



**IRISH AGRÉMENT BOARD
CERTIFICATE NO. 10/0347**

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ATLAS/AVAL External Thermal Insulation Composite Systems

Système d'isolation pour murs extérieurs

NSAI Agrément (Irish Agrément Board) is designated by Government to issue European Technical Approvals.

NSAI Agrément Certificates establish proof that the certified products are '**proper materials**' suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2011**.



PRODUCT DESCRIPTION:

The ATLAS/AVAL External Thermal Insulation Composite Systems (ETICS) comprise insulation board (bonded and mechanically fixed) with reinforced undercoat, and decorative finishes as described in the accompanying Detail Sheets:

- ATLAS/AVAL Elastified EPS/EPS ETICS Systems (Detail Sheet 1)
- ATLAS/AVAL ROKER ETICS MW System (Detail Sheet 2)
- ATLAS XPS ETICS System (Detail Sheet 3)

These external thermal insulation composite systems (ETICS) are each comprised of:

- Surface preparation of masonry or concrete substrate.
- Base profile and corner profile.
- Adhesive.

- Insulation board:
 - Expanded Polystyrene (EPS) - Standard white and carbon-enhanced (grey board).
 - Elastified EPS.
 - Extruded Polystyrene (XPS).
 - Mineral Wool (MW).
- Mechanical fixings.
- Base coat.
- Glass fibre mesh.
- Primer coat.
- Finishing coat.
- Weather-tight joints.
- Movement joints.
- Provision for limiting cold bridging at external wall/floor junctions in compliance with Acceptable Construction Details published by the DECLG (Department of the Environment, Heritage and Local Government).
- Provision for fire stopping at external compartment walls and floors.

ATLAS is responsible for the design manufacture and supply of all components to approved specifications, in accordance with the ATLAS/AVAL approved supplier system.

The list of ATLAS Agents/Distributors in Ireland is available on www.avalireland.com.

The installation of each system is carried out by installers who have been trained by ATLAS and are approved by ATLAS and NSAI Agrément to install the system.

This Certificate certifies compliance with the requirements of the Building Regulations 1997 to 2011.

USE:

The systems are for use as an external insulation of for refurbishment/retrofit of existing masonry or concrete as follows:

- Systems that achieved a Class A2 or B (non-combustible or semi-combustible) Reaction to Fire Classification (see Table 3 of each of the Detail sheets) are suitable for use up to a maximum of six storeys (18 metres) in height on purpose groups 1(a), 1(b), 1(c), 2(a), 2(b), 3, 4(a) and 4 as defined in Technical Guidance Document (TGD) to Part B of the Building Regulations 1997 to 2011.
- Systems that achieved a Class C Reaction to Fire Classification (see Table 3 of Detail sheets 2 and 3) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 18m high and for Flats and Maisonettes (Purpose Group 1(c)) not more than 10m high as defined in TGD to Part B of the Building Regulations 1997 to 2011. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.2 of TGD to Part B of the Building Regulations 1997 to 2011.
- Systems for which no Reaction to Fire performance has been determined (see Table 3 of each of Detail sheets 1 and 2) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 18m high. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.2 of TGD to Part B of the Building Regulations 1997 to 2011

For all systems, reference should also be made to Table 2 of each of the Detail Sheets of this Certificate for the Impact Classifications that apply and any resulting restrictions imposed.

The systems have not been assessed for use with timber frame or steel frame construction.

In an Irish context, Category II 'Impact Resistance' (See Table 2 of each of the Detail sheets) excludes any wall at ground level adjacent to a public footpath, but includes one with its own private, walled in garden. Class III does not include any wall at ground level.

Refer to Table 2 of Detail Sheets 1-3 for Impact Resistance achievable using the ATLAS/AVAL ETICS Systems.

MANUFACTURE, DESIGN AND MARKETING:

The system is designed and manufactured by:

ATLAS Spółka z o.o.
Ul. Św. Teresy 105,
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ATLAS is responsible for the design, manufacture and supply of all components to approved specifications, in accordance with the ATLAS/AVAL approved supplier system.

The list of ATLAS Agents/Distributors in Ireland is available on www.avalireland.com or can be presented by the Atlas's Foreign Markets Managers (or authorized representatives).

1.1 ASSESSMENT

In the opinion of NSAI Agrément, the ATLAS/AVAL External Thermal Insulation Composite Systems if used in accordance with this Certificate can meet the requirements of the Building Regulations 1997 to 2011, as indicated in Section 1.2 of this Agrément Certificate.

1.2 BUILDING REGULATIONS 1997 to 2011

REQUIREMENTS:

Part D – Materials and Workmanship

D3 – Proper Materials

The ATLAS/AVAL External Thermal Insulation Composite Systems, as certified in this Certificate, are comprised of 'proper materials' fit for their intended use (see Part 3 and 4 of this Certificate).

D1 – Materials & Workmanship

The ATLAS/AVAL External Thermal Insulation Composite Systems, as certified in this Certificate, meet the requirements for workmanship.

Part A - Structure

A1 – Loading

The ATLAS/AVAL External Thermal Insulation Composite Systems once appropriately detailed, designed and installed have adequate strength and stability to meet the requirements of this Regulation (see Part 3 of this Certificate).

A2 – Ground Movement

The ATLAS/AVAL External Thermal Insulation Composite Systems can be incorporated into structures that will meet this requirement (see Parts 3 and 4 of this Certificate).

Part B – Fire Safety

B4 – External Fire Spread

The ATLAS/AVAL External Thermal Insulation Composite Systems can be incorporated into structures that will meet this requirement (see Part 4 of this Certificate and Table 3 of each of the applicable Detail Sheets).

Part C – Site Preparation and Resistance to Moisture

C4 – Resistance to Weather and Ground Moisture

External walls have adequate weather resistance in all exposures to prevent the passage of moisture from the external atmosphere into the building as specified in Part 3 and 4 of this Certificate.

Part F – Ventilation

F2 - Condensation in Roofs

The ATLAS/AVAL External Thermal Insulation Composite Systems can be incorporated into structures that will meet this requirement (see Parts 3 and 4 of this Certificate).

Part J – Heat Producing Appliances

J3 – Protection of Building

When the ATLAS/AVAL External Thermal Insulation Composite Systems are used in accordance with this Certificate, wall lining, insulation and separation distances meet this requirement. See Part 4 of this Certificate.

Part L – Conservation of Fuel and Energy

L1 – Conservation of Fuel and Energy

The walls of the ATLAS/AVAL External Thermal Insulation Composite Systems can be readily designed to incorporate the required thickness of insulation to meet the Elemental Heat Loss method calculations for walls as recommended in TGD to Part L of the Building Regulations 1997 to 2011 (see Table 1 Part 4 of this Certificate).

2.1 PRODUCT DESCRIPTION

Each of the ATLAS/AVAL External Thermal Insulation Composite Systems is given a detailed description in the relevant Detail Sheets.

2.2 MANUFACTURE, SUPPLY AND INSTALLATION

ATLAS is responsible for the design manufacture and supply of all components to approved specifications, in accordance with the ATLAS/AVAL approved supplier system. Atlas and their approved Irish Agents/Distributors are responsible for:

- Project specific design in accordance with approved design process;
- Training, monitoring and review of licensed applicators in accordance with approved training and assessment procedures;
- Product supply;
- Technical support;
- Sales and marketing.

The installation of each system is carried out by the Certificate Holder's trained and approved installers in accordance with the Certificate Holder's project specific specifications and method statements.

Installers must also be approved and registered by NSAI Agrément as part under the NSAI Agrément Approval Scheme for installers of External Thermal Insulating Composite Systems (ETICS). See Cl. 2.4.1

2.2.1 Quality Control

The Certificate holder operates a quality management system and a quality plan is in place for system manufacture, design and installation.

2.3 DELIVERY, STORAGE AND MARKING

The insulation is delivered to site in packs. Each pack is marked with the manufacturer's details, product identification marks and batch numbers. See Table 1 of each Detail Sheet for the designation code that must be included on the on the insulation identification label.

