

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-10/0206**  
**of 27 September 2018**

English translation prepared by DIBt - Original version in German language

### 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  
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DEUTSCHLAND

This European Technical Assessment  
contains

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

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

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

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

This version replaces

ETA-10/0206 issued on 8 December 2017

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## Specific Part

### 1 Technical description of the product

#### 1.1 Definition 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. 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) mineral wool (MW) to be bonded and if it necessary additional mechanically fixed onto a wall. The methods of fixing and the relevant components are specified in the table below.

The insulation product is faced with a rendering system consisting of one base coat and key coat (site applied), in which the base coat contains reinforcement. The rendering is applied directly to the insulating panels, without any air gap or disconnecting layer.

The ETICS may include special fittings (e.g. base profiles, corner profiles ...) for connection to adjacent building elements (apertures, corners, parapets ...). Assessment and performance of these components is not addressed in this ETA, however the ETICS manufacturer is responsible for adequate compatibility and performance within the ETICS when the components are delivered as a part of the kit.

#### 1.2 Composition of the ETICS

	Components National application documents shall be taken into account	Coverage [kg/m <sup>2</sup> ]	Thickness [mm]
Insulation material with associated method of fixing	<b>Bonded ETICS:</b>		
	• <b>Insulation product</b> (see annex 1 for product characteristics) factory-prefabricated mineral wool (MW) product - MW lamella	-	≤ 300
	• <b>Adhesives</b>		
	- <b>SAKRET Klebe- und Armierungsmörtel KAM</b> (cement based powder requiring addition of about 20 - 25 % of water)	6.0 – 10.0 (prepared)	-
	- <b>SAKRET Klebe- und Armierungsmörtel KAM-san</b> (cement based powder requiring addition of about 20 - 25 % of water)	6.0 – 10.0 (prepared)	-
	- <b>SAKRET Baukleber BK</b> (cement based powder requiring addition of about 20 - 25 % of water)	about 4.0 (prepared)	-
	- <b>SAKRET Klebe- und Armierungsmörtel leicht KAM-I</b> (cement based powder requiring addition of about 25 - 30 % of water)	4.5 – 7.0 (prepared)	-

	<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>	<p><b>Mechanically fixed ETICS with anchors and supplementary adhesive:</b></p> <ul style="list-style-type: none"> <li>• Insulation product (see annex 1 for product characteristics) factory-prefabricated mineral wool (MW) product <ul style="list-style-type: none"> <li>- MW panel</li> <li>- MW lamella</li> </ul> </li> <li>• <b>Supplementary adhesive</b> (equal to bonded ETICS)</li> <li>• <b>Anchors for insulation product</b> (see annex 2 for product characteristics) all anchors with ETA according to EAD330196-00-0604<sup>1</sup> with characteristics defined in annex 2</li> </ul>	<p>–</p> <p>–</p>	<p>60 to 340</p> <p>60 to 200</p>
<b>Base coat</b>	<p><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 adhesive(s) given above.</p>	<p>6.0 – 7.0</p> <p>6.0 – 7.0</p> <p>ca. 4.5</p> <p>(Nassauftrag)</p>	<p>3.5 – 6.0</p> <p>3.5 – 6.0</p> <p>3.5 – 6.0</p>
<b>Glass fibre mesh</b>	<p><b>SAKRET Armierungsgewebe</b> (see annex 4 for product characteristics) 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.</p>	<p>–</p>	<p>–</p>
<b>Key coat</b>	<p><b>SAKRET Putzgrund PG*</b> Ready to use pigmented acrylic-resin dispersion liquid To be used with all finishing coats indicated hereafter.</p>	<p>ca. 0.150 l/m<sup>2</sup></p>	<p>–</p>
<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 paste – acrylic-silicate binder: <p><b>SAKRET Silikatputz SK</b></p> <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> <li>• Thin layered cement based powders requiring addition of about 25 % of water: <p><b>SAKRET Modellierputz MP</b> (particle size 1 and 2 mm)</p> </li> </ul>	<p>2.5 – 4.5</p> <p>2.5 – 4.5</p> <p>3.0 – 6.0 (prepared)</p>	<p>} regulated by particle size</p>

