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## European Technical Assessment

ETA-04/0110  
of 14 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

SAKRET WDV-System Polystyrol

Product family  
to which the construction product belongs

Product area code: 4

External Thermal Insulation Composite System with  
rendering on expanded polystyrene (EPS) for the use as  
external insulation of building walls

Manufacturer

SAKRET GmbH  
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37431 Bad Lauterberg  
DEUTSCHLAND

Manufacturing plant

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This European Technical Assessment  
contains

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

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No 305/2011, on the basis of

040083-00-0404

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## Specific Part

### 1 Technical description of the product

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

The ETICS kit comprises a prefabricated insulation product of expanded polystyrene (EPS) to be bonded and if it necessary additionally 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 coat and finishing coat (site applied), in which the base coat contains reinforcement. The rendering is applied directly to the insulating panels, without any air gap or disconnecting layer.

The ETICS may include special fittings (e.g. base profiles, corner profiles ...) for connection to adjacent building elements (apertures, corners, parapets ...). Assessment and performance of these components are 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 Polystyrol" of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be regarded only as a means for choosing the right products in relation to the assumed economically reasonable working life of the works.

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 EPS-insulation product - Apparent density of the EPS-insulation product according to EN 1602	(see annex 2) Class E according EN 13501-1 Value [kg/m <sup>3</sup> ]
Reaction to fire of the PU- foam adhesive	not applicable
Facade fire performance	no performance assessed
Propensity to undergo continuous smouldering of ETICS	not applicable

#### 3.2 Hygiene, health and environment (BWR 3)

Essential characteristic	Performance
<b>Release of dangerous substances</b>	no performance assessed
<b>Water absorption</b> Base coat after 1 hour after 24 hours  Rendering system after 1 hour after 24 hours  EPS insulation product after 24 hours	(see annex 3.1)  Mean value [kg/m <sup>2</sup> ] Mean value [kg/m <sup>2</sup> ]  Mean value [kg/m <sup>2</sup> ] Mean value [kg/m <sup>2</sup> ]  Maximum value 0.5 kg/m <sup>2</sup>
<b>Water-tightness of the ETICS Hygrothermal behaviour on the test wall</b>	Passed without defects
<b>Water-tightness: freeze/thaw behaviour</b>	The water absorption of the base coats as well as the rendering systems is less than 0.50 kg/m <sup>2</sup> after 24 hours for all configurations of the ETICS. The ETICS is so assessed as free/thaw resistant.
<b>Impact resistance</b>	(see annex 3.2) Category
<b>Water vapour permeability</b> - Rendering system - EPS insulation product	(see annex 3.3) s <sub>d</sub> value [m]  μ = 20 - 70      Thickness of the insulation product ≤ 400 mm

### 3.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
<p><b>Bond strength</b> between base coat and EPS insulation product</p> <p>between adhesive and substrate</p> <p>between adhesive and EPS insulation</p>	<p>(see annex 4.1) - Minimum value/Mean value [kPa]: Rupture type, Initial state (28 d immersion) - Minimum value/Mean value [kPa]: after hygrothermal cycles</p> <p>(see annex 4.2) - Thickness [mm] of the used adhesives - Minimum value/Mean value [kPa]: Rupture type, Initial state (dry conditions) - Minimum value/Mean value [kPa]: 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> <p>(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</p>
<b>Fixing strength (displacement test)</b>	Test not required therefore no limitation of ETICS length required
<p><b>Wind load resistance of ETICS</b> pull-through test of fixing static foam block test</p> <p>dynamic wind uplift test</p>	<p>(see annex 4.4) - <math>R_{\text{panel}}</math> [kN/fixing], - <math>R_{\text{joint}}</math> [kN/fixing], - Plate diameter of anchor <math>\geq 60</math> mm, <math>\geq 90</math> mm - plate stiffness <math>\geq 0.3</math> kN/mm<sup>2</sup> - load resistance of the anchor plate <math>\geq 1.0</math> kN - not applicable</p>
<p><b>Tensile strength perpendicular to the faces</b> in dry conditions standard EPS</p> <p>elastified EPS</p>	<p><math>\sigma_{\text{mt}} \geq 80</math> kPa (bonded ETICS) <math>\sigma_{\text{mt}} \geq 100</math> kPa (bonded ETICS with anchors) <math>\sigma_{\text{mt}} \geq 150</math> kPa (bonded ETICS with profiles) <math>\sigma_{\text{mt}} \geq 80</math> kPa</p>
<p><b>Shear modulus of the ETICS</b> standard EPS elastified EPS</p>	<p><math>1,0 \leq G_m \leq 3,8</math> [MPa] <math>0,3 \leq G_m \leq 1,0</math> [MPa]</p>
<b>Pull-through resistance of fixings from profiles</b>	$\geq 500$ N
<b>Render strip tensile test</b>	(see annex 4.5) crack width $w_{\text{rk}}$ [mm]

