

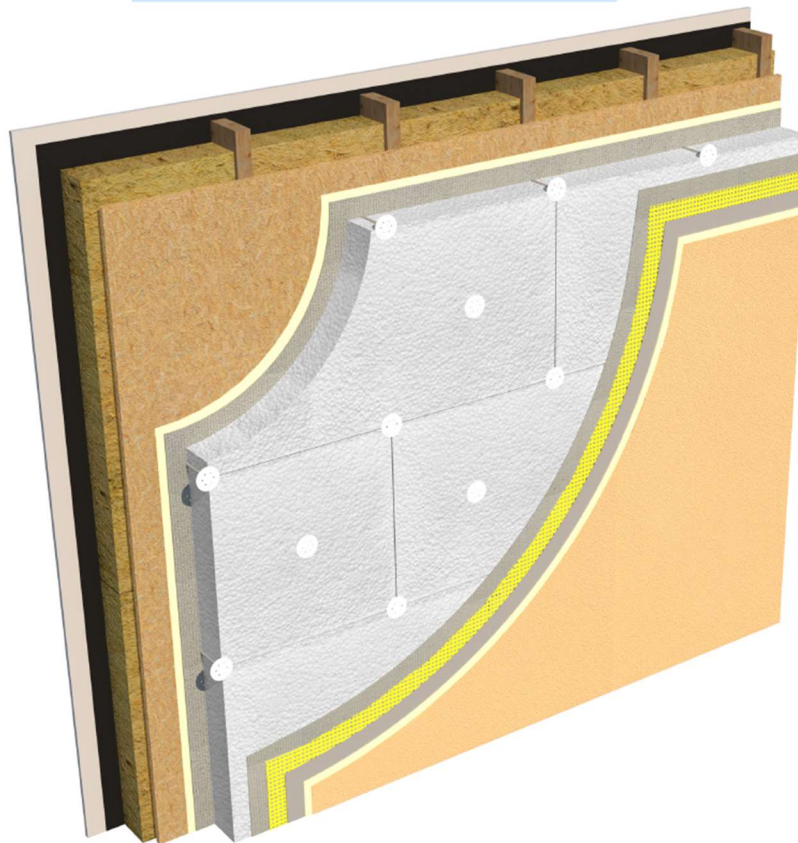
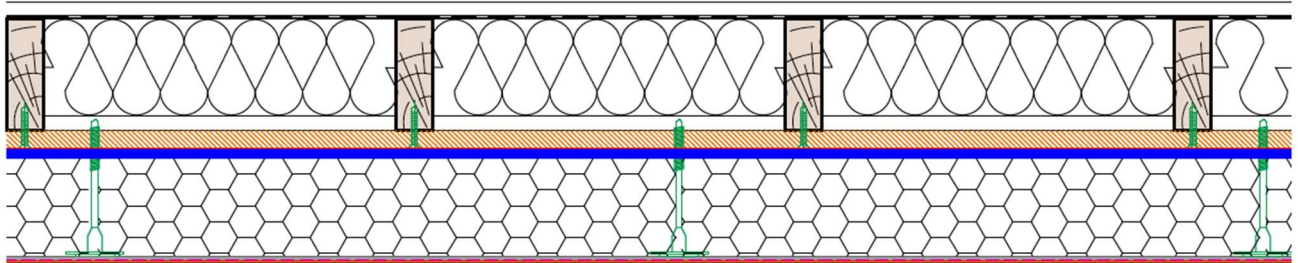


MANUAL

ATLAS EXTERNAL WALL INSULATION SYSTEM with EPS

on a substrate made of:
FCB (Fibre Cement Board),
OSB (Oriented Strand Board)
or Gypsum Fiber Boards sheathings of buildings
based on a timber frame structure

| 1





INTRODUCTION

This manual relates to the external wall insulation system for buildings with a timber frame structure, consisting of expanded polystyrene (EPS) boards fixed by a mixed method - with the use of adhesive and mechanical fasteners to the sheathing of the structure made of fibre-cement boards, OSB or gypsum-fibre boards. The finishing render is applied on the base coat reinforced with a glass fibre mesh. The system is suitable for use, with height limitation, in existing buildings (insulation), as well as in newly erected buildings - as insulating layer with render.

