

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-12/0562
of 6 September 2018

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General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

bito energy protect - system mineralwolle

Product family
to which the construction product belongs

Product area code: 4
External Thermal Insulation Composite System with
rendering on mineral wool intended for use on building
walls

Manufacturer

bito ag
Bielefelder Straße 6
10709 Berlin
DEUTSCHLAND

Manufacturing plant

bito ag
Bielefelder Straße 6
10709 Berlin
DEUTSCHLAND

This European Technical Assessment
contains

17 pages including 3 annexes which form an integral part
of this assessment

Annex 4 Control Plan contains confidential information
and is not included in the European Technical
Assessment when that assessment is publicly available

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

ETAG 004, edition 2000, amended 2013,
used as EAD according to Article 66 Paragraph 3 of
Regulation (EU) No 305/2011.

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Specific Part

1 Technical description of the product

1.1 Definition of the kit

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

The ETICS kit comprises a prefabricated insulation product of mineral wool (MW) to be bonded and if it necessary additional 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 base coat and finishing coat (site applied), in which the base coat 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 ...) for connection to adjacent building elements (apertures, corners, parapets ...). 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 ETICS

	Components National application documents shall be taken into account	Coverage [kg/m ²]	Thickness [mm]
Insulation material with associated method of fixing Insulation material with associated method of fixing	Bonded ETICS: <ul style="list-style-type: none"> • Insulation product (see annex 1 for product characteristics) factory-prefabricated mineral wool (MW) product <ul style="list-style-type: none"> - MW lamella • Adhesives (cement based powder requiring addition of about 20 - 25 % of water) <ul style="list-style-type: none"> - bito ep 572 weiß Klebe- und Armierungsmasse - bito ep 577 Klebe- und Armierungsmasse plus - bito ep 571 grau Klebe- und Armierungsmasse - bito ep 573 Baukleber 	-	≤ 400
	Mechanically fixed ETICS with anchors and supplementary adhesive: <ul style="list-style-type: none"> • Insulation product (see annex 1 for product characteristics) factory-prefabricated mineral wool (MW) product <ul style="list-style-type: none"> - MW panel - MW lamella • Supplementary adhesive (equal to bonded ETICS) 	- -	60 to 340 60 to 200

	Components National application documents shall be taken into account	Coverage [kg/m ²]	Thickness [mm]
	<ul style="list-style-type: none"> Anchors for insulation product all anchors with ETA according to EAD330196-01-0604¹ with characteristics defined in annex 2 		
Base coat	bito ep 572 weiß Klebe- und Armierungsmasse bito ep 571 grau Klebe- und Armierungsmasse bito ep 577 Klebe- und Armierungsmasse plus Cement based powder requiring addition of 20 - 25 % of water. Identical with the equally named adhesives given above.	6.0 – 7.0 6.0 – 7.0 6.0 – 10.0 (prepared)	3.5 – 6.0 3.5 – 6.0 3.5 – 6.0
Glass fibre mesh	bito ep 576 Armierungsgewebe (see annex 4 for product characteristics) Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 160 g/m ² and mesh size of about 4.0 mm x 4.0 mm.	–	–
Key coat	bito ep 550 Putzgrund* Ready to use pigmented acrylic-resin dispersion liquid To be used with all finishing coats indicated hereafter.	ca. 0,15 l/m ²	–
Finishing coat	To use with key coat "bito ep 550 Putzgrund" if applicable **: <ul style="list-style-type: none"> Ready to use paste – acrylic-silicate binder: <ul style="list-style-type: none"> bito ep Silikatputz 555 <ul style="list-style-type: none"> - Rillen-Reibbeputz (R) (particle size 1.5 – 2 and 3 mm) - Kratzputzstruktur (K) (particle size 1.5 – 2 and 3 mm) Thin layered cement based powders requiring addition of about 25 % of water: <ul style="list-style-type: none"> bito ep 570 Faschen- und Modellierputz (particle size 1 and 2 mm) bito ep 565 Mineralputz K (particle size 2 – 3 and 5 mm) bito ep 565 Mineralputz R (particle size 2 – 3 and 5 mm) bito ep 563 Mineralleichtputz <ul style="list-style-type: none"> - Rillenputzstruktur (R) (particle size 2 and 3 mm) - Scheibenputz-Struktur (K) (particle size 2 and 3 mm) bito ep 564 Glitzerputz (particle size 1 and 2 mm) bito ep 577 Klebe- und Armierungsmasse plus** 	2.5 – 4.5 2.5 – 4.5 3.0 – 6.0 (prepared) 2.7 – 5.5 (prepared) 2.7 – 6.0 (prepared) 2.3 – 3.3 1.8 – 2.5 (prepared) 9.0 – 15.0 (prepared) 4.0 – 5.0 (finished) 2.5 – 3.0	regulated by particle size 5.0 – 8.0 3.0 – 4.0 1.5 – 2.5

