



## European Technical Approval ETA-06/0152

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung <i>Trade name</i>	"RELIUS WDV-System V 710-V 810"
Zulassungsinhaber <i>Holder of approval</i>	RELIUS COATINGS GmbH & Co. KG Donnerschweer Straße 372 26123 Oldenburg DEUTSCHLAND
Zulassungsgegenstand und Verwendungszweck  <i>Generic type and use of construction product</i>	Außenseitiges Wärmedämm-Verbundsystem mit Putzschicht zur Wärmedämmung von Gebäuden  <i>External Thermal Insulation Composite System with rendering for the use as external insulation of building walls</i>
Geltungsdauer: <i>Validity:</i>	30 May 2006
	12 January 2011
verlängert <i>extended</i>	13 January 2011
	12 January 2016
Herstellwerk <i>Manufacturing plant</i>	RELIUS COATINGS GmbH & Co. KG Heimertinger Straße 10 87700 Memmingen DEUTSCHLAND

Diese Zulassung umfasst  
*This Approval contains*

16 Seiten  
*16 pages*

## I LEGAL BASES AND GENERAL CONDITIONS

- 1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:
  - Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products<sup>1</sup>, modified by Council Directive 93/68/EEC<sup>2</sup> and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council<sup>3</sup>;
  - Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998<sup>4</sup>, as amended by law of 31 October 2006<sup>5</sup>;
  - Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC<sup>6</sup>;
  - Guideline for European technical approval of "External Thermal Insulation Composite Systems with Rendering", ETAG 004.
- 2 Deutsches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.
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- 6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

<sup>1</sup> Official Journal of the European Communities L 40, 11 February 1989, p. 12  
<sup>2</sup> Official Journal of the European Communities L 220, 30 August 1993, p. 1  
<sup>3</sup> Official Journal of the European Union L 284, 31 October 2003, p. 25  
<sup>4</sup> Bundesgesetzblatt Teil I 1998, p. 812  
<sup>5</sup> Bundesgesetzblatt Teil I 2006, p. 2407, 2416  
<sup>6</sup> Official Journal of the European Communities L 17, 20 January 1994, p. 34

## II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

### 1 Definition of products and intended use

The External Thermal Insulation Composite System "RELIUS System V 710 - V 810" called ETICS in the following text, is designed and installed in accordance with the ETA-holder's design and installation instructions, deposited with the Deutsches Institut für Bautechnik (DIBt). The ETICS comprises the following components, which are factory-produced by the ETA-holder or a supplier. It's made up on site from these. The ETA-holder is ultimately responsible for the ETICS.

#### 1.1 Definition of the construction product

	<b>Components</b> (see clause 2.3 for further description, characteristics and performances)	<b>Coverage</b> [kg/m²]	<b>Thickness</b> [mm]
<b>Insulation material with associated method of fixing</b>	<b>Bonded ETICS:</b> <ul style="list-style-type: none"> <li>Insulation product factory-prefabricated mineral wool (MW) product to EN 13162:2008 <ul style="list-style-type: none"> <li>MW lamella</li> </ul> </li> <li><b>Adhesives</b> (coated lamella: minimum bonded surface 50%; uncoated lamella: minimum bonded surface 100%) <ul style="list-style-type: none"> <li><b>RELIUS WDVS Kleber PHS</b> (cement based powder requiring addition of about 25% of water)</li> <li><b>RELIUS K.A.m</b> (cement based powder requiring addition of about 25 % of water)</li> </ul> </li> </ul>	<div> <div>–</div> <div>ca. 4,0 (powder)</div> </div>	<div> <div>≤ 200</div> <div>–</div> </div>
	<b>Mechanically fixed ETICS with anchors and supplementary adhesive:</b> <ul style="list-style-type: none"> <li>Insulation product factory-prefabricated mineral wool (MW) product to EN 13162:2008 <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, minimum bonded surface 40 %)</li> <li><b>Anchors for insulation product</b> <ul style="list-style-type: none"> <li>ejotharm ST U</li> <li>ejotharm NTK U</li> <li>TERMOZ 8 SV</li> <li>KOELNER KI8M</li> <li>KEW TSD 8</li> </ul> </li> </ul> and anchors with ETA according to ETAG 014 <sup>7</sup> with characteristics defined in clause 2.3.2	<div> <div>–</div> <div>ca. 4,0 (powder)</div> </div>	<div> <div>60 to 200</div> </div>

