ZAG

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SLOVENIAN NATIONAL BUILDING AND CIVIL ENGINEERING INSTITUTE

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

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English version prepared by ZAG

GENERAL PART

Technical Assessment Body issuing the ETA Organ za tehnično ocenjevanje, ki je izdal ETA	**ZAG Ljubljana**
Trade name of the construction product Komercialno ime gradbenega proizvoda	**JUBIZOL XPS**
Product family to which the construction product belongs Družina proizvoda, kateri pripada gradbeni proizvod	**4: External Thermal Insulation Composite Systems with rendering for the use as external insulation to the walls of buildings** 4: Zunanji toplotnoizolacijski sestavljeni sistemi ometom, namenjeni za izolacijo zunanjih zidc zgradb
Manufacturer Proizvajalec	**JUB d.o.o.** **Dol pri Ljubljani 28** **SI-1262 Dol pri Ljubljani** **Slovenija**
Manufacturing plant: Proizvodni obrat:	Plant 1, Plant 2, Plant 3, Plant 4, Plant 5
This European Technical Assessment contains Ta Evropska tehnična ocena vsebuje	**30 pages including 2 Annexes which form an integral part of this assessment.** 30 strani vključno z 2 prilogama, ki sta sestavni del te tehnične ocene
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of Ta Evropska tehnična ocena je izdana na podlagi Uredbe (EU) št. 305/2011 na osnovi	ETAG 004, edition 2013, used as European Assessment Document (EAD) *ETAG 004, izdaja 2013, ki se uporablja kot Evropski ocenitveni dokument (EAD)*

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SPECIFIC PART

1 Technical description of the product

1.1 General

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 mineral wool (MW) to be:
- purely bonded,
- or bonded with supplementary mechanical fittings,
- or mechanically fixed with supplementary adhesive.

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 is applied directly to the insulating panels, without any air gap or disconnecting layer.

The ETICS may include special fittings (e.g. base profiles, corner profiles, ...) to treat details of ETICS (connections, apertures, 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.

1.2 Composition of the kit

1.2.1 Composition of the ETICS

The ETICS comprises the following: adhesive or mechanical fixings (anchors), insulation core, base coat reinforced with glass fibre mesh, key coat applied on the base coat, finishing coat and ancillary materials. The descriptions of the components are given in Tables 1 to 8, while the system compositions are defined in Tables 9 and 10.

Table 1: ETICS components - Insulation products.

Components (see § 3. for further description, characteristics and performances of the components)	
Insulation products	**Thickness (mm)**
XPS EN 13164-T1-CS(10/Y)200-TR400- DS(TH)-WL(T)1.5	≥ 50 ≤ 200

Table 2: ETICS components - Adhesives.

Components (see § 3. for further description, characteristics and performances of the components)	
Adhesives	**Coverage (kg/m²)**
JUBIZOL ADHESIVE MORTAR – dry mix cement based adhesive requiring addition of ≈ 20 % water	3.5 – 5.0 (powder)
JUBIZOL STRONG FIX – dry mix cement based adhesive requiring addition of ≈ 20 % water	3.5 – 5.0 (powder)

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Table 3: ETICS components - Anchors.

Components (see § 3. for further description, characteristics and performances of the components)
Anchors
Ejot **Ejoterm STR U, SDM-T plus, SDF-K plus, NT U, NK U, NTK-U, STR U, STR U 2g, H3, H1 eco**
Hilti **SX-FV, SD-FV 8, XI-FV, D-FV, D-FV T**
Fischer **Termoz 8 U, Termoz 8 N, Termoz KS 8,Termoz 8 SV, Termoz 8 UZ**
Leskovec **Plastično pritrdilo PP, Pritrdilno sidro PSK**
Ranit **IsoFux NDT8LZ, ND8LZ, ND8LZ K, NDS8Z, NDM8Z, NDS90Z, NDM90Z, IsoFux**
Bravoll **PTH-KZ 60/8-L_a, PTH-KZL 60/8-L_a, PTH 60/8-L_a, PTH-L 60/8-L_a**

Table 4: ETICS components – Base coats.

