Technical and Test Institute
for Construction Prague
Prosecká 811/76a
190 00 Prague
Czech Republic
eota@tzus.cz

Designated according to Article 29 of Regulation (EU) No 305/2011

Member of EOTA
www.eota.eu

European Technical Assessment ETA 14/0445 of 15/12/2014

(English language translation, the original version in Czech language)

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No. 305/2011:	**Technical and Test Institute for Construction Prague**
Trade name of the construction product	**KABE THERM EPS**
Product family to which the construction product belongs	Product area code: 4 External Thermal Insulation Composite Systems with rendering on expanded polystyrene EPS for the use as external insulation to walls of buildings.
Manufacturer	Farby KABE Polska Sp. z o.o. ul.Śląska 88 40-742 Katowice Republic of Poland www.farbykabe.pl
Manufacturing plant(s)	Farby KABE Polska Sp. z o.o. ul.Śląska 88 40-742 Katowice Republic of Poland
This European Technical Assessment contains	22 pages including 3 Annexes which form an integral part of this Assessment. Annex No. 4 Control Plan contains confidential information and is not included in the European Technical Assessment when that Assessment is publicly available.
This European Technical Assessment is issued in accordance with regulation (EU) No. 305/2011 on the basis of	ETAG 004, edition 2013, used as European Assessment Document (EAD)

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

II Specific part

1 Technical description of the product

1.1 Definition and composition 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. 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 polystyrene (EPS) to be bonded or mechanically fixed onto a wall. The methods of fixing and the relevant components are specified in the table below. The insulation product is faced with a rendering system consisting of one or more layers (site applied), one of which contains reinforcement. The rendering 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 ...) to treat details of ETICS (connections, corners, parapets, sills ...). 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.

Composition of the ETICS

Table No. 1

	Components	Coverage (kg/m2)	Thickness (mm)
Insulation products with associated methods of fixing	**Bonded ETICS (fully or partially bonded) with supplementary anchors. National application documents shall be taken into account).**		
	• Insulation product: EPS according to EN 13163: 2012 see Annex No. 1 for product characteristics	/	50 to 300
	• Adhesives: - KOMBI (cement based powder requiring addition of water - 0.260 l/kg) - KOMBI S (cement based powder requiring addition of water - 0.240 l/kg)	3.0 to 5.0 (dry)	3 - 10

	Components	Coverage (kg/m2)	Thickness (mm)
Insulation products with associated methods of fixing	**Mechanically fixed ETICS with anchors and supplementary adhesive (see Cl. 3.4.4 and Annex No. 2 for possible associations EPS/anchors)**		
	• Insulation product: EPS according to EN 13163: 2012 see Annex No. 1 for product characteristics	/	50 to 300
	• Supplementary adhesives: - **KOMBI** (cement based powder requiring addition of water - 0.260 l/kg) - **KOMBI S** (cement based powder requiring addition of water - 0.240 l/kg)	3.0 to 4.0 (dry)	3 - 10
	• Anchors: see Annex No. 2 for individual product characteristics. In addition to the following list, other anchors can be used provided that they comply with the requirements introduced in the Annex 2.		
	- **ejotherm NT U** plastic nailed-in anchors	ETA-05/0009	
	- **ejotherm STR U, STR U 2G** plastic screw-in anchors	ETA-04/0023	
	- **ejotherm NTK U** plastic nailed-in anchors	ETA-07/0026	
	- **Ejot H1 eco** plastic nailed-in anchors	ETA-11/0192	
	- **EJOT H3** plastic nailed-in anchors	ETA-14/0130	
	- **BRAVOLL PTH-KZ 60/8-La** - **BRAVOLL PTH 60/8-La** plastic nailed-in anchors	ETA-05/0055	
	- **BRAVOLL PTH-S 60/8-La** plastic screw-in anchors	ETA-08/0267	
	- **BRAVOLL PTH-SX** plastic screw-in anchors	ETA-10/0028	
	- **KOELNER TFIX-8P** plastic nailed-in anchors	ETA-13/0845	
	- **KOELNER TFIX-8M** plastic nailed-in anchors	ETA-08/0336	
	- **KOELNER TFIX-8S, TFIX-8ST** plastic screw-in anchors	ETA-11/0144	
	- **KOELNER KI-10, KI-10PA** plastic nailed-in anchors	ETA-07/0291	

