

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-08/0304
of 8 November 2022

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

Capatect-WDVS "A"
mit Unterputz Capatect Klebe- und Spachtelmasse 190

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

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

Manufacturing plant

CAPAROL
Farben Lacke Bautenschutz GmbH
Roßdörfer Straße 50
64372 Ober-Ramstadt
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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European Technical Assessment

ETA-08/0304

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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 is comprised a prefabricated insulation product of mineral wool (MW) to be bonded and if necessary additional mechanically fixed onto a wall. The methods of fixing and the relevant components are specified in annex 1 below.

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 "Capatect-WDVS "A" mit Unterputz Capatect Klebe- und Spachtelmasse 190" 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.

English translation prepared by DIBt

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"> - Cross heat of combustion for the MW-insulation product EN ISO 1716 - Apparent density EN 1602 	(see annex 2) Euroclass A1 according EN 13501-1 Value [MJ/kg] Value [kg/m ³]
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
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]
MW insulation product after 24 hours	Maximum value 3.0 [kg/m ²]
Water-tightness of the ETICS Hygrothermal behaviour on the test wall	Pass without defects
Freeze/thaw behaviour of the ETICS	The water absorption of the base coat as well as the rendering system is less than 0.5 kg/m ² after 24 h. The ETICS is so assessed as free/thaw resistant.
Impact resistance	(see annex 3.2) Category
Water vapour permeability - Rendering system - MW insulation product	(see annex 3.3) s _d value [m] μ = 1 Thickness of the insulation product 400 [mm]

3.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
<p>Bond strength between base coat and MW insulation product</p> <p>between adhesive and substrate</p> <p>between adhesive and MW insulation</p>	<p>(see annex 4.1)</p> <ul style="list-style-type: none"> - Minimal value/ average [kPa], rupture type: Initial state (28 d immersion) - Minimal value/ average [kPa], rupture type: after hygrothermal cycles <p>(see annex 4.2)</p> <ul style="list-style-type: none"> - Minimal value [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 <p>(see annex 4.3)</p> <ul style="list-style-type: none"> - Minimal value [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
Fixing strength (displacement test)	Test not required therefore no limitation of ETICS length required.
<p>Wind load resistance of ETICS pull-through test of fixing static foam block test</p>	<p>(see annex 4.5)</p> <ul style="list-style-type: none"> - R_{panel} [kN/fixing], - R_{joint} [kN/fixing], - Plate diameter of anchor ≥ 60 mm, ≥ 90 mm res. ≥ 140 mm - plate stiffness ≥ 0.3 [kN/mm²] - load resistance of the anchor plate ≥ 1.0 [kN]
<p>Tensile strength perpendicular to the faces in dry conditions MW panel, MW panel MW lamella in wet conditions - series 2</p> <p>- series 3</p>	<p>$\sigma_{\text{mt}} \geq 14$ [kPa], $\sigma_{\text{mt}} \geq 5$ [kPa] $\sigma_{\text{mt}} \geq 80$ [kPa]</p> <p>$\sigma_{\text{mt}} \geq 9.38$ [kPa], $\sigma_{\text{mt}} \geq 3.35$ [kPa] $\sigma_{\text{mt}} \geq 53.6$ [kPa]</p> <p>$\sigma_{\text{mt}} \geq 7$ [kPa], $\sigma_{\text{mt}} \geq 2.5$ [kPa] $\sigma_{\text{mt}} \geq 40$ [kPa]</p>

Essential characteristic	Performance
Shear strength of the ETICS MW panel $\sigma_{mt} \geq 14$ [kPa], MW lamella MW panel $\sigma_{mt} \geq 5$ [kPa]	≥ 20 [kPa] ≥ 6 [kPa]
Shear modulus of the ETICS MW panel $\sigma_{mt} \geq 14$ [MPa], MW lamella MW panel $\sigma_{mt} \geq 5$ [MPa]	≥ 1.0 [MPa] ≥ 0.3 [MPa]
Pull-through resistance of fixings from profiles	≥ 500 [N]
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 0.05 mm.
Bond strength after ageing finishing coat tested on the rig finishing coat not tested on the rig	(see annex 4.6) Minimal value/ average [kPa], rupture type Minimal value/ average [kPa], rupture type
Tensile strength of the glass fibre mesh in the as-delivered state Standard mesh Reinforced mesh	(see annex 4.7) Average [N/mm] Average [N/mm]
Residual tensile strength of the glass fibre mesh after aging Standard mesh Reinforced mesh	(see annex 4.7) Average [N/mm] Average [N/mm]
Relative residual tensile strength of the glass fibre mesh after aging Standard mesh Reinforced mesh	(see annex 4.7) Average [%] Average [%]
Elongation of the glass fibre mesh in the as-delivered state Standard mesh Reinforced mesh	(see annex 4.7) Average [%] Average [%]
Elongation of the glass fibre mesh after aging Standard mesh Reinforced mesh	(see annex 4.7) Average [%] Average [%]