Essential characteristic	Performance
Shear strength of foam adhesive	Minimum value/ Mean value [kPa]
shear modulus of foam adhesive	Minimum value/Mean value [MPa]
Post expansion behaviour of foam adhesive	Minimum value/Mean value [mm]
Bond strength after ageing finishing coat tested on the rig	(see annex 4.6) Minimum value/ Mean value [kPa]
Tensile strength of the glass fibre mesh in the as-delivered state	(see annex 4.7) Mean value [N/mm]
Residual tensile strength of the glass fibre mesh after aging	(see annex 4.7) Mean value [N/mm]
Relative residual tensile strength of the glass fibre mesh after aging	(see annex 4.7) Mean value [%]
Elongation of the glass fibre mesh in the as-delivered state	(see annex 4.7) Mean value [%]
Elongation of the glass fibre mesh after aging	(see annex 4.7) 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 [ $\text{m}^2 \cdot \text{K}/\text{W}$ ]
thermal transmittance of ETICS	(see annex 5) Calculated value or measurement value U [ $\text{W}/(\text{m}^2 \cdot \text{K})$ ]

#### 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 system to be applied is:

Product	Intended use	Levels or classes (Reaction to fire)	Systems
"SAKRET WDV-System Polystyrol"	ETICS in external wall subject to fire regulations	A1 <sup>(1)</sup> , A2 <sup>(1)</sup> , B <sup>(1)</sup> , C <sup>(1)</sup>	1
		A1 <sup>(2)</sup> , A2 <sup>(2)</sup> , B <sup>(2)</sup> , C <sup>(2)</sup> , D, E, (A1 to E) <sup>(3)</sup> , F	2+
	ETICS in external wall not subject to fire regulations	any	2+

<sup>(1)</sup> 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)  
<sup>(2)</sup> Products/materials not covered by footnote (1)  
<sup>(3)</sup> 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 17 November 2025 by Deutsches Institut für Bautechnik

