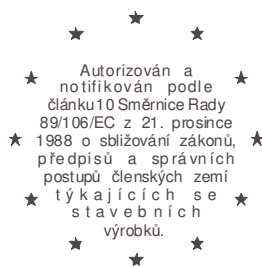


**TECHNICKÝ A ZKUŠEBNÍ ÚSTAV  
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## European Technical Approval

**ETA-09/0380**

Trade name

*Trade name:*

**FAST W**

Držitel schválení:

*Holder of approval:*

FAST Sp. z o.o.  
St. Foluszova 112  
65-751 Zielona Gora  
Poland

Druh a použití výrobku:

Vnější tepelně izolační kompozitní systém (ETICS)  
s omítkou z minerální vlny u pro použití jako vnější izolace  
stěn budov.

*Generic type and use  
of construction product:*

*External Thermal Insulation Composite Systems (ETICS) with  
rendering on mineral wool for the use as external insulation to  
the walls of buildings.*

Platnost

od:

31.12.2009

do:

30.12.2014

*Validity*

*from:*

*to:*

Výrobce:

*Manufacturer:*

FAST Sp. z o.o.  
St. Foluszova 112  
65-751 Zielona Gora  
Poland

Toto Evropské technické  
schválení obsahuje:

*This European Technical  
Approval contains:*

17 stran

17 pages



European Organisation for Technical Approvals  
Evropská organizace pro technické schvalování

## I LEGAL BASES AND GENERAL CONDITIONS

- 1 - This European Technical Approval is issued by the Technical and Test Institute for Construction Prague (Technický a zkušební ústav stavební Praha, s.p.) in accordance with:
  - \* Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products<sup>1</sup>, as amended by the Council Directive 93/68/EEC<sup>2</sup> and Regulation (EC) No. 1882/2003<sup>3</sup>
  - \* Government Decree No. 190/2002 Coll.<sup>4</sup>, as amended
  - \* Common Procedural Rules for Requesting, Preparing and Granting European Technical Approvals set out in the Annex to Commission Decision 94/23/EC<sup>5</sup>
  - \* Guideline for European Technical Approval of “External Thermal Insulation Composite Systems with rendering” ETAG No. 004, edition March 2000
- 2 - The Technical and Test Institute for Construction Prague is authorised to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.
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1 Official Journal of the European Communities N° L 40, 11.02.1989, p. 12

2 Official Journal of the European Communities N° L 220, 30.08.1993, p. 1

3 Official Journal of the European Communities N° L 284, 31.10.2003, p. 1

4 Collection of Laws of the Czech Republic Vol. 79 No. 190, 21/5/2002

5 Official Journal of the European Communities N° L 17, 20.01.1994, p. 34

## II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

### 1 Definition of products and intended use

The External Thermal Insulation Composite System (ETICS) **FAST W**, hereinafter referred to as the ETICS, is designed and installed in accordance with the ETA-Holder's design and installation instructions, deposited at the Technical and Test Institute for Construction Prague (TZÚS). The ETICS comprises the following components, which are factory-produced by the ETA-holder or a supplier, from which are then built into the building.

This system can be sold under one trade name in compositions arising from clause 1.1.

#### 1.1 Definition of product

Table No. 1

	Components (see 2.3 for further description and characteristics of the components)	Coverage (kg/m <sup>2</sup> )	Thickness (mm)
<b>Fully bonded ETICS with supplementary anchor fixing. National application documents shall be taken into account.</b>			
Insulation material with associated method of fixing	<b>Insulation product</b>		
	Mineral wool boards (MW lamella – longitudinal fibre, reaction to fire A1, water absorption WS, WL(P), tensile strength perpendicular to the faces TR 80) with other observed properties given in table No. 16 of this ETA	-	50 – 250
	<b>Adhesive</b>		
	<b>FAST Normal W</b> <i>Product as delivered:</i> powder <i>Preparation:</i> powder requiring addition of 0.22 l/kg of water <i>Composition:</i> dry mineral-based cement mixture modified with synthetic polymers	4.0 – 6.0 (kg/m <sup>2</sup> ) of dry mixture	-
<b>FAST Specjal W</b> <i>Product as delivered:</i> powder <i>Preparation:</i> powder requiring addition of 0.22 l/kg of water <i>Composition:</i> dry mineral-based cement mixture modified with synthetic polymers	4.0 – 6.0 (kg/m <sup>2</sup> ) of dry mixture		
<b>Mechanically fixed ETICS with supplementary bonding (pursuant to the ETA-Holder's instructions, the minimal bonded surface shall be 40%). National application documents shall be taken into account.</b>			
Insulation material with associated methods of fixing	<b>Insulation product</b>		
	Mineral wool boards (MW slab – longitudinal fibre, reaction to fire A1, water absorption WS, WL(P), tensile strength perpendicular to the faces TR 15) with other observed properties given in table No. 15 of this ETA	-	50 – 250
	<b>Adhesive</b>		
	<b>FAST Normal W</b> <i>Product as delivered:</i> powder <i>Preparation:</i> powder requiring addition of 0.22 l/kg of water <i>Composition:</i> dry mineral-based cement mixture modified with synthetic polymers	4.0 – 6.0 (kg/m <sup>2</sup> ) of dry mixture	-
<b>FAST Specjal W</b> <i>Product as delivered:</i> powder <i>Preparation:</i> powder requiring addition of 0.22 l/kg of water <i>Composition:</i> dry mineral-based cement mixture modified with synthetic polymers	4.0 – 6.0 (kg/m <sup>2</sup> ) of dry mixture		

