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NATIONAL TECHNICAL ASSESSMENT ITB-KOT-2018/0385 edition 4

This National Technical Assessment is issued pursuant to the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on domestic technical assessments (consolidated text: Journal of Laws of 2016, item 1968) by the Building Research Institute in Warsaw, at the request of the companies:

ATLAS sp. z o.o.
91-421 Łódź, ul. Jana Kilińskiego 2

The Technical Assessment ITB-KOT-2018/0385 edition 4 constitutes positive assessment of performance of the product listed below:

Set of products for external thermal insulation of building walls with the system **ATLAS CERAMIK**

Valid until:
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DIRECTOR
On behalf of
Deputy Director
For Research and Innovation
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The document of the National Technical Assessment ITB-KOT-2018/0385 edition 4 contains 28 pages, incl. 4 Attachments. The National Technical Assessment ITB-KOT-2018/0385 replaces the National Technical Assessment ITB-KOT-2018/0385 edition 3. The text of this document may be copied only in its entirety. Written agreement with the Building Research Institute is required in order to publish or disseminate parts of the text of the Technical Approval in any other form.

1. PRODUCT TECHNICAL DESCRIPTION

The subject of this National Technical Assessment is a set of products for external wall insulation of buildings using the ATLAS CERAMIK system.

The producer of the product set is ATLAS Sp. z o.o., 91-421 Łódź, ul. Jana Kilińskiego 2. The products included in the set are manufactured in production facilities located in Poland.

The ATLAS CERAMIK product set includes products (system components) produced in the factory by the producer of the set and/or its subcontractors.

This National Technical Assessment covers the types of products specified by the producer and resulting from the functional properties provided in section 3 and the combinations of the system components.

The ATLAS CERAMIK product set includes a factory-produced thermal insulation product – EPS boards (expanded polystyrene), which are attached to walls mechanically with additional adhesive bonding. The method of fixing the thermal insulation product to the substrate and the products included in the set are listed in Table 1 – for ATLAS CERAMIK Type I insulation, in Table 2 – for ATLAS CERAMIK Type II insulation, and in Table 3 – for ATLAS CERAMIK Type III insulation. The thermal insulation product is coated with a finishing layer, consisting of several layers applied on-site, including a layer with reinforcing mesh and an external layer such as ceramic tiles, stone tiles, or concrete slabs. The finishing layer is applied directly to the thermal insulation product without air gaps or intermediate layers.

The ATLAS CERAMIK product set also includes complementary materials and accessories, which are not the subject of this National Technical Assessment and should be used as per the manufacturer's instructions.

The properties of the products included in the ATLAS CERAMIK product set are specified in Annexes A ÷ C.

Table 1

	Set components – type I	Consumption [kg/m ²]	Thickness [mm]
Method of material fixing to thermal insulation	Mechanically bonded system with additional adhesive bonding: Polystyrene boards fixed to the substrate with mechanical fixings and adhesive mortar, actual bonded surface not less than 60%		
Thermal insulation material	<ul style="list-style-type: none"> Polystyrene boards (EPS) acc. to the standard PN-EN 13163+A1:2015 (until transitional period for the norm PN-EN 13163+A2:2016) Surface dimensions: not more than 600 x 1200 mm Edges: straight, with no gaps Of minimum performance acc. to Attachment A 	-	50 ÷ 250
Adhesive mortars	<ul style="list-style-type: none"> ATLAS STOPTER K-20 Dry mix to be mixed with water before use, weight ratio 100 : (20 ÷ 22) 	4.0 ÷ 5.0	-



	<ul style="list-style-type: none"> ATLAS HOTER U Dry mix to be mixed with water before use, weight ratio 100 : (20 ÷ 22) 	4.0 ÷ 5.0	-
	<ul style="list-style-type: none"> ATLAS GRAWIS S Dry mix to be mixed with water before use, weight ratio 100 : (22 ÷ 24) 	4.0 ÷ 5.0	-
	<ul style="list-style-type: none"> ATLAS HOTER S Dry mix to be mixed with water before use, weight ratio 100 : (20 ÷ 22) 	4.0 ÷ 5.0	-
Mechanical fixings	<ul style="list-style-type: none"> Mechanical fixings with steel pin of performance according to Attachment B, table B2 and B3 	-	-
Fiberglass mesh	<ul style="list-style-type: none"> ATLAS 150 Weave type: gauze Width 100 or 110 cm, length: ≥ 50 m Performance: acc. to Attachment B, table B1 	-	-
Adhesives for reinforced layer	<ul style="list-style-type: none"> ATLAS STOPTER K-20 Dry mix to be mixed with water before use, weight ratio 100 : (20 ÷ 22) 	3.0 ÷ 4.0	2.0 ÷ 5.0
	<ul style="list-style-type: none"> ATLAS HOTER U Dry mix to be mixed with water before use, weight ratio 100 : (20 ÷ 22) 	3.0 ÷ 4.0	2.0 ÷ 5.0
Adhesives for ceramic tiles	<ul style="list-style-type: none"> ATLAS ELASTYK class C2TE Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (29 ÷ 30) 	3.5 ÷ 5.0	4.0 ÷ 10.0
	<ul style="list-style-type: none"> ATLAS GEOFLEX class C2TE Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (26 ÷ 36) 	3.5 ÷ 5.0	4.0 ÷ 15.0
	<ul style="list-style-type: none"> ATLAS GEOFLEX WHITE class C2TE Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (26 ÷ 36) 	3.5 ÷ 5.0	4.0 ÷ 15.0
	<ul style="list-style-type: none"> ATLAS PLUS class C2TE S1 Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (26 ÷ 29) 	3.5 ÷ 5.0	4.0 ÷ 10.0
	<ul style="list-style-type: none"> ATLAS PLUS WHITE class C2TE S1 Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (26 ÷ 28) 	3.5 ÷ 5.0	4.0 ÷ 10.0
	<ul style="list-style-type: none"> ATLAS ULTRA GEOFLEX class C2TE S1 Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (27 ÷ 36) 	3.5 ÷ 5.0	4.0 ÷ 15.0
Ceramic tiles	<ul style="list-style-type: none"> Frost-resistant, façade ceramic tiles pressed or expanded clay tiles in accordance with EN 14411:2013 (until the end of the transition period for EN 14411:2016) class: Al_a, Al_b, Bl_a, Bl_b absorbability: up to 3% surface weight: not more than 40 kg/m² thickness: up to 15 mm 	-	≤ 15
Grouting mortars	<ul style="list-style-type: none"> ATLAS TIGHT GROUT/ATLAS ELASTIC GROUT Class CG 2 WA acc. to PN-EN 13888:2010 Dry mix to be mixed with water before use, weight ratio 100 : (28 ÷ 29) For joints 3 ÷ 7 mm wide 	cca. 0.5	3.0 ÷ 15.0
	<ul style="list-style-type: none"> ATLAS ARTIS GROUT Class CG 2 WA acc. to PN-EN 13888:2010 Dry mix to be mixed with water before use, weight ratio 100 : (21 ÷ 22) For joints 3 ÷ 7 mm wide 	cca. 0.5	3.0 ÷ 15.0
	<ul style="list-style-type: none"> ATLAS CERAMIC GROUT Class CG 2 WA acc. to PN-EN 13888:2010 Dry mix to be mixed with water before use, weight ratio 100 : (24 ÷ 27) For joints 3 ÷ 7 mm wide 	cca. 0.5	3.0 ÷ 15.0

