Deutsches Institut für Bautechnik

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European Technical Assessment Body for construction products

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General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	SAKRET WDV-System Mineralwolle
Product family to which the construction product belongs	Product area code: 4 External Thermal Insulation Composite System with rendering on mineral wool for the use as external insulation of building walls
Manufacturer	SAKRET GmbH Osterhagener Straße 2 37431 Bad Lauterberg DEUTSCHLAND
Manufacturing plant	SAKRET GmbH Osterhagener Straße 2 37431 Bad Lauterberg DEUTSCHLAND
This European Technical Assessment contains	22 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-10/0206 issued on 21 October 2019

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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 "SAKRET WDV-System Mineralwolle" 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/m³]
Facade fire performance	no performance assessed
Prosperity to undergo continous 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 **Rendering system** after 1 hour after 24 hours **MW insulation product after 24 hours**	(see annex 3.1) Mean value [kg/m²] Mean value [kg/m²] Mean value [kg/m²] Mean value [kg/m²] Maximum value 3.0 [kg/m²]	
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/m² after 24 hours 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	(see annex 3.3) s_d value [m]	
- MW insulation product	μ = 1	Thickness of the insulation product 400 mm

3.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Bond strength	
between base coat and MW insulation product	(see annex 4.1) - Minimum value/mean value [kPa], rupture type: Initial state (28 d immersion) - Minimum value/mean value [kPa], rupture type: after hygrothermal cycles
between adhesive and substrate	(see annex 4.2) - 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
between adhesive and MW insulation	(see annex 4.3) - 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
Wind load resistance of ETICS pull-through test of fixing static foam block test	(see annex 4.4) - 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
Tensile strength perpendicular to the faces	
in dry conditions	
MW panel	$\sigma_{mt} \geq 14$ [kPa]
MW panel	$\sigma_{mt} \geq 5$ [kPa]
MW lamella	$\sigma_{mt} \geq 80$ [kPa]
in wet conditions	
- series 2	≥ 33 % of mean value value in dry conditions
- series 3	≥ 50 % of mean value value in dry conditions
Shear strength of the ETICS	
MW panel $\sigma_{mt} \geq 14$ [kPa]	≥ 20 kPa
MW lamella $\sigma_{mt} \geq 80$ kPa	≥ 20 kPa
MW panel $\sigma_{mt} \geq 5$ [kPa]	≥ 6 kPa
Shear modulus of the ETICS	
MW panel $\sigma_{mt} \geq 14$ kPa	≥ 1,0 MPa
MW lamella $\sigma_{mt} \geq 80$ kPa	≥ 1,0 MPa
MW panel $\sigma_{mt} \geq 5$ kPa	≥ 0,3 MPa
Pull-through resistence of fixings from profiles	≥ 0.5 kN

Essential characteristic	Performance
Render strip tensile test	no performance assessed
Bond strength after ageing finishing coat 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 [(m² ·K)/W]
Thermal transmittance of ETICS	(see annex 5) Calculated value or measurement value U [W/(m² ·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
"SAKRET WDV-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	>

(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

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 by Deutsches Institut für Bautechnik

Dirk Brandenburger
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beglaubigt:
Klette

Annex 1

Composition of the ETICS

	Components National application documents shall be taken into account	**Coverage [kg/m²]**	**Thickness [mm]**
Insulation material with associated method of fixing	**Bonded ETICS:** • **Insulation product** factory-prefabricated mineral wool (MW) product - MW lamella • **Adhesives** - **SAKRET Klebe- und Armierungsmörtel KAM** (cement based powder requiring addition of about 20 - 25 % of water) - **SAKRET Klebe- und Armierungsmörtel KAM-san** (cement based powder requiring addition of about 20 - 25 % of water) - **SAKRET Klebe- und Armierungsmörtel leicht KAM-l** (cement based powder requiring addition of about 25 - 30 % of water)	– 4.0 to 5.0 (prepared) 4.0 to 5.0 (prepared) 3.0 to 4.0 (prepared)	≤ 400 – – –
	Mechanically fixed ETICS with profiles and supplementary adhesive: • **Insulation product** factory-prefabricated mineral wool (MW) product - MW panel • **Supplementary adhesive** (equal to bonded ETICS) • **Profiles** - SAKRET Halteleiste - SAKRET Verbindungsleiste Aluminium (Al) – profiles • **Anchors for profiles** - WS 8 L - ejotherm SDK U, ejotherm 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
Insulation material with associated method of fixing	**Mechanically fixed ETICS with anchors and supplementary adhesive:** • Insulation product factory-prefabricated mineral wool (MW) product - MW panel - MW lamella • **Supplementary adhesive** (equal to bonded ETICS) • **Anchors for insulation product** all anchors with ETA according to EAD330196-01-0604[1]	 – –	 60 to 340 60 to 200
Base coat	**SAKRET Klebe- und Armierungsmörtel KAM** **SAKRET Klebe- und Armierungsmörtel KAM-san** **SAKRET Klebe- und Armierungsmörtel leicht KAM-l** Identical with the equally named adhesives given above.	6.0 to 7.0 6.0 to 7.0 about 4.5	3.5 to 6.0 3.5 to 6.0 3.5 to 6.0