THE SYSTEM MEETS KEY CONDITIONS:

Thermal insulation - the system can improve the thermal insulation of external walls and contribute to meeting the requirements of national building regulations. Selection of the proper thickness of the polystyrene / graphite polystyrene insulation layer belongs to designer, who has to provide the necessary calculations, taking into consideration the actual parameters of all materials used in a particular wall partition.

Risk of condensation - the system can help reduce the risk of interlayer condensation.

Strength and stability - The system can adequately withstand wind loads and impact damage. The impact resistance depends on the selected finish.

Reaction to Fire - The system can be classified in accordance with BS EN 13501-1:2007 depending to the kit selected and is restricted by the requirements of the particular building.

Durability - Installed and maintained in accordance with the manufacturer's recommendations, the system will last for at least 25 years.

ATLAS warrants that this system is fit for its intended use, provided that it is installed, used and maintained in accordance with the manufacturer's instructions found in the technical data sheets of the individual components and this manual.

DESCRIPTION

The ATLAS EWI system insulated with EPS for buildings with a timber frame structure requires the use of the following components:

- Primer on cement-fibre boards sheathing
- Adhesive for insulation boards
- Insulation made of polystyrene boards (EPS), or graphite polystyrene boards
- Fasteners for mechanical fixing
- Base layer (reinforced with fiberglass mesh)
- Reinforcing glass-fibre mesh
- Bonding primer for top-coat layer
- Top layer of thin-layer render





		average consumption	thickness
		[kg/m ²]	[mm]
primer:	ATLAS CERPLAST ATLAS ULTRAGRUNT on OSB	0,3	0,5
adhesive:	ATLAS STOPTER K-50 ATLAS STOPTER K-20 ATLAS HOTER U ATLAS HOTER S ATLAS GRAWIS U ATLAS GRAWIS S ATLAS ROKER U	4,0 ÷ 5,0	≤ 10
insulation:	factory prefabricated standard expanded polystyrene (EPS) according to EN 13163	≤ 5	≤ 250
	factory prefabricated elasticised expanded polystyrene (EPS) according to EN 13163		
base coat:	ATLAS STOPTER K-50 ATLAS STOPTER K-20 ATLAS HOTER U ATLAS GRAWIS U	3,0 ÷ 3,5	2 ÷ 5
	ATLAS ROKER U		4 ÷ 6
reinforcing mesh	ATLAS 150 glass-fibre mesh	0,165	
	ATLAS 165 glass-fibre mesh	0,18	
primer:	not necessary on: ATLAS STOPTER K-50,		
	ATLAS CERPLAST underlay for: ATLAS SILICONE HYBRID RENDER ATLAS ACRYLIC RENDER ATLAS CERMIT ND ATLAS CERMIT N-100 ATLAS CERMIT BA-M ATLAS CERMIT WN ATLAS SILKON BA ATLAS DEKO M	0,3	0,5
	ATLAS SILKON ANX underlay for: ATLAS SILICONE RENDER ATLAS SILICONE HYBRID RENDER ATLAS SILICONE-SILICATE RENDER ATLAS SILKON BA	0,3	0,5





finishing coats / thin-coat façade render:	ATLAS SILICONE RENDER	2,5 ÷ 3,0	≤ 2
	ATLAS SILICONE HYBRID RENDER	2,5	1,5
	ATLAS SILICONE-SILICATE RENDER	2,5 ÷ 3,0	≤ 2
	ATLAS ACRYLIC RENDER	2,5	1,5
	ATLAS CERMIT ND	2,5 ÷ 2,8	≤ 2
	ATLAS CERMIT N-100	2,0	1
	ATLAS CERMIT BA-M	3,0	1,5
	ATLAS CERMIT WN	2,5 ÷ 3,0	1
	ATLAS SILKON BA	2,5	1,2
	ATLAS DEKO M	1,5 ÷ 5,5	≤ 2
maximum load from EWI components:		20 kg/m ²	
maximum total thickness of EWI			270 mm