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¹

EAD330196-01-0604

Plastic anchors for fixing of external thermal insulation composite systems with rendering

	Components National application documents shall be taken into account	Coverage [kg/m ²]	Thickness [mm]
	Application without key coat: <ul style="list-style-type: none"> Thick layered cement based powder requiring addition of about 25 % of water: 	about 22.5 (prepared before scraping) about 14.0 (finished)	15 8 – 12
Ancillary material	Remains the responsibility of the manufacturer.		
* The instruction to the installer concerning the use of a key coat remains the responsibility of the manufacturer.			
** The finishing coat "bito ep 577 Klebe- und Armierungsmasse plus" has to be used with the equally named base coat exclusively.			

2. Specification of the intended use in accordance with the applicable European assessment Document (hereinafter called EAD)

2.1 Intended use

This ETICS is intended to be used as external insulation to the walls of buildings made of masonry (bricks, blocks, stones ...) or concrete (cast on site or as prefabricated panels) with and without rendering. 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. It shall be designed to give the wall to which it is applied satisfactory thermal insulation.

The ETICS is non load-bearing construction element. 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 effects of weathering.

The ETICS can be used on new or existing (retrofit) vertical walls.

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 could need preparation (see clause 7.2.1 of ETAG 004) and on the national instructions.

The verifications and assessment methods on which this European Technical Assessment (hereinafter called ETA) is based lead to the assumption of a working life of the ETICS "bito energy protect – system mineralwolle" of at least 25 years. 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 assumed economically reasonable working life of the works.

2.2 Manufacturing

The ETA is issued for the ETICS on the basis of agreed data/information, deposited with the DIBt, which identifies the ETICS that has been assessed and judged. Changes to the ETICS or the components or their production process, which could result in this deposited data/information being incorrect, should be notified to the DIBt before the changes are introduced. The DIBt will decide whether such changes affect the approval and consequently the validity of the CE marking on the basis of the approval and if so whether further assessment or alterations to the approval 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 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 Packing, 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 to ensure that this information is made know to the concerned people.

2.5 Use, maintenance, 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 localized damaged areas due to accidents
- the aspect maintenance with products adapted and compatible with the ETICS (possibly after washing or ad hoc preparation)

Only products which are compatible with the ETICS shall be used.

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

The information on use, maintenance and repair is given in the manufacturer's technical documentation.

It is the responsibility of the manufacturer to ensure that this information is made know to the concerned people.

3 Characteristics of products and methods of verification

3.0 General

The performances of the kit as described in this chapter are valid provided that the components of the kit comply with Annexes 1 to 3.