	Components	Coverage (kg/m2)	Thickness (mm)
	- **KOELNER KI-10N, KI-10NS** plastic nailed-in anchors	ETA-07/0221	

	Components	Coverage (kg/m2)	Thickness (mm)
Insulation products with associated methods of fixing	- **Klimas Wkręt-met FIXPLUG ø8, FIXPLUG** ø10 plastic nailed-in anchors - **Klimas Wkręt-met WKTHERM ø 8** plastic nailed-in anchors - **Klimas Wkręt-met Schraubdübel eco-drive** plastic screw-in anchors - **Klimas Wkręt-met WKTHERM S** plastic screw-in anchors	ETA-11/0231 ETA-11/0232 ETA-13/0107 ETA-13/0724	
Base coat	• **KOMBI** (cement based powder requiring addition of water – 0. 260 l/kg)	Approximately 3.0 to 5.0 (dry)	Average: 4.0 Minimal: 2.0
Reinforcement	• Standard mesh see Annex No. 3 for product characteristics: - **R117 A101/AKE 145/KABE 145** - **R131 A101**	1.1 – 1.2 m2/m2 ETICS	/
Key coat	• **PERMURO GT:** water dispersion of acrylic resin, fine-grained filler • **NOVALIT GT:** water solution of potassium silicate, water dispersion of acrylic resin, fine-grained filler • **ARMASIL GT:** water solution of potassium silicate, water dispersion of acrylic resin, fine-grained filler	0.15 to 0.25 l/m2 0.15 to 0.25 l/m2 0.15 to 0.25 l/m2	/
Finishing coats	• Ready to use paste - binder based on acrylic copolymer: - **PERMURO** structure SP (particle size 1.5; 2.0; 2.5; 3.0 mm) - **PERMURO** structure SD (particle size 1.5; 2.0; 2.5; 3.0 mm) - **PERMURO AVANT** structure SP (particle size 1.5; 2.0 mm) - **PERMURO AKORD** structure SP (particle size 1.5; 2.0 mm)	2.4 to 4.5 2.3 to 4.5 2.4 to 3.0 2.0 to 2.5	Regulated by particle size

	Components	Coverage (kg/m2)	Thickness (mm)
Finishing coats	• Ready to use paste - binder based on silicone: - **NOVALIT T** structure SP (particle size 1.5; 2.0; 2.5; 3.0 mm) - **NOVALIT T** structure SD (particle size 1.5; 2.0; 2.5; 3.0 mm) - **NOVALIT T AKORD** structure SP (particle size 1.5) - **NOVALIT T – CEGŁA** rendering coat consists of layers: NOVALIT T - structure SP - particle size 1.5 mm NOVALIT T MODELOWANY NOVALIT T MODELOWANY	2.5 to 4.5 2.5 to 4.5 2.2 5.0 - 6.0	Regulated by particle size 1.5 2.5 – 3.0
	• Ready to use paste – binder based on silicate: - **ARMASIL T** structure SP (particle size 1.5; 2.0; 2.5; 3.0 mm) - **ARMASIL T** structure SD (particle size 1.5; 2.0; 2.5; 3.0 mm) - **ARMASIL T AKORD** structure SP (particle size 1.5) - **ARMASIL T – CEGŁA** rendering coat consists of layers: ARMASIL T - structure SP - particle size 1.5 mm ARMASIL T MODELOWANY ARMASIL T MODELOWANY	2.3 to 4.5 2.3 to 4.5 2.2 5.0 - 6.0	Regulated by particle size 1.5 2.5 – 3.0
Ancillary materials	Remain under the manufacturer's responsibility		

2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter "EAD")

2.1 Intended use

This ETICS is intended for use as external insulation of buildings' walls. The walls are made of masonry (bricks, blocks, stones …) or concrete (cast on site or as prefabricated panels). 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. The ETICS is designed to give the wall to which it is applied satisfactory thermal insulation.