Anja Rogsch  
Head of Section

*beglaubigt:*  
Klette

## Annex 1

### Composition of the ETICS

	<b>Components</b> National application documents shall be taken into account	<b>Coverage</b> [kg/m <sup>2</sup> ]	<b>Thickness</b> [mm]
<b>Insulation material with associated method of fixing</b>	<b>Bonded ETICS:</b> <ul style="list-style-type: none"> <li>• <b>Insulation product</b> factory-prefabricated expanded polystyrene (EPS) <ul style="list-style-type: none"> <li>– standard EPS</li> <li>– elastified EPS</li> </ul> </li> <li>• <b>Adhesives</b> (minimum bonded surface 40 %) <ul style="list-style-type: none"> <li>– <b>SAKRET Klebe- und Armierungsmörtel KAM</b></li> <li>– <b>SAKRET Klebe- und Armierungsmörtel KAM-san</b></li> <li>– <b>SAKRET Klebe- und Armierungsmörtel leicht KAM-I</b></li> </ul> </li> </ul>	–	≤ 400 ≤ 200
	<b>Mechanically fixed ETICS with profiles and supplementary adhesive:</b> <ul style="list-style-type: none"> <li>• <b>Insulation product</b> factory-prefabricated expanded polystyrene (EPS) <ul style="list-style-type: none"> <li>– standard EPS</li> </ul> </li> <li>• <b>Supplementary adhesive</b> (equal to bonded ETICS)</li> <li>• <b>Profiles</b> <ul style="list-style-type: none"> <li>– SAKRET Halteschiene</li> <li>– SAKRET Verbindungsschiene</li> </ul> </li> <li>• <b>Anchors for profiles</b> <ul style="list-style-type: none"> <li>– WS 8 L, WS 8 N</li> <li>– ejothem SDK U, ejothem NK U</li> <li>– SDF-K plus</li> </ul> </li> </ul>	–	60 to 200
	<b>Mechanically fixed ETICS with anchors and supplementary adhesive:</b> <ul style="list-style-type: none"> <li>• <b>Insulation product</b> factory-prefabricated expanded polystyrene (EPS) <ul style="list-style-type: none"> <li>– standard EPS</li> <li>– elastified EPS</li> </ul> </li> <li>• <b>Supplementary adhesive</b> (equal to bonded ETICS)</li> <li>• <b>Anchors for insulation product</b> all anchors with ETA according to EAD 330196-01-0404<sup>1</sup></li> </ul>	– –	60 to 400 60 to 200
<b>Base coat</b>	<b>SAKRET Klebe- und Armierungsmörtel KAM</b> <b>SAKRET Klebe- und Armierungsmörtel KAM-san</b> <b>SAKRET Klebe- und Armierungsmörtel leicht KAM-I</b> Identical with the equally named adhesives given above.	6.0 to 10.0 6.0 to 10.0 4.5 to 7.0 (prepared)	3.5 to 6.0 3.5 to 6.0 3.5 to 6.0

<sup>1</sup> EAD 330196-00-0604

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

	<b>Components</b> National application documents shall be taken into account	<b>Coverage</b> [kg/m <sup>2</sup> ]	<b>Thickness</b> [mm]
<b>Glass fibre mesh</b>	<b>SAKRET Armierungsgewebe</b> Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 160 g/m <sup>2</sup> and mesh size of about 4.0 mm x 4.0 mm	–	–
<b>Key coat</b>	<b>SAKRET Putzgrund PG</b> Ready to use pigmented acrylic-resin dispersion liquid For the compatibility with the finishing coats see below.	about 0.15 l/m <sup>2</sup>	–
<b>Finishing coat</b>	<p><b>To use with key coat "SAKRET Putzgrund PG" if applicable:*</b></p> <ul style="list-style-type: none"> <li>Ready to use pastes – acrylic binder: <ul style="list-style-type: none"> <li><b>SAKRET Kunstharzputz KHP</b> <ul style="list-style-type: none"> <li>- Rillen-Reibeputz (R) (particle size 1.5 – 2 and 3 mm)</li> <li>- Kratzputzstruktur (K) (particle size 1.5 – 2 and 3 mm)</li> </ul> </li> </ul> </li> <li>Ready to use pastes – acrylosioxane binder: <ul style="list-style-type: none"> <li><b>SAKRET Siliconharzputz SHP</b> <ul style="list-style-type: none"> <li>- Rillen-Reibeputz (R) (particle size 1.5 – 2 and 3 mm)</li> <li>- Kratzputzstruktur (K) (particle size 1.5 – 2 and 3 mm)</li> </ul> </li> </ul> </li> <li>Ready to use paste – acrylic-silicate binder: <ul style="list-style-type: none"> <li><b>SAKRET Silikatputz SK</b> <ul style="list-style-type: none"> <li>- Rillen-Reibeputz (R) (particle size 1.5 – 2 and 3 mm)</li> <li>- Kratzputzstruktur (K) (particle size 1.5 – 2 and 3 mm)</li> </ul> </li> </ul> </li> <li>Thin layered cement based powder requiring addition of about 25 % of water: <ul style="list-style-type: none"> <li><b>SAKRET Modellierputz MP</b> (particle size 1 and 2 mm)</li> <li><b>SAKRET Scheibenputz SBP</b> (particle size 2 – 3 and 5 mm)</li> <li><b>SAKRET Münchner Rauputz extra MRPe</b> (particle size 2 – 3 and 5 mm)</li> <li><b>SAKRET Klebe- und Armierungsmörtel KAM**</b></li> </ul> </li> <li>Thick layered cement based powder requiring addition of about 25 % of water: <ul style="list-style-type: none"> <li><b>SAKRET Kratzputz KP</b> (particle size 3 mm)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>2.5 to 4.3</li> <li>2.3 to 3.8</li> <li>2.3 to 4.2</li> <li>2.4 to 4.2</li> <li>2.5 to 4.5</li> <li>2.5 to 4.5</li> <li>3.0 to 6.0 (prepared)</li> <li>2.7 to 5.5 (prepared)</li> <li>2.7 to 6.0 (prepared)</li> <li>2.5 to 3.0</li> <li>about 22.5 (prepared before scraping)</li> <li>about 14.0 (finished)</li> </ul>	<ul style="list-style-type: none"> <li>regulated by particle size</li> <li>regulated by particle size</li> <li>1.5 to 2.5</li> <li>about 15.0</li> <li>8.0 to 12.0</li> </ul>
<b>Ancillary material</b>	Remains the responsibility of the manufacturer.		
* The instruction to the installer concerning the use of a key coat remains the responsibility of the manufacturer.			
** The finishing coat "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	Class according to EN 13501-1
Base coat	max. 2.4 %	no flame retardant	
EPS insulation product	In quantity ensuring Class E according to EN 13501-1	In quantity ensuring Class E according to EN 13501-1	
Profile	-	-	
Anchors	-	-	
<b>rendering system:</b> Base coat with finishing coat and compatible key coat indicated in annex 1:			
SAKRET Modellierputz MP, SAKRET Scheibenputz SBP, SAKRET Münchner Rauputz extra MRPe, SAKRET Kratzputz KP	max. 1.1 %	no flame retardant	B – s1,d0
SAKRET Silikatputz SK	max. 5.0 %		B – s2,d0
SAKRET Kunstharzputz KHP, SAKRET Siliconharzputz SHP, SAKRET Klebe- und Armierungsmörtel KAM	max. 7.8 %		

