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Bautechnisches Prüfamt

An institution established by the Federal and  
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## European Technical Assessment

**ETA-09/0368**  
**of 6 July 2023**

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

Mineralwolle Dämmsystem Capatect OrCa

Product family  
to which the construction product belongs

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

Manufacturer

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

Manufacturing plant

CAPAROL  
Farben Lacke Bautenschutz GmbH  
Roßdörfer Straße 50  
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DEUTSCHLAND

This European Technical Assessment  
contains

21 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

This version replaces

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## Specific Part

### 1 Technical description of the product

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 the ETICS.

The ETICS kit comprises a prefabricated insulation product of mineral wool (MW) to be bonded and if necessary additionally 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 coat (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 "Mineralwolle Dämmsystem Capatect OrCa" 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 Performance of the product and references to the methods used for its assessment

#### 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 MW insulation product <ul style="list-style-type: none"> <li>- Cross heat of combustion for the MW insulation product EN ISO 1716 [MJ/kg]</li> <li>- Apparent density EN 1602 [kg/m<sup>3</sup>]</li> </ul>	(see annex 2) Euroclass A1 according EN 13501-1 Value [MJ/kg] Value [kg/m <sup>3</sup> ]
Facade fire performance	no performance assessed
Propensity to undergo continuous smouldering of ETICS	no performance assessed

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

Essential characteristic	Performance
<b>Release of dangerous substances</b>	no performance assessed
<b>Water absorption</b> Base coat after 1 hour after 24 hours  Rendering system after 1 hour after 24 hours  MW insulation product after 24 hours	(see annex 3.1)  Average [kg/m <sup>2</sup> ] Average [kg/m <sup>2</sup> ]  Average [kg/m <sup>2</sup> ] Average [kg/m <sup>2</sup> ]  Maximum value 3.0 [kg/m <sup>2</sup> ]
<b>Water-tightness of the ETICS: Hygrothermal behaviour on the test wall</b>	Pass without defects
<b>Freeze/thaw behaviour of the ETICS</b>	The water absorption of the base coat as well as the rendering systems is less than 0.5 kg/m <sup>2</sup> for all configurations of the ETICS. The ETICS is so assessed as free/thaw resistant.
<b>impact resistance</b>	(see annex 3.2) Category
<b>Water vapour permeability</b> - Rendering system - MW insulation product	(see annex 3.3) s <sub>d</sub> value [m]  μ = 1      Thickness of the insulation product 400 [mm]

### 3.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
<b>Bond strength</b> between base coat and MW insulation product  between adhesive and substrate  between adhesive and MW insulation	(see annex 4.1) - Minimal value/average [kPa], rupture type: Initial state (28 d immersion) - Minimal value/average [kPa], rupture type: after hygrothermal cycles  (see annex 4.2) - Minimal value/average [kPa], rupture type: Initial state (dry conditions) - Minimal value/average [kPa], rupture type: after 2 d immersion in water, 2 h drying - Minimal value/average [kPa], rupture type: after 2 d immersion in water, 7 d drying  (see annex 4.3) - Minimal value/average [kPa], rupture type: Initial state (dry conditions) - Minimal value/average [kPa], rupture type: after 2 d immersion in water, 2 h drying - Minimal value/average [kPa], rupture type: after 2 d immersion in water, 7 d drying
<b>Fixing strength (displacement test)</b>	Test not required therefore no limitation of ETICS length required.
<b>Wind load resistance of ETICS</b> pull-through test of fixing static foam block test	(see annex 4.4) - $R_{\text{panel}}$ [kN/fixing], - $R_{\text{joint}}$ [kN/fixing], - Plate diameter of anchor $\geq 60$ mm, $\geq 90$ mm res. $\geq 140$ mm - plate stiffness $\geq 0.3$ [kN/mm <sup>2</sup> ] - load resistance of the anchor plate $\geq 1.0$ [kN]
<b>Tensile strength perpendicular to the faces</b> in dry conditions MW panel MW panel MW lamella  in wet conditions - series 2 - series 3	$\sigma_{\text{mt}} \geq 14$ [kPa] $\sigma_{\text{mt}} \geq 5$ [kPa] $\sigma_{\text{mt}} \geq 80$ [kPa]  $\geq 33$ % of average value in dry conditions $\geq 50$ % of average value in dry conditions
<b>Shear strength of the ETICS</b> MW panel $\sigma_{\text{mt}} \geq 14$ [kPa], MW lamella MW panel $\sigma_{\text{mt}} \geq 5$ [kPa]	$20 \leq f_{\text{tk}} \leq 100$ [kPa] $6 \leq f_{\text{tk}} \leq 100$ [kPa]