Insulation should be stored on a firm, clean, dry and level base, which is off the ground. The insulation should be protected from prolonged exposure to sunlight by storing opened packs under cover in dry conditions or by re-covering with opaque polythene sheeting.

Care should be taken when handling the insulation boards to avoid damage and contact with solvents or bitumen products. The boards must not be exposed to ignition sources.

Each container for other components, e.g. mesh cloth, primers, renders etc., bears the manufacturer's and product's identification marks, batch number and the NSAI Agrément logo incorporating the Certificate number. These components must be stored in accordance with the manufacturer's instructions, in dry conditions, and at the required storage temperatures. They should be used within the stated shelf life, where applicable.

2.4 INSTALLATION

2.4.1 Approved installers

Installation shall be carried out by the Certificate Holder's trained applicators who:

- 1) Are required to meet the requirements of an initial site installation check by NSAI Agrément prior to approval and are subject to the NSAI Agrément ETICS Approval Scheme.
- 2) Are approved by the Certificate Holder and NSAI Agrément to install the product.
- 3) Have undertaken to comply with the Certificate Holders installation Procedure.
- 4) Are employing Supervisors and Operatives who have been issued with appropriate identity cards by the Certificate Holder. Each team must consist of at least one ETICS Operative and ETICS Supervisor (can be the same person).
- 5) Are subject to supervision by the Certificate Holder including unannounced site inspections (and office records) by both the Certificate Holder/Distributor and NSAI Agrément, in accordance with the NSAI Agrément ETICS Approval Scheme.
- 6) Are subject to periodic surveillance by the system manufacturers: Site visits + office records.

2.4.2 General

The Certificate Holder prepares a bespoke site package for each project, including U-value calculations, requirements for materials handling and storage, method statements for installation, building details, fixing requirements, wind load calculations, provision for impact resistance, maintenance requirements etc.

This document forms part of the contract documentation for circulation to the home owner and the installer. Installers will be expected to adhere to the specification. Deviations must be approved by a technical representative of the Certificate Holder.

The Certificate Holders technical representatives will visit the site on a regular basis to ensure that work is carried out in accordance with the project specific site package, including the Certificate holder's installation manual.

Mineral fibre board and lamella should be protected from moisture prior to and during installation. It may be necessary to remove and replace any unsuitable/wet material.

External works that leave the external appearance of the building inconsistent with neighbouring buildings may require planning permission. The status of this requirement should be checked with the local planning authority as required.

2.4.3 Site Survey and Preliminary Work

A pre-installation survey of the property shall be carried out and recorded to confirm suitability of substrate for application of the ETICS System including, modifications/repairs necessary, pullout resistance of proposed mechanical fixings etc. The substrate must be free of water repellents, dust, dirt, efflorescence and other harmful contaminants or materials that may interfere with the adhesive bond. Remove projecting mortar or concrete parts mechanically as required. Loose or flaking elements should be removed and defects filled in using ATLAS Plastering Mix (AVAL KT 111) or ATLAS Leveling Mortar. In case of weak, dusty or highly absorbent substrates, ATLAS Uni-grunt (AVAL KT 17) should be used.

Where discrepancies preventing installation of the ATLAS/AVAL External Thermal Insulation Composite Systems in accordance with this Certificate and the Certificate holder's instructions exist, these discrepancies should be discussed with the Certificate holder and a solution implemented with the approval of the Certificate holder.

2.4.4 Application Procedure

- Following award of contract, the site specific pack is prepared by one of the ATLAS appointed Technical Distributors (TD's) based on the information recorded in the site survey form.
- The substrate is prepared in accordance with the project specific site package. This will include brushing down of walls, washing with clean water and treatment with a fungicidal wash as required.

- Weather conditions must be monitored to ensure correct application and curing conditions. Renders (adhesives, base coats, primers, finish coats) must not be applied if the temperature is below 5°C or above 25°C at the time of application.

In addition, cementitious-based renders must not be applied if the temperature will be below 0°C at any time during 72 hours after application, and cement-free, synthetic-resin, silicone-resin and silicate renders must not be applied if the temperature will be below 5°C at any time during 72 hours after application.

ATLAS Stoptex K20 (AVAL KT 85) adhesive mortar can be applied in temperature between 0°C and 5°C, once temperatures do not fall below -5°C for 8 hours after completion. The ATLAS/AVAL Code of Practice should be referenced regarding all temperature/humidity restrictions that apply. Until fully cured, the coatings must be protected from rapid drying, precipitation, direct sunlight and strong wind.

- Refer to the site package for guidance on modifications of down pipes, soil and vent pipes, pipe extensions etc. Where possible, all pipe work should be relocated as required to accommodate the Insulation. Where pipe work can not be re-located and is to be housed in the depth of the system, access for maintenance must be maintained through the use of removable covers or alternative design to be approved by the Certificate holder.
- See Table 1 in each of the applicable Detail Sheets for approved range of Adhesive/Base Coats
- Base profile and corner profiles are fixed as specified in the site package. Existing structural expansion joints should be extended through to the surface of the ETICS system with full system expansion beads. See Figure 8.
- A plinth strip/starter track is mechanically fixed to the substrate level with DPC level. This provides a horizontal line for the installation of the insulation panels as well as providing reinforcement to the lower edge of the system.
- Skirting boards are then fixed to the wall below DPC to provide necessary impact and capillary action resistance. Where practicable and economically viable, to minimize cold bridging, the XPS insulation should be extended below the ground level (as shown in Figure 6a). Where this is not possible, the first run of XPS should be positioned at ground level or, in the case of the High Density EPS Hydroboard, 10 mm minimum above ground level, with a basetrack (as shown Figure 6b). XPS and High Density Swisspor Boards specification per Detail Sheets 1-3 shall be used in all such instances.

