



INSTYTUT TECHNIKI BUDOWLANEJ
PL 00-611 WARSZAWA
ul. Filtrowa 1
tel.: (+48 22) 825-04-71
(+48 22) 825-76-55
fax: (+48 22) 825-52-86
www.itb.pl



Member of



European Technical Assessment

**ETA-16/0933
of 30/12/2016**

General Part

Technical Assessment Body issuing the European Technical Assessment

Instytut Techniki Budowlanej

Trade name of the construction product

ATLAS GRAWIS

Product family to which the construction product belongs

External Thermal Insulation Composite System with rendering (ETICS)

Manufacturer

ATLAS spółka z o.o.
ul. Świętej Teresy 105
PL 91-222 Łódź, Poland

Manufacturing plant

ATLAS spółka z o.o.
ul. Świętej Teresy 105
PL 91-222 Łódź, Poland

This European Technical Assessment contains

13 pages including 2 Annexes which form an integral part of this Assessment

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

Guideline for European Technical Approval ETAG 004, Edition 2013 "External Thermal Insulation Composite Systems with rendering", used as European Assessment Document (EAD)

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Specific Part

1 Technical description of the product

External Thermal Insulation Composite System ATLAS GRAWIS called ETICS in the following text is a kit designed and installed in accordance with the manufacturer design and installation instructions deposited with the Instytut Techniki Budowlanej.

The ETICS comprises the following components, which are factory-produced by the manufacturer or component suppliers. ETICS is made up on site from these components. The ETICS manufacturer is ultimately responsible for ETICS.

The ETICS comprises a prefabricated insulation product made of expanded polystyrene (EPS) to be bonded 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 reinforcing mesh. The rendering is applied directly to the insulation panels, without any air gap or disconnecting layer.

The ETICS also includes ancillary materials which are defined in clause 3.2.2.5 of ETAG 004. They shall be used in accordance with the manufacturer's instruction.

Table 1

	Components	Coverage (kg/m²)	Thickness (mm)
Insulation material with associated methods of fixing	Bonded ETICS: fully bonded or partially bonded (bonded surface shall be at least 40%). National application documents shall be taken into account.		
	<ul style="list-style-type: none"> Insulation product: factory prefabricated standard expanded polystyrene (EPS) according to EN 13163 – see Annex 1 for product characteristics 	-	≤ 250
	<ul style="list-style-type: none"> Adhesives: ATLAS GRAWIS S cement based powder requiring addition of 0,22 to 0,24 l/kg of water ATLAS GRAWIS U cement based powder requiring addition of 0,21 to 0,23 l/kg of water 	4,0 to 5,0 ¹ (powder)	-
Base coat	<ul style="list-style-type: none"> ATLAS GRAWIS U cement based powder requiring addition of 0,21 to 0,23 l/kg of water composition: sand, cement, mineral fillers, synthetic resin, additives 	3,0 to 3,5 (powder)	2,0 to 3,5
¹ refers to fully bonded system			
Glass fibre meshes	<ul style="list-style-type: none"> Standard and reinforced glass fibre meshes see Annex 2 for product characteristics 	-	-
Key coats	<ul style="list-style-type: none"> ATLAS CERPLAST composition: water, styroacrylat binder, mineral fillers, additives ready to use liquid to be used with ATLAS CERMIT and Tynk akrylowy ATLAS 	0,25 to 0,35	-
	<ul style="list-style-type: none"> ATLAS SILKAT ASX composition: water, styroacrylat binder, silicone resin, additives ready to use liquid to be used with ATLAS SILKAT 	0,25 to 0,35	-
	<ul style="list-style-type: none"> ATLAS SILKON ANX composition: water, styroacrylat binder, silicone resin, mineral fillers, additives ready to use liquid to be used with ATLAS SILKON, Tynk akrylowo-silikonowy ATLAS, Tynk silikonowy ATLAS, Tynk silikonowy IN ATLAS, Tynk silikonowo-silikatowy ATLAS 	0,25 to 0,35	-

