference fire scenario has not been laid down for façades. In some Member States, the classification of ETICS according to EN 13501-1 might not be sufficient for the use in façades. 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.

Extended application

The test results cover arrangements with insulation material (MW) of a lower density as well as render systems (binder types) with lower organic content (i.e. all render systems, mentioned in this ETA).

3.2 Hygiene, health and the environment (BWR 3)

3.2.1 Release of dangerous substances

ETICS BEKATHERM Prestige belongs to Category S/W2.

3.2.2 Water absorption

3.2.2.1 Water absorption of the base coat and the rendering system

- Base coat **BK-StirolFix Special**:
  - Water absorption after 1 hour < 1 kg/m²
  - Water absorption after 24 hours < 0.5 kg/m²

- Rendering systems:

description of the ETICS:	key coat	finishing coat	Water absorption after 1 hour		Water absorption after 24 hours	
			< 1 kg/m²	≥ 1 kg/m²	< 0.5 kg/m²	≥ 0.5 kg/m²
➢ base coat **BK-StirolFix Special** ➢ key coat indicated in the second column ➢ finishing coat indicated in the third column	**BK-Grund Universal**	**BK-Plast**	X		X	
		BK-Sil	X		X	
		BK-Briv Special	X		X	
	BK-Grund Silicat	**BK-S Plast**	X		X	
		BK-Sil Si&Si	X		X	

- Base coat **BK-StirolFix 1**:
  - Water absorption after 1 hour < 1 kg/m²
  - Water absorption after 24 hours < 0.5 kg/m²

- Rendering systems:

description of the ETICS:	key coat	finishing coat	Water absorption after 1 hour		Water absorption after 24 hours	
			< 1 kg/m²	≥ 1 kg/m²	< 0.5 kg/m²	≥ 0.5 kg/m²
➢ base coat **BK-StirolFix 1** ➢ key coat indicated in the second column ➢ finishing coat indicated in the third column	**BK-Grund Universal**	**BK-Plast**	X		X	
		BK-Sil	X		X	
		BK-Briv Special	X		X	
	BK-Grund Silicat	**BK-S Plast**	X		X	
		BK-Sil Si&Si	X		X	

3.2.3 Watertightness

3.2.3.1 Hygrothermal behaviour

Hygrothermal cycles have been performed on two rigs in hygrothermal chamber. None of the following defects occur during the testing:

- blistering or peeling of any finishing,
- failure or cracking associated with joints between insulation product boards or profiles fitted with system,
- detachment of render,
- cracking allowing water penetration to the insulation layer.

The ETICS **is so assessed resistant to hygrothermal cycles**.

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3.2.3.2 Freeze/thaw performance

For all rendering systems mentioned in this ETA the water absorption of both, base coats and the rendering systems is less than 0.5 kg/m² after 24 hours and so all configurations of the ETICS are **assessed as freeze/thaw resistant** without further testing.

3.2.4 Impact resistance

The resistance to hard body impacts (3 and 10 Joules) lead to the following use categories:

description of the ETICS	key coat	finishing coat	Single standard mesh "BEKAMENT mrežica 160"
➢ MW boards **Frontrock MAX E** ➢ base coat **BK-StirolFix Special** ➢ key coat indicated in the second column ➢ finishing coat indicated in the third column	**BK-Grund Universal**	**BK-Plast**	**Category I**
		BK-Sil	**Category I**
		BK-Briv Special	**Category I**
	BK-Grund Silicat	**BK-S Plast**	**Category I**
		BK-Sil Si&Si	**Category I**

description of the ETICS	key coat	finishing coat	Single standard mesh "BEKAMENT mrežica 145"
➢ MW boards **Frontrock MAX E** ➢ base coat **BK-StirolFix Special** ➢ key coat indicated in the second column ➢ finishing coat indicated in the third column	**BK-Grund Universal**	**BK-Plast**	**Category I**
		BK-Sil	**Category I**
		BK-Briv Special	**Category I**
	BK-Grund Silicat	**BK-S Plast**	**Category I**
		BK-Sil Si&Si	**Category I**

description of the ETICS	key coat	finishing coat	Single standard mesh "BEKAMENT mrežica 145"
➢ MW boards **Frontrock MAX PLUS** ➢ base coat **BK-StirolFix 1** ➢ key coat indicated in the second column ➢ finishing coat indicated in the third column	**BK-Grund Universal**	**BK-Plast**	**Category II**
		BK-Sil	**Category III**
		BK-Briv Special	**Category III**
	BK-Grund Silicat	**BK-S Plast**	**Category II**
		BK-Sil Si&Si	**Category III**