3.4 Protection against noise (BWR 5)

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

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3.5 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Thermal resistance of ETICS	(see annex 5) Calculated value or measurement value R [[m ² · K)/W]
Thermal transmittance of ETICS	(see annex 5) Calculated value or measurement value U [W/(m ² · 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
"Capatect-WDVS "A" mit Unterputz Capatect Klebe- und Spachtelmasse 190"	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+

⁽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

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 8 November 2022 Deutsches Institut für Bautechnik

Anja Rogsch
Head of Section

beglaubigt:
Keküllüoğlu

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	Bonded ETICS: <ul style="list-style-type: none"> • Insulation product factory-prefabricated mineral wool (MW) product* <ul style="list-style-type: none"> - MW lamella • Adhesives <ul style="list-style-type: none"> - Capatect Klebe- und Armierungsmasse 186 M (cement based powder requiring addition of 20 – 24 % of water) - Capatect Klebe- und Spachtelmasse 190 (cement based powder requiring addition of 20 – 24 % of water) - Capatect Klebe- und Armierungsmasse 133 Leicht (cement based powder requiring addition of 36 – 40 % of water) - Capatect Dämmkleber 185 (cement based powder requiring addition of about 20 % of water) - Capatect ArmaReno 700 (cement based powder requiring addition of 20 – 25 % of water) 	<p>–</p> <p>3.5 to 4.5 (powder)</p> <p>about 4.0 (powder)</p> <p>3.5 to 4.5 (powder)</p> <p>4.0 to 5.0 (powder)</p> <p>4.0 to 5.0 (powder)</p>	<p>≤ 400</p> <p>–</p> <p>–</p> <p>–</p> <p>–</p> <p>–</p>
	Mechanically fixed ETICS with profiles and supplementary adhesive: <ul style="list-style-type: none"> • Insulation product factory-prefabricated mineral wool (MW) product* <ul style="list-style-type: none"> - MW panel, $\sigma_{mt} \geq 14 \text{ kPa}^{****}$ • Supplementary adhesive (equal to bonded ETICS) • Profiles <ul style="list-style-type: none"> - Halteleiste Alu - Verbindungsleiste Alu Aluminium (Al) – Profile EN AW-6060 T66 nach EN 755-2:2008 • Anchors for profiles <ul style="list-style-type: none"> - WS 8 L - WS 8 N - ejothem SDK U - SDF-K plus - ejothem NK U • Anchors for insulation product if necessary (equal to mechanically fixed ETICS with anchors and supplementary adhesive, see below) 	<p>–</p>	<p>60 to 200</p>

	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 factory-prefabricated mineral wool (MW) product* <ul style="list-style-type: none"> – MW panel – MW lamella • Supplementary adhesive (equal to bonded ETICS) • Anchors for insulation product all anchors with ETA according to EAD 330196-00-0604¹ 	– –	60 to 340 60 to 200
Base coat	<p>Capatect Klebe- und Spachtelmasse 190 Identical with the equally named adhesive given above.</p>	4.0 to 5.0 (powder)	3.0 to 4.0
Glass fibre mesh	<p>Capatect-Gewebe 650 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</p> <p>Capatect-Panzergewebe 652 (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</p>	– –	– –
Key coat	<p>Putzgrund 610** Ready to use pigmented acrylic-resin dispersion liquid To be used with all finishing coats indicated hereafter if applicable</p>	about 0.20 [l/m ²]	–
Finishing coat	<ul style="list-style-type: none"> • Cement based powder requiring addition of about 40 % of water: Capatect Modellier- und Spachtelputz 134 • Cement based powder requiring addition of 28 – 44 % of water: Capatect Mineral-Leichtputz K/R*** (particle size 1.5 to 5.0 mm) • Cement based powder requiring addition of 20 – 24 % of water: Capatect Mineralputz K/R**** (particle size 2.0 to 5.0 mm) 	3.2 to 8.0 (powder) 2.3 to 4.5 (powder) 2.5 to 4.8 (powder)	2.0 to 5.0 } regulated by particle size
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

** The instruction to the installer concerning the use of a key coat remains the responsibility of the manufacturer.

*** K/R indicates different structures of the finishing coats.

**** Thermal insulation materials for mechanically fixed ETICS with profiles must circumferentially at the edges, 24 mm from the inner surface, get an approx. 3 mm wide and 13 to 18 mm deep groove cut-in at the factory

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

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. 4.6 %	no flame retardant	A2 -s1,d0
Mineral wool	Euroclass A1 according to EN 13501-1	no flame retardant	
profiles	-	-	
anchors	-	-	
Rendering system Base coat with finishing coat and compatible key coat indicated in annex 1			
Capatect Modellier- und Spachtelputz 134	max. 3.7 %	no flame retardant	
Capatect Mineral-Leichtputz K/R			
Capatect Mineralputz K/R			