3.1 Mechanical resistance and stability (BWR 1)

not relevant

3.2 Safety in case of fire (BWR 2)

Reaction to fire (ETAG 004 - clause 5.1.2)

Configurations	Organic content	Flame retardant content	Euroclass according to EN 13501-1:2007
Base coat	max. 2.4 %	no flame retardant	
Mineral wool insulation product	in quantity ensuring Euroclass E according to EN 13501-1	no flame retardant	
Profile	-	-	
Anchors	-	-	
rendering system : Base coat with finishing coat and compatible key coat indicated in clause 1.2:			
bito ep Silikatputz 555	max. 5.0 %	no flame retardant	A2 – s2,d0
bito ep 570 Faschen- und Modellierputz, bito ep 564 Glitzerputz, bito ep 565 Mineralputz K/ R bito ep 563 Mineralleichtputz, bito ep 577 Klebe- und Armierungsmasse plus, bito ep 569 Edelkratzputz.	max. 2.8 %	no flame retardant	A2 – s1,d0

3.3 Hygiene, health and environment (BWR 3)

3.3.1 Water absorption (capillarity test) (ETAG 004 - clause 5.1.3.1)

Base coat

Base coats	Water absorption after 1 h < 1.0 kg/m ²	Water absorption after 24 h < 0.5 kg/m ²
bito ep 572 weiß Klebe- und Armierungsmasse	x	x
bito ep 577 Klebe- und Armierungsmasse plus	x	x
bito ep 571 grau Klebe- und Armierungsmasse	x	x
bito ep 573 Baukleber	x	x

English translation prepared by DIBt

Rendering system:

		Water absorption after 24 hours	
		< 0.5 kg/m ²	≥ 0.5 kg/m ²
Rendering systems: Base coats with finishing coat and compatible key coat indicated in clause 1.2	bito ep Silikatputz 555	x	
	bito ep 570 Faschen- und Modellierputz	x	
	bito ep 564 Glitzerputz	x	
	Bito ep 565 Mineralputz K/ R	x	
	bito ep 563 Mineralleichtputz	x	
	bito ep 577 Klebe- und Armierungsmasse plus	x	
	bito ep 569 Edelkratzputz	x	

3.3.2 Hygrothermal behaviour (ETAG 004 - clause 5.1.3.2)

Pass (without defects)

3.3.3 Impact resistance (ETA G004 – clause 5.1.3.3)

The verified resistance to hard body impact of the ETICS results in the classification into categories listed below.

Rendering system: Base coats with finishing coat and compatible key coat indicated in clause 1.2:	Single standard mesh: "bito ep 576 Armierungsgewebe"
bito ep Silikatputz 555 (2 mm)	category II
bito ep 570 Faschen- und Modellierputz	category II
bito ep 564 Glitzerputz (3 mm)	category II
bito ep 565 Mineralputz K/ R (3 mm)	category II
bito ep 563 Mineralleichtputz (3 mm)	category II
bito ep 569 Edelkratzputz (10 mm)	category II

No performance was assessed for the resistance to impact stress of all other combinations of the ETICS.

3.3.4 Water vapour permeability (ETAG004 – clause 5.1.3.4)

Rendering system: Base coats with finishing coat and compatible key coat indicated in clause 1.2:	Equivalent air thickness s_d
bito ep Silikatputz 555	≤ 1.0 m (Test result obtained with layer thickness $t = 2$ mm: 0.2 m)
bito ep 570 Faschen- und Modelierputz bito ep 564 Glitzerputz	≤ 1.0 m (Test result obtained with layer thickness $t = 1$ mm: 0.1 m)
bito ep 565 Mineralputz K	≤ 1.0 m (Test result obtained with layer thickness $t = 3$ mm: 0.2 m)
bito ep 565 Mineralputz R	≤ 1.0 m (Test result obtained with layer thickness $t = 3$ mm: 0.3 m)
bito ep 563 Mineralleichtputz	≤ 1.0 m (Test result obtained with layer thickness $t = 3$ mm: 0.2 m)
bito ep 572 weiß Klebe- und Armierungsmasse/ bito ep 577 Klebe- und Armierungsmasse plus	≤ 1.0 m (Test result obtained with layer thickness $t = 5$ mm: 0.1 m)
bito ep 569 Edelkratzputz	≤ 1.0 m (Test result obtained with layer thickness $t = 3$ mm: 0.3 m)

