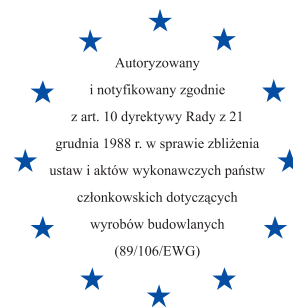




Instytut Techniki Budowlanej

Member of EOTA



European Technical Approval

ETA-06/0081

ATLAS

**External Thermal Insulation Composite System
with rendering for the use as external insulation
of building walls**

*Złożony system izolacji cieplnej
z wyprawami tynkarskimi*



Europejska Organizacja ds. Aprobat Technicznych
European Organisation for Technical Approvals

Europejska aprobatą techniczną została opracowana
w Zakładzie Aprobát Technicznych
przez mgr inż. Annę KUKULSKĄ-GRABOWSKĄ

Projekt okładki: Ewa Kossakowska

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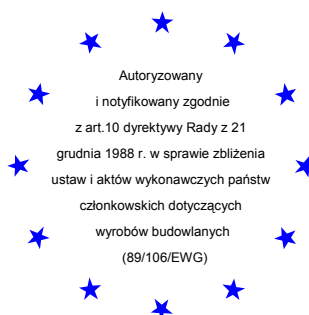


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Członek EOTA

European Technical Approval

ETA-06/0081

(English translation - the original version is in Polish language)

Nazwa handlowa

Trade name

ATLAS

ATLAS

Właściciel aprobaty

Holder of approval

ATLAS Spółka z o.o.

ul. Świętej Teresy 105

PL 91-222 Łódź, Poland

Rodzaj i przeznaczenie wyrobu

*Generic type and use
of construction product*

**Złożony system izolacji cieplnej z wyprawami
tynkarskimi**

*External Thermal Insulation Composite System
with rendering for the use as external insulation
of building walls*

Termin ważności

Valid

od

from

21. 06. 2011

do

to

21. 06. 2016

Zakład produkcyjny

Manufacturing plant

ATLAS Spółka z o.o.

ul. Świętej Teresy 105

PL 91-222 Łódź, Poland

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ETA-06/0081 ważną od 28.04.2008 do 28.04.2013

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European Organisation for Technical Approvals

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 - ustawa z dnia 16 kwietnia 2004 r. o wyrobach budowlanych (law on construction products of 16 April 2004)³;
 - rozporządzenie Ministra Infrastruktury z dnia 14 października 2004 r. w sprawie europejskich aprobat technicznych oraz polskich jednostek organizacyjnych upoważnionych do ich wydawania (ordinance of Ministry of Infrastructure of 14 October 2004 on the European Technical Approvals and Polish bodies entitled to issue them)⁴;
 - Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex to Commission Decision 94/23/EC⁵;
 - Guideline for European Technical Approval of „*External Thermal Insulation Composite Systems with rendering*” ETAG 004, edition March 2000.
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¹ Official Journal of the European Communities no. L 40, 11.2.1989, p. 12

² Official Journal of the European Communities no. L 220, 30.8.1993, p. 1

³ Official Journal of the Polish Republic no. 92/2004, pos. 881

⁴ Official Journal of the Polish Republic no. 237/2004, pos. 2375

⁵ Official Journal of the European Communities no. L 17, 20.1.1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product and intended use

External Thermal Insulation Composite System ATLAS called ETICS in the following text is designed and installed in accordance with the ETA-holder's design and installation instructions deposited with the Building Research Institute (ITB). The ETICS comprises the following components, which are factory-produced by the ETA-holder or the suppliers. It's made up on site from these. The ETA-holder is ultimately responsible for the ETICS.

