

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-06/0152**  
**of 14 June 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

"RELIUS WDV-System V 710-V 810"

Product family  
to which the construction product belongs

Product area code: 4  
External Thermal Insulation Composite System with  
rendering on mineral wool intended for use on building  
walls

Manufacturer

RELIUS Farbenwerke GmbH  
Heimertinger Straße 10  
87700 Memmingen  
DEUTSCHLAND

Manufacturing plant

RELIUS Farbenwerke GmbH  
Heimertinger Straße 10  
87700 Memmingen  
DEUTSCHLAND

This European Technical Assessment  
contains

16 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-06/0152 issued on 13 January 2016

The European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction shall be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 25(3) of Regulation (EU) No 305/2011.

## 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 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 ...) 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> <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 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>	-	≤ 200
	<b>Mechanically fixed ETICS with anchors and supplementary adhesive:</b> <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> </ul>	-	60 to 200



## **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 instruction.

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 "RELIUS WDV-System V 710-V 810" 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 and 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 and 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 known 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)

Configuration	Organic content	Flame retardant content	Euroclass according to EN 13501-1:2007
Base coat	max. 2.5 %	no flame retardant	A2 - s1,d0
Mineral wool-insulation product	in quantity ensuring Euroclass A1 according to EN 13501-1	no flame retardant	
anchors	-	-	
<b>rendering system:</b> Base coat with finishing coat indicated hereafter:			
RELIUS Mineralputz; RELIUS Mineral Strukturputz	max. 3.5 %	no flame retardant	
RELIUS Silatputz	max. 4.0 %	min. 8.0 %	
RELIUS Silcosanputz	max. 6.5 %	min. 5.0 %	

### 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 hour < 1.0 kg/m<sup>2</sup>
- Water absorption after 24 hours < 0.5 kg/m<sup>2</sup>

English translation prepared by DIBt

- **Rendering system:**

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

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

Pass (without defects)

#### Freeze/thaw behaviour

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

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

<b>Rendering system:</b> Base coat with finishing coat and key coat indicated hereafter:	<b>Single mesh:</b> "RELIUS Gittergewebe"
RELIUS Universal Putzgrund and RELIUS Silatputz	Category I
RELIUS Universal Putzgrund and RELIUS Silcosanputz	Category I
RELIUS Universal Putzgrund and RELIUS Mineral Strukturputz	Category II
RELIUS Mineralputz	Category II

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

<b>Rendering system:</b> Base coat with finishing coat and key coat indicated hereafter:	<b>Equivalent air thickness s<sub>d</sub></b>
RELIUS Universal Putzgrund and RELIUS Silcosanputz	≤ 1.0 m (Test result obtained with structure K, particle size 3 mm: 0.3 m)
RELIUS Universal Putzgrund and RELIUS Silatputz	≤ 1.0 m (Test result obtained with structure K, particle size 3 mm: 0.2 m)
RELIUS Universal Putzgrund and RELIUS Mineral Strukturputz	≤ 1.0 m (Test result obtained with structure KM, particle size 4 mm: 0.2 m)
RELIUS Mineralputz	≤ 1.0 m (Test result obtained with structure KM, particle size 4 mm: 0.1 m)

### 3.3.5 Release of dangerous substances (ETAG 004 – clause 5.1.3.5, EOTA TR034)

<b>Essential characteristic</b>	<b>Performance</b>
Release of dangerous substances:	no performance assessed

English translation prepared by DIBt

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

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

Conditioning		
Initial state	After hygrothermal cycles	After freeze/thaw test
< 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

**3.4.2 Bond strength between base coat and insulation product (MW lamella) (ETAG 004 – clause 5.1.4.1.1)**

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

**3.4.3 Bond strength between adhesive and substrate resp. insulation product (MW panel resp. 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
RELIUS WDVS Kleber PHS	Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 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
	MW lamella	< 0.08 MPa but failure in the insulation product	≥ 0.03 MPa	< 0.08 MPa but failure in the insulation product
RELIUS K.A.m	Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 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
	MW lamella	≥ 0.08 MPa	≥ 0.03 MPa	≥ 0.08 MPa

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 as bonded ETICS is possible.



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

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

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

Test not required; therefore no limitation of ETICS length required.

