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European Technical Assessment

ETA 16/0384 of 16/11/2020

General Part

Technical Assessment Body issuing the European Technical Assessment:	Technical and Test Institute for Construction Prague
Trade name of the construction product:	**LAKMA TERM ST**
Product family to which the construction product belongs:	Product area code: 4 External Thermal Insulation Composite Systems (ETICS) with rendering, insulation product - expanded polystyrene (EPS)
Manufacturer:	**LAKMA SAT Sp. Z o o.** Frysztacka 173 43-400 Cieszyn, Poland
Manufacturing plant(s):	LAKMA SAT Sp. Z o o. Mała Łąka 22 43-400 Cieszyn, Poland LAKMA SAT Sp. Z o o. Akacjowa 6 43-400 Cieszyn, Poland
This European Technical Assessment contains:	30 pages including 4 Annexes which form an integral part of this Assessment; Annex No. 5 Control Plan contains confidential information and is not included in the European Technical Assessment when that assessment is publicly disseminated
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	EAD 040083-00-0404 External thermal Insulation Composite Systems (ETICS) with rendering
This version replaces:	ETA 16/0384 issued on 21/08/2019

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

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 boards, 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 – see in Table No. 1 below.

Table No. 1

	Components	Coverage (kg/m^2)	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 see Annex No. 1 for product characteristics	/	50 to 400
	• Adhesives: - **SYNTEKOL PSW** (cement based powder requiring addition of water about 0.25 l/kg) - **UNIWERSALNA ZAPRAWA KLEJACA** (cement based powder requiring addition of water about 0.25 l/kg) - **SYNTEKOL Q4** (cement based powder requiring addition of water about 0.25 l/kg) - **SYNTEKOL PS** (cement based powder requiring addition of water about 0.25 l/kg) - **ZAPRAWA KLEJACA DO STYROPIANU** (cement based powder requiring addition of water about 0.25 l/kg)	3.0 to 6.0 (dry)	3 - 20
	- **POROLIT PU** (polyurethane foam in a metal tin)	8 – 12 m^2 / 750 ml	

	Components	Coverage (kg/m^2)	Thickness (mm)
	- See Annex No. 4 for characteristics		
Insulation products with associated methods of fixing	**Mechanically fixed ETICS with anchors and supplementary adhesive (see Cl. 3.3.6 and Annex No. 2 for possible associations EPS/anchors). National application documents shall be taken into account.**		
	• Insulation product: EPS according to EN 13163 see Annex No. 1 for product characteristics	/	100 - 400
	• Supplementary adhesives: - **SYNTEKOL PSW** (cement based powder requiring addition of water about 0.25 l/kg) - **UNIWERSALNA ZAPRAWA KLEJACA** (cement based powder requiring addition of water about 0.25 l/kg) - **SYNTEKOL Q4** (cement based powder requiring addition of water about 0.25 l/kg) - **SYNTEKOL PS** (cement based powder requiring addition of water about 0.25 l/kg) - **ZAPRAWA KLEJACA DO STYROPIANU** (cement based powder requiring addition of water about 0.25 l/kg)	3.0 to 6.0 (dry)	/
	- **POROLIT PU** (polyurethane foam in a metal tin) - See Annex No. 4 for characteristics	8 – 12 m^2 / 750 ml	5 – 30 (thickness of bonding stripe)
	• 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 No. 2.		
	- **ejotherm NTK U** plastic nailed-in anchors	ETA-07/0026	
	- **Ejotherm STR U, STR U 2G** plastic screw-in anchors	ETA-04/0023	
	- **EJOT SDM-T plus** plastic screw-in anchors	ETA-04/0064	
	- **Ejot H1 eco** plastic nailed-in anchors	ETA-11/0192	
	- **EJOT H3** plastic nailed-in anchors	ETA 14/0130	
	- **BRAVOLL PTH-KZ 60/8** plastic nailed-in anchors	ETA-05/0055	
	- **BRAVOLL PTH 60/8** plastic nailed-in anchors	ETA-05/0055	
	- **BRAVOLL PTH-S** plastic screwed-in anchors	ETA-08/0267	
	- **BRAVOLL PTH-X, PTH-EX** plastic nailed-in anchors	ETA-13/0951	

