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European Technical Assessment

ETA-13/0233
of 19 November 2025

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General Part

Technical Assessment Body issuing the European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

HAERING WDV-System MP/ML

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

HAERING GmbH
Mühlstraße 2-10
74199 Untergruppenbach-Unterheinriet
DEUTSCHLAND

Manufacturing plant

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This European Technical Assessment contains

19 pages including 6 annexes which form an integral part of this assessment

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

EAD 040083-00-0404

This version replaces

ETA-13/0233 issued on 14 September 2018

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Specific Part

1 Technical description of the product

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. It's made up on site from these. The ETICS manufacturer is ultimately responsible for the ETICS.

The ETICS kit comprises a prefabricated insulation product of mineral wool (MW) to be bonded and if necessary additional mechanically fixed onto a wall. The methods of fixing and the relevant components are specified in annex 1.

The insulation product is faced with a rendering system consisting of one base and finishing coat (site applied), the base coat 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 ...) 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.

2 Specification of the intended use in accordance with the applicable European assessment Document

The performances in Section 3 can only be assumed if the ETICS is used in accordance with the specifications and under the boundary conditions specified in Annexes 2 to 5.

The verifications and assessment methods on which this ETA is based lead to the assumption of a working life of the ETICS "HAERING WDV-System MP/ML" 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.

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

Necessary repairs are to be carried out 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 known to the concerned people.

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

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire of the ETICS	(see annex 2) Class according to EN 13501-1
Reaction to fire of the MW-insulation product - Cross heat of combustion for the MW-insulation product EN ISO 1716 - Apparent density EN 1602	(see annex 2) Class A1 according EN 13501-1 Value [MJ/kg] Value [kg/m ³]
Facade fire performance	no performance assessed
Propensity to undergo continuous smouldering of ETICS	no performance assessed

3.2 Hygiene, health and environment (BWR 3)

Essential characteristic	Performance
Release of dangerous substances	no performance assessed
Water absorption Base coat after 1 hour after 24 hours	(see annex 3.1) Mean value [kg/m ²] Mean value [kg/m ²]
Rendering system after 1 hour after 24 hours	Mean value [kg/m ²] Mean value [kg/m ²]
MW insulation product after 24 hours	Maximum value 3.0 [kg/m ²]
Water-tightness of the ETICS Hygrothermal behaviour on the test wall	Passed without defects
Freeze/thaw behaviour of the ETICS	The water absorption of the base coat as well as the rendering systems is less than 0.5 kg/m ² for all configurations of the ETICS. The ETICS is so assessed as free/thaw resistant.
impact resistance	(see annex 3.2) Category
Water vapour permeability - Rendering system - MW insulation product	(see annex 3.3) s _d value [m] μ = 1 Thickness of the insulation product 400 mm

3.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
<p>Bond strength between base coat and MW insulation product</p> <p>between adhesive and substrate</p> <p>between adhesive and MW insulation</p>	<p>(see annex 4.1)</p> <ul style="list-style-type: none"> - Minimum value/mean value [kPa], rupture type: Initial state (28 d immersion) - Minimum value/mean value [kPa], rupture type: after hygrothermal cycles <p>(see annex 4.2)</p> <ul style="list-style-type: none"> - Thickness [mm] of the used adhesives - Minimum value [kPa], rupture type: Initial state (dry conditions) - Minimum value/mean value [kPa], rupture type: after 2 d immersion in water, 2 h drying - Minimum value/mean value [kPa], rupture type: after 2 d immersion in water, 7 d drying <p>(see annex 4.3)</p> <ul style="list-style-type: none"> - Thickness [mm] of the used adhesives - Minimum value [kPa], rupture type: Initial state (dry conditions) - Minimum value/mean value [kPa], rupture type: after 2 d immersion in water, 2 h drying - Minimum value/ mean value [kPa], rupture type: after 2 d immersion in water, 7 d drying
<p>Wind load resistance of ETICS pull-through test of fixing static foam block test</p>	<p>(see annex 4.4)</p> <ul style="list-style-type: none"> - R_{panel} [kN/fixing], - R_{joint} [kN/fixing], - Plate diameter of anchor ≥ 60 mm, ≥ 90 res. ≥ 140 mm - plate stiffness ≥ 0.3 kN/mm² - load resistance of the anchor plate ≥ 1.0 kN
<p>Tensile strength perpendicular to the faces in dry conditions MW panel MW panel MW lamella in wet conditions - series 2 - series 3</p>	<p>$\sigma_{\text{mt}} \geq 14$ [kPa] $\sigma_{\text{mt}} \geq 5$ [kPa] $\sigma_{\text{mt}} \geq 80$ [kPa]</p> <p>≥ 33 % of mean value value in dry conditions ≥ 50 % of mean value value in dry conditions</p>
<p>Shear strength of the ETICS MW panel $\sigma_{\text{mt}} \geq 14$ [kPa] MW lamella $\sigma_{\text{mt}} \geq 80$ kPa MW panel $\sigma_{\text{mt}} \geq 5$ [kPa]</p>	<p>≥ 20 kPa ≥ 20 kPa ≥ 6 kPa</p>
<p>Shear modulus of the ETICS MW panel $\sigma_{\text{mt}} \geq 14$ kPa MW lamella $\sigma_{\text{mt}} \geq 80$ kPa MW panel $\sigma_{\text{mt}} \geq 5$ kPa</p>	<p>$\geq 1,0$ MPa $\geq 1,0$ MPa $\geq 0,3$ MPa</p>