#### 2.2 Apparent density of the EPS-insulation product according to EN 1602

$$\rho_a \leq 30 \text{ kg/m}^3$$

### Annex 3

#### Hygiene, health and environment (BWR 3)

##### 3.1 Water absorption

Base coat	Mean value water absorption [kg/m <sup>2</sup> ]	
	after 1 h	after 24 h
SAKRET Klebe- und Armierungsmörtel KAM	0.02	0.24
SAKRET Klebe- und Armierungsmörtel KAM-san	0.03	0.21
SAKRET Klebe- und Armierungsmörtel leicht KAM-l	0.15	0.31

Rendering system Base coats "SAKRET Klebe- und Armierungsmörtel KAM" or "SAKRET Klebe- und Armierungsmörtel KAM-san" with finishing coat indicated hereafter	Mean value water absorption [kg/m <sup>2</sup> ]	
	after 1 h	after 24 h
SAKRET Kunstharzputz KHP	0.02	0.14
SAKRET Siliconharzputz SHP	0.01	0.24
SAKRET Silikatputz SK	0.08	0.38
SAKRET Modellierputz MP	0.01	0.33
SAKRET Scheibenputz SBP	0.04	0.43
SAKRET Münchner Rauputz extra MRPe	0.26	0.46
SAKRET Klebe- und Armierungsmörtel KAM	0.02	0.24
SAKRET Kratzputz KP	0.02	0.33

Rendering system Base coats "SAKRET Klebe- und Armierungsmörtel leicht KAM-l" with finishing coat indicated hereafter	Mean value water absorption [kg/m <sup>2</sup> ]	
	after 1 h	after 24 h
SAKRET Kunstharzputz KHP	0.04	0.21
SAKRET Siliconharzputz SHP	0.05	0.27
SAKRET Silikatputz SK	0.08	0.39
SAKRET Modellierputz MP	0.18	0.41
SAKRET Scheibenputz SBP	0.25	0.42
SAKRET Münchner Rauputz extra MRPe	0.07	0.23
SAKRET Klebe- und Armierungsmörtel KAM	no performance assessed	
SAKRET Kratzputz KP	0.08	0.22

