

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-16/0713**  
**of 21 November 2016**

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

"DHTerm Wärmedämmverbundsystem MW"

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

DHT Dämmstoffhandel + Technik GmbH  
Hafenstraße 38  
31137 Hildesheim  
DEUTSCHLAND

Manufacturing plant

DHT Dämmstoffhandel + Technik GmbH  
Hafenstraße 38  
31137 Hildesheim  
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

Guideline for European technical approval of "External  
Thermal Insulation Composite Systems with Rendering",  
ETAG 004, edition 2000, amended 2013,  
used as European Assessment Document (EAD)  
according to Article 66 Paragraph 3 of Regulation (EU)  
No 305/2011.

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## SPECIFIC PART

### 1 Technical description of the product

#### 1.1 Definition and composition of the kit

This product is an ETICS (External Thermal Insulation Composite System) with rendering - a kit comprising components which are factory-produced by the manufacturer or component suppliers. 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 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 or more layers (site applied), one of which 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 ...) to treat details of ETICS (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.

#### Definition of the construction product

	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		≤ 200
	– MW lamella	–	
	• <b>Adhesives</b>		
	– <b>DHTherm Klebe- und Armierungsmörtel weiß</b> (cement based powder requiring addition of about 20 – 25 % of water)	4.0 to 5.0 (prepared)	–
– <b>DHTherm Klebe- und Armierungsmörtel grau</b> (cement based powder requiring addition of about 20 – 25 % of water)	4.0 to 5.0 (prepared)	–	
– <b>DHTherm Baukleber</b> (cement based powder requiring addition of about 20 – 25 % of water)	about 4.0 (prepared)	–	
– <b>DHTherm Klebe- und Armierungsmörtel leicht</b> (cement based powder requiring addition of about 25 – 30 % of water)	3.0 to 4.0 (prepared)	–	

	Components (National application documents shall be taken into account)	Coverage [kg/m <sup>2</sup> ]	Thickness [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>• <b>Insulation product</b> (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 ETAG 014<sup>1</sup> with characteristics defined in annex 2</li> </ul>	– –	60 to 340 60 to 200
<b>Base coat</b>	<p><b>DHTherm Klebe- und Armierungsmörtel weiß</b> <b>DHTherm Klebe- und Armierungsmörtel grau</b> <b>DHTherm Klebe- und Armierungsmörtel leicht</b> Identical with the equally named adhesives given above.</p>	6.0 to 7.0 6.0 to 7.0 about 4.5 (prepared)	3.5 to 6.0 3.5 to 6.0 3.5 to 6.0
<b>Glass fibre mesh</b>	<p><b>DHTherm 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. (see annex 3 for product characteristics)</p>	–	–
<b>Key coat</b>	<p><b>DHTherm Putzgrund</b> Ready to use pigmented acrylic-resin dispersion liquid For the compatibility with the finishing coats see below.</p>	ca. 0,15 l/m <sup>2</sup>	–
<b>Finishing coat</b>	<p><b>To use with key coat "DHTherm Putzgrund" if applicable:</b></p> <ul style="list-style-type: none"> <li>• Ready to use paste – acrylic-silicate binder: <ul style="list-style-type: none"> <li><b>DHTherm Silikatputz</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 powders requiring addition of about 25 % of water: <ul style="list-style-type: none"> <li><b>DHTherm Modellierputz</b> (particle size 1 and 2 mm)</li> <li><b>DHTherm Scheibenputz</b> (particle size 2 – 3 and 5 mm)</li> <li><b>DHTherm Edelleichtputz</b> <ul style="list-style-type: none"> <li>- Rillenputzstruktur (R) (particle size 2 and 3 mm)</li> <li>- Scheibenputz-Struktur (K) (particle size 2 and 3 mm)</li> </ul> </li> <li><b>DHTherm Münchner Rauputz</b> (particle size 2 – 3 and 5 mm)</li> <li><b>DHTherm Klebe- und Armierungsmörtel weiß**</b></li> </ul> </li> </ul>	2.5 to 4.5 2.5 to 4.5  3.0 to 6.0 (prepared) 2.7 to 5.5 (prepared)  2.3 to 3.3 1.8 to 2.5 2.7 to 6.0 (prepared) 2.5 to 3.0	regulated by particle size          1.5 to 2.5