	Components	Coverage (kg/m^2)	Thickness (mm)
	- **BRAVOLL PTH-SX** plastic nailed-in anchors	ETA-10/0028	
	- **KEW TSD 8** plastic nailed-in anchors	ETA-04/0030	
	- **KEW TSD-V 8** plastic nailed-in anchors	ETA-08/0315	
	- **KEW TSDL-V** plastic nailed-in anchors	ETA-12/0148	
	- **KEW TSD-V KN** plastic nailed-in anchors	ETA-13/0075	
	-**KEW DSH 10 K (KS)** plastic nailed-in anchors	ETA-14/0120	
	- **KOELNER TFIX-8M** plastic nailed-in anchors	ETA-07/0336	
	- **KOELNER KI-10, KI-10M** plastic nailed-in anchors	ETA-07/0291	
	- **KOELNER KI-10N, KI-10NS** plastic nailed-in anchors	ETA 07/0221	
	- **KOELNER TFIX-8S a TFIX-8ST** plastic screw-in anchors	ETA-11/0144	
	- **KOELNER TFIX-8P** plastic nailed-in anchors	ETA-13/0845	
	- **Hilti SDK - FV 8** plastic nailed-in anchors	ETA-07/0302	
	- **Hilti T-Save HTS-P** - plastic nailed-in anchors	ETA-14/0400	
	- **Hilti ETICS anchor HTH** plastic screw-in anchors	ETA-15/0464	
	- **fischer TERMOZ 8SV** plastic screw-in anchors	ETA-06/0180	
	- **fischer TERMOFIX CF 8** plastic nailed-in anchors	ETA-07/0287	
	- **fischer TERMOZ 8U, 8UZ** plastic screw-in anchors	ETA-02/0019	
	- **fischer termoz PN 8** plastic nailed-in anchors	ETA-09/0171	
	- **fischer termoz CN 8** plastic nailed-in anchors	ETA-09/0394	
	- **fischer TERMOZ CS 8** plastic screw-in anchors	ETA-14/0372	
	- **Ejotherm STR U, STR U 2G** plastic screw-in anchors	ETA 04/0023	
	- **fischer termoz SV II ecotwist** plastic screw-in anchors	ETA-12/0208	
	- **LTX10, LMX 10** plastic nailed-in anchors	ETA 16/0509	
	- **LTX 8, LMX 8** plastic nailed-in anchors	ETA-16/0509	
	- **LFM-8, LFM-10** plastic nailed-in anchors	ETA-17/0450	
	- **WKTHERM ø 8** plastic screw-in anchors	ETA-11/0232	
	- **eco drive** plastic screw-in anchors	ETA-13/0107	
	- **WKTHERM S** plastic nailed-in anchors	ETA-13/0724	
	- **AMEX LDK** plastic nailed-in anchors	ETA 09/0182	

	Components	Coverage (kg/m^2)	Thickness (mm)
Base coat	• **SYNTEKOL PSW** (cement based powder requiring addition of water 0.25 l/kg) • **UNIWERSALNA ZAPRAWA KLEJACA** (cement based powder requiring addition of water 0.25 l/kg) • **SYNTEKOL Q4** (cement based powder requiring addition of water 0.25 l/kg)	About 3.0 – 6.0 (dry matter)	3 - 6
Reinforcement	• Standard mesh applied in single layer see Annex No. 3 for product characteristics: - **R 117 A101** - **R 131 A101** - **SSA-1363-145** - **SSA-1363-160** - **AKE 145** - **AKE 170** - **Halico A 150** - **OPTIMA-NET 150** - **OPTIMA-NET 165** - **LAKMA TERM A 150** - **MASTERNET CLASSIC 145** - **MASTERNET SOLID** - **MASTERNET CLASSIC 160** - **MASTERNET PRO 165** - **03-1** - **03-43**	Mas per unit area < 0.4 $kg//m^2$	< 0.5
Key coat	- **TOTALGRUNT** (ready to used liquid) - **TYNKSILGRUNT** (ready to used liquid) - **TYNKSILGRUNT Q** (ready to used liquid) - **AKRYL P** (ready to used liquid) - **PREPARAT GRUNTUJĄCY FRANCESCO GUARDI** (ready to used liquid)	0.20 – 0.35	/
Finishing coats	• cement based powder requiring addition of water – about 0.23 l/kg: - **MINERALTYNK Q Z** (alternative trade name: **MINERALTYNK Q PLUS Z**) ribbed structure (max.particle size 1.5; 2.0; 2.5; 3.0 mm) - **MINERALTYNK Q K** (alternative trade name: **MINERALTYNK Q PLUS K**)	1.3 – 4.5 regulated by max. particle size	Regulated by particle size

	Components	Coverage (kg/m^2)	Thickness (mm)
	floated structure (max.particle size 1.5; 2.0; 2.5; 3.0 mm) - **POROLIT Q M** (alternative trade name: **POROLIT QM PLUS Z**) machine applied (max.particle size 1.5; 2.0 mm) Mineral finishing coats can be used in combination with a decorative coat SILMAL ST, SILMAL SN, SILMAL SN REPAIR, AKRYL FASADA, FASMAL		
	• Ready to use paste – binder based on colloidal silica: - **TYNKSIL S Z** (alternative trade name: **TYNKSIL S PLUS Z**) ribbed structure (max. particle size 1.5; 2.0; 2.5; 3.0 mm) - **TYNKSIL S K** (alternative trade name: **TYNKSIL S PLUS K**) floated structure (max. particle size 1.5; 2.0; 2.5; 3.0 mm) - **POROLIT S** (alternative trade name: **POROLIT S PLUS Z**) machine applied (max. particle size 1.5; 2.0 mm) Finishing coats based on colloidal silica can be used in combination with a decorative coat SILMAL ST, SILMAL SN, SILMAL SN REPAIR, AKRYL FASADA, FASMAL	1.2 – 3.8 regulated by max. particle size	Regulated by particle size
	• Ready to use paste –silicone binder: - **TYNKSIL QS Z** (alternative trade name: **TYNKSIL QS PLUS Z**) ribbed structure (max. particle size 1.5; 2.0; 2.5; 3.0 mm) - **TYNKSIL QS K** (alternative trade name: **TYNKSIL QS PLUS K**) floated structure (max. particle size 1.5; 2.0; 2.5; 3.0 mm) - **POROLIT QS** (alternative trade name: **POROLIT QS PLUS Z**) machine applied (max. particle size 1.5; 2.0 mm) Silicone finishing coats can be used in combination with a decorative coat SILMAL ST, SILMAL SN, SILMAL SN REPAIR, AKRYL FASADA, FASMAL	1.2 – 3.8 regulated by max. particle size	Regulated by particle size
	• Ready to use paste – silicate binder:		

