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European Technical Assessment

**ETA 14/0277
of 27/09/2016**

(English language translation, the original version in Czech language)

I General Part

**Technical Assessment Body issuing the
ETA and designated according to Article
29 of the Regulation (EU) No. 305/2011:**

Technical and Test Institute for
Construction Prague

Trade name of the construction product

MAMUT-THERM Mv

**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

MAMUT-THERM s.r.o.
Slaměnickova 302/23
614 00 Brno
Czech Republic

Manufacturing plant(s)

MAMUT-THERM s.r.o.
Slaměnickova 302/23
614 00 Brno
Czech Republic

**This European Technical Assessment
contains**

38 pages including 8 Annexes which form
an integral part of this Assessment.
Annex No. 9 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
This European Technical Assessment
replaces:**

ETAG 004, edition 2013, used as European
Assessment Document (EAD)

ETA 14/0277 valid from 21/08/2014

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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 bonded or 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 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, 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 products with associated methods of fixing	Fully bonded ETICS with supplementary anchors. National application documents shall be taken into account).		
	<ul style="list-style-type: none"> Insulation product: MW, according to EN 13162: 2012 see Annex No. 1 for product characteristics 	/	50 to 300
	<ul style="list-style-type: none"> Adhesives: <ul style="list-style-type: none"> MAMUT Flex 45 (cement based powder requiring addition of water - 0.25-0.27 l/kg) MAMUT Flex 50 (cement based powder requiring addition of water - 0.25-0.27 l/kg) 	3.0 to 6.0 (dry) 3.0 to 6.0 (dry)	/
	Mechanically fixed ETICS with anchors and supplementary adhesive (see Cl. 3.4.4 and Annex No. 7 for possible associations MW/anchors)		
	<ul style="list-style-type: none"> Insulation product: MW, according to EN 13162: 2012 see Annex No. 2 to 6 for product characteristics 	/	50 to 300
	<ul style="list-style-type: none"> Supplementary adhesives: <ul style="list-style-type: none"> MAMUT Flex 45 (cement based powder requiring addition of water - 0.25-0.27 l/kg) not for insulation products of TR7.5 MAMUT Flex 50 (cement based powder requiring addition of water - 0.25-0.27 l/kg) 	3.0 to 6.0 (dry) 3.0 to 6.0 (dry)	/

	Components	Coverage (kg/m ²)	Thickness (mm)
Insulation products with associated methods of fixing	<ul style="list-style-type: none"> • Anchors see Annex No. 7 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 7. 		
	<ul style="list-style-type: none"> - ejotherm NT U plastic nailed-in anchors - ejotherm STR U, STR U 2G plastic screwed-in anchors alternatively with supplementary plate: EJOT VT 90 (surface assembly) EJOT VT 2G (countersunk assembly) - EJOT SDM-T plus plastic screwed-in anchors - Ejot H1 eco plastic nailed-in anchors - EJOT H3 plastic nailed-in anchors - BRAVOLL PTH-KZ 60/8-La - BRAVOLL PTH-KZL 60/8-La plastic nailed-in anchors - BRAVOLL PTH-S 60/8-La plastic screwed-in anchors alternatively with supplementary plate: IT PTH 100, IT PTH 140 (surface assembly) ZT100, countersunk tool BRAVOLL - ZP (countersunk assembly) - BRAVOLL PTH-KZ 60/10-La, plastic nailed-in anchors - BRAVOLL BRAVOLL PTH-X, PTH-EX plastic nailed-in anchors alternatively with supplementary plate: IT PTH 100, IT PTH 140 (surface assembly) - Koelner TFIX-8M plastic nailed-in anchors - Koelner KI-10M plastic nailed-in anchors - Koelner KI-10N plastic nailed-in anchors - Koelner KI-10NS plastic screwed-in anchors - Koelner TFIX-8S, TFIX-8ST plastové šroubovací hmoždinky - Koelner TFIX-8P plastic nailed-in anchors - Thermoschraubdübel KEW TSDL-V plastic nailed-in anchors - Wkret-met LFM ø 8 plastic nailed-in anchors - Wkret-met LFM ø 10 plastic nailed-in anchors - Wkret-met LMX ø 10 plastic nailed-in anchors - Wkret-met WK THERM ø 8 plastic nailed-in anchors - Wkret-met eco drive, eco drive S plastic screwed-in anchors - Wkret-met WK THERM S plastic screwed-in anchors 	<p>ETA-05/0009</p> <p>ETA-04/0023</p> <p>ETA-04/0064</p> <p>ETA-11/0192</p> <p>ETA-14/0130</p> <p>ETA-05/0055</p> <p>ETA-08/0267</p> <p>ETA-08/0166</p> <p>ETA-13/0951</p> <p>ETA-08/0336</p> <p>ETA-07/0291</p> <p>ETA-07/0221</p> <p>ETA-07/0221</p> <p>ETA-11/0144</p> <p>ETA-13/0845</p> <p>ETA-12/0148</p> <p>ETA-06/0080</p> <p>ETA-06/0105</p> <p>ETA-08/0172</p> <p>ETA-11/0232</p> <p>ETA-13/0107</p> <p>ETA-13/0724</p>	