CONSTRUCTION DESCRIPTION

This manual presents the method of insulating existing or newly erected buildings with a structure based on a timber frame, designed in a way that ensures the bearing of all permanent loads from structural and finishing layers, including components of the insulation system and from the wind, taking into account the location in the climatic zone for a given type and building geometry in accordance with BS EN 1991-1-4:2005

SUBSTRATE

The direct substrate for the EWI system may be a sheathing of the structure made of OSB structural boards (type 4 or 5), fibre-cement or fibre-gypsum boards intended for this purpose, the parameters of which enable the transfer of the loads to structural elements and having documentation confirming their properties appropriate for such usage. The designer must take into account the load from the EWI components not less than 20 kg per m² of surface. The sheathing must be properly mounted on the structure with the use of suitably selected fasteners, the number and spacing of which will ensure the necessary load-bearing capacity and stability. These parameters and the geometric arrangement of the substructure – timber posts must provide support for the sheathing in accordance with the documentation of the panel manufacturer. The sheathing must be made in accordance with the manufacturer's recommendations. The substrate must be prepared in accordance with the recommendations of ATLAS Technical Data Sheets: it must be not frozen, dry, stable, even, cleaned and free of dust, primed alternatively with ATLAS ULTRAGRUNT or ATLAS CERPLAST depending on the substrate.

INSTALLATION OF INSULATION

Styrofoam boards should be bonded with adhesive mortars on the previously primed substrate and additionally fastened with supplementary mechanical fasteners. The arrangement of panels in accordance with the instructions contained in the ATLAS Technical Data Sheets.





It is recommended to assemble the boards using adhesive by applying it evenly with a notched trowel on the underside of the boards. The size of the teeth of the trowel is at least 10 mm x 10 mm. The ground should be even. If it is not even enough, the boards can be adhere by using the strip-point method. Descriptions of the method can be found in the Technical Data Sheets of adhesive mortars.

The number and spacing of fasteners should result from the calculations included in the Design, taking into account mainly the wind action and location on the building. The design should be prepared by an authorized designer with appropriate qualifications. Guidance on the installation of the EWI system can be found in the SCHOOL OF INSULATION guide published by ATLAS. The insulation should be installed by a contractor certified by ATLAS.

<https://www.atlas.com.pl/wp-content/uploads/2021/09/School-of-Insulation.pdf>

ADHESIVES FOR STYROFOAM

Use ATLAS adhesives intended for polystyrene listed in the table. The choice depends on the expected parameters indicated in the Technical Data Sheets of ATLAS products. All necessary product documents can be found on the site <https://www.atlas.com.pl/en/products/external-wall-insulation-672/adhesives-for-thermal-insulation-base-coat-693/>

INSULATION BOARDS

Only boards approved for use in construction for the specific application should be used. They should have documentation that confirms the requirements for this type of materials are met. The basic parameters of the polystyrene boards are:

- Tensile strength perpendicular to the faces in dry conditions: TR 80 (according to EN 1607)
- Bending strength ≥ 75 kPa (according to EN 12089)
- Shear strength $\geq 0,02$ MPa (according to EN 12090)
- Water vapour diffusion resistance factor $\mu = 20 \div 60$ (according to EN 12086)

MECHANICAL FASTENERS

Use only mechanical fasteners that have documentation confirming their use for fastening of thermal insulation systems for specific kind of substrate. Self-drilling screws should be made of stainless steel or protected against corrosion and have a retaining plate with a diameter of at least 6 cm. Fasteners should ensure the transfer of 100% of the forces resulting from the wind action. It is recommended to anchor through thermal insulation product only.