	Components	Coverage (kg/m^2)	Thickness (mm)
	- **TYNKSIL Z** (alternative trade name: **TYNKSIL PLUS Z**) ribbed structure (max. particle size 1.5; 2.0; 2.5; 3.0 mm) - **TYNKSIL K** (alternative trade name: **TYNKSIL PLUS K**) floated structure (max. particle size 1.5; 2.0; 2.5; 3.0 mm) Silicate finishing coats can be used in combination with a decorative coat SILMAL ST, SILMAL SN, SILMAL SN REPAIR, AKRYL FASADA, FASMAL	2.0 – 3.8 regulated by max. particle size	Regulated by particle size
	• Ready to use paste – acrylic binder: - **AKRYLTYNK Z** (alternative trade name: **AKRYLTYNK PLUS Z**) ribbed structure (max. particle size 1.5; 2.0; 2.5; 3.0 mm) - **AKRYLTYNK K** (alternative trade name: **AKRYLTYNK PLUS K**) floated structure (max. particle size 1.5; 2.0; 2.5; 3.0 mm) **POROLIT Z** (alternative trade name: **POROLIT PLUS Z**) machine applied (max. particle size 1.5; 2.0 mm) Acrylic finishing coats can be used in combination with a decorative coat SILMAL ST, SILMAL SN, SILMAL SN REPAIR, AKRYL FASADA, FASMAL	1.2 – 3.8 regulated by max. particle size	Regulated by particle size
	• Mosaic finishing coats, ready to use paste – acrylic binder: - **AKRYLTYNK M** ribbed structure (max. particle size 1.6 mm) - **TYNK KWARCOWY** ribbed structure manually and machine applied (max. particle size 1.6 mm) - **TYNK MARMUROWY** ribbed structure manually applied (max. particle size 1.6 mm) Mosaic finishing coats can be used in combination with decorative coat IMPREGNAT DO TYNKÓW MOZAIKOWYCH	1.8 – 6.0	Regulated by particle size

	Components	Coverage (kg/m^2)	Thickness (mm)
Decorative coats	**SILMAL SN** ready to use liquid based on silicone binder **SILMAL SN REPAIR** ready to use liquid based on silicone binder **AKRYL FASADE** ready to use liquid based on acrylic binder **SILMAL ST** ready to use liquid based on silicate binder **FASMAL** ready to use liquid based on acrylic binder **TYNKSIL QS Z Repair** ready to used paste based on silicone binder, max. particle size 0.5 mm **AKRYLTYNK Z Renowacyjny** ready to used paste based on acrylic binder, max. particle size 0.5 mm **IMPREGNAT DO TYNKÓW MOZAIKOWYCH** ready to use liquid based on acrylic binder		
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. 1.3.1 of the EAD 040083-00-0404) and shall be done in accordance with the national instructions.
The ETICS belong to Category S/W2, according to EOTA Technical Report No 034.

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.

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 1.1 and 1.2 of EAD 040083-00-0404, 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 provisions made in this European Technical Assessment are based on an assumed working life of the ETICS of at least 25 years, provided that the requirements for the packaging, transport, storage, installation as well as appropriate use, maintenance and repair are met. The indication given on the working life cannot be interpreted as a guarantee given by the manufacturer or the Technical Assessment Body, but should only be regarded as a means for

choosing the appropriate products in relation to the expected, economically reasonable working life of the works.

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 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire (EAD 040083-00-0404, clause 2.2.1, EN 13501-1)

Table No. 2

Configuration	Organic content / heat of combustion	Flame retardant content	Euroclass according to EN 13501-1
Adhesive (cement base) SYNTEKOL PS, SYNTEKOL PSW, SYNTEKOL Q4, UNIWERSALNA ZAPRAWA KLEJACA, ZAPRAWA KLEJACA DO STYROPIANU	Max. 2,5% / Max 0.36 MJ/kg	No flame retardant	**B – s1, d0**
Adhesive (pur foam base) POROLIT PU	Max. 15% / -	-	
Boards of expanded polystyrene EPS Maximal density of 22 kg/m^3	- / -	In quantity ensuring Euroclass E according to EN 13501-1	
Base coat render SYNTEKOL PS, SYNTEKOL PSW, SYNTEKOL Q4, UNIWERSALNA ZAPRAWA KLEJACA, ZAPRAWA KLEJACA DO STYROPIANU - thickness of 3 – 6 mm	Max. 2,5% / Max 0.36 MJ/kg	No flame retardant	
Glass fibre mesh	- / Max 8.17 MJ/kg; Max 1.31 MJ/m^2	No flame retardant	