		Components (see 2.3 for further description and characteristics of the components)	Coverage (kg/m <sup>2</sup> )	Thickness (mm)
		<b>Anchors</b>		
		<b>WKRET-MET LFM Ø 8</b> plastic nailed-in anchors <b>Ejotherm NT U</b> plastic nailed-in anchors <b>Ejotherm STR U</b> plastic screwed-in anchors <b>KOELNER KI8M</b> plastic nailed-in anchors <b>Bravoll PTH-KZ 60/8-L<sub>a</sub>, Bravoll PTH-KZL 60/8-L<sub>a</sub></b> plastic nailed-in anchors	-	-
base coat	trowel finished matter of base coat	<b>FAST Specjal W</b> <i>Product as delivered:</i> powder <i>Preparation:</i> powder requiring addition of 0.22 l/kg of water <i>Composition:</i> dry mineral-based cement mixture modified with synthetic polymers	4.0 – 6.0 (kg/m <sup>2</sup> ) of dry mixture	3.0
	reinforcement	<b>Glass fibre mesh for ETICS</b> <b>AKE 145 A / VERTEX R 117 A101</b> (mesh size 3.5 x 4.5 mm)	1.1 – 1.2 m <sup>2</sup> /m <sup>2</sup>	-
Key coats		<b>FAST Grunt M</b> <i>Product as delivered:</i> ready-to-use liquid <i>Preparation:</i> do not dilute <i>Composition:</i> dispersion of acrylic resin with mineral additives	0.35 (kg/m <sup>2</sup> )	-
		<b>FAST Grunt S</b> <i>Product as delivered:</i> ready-to-use liquid <i>Preparation:</i> do not dilute <i>Composition:</i> dispersion of potassium water glass	0.35 (kg/m <sup>2</sup> )	-
Finishing coat		<b>Mineral renderings</b> always provided with one of the protective coatings including the relevant key coat		
		<b>FAST Baranek</b> circular rendering, max. particle size 2.0 mm	2.25 (kg/m <sup>2</sup> )	according to max. particle size
		<b>FAST Baranek</b> circular rendering, max. particle size 2.5 mm	3.00 (kg/m <sup>2</sup> )	
		<b>FAST Baranek</b> circular rendering, max. particle size 3.0 mm	3.85 (kg/m <sup>2</sup> )	
		<b>FAST Kornik</b> scratch rendering, max. particle size 2.0 mm	2.80 (kg/m <sup>2</sup> )	
		<b>FAST Kornik</b> scratch rendering, max. particle size 3.0 mm	3.50 (kg/m <sup>2</sup> )	
		<b>Silicate renderings</b>		
		<b>FAST Baranek S</b> circular rendering, max. particle size 1.0 mm	1.70 (kg/m <sup>2</sup> )	according to max. particle size
		<b>FAST Baranek S</b> circular rendering, max. particle size 1.5 mm	2.50 (kg/m <sup>2</sup> )	
		<b>FAST Baranek S</b> circular rendering, max. particle size 2.0 mm	3.20 (kg/m <sup>2</sup> )	
		<b>FAST Kornik S</b> scratch rendering, max. particle size 2.0 mm	2.80 (kg/m <sup>2</sup> )	
		<b>FAST Kornik S</b> scratch rendering, max. particle size 3.0 mm	3.50 (kg/m <sup>2</sup> )	
		<b>Silicone renderings</b>		
		<b>FAST Baranek SIL</b> circular rendering, max. particle size 1.0 mm	1.70 (kg/m <sup>2</sup> )	according to max. particle
		<b>FAST Baranek SIL</b> circular rendering, max. particle size 1.5 mm	2.50 (kg/m <sup>2</sup> )	