Table 1

	Components	Coverage (kg/m ²)	Thickness (mm)
Finishing coats	<ul style="list-style-type: none"> • Mineral finishing coats composition: sand, cement, mineral fillers, additives 		
	ATLAS CERMIT SN mineral powder requiring addition of 0,18 to 0,26 l/kg of water; particle size 1,5; 2,0; 2,5; 3,0 mm; grained structure	2,5 to 4,5	regulated by particle size
	ATLAS CERMIT DR mineral powder requiring addition of 0,18 to 0,26 l/kg of water; particle size 2,0; 3,0 mm; ribbed structure	2,5 to 4,5	
	<ul style="list-style-type: none"> • Acrylic finishing coats composition: water, acryl-copolymer binder, sand, mineral fillers, additives ready to use paste 		
	Tynk akrylowy ATLAS particle size 1,5; 2,0 mm; grained structure	2,5 to 3,5	regulated by particle size
	<ul style="list-style-type: none"> • Silicone and acrylic-silicone finishing coats composition: water, silicone resin, acryl-copolymer binder, sand, mineral fillers, additives ready to use paste 		
	Tynk akrylowo-silikonowy ATLAS particle size 1,5; 2,0 mm; grained structure	2,5 to 3,5	regulated by particle size
	Tynk silikonowy IN ATLAS particle size 1,5; 2,0 mm; grained structure	2,5 to 3,5	regulated by particle size
	Tynk silikonowy ATLAS particle size 1,5; 2,0 mm; grained structure	2,5 to 3,5	regulated by particle size
<ul style="list-style-type: none"> • Silicone-silicate finishing coats composition: water, silicate binder, silicone binder, sand, mineral fillers, additives ready to use paste 			
Tynk silikonowo-silikatowy ATLAS particle size 1,5 mm; 2,0 mm; grained structure	2,5 to 3,5	regulated by particle size	
Primers	<ul style="list-style-type: none"> • ATLAS ARKOL SX composition: water, styroacrylat binder, mineral fillers, silicone emulsion, additives ready to use liquid to be used with ATLAS ARKOL S/SALTA S 	0,05 to 0,20	-
	<ul style="list-style-type: none"> • ATLAS ARKOL NX composition: water, styroacrylat binder, mineral fillers, silicone emulsion, additives ready to use liquid to be used with ATLAS ARKOL N, ATLAS FASTEL NOVA/SALTA, ATLAS SALTA N 	0,05 to 0,20	-
Decorative coats (paints)	ready to use liquids:		
	<ul style="list-style-type: none"> • ATLAS ARKOL E to be used optionally with all finishing coats composition: acryl-copolymer binder, pigments, additives 	0,125 to 0,250*	-
	<ul style="list-style-type: none"> • ATLAS ARKOL S/SALTA S to be used optionally with all finishing coats composition: silicate binder, pigments, additives 	0,200 to 0,280*	-
	<ul style="list-style-type: none"> • ATLAS ARKOL N to be used optionally with all finishing coats composition: silicone resin, pigments, additives 	0,125 to 0,250*	-
	<ul style="list-style-type: none"> • ATLAS FASTEL NOVA/SALTA to be used optionally with all finishing coats composition: silicone resin, pigments, additives 	0,125 to 0,250*	-
	<ul style="list-style-type: none"> • ATLAS SALTA E to be used optionally with mineral and acrylic finishing coats composition: acryl-copolymer binder, pigments, additives 	0,125 to 0,250*	-
	<ul style="list-style-type: none"> • ATLAS SALTA N to be used optionally with all finishing coats composition: silicone resin, pigments, additives 	0,125 to 0,250*	-

Table 1

	Components	Coverage (kg/m ²)	Thickness (mm)
Ancillary materials	Remain under ETICS manufacturer responsibility. Anchors as supplementary mechanical fixings covered by ETA issued according to ETAG 014.		
* decorative coats coverage in dm ³ /m ²			

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

This ETICS is intended to be used as external thermal insulation of buildings' walls made of masonry (bricks, blocks, stones, etc.) or concrete (cast on site or as prefabricated panels) with or without rendering.

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 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 effects of weathering.

The ETICS is not intended to ensure the airtightness of the building structure.

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 conditions 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 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.