2.1.1 Cross heat of combustion for the MW-insulation product EN ISO 1716

$$PCS \leq 1.4 \text{ [MJ/kg]}$$

2.2.2 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 ³]; 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	Thickness	Average water absorption [kg/m ²]	
		after 1h	after 24h
Capatect Klebe- und Spachtelmasse 190	4 mm	0.04	0.19

Rendering system:

finishing coat with base coat "Capatect Klebe- und Spachtelmasse 190"	Average water absorption [kg/m ²]	
	after 1h	after 24h
Capatect Modellier- und Spachtelputz 134	0.143	0.393
Capatect Mineral-Leichtputz K	0.076	0.302
Capatect Mineral-Leichtputz R	0.070	0.460
Capatect Mineralputz R	0.063	0.260
Capatect Mineralputz K	0.063	0.260

3.2 Impact resistance (tested on small samples)

Rendering system: Base coat "Capatect Klebe- und Spachtelmasse 190" with finishing coat indicated hereafter	Single standard mesh "Capatect-Gewebe 650"
Capatect Modellier- und Spachtelputz 134	category II
Capatect Mineral-Leichtputz K/R	category II
Capatect Mineralputz K/R	category II

The impact resistance of all other configurations of the ETICS is not assessed (npd).

3.3 Water vapour permeability

Rendering system: Base coat with finishing coat and compatible key coat indicated hereafter	Equivalent air thickness s _d [m]
Capatect Modellier- und Spachtelputz 134	≤ 1.0 m (Test result obtained with layer thickness of rendering system t = 9 mm: 0.28 m)
Capatect Mineral-Leichtputz K/R	≤ 1.0 m (Test result obtained with layer thickness of rendering system t = 9 mm: 0.23 m)
Capatect Mineralputz K/R	≤ 1.0 m (Test result obtained with layer thickness of rendering system t = 9 mm: 0.21 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 Klebe- und Spachtelmasse 190	Average	140	90	Test not required because freeze/thaw cycles not necessary
	Minimal value	130	80	

4.2 Bond strength between adhesive and substrate

Substrate: concrete		Rupture type	Conditioning		
			Initial state [kPa]	2 d immersion in water and 2 h drying [kPa]	2 d immersion in water and 7 d drying [kPa]
Capatect Klebe- und Armierungsmasse 186 M (3 – 5 mm)	Average	in the adhesive	820	452	894
	Minimal value		790	410	870
Capatect Klebe- und Spachtelmasse 190 (3 – 5 mm)	Average	in the adhesive	1020	590	1120
	Minimal value		930	537	1014
Capatect Klebe- und Armierungsmasse 133 Leicht (3 – 5 mm)	Average	in the adhesive	658	465	704
	Minimal value		586	419	677
Capatect-Dämmkleber 185 (3 – 5 mm)	Average	in the adhesive	1852	1735	1771
	Minimal value		1350	1620	1595
Capatect ArmaReno 700 (3 – 5 mm)	Average	in the adhesive	980	730	1090
	Minimal value		860	630	950

4.3 Bond strength between adhesive and MW lamella

		Rupture type	Conditioning		
			Initial state [kPa]	2d immersion in water and 2 h drying [kPa]	2d immersion in water and 7 d drying [kPa]
Capatect Klebe- und Armierungs- masse 186 M (3 – 5 mm)	Average	in the insulation product	130	90	120
	Minimal value		90	70*	90
Capatect Klebe- und Spachtelmasse 190 (3 – 5 mm)	Average	in the insulation product	140	90	70*
	Minimal value		130	80	70*
Capatect Klebe- und Armierungs- masse 133 Leicht (3 – 5 mm)	Average	in the insulation product	120	100	70*
	Minimal value		110	90	60*
Capatect- Dämmkleber 185 (3 – 5 mm)	Average	in the insulation product	150	130	140
	Minimal value		130	90	110
Capatect ArmaReno 700 (3 – 5 mm)	Average	in the insulation product	110	100	110
	Minimal value		90	60*	80

* < 80 kPa, but failure in the insulation product

4.4 Minimal bonded surface area

$$S [\%] = 0.03 \text{ N/mm}^2 \times 100 / 0.06 \text{ N/mm}^2$$

$$S = 50\%$$

The minimal bonded surface S of bonded ETICS is 50%.