Table 2

	Set components – type II	Consumption [kg/m ²]	Thickness [mm]
Method of material fixing to thermal insulation	Mechanically bonded system with additional adhesive bonding: Polystyrene boards fixed to the substrate with mechanical fixings and adhesive mortar, actual bonded surface not less than 60%		
Thermal insulation material	<ul style="list-style-type: none"> Polystyrene boards (EPS) acc. to the standard PN-EN 13163+A1:2015 (until transitional period for the norm PN-EN 13163+A2:2016) Surface dimensions: not more than 600 x 1200 mm Edges: straight, with no gaps Of minimum performance acc. to Attachment A	-	50 ÷ 250
Adhesive mortars	<ul style="list-style-type: none"> ATLAS STOPTER K-20 Dry mix to be mixed with water before use, weight ratio 100 : (20 ÷ 22) 	4.0 ÷ 5.0	-
	<ul style="list-style-type: none"> ATLAS HOTER U Dry mix to be mixed with water before use, weight ratio 100 : (20 ÷ 22) 	4.0 ÷ 5.0	-
	<ul style="list-style-type: none"> ATLAS GRAWIS S Dry mix to be mixed with water before use, weight ratio 100 : (22 ÷ 24) 	4.0 ÷ 5.0	-
	<ul style="list-style-type: none"> ATLAS HOTER S Dry mix to be mixed with water before use, weight ratio 100 : (20 ÷ 22) 	4.0 ÷ 5.0	-
Mechanical fixings	<ul style="list-style-type: none"> Mechanical fixings with steel pin of performance according to Attachment B, table B2 and B3 	-	-
Fiberglass mesh	<ul style="list-style-type: none"> ATLAS 150 Weave type: gauze Width 100 or 110 cm, length: ≥ 50 m Performance: acc. to Attachment B, table B1 	-	-
Adhesives for reinforced layer	<ul style="list-style-type: none"> ATLAS HOTER U2 Dry mix to be mixed with water before use, weight ratio 100 : (30 ÷ 32) 	3.0 ÷ 4.0	2.0 ÷ 5.0
Adhesives for ceramic tiles	<ul style="list-style-type: none"> ATLAS ELASTYK class C2TE Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (29 ÷ 30) 	3.5 ÷ 5.0	4.0 ÷ 10.0
	<ul style="list-style-type: none"> ATLAS GEOFLEX class C2TE Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (26 ÷ 36) 	3.5 ÷ 5.0	4.0 ÷ 15.0
	<ul style="list-style-type: none"> ATLAS GEOFLEX WHITE class C2TE Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (26 ÷ 36) 	3.5 ÷ 5.0	4.0 ÷ 15.0
	<ul style="list-style-type: none"> ATLAS PLUS class C2TE S1 Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (26 ÷ 29) 	3.5 ÷ 5.0	4.0 ÷ 10.0
	<ul style="list-style-type: none"> ATLAS PLUS WHITE class C2TE S1 Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (26 ÷ 28) 	3.5 ÷ 5.0	4.0 ÷ 10.0
	<ul style="list-style-type: none"> ATLAS ULTRA GEOFLEX class C2TE S1 Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (27 ÷ 36) 	3.5 ÷ 5.0	4.0 ÷ 15.0
Ceramic tiles	<ul style="list-style-type: none"> Frost-resistant, façade ceramic tiles pressed or expanded clay tiles in accordance with EN 14411:2013 	-	≤ 15

	(until the end of the transition period for EN 14411:2016) class: A ₁ , A ₁ b, B ₁ , B ₁ b absorbability: up to 6% surface weight: not more than 40 kg/m ² surface: not more than 1.0 m ² thickness: 3 ÷ 15 mm having an average coefficient of thermal expansion of $\alpha = 5.82 \cdot 10^{-6}$ (1/k), over the temperature range (-60 ÷ +90)°C		
Stone tiles	<ul style="list-style-type: none"> Frost-resistant, façade natural stone tiles acc. to PN-EN 14992+A1:2012 absorbability: up to 6% surface weight: not more than 40 kg/m ² surface: not more than 0.36 m ² thickness: 5 ÷ 20 mm		5 ÷ 20
Concrete slabs	<ul style="list-style-type: none"> Frost-resistant, façade concrete tiles acc. to PN-EN 14992+A1:2012 absorbability: up to 6% surface weight: not more than 40 kg/m ² surface: not more than 0.36 m ² thickness: 5 ÷ 20 mm		5 ÷ 20
Grouting mortars	<ul style="list-style-type: none"> ATLAS TIGHT GROUT/ATLAS ELASTIC GROUT Class CG 2 WA acc. to PN-EN 13888:2010 Dry mix to be mixed with water before use, weight ratio 100 : (28 ÷ 29) For joints 3 ÷ 7 mm wide	cca. 0.5	3.0 ÷ 15.0
	<ul style="list-style-type: none"> ATLAS ARTIS GROUT Class CG 2 WA acc. to PN-EN 13888:2010 Dry mix to be mixed with water before use, weight ratio 100 : (21 ÷ 22) For joints 3 ÷ 7 mm wide	cca. 0.5	3.0 ÷ 15.0
	<ul style="list-style-type: none"> ATLAS CERAMIC GROUT Class CG 2 WA acc. to PN-EN 13888:2010 Dry mix to be mixed with water before use, weight ratio 100 : (24 ÷ 27) For joints 3 ÷ 7 mm wide	cca. 0.5	3.0 ÷ 15.0

Table 3

	Set components – type III	Consumption [kg/m ²]	Thickness [mm]
Method of material fixing to thermal insulation	Mechanically bonded system with additional adhesive bonding: Polystyrene boards fixed to the substrate with mechanical fixings and adhesive mortar, actual bonded surface not less than 60%		
Thermal insulation material	<ul style="list-style-type: none"> Polystyrene boards (EPS) acc. to the standard PN-EN 13163+A1:2015 (until transitional period for the norm PN-EN 13163+A2:2016) Surface dimensions: not more than 600 x 1200 mm Edges: straight, with no gaps Of minimum performance acc. to Attachment A	-	50 ÷ 250
Adhesive mortars	<ul style="list-style-type: none"> ATLAS STOPTER K-20 Dry mix to be mixed with water before use, weight ratio 100 : (20 ÷ 22)	4.0 ÷ 5.0	-
	<ul style="list-style-type: none"> ATLAS HOTER U Dry mix to be mixed with water before use, weight ratio 100 : (20 ÷ 22)	4.0 ÷ 5.0	-
	<ul style="list-style-type: none"> ATLAS GRAWIS S Dry mix to be mixed with water before use, weight ratio 100 : (22 ÷ 24)	4.0 ÷ 5.0	-
	<ul style="list-style-type: none"> ATLAS HOTER S Dry mix to be mixed with water before use, weight ratio 100 : (20 ÷ 22)	4.0 ÷ 5.0	-
Mechanical fixings	<ul style="list-style-type: none"> Mechanical fixings with steel pin of performance according to Attachment B, table B2 and B3	-	-
Fiberglass mesh	<ul style="list-style-type: none"> ATLAS 150 Weave type: gauze	-	-