[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/m²]**	**Thickness [mm]**
Base coat	**SAKRET Klebe- und Armierungsmörtel Panzer KAM P** Thin layered cement base powder requiring addition of 25 – 30 % of water, vinyl acetate ethylene dispersion - with SAKRET Armierungsgewebe - with SAKRET Panzergewebe and SAKRET Armierungsgewebe	5.5 to 9.0	 3.0 to 5.0 5.0 to 8.0
Glass fibre mesh	**SAKRET Armierungsgewebe** Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 160 g/m² and mesh size of about 4.0 mm x 4.0 mm.	–	–
	Sakret Panzergewebe Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 335 g/m² and mesh size of about 6.0 mm x 5.0 mm.	–	–
Key coat	**SAKRET Putzgrund PG*** Ready to use pigmented acrylic-resin dispersion liquid For the compatibility with the finishing coats see below		
Finishing coat	**To use with key coat "SAKRET Putzgrund PG" if applicable:*** • Ready to use paste – acrylic-silicate binder: **SAKRET Silikatputz SK** - Rillen-Reibeputz (R) (particle size 1.5 – 2.0 and 3.0 mm) - Kratzputzstruktur (K) (particle size 1.5 – 2.0 and 3.0mm) • Ready to use paste – vinyl acetate binder: **SAKRET Silikonharzputz SHP-K** (particle size 1.5 – 2.0 und 3.0 mm) • Thin layered cement base powder requiring addition of about 25 % of water: **SAKRET Modellierputz MP** (particle size 1 and 2 mm) **SAKRET Scheibenputz SBP** (particle size 2 – 3 and 5 mm) **SAKRET Münchner Rauputz extra MRPe** (particle size 2 .0– 3.0 and 5.0 mm) **SAKRET Klebe- und Armierungsmörtel KAM****	 2.5 to 4.5 2.5 to 4.5 2.3 to 4.2 3.0 to 6.0 (prepared) 2.7 to 5.5 (prepared) 2.7 bis 6.0 (prepared) 2.5 to 3.0	 regulated by particle size 1.5 to 2.5
	Application without key coat: • Thick layered cement base powder requiring addition of about 25 % of water: **SAKRET Kratzputz KP** (particle size 3.0 mm)	 about 22.5 (prepared before scraping) about 14.0 (finished)	 15.0 8.0 to 12.0
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 ETA-holder.

** The finishing coat "SAKRET Klebe- und Armierungsmörtel KAM" has to be used with the equally named base coat exclusively.

Annex 2

Safety in case of fire (BWR 2)

2.1 Reaction to fire

Configurations	Organic content	Flame retardant content	Euroclass according to EN 13501-1
Base coat	max. 9.1 %	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 annex 1:			
SAKRET Silikatputz SK	max. 5.0 %	no flame retardant	A2 - s2,d0
SAKRET Siliconharzputz SHP-K	max. 7.5 %		
SAKRET Modellierputz MP SAKRET Scheibenputz SBP SAKRET Münchner Rauputz extra MRPe SAKRET Klebe- und Armierungsmörtel KAM SAKRET Kratzputz KP	max. 2.8 %		A2 - s1,d0

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

PCS ≤ 1,1 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/m³]; 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	Thickness [mm]	Mean value water absorption [kg/m²]	
		after 1 h	after 24 h
SAKRET Klebe- und Armierungsmörtel KAM	5	0.04	0.26
SAKRET Klebe- und Armierungsmörtel KAM-san	5	0.03	0.15
SAKRET Klebe- und Armierungsmörtel leicht KAM-l	5	0.15	0.31
SAKRET Klebe- und Armierungsmörtel Panzer KAM P	no performance assessed		