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

The following failure loads only apply to the listed combination and the characteristics of the insulation product given in annex 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 <b>MW panels</b>	Thickness		≥ 60 mm
	<b>Tensile strength perpendicular to the faces</b>		≥ 14 kPa
Plate diameter of anchor			≥ Ø 60 mm
Failure load [N]	Anchors not placed at the panel joints (Static Foam Block Test)	$R_{panel}$	Minimal: 650 Average: 740
	Anchors placed at the panel joints (Static Foam Block Test)	$R_{joint}$	Minimal: 590 Average: 610
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	$R_{panel}$	Minimal: 640 Average: 690
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2* - series 3*	$R_{panel}$	Minimal: 360 Average: 390 Minimal: 410 Average: 450
* according to ETAG 004 (edition 2000) clause 5.2.4.1.2 test method (2)			

Failure loads – table 2

apply to anchor ejotherm STR U with deep mounting			
Characteristics of the MW panels	Thickness		≥ 80 mm    ≥ 100 mm
	Depth of die**		≤ 5 mm    ≤ 20 mm
	Tensile strength perpendicular to the faces		≥ 14 kPa
Plate diameter of anchor			≥ Ø 60 mm
Failure load [N]	Anchors not placed at the panel joints (Static Foam Block Test)	R <sub>panel</sub>	Minimal: 430 Average: 480
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	R <sub>panel</sub>	Minimal: 410 Average: 430
	Anchors not placed at the panel joints (Pull-through test, wet conditions)	R <sub>panel</sub>	Minimal: 230 Average: 240 Minimal: 260 Average: 280
	- series 2* - series 3*		
* according to ETAG 004 (edition 2000) clause 5.2.4.1.2 test method (2)			
** for the definition of "die" see Annex 2 of ETA-04/0023, validity from 16.06.2013			

Failure loads – table 3

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 kPa
Plate diameter of anchor			≥ Ø 90 mm    ≥ Ø 140 mm
Failure load [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 no performance assessed
	Anchors not placed at the panel joints (Pull-through test, wet conditions)	R <sub>panel</sub>	Minimal: 400 Average: 460 no performance assessed
* according to ETAG 004 (edition 2000) clause 5.2.4.1.2 test method (2)			

Failure loads – table 4

apply to all anchors listed in the 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 load [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 in the table 2 apply to the following anchors with deep mounting but only on the following conditions of installation:

Dübel	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>
* according to the appropriate ETA of anchor		

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

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 about 0.15 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<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.

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

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<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

English translation prepared by DIBt

- $\chi_p = 0.004 \text{ W/K}$  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
"RELIUS WDV-System V 710-V 810"	ETICS in external wall subject to fire regulations	A1 <sup>(1)</sup> , A2 <sup>(1)</sup> , B <sup>(1)</sup> , C <sup>(1)</sup>	1
		A1 <sup>(2)</sup> , A2 <sup>(2)</sup> , B <sup>(2)</sup> , C <sup>(2)</sup> , D, E, (A1 to E) <sup>(3)</sup> , F	2+
	ETICS in external wall not subject to fire regulations	any	2+
<sup>(1)</sup> Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material) <sup>(2)</sup> Products/materials not covered by footnote (1) <sup>(3)</sup> Products/materials that do not require to be tested for reaction to fire (e. g. products/materials of Class 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 14 June 2018 by Deutsches Institut für Bautechnik

Dirk Brandenburger  
Head of Department

*beglaubigt:*  
Ruppert

**European Technical Assessment**  
**ETA-06/0152**

English translation prepared by DIBt

Page 13 of 16 | 14 June 2018

**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 13162:2015 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 1716:2010	PCS ≤ 1.1		
Thermal resistance [(m <sup>2</sup> · K)/W]	Defined in the CE marking in reference to EN 13162:2015		
Tensile strength perpendicular to the faces [kPa]; EN 1607:2013 - in dry conditions*	$\sigma_{mt} \geq 14$	$\sigma_{mt} \geq 5$	$\sigma_{mt} \geq 80$
- in wet conditions** Average value - serie 2 - serie 3	≥ 33 % of average value in dry conditions ≥ 50 % of average value in dry conditions		
Compressive strength* [kPa]; EN 826:2013	$\sigma_m \geq 40$	$\sigma_m \geq 4$	$\sigma_m \geq 40$
Apparent density [kg/m <sup>3</sup> ]; EN 1602:2013	$120 \leq \rho_a \leq 150$	$100 \leq \rho_a \leq 150$	$80 \leq \rho_a \leq 150$
Shear strength* [kPa]; EN 12090:2013	$20 \leq f_{tk} \leq 100$	$6 \leq f_{tk} \leq 100$	$20 \leq f_{tk} \leq 100$
Shear modulus [MPa]; EN 12090:2013	$1.0 \leq G_m \leq 2.0$	$0.3 \leq G_m \leq 2.0$	$1.0 \leq G_m \leq 2.0$
* Minimal value of all single values			
** According to ETAG 004 (edition 2000) 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  [%]
RELIUS Gittergewebe	Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 165 g/m <sup>2</sup> and mesh size of about 4.0 mm x 4.0 mm	≥ 20	≥ 50