The ETICS is made of non load-bearing construction elements. 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 effect of weathering.

The ETICS can be used on new or existing (retrofit) vertical walls. It can also be used on horizontal or inclined surfaces which are not exposed to precipitation.

The ETICS is not intended to ensure the airtightness of the building structure.

The choice of the method of fixing depends on the characteristics of the substrate, which may need preparation (see cl. 7.2.1 of the ETAG 004) and shall be done in accordance with the national instructions.

2.2 Manufacturing

The European Technical Assessment is issued for the ETICS on the basis of agreed data/information, deposited with the Technical and Test Institute Prague, which identifies the ETICS that has been assessed and judged. Changes to the ETICS or production process, which could result in this deposited data/information being incorrect, shall be notified to the Technical and Test Institute Prague before the changes are introduced. The Technical and Test Institute Prague will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

2.3 Design and installation

The installation instructions including special installation techniques and provisions for the qualification of the personnel are given in the manufacturer's technical documentation.

Design, installation and execution of ETICS are to be in conformity with national documents. Such documents and the level of their implementation in Member States' legislation are different. Therefore, the assessment and declaration if 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 Packaging, 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(s) to ensure that this information is made know to the concerned people.

2.5 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,
- 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).

Necessary repairs should be performed as soon as the need has been identified.

It is important to be able to carry out maintenance as far as possible using readily available products and equipment, without spoiling appearance. Only products which are compatible with the ETICS shall be used.

The information on use, maintenance and repair is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer(s) to ensure that this information is made know to the concerned people.

3 Performance of the product and references to the methods used for its assessment

The performances of the kit as described in this chapter are valid provided that the components of the kit comply with Annexes 1 - 4.

3.1 Mechanical resistance and stability (BWR 1)

Not relevant.

3.2 Safety in case of fire (BWR 2)

3.2.1 Reaction to fire (ETAG 004 - clause 5.1.2.1, EN 13501-1+A1)

Table No. 2

Configuration	**Organic content / heat of combustion**	**Flame retardant content**	Euroclass according to EN 13501-1+A1
Adhesive	max. 2%/ max 0.32 MJ/kg	No flame retardant	B-s1, d0
Panels of expanded polystyrene EPS Maximal density of 15 kg/m3	In quantity ensuring Euroclass E according to EN 13501-1+A1	In quantity ensuring Euroclass E according to EN 13501-1+A1	
Base coat render	max. 2%/ max 0.32 MJ/kg	No flame retardant	
Glass fibre mesh	--- / max 8.17 MJ/kg	No flame retardant	
Finishing coats of acrylic binder Finishing coats of silicone binder Finishing coats of silicate binder	--- / max 1.39 MJ/kg	No flame retardant	

Note: A European reference fire scenario has not been laid down for facades. In some Member States, the classification of ETICS according to EN 13501-1+A1 might not be sufficient for the use in facades. An additional assessment of ETICS according to national provisions (e.g. on the basis of a large scale test) might be necessary to comply with Member State regulations, until the existing European classification system has been completed.

3.3 Hygiene, health and environment (BWR 3)

3.3.1 Water absorption (ETAG 004 - clause 5.1.3.1)

- Base coat **KOMBI**:

Water absorption after 1 hour < 1 kg/m^2

Water absorption after 24 hours < 0.5 kg/m^2

- Rendering system:

Table No. 3

		Water absorption after 24 hours	
		< 0.5 kg/m2	**≥ 0.5 kg/m2**
Rendering system: Base coat **KOMBI** (1 x reinforcement) + finishing coats as indicated here:	**PERMURO**	X	
	PERMURO AVANT	X	
	PERMURO AKORD	X	
	NOVALIT T	X	
	NOVALIT T AKORD	X	
	NOVALIT T – CEGŁA	X	
	ARMASIL T	X	
	ARMASIL T AKORD	X	
	ARMASIL T – CEGŁA	X	

3.3.2 Watertightness (ETAG 004 - clause 5.1.3.2)

3.3.2.1 Hygrothermal behaviour

Pass (without defects).

