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and types of construction

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ETA-11/0300
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General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Capatect WDVS-Phenolharzschaum

Product family
to which the construction product belongs

Product area code: 4
External Thermal Insulation Composite System with
rendering on phenolic foam for the use on building walls

Manufacturer

CAPAROL
Farben Lacke Bautenschutz GmbH
Roßdörfer Straße 50
64372 Ober-Ramstadt
DEUTSCHLAND

Manufacturing plant

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Farben Lacke Bautenschutz GmbH
Roßdörfer Straße 50
64372 Ober-Ramstadt
DEUTSCHLAND

This European Technical Assessment
contains

15 pages including 5 annexes which form an integral part
of this assessment

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

EAD 040083-00-0404

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Specific Part

1 Technical description of the product

This product is an ETICS External Thermal Insulation Composite System (ETICS) 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 the ETICS.

The ETICS kit comprises a prefabricated insulation product of phenolic foam (PF) to be bonded and additional mechanically fixed onto a wall. The methods of fixing and the relevant components are specified in annex 1.

The insulation product is faced with a rendering system consisting of one base and finishing coats (site applied), the base coat contains reinforcement. The rendering system 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.

2 Specification of the intended use in accordance with the applicable European assessment Document

The performances in Section 3 can only be assumed if the ETICS is used in accordance with the specifications and under the boundary conditions specified in Annexes 2 to 5.

The verifications and assessment methods on which this ETA is based lead to the assumption of a working life of the ETICS "Capatect WDVS-Phenolharzschaum" 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.

For use, maintenance and 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 compatible with the ETICS (possibly after washing or ad hoc preparation).

Necessary repairs are to be carried out 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 known to the concerned people.

3 Characteristics of products and methods of verification

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire of the ETICS	(see annex 2) Euroclass according to EN 13501-1
Reaction to fire of the PF -insulation product	(see annex 2) Euroclass C – s2,d0 according EN 13501-1
Apparent density of the PF-insulation product according to DIN EN 1602	$35 < \rho_a < 45$ [kg/m ³]

3.2 Hygiene, health and environment (BWR 3)

Essential characteristic	Performance
Release of dangerous substances	no performance assessed
Water absorption Base coat after 1 hour after 24 hours	(see annex 3.1) Average [kg/m ²] Average [kg/m ²]
Rendering system after 1 hour after 24 hours	Average [kg/m ²] Average [kg/m ²]
PF insulation product (short term immersion)	Maximum value 0.9 [kg/m ²]
Water-tightness of the ETICS: Hygrothermal behaviour on the test wall	Pass without defects
Water-tightness of the ETICS: Freeze/thaw behaviour	The water absorption of the base coat as well as the rendering is less than 0.5 kg/m ² after 24 hours resp. has been assessed as freeze/thaw resistant according to the simulated method (values s. annex 3.1).
Impact resistance	(see annex 3.2) Category
Water vapour permeability - Rendering system	(see annex 3.3) s _d value [m]
- PF insulation product	$\mu = 35$ Thickness of the insulation product 200 [mm]

3.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Bond strength between base coat and PF-insulation product	(see annex 4.1) - Minimal value/average [kPa], rupture type: Initial state (28 d immersion) - Minimal value/ average [kPa], rupture type: after hygrothermal cycles

Essential characteristic	Performance
Fixing strength (displacement test)	Test not required therefore no limitation of ETICS length required.
Wind load resistance of ETICS pull-through test of fixing static foam block test	(see annex 4.2) - R_{panel} [kN/fixing], - R_{joint} [kN/fixing], - Plate diameter of anchor ≥ 60 mm resp. 112 mm - plate stiffness ≥ 0.3 [kN/mm ²] - load resistance of the anchor plate ≥ 1.0 [kN]
Tensile strength perpendicular to the faces PF without coating (fleece) in dry conditions in wet conditions PF with coating (fleece) in dry conditions in wet conditions	$\sigma_{\text{mt}} \geq 72$ kPa $\sigma_{\text{mt}} \geq 50$ kPa $\sigma_{\text{mt}} \geq 40$ kPa $\sigma_{\text{mt}} \geq 15$ kPa
Shear strength of the ETICS	$50 \leq f_{\text{rk}} \leq 70$ kPa
Shear modulus of the ETICS	$1.8 \leq G_{\text{m}} \leq 2.4$ MPa
Render strip tensile test	(see annex 4.3) crack width w_{rk} [mm]
Bond strength after ageing finishing coat tested on the rig finishing coat not tested on the rig	(see annex 4.4) Minimal value/ average [kPa] Minimal value/ average [kPa]
Tensile strength of the glass fibre mesh in the as-delivered state	(see annex 4.5) Average [N/mm]
Residual tensile strength of the glass fibre mesh after aging	(see annex 4.5) Average [N/mm]
Relative residual tensile strength of the glass fibre mesh after aging	(see annex 4.5) Average [%]
Elongation of the glass fibre mesh in the as-delivered state	(see annex 4.5) Average [N/mm]
Elongation of the glass fibre mesh after aging	(see annex 4.5) Average [%]

