



Austrian Institute of Construction Engineering
Schenkenstrasse 4 | T +43 1 533 65 50
1010 Vienna | Austria | F +43 1 533 64 23
www.oib.or.at | mail@oib.or.at



European Technical Assessment

ETA-13/0006
of 01.03.2016

General part

Technical Assessment Body issuing the European Technical Assessment

Österreichisches Institut für Bautechnik (OIB)
Austrian Institute of Construction Engineering

Trade name of the construction product

DUROSTICK THERMOSEAL EPS

Product family to which the construction product belongs

External Thermal Insulation Composite Systems
with expanded polystyrene (EPS) for the use as
external insulation to walls of buildings.

Manufacturer

DUROSTICK S.A. INDUSTRIAL & COMMERCIAL
COMPANY
19300 PATIMA KOROREMI ASPROPYRGOS,
ATTICA
GREECE

Manufacturing plant

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GREECE

This European Technical Assessment contains

12 pages

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of

ETAG 004 used as European Assessment
Document (EAD), edition June 2013

This European Technical Assessment replaces

ETA-13/0006 with validity from 21.01.2013 to
20.01.2018

General part

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Specific parts

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 EPS insulation product to be bonded or bonded and 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 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

	Components	Coverage (kg/m ²)	Thickness (mm)
Insulation materials with associated methods of fixing	Bonded ETICS (partially or fully bonded. National application documents shall be taken into account)		
	➤ Insulation product: Standard expanded polystyrene panels	/	40 to 200
	➤ Adhesives:		
	- DUROSTICK UltraColl THERMO: Mineral powder, cement base with sand, dispersion powder, additives	2,5 to 4,0 (powder)	/
Insulation materials with associated methods of fixing	Mechanically fixed ETICS with anchors and supplementary adhesive		
	➤ Insulation product: Standard expanded polystyrene panels	/	40 to 200
	➤ Adhesives:		
	- DUROSTICK UltraColl THERMO: Mineral powder, cement base with sand, dispersion powder, additives	2,5 to 4,0 (powder)	/
Base coat	➤ Anchors: Anchors with valid ETA acc. to ETAG 014 "Plastic Anchors For Fixing Of External Thermal Insulation Composite Systems With Rendering"	/	/
	- DUROSTICK UltraColl THERMO: Mineral powder, cement base with sand, dispersion powder, additives	4,5 to 7,5 (powder)	3,0 to 5,0
Key coat	- DUROSTICK Hydrostop Silicone Primer: Water based on organic binders Note: Only to be used with Hydrostop Silicone Plasters fine and Grafiato	~ 0,15 (l/m ²)	/
Glass fibre mesh	➤ Standard glass fibre mesh: - DUROSTICK Glass fiber mesh: mesh size between 3 mm and 5 mm	/	/
Finishing coat	➤ Cement based mineral powder: - DUROSTICK Hydrostop Plaster elastic fine: particle size ≤ 0,6 mm	5,0 (powder)	3,0
	- DUROSTICK Hydrostop Plaster Elastic Grafiato: particle size ≤ 4,0 mm	7,6 (powder)	4,0
	➤ Ready to use paste - silicon resin: - DUROSTICK Hydrostop Silicone Plaster fine: particle size 1,0/1,5 mm	2,0 to 2,5 (paste)	regulated by particle size
	- DUROSTICK Hydrostop Silicone Plaster Grafiato: particle size 2,5 mm	2,8 to 3,2 (paste)	2,5

1.2.2 Characteristics of the insulation product

Descriptions and characteristics		EPS panels	
		for bonded ETICS	for mechanically fixed ETICS with anchors
Reaction to fire / EN 13501-1		Euroclass E - Thickness: 40 mm to 200 mm - density: 15,0 kg/m ³ to 18,0 kg/m ³	
Thermal resistance ((m ² .K)/W)		Defined in the CE marking in reference to EN 13163 "Thermal insulation products for buildings" -Factory made products of expanded polystyrene	
Thickness (mm) / EN 823		EPS-EN 13163 – T2	
Length (mm) / EN 822		EPS-EN 13163 – L1 and L2	
Width (mm) / EN 822		EPS-EN 13163 – W2	
Squariness (mm) / EN 824		EPS-EN 13163 – S1 and S2	
Flatness (mm) / EN 825		EPS-EN 13163 – P3 and P4	
Surface condition		Cut surface (homogeneous and without "skin")	
Dimensional stability under:	specified temperature and humidity / EN 1604	EPS-EN 13163 – DS (70,-)1 and DS(70,-)2	
	laboratory condition / EN 1603	EPS-EN 13163 – DS(N)2	
Water absorption (partial immersion) / EN 1609		≤ 0,5 kg/m ²	
Water vapour diffusion resistance factor (μ) / EN 12086		≤ 60	
Tensile strength perpendicular to the faces in dry conditions (kPa) / EN 1607		≥ 100 (EPS-EN-13163 – TR100 and TR 150)	
Shear strength (N/mm ²) / EN 12090		≥ 0,02	-
Shear modulus (N/mm ²) / EN 12090		≥ 1,0	-

1.2.3 Anchors

Anchors used with valid ETA according to ETAG 014 "Plastic Anchors For Fixing Of External Thermal Insulation Composite Systems With Rendering" shown in the control plan and the declaration of performance.