Configuration	Organic content / heat of combustion	Flame retardant content	Euroclass according to EN 13501-1
Finishing coats with acrylic binder - AKRYLTYNK Z , K (alternative trade name: **AKRYLTYNK PLUS Z, PLUS K**), POROLIT Z (alternative trade name: **POROLIT PLUS Z**), AKRYLTYNK M, TYNK MARMUROWY, TYNK KWARCOWY Finishing coats with silicone binder - TYNKSIL Z,K (alternative trade name: **TYNKSIL PLUS Z, PLUS K**), TYNKSIL QS Z, K (alternative trade names: **TYNKSIL QS PLUS Z, QS PLUS K**), POROLIT QS (alternative trade name: **POROLIT QS PLUS Z**) Finishing coats with silicate or colloidal silicate binder – TYNKSIL S Z, S K (alternative trade names: **TYNKSIL S PLUS Z, S PLUS K**), POROLIT S (alternative trade name: **POROLIT S PLUS Z**)	Max 2.51 MJ/kg	No flame retardant	
Finishing coats with mineral binder - MINERALTYNK QZ, QK, (alternative trade names: **MINERALTYNK Q PLUS Z, Q PLUS K**), POROLIT QM (alternative trade name: **POROLIT QM PLUS Z)** and with paints: acrylic - AKRYL FASADA, FASMAL, AKRYLTYNK Z Renowacyjny, silicone - SILMAL SN, SILMAL SN REPAIR, TYNK QS Z REPAIR, silicate - SILMAL ST	Max 7,75 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 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.

3.2 Hygiene, health and environment (BWR 3)

3.2.1 Water absorption (EAD 040083-00-0404 - clause 2.2.5.1)

- Base coat **SYNTEKOL PSW/ UNIWERSALNA ZAPRAWA KLEJACA/ SYNTEKOL Q4**:

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/m^2	≥ 0.5 kg/m^2
Rendering system: base coat **SYNTEKOL PSW/ UNIWERSALNA ZAPRAWA KLEJACA/ SYNTEKOL Q4** + finishing coats as indicated here:	**MINERALTYNK Q Z** **MINERALTYNK Q K** (alternative trade name: **MINERALTYNK Q PLUS Z, MINERALTYNK Q PLUS K**)	X	-
	POROLIT QM (alternative trade name: **POROLIT QM PLUS Z**)	X	-
	TYNKSIL S Z **TYNKSIL S K** (alternative trade name: **TYNKSIL S PLUS Z, TYNKSIL S PLUS K**)	X	-
	POROLIT S (alternative trade name: **POROLIT S PLUS Z**)	X	-
	TYNKSIL QS Z **TYNKSIL QS K** (alternative trade name: **TYNKSIL QS PLUS Z, TYNKSIL QS PLUS K**)	X	-
	POROLIT QS (alternative trade name: **POROLIT QS PLUS Z**)	X	-
	TYNKSIL Z **TYNKSIL K** (alternative trade name: **TYNKSIL PLUS Z, TYNKSIL PLUS K**)	X	-
	AKRYLTYNK Z **AKRYLTYNK K** (alternative trade name: **AKRYLTYNK PLUS Z, AKRYLTYNK PLUS K**)	X	-

		Water absorption after 24 hours	
		< 0.5 kg/m²	≥ 0.5 kg/m²
Rendering system: base coat **SYNTEKOL PSW/ UNIWERSALNA ZAPRAWA KLEJACA/ SYNTEKOL Q4** + finishing coats as indicated here:	**POROLIT Z** (alternative trade name: **POROLIT PLUS Z**)	X	-
	AKRYLTYNK M	X	-
	TYNK KWARCOWY	X	-
	TYNK MARMUROWY	X	-

3.2.2 Watertightness

3.2.2.1 Hygrothermal behaviour (EAD 040083-00-0404 - clause 2.2.6)

Pass (without defects).

3.2.2.2 Freeze–thaw behaviour (EAD 040083-00-0404 - clause 2.2.7)

Freeze-thaw resistant - according to the water absorption test result.