Rendering system Base coat "SAKRET Klebe- und Armierungsmörtel KAM" with finishing coat indicated hereafter	Thickness [mm]	Mean value water absorption [kg/m²]	
		after 1 h	after 24 h
SAKRET Silikatputz SK	3	0.20	0.44
SAKRET Siliconharzputz SHP-K	2	0.01	0.24
SAKRET Modellierputz MP	2	0.05	0.32
SAKRET Scheibenputz SBP	3	0.27	0.43
SAKRET Münchner Rauputz extra MRPe	3	0.14	0.32
SAKRET Klebe- und Armierungsmörtel KAM	3	0.04	0.26
SAKRET Kratzputz KP	12	0.13	0.22

Rendering system Base coat "SAKRET Klebe- und Armierungsmörtel KAM-san" with finishing coat indicated hereafter	Thickness [mm]	Mean value water absorption [kg/m²]	
		after 1 h	after 24 h
SAKRET Silikatputz SK	3	0.19	0.37
SAKRET Siliconharzputz SHP-K	no performance assessed		
SAKRET Modellierputz MP	2	0.07	0.31
SAKRET Scheibenputz SBP	3	0.21	0.38
SAKRET Münchner Rauputz extra MRPe	3	0.17	0.38
SAKRET Klebe- und Armierungsmörtel KAM	not applicable acc. to Annex 1		
SAKRET Kratzputz KP	12	0.11	0.41

Rendering system Base coat "SAKRET Klebe- und Armierungsmörtel KAM-I" with finishing coat indicated hereafter	**Thickness [mm]**	**Mean value water absorption [kg/m²]**	
		after 1 h	**after 24 h**
SAKRET Silikatputz SK	3	0.08	0.39
SAKRET Siliconharzputz SHP-K	3	0.05	0.27
SAKRET Modellierputz MP	2	0.18	0.41
SAKRET Scheibenputz SBP	3	0.25	0.42
SAKRET Münchner Rauputz extra MRPe	3	0.07	0.23
SAKRET Klebe- und Armierungsmörtel KAM	not applicable acc. to Annex 1		
SAKRET Kratzputz KP	5	0.08	0.22

No performance was assessed for the water absorption of the base coat "SAKRET Klebe- und Armierungsmörtel Panzer KAM P" with all finishing coats.

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 "SAKRET Klebe- und Armierungsmörtel KAM" or "SAKRET Klebe- und Armierungsmörtel KAM-san" with finishing coat indicated hereafter	**Thickness [mm]**	**Single standard mesh "SAKRET Armierungsgewebe"**
SAKRET Silikatputz SK	2	Category I
SAKRET Modellierputz MP	3	Category II
SAKRET Scheibenputz SBP	3	Category II
SAKRET Münchner Rauputz extra MRPe	3	Category II
SAKRET Kratzputz KP	10	Category II

Rendering system Base coat "SAKRET Klebe- und Armierungsmörtel leicht KAM-l" with finishing coat indicated hereafter	**Thickness [mm]**	**Single standard mesh "SAKRET Armierungsgewebe"**
SAKRET Silikatputz SK	3	Category III
SAKRET Modellierputz MP	3	Category III
SAKRET Scheibenputz SBP	3	Category III
SAKRET Münchner Rauputz extra MRPe	3	Category III
SAKRET Kratzputz KP	10	Category III

Rendering system Base coat "SAKRET Klebe- und Armierungsmörtel Panzer KAM P" with finishing coat indicated hereafter	**Thickness [mm]**	**Single standard mesh "SAKRET Armierungsgewebe" with additional "SAKRET Panzergewebe"**
SAKRET Klebe- und Armierungsmörtel KAM	3	Category I
SAKRET Siliconharzputz SHP-K	2	
SAKRET Scheibenputz SPB	2	
SAKRET Silikatputz SK	2	

For all other combinations of finishing coat, base coat and glass fibre mesh was no performance assessed.

3.3 Water vapour permeability

Rendering system Base coat "SAKRET Klebe- und Armierungsmörtel KAM" or "SAKRET Klebe- und Armierungsmörtel KAM-san" with finishing coat and key coat indicated hereafter	**Equivalent air thickness s_d**
SAKRET Silikatputz SK	≤ 1.0 m (Test result obtained with a layer thickness 2 mm: 0.2 m)
SAKRET Siliconharzputz SHP-K	≤ 1.0 m (Test result obtained with a layer thickness 3 mm: 0.3 m)
SAKRET Modellierputz MP	≤ 1.0 m (Test result obtained with a layer thickness 1 mm: 0.1 m)
SAKRET Scheibenputz SBP	≤ 1.0 m (Test result obtained with a layer thickness 3 mm: 0.2 m)
SAKRET Münchner Rauputz extra MRPe	≤ 1.0 m (Test result obtained with a layer thickness 3 mm: 0.3 m)
SAKRET Klebe- und Armierungsmörtel KAM	≤ 1.0 m (Test result obtained with a layer thickness 5 mm: 0.1 m)
SAKRET Kratzputz KP	≤ 1.0 m (Result: 0.3 m)