Essential characteristic	Performance
<b>shear modulus of the ETICS</b> MW panel $\sigma_{mt} \geq 14$ [kPa], MW lamella MW panel $\sigma_{mt} \geq 5$ [kPa]	$1.0 \leq G_m \leq 2.0$ [MPa] $0.3 \leq G_m \leq 2.0$ [MPa]
<b>Render strip tensile test</b>	No cracks occurred during the Render Strip Tensile Test of the base coat reinforced with the glass fibre mesh "Capatect Orca-Gewebe" at a render strain value of 1 %.
<b>Bond strength after ageing</b> finishing coat tested on the rig finishing coat not tested on the rig	(see annex 4.5) Minimal value/average [kPa], rupture type Minimal value/average [kPa], rupture type
<b>Tensile strength of the glass fibre mesh in the as-delivered state</b> Standard mesh Reinforced mesh	(see annex 4.6) Average [N/mm] Average [N/mm]
<b>Residual tensile strength of the glass fibre mesh after aging</b> Standard mesh Reinforced mesh	(see annex 4.6) Average [N/mm] Average [N/mm]
<b>Relative residual tensile strength of the glass fibre mesh after aging</b> Standard mesh Reinforced mesh	(see annex 4.6) Average [%] Average [%]
<b>Elongation of the glass fibre mesh in the as-delivered state</b> Standard mesh Reinforced mesh	(see annex 4.6) Average [%] Average [%]
<b>Elongation of the glass fibre mesh after aging</b> Standard mesh Reinforced mesh	(see annex 4.6) Average [%] Average [%]

### 3.4 Protection against noise (BWR 5)

Essential characteristic	Performance
<b>Airborne sound insulation of ETICS</b>	no performance assessed
<b>Dynamic stiffness of the MW insulation product</b>	no performance assessed
<b>Air flow resistance of the MW insulation product</b>	no performance assessed

### 3.5 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
<b>Thermal resistance of ETICS</b>	(see annex 5) Calculated value or measurement value $R [(m^2 \cdot K)/W]$
<b>thermal transmittance of ETICS</b>	(see annex 5) Calculated value or measurement value $U [W/(m^2 \cdot K)]$

**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
"Mineralwolle Dämmsystem Capatect OrCa"	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 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**

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 6 July 2023 by Deutsches Institut für Bautechnik

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Head of section

*beglaubigt:*  
Keküllüoglu

## Annex 1

### 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> factory-prefabricated mineral wool (MW) product* <ul style="list-style-type: none"> <li>- MW lamella</li> </ul> </li> <li>• <b>Adhesives</b> <ul style="list-style-type: none"> <li>– <b>Capatect Klebe- und Armierungsmasse 186 M</b> (cement based powder requiring addition of 20 – 24 % of water)</li> <li>– <b>Capatect Klebe- und Spachtelmasse 190</b> (cement based powder requiring addition of 20 – 24 % of water)</li> <li>– <b>Capatect Klebe- und Armierungsmasse 133 Leicht</b> (cement based powder requiring addition of 36 – 40 % of water)</li> <li>– <b>Capatect Dämmkleber 185</b> (cement based powder requiring addition of about 20 % of water)</li> <li>– <b>Capatect ArmaReno 700</b> (cement based powder requiring addition of 20 – 25 % of water)</li> </ul> </li> </ul>	–	≤ 400
	<b>Mechanically fixed ETICS with anchors and supplementary adhesive:</b> <ul style="list-style-type: none"> <li>• <b>Insulation product</b> factory-prefabricated mineral wool (MW) product* <ul style="list-style-type: none"> <li>- MW panel</li> <li>- MW lamella</li> </ul> </li> <li>• <b>Supplementary adhesive</b> (equal to bonded ETICS)</li> <li>• <b>Anchors for insulation product</b> all anchors with ETA according to EAD 330196-01-0604<sup>1</sup></li> </ul>	– –	60 to 340 60 to 200
<b>Base coat</b>	<b>Capatect OrCa-Spachtel</b> Ready to use paste silicate/organic hybrid dispersion	4.5 to 6.0	4.0 to 5.0

<sup>1</sup>

EAD330196-01-0604

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



	Components National application documents shall be taken into account	Coverage [kg/m²]	Thickness [mm]
Glass fibre mesh	<b>Capatect OrCa-Gewebe</b> Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 160 g/m² and mesh size of about 4.0 mm x 4.0 mm	–	–
	<b>Panzergerewebe</b> (implemented in addition to the standard mesh to improve the impact resistance) Alkali- and slide-resistant glass fibre mesh with mass per unit area of about 330 g/m² and mesh size of about 6.0 mm x 6.0 mm	–	–
Finishing coat	• Ready to use pastes – silicate/organic hybrid dispersion <b>Capatect ThermoSan Fassadenputz NQG K</b> (particle size 1.5 to 3.0 mm)	1.8 to 2.6	1.5 to 3.0
Ancillary material	Remains the responsibility of the manufacturer		
* Factory-prefabricated panels and lamella made of mineral wool (MW) with the following designation code 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			