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3.2.5 Water vapour permeability

description of the ETICS	key coat	finishing coat	Equivalent air thickness s_d (m)
➢ base coat **BK-StirolFix Special** ➢ key coat indicated in the second column ➢ finishing coat indicated in the third column	**BK-Grund Universal**	**BK-Plast**	**≤ 1.0** (Test result obtained with finishing coat BK-Plast ribbed structure, particle size 1.5 mm: **0.19**)
		BK-Sil	**≤ 1.0** (Test result obtained with finishing coat BK-Sil floated structure, particle size 1.5 mm: **0.35**)
		BK-Briv Special	**≤ 1.0** (Test result obtained with finishing coat BK-Briv Special floated structure, particle size 1.5 mm: **0.16**)
	BK-Grund Silicat	**BK-S Plast**	**≤ 1.0** (Test result obtained with finishing coat BK-S Plast floated structure, particle size 1.5 mm: **0.22**)
		BK-Sil Si&Si	**≤ 1.0** (Test result obtained with finishing coat BK-Sil Si&Si floated structure, particle size 1.5 mm: **0.19**)

description of the ETICS	key coat	finishing coat	Equivalent air thickness s_d (m)
➢ base coat **BK-StirolFix 1** ➢ key coat indicated in the second column ➢ finishing coat indicated in the third column	**BK-Grund Universal**	**BK-Plast**	**≤ 1.0** (Test result obtained with finishing coat BK-Plast ribbed structure, particle size 1.5 mm: **0.13**)
		BK-Sil	**≤ 1.0** (Test result obtained with finishing coat BK-Sil floated structure, particle size 1.5 mm: **0.15**)
		BK-Briv Special	**≤ 1.0** (Test result obtained with finishing coat BK-Briv Special floated structure, particle size 1.5 mm: **0.14**)
	BK-Grund Silicat	**BK-S Plast**	**≤ 1.0** (Test result obtained with finishing coat BK-S Plast floated structure, particle size 1.5 mm: **0.12**)
		BK-Sil Si&Si	**≤ 1.0** (Test result obtained with finishing coat BK-Sil Si&Si floated structure, particle size 1.5 mm: **0.13**)

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3.3 Safety in use (BWR 4)

3.3.1 Bond strength

3.3.1.1 Bond strength between the base coat and the thermal insulation product

- Base coat **BK-StirolFix Special** onto **mineral wool**:

Conditionings		
Initial state	**Samples taken from the rig after the hygrothermal cycles**	**Samples after the freeze/thaw test**
< 0.08 MPa failure into insulation product	< 0.08 MPa failure into insulation product	Test not required because freeze/thaw cycles not necessary

- Base coat BK-**StirolFix 1** onto **mineral wool**:

Conditionings		
Initial state	**Samples taken from the rig after the hygrothermal cycles**	**Samples after the freeze/thaw test**
< 0.08 MPa failure into insulation product	< 0.08 MPa failure into insulation product	Test not required because freeze/thaw cycles not necessary

3.3.1.2 Bond strength between the adhesive and the substrate / thermal insulation product

Bond strength of all **adhesives / substrate** and **adhesive / mineral wool boards** (safety in use of the bonded ETICS) is not relevant, because no bonded ETICS or bonded ETICS with supplementary mechanical fixing is foreseen.

3.3.2 Fixing strength

Test not required because the ETICS fulfils the following criteria: E×d < 50000 N/mm for both base coats (BK-StirolFix Special and BK-StirolFix 1).

Where: E : modulus of elasticity of the base coat,
d : mean dried thickness of the base coat

3.3.3 Wind load resistance

3.3.3.1 Pull-through test of fixings

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

The following values only apply for the combination (anchor's trade name) / (MW board's characteristics) mentioned in the first and second lines of each table.

