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Membro EOTA

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European Organisation for Technical Assessment
Organisation Européenne pour l'évaluation technique

European Technical Assessment ETA 13/0871 of 19/01/17

(English language translation prepared by ITC CNR; original version in Italian)

GENERAL PART

Trade name of the construction product	**"DECOKLIMA S"**
Product family to which the construction product belongs	**External Thermal Insulation Composite System with renderings for the use as external insulation to the walls of buildings** Sistema Composito di Isolamento Termico Esterno di facciata con intonaco destinato all'isolamento termico esterno delle murature degli edifici
Manufacturer	**COLORI DECORA S.r.l.** **via degli Olmi, 10 - I 06083 Bastia Umbra (PG)**
Manufacturing plant(s)	**COLORI DECORA S.r.l.** **via degli Olmi, 10 - I 06083 Bastia Umbra (PG)**
This European Technical Assessment contains	**8 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 EAD (European Assessment Document)**
This ETA replaces	**European Technical Approval 13/0871 issued on 21.06.2013**

SPECIFIC PARTS

1. TECHNICAL DESCRIPTION OF THE PRODUCT

The kit "DECOKLIMA S" is designed and installed in accordance with the ETA Holder design and installation instructions, deposited at ITC-CNR.

According to categories envisaged by § 2.2 of ETAG 004 Edition 2013 (ETAG 004 in the following text), used as EAD, the kit "DECOKLIMA S is a bonded system (required bonded surface: at least 40%) with supplementary mechanical fixings (the fixings are used to provide stability until the adhesive has dried and act as a temporary connection); it comprises the components described in the following Table 1 which are factory-made by the ETA Holder or by his suppliers. The ETA Holder is ultimately responsible for the kit.

The components of the kit are specified by the ETA Holder as described below.

Components (see § 4 for further description, characteristics and performances of the components)		***Coverage (kg/m^2)***	***Thickness (mm)***
Bonded ETICS with supplementary mechanical fixing			
Insulation material with associated method of fixing	Insulation product: **"Stiferite Class SK"**[1] (PIR panels) (see further description at § 4.1)	//	20-240
	Adhesive: "**Rasoben F25"**[2] (common cement CEM IV/A-(P) - 42.5 R based powder paste requiring addition of 15 - 20 % water); particle size: 0.5 mm	3.5 - 4.5	//
	Anchors: **"Tasselli per cappotto"**[3] made of plastic and steel consisting different lengths in relation with thickness of insulation	6 /m^2	§ 4.1.1
Base coat	**"Rasoben F25"**[4] (common cement CEM IV/A-(P) - 42.5 R based powder paste requiring addition of 15 - 20 % water); particle size: 0.5 mm	5.0 – 6.0	2 - 3 mm (dry)
Reinforcement	Standard Glass fibre mesh: **"Rete DECOKLIMA S"**[5] (mesh size: 4.0 x 4.0 mm)	//	//
Key coat	"**Isosan – Deck Fondo"**[6] (watery solution of acrylic resin)	0.25	10 - 20 µm
Finishing coat	Ready to use paste based on acrylic resin and siloxan resins: **"Spatolato Granello ai Silossani"**[7] particle size: 1.0 mm.	3.0	2.0 mm ± 0.2
Ancillary materials	Descriptions in accordance with § 3.2.2.5 of the ETAG 004 remain under the ETA-holder responsibility		
Base profiles	**"Profilo di partenza con gocciolatoio"**[8]:made of aluminium: U profiles (length 250 cm - different sections)	//	1
Corner profiles	**"Angolare in PVC con rete in fibra di vetro"**[9] L -PVC profile (length 250 cm – different thickness)	//	1

Tab. 1: Components of the kit

2. SPECIFICATION OF THE INTENDED USE IN ACCORDANCE WITH ETAG 004 USED AS EUROPEAN ASSESSMENT DOCUMENT

The kit "DECOKLIMA S" is intended for use as external thermal insulation composite system of buildings' walls and in particular for new and existing buildings whose facades can be made of masonry (bricks, concrete, stones, …), in concrete cast on site or in