## Annex 2

### Safety in case of fire (BWR 2)

#### 2.1 Reaction to fire

Configurations	Organic content	Flame retardant content	Euroclass according to EN 13501-1
Base coat	max. 9.0 %	min. 13.9 %	A2 - s1,d0
mineral wool	Euroclass A1 according to EN 13501-1	no flame retardant	
anchors	-	-	
<b>Rendering system</b> Base coat with finishing coat indicated in annex 1:			
Capatect-ThermoSan Fassadenputz NQG K	max. 8.9 %	no flame retardant	

#### 2.2 Cross heat of combustion for the MW insulation product EN ISO 1716

$PCS \leq 1.24$  [MJ/kg]

#### 2.3 Apparent density EN 1602

Description and characteristics	MW panel	MW panel	MW lamella
Tensile strength perpendicular to the faces [kPa]; EN 1607 - in dry conditions*	$\sigma_{mt} \geq 14$	$\sigma_{mt} \geq 5$	$\sigma_{mt} \geq 80$
Apparent density [kg/m <sup>3</sup> ]; EN 1602	$120 \leq \rho_a \leq 150$	$85 \leq \rho_a \leq 150$	$80 \leq \rho_a \leq 150$
* Minimal value of all single values			

### Annex 3

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

##### 3.1 Water absorption (capillarity test)

###### Base coat:

Base coat	Average water absorption [kg/m <sup>2</sup> ]	
	after 1h	after 24h
Capatect OrCa-Spachtel	0.02	0.16

###### Rendering system:

Finishing coat with base coat "Capatect OrCa-Spachtel" indicated hereafter:	Average water absorption [kg/m <sup>2</sup> ]	
	after 1h	after 24h
Capatect-ThermoSan Fassadenputz NQG K (particle size 1.5 mm)	0.02	0.31
Capatect-ThermoSan Fassadenputz NQG K (particle size 3.0 mm)	0.03	0.36

##### 3.2 Impact resistance

Rendering system: finishing coat with base coat "Capatect OrCa-Spachtel" indicated hereafter	Single mesh Capatect Orca- Gewebe	Double mesh Capatect Orca- Gewebe	Reinforced mesh + Capatect Orca- Gewebe
Capatect-ThermoSan Fassadenputz NQG K	Category I	Category I	Category I

##### 3.3 Water vapour permeability

Rendering system: finishing coat with base "Capatect OrCa-Spachtel" coat indicated hereafter	Equivalent air thickness $s_d$
Capatect-ThermoSan Fassadenputz NQG K	$\leq 1.0$ m (Test result obtained with a layer thickness 3 mm: 0.3 m)

## Annex 4

### Safety and accessibility in use (BWR 4)

#### 4.1 Bond strength between base coat and MW lamella

		Conditioning		
		Initial state [kPa]	After hygrothermal cycles [kPa]	After freeze/thaw test
Capatect OrCa-Spachtel	Average	144	51*	Test not required because freeze/thaw cycles not necessary
	Minimal value	127	44*	
* < 80 kPa but failure in the insulation product				

#### 4.2 Bond strength between adhesive and substrate

Substrate: concrete		Conditioning		
		Initial state [kPa]	2d immersion in water and 2h drying [kPa]	2d immersion in water and 7d drying [kPa]
Capatect Klebe- und Armierungsmasse 186 M	Average	820	452	894
	Minimal value	790	410	870
Capatect Klebe- und Spachtelmasse 190	Average	1020	590	1120
	Minimal value	930	537	1014
Capatect Klebe- und Armierungsmasse 133 Leicht	Average	658	465	704
	Minimal value	586	419	677
Capatect Dämmkleber 185	Average	1852	1735	1771
	Minimal value	1350	1620	1595
Capatect ArmaReno 700	Average	980	730	1090
	Minimal value	860	630	950

#### 4.3 Bond strength between adhesive and MW lamella

		Conditioning		
		Initial state [kPa]	2d immersion in water and 2h drying [kPa]	2d immersion in water and 7d drying [kPa]
Capatect Klebe- und Armierungsmasse 186 M	Average	130	90	120
	Minimal value	90	70	90
Capatect Klebe- und Spachtelmasse 190	Average	140	90	70
	Minimal value	130	80	70
Capatect Klebe- und Armierungsmasse 133 Leicht	Average	120	100	70
	Minimal value	110	90	60
Capatect Dämmkleber 185	Average	150	130	140
	Minimal value	130	90	110
Capatect ArmaReno 700	Average	110	100	110
	Minimal value	90	60	80

##### Minimal bonded surface area

$$S [\%] = 0.03 \text{ N/mm}^2 \times 100 / 0.08 \text{ N/mm}^2$$

$$S = 37.5 \%$$

The minimal bonded surface S of bonded ETICS is 40 %.