English translation prepared by DIBt

4.5 Wind load resistance

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

4.5.1 Safety in use of mechanically fixed ETICS using profiles

Failure loads – table 1

Characteristics of the MW panels	Dimensions	625 mm x 800 mm
	Thickness	≥ 60 mm
	Tensile strength perpendicular to the faces	≥ 14 kPa
Failure load [kN/panel] (Static Foam Block Test)	Horizontal profiles with a vertical distance of 625 mm, fixed every 30 cm and vertical connection profiles No additional anchors in MW panel	Minimal: 1.20 Average: 1.25

Failure loads – table 2

Characteristics of the MW panels	Dimensions	625 mm x 800 mm
	Thickness	≥ 60 mm
	Tensile strength perpendicular to the faces	≥ 14 kPa
Failure load [kN/panel] (Static Foam Block Test)	Horizontal profiles with a vertical distance of 625 mm, fixed every 30 cm and vertical connection profiles Two additional anchors per MW panel, plate diameter ≥ 60 mm, mounted on the MW panel surface	Minimal: 2.20 Average: 2.40

4.5.2 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 _{panel}	Minimal: 0.65 Average: 0.74
	Anchors placed at the panel joints (Static Foam Block Test)	R _{joint}	Minimal: 0.59 Average: 0.61
	Anchors not placed at the panel joints (Pull-through test, dry conditions)	R _{panel}	Minimal: 0.64 Average: 0.69
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2* - series 3*	R _{panel}	Minimal: 0.36 Average: 0.39 Minimal: 0.41 Average: 0.45
* according to EAD 040083-00-0404 clause 2.2. 14.2			

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Failure loads – table 2

Apply to all anchors listed in annex 1 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 [kN]	Anchors not placed at the panel joints (Static Foam Block Test)	R _{panel}	Minimal: 0.48 Average: 0.49	Minimal: 0.56 Average: 0.69
	Anchors placed at the panel joints (Static Foam Block Test)	R _{joint}	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 _{panel}	Minimal: 0.54 Average: 0.61	no performance assessed
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2*	R _{panel}	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 ≤ t < 80	80 ≤ t < 120	120 ≤ t ≤ 200	> 200
	Tensile strength perpendicular to the faces		≥ 7.5 kPa			
Plate diameter of anchor			≥ Ø 90 mm			
Failure load [kN]	Anchors not placed at the panel joints (Static Foam Block Test, dry conditions)	R _{panel}	Minimal: 0.45 Average: 0.48	Minimal: 0.54 Average: 0.57 (see figure 4)	Minimal: 0.73 Average: 0.82 (see figure 7)	Minimal: 0.73 Average: 0.82 (see figure 7)
	Anchors placed at the panel joints (Static Foam Block Test)	R _{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 _{panel}	Minimal.: 0.50 Average: 0.56	Minimal: 0.85 Average: 0.86 (see figure 5)	Minimal: 0.98 Average: 1.02 (see figure 8)	Minimal: 0.98 Average: 1.02 (see figure 8)
	Anchors not placed at the panel joints (Pull-through test, wet conditions) - series 2*	R _{panel}	no performance assessed	Minimal: 0.42 Average: 0.46 (see figure 6)	Minimal: 0.57 Average: 0.59 (see figure 9)	Minimal: 0.57 Average: 0.59 (see figure 9)
* 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, tested with 6 anchors)