The test results given in the below table apply for the following anchors:

Anchors for which the following failure loads apply	Trade name	- EJOT **Ejoterm NTK-U** (ETA-07/0026), - EJOT **Ejoterm STR-U** (ETA-04/0023), - EJOT **H1 eco** (ETA-11/0192)	
	Plate diameter (mm)	60 or more	
Characteristics of the MW insulation for which the following failure loads apply	Thickness (mm)	≥ 50	
	Tensile strength perpendicular to the face (kPa)	≥ 10	
Failure loads (N)	Anchors not placed at the panel joints *(Pull Through Test)*	R_{panel}	Minimal: 240 Mean: 270

Anchors for which the following failure loads apply	Trade name	- Fischer **TERMOZ 8U** (ETA-02/0019), - Fischer **TERMOZ 8 UZ** (ETA-02/0019), - Fischer **WS 8L** (ETA-02/0019), - Fischer **TERMOZ PN 8** (ETA-09/0171)	
	Plate diameter (mm)	60 or more	
Characteristics of the MW insulation for which the following failure loads apply	Thickness (mm)	≥ 50	
	Tensile strength perpendicular to the face (kPa)	≥ 10	
Failure loads (N)	Anchors not placed at the panel joints *(Pull Through Test)*	R_{panel}	Minimal: 200 Mean: 230

Anchors for which the following failure loads apply	Trade name	Fischer **TERMOZ PN 8** (ETA-09/0171)	
	Plate diameter (mm)	60 or more	
Characteristics of the MW insulation for which the following failure loads apply	Thickness (mm)	≥ 80	
	Tensile strength perpendicular to the face (kPa)	≥ 7,5	
Failure loads (N)	Anchors not placed at the panel joints *(Pull Through Test)*	R_{panel}	Minimal: 348 Mean: 410

Anchors for which the following failure loads apply		Trade name	Fischer **TERMOZ PN 8** (ETA-09/0171)	
		Plate diameter (mm)	60 or more	
Characteristics of the MW insulation for which the following failure loads apply		Thickness (mm)	≥ 50	
		Tensile strength perpendicular to the face (kPa)	≥ 7,5	
Failure loads (N)	Anchors not placed at the panel joints *(Pull Through Test in dry conditions)*		R_{panel}	Minimal: 339 Mean: 365
	Anchors not placed at the panel joints (Pull Through Test in wet conditions)		R_{panel}	Minimal: 198 Mean: 229

Anchors for which the following failure loads apply		Trade name	Fischer **TERMOZ PN 8** (ETA-09/0171)	
		Plate diameter (mm)	60 or more	
Characteristics of the MW insulation for which the following failure loads apply		Thickness (mm)	≥ 120	
		Tensile strength perpendicular to the face (kPa)	≥ 7,5	
Failure loads (N)	Anchors not placed at the panel joints *(Pull Through Test in dry conditions)*		R_{panel}	Minimal: 454 Mean: 503
	Anchors not placed at the panel joints (Pull Through Test in wet conditions)		R_{panel}	Minimal: 368 Mean: 406

Anchors for which the following failure loads apply		Trade name	EJOT **Ejoterm STRU U** (ETA-04/0023)	
		Plate diameter (mm)	60 or more	
Characteristics of the MW insulation for which the following failure loads apply		Thickness (mm)	≥ 80	
		Tensile strength perpendicular to the face (kPa)	≥ 7,5	
Failure loads (N)	Anchors not placed at the panel joints *(Pull Through Test)*		R_{panel}	Minimal: 172 Mean: 193

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Anchors for which the following failure loads apply		Trade name	Fischer **TERMOZ Ecotwist** (ETA-12/0208)	
		Plate diameter (mm)	60 or more	
Characteristics of the MW insulation for which the following failure loads apply		Thickness (mm)	≥ 100	
		Tensile strength perpendicular to the face (kPa)	≥ 7,5	
Failure loads (N)	Anchors not placed at the panel joints *(Pull Through Test)*		R_{panel}	Minimal: 357 Mean: 413

**Note: according to results of various research activities head plate diameter is the most influential parameter (assuming similar plate stiffness). Failure loads for larger plates are therefore expected to be higher, thus the given values are on the "safe side".*

For calculation the following formula shall be used:

$$R_d = \frac{R_{panel} \times n_{panel} + R_{joint} \times n_{joint}}{\gamma}$$

Where:

n_{panel}: number (per m²) of anchors not placed at the panel joints

n_{joint}: number (per m²) of anchors placed at the panel joint

γ: safety factor

Considering the worst case, all anchors with valid ETA according to EAD 330196-01-0604 and with characteristics described below can be used:

- plate diameter of anchor ≥ 60 mm;
- plate stiffness ≥ 0.6 kN/mm according to EOTA TR 026;
- load resistance of the anchor plate ≥ 1.0 kN according to EOTA TR 026.