3.3.5 Release of dangerous substances (ETAG 004 - clause 5.1.3.5, EOTA TR 034)

Essential characteristic	Performance
Release of dangerous substances	no performance assessed

3.4 Safety and accessibility in use (BWR 4)

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

Base coats	Conditioning			
	Initial state		After hygrothermal cycles	After freeze/thaw test
bito ep 572 weiß Klebe- und Armierungsmasse bito ep 577 Klebe- und Armierungsmasse plus	≥ 0.08 MPa	< 0,08 MPa but failure in the insulation product	< 0,08 MPa but failure in the insulation product	Test not required because freeze/thaw cycles not necessary
bito ep 571 grau Klebe- und Armierungsmasse	≥ 0.08 MPa			

3.4.2 Bond strength between adhesive and substrate resp. insulation product (MW) (ETAG 004 – clauses 5.1.4.1.2 and 5.1.4.1.3)

Adhesive	Substrate resp. insulation product	Conditioning		
		Initial state	2 d immersion in water and 2 h drying	2 d immersion in water and 7 d drying
bito ep 572 weiß Klebe- und Armierungsmasse/ bito ep 577 Klebe- und Armierungsmasse plus	Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa
	MW lamella	≥ 0.08 MPa	≥ 0.03 MPa	≥ 0.08 MPa
	MW panel	< 0.08 MPa but failure in the insulation product	< 0.03 MPa but failure in the insulation product	< 0.08 MPa but failure in the insulation product
bito ep 571 grau Klebe- und Armierungsmasse	Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa
	MW lamella	≥ 0.08 MPa	≥ 0.03 MPa	≥ 0.08 MPa
	MW panel	< 0.08 MPa but failure in the insulation product	< 0.03 MPa but failure in the insulation product	< 0.08 MPa but failure in the insulation product
bito ep 573 Baukleber	Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa
	MW lamella	≥ 0.08 MPa	≥ 0.03 MPa	≥ 0.08 MPa
	MW panel	< 0.08 MPa but failure in the insulation product	< 0.03 MPa but failure in the insulation product	< 0.08 MPa but failure in the insulation product

Bonded surface:

With a bonded surface of 50 % the formula given in clause 6.1.4.1.3 of ETAG 004 is fulfilled and the use as bonded ETICS is possible.

3.4.3 Bond strength after ageing (ETAG 004 – clause 5.1.7.1):

((testing without key coat if optional application))

Rendering system: Base coats with finishing coat and compatible key coat indicated in clause 1.2	bito ep Silikatputz 555	≥ 0.08 MPa
	bito ep 570 Faschen- und Modellierputz	
	bito ep 564 Glitzerputz	
	bito ep 565 Mineralputz K/ R	
	bito ep 563 Mineralleichtputz	
	bito ep 577 Klebe- und Armierungsmasse plus	
	bito ep 569 Edelkratzputz	

3.4.4 Fixing strength (displacement test) (ETAG 004 - clause 5.1.4.2)

Test not required therefore no limitation of ETICS length required.

English translation prepared by DIBt

3.4.5 Wind load resistance (ETAG 004 - clause 5.1.4.3)

The following failure loads only apply to the listed combination of component characteristics and the characteristics of the insulation product given in annex 1.

3.4.5.1 Safety in use of mechanically fixed ETICS using anchors

Failure loads – Table 1

Apply to all anchors listed in the clause 1.2 mounted on the insulation panels surface			
Characteristics of the MW panels	Thickness		≥ 60 mm
	Tensile strength perpendicular to the faces		≥ 14 kPa
Versagenslast [N]	Anchors not placed at the panel joints (Static Foam Block Test)	R_{panel}	Mindestwert: 650 Mittelwert: 740
	Anchors placed at the panel joints (Static Foam Block Test)	R_{joint}	Mindestwert: 590 Mittelwert: 610
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	R_{panel}	Mindestwert: 640 Mittelwert: 690
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2* - series 3*	R_{panel}	Mindestwert: 360 Mittelwert: 390 Mindestwert: 410 Mittelwert: 450
* according to ETAG 004 clause 5.2.4.1.2 test method (2)			