	Components	Coverage (kg/m ²)	Thickness (mm)
Insulation products with associated methods of fixing	<ul style="list-style-type: none"> - fischer Termoz 8U plastic screwed-in anchors - fischer Schlagdübel Termoz 8N, 8 NZ plastic nailed-in anchors - fischer Termoz 8 SV plastic screwed-in anchors - fischer termoz CN 8 plastic nailed-in anchors alternatively with insulating plate DT 110 (surface assembly) - fischer Schlagdübel TERMOFIX CF 8 plastic nailed-in anchors - fischer termoz SV II ecotwist plastic screwed-in anchors - Hilti-Dämmstoff-Befestigungselement XI-FV plastic gun-nailed anchors - Hilti SX-FV plastic screwed-in anchors - Hilti WDVS-Schraubdübel D 8-FV plastic screwed-in anchors - Hilti WDVS-Schraubdübel D-FV a D-FV T plastic screwed-in anchors 	<p>ETA-02/0019</p> <p>ETA-03/0019</p> <p>ETA-06/0180</p> <p>ETA-09/0394</p> <p>ETA-07/0287</p> <p>ETA-12/0208</p> <p>ETA-03/0004</p> <p>ETA-03/0005</p> <p>ETA-07/0288</p> <p>ETA-05/0039</p>	
Base coat	<ul style="list-style-type: none"> - MAMUT Flex 45 <i>(cement based powder requiring addition of water – 0.25-0.27 l/kg)</i> only to be used with finishing coats MAMUT Spektrum VZ/VR and MAMUT Silikon VZ/VR; particle size from 1.5 to 3.0 mm; not for insulation products of TR7.5 - MAMUT Flex 50 <i>(cement based powder requiring addition of water – 0.25-0.27 l/kg)</i> 	<p>4.0 to 6.0 (dry)</p> <p>4.0 to 6.0 (dry)</p>	3,0 to 6,0
Reinforcement	<ul style="list-style-type: none"> • Standard mesh applied in single layer see Annex No. 8 for product characteristics: - R117 A101 - R131 A101 - REDNET CB 145 NOVA - 117S - 122 - 122L 	<p>/</p> <p>/</p> <p>/</p> <p>/</p> <p>/</p> <p>/</p>	<p>/</p> <p>/</p> <p>/</p> <p>/</p> <p>/</p> <p>/</p>
Key coat	<ul style="list-style-type: none"> • MAMUT Kontakt VSP ready to use liquid intended for use with finishing coats MAMUT Spektrum VZ and MAMUT Spektrum VR • MAMUT Kontakt VSIL ready to use liquid intended for use with finishing coats MAMUT Silikon VZ and MAMUT Silikon VR • MAMUT Kontakt VSICA ready to use liquid intended for use with finishing coats MAMUT Silikat VZ and MAMUT Silikat VR 	<p>0,15 to 0,25</p> <p>0,15 to 0,25</p> <p>0,15 to 0,25 l/m²</p>	

	Components	Coverage (kg/m²)	Thickness (mm)
Finishing coats	<ul style="list-style-type: none"> • Ready to use paste - binder based on acrylic copolymer: - MAMUT Spektrum VZ grain structure (particle size 1.0; 1.5; 2.0; 2.5; 3.0 mm) - MAMUT Spektrum VR grain structure (particle size 1.5; 2.0; 2.5; 3.0 mm) 	1.5 to 4.5 1.8 to 4.2	Regulated by particle size
	<ul style="list-style-type: none"> • Ready to use paste - binder based on silicone copolymer emulsion: - MAMUT Silikon VZ grain structure (particle size 1.0; 1.5; 2.0; 2.5; 3.0 mm) - MAMUT Silikon VR grain structure (particle size 1.5; 2.0; 2.5; 3.0 mm) 	1.5 to 4.5 1.8 to 4.2	Regulated by particle size
	<ul style="list-style-type: none"> • Ready to use paste - binder based on water-glass: - MAMUT Silikat VZ grain structure (particle size 1.0; 1.5; 2.0; 2.5; 3.0 mm) - MAMUT Silikat VR grain structure (particle size 1.5; 2.0; 2.5; 3.0 mm) 	1.5 to 4.5 1.8 to 4.2	Regulated by 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.

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. Changes to the ETICS or production process, which could result in this deposited data/information being incorrect, shall be notified to the Technical and Test Institute Prague before the changes are introduced. The Technical and Test Institute Prague 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 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 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

3.0 The performances of the kit as described in this chapter are valid provided that the components of the kit comply with Annexes 1-7.

3.1 Mechanical resistance and stability (BWR 1)

not relevant

3.2 Safety in case of fire (BWR 2)

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

Table No. 2

Configuration	Organic content / heat of combustion	Flame retardant content	Euroclass according to EN 13501-1
adhesive	-/ max -0.22 MJ/kg	no flame retardant	A2 – s1, d0
panels of mineral wool MW maximal density of 165 kg/m ³	in quantity ensuring Euroclass A1 according to EN 13501-1	no flame retardant	
base coat render	-/ max -0.22 MJ/kg	no flame retardant	
glass fibre mesh	min. 20%/ max 8.17 MJ/kg	no flame retardant	
finishing coat: - acrylic binder - silicate binder - silicone binder	-/ max 2.48 MJ/kg	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.

3.3 Hygiene, health and environment (BWR 3)

3.3.1 Water absorption (ETAG 004 - clause 5.1.3.1)

- Base coat **MAMUT Flex 45**:
 - Water absorption after 1 hour < 1 kg/m²
 - Water absorption after 24 hours < 0.5 kg/m²

- Base coat **MAMUT Flex 50**:
 - Water absorption after 1 hour < 1 kg/m²
 - Water absorption after 24 hours < 0.5 kg/m²

- Rendering system:

Table No. 3

		Water absorption after 24 hours	
		< 0.5 kg/m ²	≥ 0.5 kg/m ²
Rendering system: Base coat MAMUT Flex 45 or MAMUT Flex 50 + finishing coats as indicated here:	MAMUT Spektrum VZ	X	
	MAMUT Spektrum VR	X	
	MAMUT Silikon VZ	X	
	MAMUT Silikon VR	X	
Rendering system: Base coat MAMUT Flex 50 + finishing coats as indicated here:	MAMUT Silikat VZ	X	
	MAMUT Silikat VR	X	

3.3.2 Watertightness (ETAG 004 - clause 5.1.3.2)

3.3.2.1 Hygrothermal behaviour

Pass (without defects).