Design, installation, maintenance and repair shall take into account principles given in clause 7 of ETAG 004 and shall be done in accordance with national provisions.

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

Performances of the ETICS related to the Basic Requirements were determined in compliance with the ETAG 004.

Performances of the ETICS as described in this clause are valid provided that the components of the kit comply with Annexes 1 ÷ 2.

3.1 Safety in the case of fire (BWR 2)

3.1.1 Reaction to fire (ETAG 004, clause 5.1.2.1)

Table 2

Configuration	Maximum declared organic content	Declared flame retardant content	Reaction to fire class according to EN 13501-1
ETICS ATLAS GRAWIS with EPS boards (reaction to fire class E) and rendering system: <ul style="list-style-type: none"> • Adhesives: ATLAS GRAWIS S, ATLAS GRAWIS U • Meshes: ATLAS 150, ATLAS 165, R 117 A 101 / AKE 145 / VERTEX 145, SSA 1363-150 SM0.5 • Base coat: ATLAS GRAWIS U • Finishing coats (with relevant key coats): ATLAS CERMIT mineral, Tynk akrylowy ATLAS, Tynk akrylowo-silikonowy ATLAS, Tynk silikonowy ATLAS, Tynk silikonowy IN Atlas, Tynk silikonowo-silikatowy ATLAS • Decorative coats (with relevant primers): ATLAS SALTA N, E, ATLAS ARKOL E, ARKOL S/SALTA S, ARKOL N, ATLAS FASTEL NOVA/SALTA 	$\leq 1,90\%$ $\leq 10,57\%$ $\leq 22,7\%$	0% (no flame retardant)	C – s2, d0

Note: European reference fire scenario has not been laid down for facades. In some Member States the classification according to EN 13501-1 might not be sufficient for the use in facades. An additional tests might be required to comply with national provisions (e.g. large scale tests).

Mounting and fixing

The assessment of reaction to fire is based on tests with an insulation layer (EPS) thickness of 180 mm – SBI test according to EN 13823, 60 mm – test according to EN ISO 11925-2 and a maximum insulation material (EPS) density of 20 kg/m³ as well as finishing coats with maximum organic content.

For the SBI test according to EN 13823, the ETICS is mounted directly to a substrate (Class A2-s1, d0) with a thickness of 12 mm.

For the test according to EN ISO 11925-2 no substrate is used.

The installation of the ETICS was carried out by the manufacturer following the manufacturer's specifications (instruction of installation) using a single layer of the glass fibre mesh all over the test specimen (no overlapping glass fibre mesh). The test specimens were prefabricated and did not include any joints.

Anchors were not included in the tested ETICS as they have no influence on the test results.

3.2 Hygiene, health and the environment (BWR 3)

3.2.1 Water absorption (ETAG 004, clause 5.1.3.1)

- Base coat ATLAS GRAWIS U:
 - water absorption after 1 hour < 1,0 kg/m²,
 - water absorption after 24 hours < 0,5 kg/m²,
- Rendering systems – according to Table 3.

Table 3

		Water absorption after 24 h	
		< 0,5 kg/m ²	≥ 0,5 kg/m ²
Rendering system: base coat ATLAS GRAWIS U (with the relevant key-coat) + finishing coat indicated hereafter:	ATLAS CERMIT mineral	X	-
	Tynk akrylowy ATLAS	X	-
	Tynk akrylowo-silikonowy ATLAS	X	-
	Tynk silikonowy IN ATLAS	X	-
	Tynk silikonowy ATLAS	X	-
	Tynk silikonowo-silikatowy ATLAS	X	-

3.2.2 Watertightness (ETAG 004, clause 5.1.3.2)

Heat-rain and heat-cold cycles have been performed on a rig. The ETICS is assessed as resistant to hygrothermal cycles.

The water absorption of both the base coat and the rendering system was lower than 0,5 kg/m² after 24 hours. The ETICS is therefore assessed as resistant to freeze/thaw behaviour.