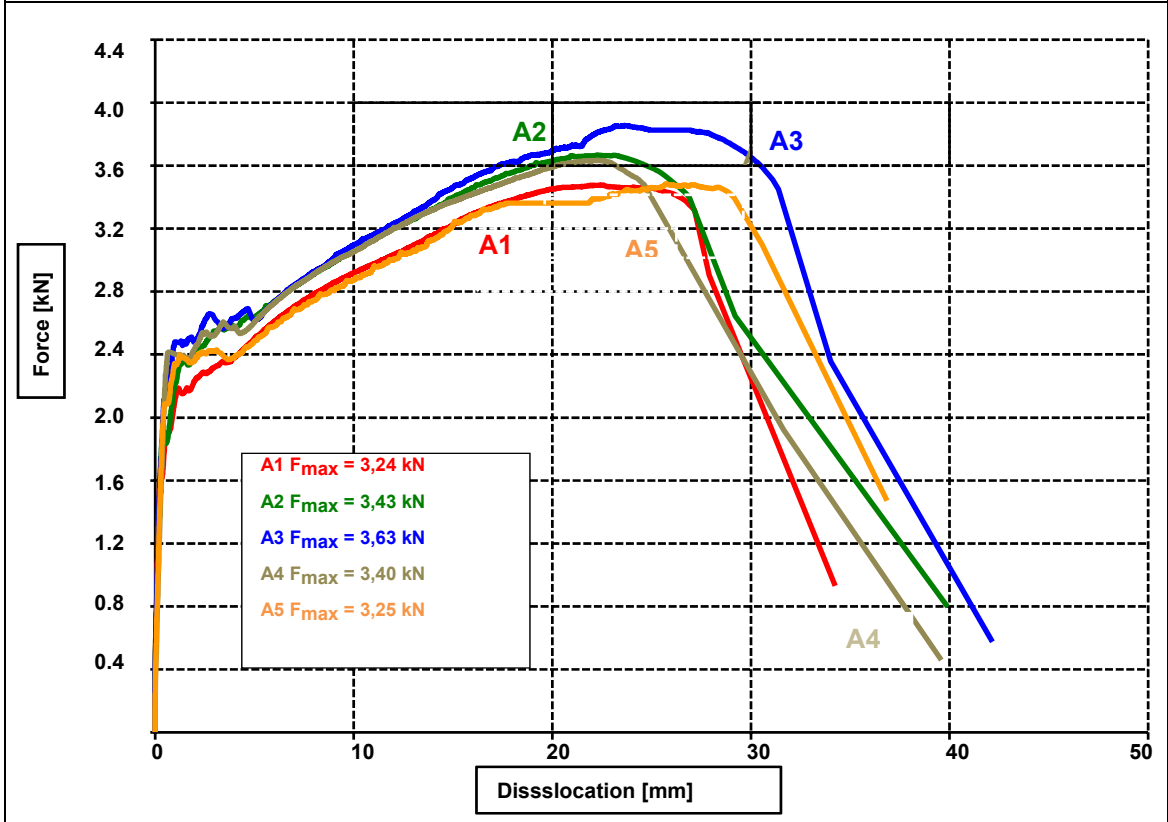


Figure 5: anchors not placed at the panel joints (Pull-through test, dry conditions)

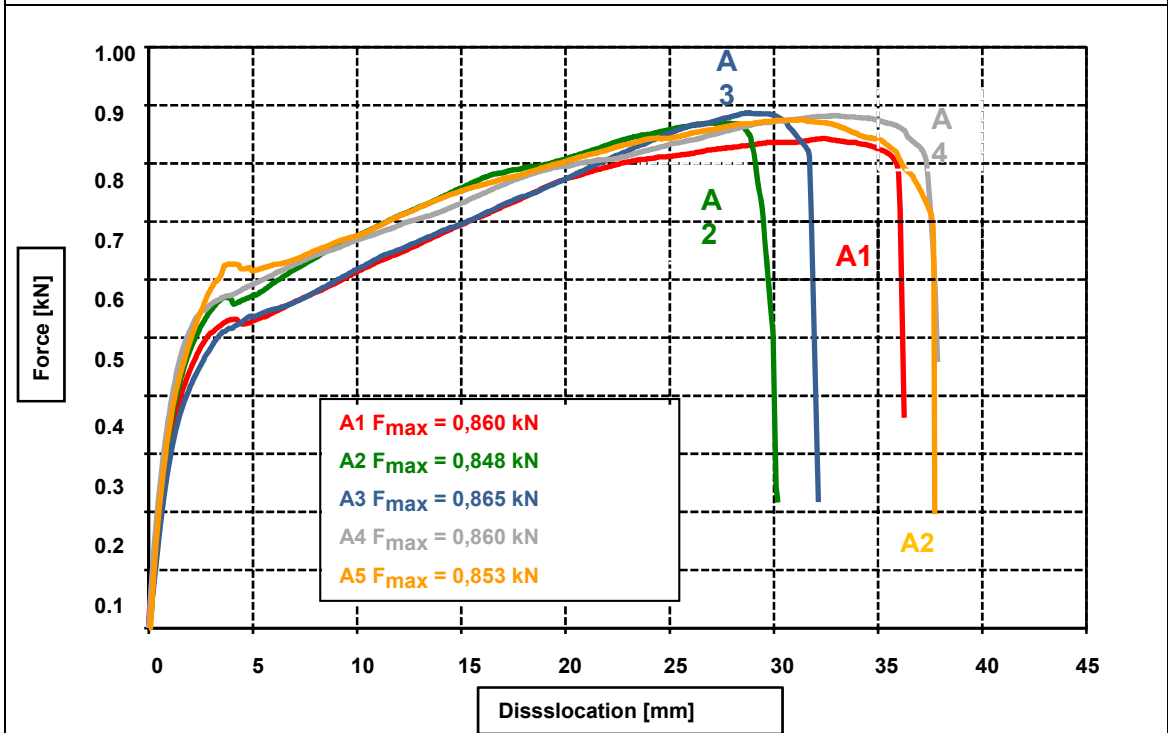


Figure 6: anchors not placed at the panel joints (Pull-through test, wet conditions)