3.3.3 Impact resistance (ETAG 004 - clause 5.1.3.3)

Table No. 4

Rendering system: Base coat MAMUT Flex 45 + reinforcement and finishing coats indicated hereafter:	single standard mesh
MAMUT Spektrum VZ	Category III
MAMUT Spektrum VR	
MAMUT Silikon VZ	Category III
MAMUT Silikon VR	

Table No. 5

Rendering system: Base coat MAMUT Flex 50 + reinforcement and finishing coats indicated hereafter:	single standard mesh
MAMUT Spektrum VZ	Category II
MAMUT Spektrum VR	
MAMUT Silikon VZ	Category II
MAMUT Silikon VR	
MAMUT Silikat VZ	Category II
MAMUT Silikat VR	

3.3.4 Water vapour permeability (ETAG 004 - clause 5.1.3.4)

Table No. 6

Rendering system: Base coat MAMUT Flex 45+ reinforcement and finishing coats indicated hereafter	Equivalent air layer thickness s_d
	single mesh
MAMUT Spektrum VZ MAMUT Spektrum VR	$\leq 0,54$ m
MAMUT Silikon VZ MAMUT Silikon VR	$\leq 0,41$ m

Table No. 7

Rendering system: Base coat MAMUT Flex 50 + reinforcement and finishing coats indicated hereafter	Equivalent air layer thickness s_d
	single mesh
MAMUT Spektrum VZ MAMUT Spektrum VR	$\leq 0,44$ m
MAMUT Silikon VZ MAMUT Silikon VR	$\leq 0,26$ m
MAMUT Silikat VZ MAMUT Silikat VR	$\leq 0,19$ m

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

Kit not assessed according to EOTA TR 034.

3.4 Safety and accessibility in use (BWR 4)

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

Table No. 8

		Initial state	after ageing
MAMUT Flex 45 MAMUT Flex 50	MW	≥ 0.08 MPa or failure in thermal insulation product	< 0.08 MPa Failure in thermal insulation product

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

Table No. 9

		Initial state	48 hrs. immersion in water + 2 hrs. 23°C/50% RH	48 hrs. immersion in water + 7 days 23°C/50% RH
MAMUT Flex 45 MAMUT Flex 50	Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa
	MW lamella (TR 80)	≥ 0.08 MPa	≥ 0.03 MPa	≥ 0,08 MPa or failure in thermal insulation product
MAMUT Flex 50	MW deska (TR15) MW Frontrock MAX E (TR10) MW FKD S (C1/C2, TR10) MW Isover TF PROFI (TR10) MW FKD N (C1/C2, TR7,5)	< 0.08 MPa Failure in thermal insulation product	< 0.03 MPa Failure in thermal insulation product	< 0.08 MPa Failure in thermal insulation product

3.4.3 Fixing strength (ETAG 004 - clause 5.1.4.2)

Test not required (no limitation of ETICS length)

3.4.4 Wind load resistance (ETAG 004 - clause 5.1.4.3)

Insulation product MW panel (TR15)

Table No. 10

Anchor description	Trade name		see Annex No. 7		
	Assembly method		Surface assembly	Countersunk assembly	Special assembly
	Plate diameter (mm)		60 or more		
MW panel characteristics	Thickness (mm)		≥ 50	≥ 100	
	Tensile strength (kPa)		≥ 15		
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min. value: 0.43 kN	min. value: 0.49 kN	
			mean value: 0.48 kN	mean value: 0.52 kN	
	R_{panel} in wet conditions		min. value: 0.38 kN	min. value: 0.45 kN	
			mean value: 0.41 kN	mean value: 0.46 kN	
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min. value: 0.35 kN	min. value: 0.40 kN	
			mean value: 0.40 kN	mean value: 0.46 kN	
R_{joint} in wet conditions		min. value: 0.28 kN	min. value: 0.37 kN		
		mean value: 0.30 kN	mean value: 0.40 kN		

Insulation product MW panel FKD S (C1/C2, TR10)

Table No. 11

Anchor description	Trade name	see Annex No. 7		EJOT anchors pursuant to Annex No. 7
	Assembly method	Surface assembly		
	Plate diameter (mm)	60 or more		
MW panel characteristics FKD S (C1/C2)	Thickness (mm)	≥ 60	≥ 100	
	Tensile strength (kPa)	≥ 10		
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min. value: 0.40 kN mean value: 0.41 kN	min. value: 0.40 kN mean value: 0.44 kN
		R_{panel} in wet conditions	min. value: 0.20 kN mean value: 0.24 kN	NPA
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min. value: 0.29 kN mean value: 0.34 kN	min. value: 0.30 kN mean value: 0.37 kN
		R_{joint} in wet conditions	min. value: 0.19 kN mean value: 0.21 kN	NPA

Table No. 12

Anchor description	Trade name	see Annex No. 7		anchors ejotherm STR U 2G with additional plate VT 2G
	Assembly method	Countersunk assembly		
	Plate diameter (mm)	60 or more	112.5	
MW panel characteristics FKD S (C1/C2)	Thickness (mm)	≥ 100		
	Tensile strength (kPa)	≥ 10		
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min. value: 0.40 kN mean value: 0.41 kN	min. value: 0.77 kN mean value: 0.91 kN
		R_{panel} in wet conditions	min. value: 0.20 kN mean value: 0.24 kN	NPA
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min. value: 0.29 kN mean value: 0.34 kN	min. value: 0.60 kN mean value: 0.70 kN
		R_{joint} in wet conditions	min. value: 0.19 kN mean value: 0.21 kN	NPA

Insulation product MW panel Isover TF PROFI (TR10)