3.4 Protection against noise (BWR 5)

Essential characteristic	Performance
Airborne sound insulation of ETICS	no performance assessed
Dynamic stiffness of the EPS insulation product	no performance assessed
Air flow resistance of the EPS insulation product	no performance assessed

3.5 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Thermal resistance and thermal transmittance of ETICS	Calculated value or measurement value R (m ² · K)/W, see annex 5

English translation prepared by DIBt

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

In accordance with EAD No. 040083-00-0404 the applicable European legal act is: [97/556/EC changed by 2001/596/EC

The systems to be applied are:

Product	Intended use	Levels or classes (Reaction to fire)	Systems
Capatect WDVS- Phenolharz- schaum	ETICS 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 to E) ⁽³⁾ , F	2+
	ETICS in external wall not subject to fire regulations	any	2+
<p>⁽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)</p> <p>⁽²⁾ Products/materials not covered by footnote (1)</p> <p>⁽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)</p>			

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

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 7 June 2022 by Deutsches Institut für Bautechnik

Dipl.-Ing. Anja Rogsch
Head of Section

beglaubigt:
Windhorst

Annex 1

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	Mechanically fixed ETICS with anchors and supplementary adhesive:		
	• Insulation product factory-prefabricated phenolic foam (PF)*	–	40 to 200
	• Adhesives		
	– Capatect Klebe-und Armierungsmasse 186 M (cement based powder requiring addition of about 20 % – 24 % of water)	3.5 to 4.5	–
	– Capatect Klebe-und Spachtelmasse 190 (cement based powder requiring addition of about 20 % – 24 % of water)	about 4.0	–
	– Capatect Dämmkleber 185 (cement based powder requiring addition of about 20 % of water)	4.0 to 5.0	–
	– Capatect ArmaReno 700 (cement based powder requiring addition of about 20 % – 25 % of water)	4.0 to 5.0	–
	• Anchors for insulation product all anchors with ETA according to EAD 330196-01-0604 ¹		
Base coat	Capatect CS-Klebe-und Armierungsmörtel 850 Cement based powder with additional redispersible synthetic-resin and aggregates requiring addition of 36 – 40 % of water.	5.5 to 8.0	5.0 to 7.0
Glass fibre mesh	Capatect Gewebe 650 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	–	–
	Capatect Panzergewebe 652 (reinforced mesh implemented in addition to the mesh described above to improve the impact resistance) Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 330 g/m ² and mesh size of about 6.0 mm x 6.0 mm	–	–
Key coat	Putzgrund 610** Ready to use pigmented liquid – styrol acrylate For the compatibility with the finishing coats see below	about 0.2 l/m ²	–

1

EAD 330196-01-0604

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]
Finishing coat	<p>To use with key coat "Putzgrund 610":*</p> <ul style="list-style-type: none"> Cement based powders requiring addition of about 28 – 44 % of water: <ul style="list-style-type: none"> Capatect Mineral-Leichtputz R**** (particle size 2.0 to 5.0 mm) 2.3 to 4.5 } regulated by particle size Capatect Mineral-Leichtputz K**** (particle size 2.0 to 5.0 mm) 2.3 to 4.5 } Cement based powder requiring addition of about 40 % of water: <ul style="list-style-type: none"> Capatect Modellier- und Spachtelputz 134 1.3 to 4.0 2.0 to 5.0 Ready to use pastes – acrylate/silicone resin emulsion: <ul style="list-style-type: none"> Capatect AmphiSilan Fassadenputz R**** (particle size 2.0 to 3.0 mm) 2.5 to 3.5 Capatect AmphiSilan Fassadenputz K**** (particle size 1.5 to 3.0 mm) 2.5 to 4.1 } regulated by particle size*** Ready to use pastes – silicate/organic hybrid dispersion <ul style="list-style-type: none"> Capatect ThermoSan Fassadenputz NQG R**** (particle size 1.5 to 3.0 mm) 1.8 to 2.6 Capatect ThermoSan Fassadenputz NQG K**** (particle size 1.0 to 4.0 mm) 1.3 to 3.2 Ready to use paste – styrol acrylate binder – associated with synthetic briquettes: <ul style="list-style-type: none"> Original Meldorfer with Meldorfer Ansatzmörtel 080 4.0 to 5.0 6.0 3.0 to 4.0 1.0 to 4.0 		
Ancillary material	Remains the responsibility of the manufacturer of ETICS.		
<p>* Factory-prefabricated panels made of phenolic foam (PF) (PF panel "Kooltherm K 5"), coated on both sides with glass fibre fleece shall be used.</p> <p>** The instruction to the installer concerning the use of a key coat remains the responsibility of the manufacturer.</p> <p>*** Total coat thickness (base coat and finishing coat) has to be ≥ 7.0 mm.</p> <p>**** K / R indicates different structures of finishing coats.</p>			

