

Approval body for construction products and types of construction

Bautechnisches Prüfamt

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European Technical Assessment

ETA-12/0238
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General Part

Technical Assessment Body issuing the European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

WDVS TecTem® Insulation Board Outdoor

Product family to which the construction product belongs

Product area code: 4
External Thermal Insulation Composite System with rendering on perlite for the use as external insulation of building walls

Manufacturer

KNAUF AQUAPANEL GmbH
Kipperstraße 19
44147 Dortmund
DEUTSCHLAND

Manufacturing plant

KNAUF AQUAPANEL GmbH
Kipperstraße 19
44147 Dortmund
DEUTSCHLAND

This European Technical Assessment contains

12 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, used as 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 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 perlite (EPB) to be bonded and if it necessary additionally 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 finishing coat (site applied), in which the base coat contains reinforcement. The rendering is applied directly to the insulating panels, without any air gap or disconnecting layer.

The ETICS may include special fittings (e.g. base profiles, corner profiles ...) for connection to adjacent building elements (apertures, corners, parapets ...). Assessment and performance of these components 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 ²]	Thickness [mm]
Insulation material with associated method of fixing	<p>Mechanically fixed ETICS with anchors and supplementary adhesive:</p> <ul style="list-style-type: none"> Insulation product (see annex 1 for product characteristics) factory-prefabricated expanded perlite (EPB) to ETA-06/0275 - uncoated <ul style="list-style-type: none"> WDVS TecTem® Insulation Board Outdoor Supplementary adhesive (minimum bonded surface 70%) TecTem Leichtmörtel (Cement based powder with additional redispersible synthetic-resin and aggregates requiring addition of 40 % of water) Anchors for insulation product all anchors with ETA according to EAD330196-00-0604¹ with characteristics defined in annex 2 	<p>–</p> <p>5.0 – 7.0</p>	<p>60 – 200</p> <p>–</p>
Base coat	<p>TecTem Leichtmörtel Identical with the equally named adhesives given above</p>	3.0 – 5.0	3.0 – 5.0

¹ EAD330196-00-0604 Plastic anchors for fixing of external thermal insulation composite systems with rendering

	Components National application documents shall be taken into account	Coverage [kg/m ²]	Thickness [mm]
Glass fibre mesh	TecTem Gewebe Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 160 g/m ² and mesh size of about 4.0 mm x 4.0 mm (see annex 3 for product characteristics)	–	–
Key coat	TecTem Putzgrund* Ready to use pigmented liquid-silicate binder dispersion	0.20 – 0.25 l/m ²	–
Finishing coat	TecTem Dekorputz K / R (particle size 1.5 – 2.0 and 3.0 mm) Ready to use paste – silicate/styrol acrylate binder	app. 2.7 – 4.5	regulated by particle size
Ancillary material	Remains the responsibility of the manufacturer.		
* The instruction to the installer concerning the use of a key coat remains the responsibility of the manufacturer.			

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 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 "WDVS TecTem® Insulation Board Outdoor" 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 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.

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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 localized 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
rendering system: Base coat with finishing coat and compatible key coat indicated hereafter			
TecTem Dekorputz K / R with TecTem Putzgrund	base coat ≤ 2,9 % finishing coat ≤ 4,6 %	no flame retardent	A2 - s1,d0

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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/m²
- Water absorption after 24 hours < 0.5 kg/m²

		Water absorption after 24 hours	
		< 0.5 kg/m ²	≥ 0.5 kg/m ²
Rendering system: Base coat with finishing coat	TecTem Dekorputz K	x	
	TecTem Dekorputz R	x	

3.3.2 Hygrothermal 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 with finishing coat	Single mesh "TecTem Gewebe"
TecTem Dekorputz K	category II
TecTem Dekorputz R	category II

3.3.4 Water vapour permeability (ETAG 004 – clause 5.1.3.4)

Rendering system: Base coat with finishing coat (evaluated without key coat)	Equivalent air thickness s _d
TecTem Dekorputz K	≤ 1.0 m (Test result obtained with particle size 2 mm: 0.2 m)
TecTem Dekorputz R	≤ 1.0 m (Test result obtained with particle size 2 mm: 0.2 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 (EPB) (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

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3.4.2 Bond strength after ageing (ETAG 004 – clause 5.1.7.1)

Rendering system: Base coat with finishing coat	TecTem Dekorputz K	≥ 0.08 MPa, but failure in the insulation product
	TecTem Dekorputz R	

3.4.3 Fixing strength (displacement test) (ETAG 004 – clause 5.1.4.2)

Test not required therefore no limitation of ETICS length required.