#### 4.4 Wind load resistance

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

##### 4.4.1 Safety in use of mechanically fixed ETICS using anchors

Failure loads – table 1

Apply to all anchors listed in annex 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 load [kN]	Anchors not placed at the panel joints (Static Foam Block Test)	R <sub>panel</sub>	Minimal: 0.65 Average: 0.74
	Anchors placed at the panel joints (Static Foam Block Test)	R <sub>joint</sub>	Minimal: 0.59 Average: 0.61
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	R <sub>panel</sub>	Minimal: 0.64 Average: 0.69
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2*  - series 3*	R <sub>panel</sub>	Minimal: 0.36 Average: 0.39 Minimal: 0.41 Average: 0.45
* according to EAD 040083-00-0404 clause 2.2.14.2			

Failure loads – table 2

Apply to all anchors listed in annex 1 mounted on the insulation panels surface				
Characteristics of the <b>MW panels</b>		Thickness		≥ 80 mm
		Tensile strength perpendicular to the faces		≥ 5.0 kPa
Plate diameter of anchor			≥ Ø 90 mm	≥ Ø 140 mm
Failure load [kN]	Anchors not placed at the panel joints (Static Foam Block Test)	R <sub>panel</sub>	Minimal: 0.48 Average: 0.49	Minimal: 0.56 Average: 0.69
	Anchors placed at the panel joints (Static Foam Block Test)	R <sub>joint</sub>	Minimal: 0.38 Average: 0.39	Minimal: 0.44 Average: 0.54
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	R <sub>panel</sub>	Minimal: 0.54 Average: 0.61	no performance assessed
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2*	R <sub>panel</sub>	Minimal: 0.40 Average: 0.46	no performance assessed
* according to EAD 040083-00-0404 clause 2.2.14.2				

Failure loads – table 3

Apply to all anchors listed in annex 1 mounted on the insulation panels surface						
Characteristics of the MW panels		Thickness	$60 \leq d < 80$	$80 \leq d < 120$	$120 \leq d \leq 200$	$> 200$
		Tensile strength perpendicular to the faces	$\geq 7.5 \text{ kPa}$			
Plate diameter of anchor			$\geq \varnothing 90 \text{ mm}$			
Failure load [kN]	Anchors not placed at the panel joints (Static Foam Block Test, dry conditions)	$R_{\text{panel}}$	Minimal: 0.45 Average: 0.48	Minimal: 0.54 Average: 0.57	Minimal: 0.73 Average: 0.82	Minimal: 0.73 Average: 0.82
	Anchors placed at the panel joints (Static Foam Block Test)	$R_{\text{joint}}$	no performance assessed	Minimal: 0.36 Average: 0.38	Minimal: 0.49 Average: 0.55	Minimal: 0.49 Average: 0.55
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	$R_{\text{panel}}$	Minimal.: 0.50 Average: 0.56	Minimal: 0.85 Average: 0.86	Minimal: 0.98 Average: 1.02	Minimal: 0.98 Average: 1.02
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2*	$R_{\text{panel}}$	no performance assessed	Minimal: 0.42 Average: 0.46	Minimal: 0.57 Average: 0.59	Minimal: 0.57 Average: 0.59
* according to EAD 040083-00-0404 clause 2.2.14.2						

Figure 4: anchors not placed at the panel joints (Static Foam Block Test, dry conditions, with 10 anchors/m<sup>2</sup>)