Components (see § 3. for further description, characteristics and performances of the components)		
Base coats	**Coverage (kg/m²)**	**Thickness (mm)**
JUBIZOL ADHESIVE MORTAR – dry mix cement base coat powder requiring addition of ≈ 20 % water. Base coat consists of aggregates, cement, dispersion powder, special additives	5.6 – 8.4 (powder)	maximal (dry): 6 minimal (dry): 4
JUBIZOL STRONG FIX – dry mix cement base coat powder requiring addition of ≈ 20 % water. Base coat consists of aggregates, cement, dispersion powder, special additives	5.6 – 8.4 (powder)	maximal (dry): 6 minimal (dry): 4

Table 5: ETICS components – Reinforcement.

Components (see § 3. for further description, characteristics and performances of the components)
Reinforcement
JUBIZOL glass fibre mesh - where JUBIZOL glass fibre mesh denotate ETA-holder own designation

Table 6: ETICS components – Key coats.

Components (see § 3. for further description, characteristics and performances of the components)	
Key coats	**Coverage (l/m²)**
JUBIZOL Unigrund – liquid, water based acrylic slurry primer intended as a key coat for all finishing coats except mineral based finishing coats as JUBIZOL MINERAL finishS and T, and Nivellin D + Façade paints.	0.15 - 0.20
Acryl emulsion - liquid, water based acrylic primer intended as a key coat for the acrylic and mineral based finishing coats	≈ 0.1
Acrycolor - liquid exterior acrylic waterborne facade paint as a key coat for the acrylic and mineral based finishing coats	≈ 0.1
SILICATEprimer - liquid, water based silicate primer intended as a key coat for the silicate based finishing coats	≈ 0.1
SILICONEprimer - liquid, water based silicone primer intended as a key coat for the silicone based finishing coats	≈ 0.1

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Table 7: ETICS components – finishing coats.

Components (see § 3. for further description, characteristics and performances of the components)		
Finishing coats	**Coverage (kg/m²)**	**Thickness (mm)**
JUBIZOL MINERAL finish T 2.0/2.5 – ready-mixed lime-cement based mortar requiring addition of water 20-23 %, based on lime, cement, aggregates, additives	2.6 - 3.1 (powder)	Regulated by the particle size
JUBIZOL MINERAL finish S 1.5/2,0/2.5 – ready-mixed lime-cement based mortar requiring addition of water 20-23 %, based on lime, cement, aggregates, additives	2.6 - 3.6 (powder)	
JUBIZOL SILICATE finish T 2.0/2.5 - ready to use paste. Based on potassium silicate and water-based acrylic binder, aggregates, additives.	2.5 - 3.2 (paste)	
JUBIZOL SILICATE finish S 1.5/2.0/2.5 - ready to use paste. Based on potassium silicate and water-based acrylic binder, aggregates, additives	3.0 - 5.5 (paste)	
JUBIZOL SILICONE finish T 2.0/2.5 - ready to use paste. Based on silicone emulsion and water-based acrylic binder, aggregates, additives (in combination with all base coats)	2.8 - 3.5 (paste)	
JUBIZOL SILICONE finish S 1.5/2.0/2.5 - ready to use paste. Based on silicone emulsion and water-based acrylic binder, aggregates, additives.	2.4 - 4.7 (paste)	
JUBIZOL ACRYL finish T 2.0/2.5 - ready to use paste. Based on water-based acrylic binder, aggregates, additives.	2.5 - 3.2 (paste)	
JUBIZOL ACRYL finish S /1.5/2.0/2.5 - ready to use paste. Based on water-based acrylic binder, aggregates, additives.	2.5 - 5.0 (paste)	
NIVELIN D + façade paints* – ready-mixed polymer based mortar requiring addition of water ~ 30 %, based on polymer, lime, cement, aggregates, additives + liquid exterior micro reinforced acrylic waterborne anti-mildew paint.	3.5 - 4.5 l/m² (powder + liquid)	
JUBIZOL UNIXIL finish S 1,0/ 1.5/2.0/2.5 - ready to use paste. Based on water-based acrylic binders, mineral fillers, special additives.	2.1 - 5.0 (paste)	
JUBIZOL UNIXIL Winter finish S 1.0/1.5/2.0/2.5- ready to use paste. Based on water-based acrylic binders, mineral fillers, special additives.	2.1 - 5.0 (paste)	
JUBIZOL UNIXIL finish T 2.0/2.5 - ready to use paste. Based on water-based acrylic binders, mineral fillers, special additives.	2.5 - 3.2 (paste)	
JUBIZOL NANO finish S 1,5/2,0/2,5 - based on water-based silicone and acrylic binders, nano structures, mineral fillers and special additives.	2.6 - 4.7 (paste)	
JUBIZOL Kulirplast 2.0 - ready to use paste. based on water-based acrylic binders, marble fillers, special additives.	4.0 - 4.5 (paste)	
JUBIZOL Kulirplast 1.8 premium - ready to use paste. Based on water-based acrylic binders, mineral fillers, special additives.	4.0 - 4.5 (paste)	