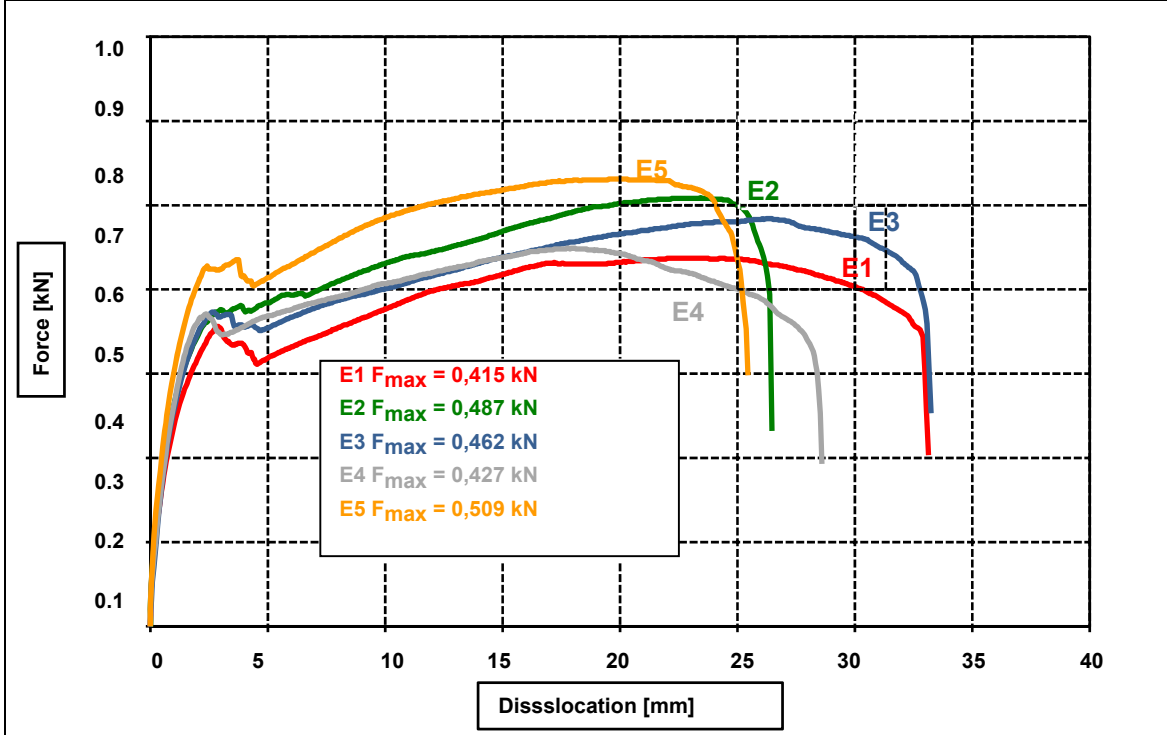
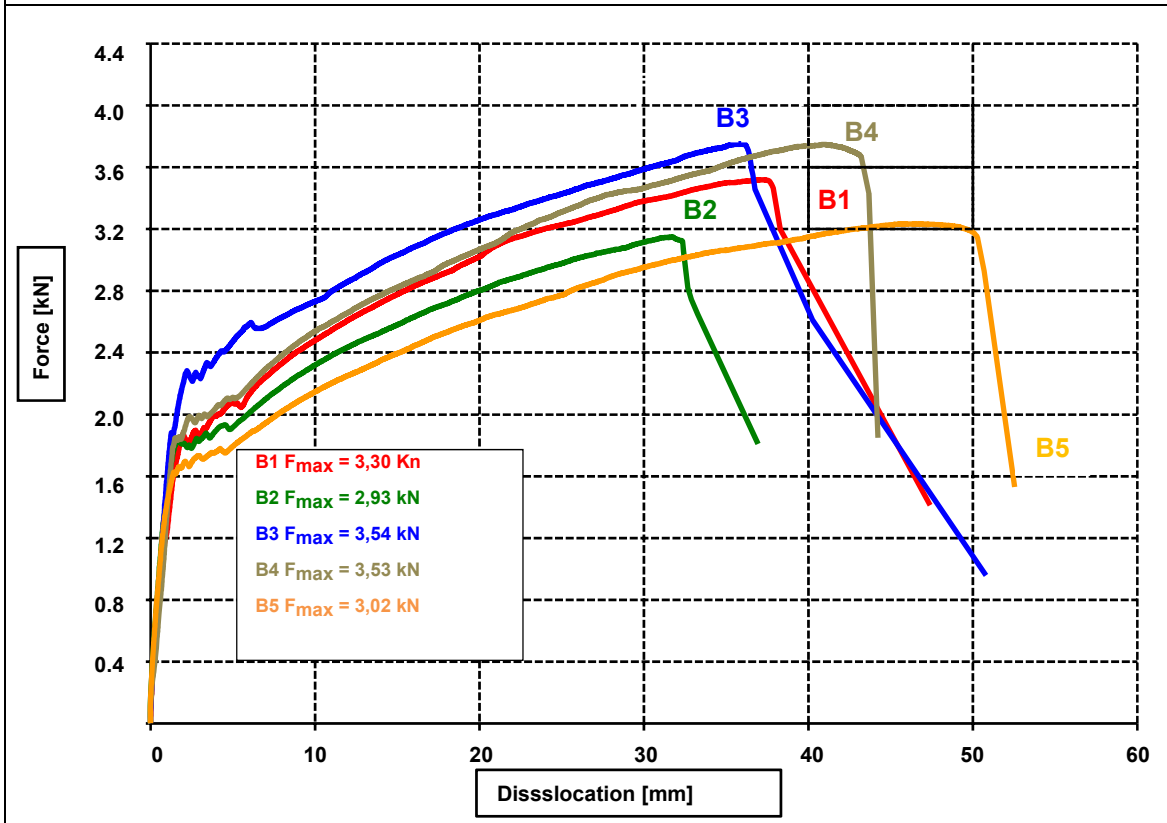