Failure loads – Table 2

Apply to all anchors listed in the clause 1.2 mounted on the insulation panels surface				
Characteristics of the MW panels	Thickness		≥ 80 mm	
	Tensile strength perpendicular to the faces		≥ 5.0 kPa	
Plate diameter of anchor			≥ Ø 90 mm	≥ Ø 140 mm
Failure loads [N]	Anchors not placed at the panel joints (Static Foam Block Test)	R_{panel}	Minimal: 480 Average: 490	Minimal: 56 Average: 69
	Anchors placed at the panel joints (Static Foam Block Test)	R_{joint}	Minimal: 380 Average: 390	Minimal: 44 Average: 54
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	R_{panel}	Minimal: 540 Average: 610	npd
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2*	R_{panel}	Minimal: 400 Average: 460	npd
* according to ETAG 004 clause 5.2.4.1.2 test method (2)				

Failure loads – Table 3

Apply to all anchors listed in clause 1.2 mounted on the insulation panels surface			
Characteristics of the MW lamella	Thickness		≥ 60 mm
	Tensile strength perpendicular to the faces		≥ 80 kPa
Plate diameter of anchor			≥ Ø 140 mm
Failure loads [N]	Anchors placed at the panel joints (Pull-through test, dry condition)	R _{joint}	Minimal: 620 Average: 660
	Anchors placed at the panel joints (Pull-through test, wet condition)	R _{joint}	Minimal: 510 Average: 570
	Anchors placed at the panel joints (Static Foam Block Test)	R _{joint}	Minimal: 710

The failure loads of table 1 specified above only apply to the following anchors with deep mounting under the given conditions of installation:

Anchor	Thickness of the MW panel [d]	Conditions of installation *
ejotherm STR U ejotherm STR U 2G (ETA-04/0023)	100 mm > d ≥ 80 mm	– Maximum installation depth of the anchor plate: 15 mm (≙ thickness of insulation cover) – Maximum depth of die: 5 mm
	≥ 100 mm	– Maximum installation depth of the anchor plate: 15 mm (≙ thickness of insulation cover) – Maximum depth of die: 20 mm
TERMOZ 8 SV (ETA-06/0180)	≥ 80 mm	– Maximum installation depth of the anchor plate: 15 mm (≙ thickness of insulation cover)

* according to the appropriate ETA of anchor

3.4.6 Render strip tensile test (ETAG 004 – clause 5.5.4.1)

The average value of crack width of the base coat "bito ep 571 grau Klebe- und Armierungsgewebe" reinforced with the glass fibre mesh "bito ep 576 Armierungsgewebe" measured at a render strain value of 0.5 % is about 0.08 mm. No performance was rated for all other combinations.

3.5 Protection against noise (BWR 5)

For the protection against noise no performance was assessed for this product.

3.6 Energy economy and heat retention (BWR 6)

3.6.1 Thermal resistance

The nominal value of the additional thermal resistance R provided by the ETICS to the substrate wall is calculated in accordance with EN ISO 6946:2007 from the nominal value of the insulation product's thermal resistance R_D given accompanied to the CE marking and from the thermal resistance of the rendering system R_{render} which is about 0.02 (m² · K)/W.

$$R = R_D + R_{render}$$

The thermal bridges caused by mechanical fixing devices (anchors) increase the thermal transmittance U. This influence had to take into account according to EN ISO 6946: 2007.

$$U_c = U + \Delta U_{anchor} \quad \text{corrected thermal transmittance [W/(m}^2\text{·K)]}$$

$$\Delta U_{anchor} = \chi_p \cdot n \quad \text{correction term for anchors}$$

where: n number of anchors per m²

English translation prepared by DIBt

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 technical approval
$\chi_p = 0.004 \text{ W/K}$	for anchors with a galvanized steel screw with the head covered by a plastic material
$\chi_p = 0.002 \text{ W/K}$	for anchors with a stainless steel screw with the head covered by plastic material, and for anchors with an air gap at the head of the screw

4 Assessment and verification of constancy of performance (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 assessment and verification of constancy of performance system (AVCP) applies suitable following table (see Annex V to Regulation (EU) No 305/2011).