3.3.3 Impact resistance (ETAG 004 - clause 5.1.3.3)

Table No. 4

Rendering system: Base coat **KOMBI** + reinforcement and finishing coats indicated hereafter:	**Single standard mesh**
PERMURO	Category II
PERMURO AVANT	Category II
PERMURO AKORD	Category III
NOVALIT T	Category II
NOVALIT T AKORD	Category II
NOVALIT T – CEGŁA	Category II
ARMASIL T	Category II
ARMASIL T AKORD	Category II
ARMASIL T – CEGŁA	Category II

3.3.4 Water vapour permeability (ETAG 004 - clause 5.1.3.4)

Table No. 5

Rendering system: Base coat **KOMBI**+ reinforcement and finishing coats indicated hereafter	**Equivalent air layer thickness sd**
PERMURO	≤ 0.32 m
PERMURO AVANT	≤ 0.22 m
PERMURO AKORD	≤ 0.20 m
NOVALIT T	≤ 0.16 m
NOVALIT T AKORD	≤ 0.16 m
NOVALIT T – CEGŁA	≤ 0.20 m
ARMASIL T	≤ 0.18 m
ARMASIL T AKORD	≤ 0.16 m
ARMASIL T – CEGŁA	≤ 0.30 m

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

NPD (no performance determined).

3.4 Safety and accessibility in use (BWR 4)

3.4.1 Bond strength between base coat and insulation product (ETAG 004 - clause 5.1.4.1.1)

Bonding strength of base coat to insulation product ≥ 0.08 MPa (cohesive failure)

3.4.2 Bond strength between adhesive and substrate / insulation product (ETAG 004 - clauses 5.1.4.1.2, 5.1.4.1.3)

Table No. 6

		Initial state	**48 hrs. immersion in water + 2 hrs. 23°C/50% RH**	**48 hrs. immersion in water + 7 days 23°C/50% RH**
KOMBI **KOMBI S**	Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa
	Expanded polystyrene (EPS)	≥ 0.08 MPa	≥ 0.03 MPa	≥ 0.08 MPa

3.4.3 Fixing strength (ETAG 004 - clause 5.1.4.2)

Test not required (no limitation of ETICS length).

3.4.4 Wind load resistance (ETAG 004 - clause 5.1.4.3)

Table No. 7

Anchor description	Trade name		**See Annex No. 2**	
			Surface assembly	Countersunk assembly
	Plate diameter (mm)		60 or more	60 or more
EPS characteristics	Thickness (mm)		≥ 50	≥ 100
	Tensile strength (kPa)		≥ 100	≥ 100
Maximal load	Anchors placed at the body of the insulation product	Rpanel	min. value: 0.51 kN mean value: 0.58 kN	
	Anchors placed at joints of the insulation product	Rjoint	min. value: 0.49 kN mean value: 0.55 kN	

3.4.5 Render strip tensile test

NPD (No performance determined).

3.5 Protection against noise (BWR 5)

3.5.1 Airborne sound insulation

NPD (no performance determined).

3.6 Energy economy and heat retention (BWR 6)

3.6.1 Thermal resistance

The thermal transmittance of the substrate wall covered by the ETICS is calculated in accordance with the standard EN ISO 6946:

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

Where:

$\chi_p \times n$ has only to be taken into account if it is greater than 0.04 W/(m2.K)

U_c: global (corrected) thermal transmittance of the covered wall (W/ (m2.K)

n : number of anchors (through insulation product) per 1 m2

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:

= 0.002 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
($\chi_p \times n$ negligible for n < 20)
= 0.004 W/K for anchors with a galvanized steel screw with the head covered by a plastic materiál
($\chi_p \times n$ negligible for n < 10)
= negligible for anchors with plastic nails (reinforced or not with glass fibres …)

U : thermal transmittance of the current part of the covered wall (excluding thermal bridges) (W/ (m2.K)) determined as follows:

$$U = \frac{1}{R_i + R_{render} + R_{substrate} + R_{se} + R_{si}}$$

Where:

R_i

: thermal resistance of the insulation product (according to declaration in reference to EN 13163) in (m2.K)/W

R_{render}: thermal resistance of the rendering system (about 0.02 in (m2.K)/W) or determined by test according to EN 12667 or EN 12664

$R_{substrate}$:thermal resistance of the substrate of the building (concrete, brick …) in (m².K)/W

R_{se} : external superficial thermal resistance in (m².K)/W

R_{si} : internal superficial thermal resistance in (m².K)/W

The value of thermal resistance of each insulation product shall be given in the manufacturer's documentation along with the possible range of thicknesses. In addition, the point thermal conductivity of anchors shall be given when anchors are used in the ETICS.

3.7 Sustainable use of natural resources (BWR 7)

NPD (no performance determined).

4 Assessment and verification of constancy of performance (hereinafter 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 AVCP systems 1 and 2+ are valid (further described in Annex V to Regulation (EU) No. 305/2011).

Table No. 8

Product(s)	Intended use(s)	Level(s) or class(es) (Reaction to fire)	System(s)
External thermal insulation composite systems/kits (ETICS) with rendering	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+
	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 he 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 EAD:

In order to help the Notified Body to make an evaluation of conformity, the Technical Assessment Body issuing the ETA shall supply the information detailed below. This information together with the requirements given in EC Guidance Paper B will generally form the basis on which the factory production control (FPC) is assessed by the Notified Body.

This information shall initially be prepared or collected by the Technical Assessment Body and shall be agreed with the manufacturer. The following gives guidance on the type of information required:

1) ETA
   Where confidentiality of information is required, this ETA makes reference to the manufacturer's technical documentation which contains such information.
2) Basic manufacturing process
   The basic manufacturing process is described in sufficient detail to support the proposed FPC methods.
   The different components of the ETICS are generally manufactured using conventional techniques. Any critical process or treatment of the components which affects performance are highlighted in the manufacturer's documentation.
3) Product and materials specifications
   The manufacturer's documentation includes:
   - detailed drawings (possibly including manufacturing tolerances),
   - incoming (raw) materials specifications and declarations,
   - references to European and/or international standards,
   - technical data sheets.
4) Control Plan (as a part of FPC)
   The manufacturer and the Technical and Test Institute for Construction Prague have agreed a Control Plan which is deposited with the Technical and Test Institute for Construction Prague in documentation which accompanies the ETA. The Control Plan specifies the type and frequency of checks/tests conducted during production and on the final product. This includes the checks conducted during manufacture on properties that cannot be inspected at a later stage and for checks on the final product.

Products not manufactured by the ETICS manufacturer shall also be tested according to the Control Plan. It must be demonstrated to the Notified Body that the FPC system contains elements securing that the ETICS manufacturer takes products conforming to the Control Plan from his supplier(s).

Where materials/components are not manufactured and tested by the supplier in accordance with agreed methods, then where appropriate they shall be subject to suitable checks/tests by the ETICS manufacturer referring to the Control Plan once again.

In cases where the provisions of the European Technical Assessment and its Control Plan are no longer fulfilled, the Notified Body shall withdraw the certificate and inform the Technical and Test Construction Institute Prague without delay.

Issued in Prague on 15.12.2014

signed by

Ing. Božena Musilová

Head of the Technical Assessment Body

Annexes:

Annex No. 1	Insulation product characteristics
Annex No. 2	Anchors, description of individual product characteristics contained in the ETA
Annex No. 3	Description of glass fiber mesh