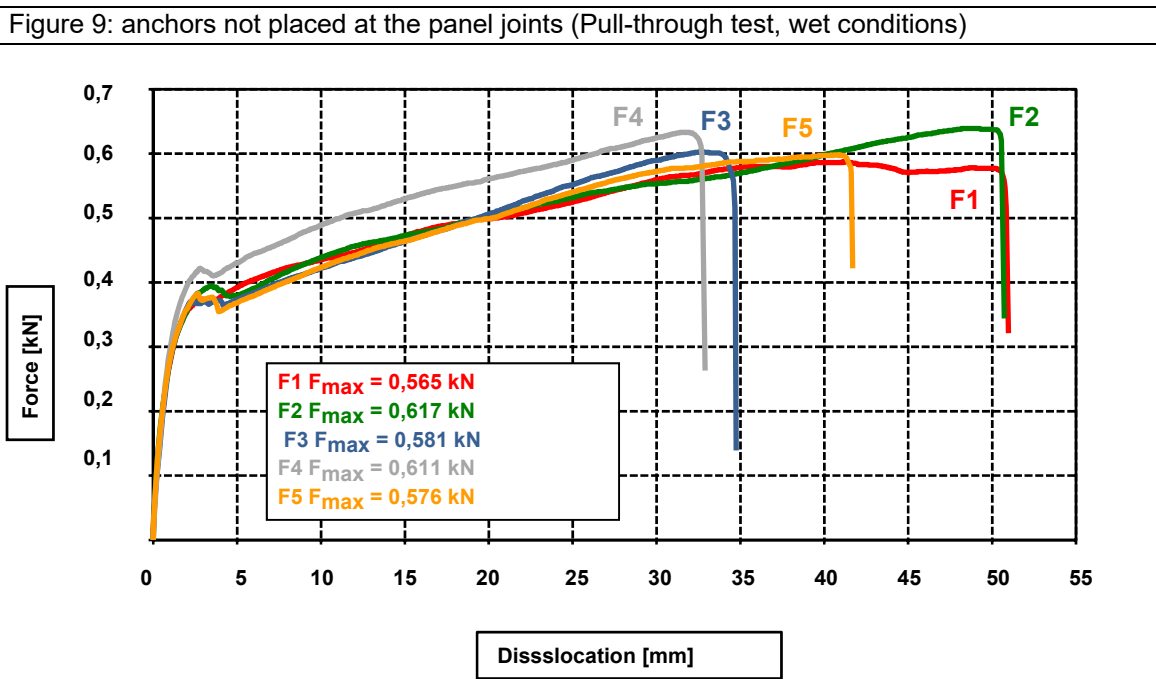
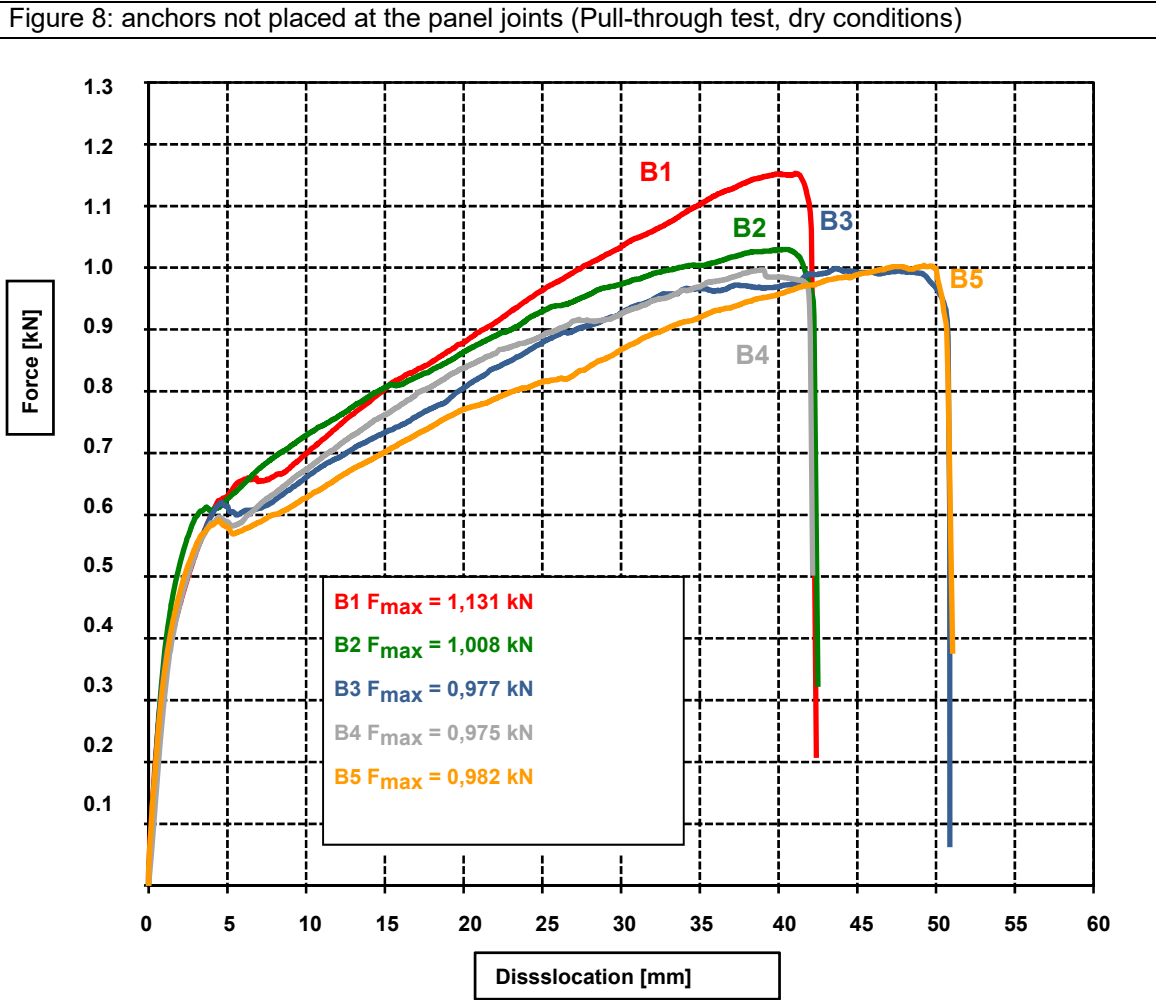