1.2.4 Render

The average value of the crack width of the base coat with the glass fibre mesh, measured at a render strain value of 0,5 % is < 0,5 mm.

1.2.5 Glass fibres meshes

	Alkali resistance			
	Residual resistance after ageing (N/mm)		Relative residual resistance: % (after ageing) of the strength in the as delivered state	
	Warp	Weft	Warp	Weft
DUROSTICK Glass fiber mesh Glass fibre mesh with mesh size between 3 mm and 5 mm	≥ 20	≥ 20	≥ 50	≥ 50

1.3 Manufacturing

The European Technical Assessment is issued for ETICS on the basis of agreed data/information, deposited with the Österreichisches Institut für Bautechnik, which identifies the ETICS that has been assessed and judged. Changes to the ETICS or production process, which could result in this deposited data/information being incorrect, shall be notified to the Österreichisches Institut für Bautechnik before the changes are introduced. The Österreichisches Institut für Bautechnik 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.

1.4 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 of 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.

1.5 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 known to the concerned people.

1.6 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 known to the concerned people.

2. Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

This ETICS is intended for use as external insulation of buildings' walls. The walls are made of masonry (bricks, blocks, stones,...), concrete (cast on site or as prefabricated panels) or cement-bonded panels. 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 bonded and 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 § 7.2.1 of the ETAG 004) and shall be done in accordance with the national instructions.

3. Performance of the product and references to the methods used for its assessment

3.1 Reaction to fire

No performance assessed. Euroclass F

3.2 Water absorption (capillarity test)

- Base coat:
 - Water absorption after 1 hour < 1 kg/m²
 - Water absorption after 24 hours < 0,5 kg/m²

- Rendering system:

		Water absorption after 24 hours	
		< 0,5 kg/m ²	≥ 0,5 kg/m ²
Rendering systems: base coat + finishing coats indicated hereafter:	DUROSTICK Hydrostop Plaster Elastic fine	X	
	DUROSTICK Hydrostop Plaster Elastic Grafiato	X	
	DUROSTICK Hydrostop Silicone Plaster fine	X	
	DUROSTICK Hydrostop Silicone Plaster Grafiato	X	

3.2 Watertightness

Passed without defects

3.3. Impact resistance

		Single standard layer
Rendering systems: base coat + finishing coats indicated hereafter:	DUROSTICK Hydrostop Plaster Elastic fine	Category I
	DUROSTICK Hydrostop Plaster Elastic Grafiato	
	DUROSTICK Hydrostop Silicone Plaster fine	Category II
	DUROSTICK Hydrostop Silicone Plaster Grafiato	

3.4 Water vapour permeability

Rendering system tested with:

DUROSTICK UltraCoII THERMO		Equivalent air thickness sd
Rendering systems: base coat + finishing coats indicated hereafter:	DUROSTICK Hydrostop Plaster Elastic fine	≤ 1,0 m (test result obtained with particle size 0,6 mm: 1,0 m)
	DUROSTICK Hydrostop Plaster Elastic Grafiato	≤ 1,0 m (test result obtained with particle size 4,0 mm: 0,3 m)
	DUROSTICK Hydrostop Silicone Plaster fine	≤ 1,0 m (test result obtained with particle size 1,0 mm: 0,5 m)
	DUROSTICK Hydrostop Silicone Plaster Grafiato	≤ 1,0 m (test result obtained with particle size 2,5 mm: 0,6 m)

3.5 Dangerous substances

Release of dangerous substances

According to the manufacturer's declaration "DUROSTICK THERMOSEAL EPS" does not contain dangerous substances detailed in Council Directive 67/548/EEC and Regulation (EC) no 1272/2008 as well as EOTA TR 034 (General ER 3 Checklist for ETAGs/CUAPs/ETAs- Content and/or release of dangerous substances in products/kits), edition March 2012.

A written declaration in this respect was submitted by the ETA-holder.

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 Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

3.6 Bond strength between base coat and insulation product

Conditionings	
Initial state	After the hygrothermal cycles (on the rig)
≥ 0,08 MPa	≥ 0,08 MPa

3.7 Adhesives onto substrate and insulation product (safety in use of the bonded ETICS)

		Conditionings		
		Initial state	48 h immersion in water + 2 h 23 °C/50 % RH	48 h immersion in water + 7 days 23 °C/50 % RH
DUROSTICK UltraColl THERMO	Concrete	≥ 0,25 Mpa	≥ 0,08 MPa	≥ 0,25 MPa
	Insulation product	≥ 0,08 Mpa	≥ 0,03 MPa	≥ 0,08 MPa

The ETICS shall be installed on the substrate with application of the adhesive on the following minimal surfaces:

	Tensile strength perpendicular to the face of the insulation product
	≥ 100 kPa
DUROSTICK UltraColl THERMO	80 %

3.8 Fixing strength (displacement test)

U_e (displacement corresponding to the elasticity limit) = 2,5 mm

3.9 Wind load resistance

Safety in use of mechanically fixed ETICS using anchors

The following values only apply for the combination (anchor plate characteristics) / (insulation product characteristics) mentioned in this table. All anchors which shall be used are shown in the control plan and the declaration of performance.