	<b>Components</b> (see 2.3 for further description and characteristics of the components)	<b>Coverage</b> <b>(kg/m<sup>2</sup>)</b>	<b>Thickness</b> <b>(mm)</b>
	<b>FAST Baranek SIL</b> circular rendering, max. particle size 2.0 mm	3.20 (kg/m <sup>2</sup> )	size
	<b>FAST Kornik SIL</b> scratch rendering, max. particle size 2.0 mm	2.80 (kg/m <sup>2</sup> )	
	<b>FAST Kornik SIL</b> scratch rendering, max. particle size 3.0 mm	3.50 (kg/m <sup>2</sup> )	
Key coat under protective coating	<b>FAST Grunt S</b> Key coat under silicate protective coat <i>Product as delivered:</i> ready-to-use liquid <i>Preparation:</i> do not dilute <i>Composition:</i> dispersion of potassium water glass	0.08 – 0.10 (kg/m <sup>2</sup> )	-
	<b>FAST Grunt SIL</b> key coat under silicone protective coat <i>Product as delivered:</i> ready-to-use liquid <i>Preparation:</i> do not dilute <i>Composition:</i> siloxane water emulsion	0.05 – 0.17 (l/m <sup>2</sup> )	-
Protective coating	<b>FAST F-S</b> silicate protective coating <i>Product as delivered:</i> ready-to-use liquid <i>Preparation:</i> 2 paints, to dilute max. with 5 volume % of FAST Grunt S <i>Composition:</i> dispersion of potassium water glasses and styrene-acrylic resin with mineral additives and pigments	0.10 – 0.20 (l/m <sup>2</sup> ) for a paint	-
	<b>FAST Silikon</b> silicone protective coating <i>Product as delivered:</i> ready-to-use liquid <i>Preparation:</i> 1-2 paints, for the first paint to dilute max. with 10% of water <i>Composition:</i> dispersion of silicone and styrene-acrylic resin with mineral additives and pigments	0.12 (l/m <sup>2</sup> ) for a paint	-
Ancillary materials	Descriptions in accordance with Section 3.2.2.5 of the ETAG, remain under the ETA-Holder responsibilities.	-	-

## 1.2 Intended use

This ETCIS is applied onto external walls of buildings. The walls are made of masonry (bricks, blocks, stones ...) or concrete (cast on site or as prefabricated panels) with reaction to fire classification A1 or A2-s2, d0 pursuant to EN 13501-1 or A1 according to EC decision 96/603/EC as amended. The ETICS is designed to provide the wall onto which it is applied with satisfactory thermal insulation.

The ETICS is made of non load-bearing construction elements. It does not directly contribute to the stability of the wall on which it is installed; however, it can contribute to 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.

It is not intended to ensure air-tightness of the building structure.

The choice of the method of fixing and design of the concrete composition depends on the properties of the substrate which can require correction (see 7.2.1 of ETAG 004) and shall be in accordance with the national regulations.

The provisions of this European Technical Approval (ETA) are based on an assumed intended working life of at least 25 years of the ETICS, provided its properly used and maintained. The indications given as to the working life cannot be interpreted as a guarantee given by the manufacturer or the Approval Body but should only be regarded as a means for choosing appropriate products in relation to the expected economically reasonable working life of the works.

## 2 Characteristics of the products and methods of verification

### 2.1 General

The identification tests and the assessment of the fitness for use of this ETICS pursuant to the Essential Requirements were carried out in compliance with “ETAG 004, Guideline for European Technical Approval of External Thermal Insulation Composite Systems” concerning External Thermal Insulation Composite Systems with rendering (hereinafter referred to as “ETAG 004”).

The ETA is issued for the ETICS based on the agreed data deposited at the Technical and Test Institute for Construction (TZÚS) Prague, s.p. which identifies the ETICS that has been assessed and judged. Any changes to the production process of the ETICS or to the ETICS itself which could make the deposited data incorrect should be notified to the TZÚS Prague, s.p. before the changes are introduced. TZÚS Prague, s.p. shall decide whether or not such changes can affect the ETA and consequently the validity of the CE marking based on the ETA and if so whether further assessment and /or alteration to the ETA is needed.

### 2.2 ETICS properties

#### 2.2.1 Reaction to fire

Table No. 2

Composition of the SAKRET Minerál system	Heat combustion (MJ/kg)	Thicknesses	Flame retardant content	Euroclass according to EN 13501-1:2003
	Organic content (%)			
adhesive	max. 0.31	max. 15 mm	no flame retardant	A2 – s2, d0
MW slabs of density $\leq 217 \text{ kg/m}^3$	-	no limits	in the amount ensuring the Euroclass A1 in accordance with EN A1-13501:1	
mortar of base coat	max. 0.31	max. 3 mm	no flame retardant	
glass fibre mesh	max. 7.81	max. 0.5 mm	no flame retardant	
key coat for mineral, silicone and silicate finishing coats	max. 2.81	max. 0.1 mm	no flame retardant	
mineral, silicone and silicate finishing coats	max. 2.30	max. 3 mm	no flame retardant	
key coats for protective coatings	max. 32.77	max. 0.1 mm	no flame retardant	
protective coatings	max. 5.09	max. 0.1 mm	no flame retardant	

**Note:** A European reference fire scenario for facades has not been laid down so far. In some Member States, the classification pursuant to EN 13501-1:2003 might not be sufficient for the use in facades. An additional assessment of the ETICS pursuant to national regulations (e.g. based on a large scale test) might be necessary to comply with the Member State regulations until the existing European classification system has been completed.