Essential characteristic	Performance
Pull-through resistance of fixings from profiles	≥ 0.5 kN
Render strip tensile test	no performance assessed
Bond strength after ageing finishing coat not tested on the rig	(see annex 4.5) Minimum value/mean value [kPa], rupture type
Tensile strength of the glass fibre mesh in the as-delivered state	(see annex 4.6) Mean value [N/mm]
Residual tensile strength of the glass fibre mesh after aging	(see annex 4.6) Mean value [N/mm]
Relative residual tensile strength of the glass fibre mesh after aging	(see annex 4.6) Mean value [%]
Elongation of the glass fibre mesh in the as-delivered state	(see annex 4.6) Mean value [%]
Elongation of the glass fibre mesh after aging	(see annex 4.6) Mean value [%]

3.4 Protection against noise (BWR 5)

Essential characteristic	Performance
Airborne sound insulation of ETICS	no performance assessed
Dynamic stiffness of the EPS insulation product	no performance assessed
Air flow resistance of the EPS insulation product	no performance assessed

3.5 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Thermal resistance of ETICS	(see annex 5) Calculated value or measurement value R [(m ² · K)/W]
Thermal transmittance of ETICS	(see annex 5) Calculated value or measurement value U [W/(m ² · K)]

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 040083-00-0404 the applicable European legal act is: 97/556/EC changed by 2001/596/EC.

The systems to be applied are:

Product	Intended use	Levels or classes (Reaction to fire)	Systems
"HAERING WDV-System MP/ML"	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+
<p>⁽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)</p> <p>⁽²⁾ Products/materials not covered by footnote (1)</p> <p>⁽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)</p>			

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

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 19 November 2025 Deutsches Institut für Bautechnik