	Width 100 or 110 cm, length: ≥ 50 m Performance: acc. to Attachment B, table B1		
Adhesives for reinforced layer	<ul style="list-style-type: none"> ATLAS STOPTER K-20 Dry mix to be mixed with water before use, weight ratio 100 : (20 \div 22) 	3.0 \div 4.0	2.0 \div 5.0
Adhesives for ceramic tiles	<ul style="list-style-type: none"> ATLAS PLUS class C2TE S1 Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (26 \div 29) 	3.5 \div 5.0	4.0 \div 10.0
	<ul style="list-style-type: none"> ATLAS PLUS WHITE class C2TE S1 Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (26 \div 28) 	3.5 \div 5.0	4.0 \div 10.0
	<ul style="list-style-type: none"> ATLAS ULTRA GEOFLEX class C2TE S1 Acc. to PN-EN 12004+A1:2012 (until the end of the transition period for PN-EN 12004-1:2-17) Dry mix to be mixed with water before use, weight ratio 100 : (27 \div 36) 	3.5 \div 5.0	4.0 \div 15.0
Ceramic tiles	<ul style="list-style-type: none"> Frost-resistant, façade ceramic tiles pressed or expanded clay tiles in accordance with EN 14411:2013 (until the end of the transition period for EN 14411:2016) class: A_a, A_b, B_{1a}, B_{1b} absorbability: up to 6% surface weight: not more than 40 kg/m² surface: not more than 1.0 m² thickness: 3 \div 15 mm having an average coefficient of thermal expansion of $\alpha = 5.82 \cdot 10^{-6}$ (1/k), over the temperature range (-60 \div +90)°C 	-	≤ 15
Grouting mortars	<ul style="list-style-type: none"> ATLAS TIGHT GROUT/ATLAS ELASTIC GROUT Class CG 2 WA acc. to PN-EN 13888:2010 Dry mix to be mixed with water before use, weight ratio 100 : (28 \div 29) For joints 3 \div 7 mm wide 	cca. 0.5	3.0 \div 15.0
	<ul style="list-style-type: none"> ATLAS ARTIS GROUT Class CG 2 WA acc. to PN-EN 13888:2010 Dry mix to be mixed with water before use, weight ratio 100 : (21 \div 22) For joints 3 \div 7 mm wide 	cca. 0.5	3.0 \div 15.0
	<ul style="list-style-type: none"> ATLAS CERAMIC GROUT Class CG 2 WA acc. to PN-EN 13888:2010 Dry mix to be mixed with water before use, weight ratio 100 : (24 \div 27) For joints 3 \div 7 mm wide 	cca. 0.5	3.0 \div 15.0

2. INTENDED PRODUCT USE

2.1 Determination of intended use

The ATLAS CERAMIK set of products is intended for thermal insulation of external walls of buildings with no existing thermal insulation.

2.2. Range and conditions of use

The product set covered by this National Technical Assessment is intended for application on substrates made of masonry elements (bricks, blocks, stone, etc.) or concrete (cast on-site or in the

form of prefabricated elements), with or without a layer of plaster.

Thermal insulation systems are applied on non-load-bearing building elements and do not affect the structural stability of the walls to which they are attached but may enhance durability by providing increased protection against atmospheric conditions. They are not designed to ensure the airtightness of the building structure against air infiltration.

Before commencing the application of the thermal insulation system ATLAS CERAMIK, the condition of the substrate should always be assessed. Polystyrene boards should be adhered to the substrate in a staggered layout of vertical joints.

In the ATLAS CERAMIK system, polystyrene boards should be fixed to the substrate using mechanical fasteners with steel pins and adhesive mortar, as specified in Tables 1 + 3. The fasteners should penetrate the layer reinforced with glass fiber mesh and the thermal insulation layer up to the depth defined in the insulation design, depending on the type of fastener and substrate. The adhesive mortar used to attach the polystyrene boards to the substrate must cover at least 60% of the surface area of the boards. The installation of mechanical fasteners should begin no earlier than 3 days after the polystyrene boards are adhered to the substrate. The quantity and type of fasteners and their correct anchorage in the substrate should be determined in the thermal insulation system's technical documentation.

On the surface of the adhered polystyrene boards, a reinforced layer made of adhesive mortar, suitable for the given type, as per Tables 1 ÷ 3, with embedded glass fiber mesh, should be applied. The thickness of the reinforced layer should be 2.0 ± 5.0 mm. Embedding the reinforcing mesh and mechanically fixing the polystyrene boards should take place in a single working cycle.

On the hardened reinforced layer, cladding tiles should be adhered using adhesive mortar for tiles, as specified in Tables 1 ÷ 3, applied onto the reinforced layer. The thickness of the adhesive mortar layer should depend on the type and size of the tiles but should not be less than 4 mm. The adhesive mortar should be applied using a combined method, covering 100% of the substrate surface (reinforced layer) and the tile surface. Gaps between the tiles should be maintained according to the guidelines in Tables 1 ÷ 3 and the thickness (depth) adjusted to the thickness of the cladding tiles.

Expansion joints in ceramic cladding fields should be specified in the technical design, considering the geometry, exposure conditions, size, and color of the tiles, as well as the average thermal expansion coefficient $\alpha = 5.82 \times 10^{-6}$ (1/K) within the temperature range (-60 °C to +90 °C).

Expansion joints in stone and concrete cladding fields should also be specified in the technical design. The necessity for expansion joints is determined by the designer, depending on the geometry and exposure conditions, as well as the size and color of the cladding tiles.

The ATLAS CERAMIK thermal insulation system is unsuitable for non-load-bearing substrates (with a minimum strength class of A2 – s3, d0 according to PN-EN 13501-1+A1:2010), which are classified

according to PN-B-02867:2013 in terms of spreading behavior, excluding flammable construction elements.

The ATLAS CERAMIK thermal insulation system applied to non-combustible substrates (with at least class A2 – s3, d0 reaction to fire according to PN-EN 13501-1+A1:2010) has been classified as class B – s1, d0 for reaction to fire according to PN-EN 13501-1:2019, and as non-flammable and non-dripping based on the ordinance of the Minister of Infrastructure dated April 12, 2002, on the technical conditions that buildings and their locations must meet (Journal of Laws of 2019, item 1065, with later amendments), as well as non-susceptible to fire exposure.

The application of the set of products covered by this National Technical Assessment should comply with technical designs developed for specific structures. The design should take into account:

- Polish standards (including PN-EN ISO 13788:2013) and construction regulations, especially the ordinance of the Minister of Infrastructure dated April 12, 2002, on the technical conditions that buildings and their locations must meet (Journal of Laws of 2019, item 1065, with later amendments),
- The provisions of this National Technical Assessment,
- Performance characteristics of the thermal insulation systems, particularly the diffusion resistance values specified in Tables 4, 5, and 6,
- The adhesion strength of polystyrene to the substrate and the critical adhesion strength of the thermal insulation system to the substrate (where applicable),
- ITB Instruction No. 447/2009,

or determine at least:

- The method of substrate preparation,
- The type and thickness of polystyrene boards,
- The type, quantity, and arrangement of mechanical fasteners,
- The method of processing specific parts of the façade (window and door recesses, balconies, plinths, expansion joints, etc.).

The insulation of buildings using the ATLAS CERAMIK system should be carried out by specialized companies, following the manufacturer's guidelines. The ambient and substrate temperature during the application and setting of the products included in the ATLAS CERAMIK system should range from +5 to +35°C for adhesive mortars such as ATLAS HOTER U2, ATLAS GEOFLEX, ATLAS GEOFLEX BIAŁY, and ATLAS ULTRA GEOFLEX, and from +5 to +30°C for all other products.

3. PRODUCT PERFORMANCES AND METHODS USED FOR THEIR ASSESMENT

Performances of thermal insulation sets ATLAS CERAMIK and methods of their assessment are given in tables 4 ÷ 11.

Table 4. Thermal insulation system ATLAS CERAMIK type I.