3.2.3 Impact resistance (EAD 040083-00-0404 - clause 2.2.8)

Table No. 4

Render coating: base coat **SYNTEKOL PSW/ UNIWERSALNA ZAPRAWA KLEJACA/ SYNTEKOL Q4** + reinforcement and finishing coats listed hereafter:	**Single standard mesh**
MINERALTYNK Q Z **MINERALTYNK Q K** (alternative trade name: **MINERALTYNK Q PLUS Z, MINERALTYNK Q PLUS K**)	Category I*
POROLIT QM (alternative trade name: **POROLIT QM PLUS Z**)	Category I*
TYNKSIL S Z **TYNKSIL S K** (alternative trade name: **TYNKSIL S PLUS Z, TYNKSIL S PLUS K**)	Category I
POROLIT S (alternative trade name: **POROLIT S PLUS Z**)	Category I
TYNKSIL QS Z **TYNKSIL QS K** (alternative trade name: **TYNKSIL QS PLUS Z, TYNKSIL QS PLUS K**)	Category I*
POROLIT QS (alternative trade name: **POROLIT QS PLUS Z**)	Category I*
TYNKSIL Z **TYNKSIL K** (alternative trade name: **TYNKSIL PLUS Z, TYNKSIL PLUS K**)	Category I

AKRYLTYNK Z **AKRYLTYNK K** (alternative trade name: **AKRYLTYNK PLUS Z, AKRYLTYNK PLUS K**)	Category I
POROLIT Z (alternative trade name: **POROLIT PLUS Z**)	Category I
AKRYLTYNK M	Category I*
TYNK KWARCOWY	Category I*
TYNK MARMUROWY	Category I*

* with average basecoat thickness of 7,5 mm

3.2.4 Water vapour permeability (EAD 040083-00-0404 - clause 2.2.9.1)

Table No. 5

Rendering system: base coat **SYNTEKOL PSW/ UNIWERSALNA ZAPRAWA KLEJACA/ SYNTEKOL Q4** + reinforcement and finishing coats indicated hereafter	**Equivalent air layer thickness s_d** **Single standard mesh**
MINERALTYNK Q Z **MINERALTYNK Q K** (alternative trade name: **MINERALTYNK Q PLUS Z, MINERALTYNK Q PLUS K**)	≤ 0.26 m
POROLIT QM (alternative trade name: **POROLIT QM PLUS Z**)	≤ 0.26 m
TYNKSIL S Z **TYNKSIL S K** (alternative trade name: **TYNKSIL S PLUS Z, TYNKSIL S PLUS K**)	≤ 0.32 m
POROLIT S (alternative trade name: **POROLIT S PLUS Z**)	≤ 0.32 m
TYNKSIL QS Z **TYNKSIL QS K** (alternative trade name: **TYNKSIL QS PLUS Z, TYNKSIL QS PLUS K**)	≤ 0.45 m
POROLIT QS (alternative trade name: **POROLIT QS PLUS Z**)	≤ 0.45 m
TYNKSIL Z **TYNKSIL K** (alternative trade name: **TYNKSIL PLUS Z, TYNKSIL PLUS K**)	≤ 0.46 m
AKRYLTYNK Z **AKRYLTYNK K** (alternative trade name: **AKRYLTYNK PLUS Z, AKRYLTYNK PLUS K**)	≤ 0.46 m
POROLIT Z (alternative trade name: **POROLIT PLUS Z**)	≤ 0.46 m
AKRYLTYNK M	≤ 0.44 m
TYNK KWARCOWY	≤ 0.44 m
TYNK MARMUROWY	≤ 0.44 m

3.2.5 Release of dangerous substances (EAD 040083-00-0404 - clause 2.2.4, EOTA TR034)

Kit not assessed according to EOTA TR 034.

3.3 Safety and accessibility in use (BWR 4)

3.3.1 Bond strength between base coat and insulation product (EAD 040083-00-0404 - clause 2.2.11.1)

- Initial state: bond strength ≥ 0.08 MPa (cohesive failure in the insulation product)
- After hygrothermal cycles: bond strength ≥ 0.080 MPa (cohesive failure in the insulation product)
- After freeze-thaw cycles: test not required (see Cl. 3.2.1 of this ETA)

3.3.2 Bond strength between adhesive and substrate / insulation product (EAD 040083-00-0404 - clauses 2.2.11.2, 2.2.11.3)

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
SYNTEKOL PSW / UNIWERSALNA ZAPRAWA KLEJACA / SYNTEKOL Q4 / SYNTEKOL PS / ZAPRAWA KLEJACA DO STYROPIANU	Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa
	Expanded polystyrene (EPS)	≥ 0.08 MPa	≥ 0.03 MPa	≥ 0.08 MPa

3.3.3 Bond strength of foam adhesives to the substrate and insulation product (EAD 040083-00-0404 - clauses 2.2.11.4)

Table No. 7

		Insulation product	Substrate	Thickness	Test conditions: Temperature / Relative humidity	Bond strength
POROLIT PU	Standard application conditions	EPS TR150	Concrete	8 ± 1 mm	23 ± 2 °C / 50 ± 5 % RH	≥ 0.08 MPa
	Modification of foam thickness	EPS TR150	Concrete	15 ± 1 mm	23 ± 2 °C / 50 ± 5 % RH	
	Modification of processing time (open time 5 min)	EPS TR150	Concrete	8 ± 1 mm	23 ± 2 °C / 50 ± 5 % RH	
	Modification of temperature: low temperature	EPS TR150	Concrete	8 ± 1 mm	5 ± 2 °C / /	
	Modification of temperature: high temperature	EPS TR150	Concrete	8 ± 1 mm	35 ± 2 °C / 30 ± 5 % RH	

3.3.4 Bond strength after ageing (EAD 040083-00-0404 - clauses 2.2.20)

- After ageing by hygrothermal cycles: bond strength ≥ 0.080 MPa (cohesive failure in the insulation product)
- After 7 days of immersion in water and 7 days of drying : ≥ 0.008 MPa (cohesive failure in insulation product)
- After freeze-thaw cycles: test not required (see Cl. 3.2.2.2 of this ETA)

3.3.5 Fixing strength (EAD 040083-00-0404 - clause 2.2.1.2)

Test not required (no limitation of ETICS length).