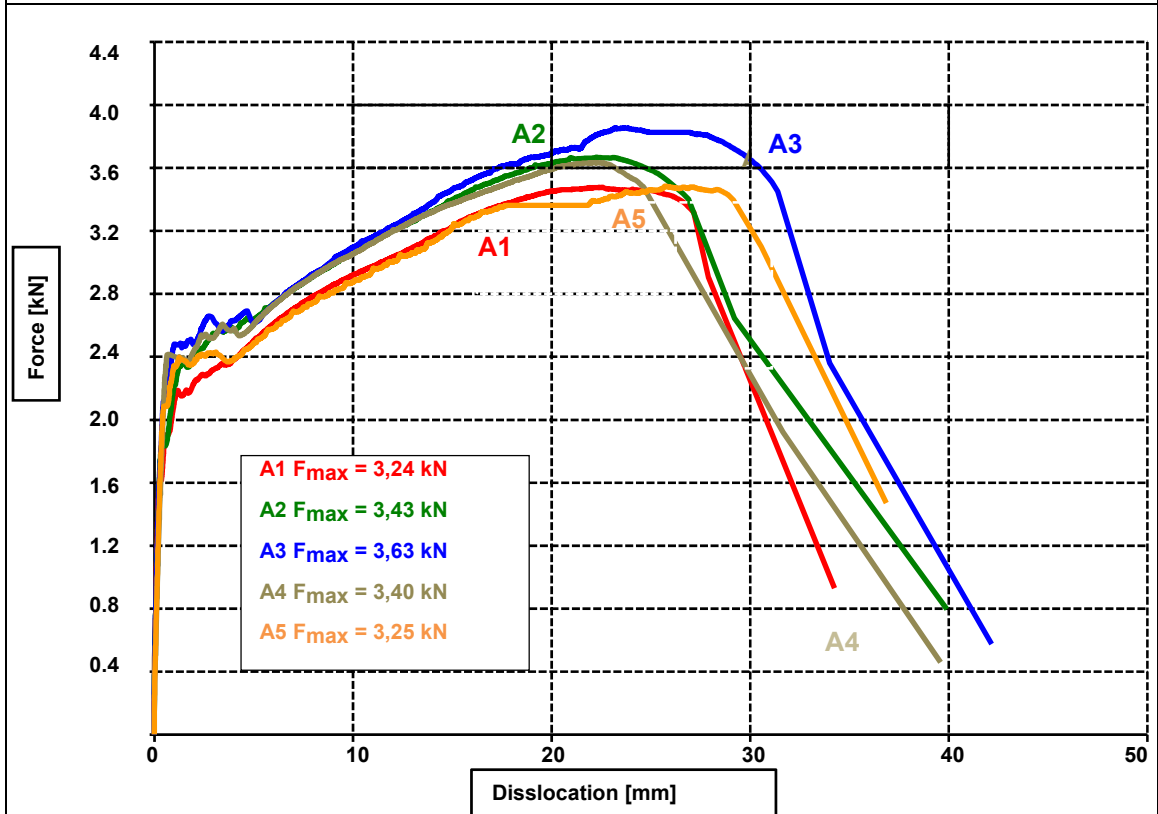


Figure 5: anchors not placed at the panel joints (Pull-through test, dry conditions)

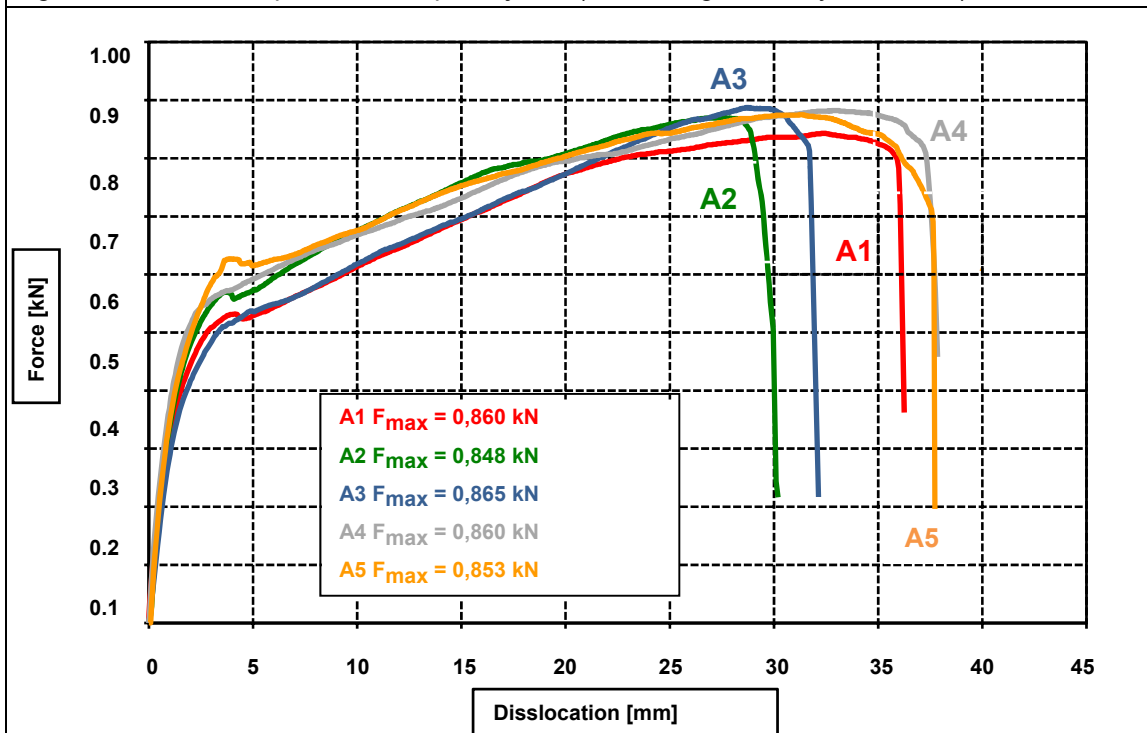




Figure 6: anchors not placed at the panel joints (Pull-through test, wet conditions)