1.1 Definition of the construction product

Table 1

	Components (see clause 2.3 for further description, characteristics and performances)	Coverage (kg/m ²)	Thickness (mm)
Insulation material with associated methods of fixing	Bonded ETICS: fully bonded or partially bonded with supplementary mechanical fixings (bonded surface shall be at least 40%); national application documents have to be taken into account.		
	<ul style="list-style-type: none"> Insulation product: factory prefabricated expanded polystyrene (EPS) according to EN 13163 <ul style="list-style-type: none"> – standard EPS – elastified EPS 	-	≤ 250
	<ul style="list-style-type: none"> Adhesives composition: sand, cement, mineral fillers, synthetic resin, additives <ul style="list-style-type: none"> ATLAS STOPTER K-10 cement based powder requiring addition of 0,20 to 0,22 l/kg of water ATLAS STOPTER K-20 cement based powder requiring addition of 0,20 to 0,22 l/kg of water ATLAS HOTER S cement based powder requiring addition of 0,20 to 0,22 l/kg of water ATLAS HOTER U cement based powder requiring addition of 0,20 to 0,22 l/kg of water 	4,0 to 5,0 ¹ (powder)	-
Base coats	<ul style="list-style-type: none"> ATLAS STOPTER K-20 cement based powder requiring addition of 0,20 to 0,22 l/kg of water composition: sand, cement, mineral fillers, synthetic resin, additives 	3,0 to 3,5 (powder)	2,0 to 3,0
	<ul style="list-style-type: none"> ATLAS HOTER U cement based powder requiring addition of 0,20 to 0,22 l/kg of water composition: sand, cement, mineral fillers, synthetic resin, additives 	3,0 to 3,5 (powder)	2,0 to 3,0

¹ refers to fully bonded system

Table 1

	Components (see clause 2.3 for further description, characteristics and performances)	Coverage (kg/m ²)	Thickness (mm)
Glass fibre meshes	<ul style="list-style-type: none"> • SSA 1363 SM(100) mesh size of about: 3,5 x 3,5 mm; mass per unit area: 145 g/m² • VERTEX 145 / AKE 145 / R 117 A 101 mesh size of about: 4,5 x 4,0 mm; mass per unit area: 150 g/m² 	-	-
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 • ATLAS SILKAT ASX composition: water, styroacrylat binder, silicone binder, mineral fillers, pigments, additives ready to use liquid to be used with ATLAS SILKAT • ATLAS SILKON ANX composition: water, acryl-copolymer binder, silicone binder, mineral fillers, pigments, additives ready to use liquid to be used with ATLAS SILKON 	0,25 to 0,35 0,25 to 0,35 0,25 to 0,35	- - -
Finishing coats	<ul style="list-style-type: none"> • Mineral finishing coats composition: sand, cement, mineral fillers, synthetic resin, pigments, additives ATLAS CERMIT SN mineral powder requiring addition of 0,18 to 0,26 l/kg of water grained structure max. particle size: 1,5; 2,0; 2,5; 3,0 mm ATLAS CERMIT DR mineral powder requiring addition of 0,18 to 0,26 l/kg of water ribbed structure max. particle size: 2,0; 3,0 mm • Acrylic finishing coats composition: water, acryl-copolymer binder, sand, mineral fillers, additives ATLAS CERMIT N acryl ready to use paste grained structure max. particle size: 1,5; 2,0; 3,0 mm ATLAS CERMIT R acryl ready to use paste ribbed structure max. particle size: 2,0; 3,0 mm • Silicate finishing coats composition: silicate binder, sand, mineral fillers, additives ATLAS SILKAT N ready to use paste grained structure max. particle size: 1,5; 2,0 mm ATLAS SILKAT R ready to use paste ribbed structure max. particle size: 2,0 mm 	2,5 to 4,5 (powder) 2,5 to 4,5 (powder) 2,5 to 4,5 2,5 to 4,5	regulated by particle size regulated by particle size regulated by particle size regulated by particle size

Table 1

	Components (see clause 2.3 for further description, characteristics and performances)	Coverage (kg/m ²)	Thickness (mm)
Finishing coats	<ul style="list-style-type: none"> • Silicone finishing coats composition: sand, silicone resin, mineral fillers, additives • ATLAS SILKON N ready to use paste grained structure max. particle size: 1,5; 2,0 mm • ATLAS SILKON R ready to use paste ribbed structure max. particle size: 2,0 mm 	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 • ATLAS ARKOL NX composition: water, styroacrylat binder, mineral fillers, silicone emulsion, additives ready to use liquid to be used with ATLAS ARKOL N and ATLAS FASTEL / FASTEL NOVA 	0,05 to 0,20	-
Decorative coats to be used optionally	<ul style="list-style-type: none"> • ATLAS ARKOL E to be used optionally with all finishing coats composition: acryl-copolymer binder, pigments, additives ready to use liquid • ATLAS ARKOL S to be used optionally with all finishing coats composition: silicate binder, pigments, additives ready to use liquid • ATLAS ARKOL N to be used optionally with all finishing coats composition: silicone resin, pigments, additives ready to use liquid • ATLAS FASTEL / FASTEL NOVA to be used optionally with all finishing coats composition: silicone resin, pigments, additives ready to use liquid 	0,125 to 0,250*	-
Ancillary materials	Anchors (supplementary mechanical fixings) covered by ETA issued according to ETAG 014. Ancillary materials in accordance with clause 3.2.2.5 of the ETAG 004. Remain under the ETA-holder responsibilities.		
* decorative coats coverage in dm ³ /m ²			