### 2.2.2 Water absorption (test of capillarity)

Base coat FAST Specjal W

- Water absorption after 1 hour < 1 kg/m<sup>2</sup>
- Water absorption after 24 hours < 0,5 kg/m<sup>2</sup>

Rendering systems:

Table No. 3

Rendering systems	Finishing coat		Water absorption after 24 hours	
			< 0.5 kg/m <sup>2</sup>	≥ 0.5 kg/m <sup>2</sup>
base coat + finishing coats with relevant key coat acc. to the table:	FAST Baranek, FAST Kornik with relevant key coat and protective coating			
	FAST Baranek S	max. particle size 1.0 mm		x
		max. particle size 2.0 mm		x
	FAST Kornik S	max. particle size 2.0 mm	x	
		max. particle size 3.0 mm		x
FAST Baranek SIL, FAST Kornik SIL		x		

### 2.2.3 Hygrothermal behaviour

The hygrothermal-cycling test was carried out on two test walls.

None of the following defects occurred on the assessed renderings and base coat during and after the testing:

- blistering or peeling of any finishing coat
- failure or cracking associated with joints between insulation product boards or profiles used in system
- detachment of render
- cracking allowing water penetration into the insulation layer

Thus, the ETICS is assessed as resistant to hygrothermal cycles.

### 2.2.4 Freeze / thaw behaviour

Rendering systems with FAST Baranek S – 1.0 mm, FAST Baranek S – 2.0 mm and FAST Kornik S – 3.0 mm finishing coat:

Water absorption of the rendering systems was higher than 0.5 kg/m<sup>2</sup> after 24 hours and the ETICS with these finishing coats has been assessed with the simulated method of frost resistance as freeze/thaw resistant.

Other rendering systems:

Water absorption of the rendering systems was lower than 0.5 kg/m<sup>2</sup> after 24 hours and the ETICS with these finishing coats has been assessed as freeze/thaw resistant.

### 2.2.5 Impact resistance

The resistance to hard body impacts (3 J and 10 J) and to perforation suggests the following use categories:

Insulation material MW slab (longitudinal fibre) TR 15

Table No. 4

Rendering systems	Finishing coat	Simple reinforced fibre
base coat + finishing coats acc. to the table:	<b>FAST Baranek, FAST Kornik</b> with relevant key coat and protective coating	Category III
	<b>FAST Baranek S, Kornik S</b>	Category II
	<b>FAST Baranek SIL, Kornik SIL</b>	Category II

Insulation material MW lamella (perpendicular fibre) TR80

Table No. 5

Rendering systems	Finishing coat	Simple reinforced fibre
base coat + finishing coats with relevant key coat acc. to table	FAST Baranek, FAST Kornik with relevant key coat and protective coating	Category II
	FAST Baranek S, FAST Kornik S	Category II
	FAST Baranek SIL, FAST Kornik SIL	Category II

### 2.2.6 Water vapour permeability

Table No. 6

Rendering systems	Finishing coat	Equivalent air thickness (m)
base coat + finishing coats with relevant key coat acc. to table:	FAST Baranek, FAST Kornik with relevant key coat and protective coating	$\leq 1.0$ (test result obtained with max. particle size 3.0 mm: 0.16)
	FAST Baranek S, FAST Kornik S	$\leq 1.0$ (test result obtained with max. particle size 3.0 mm: 0.13)
	FAST Baranek SIL, FAST Kornik SIL	$\leq 1.0$ (test result obtained with max. particle size 3.0 mm: 0.19)

### 2.2.7 Dangerous substances

The ETICS of the given composition is considered to meet the safety requirements regarding the occurrence of dangerous substances in accordance with H Instructions (Harmonized Approach to Dangerous Substances pursuant to Guidelines for Construction Products, issued in 2002, regarding dangerous substances).

In this respect, a written declaration of conformity was made by the manufacturer.

In addition to the specific clauses relating to dangerous substances contained in this ETA, there may be other requirements applicable to the ETICS falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

## 2.2.8 Safety in use

### 2.2.8.1 Bond strength

Bond strength between the base coat and the MW slab (TR15)

Table No. 7

Conditioning		
initial condition	after the hygrothermal cycles (on the wall)	after the freeze cycles (on samples)
< 0.08 MPa failure in insulation material	< 0.08 MPa failure in insulation material	< 0.08 MPa failure in insulation material

Bond strength between the base coat and the MW lamella (TR80)

Table No. 8

Conditioning		
initial condition	after the hygrothermal cycles (on the wall)	after the freeze cycles (on samples)
> 0.08 MPa failure in insulation material	< 0.08 MPa failure in insulation material	< 0.08 MPa failure in insulation material

Bond strength between the adhesives and the substrate, the MW lamella (TR80) and the MW slab (TR15)

Table No. 9

Substrate	No complementary conditioning	48 h immersion in water + 2 h 23°C/50% R H	48 h's immersion in water + 7 days 23°C/50 %R H
concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa
MW lamella TR80	≥ 0.08 MPa failure in insulation material	≥ 0.03 MPa	≥ 0.08 MPa failure in insulation material
MW slab TR15	< 0.08 MPa failure in insulation material	< 0.03 MPa failure in insulation material	< 0.08 MPa failure in insulation material

### 2.2.8.2 Fixing strength (displacement test)

The test is not required because the ETICS fulfils the following criteria:

- the bonding surface is larger than 20% for mechanically fixed ETICS with supplementary bonding
- after Render Strip Tensile Test at 2 % of elongation, only cracks with width of less or equal to 0.2 mm were observed.

