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

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European Technical Assessment

ETA 18/0258 of 30/04/2018

English version prepared by ITeCons

General Part

Technical Assessment Body issuing the ETA: ITeCons - Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade	
Trade name of the construction product	Liz Kapoto
Product family to which the construction product belongs	External Thermal Insulation Composite Systems Product area code:4
Manufacturer	Colaliz – Cimento Cola do Liz, Lda. Avenida Dom João III, Edifício 2000 3F 2400-164 Leiria Portugal
Manufacturing plant(s)	Parque Industrial Lote 43, Santa Marta de Corroios - Amora 2845-408 Seixal Portugal
This European Technical Assessment contains	13 pages
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)

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Specific parts

1. Technical description of the product

This product is an ETICS (External Thermal Insulation Composite System) with rendering – a kit comprising components which are factory-produced by manufacturer or component suppliers. The ETICS manufacturer is ultimately responsible for all components of ETICS specified in this ETA.

The ETICS kit comprises a prefabricated insulation product of expanded polystyrene (EPS) to be bonded with supplementary mechanical fixings onto a wall. The methods of fixing and the relevant components of the ETICS are specified in Table 1. The insulation product is faced with a rendering system consisting of one or two layers (site applied), one of which contains reinforcement. The rendering is applied directly to the insulation 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, apertures, corners, parapets, sills …). The 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.

Table 1: Components of the ETICS

Component	Description		Coverage (kg/m^2)	Thickness (mm)
Insulation product	Liztherm Plac Expanded polystyrene (EPS) with CE marking.		---	40
Adhesive	Lizkapoto Adhesive fibre mortar composed by cement, mineral fillers, resins and specific additives, with CE marking.		5.0 to 7.0	---
Base Coat	Lizkapoto Adhesive fibre mortar composed by cement, mineral fillers, resins and specific additives, with CE marking.	with standard glass fibre mesh	3.0 to 4.0	---
		with double standard glass fibre mesh		
Key coat	Liz Plastherm Primário Acrylic primary for surface preparation with silica-bodied.		0.2 to 0.4	---
Finishing coat	Liz Plastherm Acabamento Acrylic coating for waterproofing of the ETICS system.		2.0 to 2.5	---
Glass fibre mesh	Liztherm 160 – SSA-1363-160 Standard 160 g/m^2 (glass fibre mesh with mesh size 3.99 mm x 5.02 mm)		---	---
Anchors (supplementary mechanical fixings)	Liztherm Fix		---	---
Ancillary components	Remain under the ETA holder 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 building walls. The walls are made of masonry (bricks and blocks) or concrete (cast on site or as prefabricated panels) with a reaction to fire classification A1 to A2-s2,d0 according to EN 13501-1 or A1 according to the EC decision 96/603/EC as amended. The ETICS is designed to give the wall to which it is applied satisfactory thermal insulation. The characteristics of 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 shall be designed and installed in accordance with ETA holder´s installation instructions and this ETA. The kit consists of components defined by the ETA holder and manufactured either by the ETA holder or his supplier(s).

The ETICS is made of non-loadbearing construction elements. It does not contribute directly to the stability of 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 provisions made in this European Technical Assessment (ETA) are based on an assumed intended working life of at least 25 years, provided that the conditions laid down in the following sections 2.2 to 2.5 for the packing, transport, storage, installation are met and that the installed ETICS is subjected to an appropriate use, maintenance and repair as well. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right product in relation to the expected economically reasonable working life of the works.

2.2 Manufacturing

The European Technical Assessment is issued for the ETICS on the basis of agreed data/information, deposited with ITeCons - Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade, which identifies the ETICS that has been assessed and judged. Changes to the ETICS or production process, which could result in the deposited data/information being incorrect should be notified to ITeCons - Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade before changes are introduced. The ITeCons - Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade 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 instruction 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 sections 7.1 and 7.2 of ETAG 004 used as EAD, which summarizes 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 Packing, transport and storage

The information on packing, transport and storage is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer to ensure that this information is made know to the concerned people.

2.5 Use, maintenance and repair

The finishing coat shall be normally maintained in order to fully preserve the ETICS performance. Maintenance includes at least:

- visual inspection of the ETICS,
- the repairing of localized damaged areas due to accidents,
- the aspect maintenance with products 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 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 identification tests and the assessment for the intended use of this ETICS according the Essential Requirements were carried out in compliance with the ETAG 004, "Guideline for European Technical Approval of External Thermal Insulation Composite Systems with Rendering" – edition February 2013 (hereinafter referred to as "ETAG 004, used as EAD").