[1] Manufacturer: STIFERITE S.r.l.
[2] Manufacturer: contract of tall manufacturing under Colori Decora S.r.l. technical specifications which, on request of the ETA Holder, are described in the Technical Dossier deposited at ITC-CNR
[3] Manufacturer: Dakota Italia S.p.A.
[4] Manufacturer: contract of tall manufacturing under Colori Decora S.r.l. technical specifications which, on request of the ETA Holder, are described in the Technical Dossier deposited at ITC-CNR
[5] Manufacturer : Dakota Italia S.p.A
[6] Manufacturer: Colori Decora S.r.l.
[7] Manufacturer: Colori Decora S.r.l.
[8] Manufacturer: Dakota Italia S.p.A
[9] Manufacturer: Dakota Italia S.p.A.

prefabricated panels, and that can be rendered and coated or uncoated; the substrate may need preparation as described in § 7.2.1 of ETAG 004 Edition 2013, used as EAD.
The kit can be used on vertical walls. It can also be used on horizontal or inclined surfaces which are not exposed to precipitation. It is made of non load-bearing construction elements and the installed system 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 effects of weathering. The installed system is not intended to ensure the air tightness of the building structure.
The provisions made in this ETA are based on an assumed intended working life of at least 25 years, provided that the conditions laid down in section 2.2, 2.3, 2.4 of this ETA for the packaging, transport, storage, installation as well as appropriate use, maintenance and repair are met.
The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer or by the Technical Assessment Body, but should only be regarded as a mean for choosing the appropriate products in relation to the expected economically reasonable working life of the works.

2.1 Manufacturing

The components of "DECOKLIMA S" shall correspond, as far as their composition and manufacturing process is concerned, to the products subject to the assessment tests. Manufacturing process scheme is deposited with ITC-CNR.

2.2 Installation

2.2.1. General

It is the responsibility of the ETA Holder to guarantee that the information about design and installation of the system "DECOKLIMA S", are effectively communicated to the concerned people. These information can be given using reproductions of the respective parts of this European Technical Assessment. Besides, all the data concerning the execution shall be clearly indicated on the packaging and/or the enclosed instruction sheets using one or several illustrations.
In any case, it is suitable to comply with national regulations and particularly concerning fire.
Only the components described in clause 1.1 with characteristics in accordance with clause 2 of this ETA can be used for the system "DECOKLIMA S".
The requirements given in ETAG 004 Edition 2013, chapter 7, used as EAD, have to be considered.

2.2.2. Design

To bond the system, the minimal bonded surface area and the method of bonding shall comply with characteristics of the system as well as the national regulations. In any case, the minimal bonded surface shall be at least 40%.

2.2.3. Execution

The recognition and preparation of the substrate as well as the generalities about the execution of the system "DECOKLIMA S", which are fully described in the current version of the ETA Holder Catalogue, shall be carried out in compliance with:

- chapter 7 of the ETAG 004 Edition 2013, used as EAD
- national regulations in effect, if any.

The particularities in execution linked to the method of bonding and the application of the rendering system shall be handled in accordance with ETA Holder prescriptions. In particular it is suitable to comply with the quantities of rendering applied, the thickness regularity and the drying period between 2 layers.

2.3 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 and, in case, by ETA Holder specifications
The components have to be protected against damage.

2.4 Maintenance and repair of the works

It is accepted that the finishing coat shall normally be maintained in order to fully preserve the system's performances.
Maintenance, which is clearly described in the current version of the ETA Holder Catalogue, includes:
- the repairing of localised damaged areas due to accidents,
- the application of various products or paints, possibly after washing or ad hoc preparation.

Necessary repairs should be done rapidly.
It is important to be able to carry out maintenance as far as possible using readily available products and equipment, without spoiling appearance.

3. PERFORMANCE OF THE PRODUCT AND REFERENCES TO THE METHODS USED FOR ITS ASSESSMENT

The tests for the assessment of the performances of "DECOKLIMA S" were carried out according to the tests mentioned in ETAG 004, used as EAD; the performances are valid only if the kit's components are exactly the ones mentioned at § 1 of this ETA.