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beglaubigt:
Klette

Annex 1

Composition of the ETICS

	Components National application documents shall be taken into account (characteristics and performances)	Coverage [kg/m ²]	Thickness [mm]
Insulation material with associated method of fixing	Bonded ETICS: <ul style="list-style-type: none"> • Insulation product factory-prefabricated mineral wool (MW) product <ul style="list-style-type: none"> - MW lamella • Adhesives <ul style="list-style-type: none"> - HAERING KAM Klebe- und Armierungsmörtel DS (cement based powder requiring addition of about 25 % of water) 	– 4.0 to 6.0 (prepared)	≤ 400 –
	Mechanically fixed ETICS with profiles and supplementary adhesive: <ul style="list-style-type: none"> • Insulation product factory-prefabricated mineral wool (MW) product <ul style="list-style-type: none"> - MW panel, $\sigma_{mt} \geq 14$ kPa • Supplementary adhesive (equal to bonded ETICS) • Profiles <ul style="list-style-type: none"> – "HAERING Halteleiste Alu" – "HAERING Verbindungsleiste Alu" Aluminium (Al) – profiles • Anchors for profiles <ul style="list-style-type: none"> - WS 8 L, WS 8 N - ejothem SDK U, ejothem NK U - SDF-K plus • Anchors for insulation product if necessary (equal to mechanically fixed ETICS with anchors and supplementary adhesive, see below) 	–	60 to 200
	Mechanically fixed ETICS with anchors and supplementary adhesive: <ul style="list-style-type: none"> • Insulation product factory-prefabricated mineral wool (MW) product <ul style="list-style-type: none"> - MW panel - MW lamella • Supplementary adhesive (equal to bonded ETICS) • Anchors for insulation product all anchors with ETA according to EAD330196-00-0604¹ 	– –	60 to 400 60 to 200
Base coat	HAERING KAM Klebe- und Armierungsmörtel DS Identical with the equally named adhesive given above.	6.5 to 13.0 (prepared)	5.0 to 10.0
Glass fibre mesh	HAERING Glasseidengittergewebe G Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 160 g/m ² and mesh size of about 8.0 mm x 8.0 mm.	–	–
Key coat	HAERING VS-Grund Ready to use pigmented acrylic binder To be used with all finishing coats indicated hereafter.	about 0.20 l/m ²	–

¹ EAD330196-00-0604

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

	Components National application documents shall be taken into account characteristics and performances)	Coverage [kg/m ²]	Thickness [mm]
Finishing coat	<p>To use with key coat "HAERING VS-Grund" if applicable*:</p> <ul style="list-style-type: none"> • Thick layered cement based powder requiring addition of about 22 % of water: HAERING Kratzputz Perfekt (particle size 2 – 3 mm) • Thin layered cement based powder requiring addition of about 27 % of water: HAERING Edelputz R (particle size 2 – 3 mm) HAERING Edelputz K (particle size 1.5 – 2 – 3 – 4 mm) HAERING Edelputz M (particle size 0.5 – 1 – 1.5 – 2 – 2.5 mm) • Thin layered cement based powder requiring addition of about 36 to 40 % of water: HAERING Edelputz L K (particle size 1.5 – 2 – 3 mm) • Ready to use pastes – acrylic/vinylic binder: HAERING VS-Putz (particle size 1.5 – 2 – 3 – 4 mm) • Ready to use pastes – acrylic/vinylic/siloxane binder: HAERING Unisil-Putz (particle size 1.5 – 2 – 3 mm) HAERING Siloxanputz (particle size 1.5 – 2 – 3 mm) • Ready to use paste – silicate/acrylic binder: HAERING Silikatputz (particle size 1.5 – 2 – 3 mm) 	<p>20.0 to 25.0 (before scraping) about 14.0 (finished)</p> <p>3.5 to 5.0</p> <p>2.5 to 6.5</p> <p>1.6 to 8.0</p> <p>2.0 to 4.5</p> <p>2.0 to 4.5</p> <p>2.0 to 4.0</p> <p>2.0 to 4.0</p> <p>2.0 to 3.8</p>	<p>12.0 to 15.0</p> <p>8.0 to 12.0</p> <p>2.0 to 3.0</p> <p>1.5 to 4.0</p> <p>1.0 to 5.0</p> <p>1.5 to 3.0</p> <p>1.5 to 4.0</p> <p>1.5 to 3.0</p> <p>1.5 to 3.0</p> <p>1.5 to 3.0</p>
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.			

Annex 2

Safety in case of fire (BWR 2)

2.1 Reaction to fire

Configurations	Organic content	Flame retardant content	Class according to EN 13501-1
Base coat	max. 2.4 %	no flame retardant	
Mineral wool insulation product	in quantity ensuring Class 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:			
HAERING Kratzputz Perfekt HAERING Edelputz R HAERING Edelputz K HAERING Edelputz M HAERING Edelputz L K each with HAERING VS-Grund	max. 1.2 %	no flame retardant	A2 - s1,d0
HAERING VS-Putz HAERING Unisil-Putz HAERING Siloxanputz HAERING Silikatputz each with HAERING VS-Grund	max. 7.5 %	min. 3 %	