Product	Intended use	Levels or classes (Reaction to fire)	Systems
"bito energy protect – system mineralwolle"	ETICS 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+
	ETICS in external wall not subject to fire regulations	any	2+
⁽¹⁾ Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material) ⁽²⁾ Products/materials not covered by footnote (1) ⁽³⁾ Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Classes A1 according to Commission Decision 96/603/EC)			

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document (EAD)

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 6 September by Deutsches Institut für Bautechnik

Dirk Brandenburger
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beglaubigt:
Hartstock

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English translation prepared by DIBt

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Annexes:

Annex 1: Thermal insulation product characteristic

Annex 2: Anchors

Annex 3: Reinforcement

Annex 1: Thermal insulation product characteristic

Factory-prefabricated panels and lamella made of mineral wool (MW) to EN 13162:2015 with the following designation code and the other properties having the description in the Table below shall be used, provided that the manufacturer and the trade name of the MW are deposited with the DIBt.

MW – EN 13162 – T5 – DS(T+) – WS – WL(P) – MU1

Description and characteristics	MW panel	MW panel	MW lamella
Reaction to fire; EN 13501-1:2007	Class A1		
Gross heat of combustion [MJ/kg]; EN ISO 1716:2010	PCS ≤ 1.02		
Thermal resistance [(m ² · K)/W]	Defined in the CE marking in reference to EN 13162:2008		
Tensile strength perpendicular to the faces [kPa]; EN 1607:2013 - in dry conditions*	$\sigma_{mt} \geq 14$	$\sigma_{mt} \geq 5$	$\sigma_{mt} \geq 80$
- in wet conditions** Average value - series 2 - series 3	≥ 33 % of average value in dry conditions ≥ 50 % of average value in dry conditions		
Compressive strength* [kPa]; EN 826:2013	$\sigma_m \geq 40$	$\sigma_m \geq 4$	$\sigma_m \geq 40$
Apparent density [kg/m ³]; EN 1602:2013	$120 \leq \rho_a \leq 150$	$100 \leq \rho_a \leq 150$	$80 \leq \rho_a \leq 150$
Shear strength* [kPa]; EN 12090:2013	$20 \leq f_{tk} \leq 100$	$6 \leq f_{tk} \leq 100$	$20 \leq f_{tk} \leq 100$
Shear modulus [MPa]; EN 12090:2013	$1.0 \leq G_m \leq 2.0$	$0.3 \leq G_m \leq 2.0$	$1.0 \leq G_m \leq 2.0$
* Minimal value of all single values			
** According to ETAG 004 (edition 2000) clause 5.2.4.1.2 test method (2)			

Annex 2: Anchors

All anchors with ETA according to EAD330196-01-0604¹ with characteristics having the description below shall be used in the mechanically fixed ETICS:

- plate diameter of anchor ≥ 60 mm resp. ≥ 90 mm or ≥ 140 mm
- plate stiffness ≥ 0.3 kN/mm
- load resistance of the anchor plate ≥ 1.0 kN

These characteristics and the characteristic tension resistance of the anchors shall be taken from the corresponding ETA.

Annex 3: Reinforcement (glass fibre mesh)

Characteristics (alkali resistance): Pass

	Description	Residual strength after ageing [N/mm]	Relative residual strength after ageing, of the strength in the as-delivered state [%]
"bito ep 576 Armierungsgewebe"	Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 160 g/m ² and mesh size of about 4.0 mm x 4.0 mm	≥ 20	≥ 50