Item	Essential characteristics	Performance	Method of assessment
1	2	3	4
1	Water absorption (capillary action) of reinforced layer, kg/m ² : <ul style="list-style-type: none"> • after 1h • after 24 h 	<p>< 0.10</p> <p>< 0.35</p>	EAD 040083-00-0404 (previous ETAG 004)
2	Water absorption (capillary action) of top coat, kg/m ² : <ul style="list-style-type: none"> • after 3 minutes • after 1 h • after 24 h 	<p>< 1.0</p> <p>< 1.0</p> <p>< 1.0</p>	EAD 040287-00-0404
3	Frost resistance of the top coat	No damage: cracking, scores, chipping of grouts and ceramic tiles	EAD 040083-00-0404 (previous ETAG 004)
4	Adhesion of the top coat to the polystyrene, MPa (laboratory conditions)	≥ 0,08	EAD 040083-00-0404 (previous ETAG 004)
5	Adhesion of the top coat to the polystyrene, MPa (after ageing)	≥ 0,08	
6	Adhesion of the top coat to the polystyrene, MPa (after freeze-thaw cycles)	≥ 0,08	
7	Impact resistance, after ageing, category	II	
8	Relative diffusion resistance, m, with joints in the cladding surface: <ul style="list-style-type: none"> - < 5% - 5% - 10% - 15% 	<p>≤ value resulting from diffusion resistance of ceramic tiles</p> <p>≤ 2.2</p> <p>≤ 1.5</p> <p>≤ 1.0</p>	EAD 040287-00-0404
9	Thermal insulation (thermal resistance and heat transfer coefficient)	acc. to Attachment D	EAD 040083-00-0404
10	Adhesive mortar adhesion to concrete, thermal insulation material and ceramic tiles	acc. to Tables 8, 9 &10	acc. to Tables 8, 9 &10
11*	Fire classification <ul style="list-style-type: none"> - in the extent of fire spread through external walls when exposed to fire from the outer side - in the extent of reaction to fire 	<p>Fire retardant</p> <p>B – s1, d0</p>	<p>PN-B-02867:2013</p> <p>PN-EN 13501-1:2019</p>
12	Wind load resistance	Acc. to Table 11	EAD 040083-00-0404 (previous ETAG 004)

* Fire classification refers to thermal insulation sets used on non-flammable substrates (at least reaction to fire class A2-s3,d0 acc. to PN-EN 13501-1:2010)

Table 5. Thermal insulation system ATLAS CERAMIK type II.

Item	Essential characteristics	Performance	Method of assessment
1	2	3	4
1	Water absorption (capillary action) of reinforced layer, kg/m ² : <ul style="list-style-type: none"> • after 1h • after 24 h 	<p>< 0.10</p> <p>< 0.35</p>	EAD 040083-00-0404 (previous ETAG 004)

2	Water absorption (capillary action) of top coat, kg/m ² : <ul style="list-style-type: none"> • with ceramic cladding <ul style="list-style-type: none"> - after 3 minutes < 1.0 - after 1 h < 1.0 - after 24 h < 1.0 • with stone cladding <ul style="list-style-type: none"> - after 3 minutes < 1.0 - after 1 h < 1.0 - after 24 h < 2.0 • with concrete cladding <ul style="list-style-type: none"> - after 3 minutes < 1.0 - after 1 h < 1.0 - after 24 h < 1.0 		EAD 040287-00-0404
3	Adhesion of the top coat to the polystyrene, MPa (laboratory conditions)	≥ 0,08	EAD 040287-00-0404
4	Frost resistance of the top coat, evaluation <ul style="list-style-type: none"> - change of appearance - top coat adhesions, MPa 	No damage: cracking, scores, chipping of grouts and cladding ≥ 0,08	EAD 040287-00-0404 Annex E.2
5	Resistance to hydrothermal cycles action, evaluation <ul style="list-style-type: none"> - change of appearance - top coat adhesions, MPa 	No damage: cracking, scores, chipping of grouts and cladding ≥ 0,08	EAD 040287-00-0404
6	Resistance to hard and soft body impact	Category I	EAD 040287-00-0404
7	Relative diffusion resistance, m, with joints in the cladding surface: <ul style="list-style-type: none"> - < 5% - 5% - 10% - 15% 	≤ value resulting from diffusion resistance of ceramic tiles ≤ 2.2 ≤ 1.5 ≤ 1.0	EAD 040287-00-0404
8	Thermal insulation (thermal resistance and heat transfer coefficient)	acc. to Attachment D	EAD 040287-00-0404
9	Dead load resistance	Acc. to Table 7	EAD 040287-00-0404
10	Adhesive mortar adhesion to concrete, thermal insulation material and cladding tiles	acc. to Tables 8, 9 & 10	acc. to Tables 8, 9 & 10
11*	Fire classification <ul style="list-style-type: none"> - in the extent of fire spread through external walls when exposed to fire from the outer side - in the extent of reaction to fire 	Fire retardant B – s1, d0	PN-B-02867:2013 PN-EN 13501-1:2019
12	Wind load resistance	Acc. to Table 11	EAD 040083-00-0404 (previous ETAG 004)
* Fire classification refers to thermal insulation sets used on non-flammable substrates (at least reaction to fire class A2-s3,d0 acc. to PN-EN 13501-1:2010)			

Table 6. Thermal insulation system ATLAS CERAMIK type III.

Item	Essential characteristics	Performance	Method of assessment
1	2	3	4
1	Water absorption (capillary action) of reinforced layer, kg/m ² : <ul style="list-style-type: none"> • after 1h 	< 0.10	EAD 040083-00-0404

	<ul style="list-style-type: none"> after 24 h 	< 0.35	(previous ETAG 004)
2	Water absorption (capillary action) of top coat, kg/m ² : <ul style="list-style-type: none"> after 3 minutes after 1 h after 24 h 	<ul style="list-style-type: none"> < 1.0 < 1.0 < 1.0 	EAD 040287-00-0404
3	Adhesion of the top coat to the polystyrene, MPa (laboratory conditions)	≥ 0,08	EAD 040287-00-0404
4	Frost resistance of the top coat, evaluation <ul style="list-style-type: none"> change of appearance top coat adhesions, MPa 	No damage: cracking, scores, chipping of grouts and cladding ≥ 0,08	EAD 040287-00-0404 Annex E.2
5	Resistance to hydrothermal cycles action, evaluation <ul style="list-style-type: none"> change of appearance top coat adhesions, MPa 	No damage: cracking, scores, chipping of grouts and cladding ≥ 0,08	EAD 040287-00-0404
6	Resistance to hard and soft body impact	Category I	EAD 040287-00-0404
7	Relative diffusion resistance, m, with joints in the cladding surface: <ul style="list-style-type: none"> < 5% 5% 10% 15% 	<ul style="list-style-type: none"> ≤ value resulting from diffusion resistance of ceramic tiles ≤ 2.2 ≤ 1.5 ≤ 1.0 	EAD 040287-00-0404
8	Thermal insulation (thermal resistance and heat transfer coefficient)	acc. to Attachment D	EAD 040287-00-0404
9	Dead load resistance	Acc. to Table 7	EAD 040287-00-0404
10	Adhesive mortar adhesion to concrete, thermal insulation material and cladding tiles	acc. to Tables 8, 9 &10	acc. to Tables 8, 9 &10
11*	Fire classification <ul style="list-style-type: none"> in the extent of fire spread through external walls when exposed to fire from the outer side in the extent of reaction to fire 	<ul style="list-style-type: none"> Fire retardant B – s1, d0 	<ul style="list-style-type: none"> PN-B-02867:2013 PN-EN 13501-1:2019
12	Wind load resistance	Acc. to Table 11	EAD 040083-00-0404 (previous ETAG 004)
<p>* Fire classification refers to thermal insulation sets used on non-flammable substrates (at least reaction to fire class A2-s3,d0 acc. to PN-EN 13501-1:2010)</p>			

Table 7. Dead load resistance .