<sup>1</sup> EAD330196-00-0604

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>Finishing coat</b>	<b>SAKRET Scheibenputz SBP</b> (particle size 2 – 3 and 5 mm) <b>SAKRET Edelleichtputz ELP</b> - Rillenputzstruktur (R) (particle size 2 and 3 mm) - Scheibenputz-Struktur (K) (particle size 2 and 3 mm)  <b>SAKRET Münchner Rauputz extra MRPe</b> (particle size 2 – 3 and 5 mm) <b>SAKRET Klebe- und Armierungsmörtel KAM**</b> <b>Application without key coat:</b> <ul style="list-style-type: none"> <li>Thick layered cement based powder requiring addition of about 25% of water:</li> </ul> <b>SAKRET Kratzputz KP</b> (particle size 3 mm)	2.7 – 5.5 (prepared)  2.3 – 3.3 1.8 – 2.5 (prepared) 2.7 – 6.0 (prepared) 2.5 – 3.0	regulated by particle size   1.5 – 2.5   15 mm  8 – 12 mm
	<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			

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

### 2.1 Intended use

This ETICS is intended to be used as external insulation to the walls of buildings made of masonry (bricks, blocks, stones ...) or concrete (cast on site or as prefabricated panels) with and without rendering. The characteristics of the walls shall be verified prior to use of the ETICS, especially regarding conditions for reaction to fire classification and for fixing of the ETICS either by bonding or mechanically. It shall be designed to give the wall to which it is applied satisfactory thermal insulation.

The ETICS is non load-bearing construction element. It does not contribute directly to the stability of the wall on which it is installed, but it can contribute to durability by providing enhanced protection from the effects of weathering.

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

The ETICS is not intended to ensure the air tightness of the building structure.

The choice of the method of fixing depends on the characteristics of the substrate, which could need preparation (see clause 7.2.1 of ETAG 004) and on the national instructions.

The verifications and assessment methods on which this European Technical Assessment (hereinafter called ETA) is based lead to the assumption of a working life of the ETICS "SAKRET WDV-System Mineralwolle" of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be regarded only as a means for choosing the right products in relation to the assumed economically reasonable working life of the works.

## 2.2 Manufacturing

The ETA is issued for the ETICS on the basis of agreed data/information, deposited with the DIBt, which identifies the ETICS that has been assessed and judged. Changes to the ETICS or the components or their production process, which could result in this deposited data/information being incorrect, should be notified to the DIBt before the changes are introduced. The DIBt will decide whether or not such changes affect the approval and consequently the validity of the CE marking on the basis of the approval and if so whether further assessment or alterations to the approval shall be necessary.

## 2.3 Design and installation

The installation instructions including special installation techniques and provisions for the qualification of the personnel are given in the manufacturer's technical documentation. Design, installation and execution of ETICS are to be in conformity with national documents. Such documents and the level of their implementation in Member States' legislation are different. Therefore, the assessment and declaration of performance are done taking into account general assumptions introduced in the chapters 7.1 and 7.2 of ETAG 004 used as EAD, which summarize how information introduced in the ETA and related documents is intended to be used in the construction process and gives advice to all parties interested when normative documents are missing.

## 2.4 Packing, transport and storage

The information on packaging, transport and storage is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer to ensure that this information is made know to the concerned people.

## 2.5 Use, maintenance, repair

The finishing coat shall normally be maintained in order to fully preserve the ETICS performance. Maintenance includes at least:

- visual inspection of the ETICS
- the repairing of localised damaged areas due to accidents
- the aspect maintenance with products adapted and compatible with the ETICS (possibly after washing or ad hoc preparation)

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

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

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

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

### 3 Characteristics of products and methods of verification

#### 3.0 General

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

#### 3.1 Mechanical resistance and stability (BWR 1)

not relevant

#### 3.2 Safety in case of fire (BWR 2)

##### Reaction to fire (ETAG 004 – clause 5.1.2)

Configurations	Organic content	Flame retardant content	Euroclass according to EN 13501-1:2007
Base coat	max. 2.8 %	no flame retardant	
Mineral wool insulation product	in quantity ensuring Euroclass E according to EN 13501-1	no flame retardant	
Anchors	-	-	
<b>rendering system :</b> Base coat with finishing coat and compatible key coat indicated in clause 1.2:			
Cement based powders: SAKRET Modellierputz MP SAKRET Scheibenputz SBP SAKRET Edelleichtputz ELP SAKRET Münchner Rauputz extra MRPe SAKRET Klebe- und Armierungsmörtel KAM SAKRET Kratzputz KP	max. 2.8 %	no flame retardent	A2 – s1,d0
Ready to use pastes: SAKRET Silikatputz SK	max. 5.0 %	no flame retardent	A2 – s2,d0