3.3.6 Wind load resistance (EAD 040083-00-0404 - clause 2.2.13)

Table No. 8

Anchor description	Trade name		**See Annex No. 2, plate stiffness < 0.60 kN/mm**	**See Annex No. 2, plate stiffness ≥ 0.60 kN/mm**
			Surface assembly	
	Plate diameter (mm)		60 or more	
EPS characteristics	Thickness (mm)		≥ 100	≥ 100
	Tensile strength perpendicular to faces (kPa)		≥ 100	≥ 100
Maximal load	Anchors placed at the body of the insulation product	R_{panel}	min. value: **0.49 kN** mean value: **0.55 kN**	min. value: **0.61 kN** mean value: **0.71 kN**
	Anchors placed at joints of the insulation product	R_{joint}	min. value: **0.33 kN** mean value: **0.37 kN**	min. value: **0.54 kN** mean value: **0.56 kN**

Table No. 9

Anchor description	Trade name		**See Annex No. 2, plate stiffness ≥ 0.60 kN/mm**
			Countersunk assembly
	Plate diameter (mm)		60 or more
EPS characteristics	Thickness (mm)		≥ 100
	Tensile strength perpendicular to faces (kPa)		≥ 100
Maximal load	Anchors placed at the body of the insulation product	R_{panel}	min. value: **0,72 kN** mean value: **0,76 kN**
	Anchors placed at joints of the insulation product	R_{joint}	min. value: **0,65 kN** mean value: **0,67 kN**

Table No. 10

Anchor description	Trade name		**Hilti HTH T-Helix** ETA-15/0464	**fischer termoz SV II ecotwist** ETA-12/0208
	Assembly method		Special assembly	Special assembly
	Plate diameter (mm)		75	60
EPS characteristics	Thickness (mm)		≥ 100	≥ 100
	Tensile strength perpendicular to faces (kPa)		≥ 100	≥ 100
Maximal load	Anchors placed at the body of the insulation product	R_{panel}	min. value: **0.64 kN** mean value: **0.68 kN**	min. value: **0.49 kN** mean value: **0.53 kN**
	Anchors placed at joints of the insulation product	R_{joint}	min. value: **0.54 kN** mean value: **0.60 kN**	min. value: **0.44 kN** mean value: **0.48 kN**

3.3.7 Render strip tensile test (EAD 040083-00-0404 - clause 2.2.17)

- Base coat **SYNTEKOL PSW/ UNIWERSALNA ZAPRAWA KLEJACA/ SYNTEKOL Q4**

No performance assessed for glass fibre meshes **R 131 A101; SSA-1363-145; SSA-1363-160; AKE 145; AKE 170; Halico A 150; OPTIMA-NET 150; OPTIMA-NET 165; LAKMA TERM A 150, MASTERNET CLASSIC 145; MASTERNET SOLID; MASTERNET CLASSIC 160; MASTERNET PRO 165; 03-1; 03-43.**

Table No. 11

		Glass fibre mesh **R 117 A101** (manufacturer: SAINT-GOBAIN ADFORS CZ s.r.o.)					
		Crack width W_{typ} [mm]/ number of cracks at relative elongation ε					
Load direction		**ε = 0.3 %**	**ε = 0.5 %**	**ε = 0.8 %**	**ε = 1.0 %**	**ε = 1.5 %**	**ε = 2.0 %**
Warp	Sample No. 1	≤ 0.05/10	≤ 0.05/17	≤ 0.05/32 ≤ 0.10/1	≤ 0.05/52 ≤ 0.10/4	≤ 0.05/63 ≤ 0.10/15	≤ 0.05/70 ≤ 0.10/17 ≤ 0.15/3
	Sample No. 2	≤ 0.05/8	≤ 0.05/19	≤ 0.05/32 ≤ 0.10/1	≤ 0.05/43 ≤ 0.10/1	≤ 0.05/69 ≤ 0.10/12 ≤ 0.15/1	≤ 0.05/67 ≤ 0.10/27 ≤ 0.15/3
	Sample No. 3	≤ 0.05/7	≤ 0.05/21	≤ 0.05/48	≤ 0.05/67 ≤ 0.10/3	≤ 0.05/69 ≤ 0.10/13	≤ 0.05/60 ≤ 0.10/24 ≤ 0.15/4
Weft	Sample No. 1	≤ 0.05/1	≤ 0.05/28	≤ 0.05/53	≤ 0.05/59 ≤ 0.10/3	≤ 0.05/72 ≤ 0.10/12	≤ 0.05/66 ≤ 0.10/26
	Sample No. 2	≤ 0.05/5	≤ 0.05/25	≤ 0.05/49	≤ 0.05/65 ≤ 0.10/7	≤ 0.05/76 ≤ 0.10/15	≤ 0.05/63 ≤ 0.10/36
	Sample No. 3	≤ 0.05/8	≤ 0.05/16	≤ 0.05/42 ≤ 0.10/2	≤ 0.05/54 ≤ 0.10/6	≤ 0.05/63 ≤ 0.10/20	≤ 0.05/55 ≤ 0.10/46