3.1 Safety in case of fire

3.1.1 Reaction to fire "DECOKLIMA S"

No Performance Determined

3.2 Hygiene, health and the environment

3.2.1 Water absorption (capillarity test)

The water absorption has been determined in accordance with § 5.1.3.1 of ETAG 004, used as EAD.

Water absorption	after 1 hour		after 24 hours	
	< 1.0 kg/m^2	≥ 1.0 kg/m^2	< 0.5 kg/m^2	≥ 0.5 kg/m^2
base coat "Rasoben F25"	X	not applicable	X	
Rendering system made of: - base coat - key coat - finishing coat	X	not applicable	X	

Tab. 2: Water absorption

3.2.2 Hygrothermal behaviour (heat-rain and heat-cold cycles)

In accordance with the method envisaged in 5.1.3.2.1 ETAG 004, used as EAD, the kit has been applied on a rig and the hygrothermal behaviour has been assessed.
None of the following defects occurred:

- blistering or peeling of any paint finishing,
- failure or cracking associated with joints between insulation products boards or profiles fitted with the system,
- detachment of the render,
- cracking allowing water penetration to the insulation layer.

Assessment: the system "DECOKLIMA S" is resistant to hygrothermal cycles.

3.2.3 Freeze thaw behaviour

As shown in Table 2 of this ETA, the water absorption of the base coat and of rendering systems is less than 0.5 kg/m^2 after 24 hours and so the system "DECOKLIMA S" can be assessed as freeze/thaw resistant without any further testing.

3.2.4 Impact resistance

The tests have been performed on the rig after the hygrothermal cycles, in accordance with § 5.1.3.3 of ETAG 004 used as EAD. The system was made with one single standard mesh. The resistance of the system to hard body impacts (3 Joules and 10 Joules) leads to the following use category:

System "DECOKLIMA S" Single standard mesh	Use Category I

Tab. 3: Impact resistance

3.2.5 Water vapour permeability (Resistance to water vapour diffusion)

The water vapour permeability has been determined in accordance with § 5.1.3.4 of ETAG004, used as EAD.

Rendering system	Equivalent air thickness (m)
Base coat with key coats and finishing coat	≤ 2 m Test result obtained with particle size 1mm: 0.26

Tab. 4: Water vapour permeability

3.2.6 Release of dangerous substances

(in accordance with § 5.1.3.5 of ETAG 004, and with EOTA TR 034).

The external thermal insulation composite system neither contains nor releases the dangerous substances specified in EOTA TR 034 (October 2015).

A written declaration in this respect was made by the manufacturer. In addition to the specific clauses relating to dangerous substances contained in this European Technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products regulation 305/2011, these requirements need also to be complied with, when and where they apply.

3.3 Safety in use

3.3.1 Bond strength

The bond strength has been determined in accordance with § 5.1.4.1 of ETAG 004 used as EAD.

Bond strength between:	Acceptance criteria
base coat and insulation product (§ 5.1.4.1.1):	
- under dry conditions	≥ 0.08 MPa
adhesive and substrate (concrete) (§ 5.1.4.1.2):	
- under dry conditions	≥ 0.25 MPa
- 2 days of water immersion + 2 hours drying	≥ 0.08 MPa
- 2 days of water immersion + 7 days drying	≥ 0.25 MPa
adhesive and substrate (clay bricks) (§ 5.1.4.1.2):	
- under dry conditions	≥ 0.25 MPa
- 2 days of water immersion + 2 hours drying	≥ 0.08 MPa
- 2 days of water immersion + 7 days drying	≥ 0.25 MPa
adhesive "and insulation product (§ 5.1.4.1.3):	
- under dry conditions	≥ 0.08 MPa
- 2 days of water immersion + 2 hours drying	≥ 0.03 MPa
- 2 days of water immersion + 7 days drying	≥ 0.08 MPa

Tab. 5: Bond strength

The ETICS can be installed with application of adhesive on a surface of > 20%. The ETA holder's requires ≥ 40%

3.3.2 Fixing strength (Displacement test)

In accordance with what envisaged in Table 3 and in § 5.1.4.2 of ETAG 004 Edition February 2013, being "DECOKLIMA S" a bonded system, the fixing strength (displacement test) and wind load resistance performances were not determined.