<sup>1</sup> ETAG 014

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

	Components (National application documents shall be taken into account)	Coverage [kg/m <sup>2</sup> ]	Thickness [mm]
	<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>DHTherm Kratzputz</b> (particle size 3 mm)	about 22.5 (prepared before scraping) about 14.0 (finished)	15.0  8.0 to 12.0
<b>Ancillary material</b>	Remains the responsibility of the ETA-holder.		
* The instruction to the installer concerning the use of a key coat remains the responsibility of the ETA-holder.			
** The finishing coat "DHTherm Klebe- und Armierungsmörtel weiß" 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 (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 is based lead to the assumption of a working life of the ETICS "DHTherm Wärmedämmverbundsystem MW" 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 European Technical Assessment (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.

English translation prepared by DIBt

### 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- 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
Base coat	max. 2.8 %	no flame retardant	
Mineral wool	In quantity ensuring Euroclass E according to EN 13501-1	no flame retardant	
Anchors	-	-	

Configurations	Organic content	Flame retardant content	Euroclass according to EN 13501-1
<b>Rendering system</b> Base coat with finishing coat and compatible key coat in clause 1.1:			
DHTherm Silikatputz	max. 5.0 %	no flame retardant	A2 – s2,d0
DHTherm Modellierputz DHTherm Scheibenputz DHTherm Edelleichtputz DHTherm Münchner Rauputz DHTherm Klebe- und Armierungsmörtel weiß DHTherm Kratzputz	max. 2.8 %	no flame retardant	A2 – s1,d0

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

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

Base coat	Water absorption after 1 h < 1 kg/m <sup>2</sup>	Water absorption after 24 h < 0.5 kg/m <sup>2</sup>
DHTherm Klebe- und Armierungsmörtel weiß	x	x
DHTherm Klebe- und Armierungsmörtel grau	x	x
DHTherm Klebe- und Armierungsmörtel leicht	x	x

- **Rendering system:**

Rendering system: base coat Unterputz "DHTherm Klebe- und Armierungsmörtel weiß" or "DHTherm Klebe- und Armierungsmörtel grau" or "DHTherm Klebe- und Armierungsmörtel leicht" with finishing coat and compatible key coat indicated hereafter		Water absorption after 24 hours	
		< 0.5 kg/m <sup>2</sup>	< 0.5 kg/m <sup>2</sup>
	DHTherm Silikatputz	x	
	DHTherm Modellierputz	x	
	DHTherm Scheibenputz	x	
	DHTherm Edelleichtputz	x	
	DHTherm Münchner Rauputz	x	
	DHTherm Klebe- und Armierungsmörtel weiß	x	
	DHTherm Kratzputz	x	

#### 3.3.2 Hygrothermal behaviour (ETAG 004 - clause 5.1.3.2)

Pass (without defects)

### 3.3.3 Impact resistance (ETAG004 - clause 5.1.3.3)

The verified resistance to hard body impact and to perforation of the ETICS with different rendering configurations results in the classification into categories listed below

Rendering system: Base coat "DHTherm Klebe- und Armierungsmörtel weiß" or "DHTherm Klebe- und Armierungsmörtel grau" with finishing coat indicated hereafter:	Single standard mesh: "DHTherm Armierungsgewebe"
DHTherm Silikatputz (2 mm)	Category I
DHTherm Modellierputz (3 mm)	Category II
DHTherm Scheibenputz (3 mm)	Category II
DHTherm Edelleichtputz (3 mm)	Category II
DHTherm Münchner Rauputz (3 mm)	Category II
DHTherm Kratzputz (10 mm)	Category II

Rendering system: Base coat "DHTherm Klebe- und Armierungsmörtel leicht" with finishing coat indicated hereafter:	Single standard mesh: "DHTherm Armierungsgewebe"
DHTherm Silikatputz (3 mm)	Category III
DHTherm Modellierputz (3 mm)	Category III
DHTherm Scheibenputz (3 mm)	Category III
DHTherm Edelleichtputz (3 mm)	Category III
DHTherm Münchner Rauputz (3 mm)	Category III
DHTherm Kratzputz (10 mm)	Category III

The impact resistance of all other configurations of the ETICS is not determined (npd).