3.4.4 Wind load resistance (ETAG 004 – clause 5.1.4.3)

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

Safety in use of mechanically fixed ETICS using anchors

Apply to all anchors listed in the clause 1.2 mounted on the insulation panels surface			
Characteristics of the EPB - panel	Thickness		≥ 60 mm
	Tensile strength perpendicular to the faces		≥ 80 kPa
Plate diameter of anchor			Ø 60 mm
Failure loads [N]	Anchors not placed at the panel joints (Pull-through test - dry conditions)	R_{panel}	Minimal: 580 Average: 660
	Anchors placed at the panel joints (Pull-through test - dry conditions)	R_{joint}	Minimal : 550 Average: 600
	Anchors not placed at the panel joints (Pull-through test - wet conditions)	R_{panel}	Minimal: 375 Average: 390
	Anchors placed at the panel joints (Pull-through test - wet conditions)	R_{joint}	Minimal: 340 Average: 350

3.4.5 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 “TecTem Gewebe” measured at a render strain value of 1% is about 0.06 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 anchors profiles increases the thermal transmittance U . This influence had to take into account according to EN ISO 6946:2007

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

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

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- χ_p : local influence of thermal bridge caused by an anchor. The values listed below can be taken into account if not specified in the anchor's ETA:
- $\chi_p = 0.004 \text{ W/K}$ for anchors with a galvanized steel screw with the head covered by a plastic material
- $\chi_p = 0.002 \text{ W/K}$ for anchors with a stainless steel screw covered by plastic anchors and for anchors with an air gap at the head of the screw

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)	System
"WDVS TecTem® Insulation Board Outdoor"	in external wall subject to fire regulations	A1 ⁽¹⁾ , A2 ⁽¹⁾ , B ⁽¹⁾ , C ⁽¹⁾	1
		A1 ⁽²⁾ , A2 ⁽²⁾ , B ⁽²⁾ , C ⁽²⁾ , D, E, (A1 bis E) ⁽³⁾ , 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 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 25 January by Deutsches Institut für Bautechnik

Dirk Brandenburger
Head of Department

beglaubigt:
Ruppert

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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, uncoated panels made of expanded Perlit (EPB) to ETA-06/0275 shall be used, having the description and characteristics defined in the Table below.

Description and characteristics	For mechanically fixed ETICS with anchors and supplementary adhesive
Reaction to fire; EN 13501-1:2007+A1:2009	Class A1
Thermal resistance [(m ² ·K)/W]	Defined in the CE marking in reference to ETA-06/0275
Tolerances	
Length; EN 822:2013	± 3 (≤ 1200 mm length)/ ± 5 (> 1200 mm length)
Width [mm]; EN 822:2013	± 3 (≤ 1200 mm length)/ ± 5 (> 1200 mm length)
Thickness [mm]; EN 823:2013	± 2 (d _N ≤ 70 mm) ± 3 (70 mm ≤ d _N ≤ 120 mm) ± 4 (d _N > 120 mm)
Squareness [mm/m]; EN 824:2013	≤ 3
Flatness [mm/m]; EN 825:2013	± 3 (≤ 1200 mm length)/ ± 5 (> 1200 mm length)
Dimensional stability under	
Deformation under specified load and temperature with test condition 3 (80 kPa, 60°C, 168 h); EN 1605:2013	Δ ε < 5.0 % (DLT(3)5)
maximum change of dimension [%] with specified temperature and humidity conditions; EN 1604:2013	± 0.5
Water absorption (short term partial immersion) [kg/m ²]; EN 1609:2013	W _p ≤ 0.5
Water vapour diffusion resistance factor; EN 12086:2013	5 ≤ μ ≤ 6 *
Tensile strength** perpendicular to the faces [kPa]; EN 1607:2013	
- in dry conditions***	≥ 80
- in wet conditions***	≥ 24
- (test method 2)	
Compressive strength** [kPa]; EN 826:2013	≥ 200
Bending strength** [kPa]; EN 12089:2013	≥ 120
Apparent density** [kg/m ³]; EN 1602:2013	90 to 105
Testing of characteristics – see EAD 040010-00-1201	
* It's shall be taken the unfavourable value for the construction.	
** minimal value of all single values	
*** according to ETAG 004 clauses 5.2.4.1.1 resp. 5.2.4.1.2	

Annex 2: Anchors

All anchors with ETA according to EAD330196-00-0604¹ with characteristics having the description below shall be used in the mechanically fixed ETICS:

- plate diameter of anchor ≥ 60 mm
- plate stiffness ≥ 0.3 kN/mm
- load resistance of the anchor plate ≥ 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 [%]
"TecTem Gewebe"	Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 160 g/m ² and mesh size of about 4.0 mm x 4.0 mm	≥ 20	≥ 50