1.2 Intended use

This ETICS is intended to be used as external insulation of buildings' walls made of masonry (bricks, blocks, stones, ..) or concrete (cast on site or as prefabricated panels) with or without rendering (reaction to fire class A1 or A2-s1, d0 according to EN 13501-1). 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 effects 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 Approval are based on an assumed working life of the ETICS of at least 25 years, provided that the conditions laid down in clauses 4.2, 5.1 and 5.2 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 Approval 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.

2 Characteristics of product and methods of verification

2.1 General

The assessment of the fitness for intended use of the ETICS according to the Essential Requirements was carried out in compliance with the Guideline for European Technical Approval of „External Thermal Insulation Composite Systems with rendering” ETAG 004, edition March 2000, Amendment June 2008 (called ETAG 004 in this ETA).

2.2 ETICS characteristics

2.2.1 Reaction to fire

The reaction to fire is determined according to ETAG 004, clause 5.1.2.1. The product as defined in clause 1.1 reached the classification given in Table 2.

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 – for standard EPS and 15 kg/m³ – for elastified EPS 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 approval holder 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.

Table 2

Configuration according to clause 1.1	Maximum declared organic content	Declared flame retardant content	Reaction to fire class according to EN 13501-1
ETICS ATLAS with rendering system: <ul style="list-style-type: none"> • Adhesives: ATLAS STOPTER K-10, ATLAS STOPTER K-20, ATLAS HOTER S, ATLAS HOTER U • Base coats: ATLAS STOPTER K-20, ATLAS HOTER U • Finishing coats: ATLAS CERMIT mineral (with key coat ATLAS CERPLAST), ATLAS SILKAT (with key coat ATLAS SILKAT ASX) • Decorative coats: ATLAS ARKOL E, S, N, FASTEL / FASTEL NOVA (with relevant primers) 	$\leq 3,5\%$ $\leq 4,9\%$ $\leq 19,9\%$	0%	B – s1, d0
ETICS ATLAS with rendering system: <ul style="list-style-type: none"> • Adhesives: ATLAS STOPTER K-10, ATLAS STOPTER K-20, ATLAS HOTER S or ATLAS HOTER U • Base coats: ATLAS STOPTER K-20, ATLAS HOTER U • Finishing coats: ATLAS CERMIT acryl (with key coat ATLAS CERPLAST), ATLAS SILKON (with key coat ATLAS SILKON ANX) • Decorative coats: ATLAS ARKOL E, N, FASTEL / FASTEL NOVA (with relevant primers) 	$\leq 3,5\%$ $\leq 8,4\%$ $\leq 19,9\%$	0%	B – 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 Member States national provisions (e.g. large scale tests).

2.2.2 Water absorption (capillarity test)

The water absorption of the base coat and the various rendering systems is determined according to ETAG 004, clause 5.1.3.1.

- Base coat ATLAS STOPTER K-20:
 - water absorption after 1 hour < 1,0 kg/m²,
 - water absorption after 24 hours < 0,5 kg/m²,
- Base coat ATLAS HOTER 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 STOPTER K-20 (with the key coat according to Table 1) + finishing coat indicated hereafter	ATLAS CERMIT SN, DR mineral	X	-
	ATLAS CERMIT N, R acryl	X	-
	ATLAS SILKAT N, R	X	-
	ATLAS SILKON N, R	X	-
Rendering system: base coat ATLAS HOTER U (with the key coat according to Table 1) + finishing coat indicated hereafter	ATLAS CERMIT SN, DR mineral	X	-
	ATLAS CERMIT N, R acryl	X	-
	ATLAS SILKAT N, R	X	-
	ATLAS SILKON N, R	X	-

2.2.3 Hygrothermal behaviour

The hygrothermal cycles have been performed on a rig with both base coats according to ETAG 004, clause 5.1.3.2.1.