- The insulation boards are bonded to the wall by applying the specified adhesive (see Table 1 of each of the Detail Sheets) to the boards using the “strip-point” method. A circumferential ribbon of adhesive at least 3cm wide is applied to the insulation boards. 6 - 8 evenly distributed patches of adhesive 8 – 12 cm in diameter are then applied to the boards so that an adhesive surface of at least 40% is achieved (60% after application and pressing). Alternatively, for even and smooth substrates, the whole panel can be coated with adhesive using a notched trowel to produce a coat 2-5 mm in thickness. The insulation panel should be immediately placed on the substrate and pressed into place.
- Subsequent rows of insulation boards are installed above DPC, on top of the starter track and positioned so that the vertical board joints are staggered and overlapped at the building corners.
- To avoid thermal bridging ensure a tight adhesive free joint connection. A foam filler approved by the Certificate Holder may be used for filling gaps up to 5mm. When used, the expanding foam should have a fire-rating of B2 or better and a maximum lambda value of 0.035W/mK. Larger gaps shall be filled with strips of the ETICS insulation material.
- At façade openings e.g. windows and doors, insulation boards must not be continued around the corner. Insulation boards must overlap at these locations and can be cut to size to facilitate this. Any projecting EPS boards should be levelled out using a rubbing board with local trimming as required on mineral wool boards.
- Window and door reveals should be insulated to minimise the effects of a cold bridging in accordance with the recommendations of the Acceptable Construction Details Document (published by the DECLG), Section 2 – External Wall Insulation, Detail 2.21. to achieve an R-value of 0.6m²K/W as shown in Figure 7b. Where clearance is limited, strips of approved insulation should be installed to suit available margins and details recorded as detailed in Cl. 4.5 of this Certificate.
- Details of mechanical fixings (including their arrangement in the insulation boards) are specified in the project specific design requirements based on pullout test results, substrate type and wind loading data. Installation of mechanical fasteners shall commence no earlier than 24 hours after the insulation panels have been adhesively fixed.
- A minimum of 4-5 mechanical fixings per m² for EPS/Elastified EPS/XPS and 8 (minimum) per m² for MW shall be installed unless otherwise specified in the project specific design. See Table 1 in each of the applicable Detail Sheets for the list of approved fasteners that can be used.
- Holes are drilled into the substrate through the insulation, and the fixings are installed, fixed tightly to the insulation board, using the dedicated driving system, to ensure there is no risk of pull off.
- Purpose-made and ATLAS approved powder coated galvanized, stainless steel or aluminum window sills (complete with PVC sill end caps), are installed in accordance with the Certificate holders instructions. They are designed to prevent water ingress and incorporate drips to shed water clear of the system. See Figure 7a.
- The Certificate holder also offers an insulated resin coated sill (Eco-Oversill, Patent No. S86111) for use with the ATLAS/AVAL Elastified EPS/EPS and XPS ETICS systems (Detail Sheets 1 and 3) on buildings up to 2.5 stories. This insulated sill is manufactured from high density EPS with a resin coating applied in production. Installation of the insulated sill should not proceed if it would result in the window weep holes being covered. The insulated oversill is cut to size to meet the window opening dimensions. Cut ends of the side projections are protected by the application of a glass fibre mesh and KT 55 or KT 85 base coat (to a minimum thickness of 3mm) and appropriate finish coat in accordance with the Certificate holder’s installation instructions. During the preparation phase, the existing sills are not cut flush to the substrate walls. This ensures that a maximum bond area to the existing sill is maintained. When on site joining of sill is required, to facilitate large window openings or bay windows, the sill ends are first miter joined with KT 55 or KT 85 adhesive in accordance with the certificate holders installation instructions. Excess adhesive is then removed to the depth of the resin coating finish. When the adhesive has fully cured, the void is filled with Sintex MS-35 polymer. Installed sills must be primed with Aval KT 16 prior to the application of Aval KT 44 paint as a finish coat. Refer to the Certificate holders installation manual for all other installation instructions. See Figure 7C.
- Lamella (Rockwool) fire stops are installed in accordance with the certificate holders instructions as defined in Cl. 4.2 of this Certificate, at locations defined in the project specific site package. See Figures 10b & 13.
- For EPS insulation, any high spots or irregularities should be removed by lightly planning with a rasp to ensure the application of an even thickness of Base Coat. After sufficient stabilisation of the installed insulation (normally 2 days, during which time the insulation should be protected from exposure to extreme weather conditions to prevent degradation), the insulated wall is ready for the application of the base and finish coats.

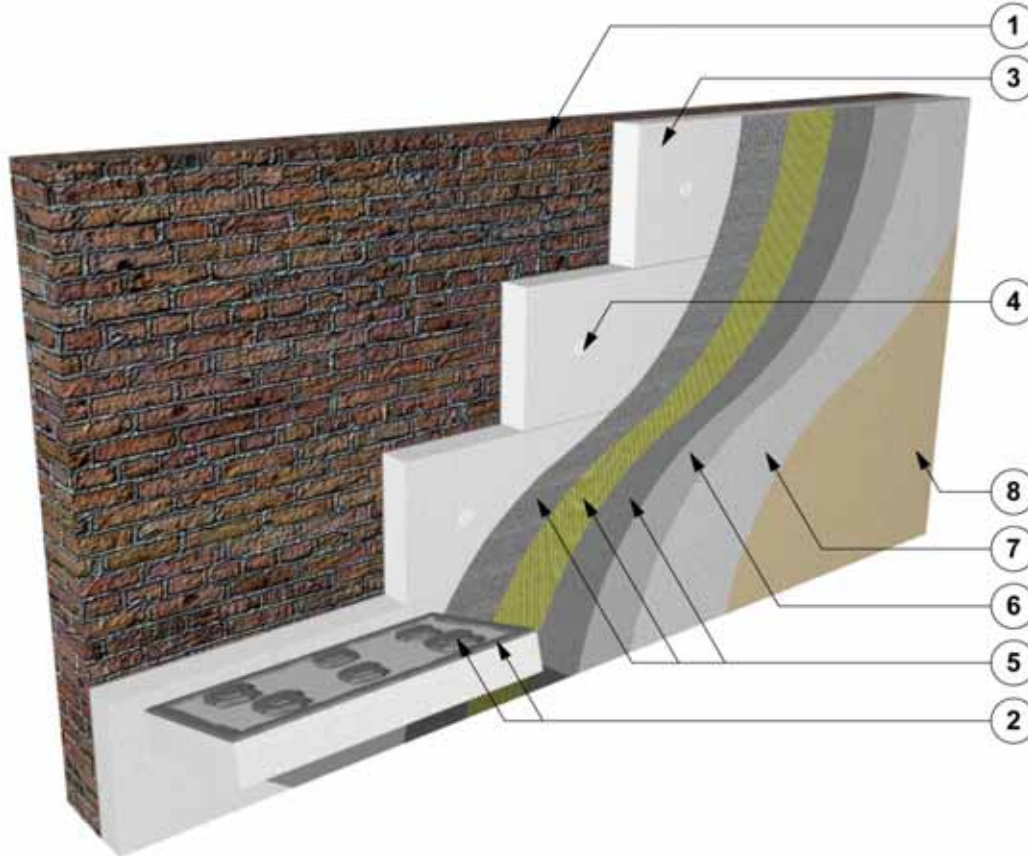
- EPS/XPS boards exposed to UV light for extended periods prior to the application of the render coatings are subject to breakdown and should be rasped down as required in preparation for rendering.
 - Movement joints shall be provided in accordance with the project specific site package. See Figure 8.
 - At all locations where there is a risk of insulant exposure, e.g. window reveals or eaves, the system must be protected e.g. by an adequate overhang or by purpose made sub-sills, seals or flashing. See Figure 11
 - Building corners, door and window heads and jambs are formed using angle beads bonded to the insulation in accordance with the manufacturer's instructions.
 - To minimise the thermal bridge affect during the installation of components/structures imposing a pressure or tensile load (e.g. railings, exterior lighting, shutter guide rails, canopies, aerials /dishes etc.), the certificate holder offers a range of anchoring options. These anchors must be installed in accordance with the certificate holder's instruction (as defined in the project specific site package) during the installation of the insulation boards. See Figure 12.
 - If it is not possible to install the EWIS system to all external walls, alternate forms of thermal upgrades, such as full fill cavity wall insulation or internal dry lining, should be provided where physically and economically feasible.
 - There should be an adequate over lap at the junction between and EWIS system and the alternative insulation method selected to limit thermal bridging at this interface.
 - Where the external insulation meets intersecting walls etc. and the abutting structure cannot be cut back, the edge of the insulation where it meets the wall should be protected using pvc universal stop-trim, followed by the application of a low modular silicone sealant between the top-coat and the abutting structure.
 - The Base Coat is prepared as described in Table 1 of the Detail sheets and is trowel applied to the surface of dry insulation boards at approximately 2/3 of the final base coat thickness. Base coats requiring the addition of water should be mixed mechanically using a drill and mixer.
 - A 10mm toothed trowel (held at 45° to the insulation board) is used to leave castellations in the basecoat. A layer of alkali-resisting glass-fibre mesh is then applied (see Table 1 of the applicable details sheets for approved meshes) either vertically or horizontally ensuring the mesh is overlapped at joint by a minimum coverage of 100mm (overlaps in quoins should be min.150mm .
- The mesh should be pressed into the base coat using a notched float so that it is not visible, yet it should not make direct contact with the Insulation.
- The remaining 1/3 thickness of base coat is than applied as required to ensure the mesh is completely covered and the required minimum thickness of base coat is achieved.
 - Where a second layer of mesh is required to achieve the required impact resistance, application of the basecoat and mesh layers should be performed in two operations. The first layer of basecoat and mesh is applied, as described above. After minimum 24 hours, a second layer of basecoat and mesh is applied to provide a combined total basecoat thickness of circa 8mm. See Table 2 of the applicable Detail Sheets.
 - Additional pieces of reinforcing mesh are applied diagonally at the corners of openings to provide the necessary reinforcement in prior to the application of the basecoat. At affected locations apply, install 200x300mm mesh strips at a 45° angle in relation to the lines determined by the reveal embedded into basecoat in accordance with the Certificate holder's instructions see Figures 4 and 5.
 - Refer to the certificate holder's instructions and the project specific site package regarding the installation method and location of the stainless steel (S.S.) fixings (normally at 0.4m centres) through the reinforcing mesh where fire stops have been installed. Additional layers of mesh are also applied at these locations See Figures 10b and 13. Stainless steel fire fixings to be provided at the rate of one per square metre above two stories. The fixing design should take account of the extra duty required under fire conditions.
 - The base coat must be allowed to dry/cure (3 days approx.) prior to the application of the primer/finish coat. Prior to the application of the finishing coat, sealant should be applied as required as defined in the project specific site package in accordance with the certificate holders instructions.
 - Primers (See Table 1 in Detail Sheets to this Certificate for approved list of primers and their compatibility with the finishing coats) shall be applied in accordance with the Certificate instructions and allowed to dry for approximately 12 hours prior to the application of the Finishing Coat. Render primers prevent penetration of impurities from the adhesive into the render, protects and reinforces the substrate, and increases the bond strength between the render and the substrate.
 - Finishing Coats (See Table 1 in Detail Sheets to this Certificate for approved list of Finishing coats and their compatibility with the primer coats) shall be applied in accordance with the Certificate instructions.