Table No. 13

Anchor description	Trade name	see Annex No. 7	EJOT anchors pursuant to Annex No. 7	BRAVOLL anchors pursuant to Annex No. 7	BRAVOLL anchors pursuant to Annex No. 7 with plate IT PTH 100	BRAVOLL anchors pursuant to Annex No. 7 with plate IT PTH 140	
	Assembly method	Surface assembly					
	Plate diameter (mm)	60 or more			100	140	
MW panel characteristics Isover TF PROFI	Thickness (mm)	≥ 50	≥ 100				
	Tensile strength (kPa)	≥ 10					
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	Minimal value: 0.48 kN mean value: 0.55 kN	Minimal value: 0.44 kN mean value: 0.46 kN	Minimal value: 0.40 kN mean value: 0.47 kN	Minimal value: 0.68 kN mean value: 0.78 kN	Minimal value: 0.90 kN mean value: 0.93 kN
		R_{panel} in wet conditions	Minimal value: 0.37 kN mean value: 0.38 kN	NPA			
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	Minimal value: 0.39 kN mean value: 0.43 kN	Minimal value: 0.37 kN mean value: 0.44 kN	Minimal value: 0.43 kN mean value: 0.46 kN	Minimal value: 0.50 kN mean value: 0.64 kN	Minimal value: 0.63 kN mean value: 0.69 kN
		R_{joint} in wet conditions	Minimal value: 0.29 kN mean value: 0.31 kN	NPA			

Table No. 14

Anchor description	Trade name	see Annex No. 7	anchors ejotherm STR U 2G with additional plate VT 2G	BRAVOLL PTH-S 60/8-La anchors with countersunk plate ZT 100	
	Assembly method	Countersunk assembly			
	Plate diameter (mm)	60 or more	112.5	100	
MW panel characteristics Isover TF PROFI	Thickness (mm)	≥ 100			
	Tensile strength (kPa)	≥ 10			
Maximal load	Anchors placed at the body of the insulation product	R _{panel} in dry conditions	min. value: 0.39 kN mean value: 0.42 kN	min. value: 0.91 kN mean value: 1.07 kN	min. value: 0.71 kN mean value: 0.81 kN
		R _{panel} in wet conditions	min. value: 0.37 kN mean value: 0.38 kN	NPA	
	Anchors placed at joints of the insulation product	R _{joint} in dry conditions	min. value: 0.33 kN mean value: 0.37 kN	min. value: 0.66 kN mean value: 0.74 kN	min. value: 0.65 kN mean value: 0.74 kN
		R _{joint} in wet conditions	min. value: 0.29 kN mean value: 0.31 kN	NPA	

Insulation product MW double density panel Frontrack MAX E (TR10)

Table No. 15

Anchor description	Trade name		see Annex No. 7			
	Assembly method		plate stiffness $\geq 0,6$		plate stiffness $\geq 0,4 < 0,6$	
	Assembly method		Surface assembly			
	Plate diameter (mm)		60 or more			
MW panel characteristics Frontrack MAX E	Thickness (mm)		≥ 80	≥ 100	≥ 80	≥ 100
	Tensile strength (kPa)		≥ 10			
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min. value: 0.47 kN mean value: 0.51 kN	min. value: 0.46 kN mean value: 0.53 kN	min. value: 0,38 kN mean value: 0,41 kN	min. value: 0,47 kN mean value: 0,51 kN
		R_{panel} in wet conditions	min. value: 0.26 kN mean value: 0.29 kN	NPA		
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min. value: 0.34 kN mean value: 0.39 kN	min. value: 0.43 kN mean value: 0.46 kN	min. value: 0,32 kN mean value: 0,37 kN	min. value: 0,34 kN mean value: 0,40 kN
		R_{joint} in wet conditions	min. value: 0.20 kN mean value: 0.22 kN	NPA		

Table No. 16

Anchor description	Trade name	EJOT anchors with EJOT VT 90 plate	EJOT anchors with EJOT VT 90 plate	BRAVOLL anchors with plate IT PTH 100	BRAVOLL anchors with plate IT PTH 100	BRAVOLL anchors with plate IT PTH 140
	Assembly method	Surface assembly				
	Plate diameter (mm)	90	90	100	100	140
MW panel characteristics Frontrock MAX E	Thickness (mm)	≥ 60	≥ 80		≥ 100	
	Tensile strength (kPa)	≥ 10				
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	Minimal value: 0.51 kN mean value: 0.58 kN	Minimal value: 0.60 kN mean value: 0.63 kN	Minimal value: 0.76 kN mean value: 0.79 kN	Minimal value: 0.90 kN mean value: 0.95 kN
		R_{panel} in wet conditions	Minimal value: 0.30 kN mean value: 0.34 kN	Minimal value: 0.30 kN mean value: 0.33 kN	NPA	
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	Minimal value: 0.44 kN mean value: 0.49 kN	Minimal value: 0.51 kN mean value: 0.52 kN	Minimal value: 0.52 kN mean value: 0.62 kN	Minimal value: 0.69 kN mean value: 0.81 kN
		R_{joint} in wet conditions	Minimal value: 0.27 kN mean value: 0.30 kN	Minimal value: 0.23 kN mean value: 0.27 kN	NPA	

Table No. 17

Anchor description	Trade name	anchors ejothem STR U 2G	BRAVOLL PTH-S anchors	anchors ejothem STR U 2G with additional plate VT 2G	BRAVOLL anchors PTH-S 60/8-La with countersunk plate ZT 100	
	Assembly method	Countersunk assembly				
	Plate diameter (mm)	60		112,5	100	
MW panel characteristics Frontrock MAX E	Thickness (mm)	≥ 100				
	Tensile strength (kPa)	≥ 10				
Maximal load	Anchor s placed at the body of the insulation product	R_{panel} in dry conditions	Minimal value: 0.31 kN mean value: 0.36 kN	Minimal value: 0.32 kN mean value: 0.36 kN	Minimal value: 0.87 kN mean value: 0.92 kN	Minimal value: 0.79 kN mean value: 0.84 kN
	Anchor s placed at joints of the insulation product	R_{joint} in dry conditions	Minimal value: 0.33 kN mean value: 0.37 kN	Minimal value: 0.34 kN mean value: 0.41 kN	Minimal value: 0.89 kN mean value: 0.93 kN	Minimal value: 0.66 kN mean value: 0.73 kN

Insulation product MW panel FKD N (C1/C2, TR7.5)