Item	Load, N	ATLAS CERAMIK type II with stone cladding	
		Average displacement, mm	Displacement difference, mm
1	2	3	4
1	0	0.05	0.05
2	37.5	0.67	0.62

3	75.0	1.14	0.47
4	112.5	1.55	0.41
5	150.0	2.17	0.62
Item	Load, N	ATLAS CERAMIK type II with concrete cladding	
		Average displacement, mm	Displacement difference, mm
1	2	3	4
1	0	0	0
2	37.5	0.47	0.47
3	75.0	0.96	0.49
4	112.5	1.69	0.73
5	150.0	2.28	0.59
Item	Load, N	ATLAS CERAMIK type III	
		Average displacement, mm	Displacement difference, mm
1	2	3	4
1	0	0	0
2	37.5	0.25	0.25
3	75.0	0.76	0.51
4	112.5	1.04	0.28
5	150.0	1.57	0.53

Table 8. Adhesion of adhesive mortars ATLAS STOPTER K-20, ATLAS HOTER U, ATLAS GRAWIS S, HOTER S and ATLAS HOTER U2 to concrete and thermal insulation material.

Item	Properties	Performance					Method of assessment
		ATLAS STOPTER K-20	ATLAS HOTER U	ATLAS GRAWIS S	ATLAS HOTER S	ATLAS HOTER U2	
1	2	3	4	5	6	7	8

1	Adhesion of mortar to concrete, MPa:						EAD 040083-00-0404 (previous ETAG 004)
	- in air-dry condition after 28 days	≥ 0.25	≥ 0.25	≥ 0.25	≥ 0.25	≥ 0.25	
	- after 48 h of immersion in water and 2 h of drying	≥ 0.08	≥ 0.08	≥ 0.08	≥ 0.08	≥ 0.08	
- after 48 h of immersion in water and 7 days of drying	≥ 0.25	≥ 0.25	≥ 0.25	≥ 0.25	≥ 0.25		
2	Adhesion of mortar to EPS, MPa:						
	- in air-dry condition after 28 days	≥ 0.08	≥ 0.08	≥ 0.08	≥ 0.08	≥ 0.08	
	- after 48 h of immersion in water and 2 h of drying	≥ 0.03	≥ 0.03	≥ 0.03	≥ 0.03	≥ 0.03	
	- after 48 h of immersion in water and 7 days of drying	≥ 0.08	≥ 0.08	≥ 0.08	≥ 0.08	≥ 0.08	

Table 9. Adhesion of adhesive mortars ATLAS ELASTYK, ATLAS PLUS, ATLAS PLUS WHITE to cladding tiles.

Item	Properties	Performance			Method of assessment
		ATLAS ELASTYK	ATLAS PLUS	ATLAS PLUS WHITE	
1	2	3	4	5	6
1	Adhesion of mortar to cladding tiles, MPa:				PN-EN 12004+A1:2012
	- initial	≥ 1.0	≥ 1.0	≥ 1.0	
	- after thermal ageing	≥ 1.0	≥ 1.0	≥ 1.0	
	- after immersion in water	≥ 1.0	≥ 1.0	≥ 1.0	
	- after freeze-thaw cycles	≥ 1.0	≥ 1.0	≥ 1.0	

Table 10. Adhesion of adhesive mortars ATLAS GEOFLEX, ATLAS GEOFLEX WHITE, ATLAS ULTRA GEOFLEX to cladding tiles.

Item	Properties	Performance			Method of assessment
		ATLAS GEOFLEX	ATLAS GEOFLEX WHITE	ATLAS ULTRA GEOFLEX	
1	2	3	4	5	6
1	Adhesion of mortar to cladding tiles, MPa:				PN-EN 12004+A1:2012
	- initial	≥ 1.0	≥ 1.0	≥ 1.0	
	- after thermal ageing	≥ 1.0	≥ 1.0	≥ 1.0	
	- after immersion in water	≥ 1.0	≥ 1.0	≥ 1.0	
	- after freeze-thaw cycles	≥ 1.0	≥ 1.0	≥ 1.0	

Table 11. Wind load resistance .

Applies to fixings in accordance to Attachment B (fixing through mesh)				
Fixing plate diameter			≥ 60 mm	
EPS characteristics	Board thickness		≥ 50 mm	
	Tensile strength perpendicular to faces		≥ 100 kPa	
Destructive force, kN	Fixings not located at board edges (fixings pulling)	R_p	Minimum: Average:	1.26 1.35
	Fixings located at board edges (static impact through the foam block; scheme J.2.2 acc. To EAD 040287-00-0404))	R_p	Minimum: Average:	1.14 1.17

4. PACKAGING, TRANSPORTATION, STORAGE AND PRODUCT LABELLING

The products included in the ATLAS CERAMIK system for external wall insulation can be transported using any means of transport, provided the packaging is protected from mechanical damage in accordance with the manufacturer's instructions.

The products included in the ATLAS CERAMIK system should be stored in dry, ventilated areas, away from heating devices, in a manner ensuring safety and preventing changes in their technical properties.

The method of marking products with a construction product label should comply with the Regulation of the Minister of Infrastructure and Construction dated November 17, 2016, on the declaration of performance of construction products and the method of marking them with a construction product label (Journal of Laws of 2016, item 1966, as amended).

The construction product label should include the following information:

- The last two digits of the year in which the construction product label was first affixed to the construction product,
- The name and address of the manufacturer or a unique identification mark that allows the manufacturer to be clearly identified,
- The name and address of the manufacturer,
- The name and designation of the type of construction product.
- The number and year of issuance of the national technical assessment, under which the performance characteristics have been declared (ITB-KOT-2018/0385 edition 4),
- The number of the national declaration of performance,

- The level or class of the declared performance characteristics,
- The name of the certification body involved in the assessment and verification of the constancy of performance characteristics of the construction product,
- The website address of the manufacturer, if the national declaration of performance is made available there.

Along with the national declaration of performance, the safety data sheet and/or information on hazardous substances contained in the construction product, as specified in Articles 31 to 33 of Regulation (EC) No. 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) and establishing the European Chemicals Agency, should be delivered or made available, as applicable.

Furthermore, the labeling of the construction product, if it contains a hazardous mixture, must comply with the requirements of Regulation (EC) No. 1272/2008 of the European Parliament and of the Council on the classification, labeling, and packaging of substances and mixtures (CLP), amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No. 1907/2006.

4. ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

5.1. National System for Assessment and Verification of Constancy of Performance

In accordance with the regulation of the Minister of Infrastructure and Construction of November 17, 2016, concerning the method of declaring the performance characteristics of construction products and the manner of marking them with a construction mark (Journal of Laws of 2016, item 1966, as amended), the assessment and verification systems of constancy of performance are applied as per Table 12.

Table 12

Group of Construction Products	Intended Use of Construction Products	Classes	National System for Assessment and Verification of Constancy of Performance
Composite insulation systems/systems with plaster coatings or other types of facade layers	- For applications subject to fire reaction requirements	A1*, A2*, B*, C*	1
		A1**, A2**, B**, C**, D, E, (A1 to E)***, F	2+
	- For other applications	-	2+

Notes:

- * Products (materials) where a precise determination of fire reaction at the production stage is not possible due to limitations such as the presence of organic raw materials affecting combustibility or halting flame spread.
- ** Products (materials) where the fire reaction class cannot be determined at the production stage but is later assessed based on additional components affecting combustibility or flame spread.