### 3.2 Impact resistance

<b>Rendering system</b> Base coats "SAKRET Klebe- und Armierungsmörtel KAM" or "SAKRET Klebe- und Armierungsmörtel KAM-san" with finishing coat indicated hereafter	<b>Single-layered glass fibre mesh</b> " SAKRET Armierungsgewebe"
SAKRET Kunstharzputz KHP (3 mm)	Category II
SAKRET Siliconharzputz SHP (3 mm)	Category II
SAKRET Silikatputz SK (2 mm)	Category I
SAKRET Modellierputz MP (3 mm)	Category II
SAKRET Scheibenputz SBP (3 mm)	Category II
SAKRET Münchner Rauputz extra MRPe (3 mm)	Category II
SAKRET Kratzputz KP (10 mm)	Category II

<b>Rendering system</b> Base coats "SAKRET Klebe- und Armierungsmörtel leicht KAM-I" with finishing coat indicated hereafter	<b>Single-layered glass fibre mesh</b> " SAKRET Armierungsgewebe"
SAKRET Kunstharzputz KHP (3 mm)	Category I
SAKRET Siliconharzputz SHP (3 mm)	Category I
SAKRET Silikatputz SK (2 mm)	Category I
SAKRET Modellierputz MP (3 mm)	Category III
SAKRET Scheibenputz SBP (3 mm)	Category III
SAKRET Münchner Rauputz extra MRPe (3 mm)	Category III
SAKRET Kratzputz KP (10 mm)	Category I

No performance assessed for all other combinations.

### 3.3 Water vapour permeability

<b>Rendering system</b> Base coats "SAKRET Klebe- und Armierungsmörtel KAM" or "SAKRET Klebe- und Armierungsmörtel KAM-san" with finishing coat indicated hereafter	<b>Equivalent air thickness <math>s_d</math></b> (Result determined with a layer thickness of 6 mm for the base coat)
SAKRET Modellierputz MP SAKRET Scheibenputz SBP SAKRET Münchner Rauputz extra MRPe SAKRET Klebe- und Armierungsmörtel KAM SAKRET Kratzputz KP	$\leq 1.0$ m (Test result obtained with SAKRET Kratzputz KP with particle size 10 mm: 0.1 m)
SAKRET Siliconharzputz SHP	$\leq 1.0$ m (Test result obtained with particle size 3 mm: 0.3 m)
SAKRET Silikatputz SK	$\leq 1.0$ m (Test result obtained with particle size 3 mm: 0.1 m)
SAKRET Kunstharzputz KHP	$\leq 1.0$ m (Test result obtained with particle size 3 mm: 0.4 m)

<b>Rendering system</b> Base coats "SAKRET Klebe- und Armierungsmörtel leicht KAM-I" with finishing coat and key coat indicated hereafter	<b>Equivalent air thickness <math>s_d</math></b> (Result determined with a layer thickness of 6 mm for the base coat)
SAKRET Scheibenputz SBP	$\leq 1.0$ m (Test result obtained with particle size 3 mm: 0.16 m)
SAKRET Siliconharzputz SHP	$\leq 1.0$ m (Test result obtained with particle size 3 mm: 0.36 m)
SAKRET Kunstharzputz KHP	$\leq 1.0$ m (Test result obtained with particle size 3 mm: 0.37 m)

No performance assessed for all other combinations.

## Annex 4

### Safety and accessibility in use (BWR 4)

#### 4.1 Bond strength between base coat and insulation product (EPS)

		Rupture type	Conditioning		
			Initial state [kPa]	After hygro-thermal cycles [kPa]	After freeze/thaw test
SAKRET Klebe- und Armierungsmörtel KAM	Mean value	insulation material	164	154	Test not required because freeze/thaw cycles not necessary
	Minimum value		160	120	
SAKRET Klebe- und Armierungsmörtel KAM-san	Mean value	insulation material	164	124	
	Minimum value		160	100	
SAKRET Klebe- und Armierungsmörtel leicht KAM-I	Mean value	insulation material	100	108	
	Minimum value		90	100	