None of the following defects occur during the testing:

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

The ETICS is so assessed as resistant to hygrothermal cycles.

2.2.4 Freeze/thaw behaviour

The water absorption of both base coats and the rendering system is less than 0,5 kg/m² after 24 hours for all configurations of the ETICS. So the ETICS is assessed as freeze/thaw resistant.

2.2.5 Impact resistance

The resistance to hard body impacts (3 Joules and 10 Joules) and to perforation (Perfotest), determined according to ETAG 004, clauses 5.1.3.3, 5.1.3.3.1, 5.1.3.3.2, lead to the categories given in Table 4 to Table 6.

Table 4

		Single standard mesh	Double standard mesh
Standard EPS + base coat ATLAS STOPTER K-20 (with the key coat according to Table 1) + finishing coat indicated hereafter	ATLAS CERMIT SN, DR mineral	Category III ¹	NPD
	ATLAS CERMIT N, R acryl	Category II ¹	NPD
	ATLAS SILKAT N, R	Category III ¹	Category II ¹
	ATLAS SILKON N, R	Category II ¹	NPD

¹ use categories according to ETAG 004, clause 6.1.3.3, Table 8

Table 5

		Single standard mesh
Standard EPS + base coat ATLAS HOTER U (with the key coat according to Table 1) + finishing coat indicated hereafter	ATLAS CERMIT SN, DR mineral	Category III ¹
	ATLAS CERMIT N, R acryl	Category II ¹
	ATLAS SILKAT N, R	Category II ¹
	ATLAS SILKON N, R	Category II ¹
¹ use categories according to ETAG 004, clause 6.1.3.3, Table 8		

Table 6

		Single standard mesh
Elastified EPS + base coat ATLAS STOPTER K-20 (with the key coat according to Table 1) + finishing coat indicated hereafter	ATLAS CERMIT SN, DR mineral	Category III ¹
	ATLAS CERMIT N, R acryl	Category III ¹
	ATLAS SILKAT N, R	Category II ¹
	ATLAS SILKON N, R	Category II ¹
Elastified EPS + base coat ATLAS HOTER U (with the key coat according to Table 1) + finishing coat indicated hereafter	ATLAS CERMIT SN, DR mineral	Category III ¹
	ATLAS CERMIT N, R acryl	Category III ¹
	ATLAS SILKAT N, R	Category II ¹
	ATLAS SILKON N, R	Category III ¹
¹ use categories according to ETAG 004, clause 6.1.3.3, Table 8		

2.2.6 Water vapour permeability

The resistance to water vapour diffusion is determined according to ETAG 004, clause 5.1.3.4.

Table 7

Rendering system: base coat ATLAS STOPTER K-20 + finishing coat indicated hereafter	Equivalent air thickness s_d
ATLAS CERMIT SN, DR mineral	<p style="text-align: center;">≤ 2,0 m</p> <p style="text-align: center;">ATLAS CERPLAST + ATLAS CERMIT SN mineral 3,0 mm: 0,23 m ATLAS CERPLAST + ATLAS CERMIT SN mineral 3,0 mm + ATLAS ARKOL SX + ATLAS ARKOL S: 0,29 m ATLAS CERPLAST + ATLAS CERMIT SN mineral 3,0 mm + ATLAS ARKOL NX + ATLAS ARKOL N: 0,32 m ATLAS CERPLAST + ATLAS CERMIT SN mineral 3,0 mm + ATLAS ARKOL E: 0,36 m ATLAS CERPLAST + ATLAS CERMIT SN mineral 3,0 mm + ATLAS ARKOL NX + ATLAS FASTEL: 0,30 m</p>