3.2.3 Impact resistance (ETAG 004, clause 5.1.3.3)

Table 4

		Impact resistance – EPS TR100
		Single mesh layer
Rendering system: base coat ATLAS GRAWIS U (with relevant key-coat) + finishing coat indicated hereafter:	ATLAS CERMIT mineral	Category III
	Tynk akrylowy ATLAS	Category III
	Tynk akrylowo-silikonowy ATLAS	Category III
	Tynk silikonowy IN ATLAS	Category III
	Tynk silikonowy ATLAS	Category III
	Tynk silikonowo-silikatowy ATLAS	Category II

Table 5

		Impact resistance – EPS TR80
		Single mesh layer
Rendering system: base coat ATLAS GRAWIS U (with relevant key-coat) + finishing coat indicated hereafter:	ATLAS CERMIT mineral	Category III
	Tynk akrylowy ATLAS	Category III
	Tynk akrylowo-silikonowy ATLAS	Category III
	Tynk silikonowy IN ATLAS	Category III
	Tynk silikonowy ATLAS	Category III
	Tynk silikonowo-silikatowy ATLAS	Category II

3.2.4 Water vapour permeability (ETAG 004, clause 5.1.3.4)**Table 6**

		Equivalent air thickness s_d
Rendering system: base coat ATLAS GRAWIS U + finishing coat indicated hereafter:	ATLAS CERMIT mineral	$\leq 2,0$ m ATLAS CERPLAST + ATLAS CERMIT 3,0 mm: 0,18 m ATLAS CERPLAST + ATLAS CERMIT 3,0 mm + ATLAS ARKOL N: 0,19 m ATLAS CERPLAST + ATLAS CERMIT 3,0 mm + ATLAS FASTEL NOVA/SALTA: 0,18 m ATLAS CERPLAST + ATLAS CERMIT 3,0 mm + ATLAS ARKOL S/SALTA S: 0,20 m ATLAS CERPLAST + ATLAS CERMIT 3,0 mm + ATLAS SALTA N: 0,20 m
	Tynk akrylowy ATLAS	$\leq 2,0$ m ATLAS CERPLAST + Tynk akrylowy ATLAS 2,0 mm: 0,17 m ATLAS CERPLAST + Tynk akrylowy ATLAS 2,0 mm + ATLAS ARKOL N: 0,40 m ATLAS CERPLAST + Tynk akrylowy ATLAS 2,0 mm + ATLAS SALTA E: 0,43 m ATLAS CERPLAST + Tynk akrylowy ATLAS 2,0 mm + ATLAS ARKOL E: 0,53 m ATLAS CERPLAST + Tynk akrylowy ATLAS 2,0 mm + ATLAS SALTA N: 0,42 m ATLAS CERPLAST + Tynk akrylowy ATLAS 2,0 mm + ATLAS FASTEL NOVA/SALTA: 0,36 m
	Tynk akrylowo-silikonowy ATLAS	$\leq 2,0$ m ATLAS SILKON ANX + Tynk akrylowo-silikonowy ATLAS 2,0 mm: 0,16 m ATLAS SILKON ANX + Tynk akrylowo-silikonowy ATLAS 2,0 mm + ATLAS SALTA N: 0,21 m ATLAS SILKON ANX + Tynk akrylowo-silikonowy ATLAS 2,0 mm + ATLAS ARKOL N: 0,22 m ATLAS SILKON ANX + Tynk akrylowo-silikonowy ATLAS 2,0 mm + ATLAS FASTEL NOVA/SALTA: 0,34 m
	Tynk silikonowy IN ATLAS	$\leq 2,0$ m ATLAS SILKON ANX + Tynk silikonowy IN ATLAS 2,0 mm: 0,16 m ATLAS SILKON ANX + Tynk silikonowy IN ATLAS 2,0 mm + ATLAS SALTA N: 0,21 m ATLAS SILKON ANX + Tynk silikonowy IN ATLAS 2,0 mm + ATLAS ARKOL N: 0,22 m ATLAS SILKON ANX + Tynk silikonowy IN ATLAS 2,0 mm + ATLAS FASTEL NOVA/SALTA: 0,34 m
	Tynk silikonowy ATLAS	$\leq 2,0$ m ATLAS SILKON ANX + Tynk silikonowy ATLAS 2,0 mm: 0,31 m ATLAS SILKON ANX + Tynk silikonowy ATLAS 2,0 mm + ATLAS ARKOL N: 0,42 m ATLAS SILKON ANX + Tynk silikonowy ATLAS 2,0 mm + ATLAS SALTA N: 0,45 m ATLAS SILKON ANX + Tynk silikonowy ATLAS 2,0 mm + ATLAS ARKOL S/SALTA S: 0,33 m ATLAS SILKON ANX + Tynk silikonowy ATLAS 2,0 mm + ATLAS FASTEL NOVA/SALTA: 0,37 m
	Tynk silikonowo-silikatowy ATLAS	$\leq 2,0$ m ATLAS SILKON ANX + Tynk silikonowo-silikatowy ATLAS 2,0 mm: 0,22 m ATLAS SILKON ANX + Tynk silikonowo-silikatowy ATLAS 2,0 mm + ATLAS ARKOL S/SALTA S: 0,38 m ATLAS SILKON ANX + Tynk silikonowo-silikatowy ATLAS 2,0 mm + ATLAS FASTEL NOVA/SALTA: 0,43 m ATLAS SILKON ANX + Tynk silikonowo-silikatowy ATLAS 2,0 mm + ATLAS SALTA N: 0,53 m ATLAS SILKON ANX + Tynk silikonowo-silikatowy ATLAS 2,0 mm + ATLAS ARKOL N: 0,37 m