Table No. 18

Anchor description	Trade name	see Annex No. 7				EJOT anchors with EJOT VT 90 plate	
	Assembly method	plate stiffness < 0,6	plate stiffness ≥ 0,6				
	Assembly method	Surface assembly					
	Plate diameter (mm)	60 or more			90		
MW panel characteristics FKD N (C1/C2)	Thickness (mm)	≥ 60	≥ 100	≥ 60	≥ 100	≥ 60	
	Tensile strength (kPa)	≥ 7,5					
Maximal load	Anchors placed at the body of the insulation product	R_{panel} in dry conditions	min. value: 0.21 kN mean value: 0.28 kN	min. value: 0.40 kN mean value: 0.42 kN	min. value: 0,27 kN mean value: 0,30 kN	NPA	min. value: 0,55 kN mean value: 0,60 kN
		R_{panel} in wet conditions	min. value: 0.21 kN mean value: 0.25 kN	NPA			
	Anchors placed at joints of the insulation product	R_{joint} in dry conditions	min. value: 0.23 kN mean value: 0.24 kN	min. value: 0.28 kN mean value: 0.30 kN	min. value: 0,24 kN mean value: 0,25 kN	NPA	min. value: 0,43 kN mean value: 0,48 kN
		R_{joint} in wet conditions	min. value: 0.17 kN mean value: 0.21 kN	NPA			

Table No. 19

Anchor description	Trade name	see Annex No. 7		anchors ejotherm STR U 2G with additional plate VT 2G
	Assembly method	Countersunk assembly		
	Plate diameter (mm)	60 or more	112.5	
MW panel characteristics FKD N (C1/C2)	Thickness (mm)	≥ 100		
	Tensile strength (kPa)	≥ 7,5		
Maximal load	Anchors placed at the body of the insulation product	R _{panel} in dry conditions	min. value: 0.21 kN mean value: 0.28 kN	min. value: 0.73 kN mean value: 0.78 kN
		R _{panel} in wet conditions	min. value: 0.21 kN mean value: 0.25 kN	NPA
	Anchors placed at joints of the insulation product	R _{joint} in dry conditions	min. value: 0.23 kN mean value: 0.24 kN	min. value: 0.62 kN mean value: 0.65 kN
		R _{joint} in wet conditions	min. value: 0.17 kN mean value: 0.21 kN	NPA

Table No. 20

Anchor description	Trade name		fischer termoz CN 8	fischer termoz CN 8 + insulation plate DT 110	fischer termoz SV II ecotwist
	Assembly method		surface assembly		special countersunk assembly
	Plate diameter (mm)		60	110	66
Characteristics MW panel FKD N (C1/C2)	Thickness (mm)		≥ 60		≥ 100
	Tensile strength (kPa)		≥ 7,5		
Maximal load	Anchors place in the body of insulation product	R _{panel} in dry conditions	min. value: 0.28 kN mean value: 0.31 kN	min. value: 0.43 kN mean value: 0.47 kN	min. value: 0.23 kN mean value: 0.28 kN
		R _{panel} in wet conditions	NPA		
	Anchors placed at joints of the insulation product	R _{panel} in dry conditions	min. value: 0.25 kN mean value: 0.27 kN	min. value: 0.40 kN mean value: 0.44 kN	min. value: 0.22 kN mean value: 0.24 kN
		R _{panel} in wet conditions	NPA		

3.4.5 Render strip tensile test

- Base coat **MAMUT Flex 45**

NPA (No Performance Assessed)

- Base coat **MAMUT Flex 50**

Table No. 21

		Glass fibre mesh R 117 A101 (manufacturer: SAINT-GOBAIN ADFORS CZ s.r.o.)					
		crack width W_{typ} [mm]/ number of cracks at relative elongation ϵ					
load direction		$\epsilon = 0.3 \%$	$\epsilon = 0.5 \%$	$\epsilon = 0.8 \%$	$\epsilon = 1.0 \%$	$\epsilon = 1.5 \%$	$\epsilon = 2.0 \%$
warp	sample No. 1	-	$\leq 0.05/3$	$\leq 0.05/6$	$\leq 0.05/6$	$\leq 0.05/10$	$\leq 0.05/12$
	sample No. 2	-	$\leq 0.05/2$	$\leq 0.05/4$	$\leq 0.05/5$	$\leq 0.05/9$	$\leq 0.05/11$
	sample No. 3	-	$\leq 0.05/2$	$\leq 0.05/5$	$\leq 0.05/5$	$\leq 0.05/8$	$\leq 0.10/10$
weft	sample No. 1	-	$\leq 0.05/2$	$\leq 0.05/3$	$\leq 0.05/4$	$\leq 0.05/7$	$\leq 0.15/10$
	sample No. 2	-	$\leq 0.05/1$	$\leq 0.05/2$	$\leq 0.05/5$	$\leq 0.10/7$	$\leq 0.15/10$
	sample No. 3	-	$\leq 0.05/1$	$\leq 0.05/2$	$\leq 0.05/4$	$\leq 0.10/6$	$\leq 0.15/8$

Table No. 22

		Glass fibre mesh R 131 A101 (manufacturer: SAINT-GOBAIN ADFORS CZ s.r.o.)					
		crack width W_{typ} [mm]/ number of cracks at relative elongation ϵ					
load direction		$\epsilon = 0.3 \%$	$\epsilon = 0.5 \%$	$\epsilon = 0.8 \%$	$\epsilon = 1.0 \%$	$\epsilon = 1.5 \%$	$\epsilon = 2.0 \%$
warp	sample No. 1	-	-	$\leq 0.05/3$	$\leq 0.05/7$	$\leq 0.05/10$	$\leq 0.10/12$
	sample No. 2	-	-	$\leq 0.05/4$	$\leq 0.05/5$	$\leq 0.05/11$	$\leq 0.10/13$
	sample No. 3	-	-	$\leq 0.05/3$	$\leq 0.05/7$	$\leq 0.05/11$	$\leq 0.10/12$
weft	sample No. 1	-	$\leq 0.05/1$	$\leq 0.05/2$	$\leq 0.05/6$	$\leq 0.10/8$	$\leq 0.15/10$
	sample No. 2	-	$\leq 0.05/1$	$\leq 0.05/2$	$\leq 0.05/5$	$\leq 0.10/8$	$\leq 0.10/11$
	sample No. 3	-	-	$\leq 0.05/2$	$\leq 0.05/5$	$\leq 0.10/8$	$\leq 0.15/12$