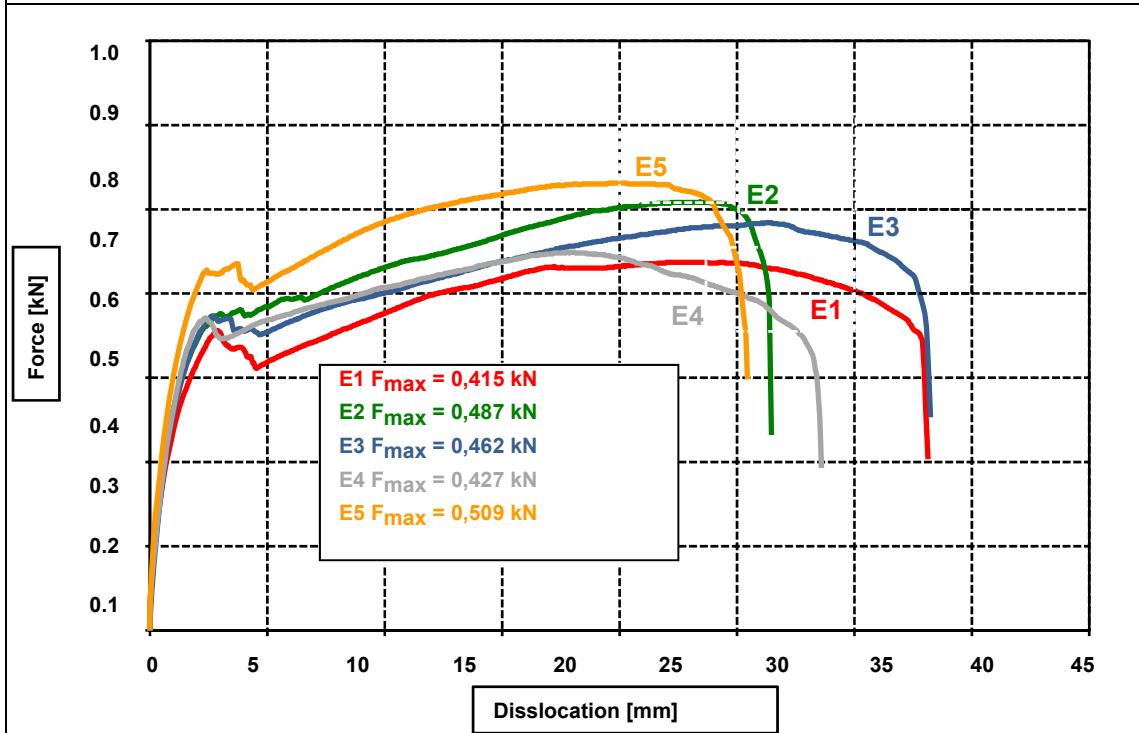


Figure 7: anchors not placed at the panel joints (Static Foam Block Test, dry conditions, with 8 anchors/m<sup>2</sup>)