Table 7

Rendering system: base coat ATLAS STOPTER K-20 + finishing coat indicated hereafter	Equivalent air thickness s_d
ATLAS CERMIT N, R acryl	<p style="text-align: center;">$\leq 2,0$ m</p> <p style="text-align: center;">ATLAS CERPLAST + ATLAS CERMIT N acryl 3,0 mm: 0,58 m ATLAS CERPLAST + ATLAS CERMIT N acryl 3,0 mm + ATLAS ARKOL NX + ATLAS ARKOL N: 0,99 m ATLAS CERPLAST + ATLAS CERMIT N acryl 3,0 mm + ATLAS ARKOL E: 0,97 m ATLAS CERPLAST + ATLAS CERMIT N acryl 3,0 mm + ATLAS ARKOL NX + ATLAS FASTEL: 0,98 m</p>
ATLAS SILKAT N, R	<p style="text-align: center;">$\leq 2,0$ m</p> <p style="text-align: center;">ATLAS SILKAT ASX + ATLAS SILKAT N 2,0 mm: 0,17 m ATLAS SILKAT ASX + ATLAS SILKAT N 2,0 mm + ATLAS ARKOL SX + ATLAS ARKOL S: 0,20 m ATLAS SILKAT ASX + ATLAS SILKAT N 2,0 mm + ATLAS ARKOL NX + ATLAS ARKOL N: 0,21 m ATLAS SILKAT ASX + ATLAS SILKAT N 2,0 mm + ATLAS ARKOL NX + ATLAS FASTEL: 0,23 m</p>
ATLAS SILKON N, R	<p style="text-align: center;">$\leq 2,0$ m</p> <p style="text-align: center;">ATLAS SILKON ANX + ATLAS SILKON N particles size 2,0 mm: 0,49 m ATLAS SILKON ANX + ATLAS SILKON N particles size 2,0 mm + ATLAS ARKOL NX + ATLAS ARKOL N: 0,80 m ATLAS SILKON ANX + ATLAS SILKON N particles size 2,0 mm + ATLAS ARKOL NX + ATLAS FASTEL: 0,87 m</p>

Table 8

Rendering system: base coat ATLAS HOTER U + finishing coat indicated hereafter	Equivalent air thickness s_d
ATLAS CERMIT SN, DR mineral	<p style="text-align: center;">$\leq 2,0$ m</p> <p style="text-align: center;">ATLAS CERPLAST + ATLAS CERMIT SN mineral 3,0 mm: 0,20 m ATLAS CERPLAST + ATLAS CERMIT SN mineral 3,0 mm + ATLAS ARKOL SX + ATLAS ARKOL S: 0,21 m ATLAS CERPLAST + ATLAS CERMIT SN mineral 3,0 mm + ATLAS ARKOL NX + ATLAS ARKOL N: 0,26 m ATLAS CERPLAST + ATLAS CERMIT SN mineral 3,0 mm + ATLAS ARKOL E: 0,32 m ATLAS CERPLAST + ATLAS CERMIT SN mineral 3,0 mm + ATLAS ARKOL NX + ATLAS FASTEL: 0,19 m</p>
ATLAS CERMIT N, R acryl	<p style="text-align: center;">$\leq 2,0$ m</p> <p style="text-align: center;">ATLAS CERPLAST + ATLAS CERMIT N acryl 3,0 mm: 0,44 m ATLAS CERPLAST + ATLAS CERMIT N acryl 3,0 mm + ATLAS ARKOL NX + ATLAS ARKOL N: 0,75 m ATLAS CERPLAST + ATLAS CERMIT N acryl 3,0 mm + ATLAS ARKOL E: 0,81 m ATLAS CERPLAST + ATLAS CERMIT N acryl 3,0 mm + ATLAS ARKOL NX + ATLAS FASTEL: 0,76 m</p>
ATLAS SILKAT N, R	<p style="text-align: center;">$\leq 2,0$ m</p> <p style="text-align: center;">ATLAS SILKAT ASX + ATLAS SILKAT N 2,0 mm: 0,15 m ATLAS SILKAT ASX + ATLAS SILKAT N 2,0 mm + ATLAS ARKOL SX + ATLAS ARKOL S: 0,15 m ATLAS SILKAT ASX + ATLAS SILKAT N 2,0 mm + ATLAS ARKOL NX + ATLAS ARKOL N: 0,20 m ATLAS SILKAT ASX + ATLAS SILKAT N 2,0 mm + ATLAS ARKOL NX + ATLAS FASTEL: 0,23 m</p>
ATLAS SILKON N, R	<p style="text-align: center;">$\leq 2,0$ m</p> <p style="text-align: center;">ATLAS SILKON ANX + ATLAS SILKON N 2,0 mm: 0,44 m ATLAS SILKON ANX + ATLAS SILKON N 2,0 mm + ATLAS ARKOL NX + ATLAS ARKOL N: 0,78 m ATLAS SILKON ANX + ATLAS SILKON N 2,0 mm + ATLAS ARKOL NX + ATLAS FASTEL: 0,81 m</p>

2.2.7 Dangerous substances

The ETICS complies with the provisions of Guidance Paper H ("A harmonized approach related to dangerous substances under the construction product directives, Revision August 2002").