English translation prepared by DIBt

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

#### 3.3.1 Water absorption (capillarity test) (ETAG 004 – clause 5.1.3.1)

##### Base coat:

Base coat	Water absorption after 1 h < 1.0 kg/m <sup>2</sup>	Water absorption after 24 h < 0.5 kg/m <sup>2</sup>
SAKRET Klebe- und Armierungsmörtel KAM	x	x
SAKRET Klebe- und Armierungsmörtel KAM-san	x	x
SAKRET Klebe- und Armierungsmörtel leicht KAM I	x	x

##### Rendering system:

		Water absorption after 24 hours	
		< 0.5 kg/m <sup>2</sup>	≥ 0.5 kg/m <sup>2</sup>
<b>Rendering systems:</b> Base coat with finishing coat and compatible key coat indicated in clause 1.2:	SAKRET Silikatputz SK	x	
	SAKRET Modellierputz MP	x	
	SAKRET Scheibenputz SBP	x	
	SAKRET Edelleichtputz ELP	x	
	SAKRET Münchner Rauputz extra MRPe	x	
	SAKRET Klebe- und Armierungsmörtel KAM	x	
	SAKRET Kratzputz KP	x	

#### 3.3.2 Hydrothermal behaviour (ETAG 004 – clause 5.1.3.2)

Pass (without defects)

#### 3.3.3 Impact resistance (ETAG 004 – clause 5.1.3.3)

Rendering system: Base coat "SAKRET Klebe- und Armierungsmörtel KAM" or "SAKRET Klebe- und Armierungsmörtel KAM-san" with finishing coat and compatible key coat indicated in clause 1.2:	Single standard mesh: "SAKRET Armierungsgewebe"
SAKRET Silikatputz SK (2 mm)	category I
SAKRET Modellierputz MP (3 mm)	category II
SAKRET Scheibenputz SBP (3 mm)	category II
SAKRET Edelleichtputz ELP (3 mm)	category II
SAKRET Münchner Rauputz extra MRPe (3 mm)	category II
SAKRET Kratzputz KP (10 mm)	category II
SAKRET Klebe- und Armierungsmörtel KAM	no performance assessed



<b>Rendering system:</b> Base coat " <b>SAKRET Klebe- und Armierungsmörtel leicht KAM-I</b> " with finishing coat and compatible key coat indicated in clause 1.2:	Single standard mesh: "SAKRET Armierungsgewebe"
SAKRET Silikatputz SK (3 mm)	category III
SAKRET Modellierputz MP (3 mm)	category III
SAKRET Scheibenputz SBP (3 mm)	category III
SAKRET Edelleichtputz ELP (3 mm)	category III
SAKRET Münchner Rauputz extra MRPe (3 mm)	category III
SAKRET Kratzputz KP (10 mm)	category III

### 3.3.4 Water vapour permeability (ETAG 004 – clause 5.1.3.4)

<b>Rendering system:</b> Base coat with finishing coat and compatible key coat indicated in clause 1.2:	<b>Equivalent air thickness <math>s_d</math></b>
SAKRET Silikatputz SK	$\leq 1.0$ m (Test result obtained with layer thickness $t = 2$ mm: 0.2 m)
SAKRET Modellierputz MP	$\leq 1.0$ m (Test result obtained with layer thickness $t = 1$ mm: 0.1 m)
SAKRET Scheibenputz SBP	$\leq 1.0$ m (Test result obtained with layer thickness $t = 3$ mm: 0.2 m)
SAKRET Edelleichtputz ELP	$\leq 1.0$ m (Test result obtained with layer thickness $t = 3$ mm: 0.2 m)
SAKRET Münchner Rauputz extra MRPe	$\leq 1.0$ m (Test result obtained with layer thickness $t = 3$ mm: 0.3 m)
SAKRET Klebe- und Armierungsmörtel KAM	$\leq 1.0$ m (Test result obtained with layer thickness $t = 5$ mm: 0.1 m)
SAKRET Kratzputz KP	$\leq 1.0$ m (Test result obtained with layer thickness $t = 10$ mm: 0.3 m)