The characteristic crack width W_{rk} [mm] at a render strain value of 0.8%, determined with simple Method II pursuant to EAD 040083-00-0404 - clause 2.2.17.

Table No. 12

	Characteristic width of cracks W_{rk} [mm] at render strain value of 0.8%	
	Warp direction	**Weft direction**
R117 A101	0.072	0.069

The width of cracks in reinforced base coat at 2% elongation is equal or lower than 0.15 mm.

3.4 Protection against noise (BWR 5)

3.4.1 Airborne sound insulation (EAD 040083-00-0404 - clause 2.2.22)

No performance assessed.

3.5 Energy economy and heat retention (BWR 6)

3.5.1 Thermal resistance and thermal transmittance (EAD 040083-00-0404 - clause 2.2.23)

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 material
($\chi_p \times n$ 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:

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

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.

3.6 Sustainable use of natural resources (BWR 7)

No performance assessed.

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. 13

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 16/11/2020

By

Ing. Mária Schaan

Head of the Technical Assessment Body

Annex No. 1 Insulation product characteristics

EPS insulation boards TR 100 and more

Description and characteristics		Regulation	Declared characteristics of EPS boards	
			Class, level according to EN 13163	Value
Reaction to fire		EN 13501 -1+A1:2010	E	Apparent density ≤ 22 kg/m³
Thermal resistance		EN 12667	Defined in CE mark in accordance with EN 13163	
Thickness		EN 823	T(1)	± 1 mm
Length		EN 822	L(2)	± 2 mm
Width			W(1)	± 1 mm
Squareness		EN 824	S(2)	± 2 mm/m
Flatness		EN 825	P(3)	± 5 mm
Surface		-	Cut surface (homogenous, without coating)	
Dimensional stability	Under defined temperature and humidity conditions	EN 1604	DS(70,-)1	1%
			DS(70,90)1	1%
	Under constant laboratory conditions	EN 1603	DS(N)2	0.2%
Short term water absorption at partial immersion		EN 1609	WL (T) 1	< 1 kg/m²
Diffusion factor (μ)		EN 13163	MU 20 – 40	20 - 40
Tensile strength perpendicular to the faces of insulation product		EN 1607	TR100, TR150, TR200	≥ 100 kPa
Shear strength		EN 12090	SS20	≥ 20 kPa
Shear modulus of elasticity			GM1000	≥ 1000 kPa

Note: Classes and levels for individual characteristics comply with EN 13163:2012+A1:2015
Reaction to fire E has to be proved for every insulation product also at 10 mm products thickness.

EPS insulation boards TR 80

Description and characteristics			Regulation	Declared characteristics of EPS boards	
				Class, level according to EN 13163	Value
Reaction to fire			EN 13501 -1+A1:2010	E	Apparent density ≤ 22 kg/m³
Thermal resistance			EN 12667	Defined in CE mark in accordance with EN 13163	
Thickness			EN 823	T(1)	± 1 mm
Length			EN 822	L(2)	± 2 mm
Width				W(1)	± 1 mm
Squareness			EN 824	S(2)	± 2 mm/m
Flatness			EN 825	P(3)	5 mm
Surface			-	Cut surface (homogenous, without coating)	
Dimensional stability	Under defined temperature and humidity conditions		EN 1604	DS(70,-)1	1%
				DS(70,90)1	1%
	Under constant laboratory conditions		EN 1603	DS(N)2	0.2%
Short term water absorption at partial immersion			EN 1609	WL (T) 1	< 1 kg/m²
Diffusion factor (μ)			EN 13163	MU 20 – 40	20 - 40
Tensile strength perpendicular to the faces of insulation product			EN 1607	TR80	≥ 80 kPa
Shear strength			EN 12090	SS20	≥ 20 kPa
Shear modulus of elasticity				GM1000	≥ 1000 kPa

Note: Classes and levels for individual characteristics comply with EN 13162:2012+A1:2015
Reaction to fire E has to be proved for every insulation product also at 10 mm products thickness.