A written declaration was submitted by the ETA-holder.

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

2.2.8 Safety in use

2.2.8.1 Bond strength

The bond strength is determined according to ETAG 004, clauses 5.1.4.1.1, 5.1.4.1.2, 5.1.4.1.3.

Table 9

Bond strength between base coat and insulation product (EPS)				
Base coats		Under dry conditions	After hygrothermal cycles on the rig	After freeze/thaw cycles
ATLAS STOPTER K-20		≥ 0,08 MPa	≥ 0,08 MPa	test not required because freeze/thaw cycles not necessary
ATLAS HOTER U		≥ 0,08 MPa	≥ 0,08 MPa	test not required because freeze/thaw cycles not necessary
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 STOPTER K-10	Concrete	≥ 0,25 MPa	≥ 0,08 MPa	≥ 0,25 MPa
	EPS	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa
ATLAS STOPTER K-20	Concrete	≥ 0,25 MPa	≥ 0,08 MPa	≥ 0,25 MPa
	EPS	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa
ATLAS HOTER S	Concrete	≥ 0,25 MPa	≥ 0,08 MPa	≥ 0,25 MPa
	EPS	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa
ATLAS HOTER U	Concrete	≥ 0,25 MPa	≥ 0,08 MPa	≥ 0,25 MPa
	EPS	≥ 0,08 MPa	≥ 0,03 MPa	≥ 0,08 MPa
Minimal bonded surface area is 40%.				

2.2.8.2 Fixing strength (displacement test)

Test not required because the ETICS fulfils the following criteria (clause 5.1.4.2. of ETAG 004): $E \times d < 50\,000$ N/mm (E: modulus of elasticity of the base coat; d: mean thickness of the base coat).

2.2.9 Thermal resistance

The additional thermal resistance provided by the ETICS (R_{ETICS}) to the substrate wall is calculated from the thermal resistance of the insulation product (R_D), determined in accordance with 5.2.6.1, and from the tabulated R_{render} value of the render system (R_{render} is about $0,02$ $m^2 \cdot K/W$),

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

as described in:

EN ISO 6946-1: Building components and building elements – Thermal resistance and thermal transmittance – Calculation method.

EN 12524: Building materials and products – Hygrothermal properties – Tabulated design values.

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

EN 1934: Thermal performance of buildings – Determination of thermal resistance by hot box method using heat flow meter - Masonry.

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:

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

with: U_c - corrected thermal transmittance of the entire wall, including thermal bridges

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

$$U = 1: [R_{ETICS} + R_{substrate} + R_{se} + R_{si}]$$

$R_{substrate}$ thermal resistance of the substrate wall [$(m^2 \cdot K)/W$]

R_{se} external surface thermal resistance [$(m^2 \cdot K)/W$]

R_{si} internal surface thermal resistance [$(m^2 \cdot K)/W$]

ΔU - correction term of the thermal transmittance for mechanical fixing devices = $\chi_p \cdot n$ (for anchors)

χ_p point thermal transmittance value of the anchor [W/K]. See EOTA Technical Report 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

$$= 0,008 \text{ W/K for all other anchors (worst case)}$$

n number of anchors per m²

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

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

2.2.10 Aspects of durability and serviceability. Bond strength after ageing

The bond strength after ageing is determined according to ETAG 004, clause 5.1.7.1.

Table 10

		After hygrothermal cycles on the rig
Rendering system: base coat ATLAS STOPTER K-20 (with the key coat according to Table 1) + finishing coat indicated hereafter	ATLAS CERMIT SN, DR mineral	≥ 0,08 MPa
	ATLAS CERMIT N, R acryl	≥ 0,08 MPa
	ATLAS SILKAT N, R	≥ 0,08 MPa
	ATLAS SILKON N, R	≥ 0,08 MPa
Rendering system: base coat ATLAS HOTER U (with the key coat according to Table 1) + finishing coat indicated hereafter	ATLAS CERMIT SN, DR mineral	≥ 0,08 MPa
	ATLAS CERMIT N, R acryl	≥ 0,08 MPa
	ATLAS SILKAT N, R	≥ 0,08 MPa
	ATLAS SILKON N, R	≥ 0,08 MPa

2.3 Components' characteristics

2.3.1 Insulation product

Factory-prefabricated, uncoated panels made of expanded polystyrene (EPS) according to EN 13163 with the characteristic given in Table 11 shall be used.