- It is imperative that weather conditions are suitable for the application and curing of the ATLAS/AVAL finishing coats. Finishing coats should not be applied when the air or wall temperature is below +5° C or above 25° C for the duration of the curing time. In wet weather the finished walls should be protected to prevent wash-off.
It is also advisable that protective covers remain in place as required to maximise the drying process.
- In sunny weather, work should commence on the shady side of the building and be continued, following the sun to prevent the rendering drying out too rapidly.
- To minimise colour shade variations and to avoid dry line jointing, continuous surfaces should be completed without a break. If breaks cannot be avoided they should be made where services or architectural features, such as reveals or lines of doors and windows, help mask cold joints. Where long uninterrupted runs are planned, containers of the Finishing Coat should be checked for batch numbers. Bags with different batch numbers should be checked for colour consistency.
- All rendering should follow best practice guidelines e.g. BS 8000-10:1995 *Workmanship on building sites – Code of practice for plastering and rendering* and IS EN 13914-1:2005 *Design, preparation and application of external rendering and internal plastering – External rendering*.
- On completion of the installation, external fittings, rainwater goods etc. are fixed through the system into the substrate in accordance with the Certificate holder's instructions.
- All necessary post-application inspections should be performed and the ATLAS documentation (check/sign-off sheets and provision of the Maintenance/Homeowners manual and project specific documentation to the client) completed accordingly.

Figure 1.

Thermal Insulation Composite Systems ATLAS/AVAL

Layers of Thermal Insulation Composite System ATLAS/AVAL with expanded polystyrene boards EPS (standard and elastified)

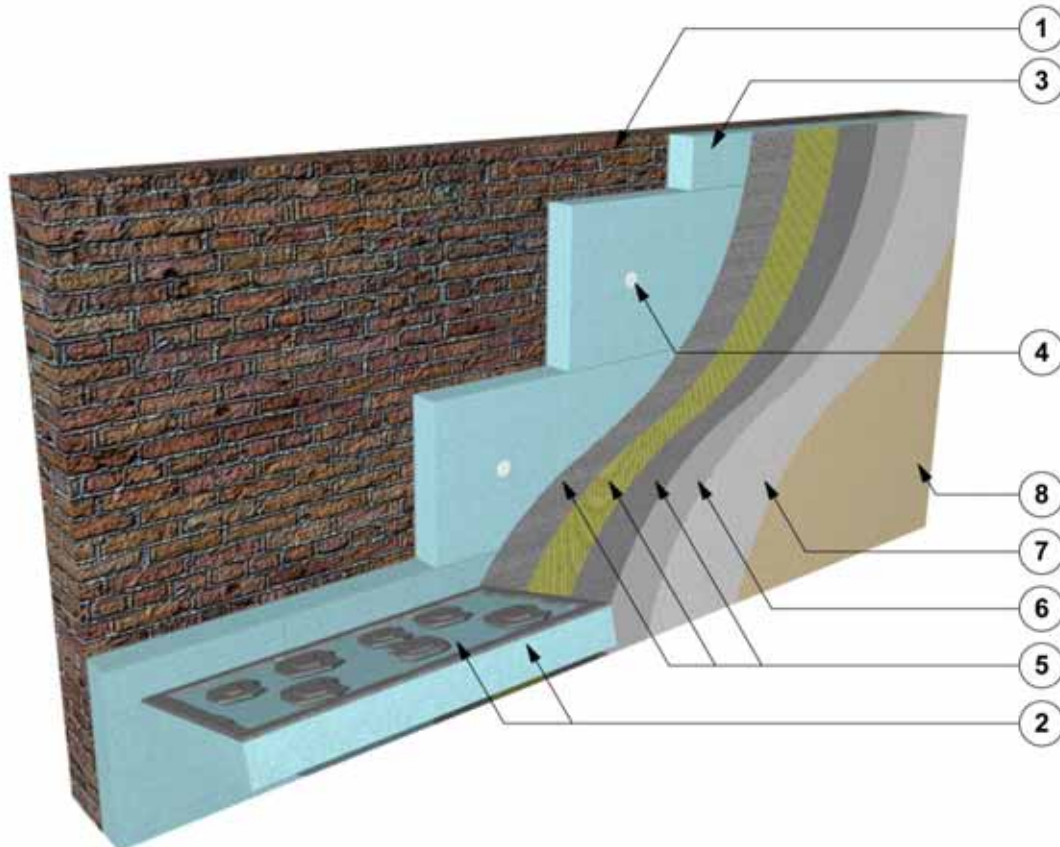


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| <ol style="list-style-type: none"> 1. Substrate 2. Insulation adhesive <ul style="list-style-type: none"> - ATLAS STOPTER K-10/AVAL KT 83 - ATLAS STOPTER K-20/AVAL KT 85 - ATLAS HOTER S/AVAL KT 53 - ATLAS HOTER U/AVAL KT 55 3. Thermal insulation <ul style="list-style-type: none"> - standard expanded polystyrene EPS - elastified expanded polystyrene EPS 4. Anchor 5. Reinforced layer <ul style="list-style-type: none"> - Insulation adhesive ATLAS STOPTER K-20/AVAL KT 85 - Insulation adhesive ATLAS HOTER U/AVAL KT 55 - Glass fibre reinforcing mesh 6. Render primer <ul style="list-style-type: none"> - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 and acrylic render ATLAS CERMIT/AVAL KT 60/AVAL KT 64) - ATLAS SILKAT ASX/AVAL KT 15 (with silicate render ATLAS SILKAT/AVAL KT 72/AVAL KT 73) - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILKON/AVAL KT 74/AVAL KT 75) | <ol style="list-style-type: none"> 7. Render coat <ul style="list-style-type: none"> - Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 - Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64 - Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73 - Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75 8. Top paint coat (optional) <ul style="list-style-type: none"> - Acrylic paint ATLAS ARKOL E/AVAL KT 44 - Silicate paint ATLAS ARKOL S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52) - Silicone paint ATLAS ARKOL N/AVAL KT 48 and ATLAS FASTEL/AVAL KT 46 (with primer ATLAS ARKOL NX/AVAL KT 47) - Silicone paint ATLAS FASTEL-NOVA |
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Figure 2.