Rendering system Base coat "SAKRET Klebe- und Armierungsmörtel leicht KAM-l" with finishing coat and key coat indicated hereafter	**Equivalent air thickness s_d**
SAKRET Siliconharzputz SHP-K	≤ 1,0 m (Ergebnis ermittelt mit einer Schichtdicke von 3 mm: 0.36 m)
SAKRET Scheibenputz SBP	≤ 1,0 m (Ergebnis ermittelt mit einer Schichtdicke von 3 mm: 0.16 m)

For all other combinations of finishing coat and base coat was no performance assessed.

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 hygro-thermal cycles [kPa]	after freeze/thaw test
SAKRET Klebe- und Armierungsmörtel KAM	Mean value	insulation product	76	no performance assessed	Test not required because freeze/thaw cycles not necessary
	Minimum value		70		
SAKRET Klebe- und Armierungsmörtel KAM-san	Mean value	insulation product	76	26	
	Minimum value		70	20	
SAKRET Klebe- und Armierungsmörtel leicht KAM-l	Mean value	insulation product	140	no performance assessed	
	Minimum value		130		
SAKRET Klebe- und Armierungsmörtel Panzer KAM P	Mean value	insulation product	no performance assessed		
	Minimum value				

4.2 Bond strength between adhesive and substrate

Substrate: concrete		Rupture type	Konditionierung		
			Initial state [kPa]	2 d immersion in water and 2 h drying [kPa]	2 d immersion in water and 7 d drying [kPa]
SAKRET Klebe- und Armierungsmörtel KAM	Mean value	in adhesive	618	242	1070
	Minimum value		520	220	990
SAKRET Klebe- und Armierungsmörtel KAM-san	Mean value	in adhesive	560	580	724
	Minimum value		500	500	640
SAKRET Klebe- und Armierungsmörtel leicht KAM-l	Mean value	in adhesive	480	200	420
	Minimum value		430	200	390

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]
SAKRET Klebe- und Armierungsmörtel KAM	Mean value	insulation product	76	52	96
	Minimum value		70	40	80
SAKRET Klebe- und Armierungsmörtel KAM-san	Mean value	insulation product	76	62	76
	Minimum value		70	60	70
SAKRET Klebe- und Armierungsmörtel leicht KAM-l	Mean value	insulation product	140	150	140
	Minimum value		130	140	130

Minimal bonded surface

S = 0.03 N/mm² x 100 / 0.07 N/mm² [%]

S = 43 %

For the adhesives "SAKRET Klebe- und Armierungsmörtel KAM" and "SAKRET Klebe- und Armierungsmörtel KAM-san" the minimal bonded surface S of bonded ETICS is 50 %.

Fort the adhesives "SAKRET Klebe- und Armierungsmörtel leicht KAM-l" the minimal bonded surface S of bonded ETICS is 60 %.

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			≥ ∅ 60 mm
Failure load [kN/fixing]	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			**≥ 5.0 kPa**	
Plate diameter of anchor				≥ ∅ 90 mm	≥ ∅ 140 mm
Failure load [kN/fixing]	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	

* 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			≥ ∅ 140 mm
Failure load [kN/fixing]	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

The failure loads specified in 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 ≥ 80 mm	– Maximum installation depth of the anchor plate: 15 mm (≙ thickness of insulation cover) – Cutting depth 20 mm
	t ≥ 100 mm	– Maximum installation depth of the anchor plate: 15 mm (≙ thickness of insulation cover) – Cutting depth 35 mm
TERMOZ 8 SV (ETA-06/0180)	t ≥ 80 mm	– Maximum installation depth of the anchor plate: 15 mm (≙ thickness of insulation cover)

* according to the appropriate ETA of anchor

4.5 Bond strength after aging

Rendering system Base coat "SAKRET Klebe- und Armierungsmörtel KAM" with finishing coats indicated hereafter		**Rupture type**	**after hygrothermal cycles [kPa]**
SAKRET Siliconharzputz SHP-K	Mean value	insulation product	138
	Minimum value		120
SAKRET Scheibenputz SBP	Mean value	insulation product	100
	Minimum value		60

Rendering system Base coat "SAKRET Klebe- und Armierungsmörtel KAM-san" with finishing coats indicated hereafter		**Rupture type**	**after hygrothermal cycles [kPa]**
SAKRET Scheibenputz SBP	Mean value	insulation product	70
	Minimum value		60