Table No. 23

		Glass fibre mesh REDNET CB 145 NOVA (manufacturer: Ningbo Shanquan Fiberglass Co.Ltd.)					
		crack width W_{typ} [mm]/ number of cracks at relative elongation ϵ					
load direction		$\epsilon = 0.3 \%$	$\epsilon = 0.5 \%$	$\epsilon = 0.8 \%$	$\epsilon = 1.0 \%$	$\epsilon = 1.5 \%$	$\epsilon = 2.0 \%$
warp	sample No. 1	-	-	$\leq 0.05/4$	$\leq 0.05/6$	$\leq 0.05/7$	$\leq 0.10/8$
	sample No. 2	-	$\leq 0.05/1$	$\leq 0.05/5$	$\leq 0.05/5$	$\leq 0.05/10$	$\leq 0.10/13$
	sample No. 3	-	-	$\leq 0.05/4$	$\leq 0.05/5$	$\leq 0.05/8$	$\leq 0.10/9$
weft	sample No. 1	-	$\leq 0.05/3$	$\leq 0.05/4$	$\leq 0.05/5$	$\leq 0.05/7$	$\leq 0.10/9$
	sample No. 2	-	$\leq 0.05/2$	$\leq 0.05/2$	$\leq 0.05/6$	$\leq 0.05/8$	$\leq 0.10/9$
	sample No. 3	-	$\leq 0.05/1$	$\leq 0.05/3$	$\leq 0.05/5$	$\leq 0.05/7$	$\leq 0.10/9$

Table No. 24

		Glass fibre mesh 117 S (manufacturer: Technical textiles, s.r.o.)					
		crack width W_{typ} [mm]/ number of cracks at relative elongation ϵ					
load direction		$\epsilon = 0.3 \%$	$\epsilon = 0.5 \%$	$\epsilon = 0.8 \%$	$\epsilon = 1.0 \%$	$\epsilon = 1.5 \%$	$\epsilon = 2.0 \%$
warp	sample No. 1	-	-	$\leq 0.05/2$	$\leq 0.05/5$	$\leq 0.05/6$	$\leq 0.10/6$
	sample No. 2	-	-	$\leq 0.05/3$	$\leq 0.05/5$	$\leq 0.05/7$	$\leq 0.10/10$
	sample No. 3	-	-	$\leq 0.05/2$	$\leq 0.05/4$	$\leq 0.05/6$	$\leq 0.10/10$
weft	sample No. 1	-	-	$\leq 0.05/2$	$\leq 0.05/5$	$\leq 0.05/6$	$\leq 0.10/10$
	sample No. 2	-	-	$\leq 0.05/4$	$\leq 0.10/4$	$\leq 0.10/8$	$\leq 0.10/11$
	sample No. 3	-	-	$\leq 0.05/3$	$\leq 0.05/4$	$\leq 0.10/8$	$\leq 0.10/10$

Table No. 25

		Glass fibre mesh 122 (manufacturer: Technical textiles, s.r.o.)					
		crack width W_{typ} [mm]/ number of cracks at relative elongation ϵ					
load direction		$\epsilon = 0.3 \%$	$\epsilon = 0.5 \%$	$\epsilon = 0.8 \%$	$\epsilon = 1.0 \%$	$\epsilon = 1.5 \%$	$\epsilon = 2.0 \%$
warp	sample No. 1	-	-	$\leq 0.05/3$	$\leq 0.05/5$	$\leq 0.05/6$	$\leq 0.05/8$
	sample No. 2	-	-	$\leq 0.05/2$	$\leq 0.05/6$	$\leq 0.05/8$	$\leq 0.05/12$
	sample No. 3	-	-	$\leq 0.05/2$	$\leq 0.05/7$	$\leq 0.05/10$	$\leq 0.05/12$
weft	sample No. 1	-	-	$\leq 0.05/2$	$\leq 0.05/5$	$\leq 0.05/7$	$\leq 0.05/10$
	sample No. 2	-	-	-	$\leq 0.05/3$	$\leq 0.05/5$	$\leq 0.05/8$
	sample No. 3	-	-	-	$\leq 0.05/5$	$\leq 0.05/6$	$\leq 0.05/10$

Table No. 26

		Glass fibre mesh 122L (manufacturer: Technical textiles, s.r.o.)					
		crack width W_{typ} [mm]/ number of cracks at relative elongation ϵ					
load direction		$\epsilon = 0.3 \%$	$\epsilon = 0.5 \%$	$\epsilon = 0.8 \%$	$\epsilon = 1.0 \%$	$\epsilon = 1.5 \%$	$\epsilon = 2.0 \%$
warp	sample No. 1	-	-	-	$\leq 0.05/5$	$\leq 0.10/1$	$\leq 0.10/3$
	sample No. 2	-	-	$\leq 0.05/2$	$\leq 0.05/4$	$\leq 0.10/1$	$\leq 0.10/2$
	sample No. 3	-	-	$\leq 0.05/1$	$\leq 0.05/5$	$\leq 0.10/2$	$\leq 0.10/3$
weft	sample No. 1	-	-	$\leq 0.05/1$	$\leq 0.05/2$	$\leq 0.05/6$	$\leq 0.05/9$
	sample No. 2	-	-	$\leq 0.05/1$	$\leq 0.05/3$	$\leq 0.10/1$	$\leq 0.10/2$
	sample No. 3	-	-	-	$\leq 0.05/3$	$\leq 0.05/7$	$\leq 0.10/1$

The characteristic crack width W_{rk} [mm] at a render strain value of 0.8%, determined with simple Method II pursuant to ETAG 004, cl. 5.5.4.1.