<sup>7</sup>

ETAG 014

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

	<b>Components</b> (see clause 2.3 for further description, characteristics and performances)	<b>Coverage</b> [kg/m <sup>2</sup> ]	<b>Thickness</b> [mm]
<b>Base coat</b>	<b>RELIUS K.A.m</b> Identical with the equally named adhesive given above.	3,5 – 12,0 (powder)	On average: 3,0 – 10(dry)
<b>Glass fibre mesh</b>	<b>Standard mesh: RELIUS Gittergewebe</b> Alkali- and slide-resistant glass fibre mesh with mass per unit area of about ca. 165 g/m <sup>2</sup> and mesh size of about ca. 4,0 mm x 4,0 mm.	–	–
<b>Key coat</b>	<b>RELIUS Universal Putzgrund</b> Ready to use pigmented acrylic-resin dispersion liquids. used with all finishing coats with the exception of "RELIUS Mineralputz"**	0,2 - 0,3 l/m <sup>2</sup>	–
<b>Finishing coat</b>	<b>To use with key coat "RELIUS Universal Putzgrund" if applicable: **</b> <ul style="list-style-type: none"> <li>• Ready to use pastes – potassium <b>RELIUS Silatputz</b> (particle size 1,5 – 2,5 – 3 – 4 – 6 – 8 und 12 mm)</li> <li>• Ready to use pastes – silicate/acrylic-resin <b>RELIUS Silcosanputz</b> Struktur Edelputz K* (Korngröße 1,5 und 2 mm) Struktur Rillenputz R* (Korngröße 1,5 und 2 mm)</li> <li>• Thin layered cement based powder requiring addition of about 27 % of water:</li> <li>• <b>RELIUS Mineral Strukturputz</b> Struktur Edelputz KM*(Korngröße 2 - 3 und 4 mm) Struktur Rillenputz RM* (Korngröße 3 und 4 mm) Cement based powder requiring addition of about 27 % of water</li> <li>• <b>RELIUS Mineralputz</b> Struktur Edelputz KM* (Korngröße 2 - 3 und 4 mm) Struktur Rillenputz RM* (Korngröße 2 - 3 und 4 mm) Struktur Wascheputz (Korngröße 0,5 und 1,5 mm)</li> </ul>	<p>2,8 to 5,0</p> <p>2,0 to 3,0</p> <p>3,5 bis 4,5 (Pulver)</p> <p>3,0 bis 4,5 3,0 bis 4,5 4,0 bis 11 (Pulver)</p>	<p>Regulated by particle size</p> <p>Regulated by particle size</p> <p>Regulated by particle size</p> <p>Regulated by particle size 3,0 – 8,0</p>
<b>Ancillary material</b>	Description in accordance with clause 3.2.2.5 of ETAG 004 and decorative coatings compatible with the ETICS to be applied to the finishing coat. Remains the responsibility of the ETA-holder.		
* K / KM / R / RM indicates different structures of the finishing coats.			
** The instruction to the installer concerning the use of a key coat remains the responsibility of the ETA-holder.			

## 1.2 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 (Class A1 according to EN 13501-1:2007). It shall be designed to give the wall to which it is applied satisfactory thermal insulation.

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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 provisions made in this European technical approval (ETA) based upon the assumed intended working life of the ETICS of at least 25 years, provided that the conditions laid down in clauses 4.2, 5.1 and 5.2 for the packaging, transport, storage, installation as well as appropriate use, maintenance and repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer or the Approval Body, but should only be regarded as a means to choosing the appropriate products in relation to the expected, economically reasonable working life of the works.