Table 11

Reaction to fire EN 13501-1	Class E with a maximum density 20,0 kg/m ³
Thermal resistance (m ² ·K)/W	Defined in the CE marking in reference to EN 13163
Thickness (mm) EN 823	± 1 (class T2)
Length (mm) EN 822	± 2 (class L2) or ± 3 (class L1)
Width (mm) EN 822	± 2 (class W2)

Table 11

Squareness (mm/m) EN 824		± 5 (class S1) or ± 2 (class S2)
Flatness (mm/m) EN 825		± 10 (class P3) or ± 5 (class P4)
Surface condition		Cut surface (homogeneous and without "skin")
Dimensional stability:	laboratory conditions EN 1603	DS(N)2
	specified temperature and humidity EN 1604	DS(70,-)1 or DS(70,-)2
Water absorption (partial immersion) (kg/m²) EN 1609		$\leq 1,0$
Water vapour diffusion resistance factor (μ) EN 12086		20 to 60
Tensile strength perpendicular to the faces in dry conditions (kPa) EN 1607		≥ 80 (TR 80) – elastified EPS ≥ 100 (TR 100) – standard EPS
Bending strength (kPa) EN 12089		≥ 75
Shear strength (MPa) EN 12090		$0,02 \leq f_{tk} \leq 0,10$
Shear modulus of elasticity (MPa) EN 12090		
– standard EPS		$1,0 \leq G_m \leq 3,0$
– elastified EPS*		$0,3 \leq G_m \leq 1,0$
* Elastified EPS is made from standard EPS by short time high load pressing to reduce the dynamic stiffness.		

2.3.2 Anchors

The anchors according to Table 1, with references to the respective ETA are to be used as supplementary mechanical fixings.

2.3.3 Render

No performance determined.

2.3.4 Glass fibre meshes

The glass fibre meshes tests are determined according to ETAG 004 clause 5.6.7.1.

Table 12

	SSA 1363 SM(100) VERTEX 145 / AKE 145 / R 117 A 101	
	Warp	Weft
Residual strength after ageing (N/mm)	≥ 20	≥ 20
Relative residual resistance (%) after ageing of the strength in the as-delivered state	≥ 50	≥ 50

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the decision 97/556/EC of the European Commission amended by 2001/596/EC the system 1 or 2+ attestation of conformity applies depending on reaction to fire.

The systems of attestation of conformity are system 1 regarding reaction to fire characteristics and system 2+ regarding other characteristics than reaction to fire.

These systems of attestation of conformity are defined as follows:

System 1: Certification of conformity of the product by a notified certification body on the basis of:

- a) Tasks of the manufacturer:
 - (1) factory production control,
 - (2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan,
- b) Tasks of the notified body:
 - (3) initial type-testing of the product,
 - (4) initial inspection of factory and of factory production control,
 - (5) continuous surveillance, assessment and approval of factory production control.

System 2+: Declaration of conformity of the product by the manufacturer on the basis of:

- a) Tasks of the manufacturer:
 - (1) initial type-testing of the product,
 - (2) factory production control,
 - (3) testing of samples taken at the factory in accordance with a prescribed test plan,
- b) Tasks of the notified body:
 - (4) certification of factory production control on the basis of:
 - initial inspection of factory and of factory production control,

- continuous surveillance, assessment and approval of factory production control.

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. 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 ETICS and the components are in conformity with this European Technical Approval.

The manufacturer may only use raw materials stated in the technical documentation of this ETA. The incoming raw materials shall be subjected to verifications by the manufacturer before acceptance.

The factory production control shall be in accordance with the control plan⁶ which is a part of the technical documentation of this ETA. The control plan has been agreed between the manufacturer and Instytut Techniki Budowlanej and is laid down in the context of the factory production control system operated by the manufacturer and deposited with Instytut Techniki Budowlanej.

The results of factory production control are recorded and evaluated in accordance with the provisions of the control plan. The records shall include at least the following information:

- designation of the product, the basic materials and components,
- type of control or testing,
- date of manufacture of the product and date of testing of the product or basic materials or components,
- result of control and testing and, if appropriate, comparison with requirements,
- signature of person responsible for factory production control.