3.3.4 Render strip tensile test /statement of crack

The mean value of the width of multiple cracks of the base coat **BK-StirolFix Special** with the glass fibres mesh, measured at a render strain value of 0.8 % **in warp and weft direction** was between **0.05 and 0.10 mm.**

The mean value of the width of multiple cracks of the base coat **BK-StirolFix 1** with the glass fibres mesh, measured at a render strain value of 0.8 % **in warp and weft direction** was between **0.05 and 0.10 mm.**

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3.3.5 Bond strength after ageing

	key coat	finishing coat	After hygrothermal cycles (rig)	After freeze / thaw cycles
➢ base coat **BK-StirolFix Special** ➢ key coat indicated in the second column ➢ finishing coat indicated in the third column	**BK-Grund Universal**	**BK-Plast**	**failure into insulation product** (< 0.08 N/mm²)	Test not required because freeze/thaw cycles not necessary
		BK-Sil	**failure into insulation product** (< 0.08 N/mm²)	
		BK-Briv Special	**failure into insulation product** (< 0.08 N/mm²)	
	BK-Grund Silicat	**BK-S Plast**	**failure into insulation product** (< 0.08 N/mm²)	
		BK-Sil Si&Si	**failure into insulation product** (< 0.08 N/mm²)	

	key coat	finishing coat	After hygrothermal cycles (rig)	After freeze / thaw cycles
➢ base coat **BK-StirolFix 1** ➢ key coat indicated in the second column ➢ finishing coat indicated in the third column	**BK-Grund Universal**	**BK-Plast**	**failure into insulation product** (< 0.08 N/mm²)	Test not required because freeze/thaw cycles not necessary
		BK-Sil	**failure into insulation product** (< 0.08 N/mm²)	
		BK-Briv Special	**failure into insulation product** (< 0.08 N/mm²)	
	BK-Grund Silicat	**BK-S Plast**	**failure into insulation product** (< 0.08 N/mm²)	
		BK-Sil Si&Si	**failure into insulation product** (< 0.08 N/mm²)	

The ETICS fulfils the acceptance criteria given in EAD 040083-00-0404.

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3.3.6 Mechanical and physical characteristics of the mesh

3.3.6.1 Tensile strength of the glass fibre mesh in as-delivered state and after ageing

Glass fibre meshes with 3.3 – 4.8 mm wide grid of fibres.

			Alkalis resistance			
			Residual strength after ageing - mean value (N/mm)		Relative residual resistance after ageing of the strength in the as delivered state (%)	
	Weight (g/m^2)	Openings (mm)	Warp	Weft	Warp	Weft
BEKAMENT mrežica 160	160	3.3 × 3.6	**≥ 20**	**≥ 20**	**≥ 50**	**≥ 50**
BEKAMENT mrežica 145	145	3.5 x 4.8	**≥ 20**	**≥ 20**	**≥ 50**	**≥ 50**

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 and thermal transmittance of the ETICS

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

$$U = U_c + \chi_p . n \text{ , where:}$$

$\chi_p . n$: has only to be taken into account if it is greater than 0.04 W/(m².K)

U: overall thermal transmittance of the covered wall (W/ (m².K))

n: number of anchors (through insulation product) per m²

χ_p: local influence of thermal bridge caused by an anchor. The values listed below can be taken into account if not specified in the anchor's ETA

χ_p = 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 ($\chi_p . n$ negligible for n < 20)

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

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

U_c: thermal transmittance of the current part of the covered wall, excluding thermal bridges), (W/m².K) determined as follows:

$$U_c = \frac{1}{R_i + R_{render} + R_{substrate} + R_{se} + R_{si}}$$, where:

R_{design}: thermal resistance of the insulation product - see CE marking in reference to MW SIST EN 13162 ((m².K)/W)

R_{render}: thermal resistance of the render (about 0.02 (m².K)/W)

$R_{substrate}$: thermal resistance of the substrate of the building (concrete, brick ...) ((m².K)/W)

R_{se}: external surface thermal resistance ((m².K)/W)

R_{si}: internal surface thermal resistance ((m².K)/W)

The value of thermal resistance of each insulation product shall be given in the Declaration of performance along with the possible range of thicknesses. In addition, the point thermal conductivity of anchors shall be given when anchors are used in the ETICS.

Note: in some countries treatment of data beyond EN 13162 may be needed, such as derivation of the design thermal values, based on declared values for insulation product, calculated according EN ISO 10456. If such treatment is not foreseen declared values may be used instead.