Table 8: ETICS components – Facade paints.

Components (see § 3. for further description, characteristics and performances of the components)	
Façade paints	**Coverage (ml/m²)**
Acrylcolor – based on water-based acrylic binders, special additives	200
Revitalcolour AG - based on water-based acrylic binders, special additives, micro-reinforcing fibers .	270
Jubosilcolor Silicone - based on water-based silicon binders, special additives.	200
Nanoxilcolor - based on water-based silicone binders, special additives, special fillers, micro-reinforcing fibers.	270
Revitalcolor Silicone - based on water-based silicone binders, special additives, micro-reinforcing fibers .	270
Jubosilcolor Silicate - based on water-based potassium silicate binder, special additives (in combination with all finishing coats.	200
Revitalcolor Silicate - based on water-based potassium silicate binder, special additives, micro-reinforcing fibers.	270
Décor Antique - based on water-based potassium silicate binder, special additives .	180

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Table 9: Components to be applied for bonded ETICS.

Bonded ETICS
Insulation XPS-EN 13164-T1-CS(10/Y)200-TR400- DS(TH)-WL(T)1.5* Note*: thicknesses from 20 mm to 100 mm
Adhesives **JUBIZOL ADHESIVE MORTAR, JUBIZOL STRONG FIX**
Reinforcement **JUBIZOL GLASS FIBRE MESH**
Base coats **JUBIZOL ADHESIVE MORTAR, JUBIZOL STRONG FIX**
Key coats **JUBIZOL Unigrund *** **Acryl emulsion **** **Acrycolor ***** **SILICATEprimer ****** **SILICONEprimer******* Note*: a key coat to be used with all finishing coats, except JUBIZOL MINERAL Finish and Nivellin D + Façade paint. Note**: a key for JUBIZOL MINERAL Finish, JUBIZOL ACRYL Finish. Note***: a key coat for JUBIZOL MINERAL Finish, JUBIZOL ACRYL Finish. Note****: a key coat for the (JUBIZOL SILICATE Finish. Note*****: a key coat for the JUBIZOL SILICONE Finish.
Finishing coats **JUBIZOL MINERAL finish T 2.0/2.5** **JUBIZOL MINERAL finish S 1.5/2,0/2.5** **JUBIZOL SILICATE finish T 2.0/2.5** **JUBIZOL SILICATE finish S 1.5/2.0/2.5** **JUBIZOL SILICONE finish T 2.0/2.5** **JUBIZOL SILICONE finish S 1.5/2.0/2.5** **JUBIZOL ACRYL finish T 2.0/2.5** **JUBIZOL ACRYL finish S /1.5/2.0/2.5** **NIVELIN D + façade paints*** **JUBIZOL UNIXIL finish S 1.0/1.5/2.0/2.5** **JUBIZOL UNIXIL Winter finish S 1.0/1.5/2.0/2.5** **JUBIZOL UNIXIL finish T 2.0/2.5** **JUBIZOL NANO finish S 1.5/2.0/2.5** **JUBIZOL Kulirplast 2.0** **JUBIZOL Kulirplast 1.8 premium**
Façade paints **Acrylcolor*** **Revitalcolour AG*** **Jubosilcolor Silicone*** **Nanoxilcolor*** **Revitalcolor Silicone*** **Jubosilcolor Silicate*** **Revitalcolor Silicate*** **Décor Antique*** Note*: Façade paints can be applied on any of the finishing coats, except JUBIZOL Kulirplast 2.0 and JUBIZOL Kulirplast 1.8 premium.