### 2.2.8.3 Wind load resistance

Safety in use when fixing the ETICS with anchors.

The following values only apply to the combination (anchor's trade name) / (MW slab properties) given in the first line of the table.

Table No. 12

<b>Kind of the anchor</b>	Trade name	surface assembly <b>WKREȚ – MET LFM Ø 8</b> (ETA - 06/0080) <b>EJOTHERM NT U</b> (ETA - 05/0009) <b>KOELNER KI 8M</b> (ETA - 06/0191) <b>BRAVOLL PTH-KZ60/8-L<sub>a</sub>, PTH-KZL60/8-L<sub>a</sub></b> (ETA05/0055) surface and countersunked assembly <b>EJOTHERM STR U</b> (ETA - 04/0023)		
	Plate diameter (mm)	60		
<b>MW slab properties</b>	Thickness (mm)	≥ 50 ≥ 100 for countersunked assembly		
	Tensile strength perpendicular to the faces (kPa)	≥ 15		
Maximal load in pull through	Anchors not placed at the panel joints ( <i>pull-through test of fixings – ETAG 004, Art. 5.1.4.3, scheme 1a</i> )	$R_{\text{panel}}$	in dry conditions	Minimal value: <b>0.41 kN</b> Average value: <b>0.43 kN</b>
			in wet conditions	Minimal value: <b>0.35 kN</b> Average value: <b>0.37 kN</b>
	Anchors placed at the panel joints ( <i>pull-through test of fixings through insulation material + foam block test – ETAG 004, Art. 5.1.4.3, scheme 2b</i> )	$R_{\text{joint}}$	in dry conditions	Minimal value: <b>0.38 kN</b> Average value: <b>0.41 kN</b>
in wet conditions			Minimal value: <b>0.29 kN</b> Average value: <b>0.30 kN</b>	
Anchors placed at the panel joints ( <i>pull-through test of fixings – ETAG 004, Art. 5.1.4.3, scheme 2a</i> )				

The following formula shall be used for all calculations:

$$R_d = (R_{\text{panel}} \times n_{\text{panel}} + R_{\text{joint}} \times n_{\text{joint}}) / \gamma$$

$n_{\text{panel}}$  - number (per m<sup>2</sup>) of anchors not placed at the panel joints

$n_{\text{joint}}$  - number (per m<sup>2</sup>) of anchors placed at the panel joint

$\gamma$  – national safety factor

## 2.2.9 Thermal resistance

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

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

Where:  $\chi_p \cdot n$  has only to be taken into account if it is greater than 0.04 W/(m<sup>2</sup>.K)

$U$ : global thermal transmittance of the covered wall (W/ (m<sup>2</sup>.K))

$n$ : number of anchors (through insulation material) per 1 m<sup>2</sup>

$\chi_p$ : 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:

= 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 ( $\chi_p \cdot n$  is negligible for  $n < 20$ )

= 0.004 W/K for anchors with a galvanised steel screw with the head covered by a plastic material ( $\chi_p \cdot n$  is negligible for  $n < 10$ )

= negligible for anchors with plastic nails

$U_c$ : thermal transmittance of the current part of the covered wall (excluding thermal bridges) (W/ (m<sup>2</sup>.K)) determined as follows:

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

Where:	$R_i$ :	thermal resistance of the insulation product (see the CE marking in reference to MW EN 13162) in $(m^2.K)/W$
	$R_{render}$ :	thermal resistance of the render (about 0.02 in $(m^2.K)/W$ )
	$R_{substrate}$ :	thermal resistance of the substrate of the building (concrete, brick ...) in $(m^2.K)/W$
	$R_{se}$ :	external superficial thermal resistance in $(m^2.K)/W$
	$R_{si}$ :	internal superficial thermal resistance in $(m^2.K)/W$

## 2.2.10 Aspects of durability and serviceability

### 2.2.10.1 Bond strength after artificial ageing

Insulation material MW slab (longitudinal fibre) TR 15

Table No. 13

base coat + finishing coats with relevant key acc. to table:	FAST Baranek, FAST Kornik with relevant key coats and protective coatings	< 0.08 MPa failure in insulation material
	FAST Baranek S, FAST Kornik S	
	FAST Baranek SIL, FAST Kornik SIL	

Insulation material MW lamella (perpendicular fibre) TR80

Table No. 14

base coat + finishing coats with relevant key acc. to table:	FAST Baranek, FAST Kornik with relevant key coats and protective coatings	< 0.08 MPa failure in insulation material
	FAST Baranek S, FAST Kornik S	
	FAST Baranek SIL, FAST Kornik SIL	

## 2.3 Components' properties

### 2.3.1 Insulation product

Slabs of mineral wool with tensile strength perpendicular to the faces min. 15 kPa (TR15) for mechanically fixed ETICS with supplementary bonding.