3.6 Characteristics of the components

3.6.1 Insulation product – mineral wool (MW)

Designation code	ROCKWOOL Frontrock MAX E: MW-EN 13162-T5-DS(T+)-DS(TH)-CS(10)20-TR10-PL(5)250-WS-WL(P)-MU1, ROCKWOOL Frontrock MAX Plus: MW-EN13162-T5-DS (70, -)-DS(79, 90)-CS(10)15-TR7,5-PL(5)200-WS-WL(P)-MU 1, Knauf Insulation – FKD-S Thermal MW-EN 13162-T5- CS(10)30-TR10- WS-WL(P)-MU1 Knauf Insulation – FKD-N Thermal MW-EN 13162-T5- CS(10)25-TR7,5- WS-WL(P)-MU1		
General appearance	mineral wool boards		
Reaction to fire acc. SIST EN 13501-1	**Maximum density (kg/m³)**	**Maximum thickness (mm)**	**class**
	approx. 150	300	A1
Water absorption acc. SIST EN 1609	**≤ 1 kg/m²**		
Thickness (mm) acc. SIST EN 823	MW-EN 13162 – **T5**		

Compressive stress or compressive strength (kPa) acc. SIST EN 826	**≥ 15 kPa;** MW-EN 13162-**CS(10)15**
Thermal resistance ((m².K)/W)	Defined in reference to EN 13162
Water vapour permeability acc. SIST EN 12086	**μ = 1.4**
Tensile test perpendicular to the faces acc. SIST EN 1607	**≥ 7.5 kPa;** MW-EN 13162- **TR 7,5**
	under dry condition: ≥ 7.5 kPa **under wet condition: ≥ 5 kPa**

3.6.2 Anchors

PVC anchors, used as a fixing device in mechanically fixed systems.

Trade name	Plate diameter (mm)	Characteristic pull-out strength of anchor
EJOT **Ejoterm STRU-U**	> 60	See ETA-04/0023
EJOT **Ejoterm NTK-U**	> 60	See ETA-07/0026
EJOT **H1 eco**	> 60	See ETA-11/0192
Fischer **Schlagdübel TERMOZ 8U**	> 60	See ETA-02/0019
Fischer **Schlagdübel TERMOZ 8 UZ**	> 60	See ETA-02/0019
Fischer **Schlagdübel WS 8 L**	> 60	See ETA-02/0019
Fischer **Schlagdübel TERMOZ PN 8**	> 60	See ETA-09/0171
Fischer **TERMOZ Ecotwist**	> 60	See ETA-12/0208

4 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (AVCP)

According to the decision 97/556/EC of the European Commission[1] amended by the European Commission decision 2001/596/EC, the **AVCP system 2+** (further described in Annex V to Regulation (EU) No 305/2011) apply.

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[1] Official Journal of the European Communities L 254 of 8.10.1996

5 TECHNICAL DETAILS NECESSARY FOR THE IMPLEMENTATION OF THE AVCP SYSTEM, AS PROVIDED FOR IN THE APPLICABLE EAD

Technical details necessary for the implementation of the AVCP system are laid down in the Control plan[2] deposited at ZAG Ljubljana.

Issued in Ljubljana on 8. 12. 2020

Signed by:
Franc Capuder, M.Sc.
Head of Service of TAB

[2] The Control plan is a confidential part of the technical documentation of this European Technical Assessment, but not published together with the ETA, and handed over only to the approved body or bodies involved in the procedure of attestation of conformity.

Use

ETICS

Adhesive

BK-StirolFix Special
BK-StirolFix 1
BK-StirolFix WDVS

Insulation

MW

Base coat

BK-StirolFix Special
BK-StirolFix 1

Glass fibre mesh

Bekament mrežica 160
Bekament mrežica 145

Keycoat + Finishing coat

BK-Grund Universal + BK-Plast
BK-Grund Universal + BK-Sil
BK-Grund Universal + BK-Briv Special
BK-Grund Silicat + BK-S Plast
BK-Grund Silicat + BK-Sil Si&Si

Anchors

EJOT: Ejoterm NTK U, Ejoterm STRU U and Ejoterm H1 eco
Fischer: TERMOZ 8U, TERMOZ 8 UZ, WS 8 L, TERMOZ PN 8, TERMOZ Ecotwist

BEKATHERM Prestige	**Annex A1**
Trade names of the components	