Table No. 27

	Characteristic width of cracks W_{rk} [mm] at render strain value of 0,8%	
	warp direction	weft direction
R 117 A101	0.050	0.050
R 131 A101	0.050	0.050
REDNET CB 145 NOVA	0.050	0.050
117S	0.050	0.050
122	0.050	0.116
122L	0.116	0.124

3.5 Protection against noise (BWR 5)

3.5.1 Airborne sound insulation

NPA (No Performance Assessed)

3.6 Energy economy and heat retention (BWR 6)

3.6.1 Thermal resistance

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

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

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

U_c : global (corrected) thermal transmittance of the covered wall (W/ (m².K)

n : number of anchors (through insulation product) per 1 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:

= 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 ($\chi_p \cdot n$ negligible for $n < 20$)

= 0.004 W/K for anchors with a galvanized steel screw with the head covered by a plastic material ($\chi_p \cdot n$ 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/ (m².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 (m².K)/W

R_{render} : thermal resistance of the rendering system (about 0.02 in (m².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.

3.7 Sustainable use of natural resources (BWR 7)

NPA (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. 28

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 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 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 27/09/2016

By

Ing. Mária Schaan

Head of the department Technical Assessment Body

Annexes:

- Annex No. 1 Insulation Product Characteristics for bonded ETICS with supplementary anchors MW lamella (TR80)
- Annex No. 2 Insulation Product Characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW panel (TR15)
- Annex No. 3 Insulation Product Characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW double density insulation panel Frontrock MAX E (TR10)
- Annex No. 4 Insulation Product Characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW panel FKD S (TR10), FKD S C1 (TR10), FKD S C2 (TR10)
- Annex No. 5 Insulation Product Characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW panel TF PROFI (TR10)
- Annex No. 6 Insulation Product Characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW panel FKD N (TR7.5), FKD N C1 (TR7.5), FKD N C2 (TR7.5)
- Annex No. 7 Anchors, description of individual product characteristics contained in the ETA
- Annex No. 8 Description of glass fibre mesh

Annex No. 1

Insulation Product Characteristics for bonded ETICS with supplementary anchors
MW lamella (TR80)

Description and characteristics		Regulation	Declared characteristics MW lamella (TR80)	
			Class, level according to EN 13162+A1	Value
Reaction to fire		EN 13501 -1+A1:2009	A1	Apparent density $\leq 165 \text{ kg/m}^3$
Thermal resistance			Defined in CE mark in accordance with EN 13162:2012	
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	$\pm 2 \%$
Width			---	$\pm 1.5 \%$
Squareness		EN 824	---	$\leq 5 \text{ mm/m}$
Flatness		EN 825	---	$\leq 6 \text{ mm}$
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	$\leq 1.0 \text{ kg/m}^2$
	Long term water absorption	EN 12087	WL(P)	$\leq 3.0 \text{ kg/m}^2$
Diffusion factor (μ)		EN 12086 - EN 13162	MU1	1
Tensile strength perpendicular to the faces of insulation product in dry conditions		EN 1607	TR80	$\geq 80 \text{ kPa}$
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	$\geq 50 \text{ kPa}$
Shear strength		EN 12090	---	$\geq 20 \text{ kPa}$
Shear modulus of elasticity		EN 12090	---	$\geq 1000 \text{ kPa}$

* - highest value applies

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

Annex No. 2

Insulation Product Characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW panel (TR15)

Description and characteristics		Regulation	Declared characteristics MW board (TR 15)	
			Class, level according to EN 13162+A1	Value
Reaction to fire		EN 13501 -1+A1:2009	A1	Apparent density ≤ 165 kg/m ³
Thermal resistance			Defined in CE mark in accordance with EN 13162:2012	
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+A1

Annex No. 3

Insulation Product Characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW double density insulation panel Frontrock MAX E (TR10)

Description and characteristics		Regulation	Declared characteristics MW panel Frontrock MAX E (double density, TR10)	
			Class, level according to EN 13162+A1	Value
Reaction to fire		EN 13501 -1+A1:2009	A1	Apparent density ≤ 150 kg/m ³
Thermal resistance			Defined in CE mark in accordance with EN 13162:2012	
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	max. 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+A1

Annex No. 4

Insulation Product Characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW panel FKD S (TR10) - without facing

FKD S C1 (TR10) - with one side silicate facing

FKD S C2 (TR10) - with both side silicate facing

Description and characteristics		Regulation	Declared characteristics MW board FKD S, FKD S C1, FKD S C2 (TR 10)	
			Class, level according to EN 13162+A1	Value
Reaction to fire		EN 13501 -1+A1:2009	A1	Apparent density ≤ 120 kg/m ³
Thermal resistance			Defined in CE mark in accordance with EN 13162:2012	
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 or coating (one side, both side)	
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+A1

Annex No. 5

Insulation Product Characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW panel TF PROFI (TR10)

Description and characteristics	Regulation	Declared characteristics MW board Isover TF PROFI (TR10)		
		Class, level according to EN 13162+A1	Value	
Reaction to fire	EN 13501 -1+A1:2009	A1	Apparent density ≤ 150 kg/m ³	
Thermal resistance		Defined in CE mark in accordance with EN 13162:2012		
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+A1

Annex No. 6

Insulation Product Characteristics for mechanically fixed ETICS with anchors and supplementary bonding – MW panel FKD N (TR7.5) - without facing