The recommended fasteners: EJOTerm STR H or EJOTerm STR H A2 self-drilling insulation mounting screw depending on the substrate.

declared characteristic values of the pull-out strength of self-drilling screw from 15mm fibre-cement board (FCB) are:

for EJOTerm STR H:	0.52 kN
for EJOTerm STR H A2:	0.72 kN





REINFORCING MESH

It is recommended to use

ATLAS 150	150 g/m ²	mesh size 4,5 x 5,0 mm
or ATLAS 165	160 g/m ²	mesh size 3,7 x 3,9 mm

alternatively:

R 117 A 101 / AKE 145 / VERTEX 145	145 g/m ²	mesh size 4,0 x 4,5 mm
SSA 1363 SM(100)	145 g/m ²	mesh size 3,5 x 3,5 mm
SSA 1363-150 SM 0.5	150 g/m ²	mesh size 3,6 x 4,3 mm

- alkali resistant
- residual resistance after ageing ≥ 20 N/mm

The mesh should be embedded in a way that ensures its full immersion in the base coat layer, so that it is not visible on the surface. It should be laid in strips from top to bottom, ensuring appropriate overlaps (at least 10 cm). Before embedding the mesh, the necessary profiles should be installed - starting, eaves, corner, window, expansion joints, etc. In the corners of the openings, mesh diagonal battens should be pasted in advance.

The necessary information can be found in the SCHOOL OF INSULATION manual issued by ATLAS.
<https://www.atlas.com.pl/wp-content/uploads/2021/09/School-of-Insulation.pdf>

BASE COAT

Use ATLAS mortars listed in the table. The choice depends on the expected parameters indicated in the Technical Data Sheets of ATLAS products. All necessary product documents can be found on the site: <https://www.atlas.com.pl/en/products/external-wall-insulation-672/adhesives-for-thermal-insulation-base-coat-693/>

BONDING PRIMER FOR TOP-COAT LAYER:

Use ATLAS CERPLAST or ATLAS SILKON ANX primers adapted to the selected type of thin-layer render for the facade finish. Recommendations for priming can be found in the Product Data Sheets of the respective renders.

TOP LAYER: THIN-COAT RENDER

ATLAS recommends the renders listed in the table, which the investor can use freely, depending on the effect on the facade surface - the structure and colour he wants to achieve. These renders also perform parameters suitable for various objects, their location and exploitation conditions. The necessary information can be found in the Product Data Sheets available at: <https://www.atlas.com.pl/en/products/external-wall-insulation-672/thin-coat-renders-694/>

More helpful information referring to facade finishing can be found in the ATLAS brochures available on the website <https://www.atlas.com.pl/en/download/brochures/>