## 2 Characteristics of products and methods of verification

### 2.1 General

The assessment of the fitness for use of the ETICS for the intended use according to the Essential Requirements was carried out in compliance with ETAG 004, "Guideline for European Technical Approval of External Thermal Insulation Composite Systems with rendering", edition March 2000 (called ETAG 004 in this ETA).

Characteristics (of the components as well as of the ETICS), not mentioned in this ETA nor in the annexe/s shall correspond to the respective values laid down in the technical documentation of this ETA.

### 2.2 Characteristics of the ETICS

#### 2.2.1 Reaction to fire

Class according to EN 13501-1:2007: F without testing (no performance determined).

#### 2.2.2 Water absorption (capillarity test)

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>
RELIUS K.A.m	x	

Rendering system: Base coat with finishing coat and compatible key coat indicated hereafter	Water absorption after 24 h	
	< 0.5 kg/m <sup>2</sup>	≥ 0.5 kg/m <sup>2</sup>
RELIUS Universal Putzgrund + RELIUS Silatputz	x	
RELIUS Mineralputz		x
RELIUS Universal Putzgrund + RELIUS Mineral Strukturputz	x	
RELIUS Universal Putzgrund + RELIUS Silcosanputz	x	

### 2.2.3 Hygrothermal behaviour

Hygrothermal cycles have been performed on a rig with the base coat "RELIUS K.A.m". None of the following defects occur during the testing:

- blistering or peeling of any finishing
- failure or cracking associated with joints between insulation product boards or profiles fitted with the system
- detachment of render
- cracking allowing water penetration to the insulation layer

The ETICS with the base coat "RELIUS K.A.m" is so assessed resistant to hygrothermal cycles.

### 2.2.4 Freeze/thaw behaviour

The water absorption of the base coat as well as the rendering system with thick layered cement based finishing coat "RELIUS Silatputz", "RELIUS Mineral Strukturputz" and "RELIUS Silcosanputz" is less than 0.5 kg/m<sup>2</sup> after 24 hours for all configurations of the ETICS. The ETICS is so assessed as freeze/thaw resistant.

The ETICS with finishing coat "RELIUS Mineralputz" has been assessed as freeze/thaw resistant according to the simulated method.

### 2.2.5 Impact resistance ((testing without decorative coat if optional application))

The verified resistance to hard body impacts (3 Joules and 10 Joules) and to perforation of the ETICS with different mesh configurations results in the classification into categories listed below. The resistance to perforation has not to be verified, because of a total render thickness of not less than 6 mm.

Rendering system: Base coat with finishing coat and compatible key coat indicated hereafter	Single standard mesh "RELIUS Gittergewebe"
RELIUS Universal Putzgrund + RELIUS Silatputz	Category I
RELIUS Universal Putzgrund + RELIUS Silcosanputz	Category I
RELIUS Universal Putzgrund + RELIUS Mineral Strukturputz	Category II
RELIUS Mineralputz	Category II

### 2.2.6 Water vapour permeability

Rendering system: Base coat with finishing coat and compatible key coat indicated hereafter	Equivalent air thickness $s_d$
RELIUS Universal Putzgrund + RELIUS Silatputz	$\leq 1.0$ m (0.2 m; corresponds to the structure KC, particle size 3 mm)
RELIUS Universal Putzgrund + RELIUS Silcosanputz	$\leq 1.0$ m (0.3 m; corresponds to the structure KC, particle size 3 mm)
RELIUS Universal Putzgrund + RELIUS Mineral Strukturputz	$\leq 1.0$ m (0.2 m; corresponds to the structure KC, particle size 4 mm)
RELIUS Mineralputz	$\leq 1.0$ m (0.1 m; corresponds to the structure KC, thickness 4 mm)

## 2.2.7 Emission of dangerous substances or radiation

The ETICS complies with the provisions of Guidance Paper H ("A harmonized approach related to dangerous substances under the construction product directives Revision August 2002").