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

Essential characteristic	Performance
Release of dangerous substances	no performance assessed

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

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

Conditioning			
Initial state		After hygrothermal cycles	After freeze/thaw test
MW lamella	MW panel	< 0,08 MPa but failure in the insulation product	Test not required because freeze/thaw cycles not necessary
≥ 0,08 MPa	< 0,08 MPa but failure in the insulation product		

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

Adhesive	Substrate resp. insulation product	Conditioning		
		Initial state	2 d immersion in water and 2 h drying	2 d immersion in water and 7 d drying
SAKRET Klebe- und Armierungs- mörtel KAM	concrete	≥ 0,25 MPa	≥ 0,08 MPa	≥ 0,25 MPa
	MW lamella	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa
	MW panel	< 0,08 MPa but failure in the insulation product	< 0,03 MPa but failure in the insulation product	< 0,08 MPa but failure in the insulation product
SAKRET Klebe- und Armierungs- mörtel KAM-san	concrete	≥ 0,25 MPa	≥ 0,08 MPa	≥ 0,25 MPa
	MW lamella	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa
	MW panel	< 0,08 MPa but failure in the insulation product	< 0,03 MPa but failure in the insulation product	< 0,08 MPa but failure in the insulation product
SAKRET Baukleber BK	concrete	≥ 0,25 MPa	≥ 0,08 MPa	≥ 0,25 MPa
	MW lamella	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa
	MW panel	< 0,08 MPa but failure in the insulation product	< 0,03 MPa but failure in the insulation product	< 0,08 MPa but failure in the insulation product
SAKRET Klebe- und Armierungs- mörtel leicht KAM-I	concrete	≥ 0,25 MPa	≥ 0,08 MPa	≥ 0,25 MPa
	MW lamella	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa
	MW panel	< 0,08 MPa but failure in the insulation product	< 0,03 MPa but failure in the insulation product	< 0,08 MPa but failure in the insulation product

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Bonded surface:

For the adhesives "SAKRET Klebe- und Armierungsmörtel KAM", "SAKRET Klebe- und Armierungsmörtel KAM-san" and "SAKRET Baukleber BK" the formula given in clause 6.1.4.1.3 of ETAG 004 is fulfilled with a bonded surface of 50 % and the use as bonded ETICS is possible.

For the adhesive "SAKRET Klebe- und Armierungsmörtel leicht KAM-l" the formula given in clause 6.1.4.1.3 of ETAG 004 is fulfilled with a bonded surface of 60 % and the use as bonded ETICS is possible.

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

<b>Rendering system:</b> Base coat with finishing coat and compatible key coat indicated in clause 1.2	SAKRET Silikatputz SK	$\geq 0.08$ MPa
	SAKRET Modellierputz MP	
	SAKRET Scheibenputz SBP	
	SAKRET Edelleichtputz ELP	
	SAKRET Münchner Rauputz extra MRPe	
	SAKRET Klebe- und Armierungsmörtel KAM	
	SAKRET Kratzputz KP	

**3.4.4 Fixing strength (displacement test) (ETAG 004 – clause 5.1.4.2)**

Test not required therefore no limitation of ETICS length required.

**3.4.5 Wind load resistance (ETAG 004 – clause 5.1.4.3)**

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

**3.4.5.1 Safety in use of mechanically fixed ETICS using anchors**

Failure loads – Table 1

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

\* according to ETAG 004 clause 5.2.4.1.2 test method (2)

Failure loads – Table 2

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

Failure loads – Table 3

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

The failure loads of tables 2 and 3 specified above only apply to the following anchors with deep mounting under the given conditions of installation:

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

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

The average value of crack width of the base coat "SAKRET Klebe- und Armierungsmörtel KAM-san" reinforced with the glass fibre mesh "SAKRET Armierungsgewebe" measured at a render strain value of 0.5 % is about 0.08 mm.