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 NTK U	60	see ETA 07/0026	0.50	1.44
Ejotherm STR U, STR U 2G	60	see ETA 04/0023	0.60	2.08
EJOT SDM-T plus	60	see ETA 04/0064	0.60	2.67
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	60	see ETA 05/0055	0.70	2.10
BRAVOLL PTH 60/8			0.60	1.63
BRAVOLL PTH-S	60	see ETA 08/0267	0.90	2.60
BRAVOLL PTH-X	60	see ETA 13/0951	0.60	1.50
BRAVOLL PTH-EX			0.60	1.40
BRAVOLL PTH-SX	60	see ETA 10/0028	0.70	1.80
KEW TSD 8	60	see ETA 04/0030	0.60	1.60
KEW TSD-V 8	60	see ETA 08/0315	1.20	1.75
KEW TSDL-V	60	see ETA 12/0148	1.20	1.75
KEW TSD-V KN	60	see ETA 13/0075	1.20	1.75
KEW DSH 10 K	60	see ETA 14/0129	0,40	1,70
KEW DSH 10 KS			1,00	2,90
KOELNER TFIX-8M	60	see ETA 07/0336	1.00	1.75
KOELNER KI-10	60	see ETA 07/0291	0.39	0.81
KOELNER KI-10M			0.45	0.85
KOELNER KI-10N, KI-10NS	60	see ETA 07/0221	0.50	1.23
KOELNER TFIX-8S, TFIX-8ST	60	see ETA 11/0144	0.60	2.04
KOELNER TFIX-8P	60	see ETA 13/0845	0.30	1.38
Hilti SDK – FV 8	60	see ETA 07/0302	0.50	1.48
Hilti T-Save HTS-P	60	see ETA 14/0400	0.60	1.40

Trade name	Plate diameter (mm)	Characteristic pull-out resistance	Plate stiffness (kN/mm)	Load at plate rupture (kN)
fischer TERMOFIX CF 8	60	see ETA 07/0287	0.50	1.65
fischer TERMOZ 8U	60	see ETA 02/0019	0.50	2.45
fischer TERMOZ 8UZ			0.50	0.54
fischer termoz PN 8	60	see ETA 09/0171	0.40	1.60
fischer termoz CN 8	60	see ETA 09/0394	0.40	1.60
fischer TERMOZ CS 8	60	see ETA 14/0372	0.60	1.70
LTX10, LMX 10	60	see ETA 16/0509	0.50	1.02
LTX 8, LMX 8			0,50	1,09
LFM ø 8	60	see ETA 17/0450	0.30	1.44
eco drive	60	see ETA 13/0107	0.60	2.80
WKTHERM S	60	see ETA 13/0724	0.60	4.30
WKTHERM ø 8	60	see ETA 11/0232	0.60	4.30
AMEX LDK	60	see ETA 09/0182	0.40	0.53
Countersunk assembly				
Ejotherm STR U, STR U 2G	60	see ETA 04/0023	0.60	2.08
fischer TERMOZ 8 SV	60	see ETA 06/0180	1.10	2.13
BRAVOLL PTH-SX	60	see ETA 10/0028	0.60	1.80
KOELNER TFIX-8S, TFIX-8ST	60	see ETA 11/0144	0.60	2.04
Special assembly				
fischer termoz SV II ecotwist	60	see ETA 12/0208	-	-
Hilti ETICS anchor HTH	75	see ETA 15/0464	-	-

In addition to this list, anchors assessed according to EAD 330196-01-0604 or EAD 330196-00-0604 can be used provided that such anchors meet the following requirements:

	Requirements	
Plate diameter	≥ 60 mm	
Plate stiffness	Surface assembly:	≥ 0.3 kN/mm
	Countersunk assembly:	≥ 0.6 kN/mm
Rupture force of anchor´s plate	≥ Higher of figures R_{panel} and R_{joint} in relevant table in Cl. 3.3.6	

Annex No. 3 Description of glass fibre mesh

	Description	Strength after ageing	
	Standard fibre mesh applied in one or two layers with aperture size (average mesh size)	Absolute strength after ageing (N/mm)	Relative residual strength after ageing, of the strength in the as-delivered state (%)
R117 A101	4,5 x 4,0 mm	≥ 20	≥ 50
R 131 A101	3,8 x 3,8 mm		
SSA-1363-145	4,0 x 5,5 mm		
SSA-1363-160	4,0 x 5,0 mm		
AKE 145	4,0 x 4,5 mm		
AKE 170	3,8 x 3,8 mm		
Halico A 150	4,7 x 4,5 m		
OPTIMA-NET 150	4,0 x 4,5 mm		
OPTIMA-NET 165	3,6 x 4,0 mm		
LAKMA TERM A 150	4,7 x 4,5 mm		
MASTERNET CLASSIC 145	5,0 x 5,0 mm		
MASTERNET SOLID	4,8 x 5,0 mm		
MASTERNET CLASSIC 160	5,1 x 4,2 mm		
MASTERNET PRO 165	5,0 x 4,2 mm		
03-1 (Asglatex)	4,0 x 3,7 mm		
03-43 (Asglatex)	4,6 x 3,6 mm		

Annex No. 4 Foam adhesive characteristics

	Shear strength	Shear modulus	Post expansion					
			5 min	10 min	20 min	40 min	60 min	24 hod
POROLIT PU	79 kPa	131 kPa	3 mm	3 mm	4.8 mm	4.5 mm	4.3 mm	3.5 mm