In addition to the specific clauses relating to dangerous substances contained in this ETA, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

## 2.2.8 Safety in use

### 2.2.8.1 Bond strengths

Bond strength between base coat and insulation product (MW panel)

Conditioning		
Initial state	After hygrothermal cycles	After freeze/thaw test
< 0.08 MPa but failure in the MW panel	< 0.08 MPa but failure in the MW panel	Test not required because freeze/thaw cycles not necessary

Bond strength between base coat and insulation product (MW lamella)

Conditioning		
Initial state	After hygrothermal cycles	After freeze/thaw test
≥ 0.08 MPa	< 0.08 MPa but failure in the MW lamella	Test not required because freeze/thaw cycles not necessary

Bond strength between adhesive and substrate resp. insulation products (MW panel / lamella)

Adhesive	Substrate resp. insulation product	Conditioning		
		Initial state	2 d immersion in water + 2 h drying	2 d immersion in water + 7 d drying
RELIUS WDVS Kleber PHS	Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa
	MW lamella	≤ 0.08 MPa but failure in the MW lamella	≥ 0.03 MPa	≤ 0.08 MPa but failure in the MW lamella
	MW panel	≤ 0.08 MPa but failure in the MW panel	≤ 0.03 MPa but failure in the MW panel	≤ 0.08 MPa but failure in the MW panel



Adhesive	Substrate resp. insulation product	Conditioning		
		Initial state	2 d immersion in water + 2 h drying	2 d immersion in water + 7 d drying
RELIUS K.A.m	Concrete	$\geq 0.25 \text{ MPa}$	$\geq 0.08 \text{ MPa}^8$	$\geq 0.25 \text{ MPa}^8$
	MW lamella	$\geq 0.08 \text{ MPa}$	$\geq 0.03 \text{ MPa}^8$	$\geq 0.08 \text{ MPa}^8$
	MW panel	$\leq 0.08 \text{ MPa}$ but failure in the MW panel	$\leq 0.03 \text{ MPa}^8$ but failure in the MW panel	$\leq 0.08 \text{ MPa}^8$ but failure in the MW panel

Bonded surface:

With a bonded surface of 50 % the formula given in clause 6.1.4.1.3 of ETAG 004 is fulfilled and the use "RELIUS WDV-System V 810" as bonded ETICS is possible.

2.2.8.2 Fixing strength (displacement test)

Test not required because the ETICS fulfils the following criteria to clause 5.1.4.2 of ETAG 004:

- the bonded area exceeds 20 %
- $E \cdot d < 50\,000 \text{ N/mm}$   
(E: modulus of elasticity of the base coat – d: mean dried thickness of the base coat)

2.2.8.3 Wind load resistance

Safety in use of mechanically fixed ETICS using anchors

The following failure loads only apply to the listed combination (MW characteristics) / (anchor plate's characteristics) and the characteristics of the insulation product given in clause 2.3.1.

Failure loads – Table 1

Apply to all anchors listed in the Table in 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	



Failure loads – Table 2

Apply to anchor ejotherm STR U with deep mounting			
Characteristics of the MW panels	Thickness		≥ 80 mm
	Depth of die**		≤ 5 mm
	<b>Tensile strength perpendicular to the faces</b>		<b>≥ 14.0 kPa</b>
Plate diameter of anchor			≥ Ø 60 mm
Failure loads [N]	Anchors not placed at the panel joints (Static Foam Block Test)	$R_{\text{panel}}$	Minimal: 430 Average: 480
	Anchors placed at the panel joints (Pull-through test, dry conditions)	$R_{\text{joint}}$	Minimal: 410 Average: 430
	Anchors not placed at the panel joints (Pull-through test, wet conditions)	$R_{\text{joint}}$	Minimal: 230 Average: 240
	- series 2 *		Minimal: 260 Average: 280
	- series 3 *		
* According to ETAG 004 clause 5.2.4.1.2 test method (2)			
** For the definition of "die" see Annex 2 of ETA-04/0023, validity from 04.05.2009			

Failure loads – Table 3

Apply to all anchors listed in the Table in 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)	R <sub>panel</sub>	Minimal: 400 Average: 460	npd
	- series 2 *			
* According to ETAG 004 clause 5.2.4.1.2 test method (2)				