3.2.5 Release of dangerous substances (ETAG 004 - clause 5.1.3.5, EOTA TR 034)

The written declaration on dangerous substances was submitted by the manufacturer to the Technical Assessment Body.

Regarding dangerous substances 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.

3.3 Safety and accessibility in use (BWR 4)**3.3.1 Bond strength between base coat and insulation product (ETAG 004, clause 5.1.4.1.1)**

Table 7

Bond strength between base coat and insulation product (EPS panels)			
Base coat	Initial state	After hygrothermal cycles (on the rig)	After freeze/thaw cycles
ATLAS GRAWIS U	≥ 0,08 MPa	≥ 0,08 MPa	test not required because freeze/thaw cycles not necessary

3.3.2 Bond strength between adhesive / substrate and adhesive / insulation product (ETAG 004, clause 5.1.4.1.2 and 5.1.4.1.3)

Table 8

Bond strength between: adhesive – substrate (concrete) and adhesive – insulation product (EPS)				
Adhesives		Under dry conditions	48 h immersion in water + 2 h drying at (23±2)°C and (50±5)% RH	48 h immersion in water + 7 days drying at (23±2)°C and (50±5)% RH
ATLAS GRAWIS S	Concrete	≥ 0,25 MPa	≥ 0,08 MPa	≥ 0,25 MPa
	EPS	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa
ATLAS GRAWIS U	Concrete	≥ 0,25 MPa	≥ 0,08 MPa	≥ 0,25 MPa
	EPS	≥ 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 surface:

Table 9

	Tensile strength perpendicular to the faces of EPS	
	TR80	TR100
		≥ 80 kPa
ATLAS GRAWIS S ATLAS GRAWIS U	40%	40%

3.3.3 Bond strength after ageing (ETAG 004, clause 5.1.7)

Table 10

		After hygrothermal cycles
Rendering system: base coat ATLAS GRAWIS U (with relevant key-coat) + finishing coat indicated hereafter:	ATLAS CERMIT mineral	≥ 0,08 MPa
	Tynk akrylowy ATLAS	≥ 0,08 MPa
	Tynk akrylowo-silikonowy ATLAS	≥ 0,08 MPa
	Tynk silikonowy IN ATLAS	≥ 0,08 MPa
	Tynk silikonowy ATLAS	≥ 0,08 MPa
	Tynk silikonowo-silikatowy ATLAS	≥ 0,08 MPa

3.3.4 Fixing strength (ETAG 004, clause 5.1.4.2)

Test not required because the ETICS fulfills the criteria given in clause 5.1.4.2.

3.3.5 Render strip tensile test (ETAG 004, clause 5.5.4)

No performance assessed.

3.4 Protection against noise (BWR 5)

3.4.1 Airborne sound insulation (ETAG 004, clause 5.1.5)

No performance assessed.