Thermal Insulation Composite Systems ATLAS/AVAL

Layers of Thermal Insulation Composite System ATLAS
with extruded polystyrene boards XPS



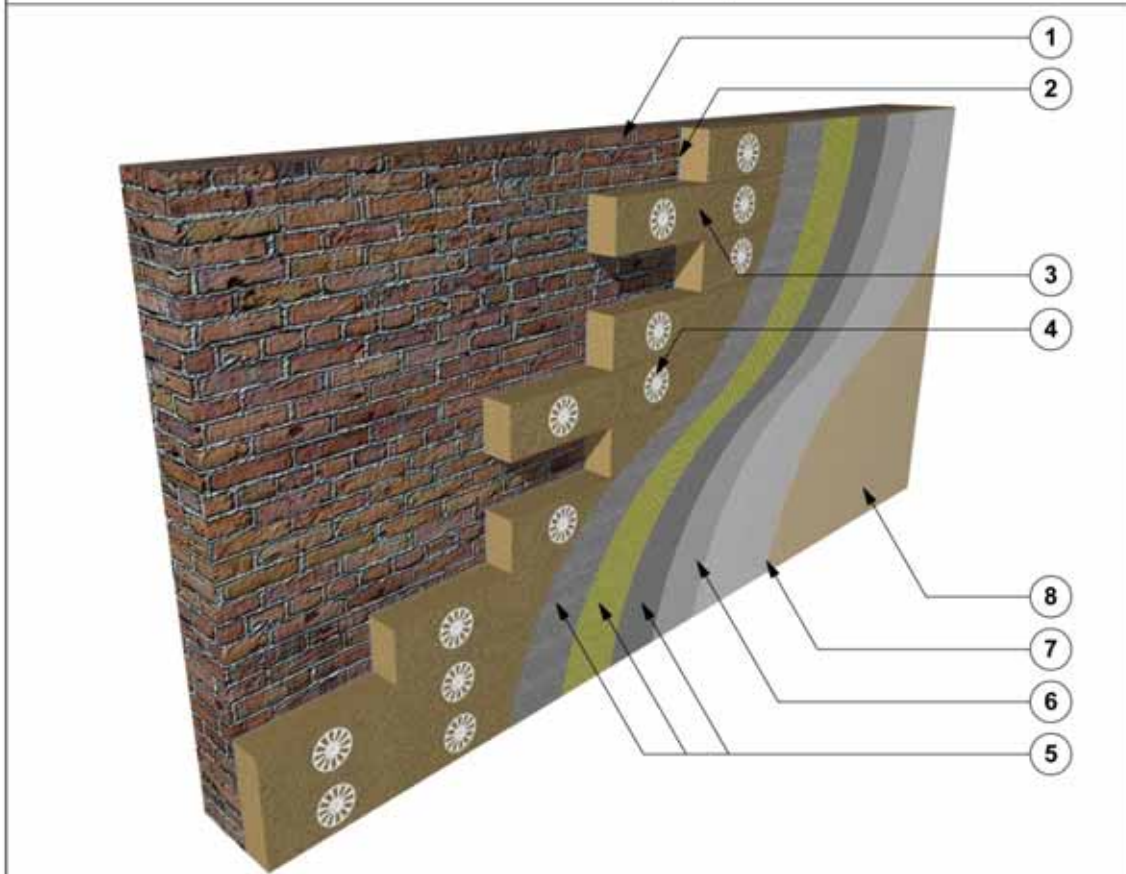
1. Substrate
2. Insulation adhesive
 - ATLAS STOPTER K-10/AVAL KT 83
 - ATLAS STOPTER K-20/AVAL KT 85
 - ATLAS HOTER S/AVAL KT 53
 - ATLAS HOTER U/AVAL KT 55
3. Thermal insulation
 - extruded polystyrene XPS
4. Anchor
5. Reinforced layer
 - Insulation adhesive
ATLAS STOPTER K-20/AVAL KT 85
 - Insulation adhesive
ATLAS HOTER U/AVAL KT 55
 - Glass fibre reinforcing mesh
6. Render primer
 - ATLAS CERPLAST/AVAL KT 16
(with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 and acrylic render ATLAS CERMIT/AVAL KT 60/AVAL KT 64)
 - ATLAS SILKAT ASX/AVAL KT 15 (with silicate render ATLAS SILKAT/AVAL KT 72/AVAL KT 73)
 - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILKON/AVAL KT 74/AVAL KT 75)

7. Render coat
 - Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137
 - Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64
 - Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73
 - Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75
8. Top paint coat (optional)
 - Acrylic paint ATLAS ARKOL E/AVAL KT 44
 - Silicate paint ATLAS ARKOL S/AVAL KT 54
(with primer ATLAS ARKOL SX/AVAL KT 52)
 - Silicone paint ATLAS ARKOL N/AVAL KT 48
and ATLAS FASTEL/AVAL KT 46
(with primer ATLAS ARKOL NX/AVAL KT 47)
 - Silicone paint ATLAS FASTEL-NOVA

Figure 3.

Thermal Insulation Composite Systems ATLAS/AVAL

Layers of Thermal Insulation Composite System
ATLAS/AVALROKER with mineral wool boards (MW)



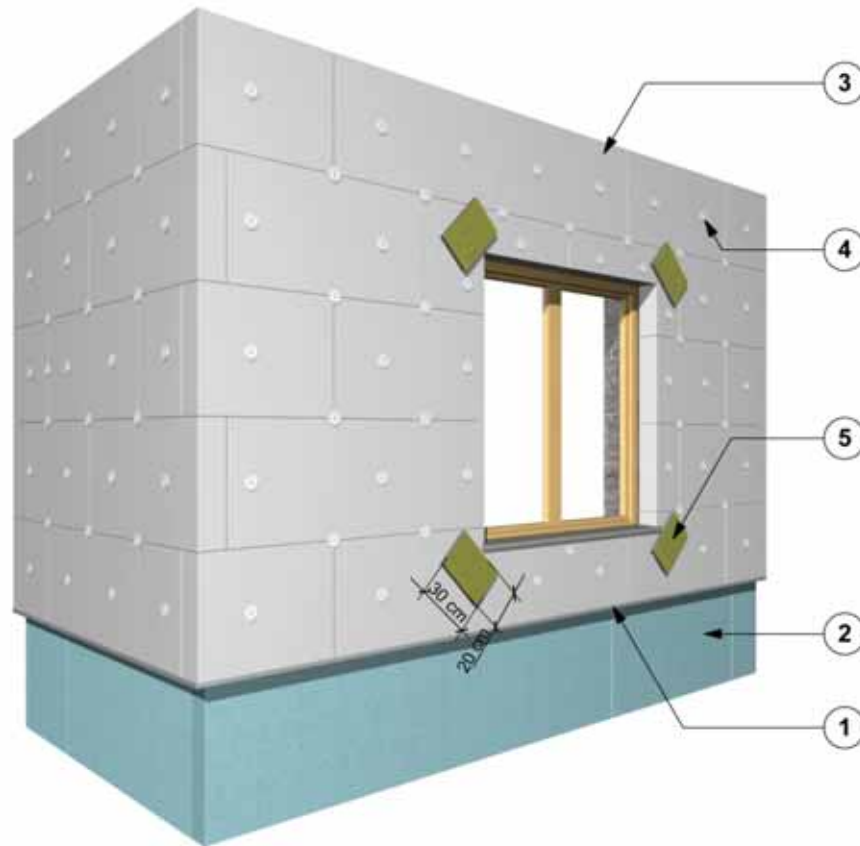
1. Substrate
2. Insulation adhesive
- ATLAS ROKER W-20/AVAL KT 190
3. Thermal insulation
- mineral wool (MW)
4. Anchor (with hammer in steel pin)
5. Reinforced layer
- Insulation adhesive ATLAS ROKER W-20 /AVAL KT 190
- Glass fibre reinforcing mesh
6. Render primer
- ATLAS CERPLAST/AVAL KT 16
(with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137)
- ATLAS SILKAT ASX/AVAL KT 15
(with silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73)
- ATLAS SILKON ANX/AVAL KT 76
(with silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75)