- *** Products (materials) where an appropriate legal basis exists (a decision by the Commission) enabling fire reaction classification without tests.

5.2. Test of type

Performance, assessed in point 3, from the test of product type until change of raw materials, components, production lines or processing plant occurs.

5.3. Factory production control

The manufacturer should have an implemented factory production control system in the production facility. All elements of this system, requirements, and provisions adopted by the manufacturer should be documented systematically in the form of rules and procedures, including the records of conducted tests. Factory production control should be adapted to the production technology and ensure the maintenance of the declared performance characteristics in serial production.

Factory production control includes the specification and verification of raw materials and components, monitoring and testing during the manufacturing process, and control testing (as per section 5.4) conducted by the manufacturer according to an established testing plan and in accordance with the rules and procedures specified in the factory production control documentation.

The results of production control should be systematically recorded. The registry entries should confirm that the products meet the criteria for assessment and verification of constancy of performance. Each product or batch of products and the associated production details must be fully traceable and reproducible.

5.4. Control tests

5.4.1 Test program. The test program includes:

- a) ongoing tests,
- b) periodic tests.

5.4.2. Ongoing tests. Ongoing tests include the verification of:

a) Adhesive mortars and jointing mortars in terms of:

- external appearance,
- bulk or volumetric density, according to Annex C.

b) Glass fiber meshes in terms of:

- mesh dimensions in light,
- mesh width,
- surface mass.

5.4.3. Periodic tests. Periodic tests include the verification of:

- a) Adhesive mortars **ATLAS STOPTER K-20, ATLAS HOTER U, ATLAS GRAWIS S, ATLAS HOTER S,** and **ATLAS HOTER U2** in terms of:
- ash content,
 - adhesion to concrete and polystyrene.
- b) Adhesive mortars **ATLAS ELASTYK, ATLAS GEOFLEX, ATLAS PLUS, ATLAS PLUS WHITE, ATLAS ULTRA GEOFLEX,** and **ATLAS GEOFLEX WHITE** in terms of:
- Ash content,
 - Adhesion to ceramic tiles.
- c) Grouting mortars in terms of ash content.
- d) Glass fiber meshes in terms of:
- Ash content,
 - Breaking force and relative elongation, along the warp and weft,
- e) Insulation systems in terms of the degree of fire spread through the external walls from the outer side.

5.5. Frequency of tests

Ongoing tests should be conducted in accordance with the established test plan, but not less frequently than for each product batch. The batch size should be specified in the documentation of the in-house production control system.

Periodic tests should be performed no less frequently than once every 3 years.

6. INSTRUCTION

6.1. The National Technical Assessment ITB-KOT-2018/0385 Edition 4 replaces the National Technical Assessment ITB-KOT-2018/0385 Edition 3.

6.2. The National Technical Assessment ITB-KOT-2018/0385 Edition 4 is a positive assessment of the functional properties of these essential characteristics of the product set for external wall insulation systems with the ATLAS CERAMIK system. These, in accordance with the intended use, as specified by the provisions of the Assessment, have an impact on meeting the basic requirements for building structures where the product will be applied.

6.3. The National Technical Assessment ITB-KOT-2018/0385 Edition 4 is not a document authorizing the marking of the construction product with a construction mark.

In accordance with the Act of April 16, 2004, on construction products (Journal of Laws 2021, item

1213), the product set covered by this National Technical Assessment can be placed on the market or made available on the domestic market if the manufacturer has carried out the evaluation and verification of the consistency of performance, prepared a national declaration of performance in accordance with the National Technical Assessment ITB-KOT-2018/0385 Edition 4, and marked the products with a construction mark in compliance with the applicable regulations.

6.4 The National Technical Assessment ITB-KOT-2018/0385 Edition 4 does not violate the rights arising from regulations on the protection of industrial property, particularly the Act of June 30, 2000, on Industrial Property Rights (Journal of Laws 2021, item 324). Ensuring these rights belongs to the obligations of those using this National Technical Assessment issued by ITB.

6.5. The ITB issuing the National Technical Assessment does not bear responsibility for any violations of exclusive or acquired rights.

6.6. The National Technical Assessment does not exempt the manufacturer of the products from responsibility for their proper quality, nor does it exempt the contractors of construction works from responsibility for their correct application.

6.7. The validity of the National Technical Assessment may be extended for additional periods, not exceeding 5 years each.

7.1. LIST OF DOCUMENTS USED IN THE PROCEDURE

7.2. Reports, test reports, assessments, classifications.

1. Fire Reaction Classification Report under PN-EN 13501-2:2019, no. 01141.2/20/R114/NZP (extension 011414.1/19/R105NZP), Fire Testing Laboratory ITB.
2. Classification report on the degree of fire spread under PN-B-02867:2013, no. 01141.3/20/R114/NZP (extension 011414/20/R109NZP), Fire Testing Laboratory ITB.
3. Test Report no. LZM00-01141/20/R110NZM, Department of Building Materials Engineering ITB.
4. Opinion no. NZM.413.283.202.02059.02.MW, Department of Building Materials Engineering ITB.
5. Test Report no. LZM00-01141/19/R94NZM, Department of Building Materials Engineering ITB.
6. Classification report on the degree of fire spread under PN-B-02867:2013-06, no. 011414/20/R109NZP (extension 011417/R76NZP), Fire Testing Laboratory ITB.
7. Test Report no. LZM00-01141/17/R79NZM, Department of Building Materials Engineering ITB.
8. Classification report on the degree of fire spread under PN-B-02867:2013-06, no. 011417/R76NZP, Fire Testing Laboratory ITB.

9. Test Report no. LZK00-01141/17/R77NZK, Department of Structural and Geotechnical Engineering ITB.
10. Test Report no. LZM00-01141/17/R74NZM/B, Department of Building Materials Engineering ITB.
11. Expert Opinion no. 011417/R74NZM, Assessment of the suitability of the ATLAS CERAMIK external insulation system, Department of Building Materials Engineering ITB.
12. Test Reports no. MB/01/2017 and MB/51/2016, Laboratory for Building Materials and Building Physics, Technical University of Łódź.
13. Test Reports no. W-KP030-IDENT, W-KP027-IDENT, W-FU024-IDENT, ATLAS R&D Laboratory.
14. Test Reports no. W-KP006-IDENT, W-KP026-IDENT, W-FU001-IDENT, W-FU005-IDENT, W-KP003-IDENT, W-KP007-IDENT, ATLAS R&D Laboratory.
15. Expert Opinion on the application of new ATLAS ETICS mesh types no. NZM-047117.02/DG/16, Department of Building Materials Engineering ITB.
16. Test Report No. LM04-1141/16/R59NM, Department of Building Materials Engineering ITB.
17. Test Reports No. MB/11/2016 and MB/46/2016, Laboratory of Building Materials and Building Physics, Technical University of Łódź.
18. Test Reports No. KOO08-10-2015-S, KOO07-2015-08-Z, KOO02-09-2015-Z, KOO01-2015-07-Z, KOO04-09-2015-Z, KOO03-2015-08-Z, MESH 150/165-2016, ATLAS R&D Laboratory.
19. Test Reports No. LM01-01141/15/R39NM, LM02-01141/15/R39NM, LM03-01141/15/R39NM, LM04-01141/15/R39NM, LM05-01141/15/R39NM, LM07-01141/15/R39NM, LM09-01141/15/R39NM, LM10-01141/15/R39NM, LM11-01141/15/R39NM, Department of Building Materials Engineering ITB.
20. Test Certificate DD 4047/1A/2012, DD 4047/2A/2012, KIWA MPA Bautest GmbH, Dresden Branch.
21. Laboratory Tests of Thermal Insulation Systems ATLAS, 1141/12/R14NM (LM00-1141/12/R14NM), Department of Building Materials ITB.
22. Tests of Products Included in the ATLAS Thermal Insulation Systems. Parts 1 and 2, NM-3/03934/A/09, Department of Building Materials ITB.
23. Tests of Products Included in the ATLAS Thermal Insulation Systems with Ceramic Coating - for Technical Approval, No. NM-3/03937/A/2009, Department of Building Materials ITB.