Figure 7: anchors not placed at the panel joints (Static Foam Block Test, dry conditions, tested with 4 anchors)





English translation prepared by DIBt

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 _{joint}	Minimal: 0.62 Average: 0.66
	Anchors placed at the panel joints (Pull-through test, wet condition)	R _{joint}	Minimal: 0.51 Average: 0.57
	Anchors placed at the panel joints (Static Foam Block Test)	R _{joint}	Minimal: 0.71

The failure loads of table 2 in section 4.4.1 and table 1 in section 4.4.2 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 ≥ 80 mm	– Maximum installation depth of the anchor plate: 15 mm (≅ thickness of insulation cover) – Cutting depth 20 mm
	t ≥ 100 mm	– Maximum installation depth of the anchor plate: 15 mm (≅ thickness of insulation cover) – Cutting depth 35 mm
TERMOZ 8 SV (ETA-06/0180)	t ≥ 80 mm	– Maximum installation depth of the anchor plate: 15 mm (≅ thickness of insulation cover)

* according to the appropriate ETA of anchor

English translation prepared by DIBt

4.6 Bond strength after aging

Base coat "Capatect Klebe- und Spachtelmasse 190" with finishing coats indicated hereafter		7d immersion in water and 7 days drying [kPa]
Capatect Modellier- und Spachtelputz 134	Average	110.0
	Minimal value	100.1
Capatect Mineral-Leichtputz K	Average	100.0
	Minimal value	100.4
Capatect Mineral-Leichtputz R	Average	100.0
	Minimal value	100.4
Capatect Mineralputz K	Average	120.0
	Minimal value	100.0
Capatect Mineralputz R	Average	120.0
	Minimal value	100.0

4.7 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-Panzerewebe 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
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 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 $[W/(m^2 \cdot K)]$

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

correction term for mechanical fixing devices (anchors, profiles)

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

correction term for anchors

where: 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 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

$\Delta U_{profile}$

correction term for profiles; subject to the thickness of the insulation product and the thermal resistance of the substrate wall the following values apply:

Thermal resistance of the substrate wall $[(m^2 \cdot K)/W]$	Thickness of the insulation product [mm]	$\Delta U_{profile}$ $[W/(m^2 \cdot K)]$
$R < 0.33$	$60 \leq t < 80$	0.03
	$80 \leq t < 120$	0.02
	$t \geq 120$	0
$0.33 \leq R \leq 1.10$	$60 \leq t < 80$	0.02
	$80 \leq t \leq 100$	0.01
	$t > 100$	0
$R > 1.10$	$t \geq 60$	0