7. Render coat
- Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137
- Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73
- Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75
8. Top paint coat (optional)
- Silicate paint ATLAS ARKOL S/AVAL KT 54
(with primer ATLAS ARKOL SX/AVAL KT 52)
- Silicone paint ATLAS ARKOL N/AVAL KT 48
and ATLAS FASTEL/AVAL KT 46
(with primer ATLAS ARKOL NX/AVAL KT 47)
- Silicone paint ATLAS FASTEL-NOVA

Figure 4.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme: Arrangement of anchors and additional reinforcing at corners of window/door reveals (with additional patches of reinforcing mesh)

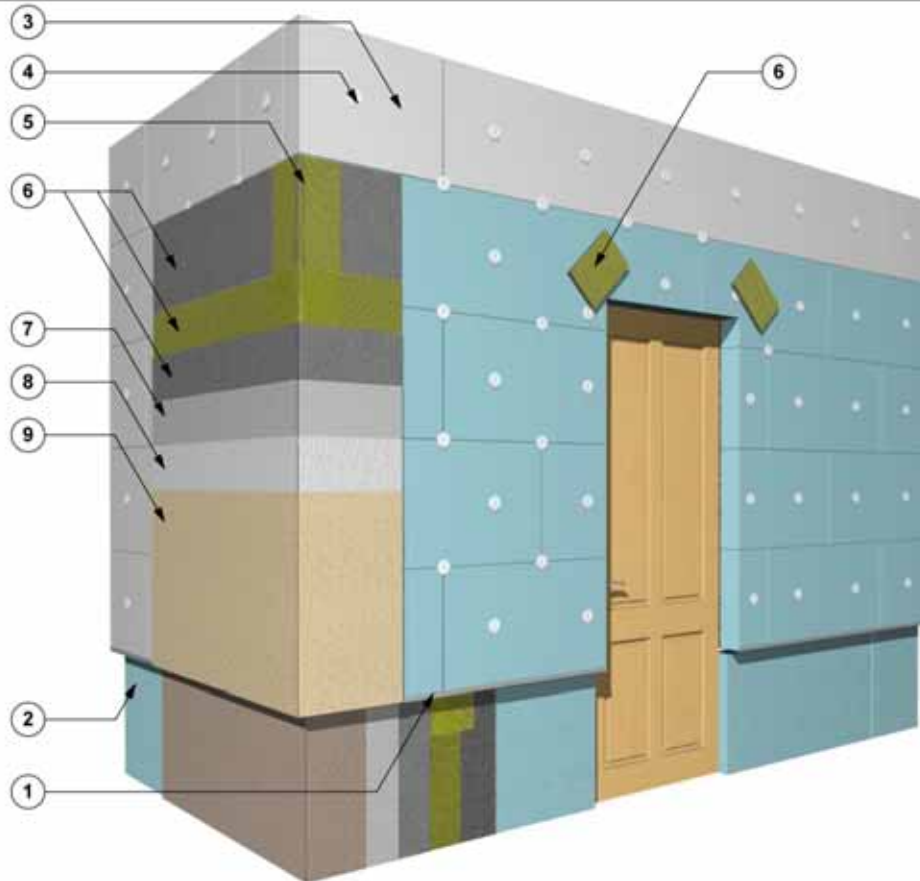


1. Starter track
2. Thermal insulation
 - extruded polystyrene XPS
3. Thermal insulation
 - standard expanded polystyrene EPS
 - elastified expanded polystyrene EPS
4. Anchor
5. Reinforced layer
 - Insulation adhesive
ATLAS STOPTER K-20 /AVAL KT 85
 - Insulation adhesive
ATLAS HOTER U /AVAL KT 55
 - Glass fibre reinforcing mesh
(patches min. 200 x 300 mm)

Figure 5.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme: Insulation of external wall corner
(with a corner profile)

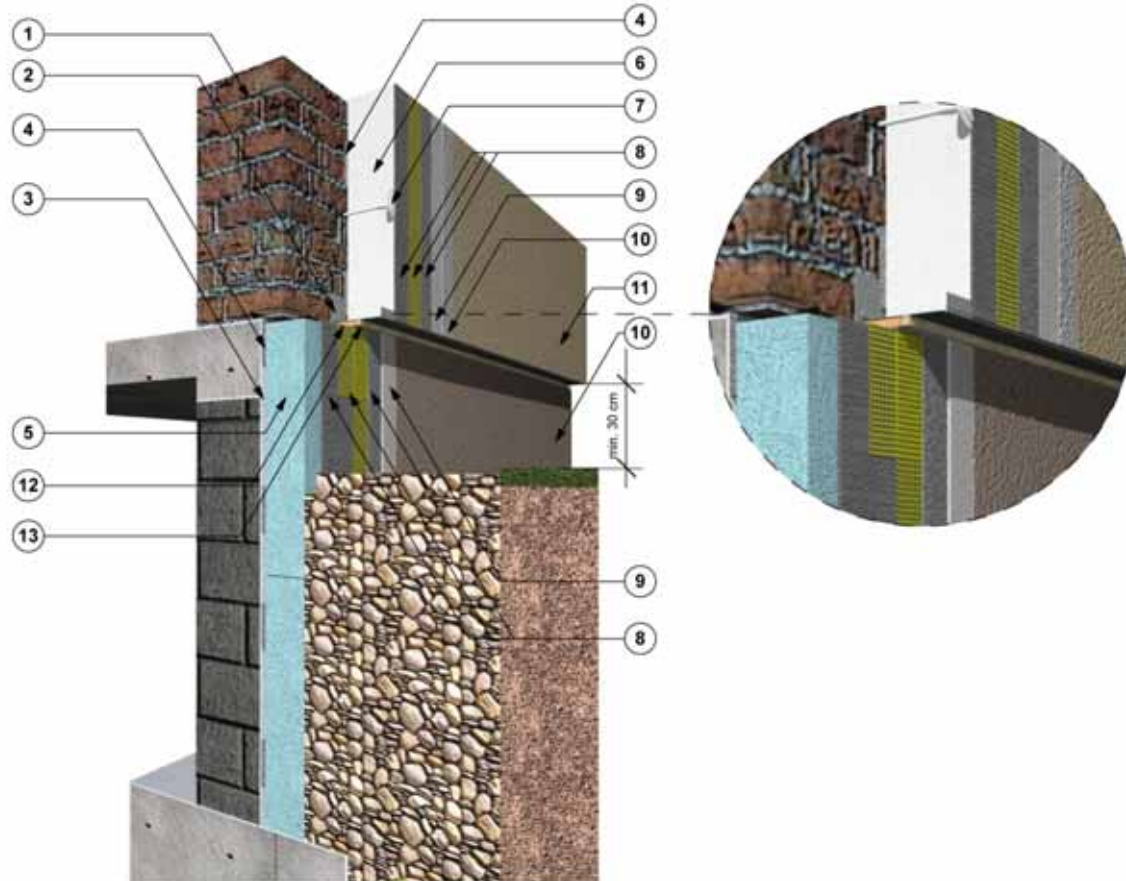


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| <ol style="list-style-type: none"> 1. Starter track 2. Thermal insulation
- extruded polystyrene XPS 3. Thermal insulation
- standard expanded polystyrene EPS
- elastified expanded polystyrene EPS 4. Anchor 5. Corner profile with mesh 6. Reinforced layer
- Insulation adhesive
ATLAS STOPTER K-20 /AVAL KT 85
- Insulation adhesive
ATLAS HOTER U /AVAL KT 55
- Glass fibre reinforcing mesh 7. Render primer
- ATLAS CERPLAST/AVAL KT 16
(with mineral render ATLAS CERMIT
/AVAL KT 35 /AVAL KT 137
and acrylic render ATLAS CERMIT
/AVAL KT 60 /AVAL KT 64)
- ATLAS SILKAT ASX /AVAL KT 15
(with silicate render ATLAS SILKAT
/AVAL KT 72 /AVAL KT 73)
- ATLAS SILKON ANX/AVAL KT 76
(with silicone render ATLAS SILKON
/AVAL KT 74 /AVAL KT 75) | <ol style="list-style-type: none"> 8. Render coat
- Mineral render ATLAS CERMIT
/AVAL KT 35 /AVAL KT 137
- Acrylic render ATLAS CERMIT
/AVAL KT 60 /AVAL KT 64
- Silicate render ATLAS SILKAT
/AVAL KT 72 /AVAL KT 73
- Silicone render ATLAS SILKON
/AVAL KT 74 /AVAL KT 75 9. Top paint coat (optional)
- Acrylic paint ATLAS ARKOL E /AVAL KT 44
- Silicate paint ATLAS ARKOL S /AVAL KT 54
(with primer ATLAS ARKOL SX /AVAL KT 52)
- Silicone paint ATLAS ARKOL N /AVAL KT 48
and ATLAS FASTEL /AVAL KT 46
(with primer ATLAS ARKOL NX /AVAL KT 47)
- Silicone paint ATLAS FASTEL-NOVA |
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Figure 6a.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:
Base and plinth insulation