Annex 2
Safety in case of fire (BWR 2)
Reaction to fire

Configurations	Organic content	Flame retardant content	Euroclass according to EN 13501-1:2007
Base coats	max. 2.9 %	no flame retardant	B - s1,d0
PF insulation product	Euroclass C - s2,d0 according to EN 13501-1	Euroclass C - s2,d0 according to EN 13501-1	
Anchors	-	-	
Rendering system: base coats with finishing coat and compatible key coat indicated in annex 1			
Capatect Mineral-Leichtputz R, Capatect Mineral-Leichtputz K, Capatect Modellier- und Spachtelputz 134	max. 3.7 %	no flame retardant	
Capatect AmphiSilan Fassadenputz R	max. 7.5 %	no flame retardant	
Capatect AmphiSilan Fassadenputz K	max. 8.4 %	min 3.0 %	
Capatect ThermoSan Fassadenputz NQG R, Capatect ThermoSan Fassadenputz NQG K	max. 8.9 %	no flame retardant	
Meldorfer Flachverblender with Meldorfer Ansatzmörtel 080	max. 9.2 % max. 9.9 %	min. 9.0 % no flame retardant	

Annex 3

Hygiene, health and environment (BWR 3)

3.1 Water absorption (capillarity test)

Base coat:

Base coat	Average water absorption [kg/m ²]	
	after 1h	after 24h
Capatect CS Klebe- und Armierungsmörtel 850 (7 mm)	0.05	0.36

Rendering system:

Finishing coat with base coat indicated hereafter	Average water absorption [kg/m ²]	
	after 1h	after 24h
Capatect Mineral-Leichtputz R (3 mm)	0.08	0.53
Capatect Mineral-Leichtputz R (5 mm)	0.09	0.59
Capatect Mineral-Leichtputz K (2 mm)	0.19	0.52
Capatect Mineral-Leichtputz K (5 mm)	0.09	0.39
Capatect Modellier- und Spachtelputz 134 (3 mm)	0.14	0.27
Capatect AmphiSilan Fassadenputz R (2 mm)	0.21	0.63
Capatect AmphiSilan Fassadenputz K (1.5 mm)	0.10	0.73
Capatect ThermoSan Fassadenputz NQG K (3 mm)	0.15	0.77
Meldorfer Flachverblender with Meldorfer Ansatzmörtel 080	0.04	0.24

3.2 Impact resistance

Rendering system: Base coat with finishing coat and compatible key coat indicated in annex 1:	Single standard mesh: "Capatect Gewebe 650"
Capatect Mineral-Leichtputz R	category III
Capatect Mineral-Leichtputz K	
Capatect Modellier- und Spachtelputz 134	
Capatect AmphiSilan Fassadenputz R/K	category II
Capatect ThermoSan Fassadenputz NQG R/K	
Meldorfer Flachverblender with Meldorfer Ansatzmörtel 080	category I

For the impact resistance for base coat and all finishing coats with the combination of "Capatect Gewebe 650" and "Capatect Panzergewebe 652" no performance was assessed.

3.3 Water vapour permeability ETICS

Rendering system: Base coat with finishing coat and compatible key coat indicated in annex 1	Equivalent air thickness s_d
Capatect Mineral-Leichtputz R30*	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.15 m)
Capatect Mineral-Leichtputz R50*	≤ 1.0 m (Test result obtained with particle size 5 mm: 0.30 m)
Capatect Mineral-Leichtputz K20*	≤ 1.0 m (Test result obtained with particle size 2 mm: 0.35 m)
Capatect Mineral-Leichtputz K50*	≤ 1.0 m (Test result obtained with particle size 5 mm: 0.15 m)
Capatect Modellier- und Spachtelputz 134*	≤ 1.0 m (Test result obtained with a layer thickness 5 mm: 0.14 m)
Capatect AmphiSilan Fassadenputz R,K**	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.19 m)
Capatect ThermoSan Fassadenputz NQG R/K**	≤ 1.0 m (Test result obtained with particle size 3 mm: 0.24 m)
Meldorfer Flachverblender with Meldorfer Ansatzmörtel 080**	≤ 1.0 m (Test result obtained with a layer thickness 7 mm: 0.7 m)
* evaluate without key coat ** evaluate with key coat	