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Table 10: Components to be applied to ETICS with supplementary mechanical fixings – anchors or ETICS fixed with supplementary adhesive.

ETICS with supplementary mechanical fixings and ETICS fixed with supplementary adhesive
Insulation XPS-EN 13164-T1-CS(10/Y)200-TR400- DS(TH)-WL(T)1.5* Note*: thicknesses from 50 mm to 200 mm
Adhesives **JUBIZOL ADHESIVE MORTAR, JUBIZOL STRONG FIX**
Reinforcement **JUBIZOL GLASS FIBRE MESH**
Anchors **EJOT** Ejoterm ST U*, Ejoterm STR-U^{c}, SDM-T plus*, SDF-K plus*, Ejoterm NT-U*, Ejoterm NK-U*, Ejoterm NTK-U*, STR U 2g*, H3*, H1 eco*, **Hilti** SX-FV*, SD-FV 8**, XI-FV*, D-FV * and D-FV T* **Fischer** Termoz 8 U**, Termoz 8 N**, Termoz KS 8**, Termoz 8 SV*, Termoz 8 UZ# **Leskovec** Plastično pritrdilo PP**, Pritrdilno sidro PSK** **Ranit** IsoFux NDT8LZ*, ND8LZ*, ND8LZ K*, NDS8Z*, NDM8Z*, NDS90Z*, NDM90Z*, IsoFux* **Bravoll** PTH-KZ 60/8-L$_a$**, PTH-KZL 60/8-L$_a$**, PTH 60/8-L$_a$* and PTH-L 60/8-L$_a$* Note: to be used with insulation product with thickness * ≥ 60 mm, ** ≥ 50 mm, # ≥ 80 mm.
Base coats **JUBIZOL ADHESIVE MORTAR, JUBIZOL STRONG FIX**
Key coats **JUBIZOL Unigrund *** **Acryl emulsion **** **Acrycolor ***** **SILICATEprimer ****** **SILICONEprimer******* Note*: a key coat to be used with all finishing coats, except JUBIZOL MINERAL Finish and Nivellin D + Façade paint. Note**: a key for JUBIZOL MINERAL Finish, JUBIZOL ACRYL Finish. Note***: a key coat for JUBIZOL MINERAL Finish, JUBIZOL ACRYL Finish. Note****: a key coat for the (JUBIZOL SILICATE Finish. Note*****: a key coat for the JUBIZOL SILICONE Finish.
Finishing coats **JUBIZOL MINERAL finish T 2.0/2.5** **JUBIZOL MINERAL finish S 1.5/2,0/2.5** **JUBIZOL SILICATE finish T 2.0/2.5** **JUBIZOL SILICATE finish S 1.5/2.0/2.5** **JUBIZOL SILICONE finish T 2.0/2.5** **JUBIZOL SILICONE finish S 1.5/2.0/2.5** **JUBIZOL ACRYL finish T 2.0/2.5** **JUBIZOL ACRYL finish S 1.5/2.0/2.5** **NIVELIN D + façade paints*** **JUBIZOL UNIXIL finish S 1.0/ 1.5/2.0/2.5** **JUBIZOL UNIXIL Winter finish S 1,0/ 1.5/2.0/2.5** **JUBIZOL UNIXIL finish T 2.0/2.5** **JUBIZOL NANO finish S 1.5/2.0/2.5** **JUBIZOL Kulirplast 2.0** **JUBIZOL Kulirplast 1.8 premium**
Façade paints **Acrylcolor*** **Revitalcolour AG*** **Jubosilcolor Silicone*** **Nanoxilcolor*** **Revitalcolor Silicone*** **Jubosilcolor Silicate*** **Revitalcolor Silicate*** **Décor Antique*** Note*: Façade paints can be applied on any finishing coats, except JUBIZOL Kulirplast 2.0 and JUBIZOL Kulirplast 1.8 premium.