The records shall be presented to the notified body involved in continuous surveillance. On request they shall be presented to Instytut Techniki Budowlanej.

3.2.1.2 Other tasks of manufacturer

For the components of the ETICS which the ETA-holder does not manufacture by himself, he makes sure that factory production control carried out by the other manufacturer gives the guaranty of the components compliance with the European Technical Approval.

For initial type-testing of the ETICS and the components regarding other characteristics than reaction to fire, the results of the tests performed as a 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 initial type-testing has to be agreed between Instytut Techniki Budowlanej and the notified body involved.

⁶ The control plan has been deposited with Instytut Techniki Budowlanej and may be handed over only to the notified body involved in the procedure of attestation of conformity.

The manufacturer shall, on the basis of a contract, involve a body which is notified for the task referred to in section 3.1 in the field of ETICS in order to undertake the actions laid down in section 3.2.2. For this purpose, the control plan referred to in section 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the notified body involved.

The manufacturer shall make a declaration of conformity, stating that the ETICS is in conformity with the provisions of the ETA-06/0081.

3.2.2 Tasks of the notified body

The notified body shall perform the:

- initial type-testing of the ETICS and the components (in case of system 1),
 - initial inspection of factory and of factory production control,
 - continuous surveillance, assessment and approval of factory production control,
- in accordance with the provision laid down in the control plan.

The notified body shall retain the essential points of its actions referred to above and state the results obtained and conclusion drawn in written report.

The notified certification body involved by the manufacturer shall issue an EC certificate of conformity of the ETICS which includes the certification of factory production control stating the conformity with provisions of this ETA.

In cases where the provisions of the ETA and its control plan are no longer fulfilled the notified certification body shall withdraw the certificate of conformity and inform Instytut Techniki Budowlanej without delay.

3.3 CE marking

The CE marking shall be affixed on the attached label or on the accompanying commercial documents. The letters "CE" shall be accompanied by the following additional information:

- the identification number of the Notified Body (system 1 and 2+),
- the name and address of the ETA-holder,
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate of conformity for the ETICS (system 1),
- the number of the EC certificate of conformity of Factory Production Control (system 2+),
- the number of the ETA,
- the number of the ETAG,
- ETICS trade name.

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 Manufacturing

The composition and manufacturing process used for the components of the ETICS shall comply with those on which the approval tests were based. Composition and manufacturing process are deposited with Instytut Techniki Budowlanej.

The ETA is issued for the ETICS on the basis of agreed data/information, deposited with Instytut Techniki Budowlanej, which identifies the ETICS that has been assessed and judged. Changes to the ETICS or the components or their production process, which could result in this deposited data/information being incorrect, should be notified to Instytut Techniki Budowlanej before the changes are introduced. Instytut Techniki Budowlanej 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.

4.2 Installation, design and execution

4.2.1 General

The wall on which the ETICS is applied shall be sufficiently stable and airtight. Its stiffness shall be large enough to ensure that the ETICS are not subjected to deformations, which could lead to damage.

The requirements given in ETAG 004, edition March 2000, chapter 7, have to be considered.

4.2.2 Installation

The ETICS is installed on site. The approval holder is obliged to instruct all those entrusted with the design and execution of the ETICS, about the specific conditions of this ETA and all other details necessary for proper execution.

Only the components whose trade names are given in clause 1.1 of this ETA and which have the characteristics according to clause 2.3 may be used for the ETICS.

4.2.3 Design

To the requirements for the substrate and its preparation, ETAG 004, clause 7.3.1 applies.

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

4.2.4 Execution of the works

The manufacturer's installation instructions, which are part of the technical documentation for this ETA, shall be observed with respect to the installation of the ETICS and drying times of rendering products.

5 Indications to the manufacturer

5.1 Packaging, transport and storage

Packaging of the components has to be such that the products are protected against moisture during transport and storage, unless other measures are foreseen by the manufacturer for this purpose.

The components are to be protected against damage.

5.2 Use, maintenance, repair

To the indication on use, maintenance and repair ETAG 004, clause 7.3 applies.

On behalf of Instytut Techniki Budowlanej

A handwritten signature in blue ink, appearing to read 'M. Kaproń', is centered on the page.

Marek Kaproń
Director of ITB



Instytut Techniki Budowlanej

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