#### 4.2 Bond strength between adhesive and substrate

Substrate: Concrete		Rupture type	Thick-ness [mm]	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	in adhesive	3	618	242	1070
	Minimum value			520	220	990
SAKRET Klebe- und Armierungsmörtel KAM-san	Mean value	in adhesive	3	560	580	724
	Minimum value			500	500	640
SAKRET Klebe- und Armierungsmörtel leicht KAM-I	Mean value	in adhesive	3	480	200	420
	Minimum value			430	200	390

#### 4.3 Bond strength between adhesive and insulation (EPS)

		Rupture type	Thick-ness [mm]	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 material	3	164	130	176
	Minimum value			160	100	170
SAKRET Klebe- und Armierungsmörtel KAM-san	Mean value	insulation material	3	164	130	140
	Minimum value			160	100	120
SAKRET Klebe- und Armierungsmörtel leicht KAM-I	Mean value	insulation material	3	99	94	112
	Minimum value			92	80	100

#### Bonded surface

$$S [\%] = 0.03 \text{ N/mm}^2 \times 100 / 0.08 \text{ N/mm}^2$$

$$S = 37.5 \%$$

For bonded ETICS the calculated minimal bonded surface area is 40 %.

English translation prepared by DIBt

#### 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

Characteristics of the EPS (standard EPS)	Dimensions		500 mm x 500 mm
	Thickness		≥ 60 mm
	<b>Tensile strength perpendicular to the faces</b>		<b>≥ 150 kPa</b>
	Shear modulus		≥ 1.0 N/mm <sup>2</sup>
Failure loads [kN/panel] (Static Foam Block Test)	Horizontal profiles fixed every 30 cm and 49.4 cm long vertical connection profiles	$R_{\text{joint}}$	Minimal: 0.95 Mean value: 1.01

##### 4.4.2. Safety in use of mechanically fixed ETICS using anchors

Apply to all anchors listed in the annex 1 mounted on the insulation panels surface				
Characteristics of the EPS (standard EPS)	Thickness		≥ 60 mm	
	<b>Tensile strength perpendicular to the faces</b>		<b>≥ 100 kPa</b>	
	Shear modulus		≥ 1.0 N/mm <sup>2</sup>	
Plate diameter of anchor		∅ 60 mm	∅ 90 mm	
Plate stiffness		≥ 0.3 kN/mm		
Load capacity of the plate		≥ 1.0 kN		
Failure loads [kN]	Anchors not placed at the panel joints (Static Foam Block Test)	$R_{\text{panel}}$	Minimal: 0.51 Mean value: 0.52	Minimal: 0.72 Mean value: 0.73
	Anchors placed at the panel joints (Pull-through test)	$R_{\text{joint}}$	Minimal: 0.40 Mean value: 0.43	Minimal: 0.43 Mean value: 0.47

Apply to all anchors listed in the annex 1 mounted on the insulation panels surface				
Characteristics of the EPS (elastified EPS)	Thickness		≥ 60 mm	
	<b>Tensile strength perpendicular to the faces</b>		<b>≥ 80 kPa</b>	
	Shear modulus		≥ 0.3 N/mm <sup>2</sup>	
Plate diameter of anchor		∅ 60 mm		
Plate stiffness		≥ 0.3 kN/mm		
Load capacity of the plate		≥ 1.0 kN		
Failure loads [kN]	Anchors not placed at the panel joints (Static Foam Block Test)	$R_{\text{panel}}$	Minimal: 0.35 Mean value: 0.36	
	Anchors placed at the panel joints (Pull-through test)	$R_{\text{joint}}$	Minimal: 0.30 Mean value: 0.31	

The failure loads specified above for a plate diameter of anchor of 60 mm apply to the following anchors with deep mounting but only on the following conditions of installation:

Anchor	Thickness of the EPS	Conditions of installation*
ejotherm STR U, ejotherm STR U 2G (ETA-04/0023)	≥ 80 mm (for standard and elastified EPS)	– Maximum installation depth of the anchor plate: 15 mm ( $\triangleq$ thickness of insulation cover) – Incision depth: 20 mm
	≥ 100 mm (for standard and elastified EPS)	– Maximum installation depth of the anchor plate: 15 mm ( $\triangleq$ thickness of insulation cover) – Incision depth: 35 mm
TERMOZ 8 SV (ETA-06/0180)	≥ 80 mm (for standard EPS only)	– Maximum installation depth of the anchor plate: 15 mm ( $\triangleq$ thickness of insulation cover)
TermoZ SV II ecotwist (ETA-12/0208)	≥ 100 mm (for standard EPS only)	– Minimum installation depth $h_E = 70$ mm
* according to the appropriate ETA of anchor		