3.4 Protection against noise

3.4.1 Airborne sound insulation (ETAG 004 used as EAD, § 5.1.5)

No Performance Determined.

3.5 Energy economy and heat retention

3.5.1 Thermal resistance

The additional thermal resistance provided by the ETICS (RETICS) to the substrate wall is calculated from the thermal resistance of the insulation product (RD), determined in accordance with 5.2.6.1, and from the tabulated R_{render} value of the render system (R_{render} is about 0.02 m2K/W),

$$R_{ETICS} = R_D + R_{render} \ [(m^2 \times K)/W]$$

as described in:

- EN ISO 6946: Building components and building elements - Thermal resistance and thermal transmittance - Calculation method.
- EN ISO 10456: Building materials and products - Hygrothermal properties – Tabulated design values and procedures for determining declared and design thermal values.

If the thermal resistance cannot be calculated, it can be measured on the complete ETICS as described in:

EN 1934: "Thermal insulation - Determination of steady state thermal transmission properties - Calibrated and guarded hot box".

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:

$$Uc = U + \Delta U \ [W/(m^2 \times K)]$$

With:

Uc corrected thermal transmittance of the entire wall, including thermal bridges

U thermal transmittance of the entire wall, including ETICS, without thermal bridges

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

$R_{substrate}$ thermal resistance of the substrate wall [(m²×K)/W]

R_{se} external surface thermal resistance [(m²×K)/W]

R_{si} internal surface thermal resistance [(m²×K)/W]

ΔU correction term of the thermal transmittance for mechanical fixing devices

= χ_p * n (for anchors) + Σψi * ℓi (for profiles)

χ_p point thermal transmittance value of the anchor [W/K]. See Technical Report n°25. If not specified in the anchors ETA, the following values apply:

= 0.002 W/K for anchors with a stainless steel screw with the head covered by plastic material, and for anchors with an air gap at the head of the screw.

= 0.004 W/K for anchors with a galvanized steel screw with the head covered by a plastic material

= 0.008 W/K for all other anchors (worst case)

n number of anchors per m²

ψi linear thermal transmittance value of the profile [W/(m×K)]
ℓi length of the profile per m²

The influence of thermal bridges can also be calculated as described in: EN ISO 10211: Thermal bridges in building construction - Heat flows and surface temperatures - Detailed calculations.

It shall be calculated according to this standard if there are more than 16 anchors per m² foreseen. The cp-values given by the manufacturer do not apply in this case.

3.6 Sustainable use of natural resources

No performance determined.

3.7 Aspects of durability and serviceability

3.7.1 Bond strength after ageing

The bond strength of the system after ageing has been determined following the method envisaged in § 5.1.7.1.2 of ETAG 004 used as EAD.

Rendering system	After hygrothermal cycles after 7 days immersion in water + 7 days 23°C/50%RH (on samples)
Base coat + finishing coat with insulation product	≥ 0.08 MPa

Tab. 6: Bond strength after ageing

4. Component's characteristics and parameters[10]

The tests on components have been carried out in accordance with § 5.2 and to Annex C of ETAG 004, used as EAD, in order to verify the declared values; the results were positive; where the declared values were not given by the Applicant, the ETAG 004, used as EAD, values have been adopted.

[10] The ETA Holder could change, under his own responsibility, some of the suppliers of a component, but only provided that the characteristics and the performances of the new components and the final performances of the system do not change at all. These changes must be fully recorded within the Factory Production Control documents in order to grant full traceability.

4.1 Insulation product "Siferite class S K"

PIR panels with right edges covered with saturated glass felt. Their characteristics are given in the following table.