3.1 ETICS characteristics

3.1.1 Mechanical resistance and stability (BWR 1)

Not relevant.

3.1.2 Safety in case of fire (BWR 2)

3.1.2.1 Reaction to Fire

The reaction to fire was tested according to ISO 11925-2:2010, ISO 11925-2:2010/Cor1:2011 and EN 13823:2010+A1:2014 and classified according to EN 13501-1:2007+A1:2009.

The Liz Kapoto system meets the requirements of class B-s2, d0. This classification is valid for the Liz Kapoto system with EPS insulation product, standard mesh, base coat, key coat and finishing coat.

Note: A European reference fire scenario has not been laid down for facades. In some Member States, the classification of ETICS according to EN 13501-1:2007+A1:2009 might not be sufficient for the use in facades. An additional assessment of ETICS according to national provisions (e.g. on the basis of large scale test) might be necessary to comply with Member State regulations, until the existing European classification system has been completed.

3.1.3 Hygiene, health and environment (BWR 3)

3.1.3.1 Water absorption (capillarity test)

The results of the water absorption test of the base coat (system without finishing), presented in Table 2, verify the following condition:

- Water absorption after 1 hour < 1 kg/m^2
- Water absorption after 24 hours < 0.5 kg/m^2

The system is therefore judged to have satisfactory performance concerning water absorption.

Table 2: Water absorption (capillary test)

System specimens	Water absorption after 24 h	
	<0.5 kg/m^2	**≥0.5 kg/m^2**
EPS + base coat + standard mesh	X	
EPS + base coat + standard mesh + key coat + finishing coat	X	

3.1.3.2 Watertightness

3.1.3.2.1 Hygrothermal behaviour

Hygrothermal cycles have been performed on a rig. None of the following defects occurred during the testing:

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

This ETICS is therefore assessed resistant to hygrothermal cycles.

3.1.3.2.2 Freeze-thaw behaviour

The results of water absorption test of the system with and without finishing, presented in Table 2, verify the following condition:

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

This system is therefore assessed as freeze/thaw resistant without further testing.

3.1.3.3 Impact resistance

The resistance to hard body impact (3 and 10 Joules) tests carried out on samples of system composition lead to the use categories presented in Table 3.

Table 3: Impact resistance to hard body impacts

System specimens	Use categories[1]
EPS + base coat + standard mesh + key coat + finishing coat	II
EPS + base coat + double standard mesh + key coat + finishing coat	II

[1] Use categories:
Category I – zones readily accessible at ground level to the public and vulnerable to hard impacts but not subjected to abnormally rough use;
Category II – zones liable to impacts from thrown or kicked objects, but in public locations where the height of system will limit the size of impact; or at lower levels where access to the building is primarily to those with some incentive to exercise care.
Category III – zones not likely to be damaged by normal impacts caused by people or by thrown or kicked objects.

3.1.3.4 Water vapour permeability

Table 4 presents de resistance to water vapour diffusion of rendering system (base coat and finishing coat) for the system configuration, expressed by the equivalent air thickness.

Table 4: Equivalent air thickness

System specimens	Equivalent air thickness (m)
Base coat + standard mesh + key coat + finishing coat	0.5

3.1.3.5 Release of dangerous substances

A written declaration was submitted by the ETA holder stating that all ETICS components does not contain dangerous substances.

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 Regulation (EU) No 305/2011, these requirements need also to be complied with, when and where they apply.

3.1.4 Safety in use (BWR 4)

3.1.4.1 Bond strength

3.1.4.1.1 Base coat onto insulation product

Tests were performed on the system Liz Kapoto, at initial state. The results are summarized in Table 5.

Table 5: Bond strength between base coat and insulation product at initial state

System	Bond strength (initial state)
EPS + base coat + standard mesh + key coat + finishing coat	≥ 0.08 MPa

Tests were also performed on the system Liz Kapoto, after hygrothermal cycles. The results are summarized in Table 6.

Table 6: Bond strength between base coat and insulation product after hygrothermal cycles

System	Bond strength (after ageing)
EPS + base coat + standard mesh + key coat + finishing coat	≥ 0.08 MPa
EPS + base coat + standard mesh + reinforced mesh + key coat + finishing coat	≥ 0.08 MPa

3.1.4.1.2 Adhesive onto insulation product

Tests were performance on samples of insulation products with base coat. The results are summarized in Table 7.