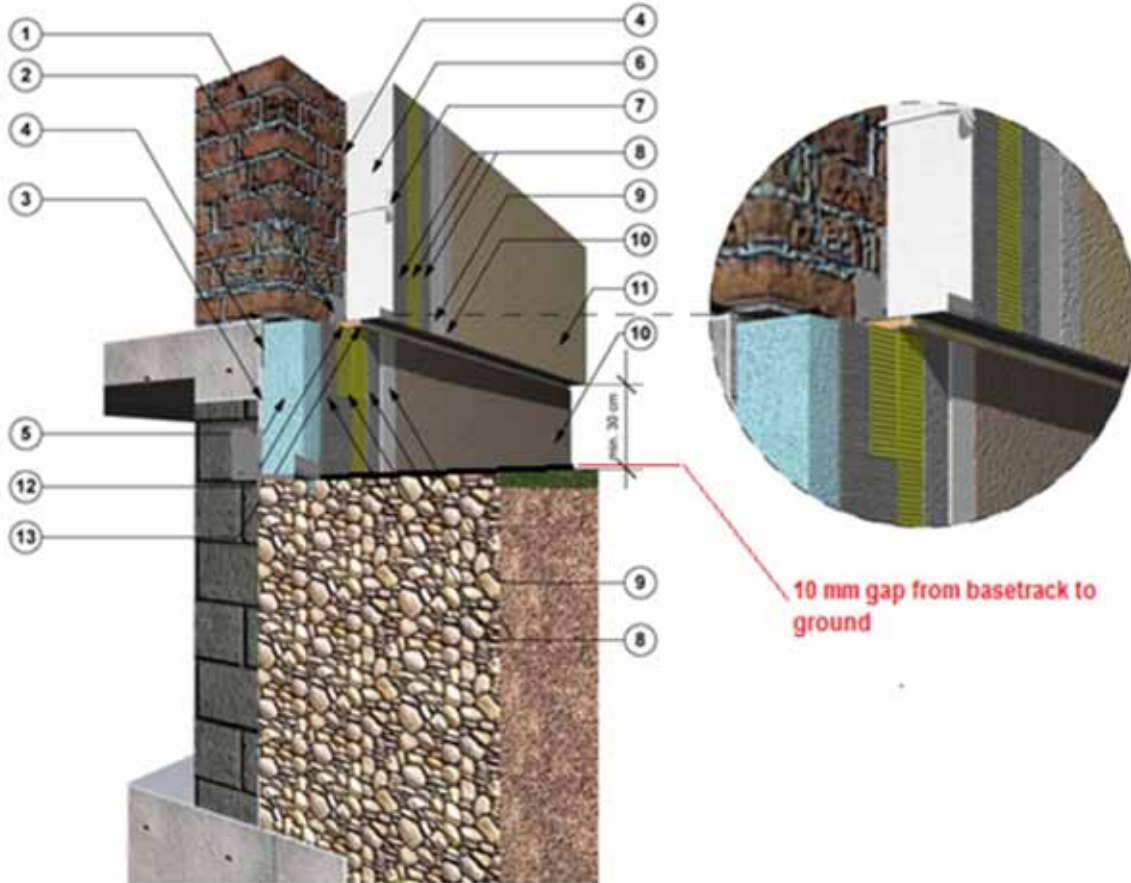
1. Substrate
2. Starter track
3. ATLAS WODER E/AVAL KL 51 sealing layer
4. Insulation adhesive
 - ATLAS STOPTER K-10/AVAL KT 83
 - ATLAS STOPTER K-20/AVAL KT 85
 - ATLAS HOTER S/AVAL KT 53
 - ATLAS HOTER U/AVAL KT 55
5. Thermal insulation
 - extruded polystyrene XPS
6. Thermal insulation
 - standard expanded polystyrene EPS
 - elastified expanded polystyrene EPS
7. Anchor
8. Reinforced layer
 - Insulation adhesive ATLAS STOPTER K-20 /AVAL KT 85
 - Insulation adhesive ATLAS HOTER U /AVAL KT 55
 - Glass fibre reinforcing mesh
9. Render primer
 - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 and acrylic render ATLAS CERMIT/AVAL KT 60/AVAL KT 64)
 - ATLAS SILKAT ASX/AVAL KT 15 (with silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73)

- ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75)
10. Render coat
 - Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137
 - Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64
 - Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73
 - Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75
 11. Top paint coat (optional)
 - Acrylic paint ATLAS ARKOL E/AVAL KT 44
 - Silicate paint ATLAS ARKOL S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
 - Silicone paint ATLAS ARKOL N/AVAL KT 48 and ATLAS FASTEL/AVAL KT 46 (with primer ATLAS ARKOL NX/AVAL KT 47)
 - Silicone paint ATLAS FASTEL-NOVA
 12. Expanding tape
 13. Mastic sealant

Figure 6b.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:
Base and plinth insulation