2.2 Cross heat of combustion for the MW-insulation product EN ISO 1716

$PCS \leq 1,4$ [MJ/kg]

2.3 Apparent density EN 1602

Description and characteristics	MW panels	MW panels	MW lamella
Tensile strength perpendicular to the faces [kPa]; EN 1607 - in dry conditions*	$\sigma_{mt} \geq 14$	$\sigma_{mt} \geq 5$	$\sigma_{mt} \geq 80$
Apparent density [kg/m ³]; EN 1602	$120 \leq \rho_a \leq 150$	$80 \leq \rho_a \leq 150$	$80 \leq \rho_a \leq 150$
* Minimum value of all individual values			

Annex 3

Hygiene, health and environment (BWR 3)

3.1 Water absorption (capillarity test)

Base coat

Base coat	Thickness [mm]	Mean value water absorption [kg/m ²]	
		after 1 h	after 24 h
HAERING KAM Klebe- und Armierungsmörtel DS	10	0.03	0.13

Rendering system

Base coat "HAERING KAM Klebe- und Armierungsmörtel DS" with finishing coat indicated hereafter	Thickness [mm]	Mean value water absorption [kg/m ²]	
		after 1 h	after 24 h
HAERING Kratzputz Perfekt with HAERING VS-Grund	10	0.03	0.12
HAERING Edelputz R with HAERING VS-Grund	3	0.05	0.12
HAERING Edelputz K with HAERING VS-Grund	3	0.04	0.10
HAERING Edelputz M with HAERING VS-Grund	2.5	0.03	0.12
HAERING Edelputz L K with HAERING VS-Grund	3	0.19	0.40
HAERING VS-Putz with HAERING VS-Grund	3	0.04	0.17
HAERING Unisil-Putz with HAERING VS-Grund	3	0.05	0.16
HAERING Siloxanputz with HAERING VS-Grund	2	0.04	0.16
HAERING Silikatputz with HAERING VS-Grund	2	0.12	0.37

3.2 Impact resistance

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

Rendering system: Base coat "HAERING KAM Klebe- und Armierungsmörtel DS" with finishing coat and compatible key coat indicated in annex 1	Single standard mesh: "HAERING Glasseidengittergewebe G"
HAERING Kratzputz Perfekt	Category I
HAERING Edelputz R	Category II
HAERING Edelputz K	Category II
HAERING Edelputz M	Category II
HAERING Edelputz L K	Category II
HAERING VS-Putz	Category II
HAERING Unisil-Putz	Category I
HAERING Siloxanputz	Category I
HAERING Silikatputz	Category II

3.3 Water vapour permeability

Rendering system: Base coat "HAERING KAM Klebe- und Armierungsmörtel DS" with finishing coat and compatible key coat indicated in annex 1 (evaluated without key coat)	Equivalent air thickness s_d (Result determined with a layer thickness of 10 mm for the base coat)
HAERING Kratzputz Perfekt	≤ 1.0 m (Test result obtained with a layer thickness 10 mm: 0.17 m)
HAERING Edelputz R	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.20 m)
HAERING Edelputz K	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.11 m)
HAERING Edelputz M	≤ 1.0 m (Test result obtained with particle size 2.5 mm: 0.22 m)
HAERING Edelputz L K	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.23 m)
HAERING VS-Putz	≤ 1.0 m (Test result obtained with particle size 2 mm: 0.26 m)
HAERING Unisil-Putz	≤ 1.0 m (Test result obtained with particle size 2 mm: 0.24 m)
HAERING Siloxanputz	≤ 1.0 m (Test result obtained with particle size 2 mm: 0.22 m)
HAERING Silikatputz	≤ 1.0 m (Test result obtained with particle size 2 mm: 0.12 m)

Annex 4

Safety and accessibility in use (BWR 4)

4.1 Bond strength between base coat and MW lamella

		Rupture type	Conditioning		
			Initial state [kPa]	After hygrothermal cycles [kPa]	After freeze/thaw test
HAERING KAM Klebe- und Armierungsmörtel DS	Mean value	in the insulation product	119	84	Test not required because freeze/thaw cycles not necessary
	Minimum value		110	60	