#### 4.5 Render strip tensile test

The mean value of crack width of the base coat reinforced with the glass fibre meshes measured at a render strain value of 1 % is:

Rendering system	Mean value of crack width $w_{m(1\%)}$
Base coat with glass fibre mesh indicated hereafter	
SAKRET Klebe- und Armierungsmörtel KAM-san	0.08 mm
SAKRET Klebe- und Armierungsmörtel leicht KAM-I	0.11 mm

No performance assessed for all other combinations.

#### 4.6 Bond strength after ageing

Rendering system		Rupture type	after hygro- thermal cycles [kPa]
Base coat "SAKRET Klebe- und Armierungsmörtel KAM" with finishing coat indicated hereafter			
SAKRET Siliconharzputz SHP	Mean value	insulation material	150
	Minimum value		130

Rendering system		Rupture type	after hygro- thermal cycles [kPa]
Base coat "SAKRET Klebe- und Armierungsmörtel KAM-san" with finishing coat indicated hereafter			
SAKRET Siliconharzputz SHP	Mean value	insulation material	110
	Minimum value		80

Rendering system		Rupture type	after hygro- thermal cycles [kPa]
Base coat "SAKRET Klebe- und Armierungsmörtel leicht KAM-I" with finishing coat indicated hereafter			
SAKRET Siliconharzputz SHP	Mean value	insulation material	110
	Minimum value		100

No performance assessed for all other combinations of base coat and finishing coat..

#### 4.7 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 %

## Annex 5

### Energy economy and heat retention (BWR 6)

#### 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

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

Where:	$U_c$ :	corrected thermal transmittance [ $\text{W}/(\text{m}^2 \cdot \text{K})$ ]
	$n$ :	number of anchors per $\text{m}^2$
	$\chi_p$ :	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

The thermal bridges caused by profiles are negligible.

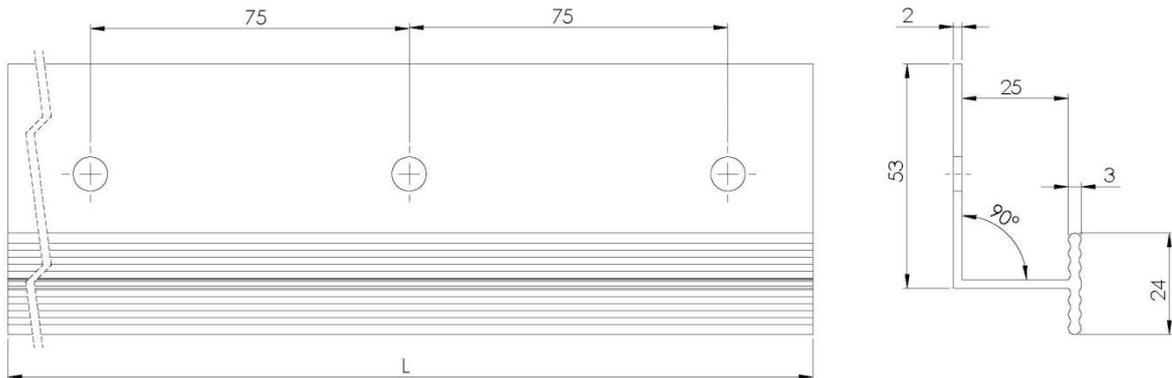
## Annex 6

### Profiles

Polyvinyl chloride (PVC) profiles, PVC-U, EGL, 082-05-T33 to EN ISO 1163-1 are to be used in the mechanically fixed ETICS with profiles.

The Pull-through resistance of fixings from profiles is  $\geq 500$  N.

#### Horizontal profile – "SAKRET Halteschiene" (dimensions in millimetres)



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