3.5 Energy economy and heat retention (BWR 6)

3.5.1 Thermal resistance and thermal transmittance (ETAG 004, clause 5.1.6)

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

$$U_c = U + \chi_p \cdot n$$

- where: $\chi_p \cdot n$ has only to be taken into account if it is greater than 0,04 W/(m²·K)
- U_c : corrected 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 plastic screw, stainless steel screw with a head covered by plastic material and for anchors with an air gap at the head of the screw ($\chi_p \cdot n$ negligible for $n < 20$)
 - = 0,004 W/K for anchors with a galvanized steel screw with the head covered by a plastic material ($\chi_p \cdot n$ negligible for $n < 10$)
 - = 0,008 W/K for all other anchors (worst case)
- U : thermal transmittance of the current part of the covered wall (excluding thermal bridges) (W/(m²·K)) determined as follows:

$$U = 1 : [R_i + R_{\text{render}} + R_{\text{substrate}} + R_{\text{se}} + R_{\text{si}}]$$

- 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 or determined by test according to EN 12667 or EN 12664)
- $R_{\text{substrate}}$: thermal resistance of the substrate (e.g. 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 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 (AVCP) system applied, with reference to its legal base

According to Decision 97/556/EC of the European Commission amended by the Decision 2001/596/EC, the systems of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table apply.

Table 11

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+

⁽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 Class 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 European Assessment Document (EAD)

Technical details necessary for the implementation of the AVCP system are laid down in the control plan which is deposited at Instytut Techniki Budowlanej.

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 Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 30/12/2016 by Instytut Techniki Budowlanej



Marcin M. Kruk, PhD
Director of ITB

Description and characteristics		EPS panels according to EN 13163
Reaction to fire EN 13501-1		Class E thickness: 20 mm to 250 mm density: up to 20,0 kg/m ³
Thermal resistance (m ² ·K)/W		Defined in the CE marking in reference to EN 13163
Thickness EN 823		EPS-EN 13163 – T1
Length EN 822		EPS-EN 13163 – L2
Width EN 822		EPS-EN 13163 – W2
Squareness EN 824		EPS-EN 13163 – S5
Flatness EN 825		EPS-EN 13163 – P5
Surface condition		Cut surface (homogeneous and without “skin”)
Dimensional stability	laboratory conditions EN 1603	EPS-EN 13163 – DS(N)2
	specified temperature and humidity EN 1604	EPS-EN 13163 – DS(70,-)1 EPS-EN 13163 – DS(70,-)2
Short-term water absorption (partial immersion) (kg/m ²) EN 1609		≤ 1,0
Water vapour diffusion resistance factor (μ) EN 12086		20 to 60
Tensile strength perpendicular to the faces in dry conditions EN 1607		EPS-EN 13163 – TR80 EPS-EN 13163 – TR100
Bending strength (kPa) EN 12089		≥ 75
Shear strength (MPa) EN 12090		≥ 0,02
Shear modulus (MPa) EN 12090		1,0 ≤ G _m ≤ 3,0
ATLAS GRAWIS		Annex 1 of European Technical Assessment ETA-16/0933
Thermal insulation products characteristic		

Mesh trade name	Description	Alkalis resistance	
		Residual resistance after ageing N/mm	Relative residual resistance, (after ageing) of the strength in the as delivered state, %
R 117 A 101 / AKE 145 / VERTEX 145	standard mesh mass per unit area: 145 g/m ² mesh size: 4,0 x 4,5 mm	≥ 20	≥ 50
SSA 1363-150 SM0.5	standard mesh mass per unit area: 150 g/m ² mesh size: 3,6 x 4,3 mm	≥ 20	≥ 50
ATLAS 150	standard mesh mass per unit area: 150 g/m ² mesh size: 4,5 x 5,0 mm	≥ 20	≥ 50
ATLAS 165	standard mesh mass per unit area: 160 g/m ² mesh size: 3,7 x 3,9 mm	≥ 20	≥ 50
ATLAS GRAWIS		Annex 2 of European Technical Assessment ETA-16/0933	
Glass fibre meshes characteristic			