24. Test Report: Glass Fibre Mesh Fabrics, 31.3.2022, Saint-Gobain ADFORS CZ, Sokolovska 106, 570 01 Litomyšl.

7.3. Standards and related documents.

PN-B-02867:2013 *Fire protection of buildings. Method for testing the spread of fire through external walls and principles of classification.*

PN-EN 1469:2005 *Products of natural stone. Slabs for cladding. Requirements.*

PN-EN 12004+A1:2012 *Adhesives for tiles. Requirements, conformity assessment, classification, and designation.*

PN-EN 12004-1:2017 *Adhesives for ceramic tiles. Part 1: Requirements, assessment, and verification of constancy of performance, classification, and marking.*

PN-EN 13163+A1:2015 *Thermal insulation products for buildings. Factory-made products of expanded polystyrene (EPS). Specification.*

PN-EN 13163+A2:2016 *Thermal insulation products for buildings. Factory-made products of expanded polystyrene (EPS). Specification.*

PN-EN 13501-1:2019 *Fire classification of construction products and building elements. Part 1: Classification based on fire reaction tests.*

PN-EN 13788:2013 *Hygrothermal performance of building components and building elements. Internal surface temperature to avoid critical surface humidity and interstitial condensation. Calculation methods.*

PN-EN 13888:2010 *Grouts for tiles. Requirements, conformity assessment, classification, and designation.*

PN-EN 14411:2013 *Ceramic tiles. Definitions, classification, characteristics, conformity assessment, and marking.*

PN-EN 14411:2016 *Ceramic tiles. Definitions, classification, characteristics, assessment, and verification of constancy of performance, and marking.*

PN-EN 14992+A1:2012 *Precast concrete products. Wall elements.*

EAD 040287-00-0404 *Kits for external thermal insulation composite system (ETICS) with panels as thermal insulation and discontinuous claddings as exterior skin.*

EAD 330196-01-0604 *Plastic anchors made of virgin or non-virgin material for fixing of external thermal insulation composite systems with rendering.*

EAD 040083-00-0404 *External Thermal Insulation Composite Systems (ETICS) with renderings.*

ETAG 004 *External Thermal Insulation Composite Systems (ETICS) with renderings.*

ETAG 014 *Plastic anchors for fixing of External Thermal Insulation Composite Systems with Rendering.*

ETA-07/0221 *KOELNER KI-10N and KI-10NS Plastic anchors with metal pins for hammering and*

screwing, designed for fixing insulation layers in external thermal insulation systems to concrete and masonry substrates.

ETA-07/0291 KOELNER KI-10, KOELNER KI-10PA, and KOELNER KI-10M Plastic anchors for fixing insulation layers in external thermal insulation systems to concrete and masonry substrates.

ETA-11/0144 KOELNER TFix-8S and TFix-8ST Screwed-in anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry.

ETA-07/0336 KOELNER TFix-8M Nailed-in plastic anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry.

ETA-04/0023 Ejothem STR U, Ejothem STR U 2G, and Ejothem SDK U Screwed-in anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry.

ETA-05/0009 Ejothem NT U and Ejothem NK U Nailed-in plastic anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry.

ETA-04/0064 Ejothem STR U, Ejothem STR U 2G, and Ejothem SDK U Screwed-in anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry.

ETA-03/0019 Fischer nailed-in anchor TERMOZ 8 N, TERMOZ 8 NZ, and WS 8 N Nailed-in plastic anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry.

ETA-09/0171 Fischer Termoz PN 8 Nailed-in plastic anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry.

Instrukcja ITB Nr 447/2009 Comprehensive thermal insulation system for external walls of buildings (ETICS).

Design and implementation principles.

ITB-KOT-2018/0385 wydanie 3 Set of products for the execution of external wall thermal insulation systems with the ATLAS CERAMIK system.

ATTACHMENTS

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Attachment A

Table A1. Properties of polystyrene boards (EPS)

Factory-made polystyrene boards (EPS) according to norm PN-EN 13163+A1:2015 (until transition period for norm PN-EN 13163+A2:2016)		
Description, properties and assessment methods		
Reaction to fire PN-EN 13501-1+A1:2010		Class E
Thermal resistance (m²K)/W		Set at CE marking
Thickness PN-EN 823:2013		EPS-EN 13163 – T1
Length PN-EN 822:2013		EPS-EN 13163 – L2
Width PN-EN 824:2013		EPS-EN 13163 – W2
Squareness PN-EN 824:2013		EPS-EN 13163 – S5
Flatness PN-EN 825:2013		EPS-EN 13163 – P5
Surface condition		Cut surfaces (homogenous and with no “coating”)
Dimensions stability		EPS-EN 13163 – DS(N)2
- Laboratory conditions PN-EN 1603:2013 - Set conditions of temperature and humidity PN-EN 1604:2013		EPS-EN 13163 – DS(70,-)2
Water vapour diffusive resistance coefficient (μ) PN-EN 12086:2013		20 to 70
Tensile strength perpendicular to faces, in dry conditions PN-EN 1607:2013		EPS-EN 13163 – TR100
Bending strength, kPa PN-EN 12089:2013		≥ 115
Shear strength, kPa PN-EN 12090:2013	after 7 days in temp. +70 +/- 2°C and relative humidity 95 +/- 5%	≥ 15

	after 7 days in temp. +70 +/- 2°C and relative humidity 95 +/- 5%	≥ 15
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Attachment B

Table B1. Properties of fiberglass mesh ATLAS 150

Item	Properties	Requirements		Test methods
		3	4	
1	2	3	4	5
1	Width, m	1.0 or 1.1 ± 1 %		EAD 040083-00-0404
2	Clear mesh size, mm	(4.5 X 5.0) ± 0.5		
3	Mass per unit area, g/m ²	150 (- 3 / + 10 %)		
4	Ash content at 625 °C, %	80.1 ± 5%		
5	Breaking force along warp and weft, N/mm, tested on samples stored for 28 days in: - laboratory conditions - alkaline solution (1g NaOH + 4g KOH+ 0.5g Ca(OH) ₂ / 1 dm ³)	≥ 35		
		≥ 20 ¹⁾		
6	Relative elongation along warp and weft, at breaking force, %, tested on samples stored for 28 days in: - laboratory conditions - alkaline solution (1g NaOH + 4g KOH+ 0.5g Ca(OH) / 1 dm ³)	≤ 4.5		
		≤ 3.0		

¹⁾ minimum 50 % of initial strength (sample stored under laboratory conditions) and not less than 20 N/mm

Table B2. Mechanical fixings with steel pin for thermal insulation systems used in ATLAS CERAMIK system

Item	Commercial fixing name ¹⁾	Identification features and characteristic pull-out load of the fixing
1	2	3
1	Koelner KI-10N and KI-10NS	ETA-07/0221
2	Koelner KI-10, KI-10PA	ETA-07/0291
3	Koelner TFIX-8S and TFIX-8ST	ETA-11/0144
4	Koelner TFIX-8M	ETA-07/0336
5	ejotharm STR U	ETA-04/0023
6	ejotharm NT U	ETA-05/0009
7	Ejotharm SDM-T plus, SDF-K plus, SDF-S plus	ETA-04/0064
8	Fisher TERMOZ 8N and 8 NZ	ETA-03/0019
9	Fisher TERMOZ PN8	ETA-09/0171