Failure loads – Table 4

Apply to all anchors listed in the Table 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 conditions)	R <sub>joint</sub>	Minimal: 620 Average: 660
	Anchors placed at the panel joints (Pull-through test, wet conditions)	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 2 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 (ETA-04/0023)	100 mm > d ≥ 80 mm	<ul style="list-style-type: none"> <li>– Maximum installation depth of the anchor plate: 15 mm ( thickness of insulation cover)</li> <li>– Maximum depth of die: 5 mm</li> </ul>
	≥ 100 mm	<ul style="list-style-type: none"> <li>– Maximum installation depth of the anchor plate: 15 mm ( thickness of insulation cover)</li> <li>– Maximum depth of die: 20 mm</li> </ul>
TERMOZ 8 SV (ETA-06/0180)	≥ 80 mm	<ul style="list-style-type: none"> <li>– Maximum installation depth of the anchor plate: 15 mm ( thickness of insulation cover)</li> </ul>
* According to the appropriate ETA of anchor		

The wind load resistance  $R_d$  of the ETICS is calculated as follows:

$$R_d = \frac{R_{\text{panel}} \cdot n_{\text{panel}} + R_{\text{joint}} \cdot n_{\text{joint}}}{\gamma}$$

$n_{\text{panel}}$ : number (per m<sup>2</sup>) of anchors not placed at the panel joints

$n_{\text{joint}}$ : number (per m<sup>2</sup>) of anchors placed at the panel joint

$\gamma$ : national safety factor

## 2.2.9 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  $R_{\text{render}}$  which is about 0.02 (m<sup>2</sup>·K)/W.

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

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.

$$U_c = U + \Delta U$$

corrected thermal transmittance

$$\Delta U = \Delta U_{\text{anchor}} + \Delta U_{\text{profile}}$$

correction term for mechanical fixing devices (anchors, profiles)

$$\Delta U_{\text{anchor}} = \chi_p \cdot n$$

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

## 2.2.10 Aspects of durability and serviceability

Bond strength after ageing:

<b>Rendering system:</b>  Base coat with finishing coat and compatible key coat indicated hereafter	RELIUS Universal Putzgrund + RELIUS Silatputz	$< 0.08 \text{ MPa}$ but failure in the insulation product
	RELIUS Universal Putzgrund + RELIUS Silcosanputz	
	RELIUS Universal Putzgrund + RELIUS Mineral Strukturputz	
	RELIUS Mineralputz	

## 2.3 Characteristics of the components

Detailed information on the chemical composition and other identifying characteristics of the components, following Annex C of ETAG 004 have been deposited with the DIBt.

Further information can be observed from the product data sheets, which are part of the technical documentation for this ETA.

### 2.3.1 Thermal insulation product

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		
Thermal resistance $[(\text{m}^2 \cdot \text{K})/\text{W}]$	Defined in the CE marking in reference to EN 13162:2008		
Tensile strength perpendicular to the faces [kPa]; EN 1607:1997 - in dry conditions * - in wet conditions ** Average value - series 2 - series 3	$\sigma_{\text{mt}} \geq 14$	$\sigma_{\text{mt}} \geq 5$	$\sigma_{\text{mt}} \geq 80$
Compressive strength * [kPa]; EN 826:1996	$\sigma_{\text{m}} \geq 40$	$\sigma_{\text{m}} \geq 4$	$\sigma_{\text{m}} \geq 40$
Apparent density $[\text{kg}/\text{m}^3]$ ; EN 1602:1996	$120 \leq \rho_{\text{a}} \leq 150$	$100 \leq \rho_{\text{a}} \leq 150$	$80 \leq \rho_{\text{a}} \leq 150$
Shear strength * [kPa]; EN 12090:1997	$20 \leq f_{\text{tk}} \leq 100$	$6 \leq f_{\text{tk}} \leq 100$	$20 \leq f_{\text{tk}} \leq 100$
Shear modulus [MPa]; EN 12090:1997	$1.0 \leq G_{\text{m}} \leq 2.0$	$0.3 \leq G_{\text{m}} \leq 2.0$	$1.0 \leq G_{\text{m}} \leq 2.0$
* Minimal value of all single values			
** According to ETAG 004 clause 5.2.4.1.2 test method (2)			

### 2.3.2 Anchors

The anchors listed in the Table in clause 1.1 with reference to the respective ETA are to be used in the mechanically fixed ETICS. The characteristic tension resistance of the anchor shall be taken from the corresponding ETA.