Factory-prefabricated, uncoated boards with right edges made of mineral wool (Mw) according to EN 13162 being described including their properties in the table below.

Table No. 15

Description and properties	MW slabs (longitudinal fibre orientation)
	for mechanically fixed ETICS with supplementary bonding
Reaction to fire / EN 13501-1	Euroclass A1 for density max. 217 kg/m <sup>3</sup>
Thermal resistance $((m^2.K)/W)$	Defined in the CE marking pursuant to ČSN EN 13162
Thickness (mm) / EN 823	T5 - (MW-EN 13162)
Length (mm) / EN 822	± 2
Width (mm) / EN 822	± 1.5
Squareness (mm) / EN 824	≤ 5

Flatness (mm) / EN 825		≤ 6
Surface condition		Cut surface (homogeneous, without "skin")
Dimensional stability under	Specified temperature / EN 1604	DS(T+) - (MW-EN 13162)
	Specified temperature and humidity / EN 1604	DS(TH) - (MW-EN 13162)
Water absorption (partial immersion) / EN 1609		WS, WL(P) - (MW-EN 13162)
Water vapour permeability - diffusion resistance factor ( $\mu$ ) / EN 12086 - EN 13162		max. 6
Tensile strength perpendicular to the front of the slab in dry conditions (kPa) / EN 1607		≥ 15 (MW EN 13162-TR 15)
Tensile strength perpendicular to the front of the slab in wet conditions (kPa) / ETAG 004		≥ 6
Shear strength (MPa) / EN 12090		-
Shear modulus of elasticity (MPa) / EN 12090		-

Lamellas of mineral wool with tensile strength perpendicular to the faces min. 80 kPa (TR80) for the fully bonded ETICS with supplementary fixing.

Factory-prefabricated, uncoated boards with right edges made of mineral wool (MW) according to EN 13162 being described including their properties in the table below.

Table No. 16

Description and properties		MW lamellas (perpendicular fibre orientation)
		for fully bonded ETICS with supplementary fixing
Reaction to fire / EN 13501-1		Euroclass A1 for density max. 150 kg/m <sup>3</sup>
Thermal resistance ((m <sup>2</sup> .K)/W)		Defined in the CE marking pursuant to ČSN EN 13162
Thickness (mm) / EN 823		T5 - (MW-EN 13162)
Length (mm) / EN 822		± 2
Width (mm) / EN 822		± 1.5
Squareness (mm) / EN 824		≤ 5
Flatness (mm) / EN 825		≤ 6
Surface condition		Cut surface (homogeneous, without "skin")
Dimensional stability under	Specified temperature / EN 1604	DS(T+) - (MW-EN 13162)
	Specified temperature and humidity / EN 1604	DS(TH) - (MW-EN 13162)
Water absorption / EN 1609, EN12087		WS, WL(P) - (MW-EN 13162)
Water vapour permeability - diffusion resistance factor ( $\mu$ ) / EN 12086 - EN 13162		max. 5
Tensile strength perpendicular to the front in dry conditions (kPa)/ EN 1607		≥ 80 (MW EN 13162-TR 80)

Tensile strength perpendicular to the front of the slab in wet conditions (kPa) / ETAG 004	≥ 50
Shear strength (MPa) / EN 12090	≥ 20
Shear modulus of elasticity (MPa) / EN 12090	≥ 1.0

### 2.3.2 Anchors

Anchors for MW slab:

Plastic anchors with expansion pin, collar with diameter of 60 mm and screw or nail with a flat head.

Table No. 17

Trade name	Plate diameter (mm)	Characteristic pull-out resistance
WKRET-MET LFM Ø 8	60	see ETA – 06/0080
Ejotharm NT U	60	see ETA - 05/0009
Ejotharm STR U	60	see ETA – 04/0023
KOELNER KI 8M	60	see ETA - 06/0191
Bravoll PTH-KZ 60/8-L <sub>a</sub> , PTH-KZL 60/8-L <sub>a</sub>	60	see ETA – 05/0055

### 2.3.3 Base coat

The maximal crack width of the base coat with glass fibre mesh is less or equal to 0.10 mm at 2 % render strain value.