FKD N C1 (TR7.5) - with one side silicate facing

FKD N C2 (TR7.5) - with both side silicate facing

Description and characteristics		Regulation	Declared characteristics MW panel FKD N , FKD N C1, FKD N C2 Thermal (TR7.5)	
			Class, level according to EN 13162+A1	Value
Reaction to fire		EN 13501 -1+A1:2009	A1	Apparent density $\leq 120 \text{ kg/m}^3$
Thermal resistance			Defined in CE mark in accordance with EN 13162:2012	
Thickness		EN 823	T5	-1 % or -1 mm*, +3 mm
Length		EN 822	---	$\pm 2 \%$
Width			---	$\pm 1.5 \%$
Squareness		EN 824	---	$\leq 5 \text{ mm/m}$
Flatness		EN 825	---	$\leq 6 \text{ mm}$
Surface		ETAG 004	No additional treatment or coating (one side, both side)	
Dimensional stability under defined temperature and humidity		EN 1604	DS(70,90)	1 %
Water absorption	Short term water absorption	EN 1609	WS	$\leq 1.0 \text{ kg/m}^2$
	Long term water absorption	EN 12087	WL(P)	$\leq 3.0 \text{ kg/m}^2$
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	$\geq 7.5 \text{ kPa}$
Tensile strength perpendicular to the faces of insulation product in wet conditions		ETAG 004	---	$\geq 4 \text{ kPa}$
Shear strength		EN 12090	---	---
Shear modulus of elasticity		EN 12090	---	---

* - highest value applies

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

Annex No. 7

Anchors, description of individual product characteristics contained in the ETA

Trade name	Plate diameter (mm)	Characteristic pull-out resistance	Plate stiffness (kN/mm)	Load at plate rupture (kN)
Surface assembly				
Ejotherm NT U	60	see ETA - 05/0009	0.60	2.43
Ejotherm STR U, STR U 2G alternatively with additional plate EJOT VT 90	60 (90)	see ETA - 04/0023	0.60	2.08
EJOT SDM-T plus	60	see ETA - 04/0064	0.70	2.24
EJOT H1 eco	60	see ETA - 11/0192	0.60	1.40
EJOT H3	60	see ETA - 14/0130	0.60	1.25
BRAVOLL PTH-KZ 60/8-La, PTH-KZL 60/8-La	60	see ETA - 05/0055	0.70	2.10
BRAVOLL PTH-S 60/8-La alternatively with supplementary plate IT PTH 100 or IT PTH 140	60 (100. 140)	see ETA - 08/0267	0.90	2.60
BRAVOLL PTH-KZ 60/10-La	60	see ETA - 08/0166	0.70	1.36
BRAVOLL PTH-X, PTH-EX alternatively with supplementary plate IT PTH 100 or IT PTH 140	60 (100. 140)	see ETA - 13/0951	0.60	1.40
Koelner TFIX-8M	60	see ETA - 07/0336	1.00	1.75
Koelner KI 10M	60	see ETA - 07/0291	0.45	0.65
Koelner KI-10N, KI-10NS	60	see ETA - 07/0221	0.30	1.39
Koelner TFIX-8S	60	see ETA - 11/0144	0.60	2.04
Koelner TFIX-8P	60	see ETA - 13/0845	0.30	1.38
Thermoschlagdübel KEW TSDL-V	60	see ETA - 12/0148	1.2	1.75
Wkret-met LFM ø 8	60	see ETA - 06/0080	0.50	1.0
Wkret-met LFM ø 10	60	see ETA - 06/0105	0.40	1.0
Wkret-met LMX ø 10	60	see ETA - 08/0172	0.50	1.64
Wkret-met WKTHERM ø 8	60	see ETA - 11/0232	0.60	4.3
Wkret-met WKTHERM S	60	see ETA - 13/0724	0.60	4.3
fischer TERMOZ 8U	60	see ETA - 02/0019	0.50	2.45
fischer Schlagdübel TERMOZ 8N, 8 NZ	60	see ETA - 03/0019	0.50/0.50	1.34/1.43
fischer Schlagdübel TERMOFIX CF 8	60	see ETA - 07/0287	0.50	1.65
fischer termoz CN 8 alternatively with insulation plate DT 110	60 (110)	see ETA - 09/0394	0.40	1.60
Hilti-Dämmstoff-Befestigungselement XI-FV	60	see ETA - 03/0004	0.40	1.60
Hilti SX-FV	60	see ETA - 03/0005	0.70	1.73
Hilti WDVS-Schraubdübel D-FV, D-FV T	60	see ETA - 05/0039	0.80	1.93

Trade name	Plate diameter (mm)	Characteristic pull-out resistance	Plate stiffness (kN/mm)	Load at plate rupture (kN)
Countersunk assembly				
Ejotherm STR U, STR U 2G alternatively with additional plate EJOT VT 2G	60 (112.5)	see ETA - 04/0023	0.60	2.08
BRAVOLL PTH-S 60/8-La alternatively with supplementary plate ZT100 or countersunk tool BRAVOLL - ZP	60 (100)	see ETA - 08/0267	0.90	2.60
Koelner TFIX-8ST	60	see ETA - 11/0144	0.60	2.04
fischer Termoz 8 SV	60	see ETA - 06/0180	1.10	2.13
Wkret-met eco drive, eco drive S	60	see ETA - 13/0107	0.60	2.8
Special assembly				
fischer termoz SV II ecotwist (anchors with screw head)	66	see ETA - 12/0208	0.96	1.90
Hilti WDVS-Schraubdübel D 8-FV (anchors with screw head)	60	see ETA - 07/0288	-	-

In addition to this list, anchors assessed in accordance with 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. 3.4.4	

Annex No. 8

Description of glass fibre mesh

	Description	Strength after ageing	
		Absolute strength after ageing (N/mm)	Relative residual strength after ageing, of the strength in the as-delivered state (%)
R117 A101	standard fibre mesh applied in single layer with mesh size 4.0 x 4.5 mm	≥ 20	≥ 50
R131 A101	standard fibre mesh applied in single layer with mesh size 3.5 x 3.8 mm	≥ 20	≥ 50
REDNET CB 145 NOVA	standard fibre mesh applied in single layer with mesh size 4.0 x 4.0 mm	≥ 20	≥ 50
117S	standard fibre mesh applied in single layer with mesh size 4.0 x 4.0 mm	≥ 20	≥ 50
122	standard fibre mesh applied in single layer with mesh size 5.0 x 5.0 mm	≥ 20	≥ 50
122L	standard fibre mesh applied in single layer with mesh size 4.0 x 4.5 mm	≥ 20	≥ 50