Annex 4

Safety and accessibility in use (BWR 4)

4.1 Bond strength between base coat and insulation product (PF)

		Conditioning		
		Initial state [kPa]	After hygrothermal cycles [kPa]	After freeze/thaw test [kPa]
Capatect CS Klebe-und Armierungsmörtel 850	Average	90	51*	Test not required because freeze/thaw cycles
	Minimal value	80	48*	
* < 80 kPa but failure in the insulation product				

4.2 Wind load resistance

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

4.2.1 Safety in use of mechanically fixed ETICS using anchors

Table 1: Apply to all anchors listed in annex 1 mounted on the insulation panels surface					
Thickness of PF-insulation product				$40 \text{ mm} \leq d < 60 \text{ mm}$	$\geq 60 \text{ mm}$
Plate diameter of anchor				$\geq \varnothing 60 \text{ mm}$	
Failure loads [kN]	Anchors not placed at the panel joints (Pull-through test/dry conditions)	R_{panel}	Minimal: Average:	0.640 0.750	0.680 0.730
	Anchors placed at the panel joints (Pull-through test/dry conditions)	R_{joint}	Minimal: Average:	0.510 0.690	0.630 0.720
	Anchors not placed at the panel joints (Pull-through test/wet conditions)	R_{panel}	Minimal: Average:	0.625 0.670	0.660 0.725
	Anchors placed at the panel joints (Pull-through test/wet conditions)	R_{joint}	Minimal: Average:	0.465 0.595	0.615 0.700

Table 2: Apply to specified anchors corresponding with mentioned below table with near-surface mounting exclusively placed at the panel			
Thickness of PF-insulation product			$\geq 80 \text{ mm}$
Plate diameter of anchor			$\varnothing 112 \text{ mm}$
Failure load [kN]	Anchors not placed at the panel joints (Pull-through test dry conditions)	R_{panel}	Minimal: 1.035 Average: 1.230
	Anchors not placed at the panel joints (Pull-through test wet conditions)	R_{panel}	Minimal: 1.016 Average: 1.205

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The failure loads in table 2 apply to the following anchors with near-surface mounting but only on the following conditions of installation:

Anchor	Thickness of the PF panel [t]	Conditions of installation *
ejothem STR U ejothem STR U 2G (ETA-04/0023) STR Carbon (ETA-13/0009)	$t \geq 80$ mm	Only in connection with the addition plate "Dübelteller VT 2G" exclusively placed at the panel
* according to the appropriate ETA of anchor		

4.3 Render strip tensile test

The average value of crack width of the base coat reinforced with the glass fibre mesh "Capatect Gewebe 650" measured at a render strain value of 1 % is about 0.06 mm.

4.4 Bond strength after aging [kPa]

Finishing coat with base coat indicated hereafter:		7 d immersion in water and 7 d drying [kPa]
Capatect Mineral-Leichtputz R/K	Average	32*
	Minimal value	28*
Capatect Modellier- und Spachtelputz 134	Average	50*
	Minimal value	50*
Capatect AmphiSilan Fassadenputz R/K	Average	80
	Minimal value	58*
Capatect ThermoSan Fassadenputz NQG R/K	Average	80
	Minimal value	57*
Meldorfer Flachverblender with Meldorfer Ansatzmörtel 080*	Average	83
	Minimal value	66*
* < 80 kPa but failure in the insulation product		

4.5 Reinforcement (glass fibre mesh)

Capatect Gewebe 650	Average warp	Average weft
Tensile strength in as-delivered state	44.8 N / mm	44.8 N / mm
Residual tensile strength after aging	30.6 N / mm	30.2 N / mm
Relative residual tensile strength after aging	68.3 %	67.4 %
Elongation in as-delivered state	3.6 %	3.6 %
Elongation after aging	1.49 %	1.31 %

Capatect Panzergewebe 652	Average warp	Average weft
Tensile strength in as-delivered state	64.0 N / mm	70.0 N / mm
Residual tensile strength after aging	32.0 N / mm	35.0 N / mm
Relative residual tensile strength after aging	50.0 %	50.0 %
Elongation in as-delivered state	4.5 %	4.5 %
Elongation after aging	4.0 %	4.0 %

Annex 5

5 Energy economy and heat retention (BWR 6)

5.1 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 $0.02 \text{ (m}^2 \cdot \text{K)/W}$.

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

The thermal bridges caused by mechanical fixing (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 [$\text{W}/(\text{m}^2 \cdot \text{K})$]
	n :	number of anchors per m^2
	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