### 2.3.4 Glass fibre mesh

Table No. 18

Glass fibre mesh	warp	weft
	AKE 145 A / VERTEX R 117 A101	
Residual strength after ageing: (N/mm)	≥ 20	≥ 20
Relative residual resistance: (%) (after ageing) of the strength in the as-delivered state	≥ 50	≥ 50

## 3 Evaluation and Attestation of Conformity and CE marking

### 3.1 System of attestation of conformity

According to Decision 97/556/EC of the European Commission amended by 2001/596/EC, the system 2+ of attestation of conformity applies.

In addition, the system 1 and 2+ of attestation of conformity apply with regard to reaction to fire pursuant to Decision 2001/596/EC of the European Commission.

Considering the Euroclasses A, B and F for the reaction to fire, the system of attestation of conformity, regarding other characteristics than reaction to fire, is the system 2+. This system is described in Council Directive 89/106/EEC Annex III, 2 (ii), First possibility as follows:

Declaration of conformity of the ETICS by the manufacturer based on:

- a) Tasks for the manufacturer:
  - (1) - initial-type testing of the ETICS and the components
  - (2) - Factory production control
  - (3) - testing of samples taken at the factory in accordance with the prescribed Control Plan<sup>6</sup>

<sup>6</sup> The control plan is deposited at the Technical and Test Institute for Construction Prague and is handed over only to the notified bodies involved in the conformity attestation procedure.

b) Tasks for the Notified Body:

(4) certification of factory production control based on:

- initial inspection of the factory and factory production control
- continuous surveillance, assessment and approval of the factory production control (FPC)

Considering the Euroclass A for reaction to fire, the system of attestation of conformity, regarding reaction-to-fire characteristic, is the system 1. The system 1 is described in Council Directive 89/106/EEC Annex III, 2 (i), as follows:

Certification of conformity of the ETICS by a Notified certification Body based on:

a) Tasks for the manufacturer:

- (1) factory production control (FPC)
- (2) further testing of samples taken at the factory in accordance with the prescribed Control Plan

b) Tasks for the Notified Body

- (3) initial-type testing of the ETICS and the components
- (4) initial inspection of the factory and factory production control
- (5) continuous surveillance, assessment and approval of the factory production control (FPC)

## **3.2 Responsibilities**

### **3.2.1 Tasks of the manufacturer**

#### **3.2.1.1 Factory production control**

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. The production control system shall ensure that the product complies with this European Technical Approval.

The manufacturer may only use components stated in the technical documentation of this European Technical Approval which contains the Control Plan<sup>6</sup>.

The ETA-Holder makes sure that for the components of the ETICS which he does not manufacture by them, the factory production control (FPC) carried out by other manufacturers guarantees compliance of the components with the European Technical Approval.

The factory production control (FPC) and the provisions taken by the ETA-Holder for components not manufactured by them shall be in accordance with the Control Plan relating to the European Technical Approval which is a part of the technical documentation of this European Technical Approval. The Control Plan is laid down in the context of the factory production control system operated by the manufacturer and deposited with the Technical and Test Institute for Construction Prague.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

#### **3.2.1.2 Other tasks of the manufacturer**

The manufacturer shall contractually involve a body (bodies) which is (are) notified for the tasks referred to in section 3.1 in the field of the ETICS in order to undertake the actions laid down in section 3.3. For this purpose, the Control Plan<sup>6</sup> referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the notified body or bodies involved.

For initial type testing (in case of the system 2+), the results of the tests carried out as a part of the assessment for the European Technical Approval can be used unless there are any changes to the production line or the plant. In such cases, the necessary initial type testing has to be agreed between the TZÚS Prague, s.p. and the Notified Bodies involved.

The manufacturer shall make an EC declaration of conformity, stating that the construction product is in conformity with the provisions of the European Technical Approval. The initial type-testing mentioned above could be taken over by the manufacturer for this declaration.

### 3.2.2 Tasks of the Notified Bodies

The notified body (bodies) shall carry out the:

- initial type-testing of the product (for system 1)  
The results of the tests carried out as a part of the assessment for the European Technical Approval can be used unless there are any changes to the production line or the plant. In such cases, the necessary initial type testing has to be agreed between the TZÚS Prague, s.p. and the Notified Bodies involved.
- initial inspection of factory and of factory production control (FPC)  
The Notified Body shall ascertain that, in accordance with the Control Plan<sup>6</sup>, the factory (the employees and the equipment in particular) and the factory production control (FPC) are suitable to ensure continuous and proper manufacture of the components according to the specifications mentioned in clause 2 of this ETA.
- continuous surveillance, assessment and approval of the factory production control (FPC)  
The Notified Body shall conduct surveillance in the factory:
  - at least twice a year. If agreed between the Technical and Test Institute for Construction Prague and the Notified Body involved, this frequency can be reduced to once a year after a probative period
  - or
  - at least once a year for surveillance of this manufacturer having a factory production control system (FPC) complying with EN ISO 9001 covering the manufacture of the ETICS components.

It has to be verified that the system of factory production control and the specified automated manufacturing process are maintained taking the Control Plan<sup>6</sup> into account.