Trade name	ETA-number
ejotharm ST U	ETA-02/0018
ejotharm NTK U	ETA-04/0026
KEW TSD 8	ETA-04/0030
TERMOZ 8 SV	ETA-06/0180
KOELNER KI8M	ETA-06/0191

Additionally all anchors with ETA according to ETAG 014<sup>7</sup> with characteristics having the description below shall be used:

- 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

### 2.3.3 Render (base coat)

The average value of crack width of the base coat reinforced with the glass fibre mesh "RELIUS Gittergewebe" measured at a render strain value of 1 % is  $w_m(1,0\%) = 0,15$  mm.

### 2.3.4 Reinforcement (glass fibre mesh)

**Characteristics (alkali resistance): Pass**

	"RELIUS WDV-System V 810"	
	Warp	Weft
Residual strength after ageing [N/mm]	$\geq 25$	$\geq 20$
Relative residual resistance after ageing in % of the strength in the as-delivered state	$\geq 50$	$\geq 55$

## 3 Evaluation and attestation of conformity and CE-marking

### 3.1 System of attestation of conformity

According to the decision 97/556/EC of the European Commission<sup>9</sup> amended by 2001/596/EC<sup>10</sup> system 1 or 2+ of the attestation of conformity applies depending on reaction to fire.

Considering Class F for reaction to fire of the ETICS, the system of attestation of conformity is system 2+.

System 2+: Declaration of conformity of the product by the manufacturer on the basis of:

- (a) Tasks for the manufacturer:
- (1) initial type-testing of the product;
  - (2) factory production control;
  - (3) testing of samples taken at the factory in accordance with a prescribed test plan.

<sup>9</sup>

Official Journal of the European Communities/Union L229/14 of 20.08.1997

<sup>10</sup>

Official Journal of the European Communities/Union L 209/33 of 02.08.2001

- (b) Tasks for the notified body:
  - (4) certification of factory production control on the basis of:
    - initial inspection of factory and of factory production control;
    - continuous surveillance, assessment and approval of factory production control.

## 3.2 Responsibilities

### 3.2.1 Tasks for the manufacturer

#### 3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the ETICS and the components are in conformity with this ETA.

The manufacturer shall only use raw materials stated in the technical documentation of this ETA. The incoming raw materials are subjected to verifications by the manufacturer before acceptance.

The factory production control shall be in accordance with the "Control plan"<sup>11</sup> which is part of the technical documentation of this ETA. The "Control plan"<sup>11</sup> has been agreed between the manufacturer and the DIBt and is laid down in the context of the factory production control system operated by the manufacturer and deposited with the DIBt.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the "Control plan"<sup>11</sup>. The records include at least the following information:

- designation of the product, the basic materials and components;
- type of control or testing;
- date of manufacture of the product and date of testing of the product or basic materials or components;
- result of control and testing and, if appropriate, comparison with requirements;
- signature of person responsible for factory production control.

The records shall be presented to the notified body involved in continuous surveillance. On request they shall be presented to the DIBt.

#### 3.2.1.2 Other tasks for the manufacturer

For initial type-testing of the ETICS and the components the results of the tests performed as part of the assessment for the ETA shall be used unless there are changes in the production line or plant. In such cases the necessary initial type-testing has to be agreed with the DIBt.

The manufacturer shall, on the basis of a contract, involve a body which is notified for the tasks referred to in clause 3.1 in the field of ETICS in order to undertake the actions laid down in clause 3.2.2. For this purpose, the "Control plan"<sup>11</sup> referred to in clauses 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the notified bodies involved.