BEADS / TRIMS / ACCESSORIES

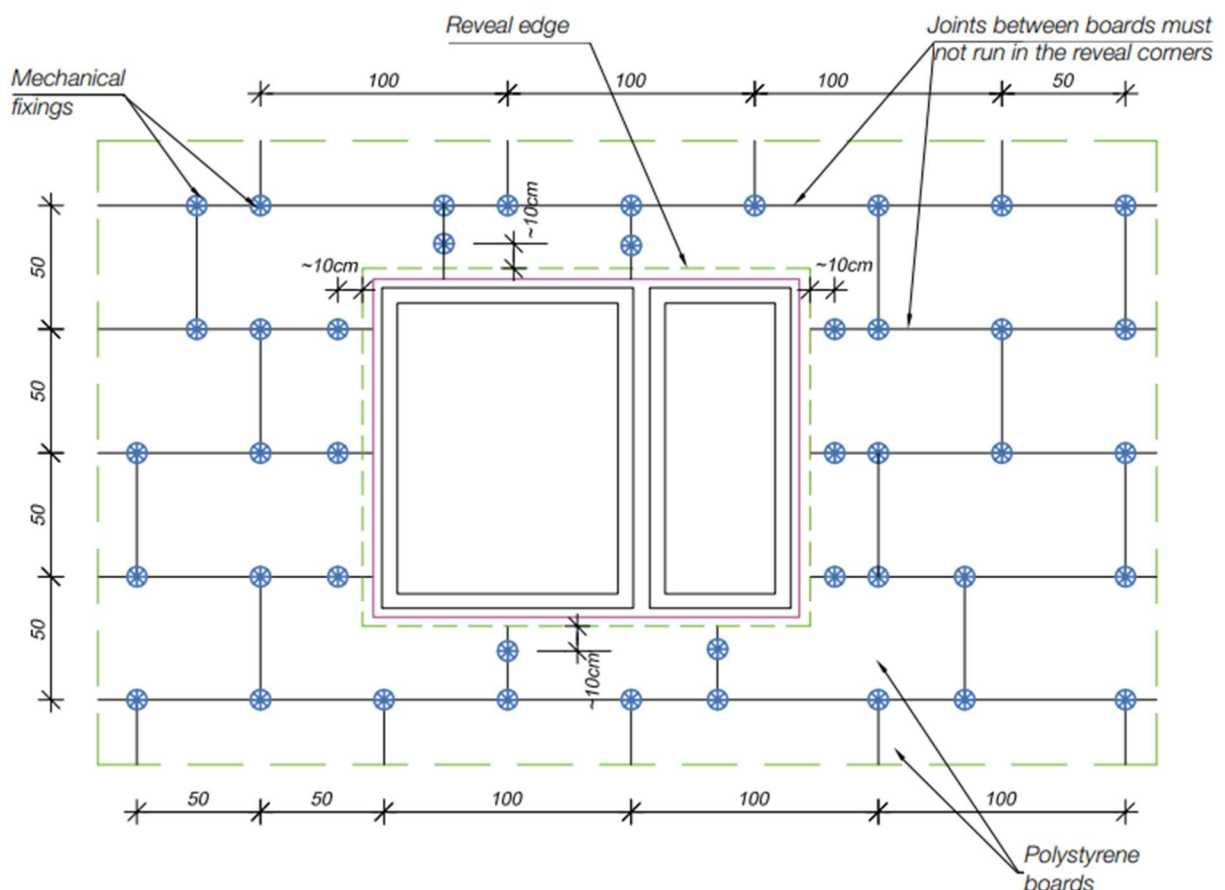
In order to ensure proper operation of the system, the necessary accessories should be used, i.e. starting profiles, corner profiles, eaves profiles, window profiles and expansion joints in places where they are required. It is necessary to take into account the correct order of assembly of profiles and reinforcing mesh.

<https://www.atlas.com.pl/en/product/facade-profiles-for-external-wall-insulation-697-2341/>

FLASHING / SEALING

in order to ensure that the system achieves the expected parameters of thermal insulation, the works performed must be protected against water. for this purpose, tightness should be ensured by installing appropriate flashings and seals in places exposed to water penetration - including passages of all installations.

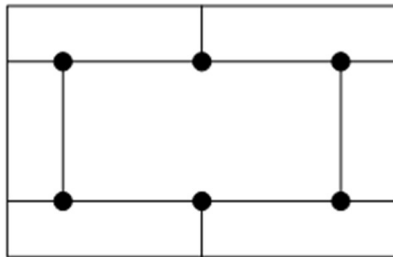
LAYOUT OF THE INSULATING BOARDS



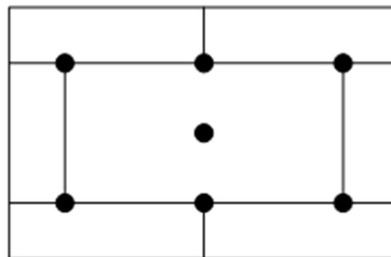
exemplary arrangement of insulation panels and fasteners around windows



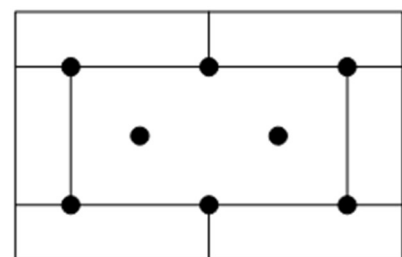
exemplary layout of mechanical fasteners corresponding to their number per square meter of insulation:



2,78 pcs/sqm



4,17 pcs/sqm



5,56 psc/sqm

for 1,2 m x 0,6 m panels:

for 1,0 m x 0,5 m panels:

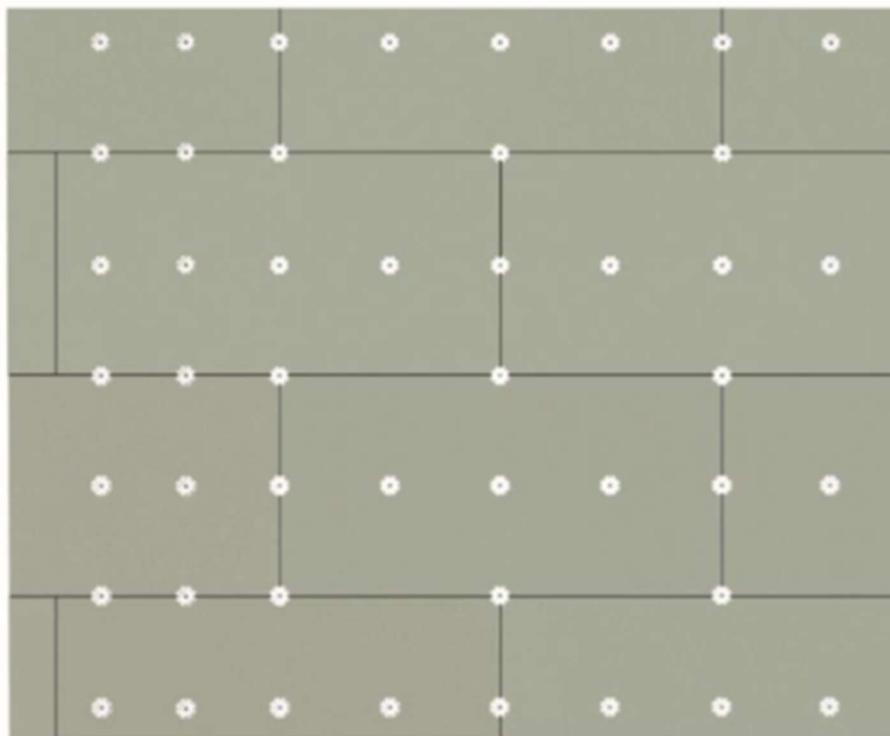
4,00 pcs/sqm



6,00 pcs/sqm



8,00 psc/sqm

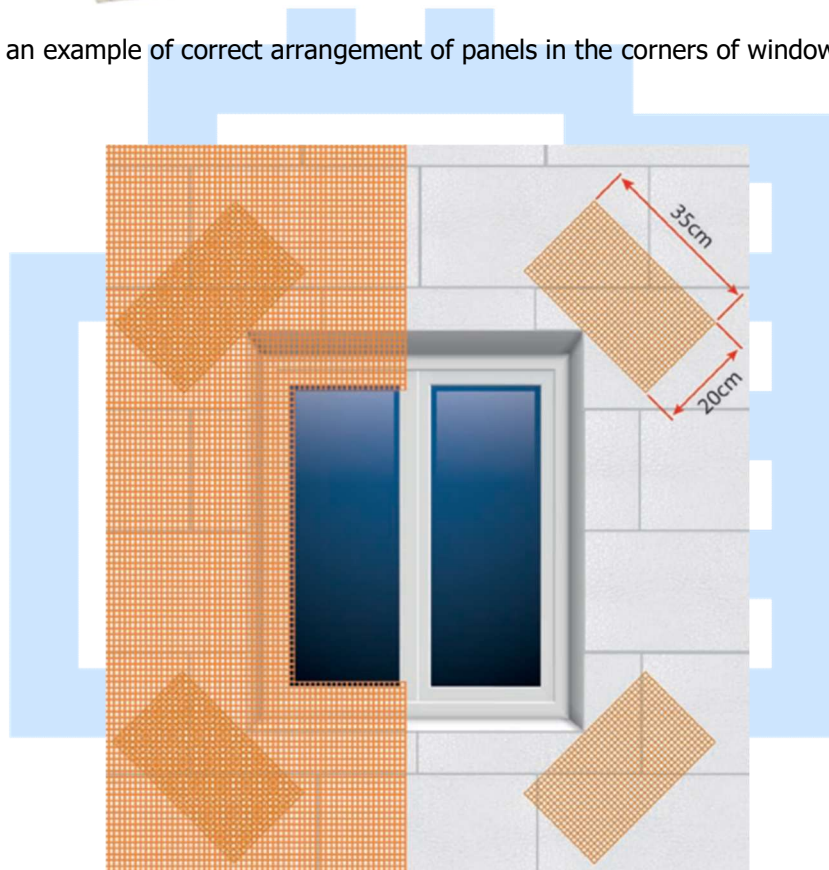


an example of the arrangement of mechanical fasteners with increased placement in the zone at the building's corner.





an example of correct arrangement of panels in the corners of windows



places for installing additional diagonal reinforcements





APPLICATION LIMITATION

Remember about the limitations related to the use of individual materials in connection with legal requirements regarding the fire protection properties of EWI systems depending on the type of building and its height. Please note that different regulations apply to England, Scotland, Wales and Northern Ireland depending on your location.

Reaction to fire class according to EN 13501-1 using E-class polystyrene boards is specified for the following sets:

adhesives:	ATLAS STOPTER K-20 ATLAS HOTER U ATLAS HOTER S	not worse than C - s2, d0
base coats:	ATLAS STOPTER K-20 ATLAS HOTER U	
finishing coats / thin-coat façade render:	ATLAS SILICONE RENDER ATLAS SILICONE HYBRID RENDER ATLAS SILICONE-SILICATE RENDER ATLAS ACRYLIC RENDER	

adhesives:	ATLAS STOPTER K-20 ATLAS HOTER U ATLAS HOTER S	not worse than B - s1, d0
base coats:	ATLAS STOPTER K-20 ATLAS HOTER U	
finishing coats / thin-coat façade render:	ATLAS CERMIT ND ATLAS CERMIT BA-M ATLAS CERMIT WN	