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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) with a reaction to fire classification A1 or A2-s1,d0 according to SIST EN 13501-1 and a minimum density of 820 kg/m^3 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 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 air-tightness of the building structure.

The choice of the method of fixing depends on the characteristics of the substrate, which could need preparation (see § 7.2.1 of the ETAG no. 004) and shall be done in accordance with national instructions.

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 sections 2.3 and 2.4 for the packaging, transport, storage and installation as well as appropriate use, maintenance and repair are met. The indications given as to the working life cannot be interpreted as a guarantee given by the manufacturer or the 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.

3. Characteristics of product and methods of verification

3.1 General

The identification tests and the assessment of the fitness for use of this ETICS according to the Essential Requirements were carried out in compliance with the "ETA Guideline no. 004" concerning External Thermal Insulation Composite Systems with rendering – edition March 2000, amended June 2008 (called ETAG no. 004 in this ETA).

3.2 Manufacturing

The European Technical Assessment is issued for the ETICS on the basis of agreed data/information, deposited with the Zavod za gradbeništvo Slovenije (ZAG Ljubljana), 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 the ZAG Ljubljana before the changes are introduced. ZAG Ljubljana 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.

3.3 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 chapter 7 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.

3.4 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.

3.5 Use, maintenance and repair

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

- visual inspection of the ETICS,
- the repairing 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 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.

4 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 to the Essential Requirements were carried out in compliance with the ETA Guidance n. 004: External Thermal Insulation Composite Systems with Rendering- edition June 2013, used as EAD (called "ETAG 004, used as EAD", in this ETA).

4.1 Mechanical resistance and stability (BWR 1)

Not relevant.

4.2 Safety in case of fire (BWR 2)

4.2.1 Reaction to fire

Configuration	Maximum declared organic content of the finishing coat	Declared flame retardant content of the rendering system	Insulation thickness (mm)	Reaction to fire according to SIST EN 13501-1
ETICS JUBIZOL XPS - XPS and all finishing coats described in this ETA	14 %	0 %	≤100	B - s1, do
			> 100	F (no performance declared)

Note: an 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.

Mounting and fixing

The assessment of reaction to fire is based on two tests (SIST EN 13823 and SIST EN ISO 1716). The *SBI* test (SIST EN 13823) is done on a sample with XPS insulation material according to EN 13163. Selected rendering system is the one including finishing coat with maximum organic content, established.

For the SBI test this ETICS is mounted directly to a calcium silicate substrate (A2-s1, d0) with a minimum density of 820 kg/m^3.

The installation of the ETICS was carried out by the manufacturer, following the manufacturer's specifications (instruction sheet) using a single layer of the glass fibre mesh all over the test specimen (no overlapping glass fiber mesh).

The test specimens were prefabricated and did not include any joints. The panel edges were rendered. Anchors were not included in the tested ETICS as they have no influence on the test result.

Please note that in some member states the classification on the basis of SBI test is not accepted. Additional tests might be required e.g. large scale tests to demonstrate compliance with a member state's fire regulation.