¹⁾ or other mechanical fixings placed on the market in accordance with the provisions in force and the intended use, meeting the requirements of Table B3

Table B3. Properties of mechanical fixings used in ATLAS CERAMIK system

Item	Properties	Requirement	Test methods
1	2	3	EAD 330196-01-0604 (previous ETAG 014)
1	Diameter of the disc, mm	≥ 60	
2	Destructive load of the disc, kN	≥ 1.23	
3	Disc stiffness, kN/mm	≥ 0.50	
4	Pull-out resistance from the substrate, kN	acc. to KOT or ETA	

Attachment C.**Table C1.** Identification properties of adhesive mortars ATLAS STOPTER K-20, ATLAS HOTER U and ATLAS HOTER U2

Item	Properties	Requirements			Test methods
		ATLAS STOPTER K-20	ATLAS HOTER U	ATLAS HOTER U2	
1	2	3	4	5	6
1	External appearance	dry mix, homogeneous, without lumps, homogeneous mass without delamination and lumps is created after processing with water			EAD 040083-00-0404 (previous ETAG 004)
2	Bulk density, g/cm ³	1.4 ± 10 %	1.4 ± 10 %	1.4 ± 10 %	
3	Ash content at 450°C, %	99.8 (-0.5/+0.1)	97.6 ± 0.5	98.1 ± 0.5	
4	Resistance to the shrinkage crack formation	no cracks in a layer of thickness up to 8 mm			1)
1) metal mould of wedge shape (wedge length 160 mm, height 8 mm) is filled with mortar; the test result consists in visual evaluation of cracks after 14 days keep in laboratory conditions					

Table C2. Identification properties of adhesive mortars ATLAS GRAWIS S and ATLAS HOTER S

Item	Properties	Requirements		Test methods
		ATLAS GRAWIS S	ATLAS HOTER S	
1	2	3	4	5
1	External appearance	dry mix, homogeneous, without lumps, homogeneous mass without delamination and lumps is created after processing with water		EAD 040083-00-0404 (previous ETAG 004)
2	Bulk density, g/cm ³	1.40 ± 10 %	1.4 ± 10 %	
3	Ash content at 450°C, %	99.2 (-0.4/+0.2)	99.0 (-0.4/+0.2)	
4	Resistance to the shrinkage crack formation	no cracks in a layer of thickness up to 8 mm		1)
1) metal mould of wedge shape (wedge length 160 mm, height 8 mm) is filled with mortar; the test result consists in visual evaluation of cracks after 14 days keep in laboratory conditions				

Table C3. Identification properties of adhesive mortars ATLAS ELASTYK and ATLAS GEOFLEX

Item	Properties	Requirements		Test methods
		ATLAS ELASTYK	ATLAS GEOFLEX	
1	2	3	4	5
1	External appearance	dry mix, homogeneous, without lumps, homogeneous mass without delamination and lumps is created after processing with water		EAD 040083-00-0404 (previous ETAG 004)
2	Bulk density, g/cm ³	1.6 ± 10 %	1.6 ± 10 %	
3	Ash content at 450°C, %	98.6 +/- 0.5	98.4 +/- 0.5	

Table C4. Identification properties of adhesive mortars ATLAS PLUS and ATLAS PLUS WHITE

Item	Properties	Requirements		Test methods
		ATLAS PLUS	ATLAS PLUS WHITE	
1	2	3	4	5
1	External appearance	dry mix, homogeneous, without lumps, homogeneous mass without delamination and lumps is created after processing with water		EAD 040083-00-0404 (previous ETAG 004)
2	Bulk density, g/cm ³	1.6 ± 10 %	1.6 ± 10 %	
3	Ash content at 450°C, %	96.4 ± 0.5	96.6 ± 0.5	

Table C5. Identification properties of adhesive mortars ATLAS ULTRA GEOFLEX and ATLAS GEOFLEX WHITE

Item	Properties	Requirements		Test methods
		ATLAS ULTRA GEOFLEX	ATLAS GEOFLEX WHITE	
1	2	3	4	5
1	External appearance	dry mix, homogeneous, without lumps, homogeneous mass without delamination and lumps is created after processing with water		EAD 040083-00-0404 (previous ETAG 004)
2	Bulk density, g/cm ³	1.6 ± 10 %	1.6 ± 10 %	
3	Ash content at 450°C, %	96.6 ± 0.5	97.9 ± 0.5	

Table C6. Identification properties of grouting mortars ATLAS TIGHT GROUT/ATLAS ELASTIC GROUT, ATLAS ARTIS GROUT and ATLAS CERAMIC GROUT

Item	Properties	Requirements			Test methods
		ATLAS TIGHT GROUT/ATLAS ELASTIC GROUT	ATLAS ARTIS GROUT	ATLAS CERAMIC GROUT	
1	2	3	4	5	6
1	External appearance	dry mix, homogeneous, without lumps, homogeneous mass without delamination and lumps is created after processing with water			EAD 040083-00-0404 (previous ETAG 004)
2	Bulk density, g/cm ³	1.9 ± 10 %	2.0 ± 10 %	1.9 ± 10 %	
3	Ash content at 450°C, %	97.7 ± 0.5	97.6 ± 0.5	98.8 ± 0.5	

Attachment D

The heat transfer coefficient of a wall with insulation is calculated in accordance with the PN-EN 6946:2017 standard:

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

where:

$\chi_p \cdot n$: correction factor for the effect of fixings

U_c : adjusted heat transfer coefficient of the wall with insulation, accounting for thermal bridges (W/(m²·K))

n : number of fixings per square meter

χ_p : point heat transfer coefficient per fastener. The values below should be considered unless specified in the technical specifications of the fixings (ETA, AT or KOT) for expansion fixings:

- $\chi_p = 0.002$ W/K for expansion fixings with stainless steel cores coated with synthetic material or air-sealed fixings
- $\chi_p = 0.004$ W/K for expansion fixings with galvanized steel cores coated with synthetic material
- $\chi_p = 0.008$ W/K for all other fixings (worst case scenario)

U : heat transfer coefficient of the wall covered with insulation (excluding thermal bridges) (W/(m²·K)), determined as follows:

$$U = 1 : [R_{Si} + R_s + R_{ETICS} + R_{Se}]$$

where:

- R_s : thermal resistance of the structural base (e.g., concrete, brick) ($m^2 \cdot K$)/W
- R_{se} : thermal resistance of the external surface ($m^2 \cdot K$)/W
- R_{si} : thermal resistance of the internal surface ($m^2 \cdot K$)/W
- R_{ETICS} : thermal resistance of the entire insulation system ($m^2 \cdot K$)/W (note: the thermal resistances of the reinforced layer, adhesive mortar, and insulation materials can be omitted in calculations)

$$R_{ETICS} = R_{topcoat} + R_{adhesivemortarfortiles} + R_{reinforcinglayer} + R_{insulationmaterials} + R_{adhesivemortar}$$

Where:

$$R_{topcoat} = R_{tiles} \cdot P_{tiles} + R_{groutingmortar} \cdot P_{joints}$$

- P_{tiles} : percentage share of the tile surface, %
- P_{joints} : percentage share of the joint surface, %

The thermal resistance value of the product used for thermal insulation should be specified in the manufacturer's documentation concerning the specific thicknesses of the boards.