Table 7: Bond strength between adhesive and insulation product

Specimen	Bond strength		
	Initial state	After conditioning	
		48 h immersion in water + 2 h 23 °C/50% RH	48 h immersion in water + 7 days 23 °C/50% RH
EPS + adhesive	≥ 0.08 MPa	≥ 0.03 MPa	≥ 0.08 MPa

3.1.4.1.3 Adhesive onto substrate

Tests were performance on samples of substrate (concrete) faced with adhesive product. The results are summarized in Table 8.

Table 8: Bond strength between adhesive and substrate

Specimen	Bond strength		
	Initial state	After conditioning	
		48 h immersion in water + 2 h 23 °C/50% RH	48 h immersion in water + 7 days 23 °C/50% RH
Adhesive + substrate (concrete)	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa

3.1.5 Protection against noise (BWR 5)

Table 9 presents the test results, and the ETICS configuration and substrate characteristics for which the values are valid.

Table 9: Airborne sound insulation

Insulation Product	Rendering system	ETICS fixing	Substrate	ETICS performance
Insulation type: Expanded polystyrene (EPS) Thickness: 40 mm	Minimum mass of the rendering system: 3.6 kg/m^2	**Bonding by adhesive** maximum bonded surface area: 100%	Type: Masonry bricks	ΔR_w = -3 dB $\Delta R_w + C$ = -3 dB $\Delta R_w + C_{tr}$ = -3 dB

Maximum dynamic stiffness: NPD Air flow resistance: NPD				

3.1.6 Energy economy and heat retention (BWR 6)

3.1.6.1 Thermal resistance

The additional thermal resistance R_{ETICS} provided by the ETICS to the substrate wall is calculated in accordance with EN ISO 6946 from the nominal value of the insulation products thermal resistance R_D given accompanied to the CE marking and from the thermal resistance of the rendering system R_{render} which is about 0.02 m^2K/W.

$$R_{ETICS} = R_D + R_{render}$$

The thermal bridges caused by mechanical fixing devices influence the thermal transmittance of the entire wall and shall be taken into account using the following calculation:

$$U_C = U + \Delta U \ (W/m^2K)$$

U_C: corrected thermal trnsmittance (W/m^2K) of the entire wall, including thermal bridges.

U: thermal transmittance of the entire wall, including ETICS, without thermal bridges (W/m^2K):

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

R_i: thermal resistance of the insulation product;

R_{render}: thermal resistance of the render [about 0.02 (m2.K)/W];

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

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

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

ΔU: correction term of the thermal transmittance for mechanical fixing devices

$$\Delta U = X_p * n$$

n: number of anchors (through insulation product) per m^2;

X_p: point thermal transmittance value of the anchor (0.002 W/K)[1].

[1]The thermal bridge effect of the anchor is smaller than 0.0005 W/K and can therefore be neglected in the calculation.

The value of thermal resistance of the render system (R_{render}) was considered as equal to 0.02 m.°C/W according clause 5.6.4.1 of the ETAG 004.

Table 10 presents the values of thermal resistance calculation for Liz Kapoto system with EPS thickness equal to 40 mm.

Table 10: Thermal resistance values for Liz Kapoto system

EPS thickness (mm)	R_{ETICS} [m^2.°C/W]
40	1.12

3.1.7 Sustainable use of natural resources (BWR7)

No performance determined.

3.1.8 Aspect of durability and serviceability

3.1.8.1 Bond strength after ageing

Results of the tests for determining the bond strength between the base coat and the insulation product present in Table 5 show that in all cases the failure resistance values are higher than 0.08 MPa with coesive rupture.

3.2 Characteristics of the components

3.2.1 Insulation product

Factory-prefabricated uncoated panels made of expanded polystyrene (EPS) complying with the requirements of EN 13163.

Table 11: EPS characteristics

Component	Trade name	Characteristics	Declared values and classes
Insulation product	Liztherm Plac	Reaction to Fire / EN 13501-1	E (Thickness: 20 to 200 mm; Density: 20kg/m3)
		Thermal conductivity (W/m.°C) / EN 12667	0.036
		Compressive stress at 10% deformation (k.Pa) / EN 826	100
		Bending strength (k.Pa) / EN 12089	150

3.2.2 Render

3.2.2.1 Render strip tensile test

No performance determined.

3.2.3 Glass fibre mesh

The characteristics of the glass fibre mesh are presented in Table 12.