Rendering system Base coat "SAKRET Klebe- und Armierungsmörtel KAM-I" with finishing coats indicated hereafter		**Rupture type**	**after hygrothermal cycles [kPa]**
SAKRET Scheibenputz SBP	Mean value	insulation product	120
	Minimum value		80

Rendering system Base coat "SAKRET Klebe- und Armierungsmörtel KAM P" with finishing coats indicated hereafter		**Rupture type**	**after hygrothermal cycles [kPa]**
SAKRET Silikatputz SK	Mean value	insulation product	137
	Minimum value		130
SAKRET Siliconharzputz SHP-K	Mean value	insulation product	116
	Minimum value		90
SAKRET Scheibenputz SBP	Mean value	insulation product	130
	Minimum value		120

For all other combinations of finishing coat with base coat was no performance assessed.

4.6 Reinforcement (glass fibre mesh)

"SAKRET Armierungsgewebe"	**Mean value warp**	**Mean value weft**
Tensile strength in as-delivered state	≥ 40 N/mm	≥ 40 N/mm
Residual tensile strength after aging	≥ 20 N/mm	≥ 20 N/mm
Relative residual tensile strength after aging	50 %	50 %
Elongation in as-delivered state	4.2 %	5.0 %
Elongation after aging	1.8 %	1.7 %

"SAKRET Panzergewebe"	**Mean value warp**	**Mean value weft**
Tensile strength in as-delivered state	≥ 70 N/mm	≥ 70 N/mm
Residual tensile strength after aging	≥ 35 N/mm	≥ 35 N/mm
Relative residual tensile strength after aging	50 %	50 %
Elongation in as-delivered state	5.5 %	5.5 %
Elongation after aging	3.5 %	3.5 %

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 (m² ·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.

$U_c = U + \Delta U$	corrected thermal transmittance [W/(m² ·K)]
$\Delta U = \Delta U_{Anchor} + \Delta U_{Profile}$	Correction factor for mechanical fasteners (anchor, profiles)
$\Delta U_{Anchor} = \chi_p \cdot n$	Correction factor for anchor

Where:

n	number of anchors per m²
χ_p	local influence of thermal bridge caused by an anchor. The values listed below can be taken into account if not specified in the anchor's ETA:
$\chi_p = 0.004$ W/K	for anchors with a galvanized steel screw with the head covered by a plastic material
$\chi_p = 0.002$ W/K	for anchors with a stainless steel screw covered by plastic anchors and for anchors with an air gap at the head of the screw
ΔU_{Profil}	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 [(m²·K)/W]	Thickness of thermal insulation [mm]	ΔU_{Profil} [W/(m²·K)]
R < 0.33	60 ≤ d < 80	0.03
	80 ≤ d < 120	0.02
	d ≥ 120	0
0.33 ≤ R ≤ 1.10	60 ≤ d < 80	0.02
	80 ≤ d ≤ 100	0.01
	d > 100	0
R > 1.10	d ≥ 60	0

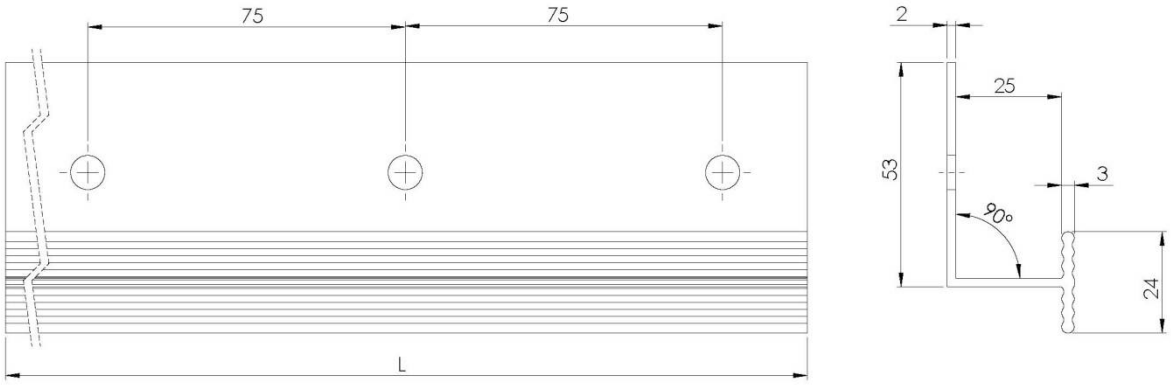
Annex 6

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 – "SAKRET Halteschiene" (dimensions in millimetres)



Vertical connection profile – "SAKRET Verbindungsschiene"
(dimensions in millimetres)