These tasks shall be performed in accordance with the provisions laid down in the Control Plan relating to the European Technical Approval.

The Notified Body (Bodies) shall retain the essential points of its (their) actions mentioned above and present the results obtained and conclusions drawn in (a) written report (reports).

- In the case of the AoC system 1  
The notified body involved by the manufacturer shall issue an EC certificate of conformity of the product certifying conformity with the provisions of this European Technical Approval.
- In the case of the AoC system 2+  
The notified body involved by the manufacturer shall issue an EC certificate of conformity of the factory production control (FPC) certifying conformity with the provisions of this European Technical Approval.

In cases where the provisions of the European Technical Approval and its Control Plan<sup>6</sup> are no longer fulfilled, the certification body shall withdraw the certificate of conformity and inform Technical and Test Institute for Construction Prague, without undue delay.

### 3.3 CE marking

The CE marking shall be affixed either on the product itself, on a label attached to it, on its packaging or on the commercial documents accompanying the components of the ETICS. The letters « CE » shall be followed by the identification number of the Notified Body involved and accompanied by the following additional information:

- name or identification mark and address of the ETA-Holder
- the last two digits of the year in which the CE marking was affixed
- number of the certificate of Factory Production Control (FPC) (system 2+)
- number of the EC certificate of conformity of the ETICS (system 1)

- number of the European Technical Approval
- the ETICS trade name
- number of the ETAG.

## **4 Assumptions under which the fitness of the product for the intended use was favourably assessed**

### **4.1 Manufacturing**

The European Technical Approval is issued for the ETICS based on the agreed data/information deposited at the Technical and Test Institute for Construction Prague which identify/identifies the ETICS that has been assessed and judged. Any changes to the ETICS or production process which could result in this deposited data/information being incorrect should be notified to the Technical and Test Institute for Construction Prague before the changes are introduced. TZÚS Prague, s.p. shall decide whether or not such changes can affect the ETA and consequently the validity of the CE marking based on the ETA and if so whether further assessment or alterations to the ETA is necessary.

The components of the ETICS shall correspond to the products being subject to the approval tests as far as their composition and manufacturing process are concerned.

### **4.2 Installation**

#### **4.2.1 General**

It is the ETA-Holder's responsibility to provide the interested persons with the information about the design and application of the ETICS. This information can be given in the form of technological procedures and copies of the relevant parties of the ETA. In addition, all the data concerning the execution of product shall be clearly indicated on the packaging and/or the enclosed instruction sheets using one or several illustrations.

In any case, the usage of the product shall comply with the national regulations and particularly those concerning fire resistance, structural analysis including wind load resistance and structural physics.

Only the components described in clause 1.1 of properties according to clause 2 of this ETA can be used for the ETICS.

The requirements given in ETAG 004, chapter 4 and chapter 7 have to be considered.

#### **4.2.2 Design**

For the bonded ETICS, the minimal bonded surface and method of bonding must comply with the ETICS properties (see Section 2.2.8.1 of this ETA) as well as the national regulations. The ETA-Holder specifies the minimal bonded surface of 100 % for the partially bonded ETICS with supplementary fixing.

For mechanically fixed ETICS with supplementary bonding, the choice and the number of anchors shall be determined considering:

- the design wind load suction and the national regulations (taking the national safety factors, the design rules, ... into account)
- the characteristic pull-out resistance of the anchors off the considered substrate (see the installation parameters – effective anchorage, characteristic resistance ... – in the ETA of the anchors)
- safety in use of the ETICS (Art. 2.2.8) according to the method of fixing

#### **4.2.3 Execution**

It should be done by trained workers only.

The recognition and preparation of the substrate as well as the generalities about the execution of the ETICS shall be carried out in compliance with:

- Chapter 7 of ETAG No. 004, with compulsory removal of any existing organic finishing coats when using the bonded ETICS.
- the national regulations in force

The particularities in execution linked to different methods of fixing and application of the rendering system shall be handled in accordance with the ETA-Holder prescriptions. In particular, it is necessary to comply with the quantities of the rendering applied, the thickness regularity and the drying periods between two layers.

## **5 Indication to the manufacturer**

### **5.1 Packaging, transport and storage**

Packaging of the components has to be such that the products are protected from moisture during transport and storage unless other measures are foreseen by the manufacturer for this purpose.

The components have to be protected against damage.

It is the responsibility of the manufacturer(s) to ensure that these provisions are easily accessible to the employees concerned.

### **5.2 Use, maintenance, repair**

The finishing coat shall be normally maintained in order to fully preserve the ETICS's performances.

Maintenance includes at least:

- repairs of localised 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 done as soon as possible.

It is important to carry out maintenance using readily available products and equipment, without causing any damage to the appearance.

It is the responsibility of the manufacturer(s) to ensure that these provisions are easily accessible to the employees concerned and that all necessary information on maintenance is handed over to the user.

The original Czech version is signed by

**Ing. Jana Čurdová**  
Head of the Approving Body