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

Rendering system: Base coat "DHTherm Klebe- und Armierungsmörtel weiß" or "DHTherm Klebe- und Armierungsmörtel grau" or "DHTherm Klebe- und Armierungsmörtel leicht" with finishing coat indicated hereafter	Equivalent air thickness $s_d$
DHTherm Silikatputz	$\leq 1.0$ m (Test result obtained with a layer thickness 2 mm: 0.2 m)
DHTherm Modellierputz	$\leq 1.0$ m (Test result obtained with a layer thickness 1 mm: 0.1 m)
DHTherm Scheibenputz	$\leq 1.0$ m (Test result obtained with a layer thickness 3 mm: 0.2 m)
DHTherm Edelleichtputz	$\leq 1.0$ m (Test result obtained with a layer thickness 3 mm: 0.2 m)
DHTherm Münchner Rauputz	$\leq 1.0$ m (Test result obtained with a layer thickness 3 mm: 0.3 m)



<b>Rendering system:</b> Base coat "DHTherm Klebe- und Armierungsmörtel weiß" or "DHTherm Klebe- und Armierungsmörtel grau" or "DHTherm Klebe- und Armierungsmörtel leicht" with finishing coat indicated hereafter	<b>Equivalent air thickness <math>s_d</math></b>
DHTherm Klebe- und Armierungsmörtel weiß	$\leq 1.0$ m (Test result obtained with a layer thickness 5 mm: 0.1 m)
DHTherm Kratzputz	$\leq 1.0$ m (Test result obtained with a particle size 3 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

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

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

Base coat	Conditioning			
	MW lamella	MW panel	After hygrothermal cycles	After freeze/thaw test
DHTherm Klebe- und Armierungsmörtel weiß	$\geq 0.08$ MPa	< 0.08 MPa but failure in the insulation product	< 0.08 MPa but failure in the insulation product	Test not required because freeze/thaw cycles not necessary
DHTherm Klebe- und Armierungsmörtel grau	$\geq 0.08$ MPa			
DHTherm Klebe- und Armierungsmörtel leicht	$\geq 0.08$ MPa			

**3.4.2 Bond strength between base coat and substrate resp. insulation product (ETAG 004 - clause 5.1.4.1.2 and 5.1.4.1.3)**

		Conditioning		
		Initial state	2 d immersion in water and 2 h drying	2 d immersion in water and 7 d drying
DHTherm Klebe- und Armierungsmörtel weiß	Concrete	$\geq 0.25$ MPa	$\geq 0.08$ MPa	$\geq 0.25$ MPa
	MW lamella	$\geq 0.08$ MPa	$\geq 0.03$ MPa	$\geq 0.08$ 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
DHTherm Klebe- und Armierungsmörtel grau	Concrete	$\geq 0.25$ MPa	$\geq 0.08$ MPa	$\geq 0.25$ MPa
	MW lamella	$\geq 0.08$ MPa	$\geq 0.03$ MPa	$\geq 0.08$ 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

		Conditioning		
		Initial state	2 d immersion in water and 2 h drying	2 d immersion in water and 7 d drying
DHTherm Baukleber	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
DHTherm Klebe- und Armierungsmörtel leicht	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

**Bonded surface:**

For the adhesives "DHTherm Klebe- und Armierungsmörtel weiß", "DHTherm Klebe- und Armierungsmörtel grau" and "DHTherm Baukleber" 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 "DHTherm Klebe- und Armierungsmörtel leicht" 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:**

<b>Rendering system:</b> Base coat "DHTherm Klebe- und Armierungsmörtel weiß" or "DHTherm Klebe- und Armierungsmörtel grau" or "DHTherm Klebe- und Armierungsmörtel leicht" with finishing coat indicated hereafter	DHTherm Silikatputz	≥ 0.08 MPa
	DHTherm Modellierputz	
	DHTherm Scheibenputz	
	DHTherm Edelleichtputz	
	DHTherm Münchner Rauputz	
	DHTherm Klebe- und Armierungsmörtel weiß	
	DHTherm Kratzputz	