4.2 Bond strength between adhesive and substrate

Substrate: concrete		Rupture type	Conditioning		
			Initial state [kPa]	2 d immersion in water and 2 h drying [kPa]	2 d immersion in water and 7 d drying [kPa]
HAERING KAM Klebe- und Armierungsmörtel DS	Mean value	in the adhesive	373	178	1062
	Minimum value		326	163	978

4.3 Bond strength between adhesive and MW lamella

		Rupture type	Conditioning		
			Initial state [kPa]	2 d immersion in water and 2 h drying [kPa]	2 d immersion in water and 7 d drying [kPa]
HAERING KAM Klebe- und Armierungsmörtel DS	Mean value	in the insulation product	119	71	128
	Minimum value		110	65	118

Minimal bonded surface

$$S [\%] = 0,03 \text{ N/mm}^2 \times 100 / 0,08 \text{ N/mm}^2$$

$$S = 37,5 \%$$

The minimal bonded surface S of bonded ETICS is 50 % (systemic).

4.4 Wind load resistance

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

4.4.1 Safety in use of mechanically fixed ETICS using profiles

Failure loads – table 1

Eigenschaften der Characteristics of the MW panels	Dimensions	625 mm x 800 mm
	Thickness	≥ 60 mm
	Tensile strength perpendicular to the faces	≥ 14 kPa
Failure load [kN/panel] (Static Foam Block Test)	Horizontal profiles with a vertical distance of 625 mm, fixed every 30 cm and vertical connection profiles No additional anchors in MW panel	Minimal: 1.20 Mean value: 1.25

Failure loads – table 2

Eigenschaften der Characteristics of the MW panels	Dimensions	625 mm x 800 mm
	Thickness	≥ 60 mm
	Tensile strength perpendicular to the faces	≥ 14 kPa
Failure load [kN/panel] (Static Foam Block Test)	Horizontal profiles with a vertical distance of 625 mm, fixed every 30 cm and vertical connection profiles Two additional anchors per MW panel, plate diameter ≥ 60 mm, mounted on the MW panel surface	Minimal: 2.20 Mean value: 2.40

4.4.2 Safety in use of mechanically fixed ETICS using anchors

Failure loads – table 3

Apply to all anchors listed in the annex 1 mounted on the insulation panels surface			
Characteristics of the MW panels	Thickness		≥ 60 mm
	Tensile strength perpendicular to the faces		≥ 14 kPa
Plate diameter of anchor			≥ Ø 60 mm
Failure load [kN/anchor]	Anchors not placed at the panel joints (Static Foam Block Test)	R_{panel}	Minimal: 0.65 Mean value: 0.74
	Anchors placed at the panel joints (Static Foam Block Test)	R_{joint}	Minimal: 0.59 Mean value: 0.61
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	R_{panel}	Minimal: 0.64 Mean value: 0.69
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2* - series 3*	R_{panel}	Minimal: 0.36 Mean value: 0.39 Minimal: 0.41 Mean value: 0.45
* according to EAD 040083-00-0404 clause 2.2.14.2			

Failure loads – table 4

Apply to all anchors listed in the annex 1 mounted on the insulation panels surface				
Characteristics of the MW panels	Thickness		≥ 80 mm	
	Tensile strength perpendicular to the faces		≥ 5 kPa	
Plate diameter of anchor			≥ Ø 90 mm	≥ Ø 140 mm
Failure load [kN/anchor]	Anchors not placed at the panel joints (Static Foam Block Test)	R_{panel}	Minimal: 0.48 Mean value: 0.49	Minimal: 0.56 Mean value: 0.69
	Anchors placed at the panel joints (Static Foam Block Test)	R_{joint}	Minimal: 0.38 Mean value: 0.39	Minimal: 0.44 Mean value: 0.54
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	R_{panel}	Minimal: 0.54 Mean value: 0.61	no performance assessed
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2*	R_{panel}	Minimal: 0.40 Mean value: 0.46	no performance assessed
* according to EAD 040083-00-0404 clause 2.2.14.2				