Anchors for which the following failure loads apply and characteristics:		All anchors according to clause 1.2	
		Plate diameter of anchor	≥ Ø 60 mm
Characteristic of the insulation product for which the following failure loads apply		Thickness	≥ 40 mm
		Tensile strength perpendicular to the face	≥ 100 kPa
Failure load [kN]	Anchors not placed at the panel joints (pull through test; dry conditions)	R_{panel}	Minimum: ≥ 0,55 Average: ≥ 0,55
	Anchors placed at the panel joints (pull through test; dry conditions)	R_{joint}	Minimum: ≥ 0,45 Average: ≥ 0,50

The above given loads apply for all anchors if they meet the following criteria:

- valid ETA according to ETAG 014
- hit or screw anchors
- plate stiffness of anchors ≥ 0,3 kN/mm
- load resistance of anchor plate ≥ 1,0 kN
- anchors mounted on the insulation panel surface or with the minimal residual thickness of the insulation product as stated above

The wind load resistance of the ETICS R_d is calculated as follow:

$$R_d = \frac{4,0}{m} \text{ kN/m}^2$$

$$R_d \geq S_d$$

Where:

R_d design resistance

S_d wind load suction

m national safety factor of resistance for normal materials (partial safety factor to be chosen in function of the type of failure which occurred and the ageing of material properties concerned).

3.10 Thermal resistance

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

$$U = U_c + \chi_{p,n}$$

Where: $\chi_{p,n}$ has only to be taken into account if it is greater than 0,04 W/(m²·K)

U : global thermal transmittance of the covered wall (W/ (m²·K))

n : number of anchors (through insulation product) per 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 ($\chi_{p,n}$ negligible for $n < 20$)

= 0,004 W/K for anchors with a galvanized steel screw with the head covered by a plastic material ($\chi_{p,n}$ negligible for $n < 10$)

= negligible for anchors with plastic nails (reinforced or not with glass fibres ...)

U_c : 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 render (about 0.02 in (m²·K)/W)

$R_{substrate}$: 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 Declaration of performance 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.

3.11 Airborne sound insulation

Single improvement values determined by testing, ETICS configuration and substrate characteristics for which the values are valid:

Insulation product	Rendering system	ETICS fixing	Substrate description	ETICS performance
Insulation type: EPS Range of thickness: 40 to 200 mm maximum dynamic stiffness: NPD air flow resistance: NPD	minimum mass of the rendering system: depending on ETICS-thickness	mechanical fixing type: anchors acc. to ETAG 014 maximum number per m ² : depending on calculation bonding by adhesives maximum bonded surface area: see clause 3.7	type: heavy wall - mass per unit: depending on wall construction	$\Delta R_w = \text{NPD}$ $\Delta R_w + C = \text{NPD}$ $\Delta R_w + C_{tr} = \text{NPD}$

3.12 Bond strength after ageing

		after hygrothermal cycles (on the rig) or after 7 days immersion in water + 7 days 23°C/50% RH
Rendering systems: Base coats + finishing coats indicated hereafter:	DUROSTICK Hydrostop Plaster Elastic fine	≥ 0,08 MPa
	DUROSTICK Hydrostop Plaster Elastic Grafiato	
	DUROSTICK Hydrostop Silicone Plaster fine	
	DUROSTICK Hydrostop Silicone Plaster Grafiato	

3.13 Sustainable use of natural resources

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 the European Commission decision 2001/596/EC, the AVCP systems (further described in Annex V to Regulation (EU) No 305/2011) 1 and 2+ apply.

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 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)

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) The 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 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)

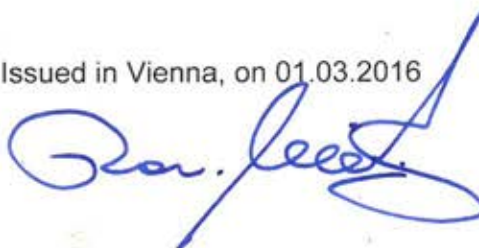
The manufacturer and the Österreichisches Institut für Bautechnik have agreed a Control Plan which is deposited with the Österreichisches Institut für Bautechnik in documentation which accompanies the ETA. The Control Plan specifies the type and frequency of checks/tests conducted during production and 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 before acceptance.

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 Österreichisches Institut für Bautechnik without delay.

Issued in Vienna, on 01.03.2016



Rainer Mikulits
Managing Director