adhesive:	ATLAS STOPTER K-20 ATLAS HOTER U ATLAS HOTER S	not worse than B - s2, d0
base coat:	ATLAS STOPTER K-20 ATLAS HOTER U	
finishing coats:	ATLAS CERMIT N-100 ATLAS SILKON BA	

adhesive:	ATLAS GRAWIS S ATLAS GRAWIS U	not worse than B - s2, d0
base coat:	ATLAS GRAWIS U	
finishing coats:	ATLAS CERMIT ND ATLAS CERMIT BA-M ATLAS CERMIT WN	





	ATLAS ACRYLIC RENDER ATLAS SILICONE HYBRID RENDER ATLAS SILICONE RENDER ATLAS SILICONE-SILICATE RENDER	
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For the test according to EN 13823 substrate class A2-s1, d0 with a thickness of 12 mm was used. In case of the substrate with worse parameters it should be recognized that the reaction to fire of the set will not be better than that of the substrate.

GENERAL NOTICE

- EWI components should be installed by certified contractors with the necessary knowledge and skills
- Compliance with work safety regulations is absolutely required
- Works should be carried out in the conditions specified in the Technical Data Sheets of individual system components, protecting against adverse weather conditions
- The inter-operational technological breaks required by ATLAS should be maintained, enabling the materials to achieve the expected physical parameters,
- During the application of system components, the contractor must follow the ATLAS guidelines contained in the technical data sheets of individual products. Information about the conditions and method of use can be found on the packaging and on the website www.atlas.com.pl/en/