Table 12: Glass fibre mesh characteristics

Component	Trade Name	Characteristics		Results
Standard and reinforced mesh	Liztherm 160 – SSA-1363-16	Mass per unit area (g/m^2)		154
		Ash content at 625 °C (%)		83.4
		Loss on ignition at 625 °C (%)		16.6
		Residual strength after ageing (N/mm)	Warp	≥ 20
			Weft	≥ 20
			Warp	≥ 50

		Relative residual strength after ageing (%)[1]	Weft	≥ 50
		Mesh size (mm)		3.99 x 5.02
		Mesh opening (mm)		3.66 x 4.15

[1] Percentage of the strength in the as-delivered state

3.2.4 Anchors

Anchors for insulation product act as a supplementary fixing if required. The characteristic resistances of anchors were evaluated according ETAG 014, clause 5.4.2. The test results are presented in Table 13.

Table 13: Anchors description of individual product characteristics contained in the ETA

Trade name	Plate diameter (mm)	Characteristic resistances in the substrate
Liztherm Fix	60	See ETA-08/0172

4. Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to the Decision 97/556/EC of European Commission as amended by the European Commission Decision 2001/596/EC, the AVCP systems (further described in Annex V Regulation (EU) No 305/2011) 1 and 2+ apply.

Table 14: AVCP Systems

Product(s)	Intended use(s)	Levels(s) or class(es) (Reaction to fire)	System(s)
External thermal insulation composite systems/kits with rendering (ETICS)	In external wall subject to fire regulations	A1 (1), A2 (1), B (1), C (1)	1
		A1 (2), A2 (2), B (2), C (2), D, E, (A1 to E) (3), F	2+
	In external wall not subject to fire regulations	any	2+

(1) Products/materials for which as clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).

(2) Products/materials not covered by footnote 1.

(3) Products/materials that do not required 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

The ETA is issued on the basis of agreed data/information, deposited at ITeCons, which identifies the product that has been assessed and judged. It is the manufacturer's responsibility to make sure that all those who use the kit are appropriately informed of specific conditions laid down in this ETA.

Changes to the ETICS or the components or their production process should be notified to the ITeCons before the changes are introduced. ITeCons will decide whether or not such changes affect the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

5.1 Tasks of the manufacturer

5.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production of concerned product. 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. This production control system shall ensure that the product is in conformity with this ETA.

The manufacturer may only use components stated in the technical documentation of this ETA including Control Plan. The incoming raw materials are subjected to verifications by the manufacturer before acceptance.

For the components of the ETICS which the manufacturer does not manufacture by himself, he shall make sure that factory production control carried out by the other manufacturers gives the guarantee of the components compliance with the ETA.

The factory production control shall be in accordance with the Control Plan which is a part of technical documentation of this European Technical Assessment. The control plan has been agreed between the manufacturer and ITeCons and is laid down in context of the factory production control system operated by the manufacturer and deposited within ITeCons. The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

5.1.2 Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is notified for the tasks referred to in section 4 in the field of ETICS in order to undertake the actions laid down in this clause. For this purpose, the control plan shall be handed over by the manufacturer to the notified bodies involved.

For initial type-testing of the ETICS and the components the results of the tests performed as part of the assessment for the ETA shall be used unless there are changes in the production line or plant. In such cases the necessary testing has to be agreed with ITeCons.

The manufacturer shall make a declaration of performance, stating that the ETICS is in conformity with the provisions of this ETA.

Changes to the ETICS or the components or their production process should be notified to ITeCons before the changes are introduced. ITeCons will decide whether or not such changes affect the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

5.2 Tasks for the Notified Body (bodies)

5.2.1 Initial inspection of factory and of factory production control

The Notified Body shall ascertain that, in accordance with the Control Plan, the factory (in particular the employees and the equipment) and the factory production control are suitable to ensure continuous and orderly manufacturing of the components according to the specifications mentioned in this ETA.

5.2.2 Continuous surveillance, assessment and evaluation of factory production control

Within the scope of continuous surveillance, assessment and evaluation of factory production control, the Notified Body (bodies) shall visit the factory at least once a year for surveillance. It has to be verified that the factory production control is maintained in suitable conditions.

These tasks shall be performed in accordance with the provisions laid down in the control plan.

The Notified Body (bodies) shall retain the essential points of its (their) actions referred to above and state the results obtained and conclusions drawn in a written report. The Notified Body involved by the manufacturer shall issue a certificate of conformity of the factory production control stating the conformity with the provisions of this ETA.

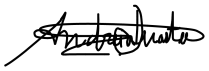
In cases where the provisions of the ETA and its control plan are no longer fulfilled, the Notified Body shall withdraw the certificate of conformity and inform ITeCons without delay.

Issued in Coimbra on 30.04.2018

By

Technical Assessment Unit of

ITeCons – Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade



(*Andreia Gil, Technical Assessment Unit Coordinator*)