Failure loads – Table 5

Apply to all anchors listed in the annex 1 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 load [kN/anchor]	Anchors placed at the panel joints (Pull-through test, dry condition)	R_{joint}	Minimal: 0.62 Mean value: 0.66
	Anchors placed at the panel joints (Pull-through test, wet condition)	R_{joint}	Minimal: 0.51 Mean value: 0.57
	Anchors placed at the panel joints (Static Foam Block Test)	R_{joint}	Minimal: 0.71

Failure loads – table 6

Apply to all anchors listed in the annex 1 mounted on the insulation panels surface							
Characteristics of the MW panels	Thickness	$60 \leq d < 80$	$80 \leq d < 120$	$120 \leq d \leq 200$	> 200		
	Tensile strength perpendicular to the faces	$\geq 7.5 \text{ kPa}$					
Plate diameter of anchor		$\geq \varnothing 90 \text{ mm}$					
Failure load [kN/anchor]	Anchors not placed at the panel joints (Static Foam Block Test, dry conditions)	R_{panel}	Minimal: 0.45 Mean value: 0.48	Minimal: 0.54 Mean value: 0.57	Minimal: 0.73 Mean value: 0.82	Minimal: 0.73 Mean value: 0.82	
	Anchors placed at the panel joints (Static Foam Block Test)	R_{joint}	no performance assessed	Minimal: 0.36 Mean value: 0.38	Minimal: 0.49 Mean value: 0.55	Minimal: 0.49 Mean value: 0.55	
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	R_{panel}	Minimal.: 0.50 Mean value: 0.56	Minimal: 0.85 Mean value: 0.86	Minimal: 0.98 Mean value: 1.02	Minimal: 0.98 Mean value: 1.02	
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2*	R_{panel}	no performance assessed	Minimal: 0.42 Mean value: 0.46	Minimal: 0.57 Mean value: 0.59	Minimal: 0.56 Mean value: 0.59	
* according to EAD 040083-00-0404 clause 2.2.14.2							

The failure loads specified in Table 2 of Section 4.4.1 and Table 3 of Section 4.4.2 apply plate diameter of anchor of 60 mm for the following anchors, even with countersunk installation, only under the following conditions:

Anchor	Thickness of the MW panel [t]	Conditions of installation *
ejotherm STR U ejotherm STR U 2G (ETA-04/0023)	$t \geq 80 \text{ mm}$	– Maximum installation depth of the anchor plate: 15 mm ($\hat{=}$ thickness of insulation cover) – Cutting depth 20 mm
	$t \geq 100 \text{ mm}$	– Maximum installation depth of the anchor plate: 15 mm ($\hat{=}$ thickness of insulation cover) – Cutting depth 35 mm
TERMOZ 8 SV (ETA-06/0180)	$t \geq 80 \text{ mm}$	– Maximum installation depth of the anchor plate: 15 mm ($\hat{=}$ thickness of insulation cover)
* according to the appropriate ETA of anchor		

4.5 Bond strength after aging

Base coat "HAERING KAM Klebe- und Armierungsmörtel DS" with finishing coats indicated hereafter		Rupture type	7 d immersion in water and 7 d drying [kPa]
HAERING Kratzputz Perfekt	Mean value	in the insulation product	90
	Minimum value		61
HAERING Edelputz R	Mean value	in the insulation product	106
	Minimum value		71
HAERING Edelputz K	Mean value	in the insulation product	63
	Minimum value		56
HAERING Edelputz M	Mean value	in the insulation product	74
	Minimum value		67
HAERING Edelputz L K	Mean value	in the insulation product	104
	Minimum value		82
HAERING VS-Putz	Mean value	in the insulation product	126
	Minimum value		117
HAERING Unisil-Putz	Mean value	in the insulation product	117
	Minimum value		102
HAERING Siloxanputz	Mean value	in the insulation product	71
	Minimum value		65
HAERING Silikatputz	Mean value	in the insulation product	80
	Minimum value		71

4.6 Reinforcement (glass fibre mesh)

HAERING Glasseidengittergewebe G	Mean value warp	Mean value weft
Tensile strength in as-delivered state	61 N/mm	56 N/mm
Residual tensile strength after aging	41 N/mm	38 N/mm
Relative residual tensile strength after aging	≥ 50 %	≥ 50 %
Elongation in as-delivered state	4.1 %	3.8 %
Elongation after aging	2.7 %	2.4 %

Annex 5

Energy economy and heat retention (BWR 6)

5.1 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 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 $0.02 \text{ (m}^2 \cdot \text{K)/W}$.