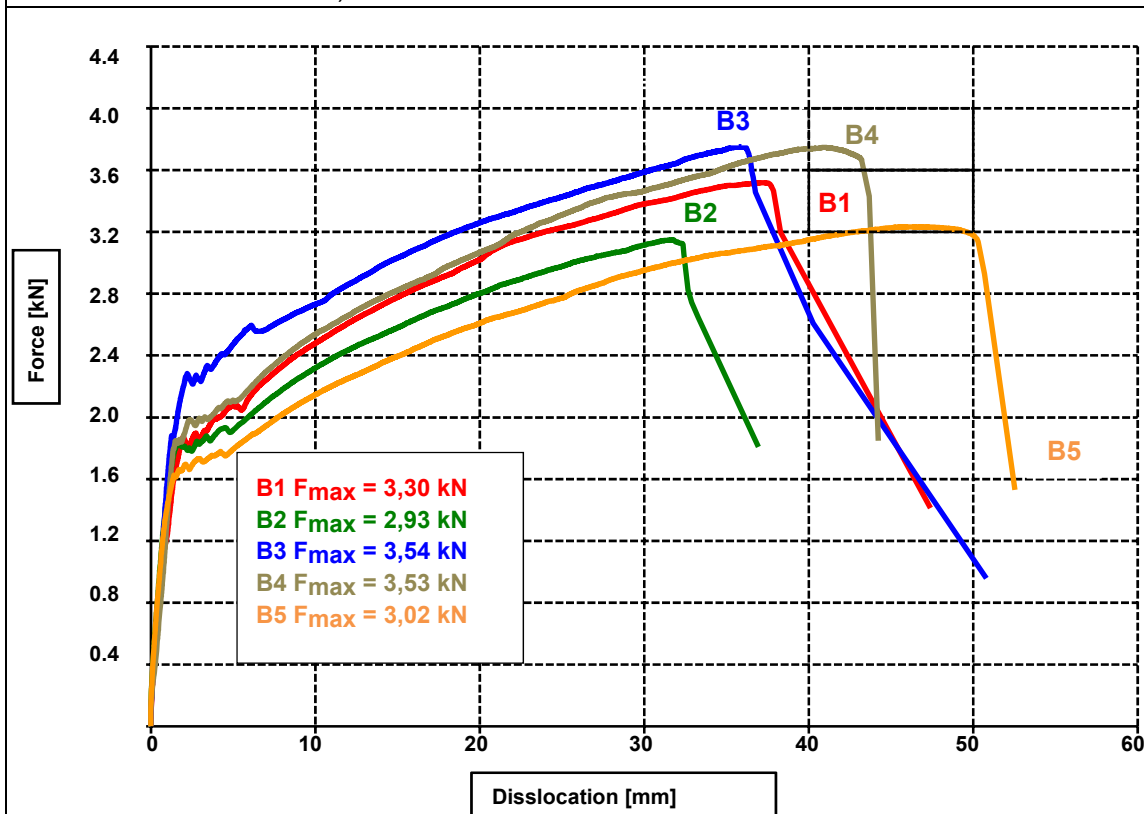


Figure 8: anchors not placed at the panel joints (Pull-through test, dry conditions)

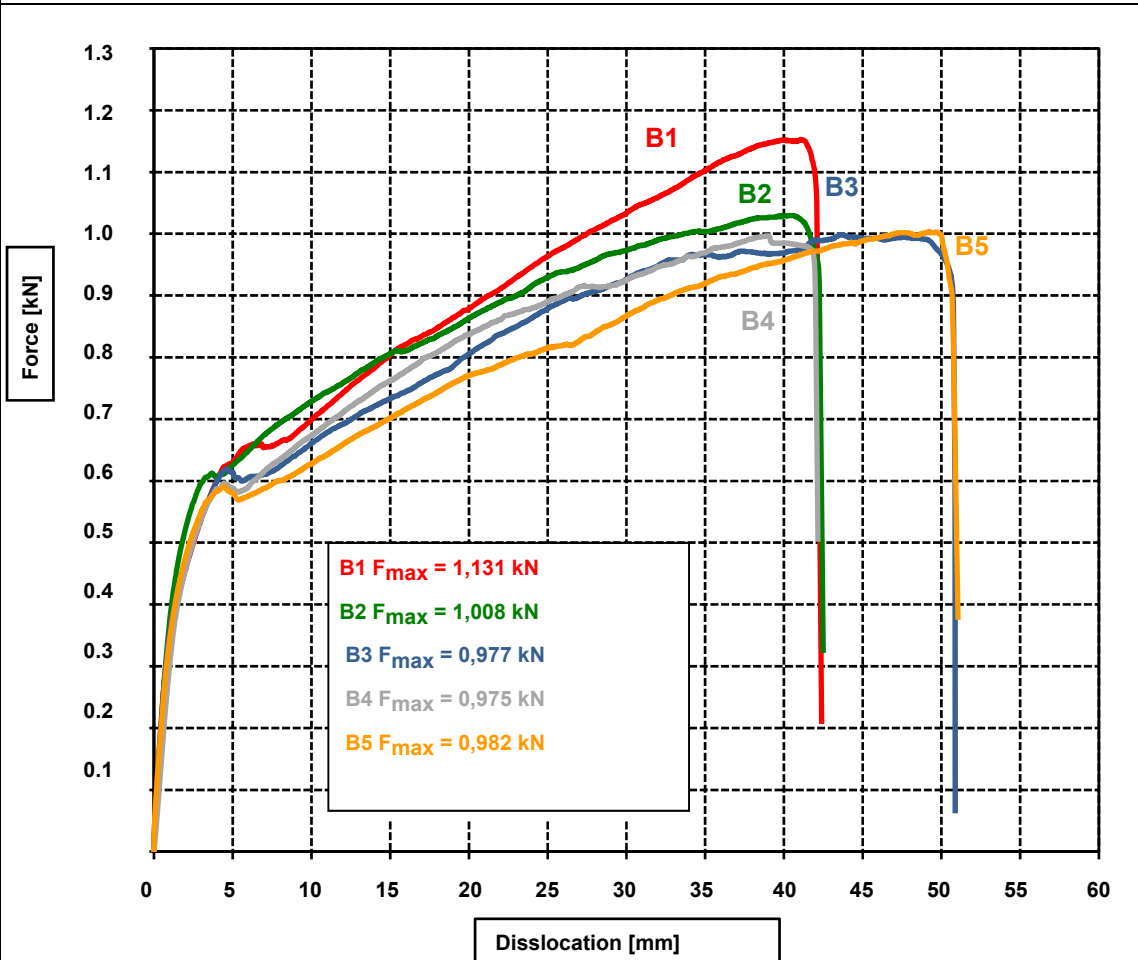
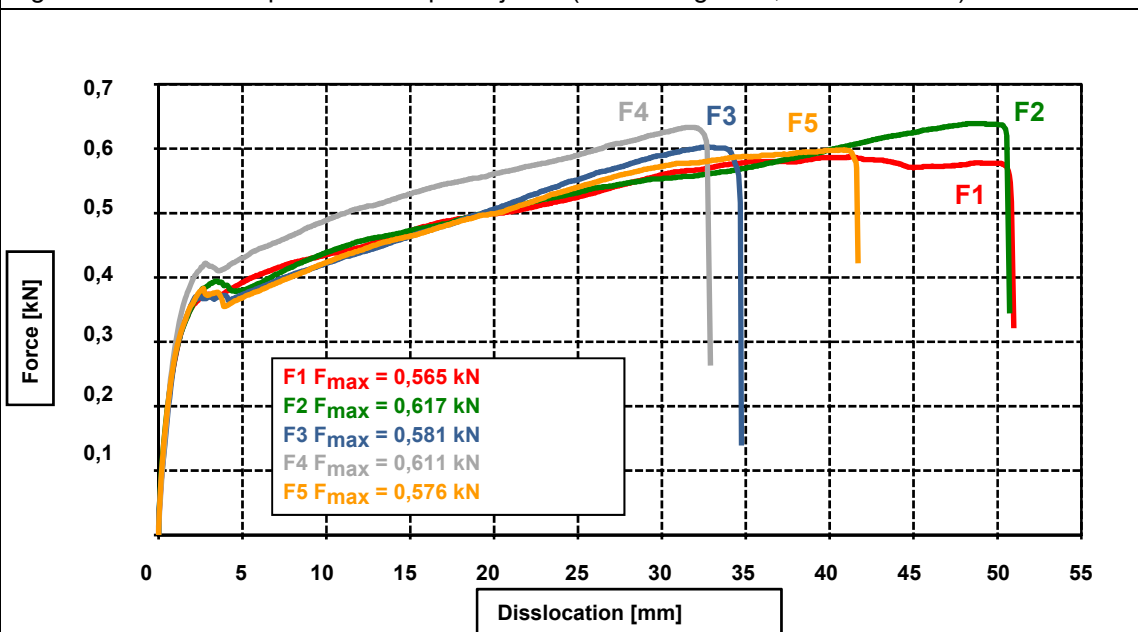