Descriptions and characteristics		PIR Panels
Reaction to fire (Delegated Regulation EU 2016/364)		Euroclass E thickness: 60- 240 mm -density 35 kg/m^3
Thermal resistance		Defined in CE marking in reference to EN 13165 "Thermal insulation products for buildings" – Factory made rigid polyurethane foam (PU) products. Specification
Thickness (EN 823)		T2 (EN 13165)
Length (EN 822)		1200 ± 7.5 mm L2 (EN 13165)
Width (EN 822)		1200 ± 7.5 mm (EN 13165)
Squareness (EN 824)		≤6 mm/m (EN 13165)
Flatness (EN 825)		≤ 5 mm (EN 13165)
Surface condition		Superficie regolare
Density		35 ± 2 kg/m^3
Dimensional stability under	23° C 50% RH (EN 1603)	≤ 0.2 %
	70° ± 2° C 90% ± 5 RH for 48 hours) (EN 1604)	≤ 1%
Water absorption by partial immersion (EN 1609)		≤ 1kg/m^2
Water vapour permeability (μ) (EN 12086)		56.00
Tensile strength (kPa) (EN 1607)		150
Shear strength (N/mm^2) (EN 12090)		≥ 0.02
Shear modulus of elasticity (N/mm^2) (EN 12090)		≥ 1.0
Resistance to compression CS(10) (EN 826)		150
Conductivity λ (W/mK) (EN 12667)		≤ 0.028

Tab. 7: Characteristics of insulation product

4.1.1 Anchors

Plastic anchors with steel nail with different lengths in relation with thickness of insulation

Trade name	Measures (mm)
Tasselli per cappotto	Plate diameter: 60 mm Ø nail: 80 mm

Tab. 8: Anchors characteristic

4.2 Rendering system (base coat + reinforcement)

4.2.1 Rendering system strip tensile test

The test has been carried out in accordance with § 5.5.4.1 of ETAG 004.

Rendering system strain value	mean value of cracks in warp direction (mm)	mean value of cracks in weft direction (mm)
0.3 %	0.05 < w ≤ 0.10	0.05 < w ≤ 0.10
0.5 %	0.05 < w ≤ 0.10	0.05 < w ≤ 0.10
0.8 %	0.05 < w ≤ 0.10	0.05 < w ≤ 0.10
1.0 %	0.05 < w ≤ 0.10	0.05 < w ≤ 0.10
1.2 %	0.05 < w ≤ 0.10	0.05 < w ≤ 0.10
1.5 %	0.10 < w ≤ 0.15	0.10 < w ≤ 0.15
1.8 %	0.10 < w ≤ 0.15	failure
2.0 %	0.10 < w ≤ 0.15	
n° of cracks	20 (mean value)	25 (mean value)

Tab. 9: Rendering system strip tensile test results (w = crack's width)

4.3 Reinforcement (glass fibre mesh)

The reinforcement is a glass fibre mesh and its characteristics have been verified through the identification methods envisaged in Annex C of ETAG 004, used as EAD.

4.3.1 Residual strength of reinforcements after ageing:

Glass fibre mesh	Alkali resistance			
	Residual strength after ageing (N/mm)		Relative residual resistance (% after ageing) of strength in the as delivered state	
	warp	weft	warp	weft
Rete DECOKLIMA S	≥ 20	≥20	≥ 50	≥ 50

Tab. 10: Residual strength after ageing

5. Assessment and Verification of Constancy of Performance (hereinafter AVCP) system applied, with reference to its legal base

According to Decision 97/556/EC[11] of the European Commission amended by the Decision 001/596/EC, the AVCP (see Annex V to Regulation (EU) 305/2011) given in the following table applies.

Product	***Intended use***	***Level or class (reaction to fire)***	***System***
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+

Tab. 11: AVCP system

(1) Products/materials for which a 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 require to be tested for reaction to fire (e.g. Products/materials of Classes A1 according to Commission Decision 96/603/EC)

The system of Attestation of Conformity is System 2+ (see Annex V to Regulation (EU) 305/2011 for tasks and responsibilities).

6. Technical details necessary for the implementation of the AVCP system, as provided for in ETAG 004 used EAD

Technical details necessary for the implementation of the AVCP system are laid down in the Control Plan which is deposited at ITC CNR.
For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between ITC CNR and the Notified Body.

Issued in San Giuliano Milanese, Italy on 19/01/17
by ITC – CNR

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