Annex No. 1 Insulation product characteristics

		Panels from expanded polystyrene EPS
Reaction to fire / EN 13501-1+A1		Euroclass - E
Thermal resistance		acc. to the declaration in accordance with EN 13163 ($(m^2 \cdot K)/W$)
Thickness / EN 823		EN 13163 - T(1)
Length / EN 822		EN 13163 - L(2)
Width / EN 822		EN 13163 - W(2)
Squareness/ EN 824		EN 13163 - S(5)
Flatness / EN 825		EN 13163 - P(10)
Dimensional stability under:	specified temperature and humidity EN 1604	EN 13163 - DS(70,-)2
	laboratory conditions/ EN 1603	EN 13163 - DS(N)2
Water absorption (partial immersion) / EN 1609		< 1.0 kg/m²
Water vapour permeability, diffusion factor (μ) / EN 12086 – EN 13163		20 - 40
Tensile strength perpendicular to the front of the slab in dry conditions (kPa) /EN 1607		EN 13163 – min. TR 100
Shear strength (MPa) / EN 12090		≥ 0.02 MPa
Shear modulus of elasticity (MPa) /EN 12090		≥ 1.0 MPa

Note: classes and levels for individual characteristics comply with EN 13163:2012

The reaction-to-fire class E is to be proved for every insulation product of thickness of 10 mm, too

Annex No. 2 Anchors, description of individual product characteristics contained in the ETA

Trade name	Plate diameter (mm)	Characteristic pull-out resistance	Plate stiffness (kN/mm)	Load at plate rupture (kN)
Surface assembly				
Ejotherm NT U	60	see ETA - 05/0009	0.60	2.43
Ejotherm STR U, STR U 2G	60	see ETA - 04/0023	0.60	2.08
Ejotherm NTK U	60	see ETA - 07/0026	0.50	1.44
EJOT H1 eco	60	see ETA - 11/0192	0.60	1.40
EJOT H3	60	see ETA - 14/0130	0.60	1.25
BRAVOLL PTH-KZ 60/8-La	60	see ETA – 05/0055	0.70	2.10
BRAVOLL PTH-60/8-La			0.60	1.63
BRAVOLL PTH-S 60/8-La	60	see ETA - 08/0267	0.90	2.60
BRAVOLL PTH-SX	60	see ETA - 10/0028	0.70	1.80
KOELNER TFIX-8P	60	see ETA - 13/0845	0.30	1.38
KOELNER TFIX-8M	60	see ETA - 07/0336	1.00	1.75
KOELNER TFIX-8S	60	see ETA - 11/0144	0.60	2.04
KOELNER KI-10, KI-10PA	60	see ETA - 07/0291	0.39	0.81
KOELNER KI-10N, KI-10NS	60	see ETA - 07/0221	0.50	1.23
Klimas Wkręt-met FIXPLUG ø 8, FIXPLUG ø 10	60	see ETA -11/0231	0.60	1.50
Klimas Wkręt-met WKTHERM ø 8	60	see ETA -11/0232	0.60	4.30
Klimas Wkręt-met Schraubdübel eco-drive	60	see ETA - 13/0107	0.60	2.80
Klimas Wkręt-met WKTHERM S	60	see ETA - 13/0724	0.60	4.30
Countersunk assembly				
Ejotherm STR U, STR U 2G	60	see ETA - 04/0023	0.60	2.08
BRAVOLL PTH-S 60/8-La	60	see ETA - 08/0267	0.90	2.60
BRAVOLL PTH-SX	60	see ETA - 10/0028	0.70	1.80
KOELNER TFIX-8ST	60	see ETA - 11/0144	0.60	2.04

In addition to this list the following anchors can be used provided that they comply with the following requirements:

Surface assembly	**Plate diameter (mm)**	**Characteristic pull-out resistance**	**Plate stiffness (kN/mm)**
	60	see relevant ETA	≥ 0.30

Countersunk assembly	**Plate diameter (mm)**	**Characteristic pull-out resistance**	**Plate stiffness (kN/mm)**
	60	see relevant ETA	≥ 0.60

Minimal value of the load at plate rupture for other anchors is 0.8 kN.

Annex No. 3 Description of glass fiber mesh

	Description	Strength after ageing	
		Absolute strength after ageing (N/mm)	**Relative residual strength after ageing, of the strength in the as-delivered state (%)**
R117 A101/ AKE 145/KABE 145	Standard fiber mesh applied in single layer with mesh size 4.0 x 4.5 mm	≥ 20	≥ 50
R131 A101	Standard fiber mesh applied in single layer with mesh size 3.5 x 3.8 mm	≥ 20	≥ 50