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

The thermal bridges caused by mechanical fixing (anchors, profiles) increases the thermal transmittance U . This influence had to take into account according to EN ISO 6946

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

$$\Delta U = \Delta U_{Anchor} + \Delta U_{Profile} \quad \text{Correction factor for mechanical fasteners (anchor, profiles)}$$

$$\Delta U_{Anchor} = \chi_p \cdot n \quad \text{Correction factor for anchor}$$

Where: n number of anchors per m^2

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

$\chi_p = 0.004 \text{ W/K}$ 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 covered by plastic anchors and for anchors with an air gap at the head of the screw

$\Delta U_{Profile}$ Correction factor for profiles. Taking into account the thickness of the thermal insulation material and the thermal resistance of the wall substrate, the following values apply:

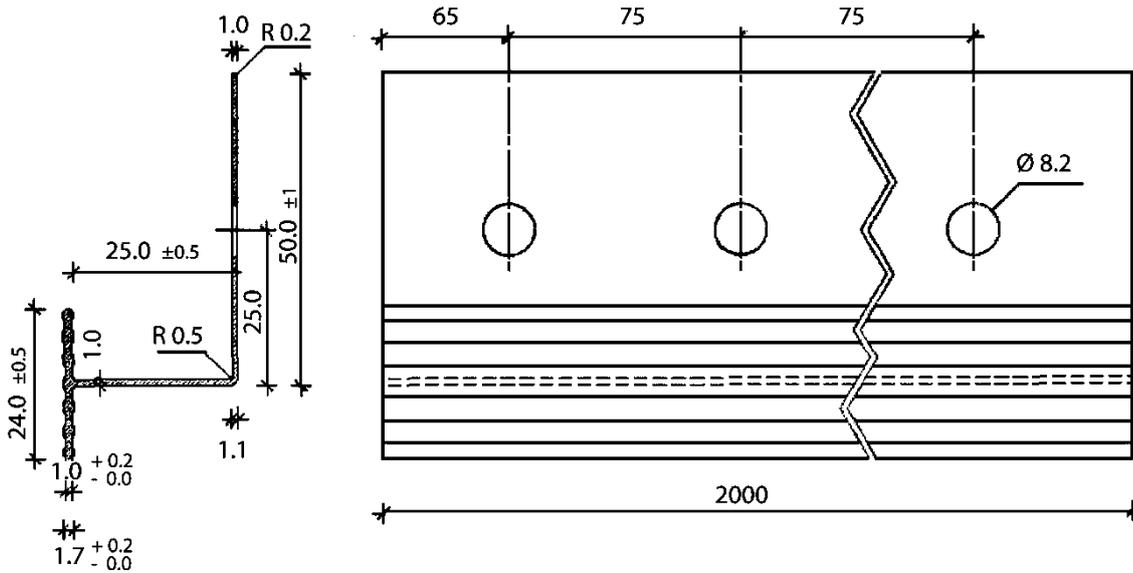
Thermal resistance of the wall substrate [(m ² ·K)/W]	Thickness of thermal insulation [mm]	$\Delta U_{Profile}$ [W/(m ² ·K)]
$R < 0.33$	$60 \leq d < 80$	0.03
	$80 \leq d < 120$	0.02
	$d \geq 120$	0
$0.33 \leq R \leq 1.10$	$60 \leq d < 80$	0.02
	$80 \leq d \leq 100$	0.01
	$d > 100$	0
$R > 1.10$	$d \geq 60$	0

Annex 6

Profiles

Aluminium (Al) profiles, EN AW-6060 T66 to EN 755-2: are to be used in the mechanically fixed ETICS with profiles. The Pull-through resistance of fixings from profiles is ≥ 0.5 kN.

Horizontal profile – "HAERING Halteleiste Alu" (dimensions in millimetres)



Vertical connection profile – "HAERING Verbindungsleiste Alu" (dimensions in millimetres)