Figure 9: anchors not placed at the panel joints (Pull-through test, wet conditions)



Failure loads – Table 4

Apply to all anchors listed in annex 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 load [kN]	Anchors placed at the panel joints (Pull-through test, dry condition)	R <sub>joint</sub>	Minimal: 0.62 Average: 0.66
	Anchors placed at the panel joints (Pull-through test, wet condition)	R <sub>joint</sub>	Minimal: 0.51 Average: 0.57
	Anchors placed at the panel joints (Static Foam Block Test)	R <sub>joint</sub>	Minimal: 0.71

The failure loads of table 1 specified above with a plate diameter of anchor of 60 mm apply to the following anchors with deep mounting only under the following conditions:

Anchor	Thickness of the MW panel [t]	Conditions of installation*
ejotherm STR U ejotherm STR U 2G (ETA-04/0023) STR Carbon (ETA-13/0009)	$t \geq 80$ mm	– Maximum installation depth of the anchor plate: 15 mm ( $\triangleq$ thickness of insulation cover) – Cutting depth 20 mm
	$t \geq 100$ mm	– Maximum installation depth of the anchor plate: 15 mm ( $\triangleq$ thickness of insulation cover) – Cutting depth 35 mm
TERMOZ 8 SV (ETA-06/0180)	$t \geq 80$ mm	– Maximum installation depth of the anchor plate: 15 mm ( $\triangleq$ thickness of insulation cover)
* according to the appropriate ETA of anchor		

#### 4.5 Bond strength after aging

finishing coat with base coat "Capatect OrCa-Spachtel" indicated hereafter		After hygrothermal cycles [kPa] with	Rupture typ
Capatect-ThermoSan Fassadenputz NQG K	Average	8.7	< 80 kPa but failure in the insulation product
	Minimal value	6.7	

#### 4.6 Reinforcement (glass fibre mesh)

Capatect OrCa-Gewebe	Average warp	Average weft
Tensile strength in as-delivered state	47.65 N/mm	60.86 N/mm
Residual tensile strength after aging	22.0 N/mm	30.32 N/mm
Relative residual tensile strength after aging	65.0 %	50.0 %
Elongation in as-delivered state	2.03 %	2.60 %
Elongation after aging	1.49 %	1.31 %

Panzergewebe	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

### 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 $\text{m}^2$
	$\chi_p$ :	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 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