**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)**

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

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

Failure loads – Table 1

Apply to all anchors listed in the clause 1.1 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 loads [N]	Anchors not placed at the panel joints (Static Foam Block Test)	R <sub>panel</sub>	Minimal: 650 Average: 740
	Anchors placed at the panel joints (Static Foam Block Test)	R <sub>joint</sub>	Minimal: 590 Average: 610
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	R <sub>panel</sub>	Minimal: 640 Average: 690
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2* - series 3*	R <sub>panel</sub>	Minimal: 360 Average: 390 Minimal: 410 Average: 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 1.1 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			≥ Ø 90 mm	≥ Ø 140 mm
Failure loads [N]	Anchors not placed at the panel joints (Static Foam Block Test)	R <sub>panel</sub>	Minimal: 480 Average: 490	Minimal: 560 Average: 690
	Anchors placed at the panel joints (Static Foam Block Test)	R <sub>joint</sub>	Minimal: 380 Average: 390	Minimal: 440 Average: 540
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	R <sub>panel</sub>	Minimal: 540 Average: 610	npd
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2*	R <sub>panel</sub>	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 1.1 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 loads [N]	Anchors placed at the panel joints (Pull-through test, dry condition)	R <sub>joint</sub>	Minimal: 620 Average: 660
	Anchors placed at the panel joints (Pull-through test, wet condition)	R <sub>joint</sub>	Minimal: 510 Average: 570
	Anchors placed at the panel joints (Static Foam Block Test)	R <sub>joint</sub>	Minimal: 710

The failure loads of Table 1 specified above only apply to the following anchors with deep mounting under the given conditions of installation

Anchor	Thickness of the EPS [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 (≙ thickness of insulation cover) – Maximum depth of die: 5 mm
	≥ 100 mm	– Maximum installation depth of the anchor plate: 15 mm (≙ 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 (≙ thickness of insulation cover)

\* According to the appropriate ETA of anchor

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

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

No performance determined for the width of cracks for base coat "DHTherm Klebe- und Armierungsmörtel weiß".

### 3.5 Protection against noise (BWR 5)

NPD (no performance determined)

### 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<sub>D</sub> given accompanied to the CE marking and from the thermal resistance of the rendering system R<sub>render</sub> which is about 0.02 (m<sup>2</sup> · K)/W.

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

English translation prepared by DIBt

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

$U_c = U + \Delta U_{\text{anchor}}$	corrected thermal transmittance
U	thermal transmittance
$\Delta U_{\text{anchor}} = \chi_p \cdot n$	correction term for anchors
where: n	number of anchors per m <sup>2</sup>
$\chi_p$	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

### 3.7 Sustainable use of natural resources (BWR 7)

For the sustainable use of natural resources no performance was investigated for this product.

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

According to the European Commission decision 97/556/EC amended by the European Commission decision 2001/596/EC, the 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
"DHTherm Wärmedämmverbundsystem MW"	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+

- (1) Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material)
- (2) Products/materials not covered by footnote (1)
- (3) Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Classes A1 according to Commission Decision 96/603/EC)

**5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD**

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 21 November 2016 by Deutsches Institut für Bautechnik

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**Annexes:**

Annex 1: Thermal insulation product characteristic

Annex 2: Anchors

Annex 3: Reinforcement (glass fibre mesh)

**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	$\geq 33$ % of average value in dry conditions $\geq 50$ % of average value in dry conditions		
Compressive strength* [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* [kPa]; EN 12090:1997	$20 \leq f_{rk} \leq 100$	$6 \leq f_{rk} \leq 100$	$20 \leq f_{rk} \leq 100$
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 ETAG 014<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	Strength after ageing	
		Residual strength after ageing (N/mm)	Relative residual strength after ageing, of the strength in the as-delivered state (%)
"DHTherm Armierungsgewebe"	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