The average value of crack width of the base coat coat "SAKRET Klebe- und Armierungsmörtel leicht KAM-l" reinforced with the glass fibre mesh "SAKRET Armierungsgewebe" measured at a render strain value of 1 % is about 0.11 mm.

### 3.5 Protection against noise (BWR 5)

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

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

#### 3.6.1 Thermal resistance

The nominal value of the additional thermal resistance  $R$  provided by the ETICS to the substrate wall is calculated in accordance with EN ISO 6946:2007 from the nominal value of the insulation product's thermal resistance  $R_D$  given accompanied to the CE marking and from the thermal resistance of the rendering system  $R_{render}$  which is about  $0.02 (m^2 \cdot K)/W$ .

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

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

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

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

where:  $n$  number of anchors per  $m^2$

$\chi_p$  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 technical approval

$\chi_p = 0.004 \text{ W/K}$  for anchors with a galvanized steel screw with the head covered by a plastic material

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

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

According to the European Commission decision 97/556/EC amended by the European Commission decision 2001/596/EC, the assessment and verification of constancy of performance system (AVCP) applies suitable following table (see Annex V to Regulation (EU) No 305/2011).

Product	Intended use	Levels or classes (Reaction to fire)	Systems
"SAKRET WDV-System Mineralwolle"	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+
	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 (EAD)**

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

Issued in Berlin on 27 September 2018 by Deutsches Institut für Bautechnik

Dirk Brandenburger  
Head of Department

*beglaubigt:*  
Hartstock

**European Technical Assessment**  
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**Annexes:**

Annex 1: Thermal insulation product characteristic

Annex 2: Anchors

Annex 3: Reinforcement

**Annex 1: Thermal insulation product characteristic**

Factory-prefabricated panels and lamella made of mineral wool (MW) to EN 13162:2008 with the following designation code and the other properties having the description in the Table below shall be used, provided that the manufacturer and the trade name of the MW are deposited with the DIBt.

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

Description and characteristics	MW panel	MW panel	MW lamella
Reaction to fire; EN 13501-1:2007	Class A1		
Gross heat of combustion [MJ/kg]; EN ISO 1716:2002	PCS ≤ 1.02		
Thermal resistance [(m <sup>2</sup> · K)/W]	Defined in the CE marking in reference to EN 13162:2008		
Tensile strength perpendicular to the faces [kPa]; EN 1607:1997 - in dry conditions*	$\sigma_{mt} \geq 14$	$\sigma_{mt} \geq 5$	$\sigma_{mt} \geq 80$
- in wet conditions** Average value - series 2 - series 3	≥ 33 % of average value in dry conditions ≥ 50 % of average value in dry conditions		
Compressive strength <sup>†</sup> [kPa]; EN 826:1996	$\sigma_m \geq 40$	$\sigma_m \geq 4$	$\sigma_m \geq 40$
Apparent density [kg/m <sup>3</sup> ]; EN 1602:1996	$120 \leq \rho_a \leq 150$	$100 \leq \rho_a \leq 150$	$80 \leq \rho_a \leq 150$
Shear strength <sup>†</sup> [kPa]; EN 12090:1997	$20 \leq f_{tk} \leq 100$	$6 \leq f_{tk} \leq 100$	$20 \leq f_{tk} \leq 100$
Shear modulus [MPa]; EN 12090:1997	$1.0 \leq G_m \leq 2.0$	$0.3 \leq G_m \leq 2.0$	$1.0 \leq G_m \leq 2.0$
* Minimal value of all single values			
** According to ETAG 004 clause 5.2.4.1.2 test method (2)			



## Annex 2: Anchors

All anchors with ETA according to EAD330196-00-0604<sup>1</sup> with characteristics having the description below shall be used in the mechanically fixed ETICS:

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

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

**Annex 3: Reinforcement (glass fibre mesh)**

Characteristics (alkali resistance): Pass

	Description	Residual strength after ageing [N/mm]	Relative residual strength after ageing, of the strength in the as-delivered state [%]
"SAKRET Armierungsgebebe"	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	≥ 20	≥ 50