The manufacturer shall make a declaration of conformity, stating that the ETICS is in conformity with the provisions of ETA-05/216 issued on 12 January 2006.

<sup>11</sup>

The "Control plan" is a confidential part of the European technical approval and only handed over to the notified body involved in the procedure of attestation of conformity. See section 3.2.2.

### **3.2.2 Tasks for the notified bodies**

The notified body shall perform the

- initial inspection of factory and of factory production control,
  - continuous surveillance, assessment and approval of factory production control,
- in accordance with the provisions laid down in the "Control plan"<sup>11</sup>.

The notified body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The notified certification body involved by the manufacturer shall issue an EC certificate of conformity of the factory production control stating the conformity with the provisions of this ETA.

In cases where the provisions of the ETA and its "Control plan"<sup>11</sup> are no longer fulfilled the notified certification body shall withdraw the certificate of conformity and inform the DIBt without delay.

## **3.3 Marking**

### **3.3.1 CE marking**

The CE marking shall be affixed on the accompanying commercial document. The letters "CE" shall be followed by the identification number of the notified certification body and be accompanied by the following additional information:

- the name and address of the ETA-holder (legal entity responsible for the manufacture),
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate for the factory production control,
- the number of the ETA,
- the number of the ETAG,
- the ETICS trade name.

### **3.3.2 Additional marking**

The respective trade name of the individual components of the ETICS shall be given on the packaging.

In addition to the trade name the following information shall be given in the accompanying commercial document and/or on the packaging of the thermal insulation product:

- minimum value of the tensile strength perpendicular to the faces of the insulation product,
- shear modulus of the insulation product.

## **4 Assumptions under which the fitness of the product for the intended use was favourably assessed**

### **4.1 Manufacturing**

The composition and manufacturing process used for the components of the ETICS shall comply with those on which the approval tests were based. Composition and manufacturing process are deposited at the DIBt.

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. 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.

## **4.2 Installation, design and execution**

### **4.2.1 General**

The wall on which the ETICS is applied shall be sufficiently stable and airtight. Its stiffness shall be large enough to ensure that the ETICS is not subjected to deformations, which could lead to damage.

The requirements given in ETAG 004, chapter 7, have to be considered.

### **4.2.2 Installation**

The ETICS is installed on site. The approval holder is obliged to instruct all those entrusted with the design and execution of the ETICS about the specific conditions of this ETA and all other details necessary for perfect execution.

Only the components whose trade name is given in clause 1.1 and which have the characteristics according to clause 2.3 may be used for the ETICS.

### **4.2.3 Design**

#### **4.2.3.1 Requirements for the substrate**

As to the requirements for the substrate and its preparation, ETAG 004, clause 7.2.1 applies.

The substrate for mechanically fixed systems should have a sufficient resistance for the use of anchors according to clause 2.3.2. The conditions of the ETA for the anchor concerned apply.

#### **4.2.3.2 Resistance to wind load**

Judging of sufficient resistance to wind load should be on the basis of the resistance of the fixings according to clause 2.2.8.3 and of the characteristic tension resistance of the used anchor according to clause 2.3.2. Taking into account the national safety factors the design values of resistance are determined. The smaller one of the design resistances of the ETICS ( $R_d$ ) and of the anchor ( $N_{Rd}$ ) is decisive.

The determined design wind load suction  $S_d$  (taking into account the national safety factors) is compared with the design resistance.

### **4.2.4 Execution**

The manufacturer's design and installation instructions, which are part of the technical documentation for this ETA, shall be observed with respect to the installation of the ETICS and drying times of rendering products.



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*English translation prepared by DIBt*

**5 Indications to the manufacturer**

**5.1 Packaging, transport and storage**

Packaging of the components has to be such that they are protected against moisture during transport and storage, unless other measures are foreseen by the manufacturer for this purpose.

The components are to be protected against damage.

**5.2 Use, maintenance, repair**

To the indications on use, maintenance and repair ETAG 004, clause 7.3 applies.

Uwe Bender  
Head of Department

*beglaubigt:*  
Praktiknjo