10 mm gap from basetrack to ground

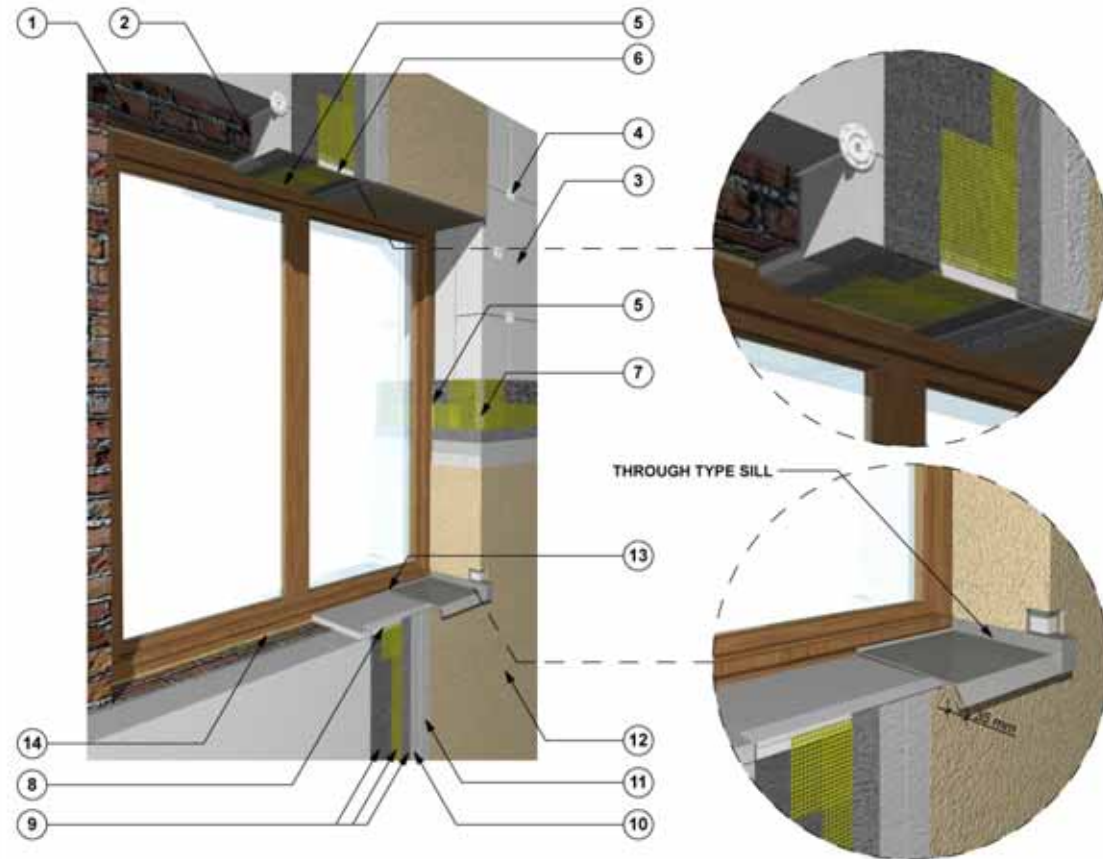
1. Substrate
2. Starter track
3. ATLAS WODER E/AVAL KL 51 sealing layer
4. Insulation adhesive
 - ATLAS STOPTER K-10/AVAL KT 83
 - ATLAS STOPTER K-20/AVAL KT 85
 - ATLAS HOTER S/AVAL KT 53
 - ATLAS HOTER U/AVAL KT 55
5. Thermal insulation
 - extruded polystyrene XPS
6. Thermal insulation
 - standard expanded polystyrene EPS
 - elastified expanded polystyrene EPS
7. Anchor
8. Reinforced layer
 - Insulation adhesive ATLAS STOPTER K-20 /AVAL KT 85
 - Insulation adhesive ATLAS HOTER U /AVAL KT 55
 - Glass fibre reinforcing mesh
9. Render primer
 - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 and acrylic render ATLAS CERMIT/AVAL KT 60/AVAL KT 64)
 - ATLAS SILKAT ASX/AVAL KT 15 (with silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73)

- ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75)
10. Render coat
 - Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137
 - Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64
 - Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73
 - Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75
 11. Top paint coat (optional)
 - Acrylic paint ATLAS ARKOL E/AVAL KT 44
 - Silicate paint ATLAS ARKOL S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
 - Silicone paint ATLAS ARKOL N/AVAL KT 48 and ATLAS FASTEL/AVAL KT 46 (with primer ATLAS ARKOL NX/AVAL KT 47)
 - Silicone paint ATLAS FASTEL-NOVA
 12. Expanding tape
 13. Mastic sealant

Figure 7a.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:
Window reveal insulation



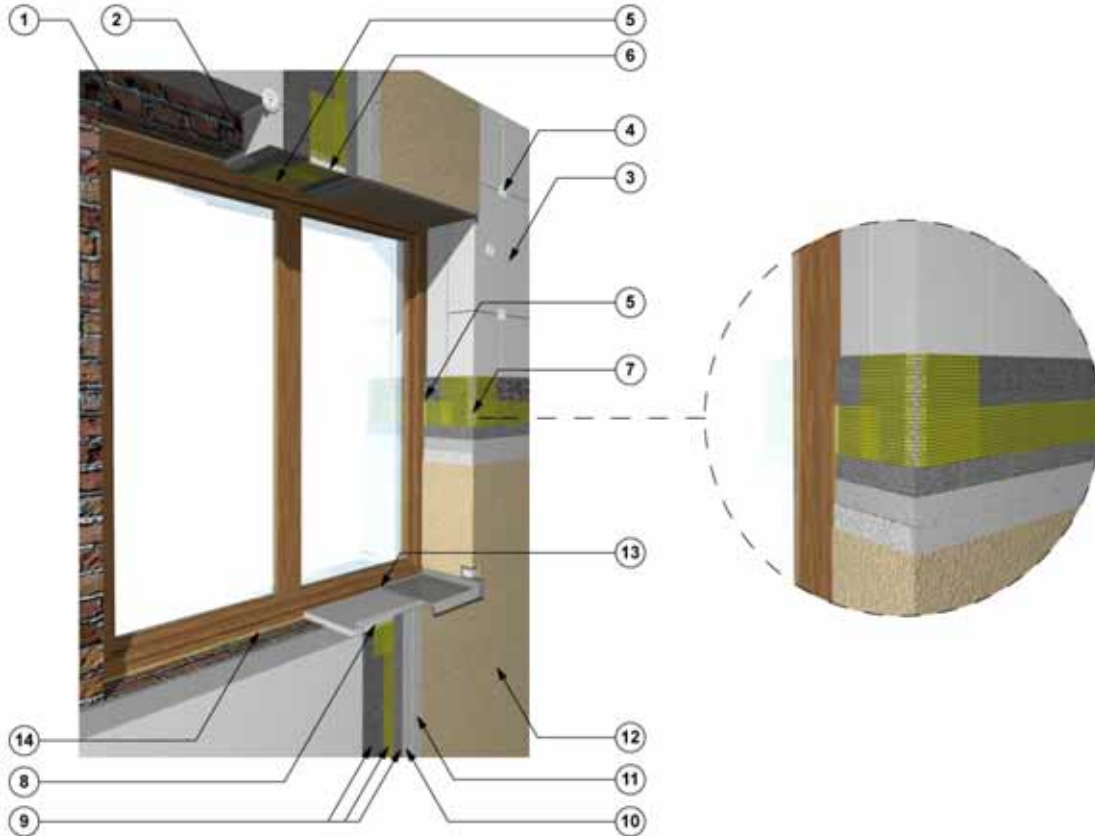
1. Substrate
2. Insulation adhesive
 - ATLAS STOPTER K-10/AVAL KT 83
 - ATLAS STOPTER K-20/AVAL KT 85
 - ATLAS HOTER S/AVAL KT 53
 - ATLAS HOTER U/AVAL KT 55
3. Thermal insulation
 - standard expanded polystyrene EPS
 - elastified expanded polystyrene EPS
4. Anchor
5. Window profile
6. Drip profile
7. Corner profile with mesh
8. Under window-sill profile
9. Reinforced layer
 - Insulation adhesive
ATLAS STOPTER K-20/AVAL KT 85
 - Insulation adhesive
ATLAS HOTER U/AVAL KT 55
 - Glass fibre reinforcing mesh
10. Render primer
 - ATLAS CERPLAST/AVAL KT 16
(with mineral render ATLAS CERMIT
/AVAL KT 35/AVAL KT 137 and acrylic render
ATLAS CERMIT/AVAL KT 60/AVAL KT 64)

- ATLAS SILKAT ASX/AVAL KT 15
(with silicate render ATLAS SILKAT
/AVAL KT 72/AVAL KT 73)
 - ATLAS SILKON ANX/AVAL KT 76
(with silicone render ATLAS SILKON
/AVAL KT 74/AVAL KT 75)
11. Render coat
 - Mineral render ATLAS CERMIT
/AVAL KT 35/AVAL KT 137
 - Acrylic render ATLAS CERMIT
/AVAL KT 60/AVAL KT 64
 - Silicate render ATLAS SILKAT
/AVAL KT 72/AVAL KT 73
 - Silicone render ATLAS SILKON
/AVAL KT 74/AVAL KT 75
 12. Top paint coat (optional)
 - Acrylic paint ATLAS ARKOL E/AVAL KT 44
 - Silicate paint ATLAS ARKOL S/AVAL KT 54
(with primer ATLAS ARKOL SX/AVAL KT 52)
 - Silicone paint ATLAS ARKOL N/AVAL KT 48
and ATLAS FASTEL/AVAL KT 46
(with primer ATLAS ARKOL NX/AVAL KT 47)
 - Silicone paint ATLAS FASTEL-NOVA
 13. Mastic sealant
 14. Sealing foam

Figure 7b.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:
Window reveal insulation

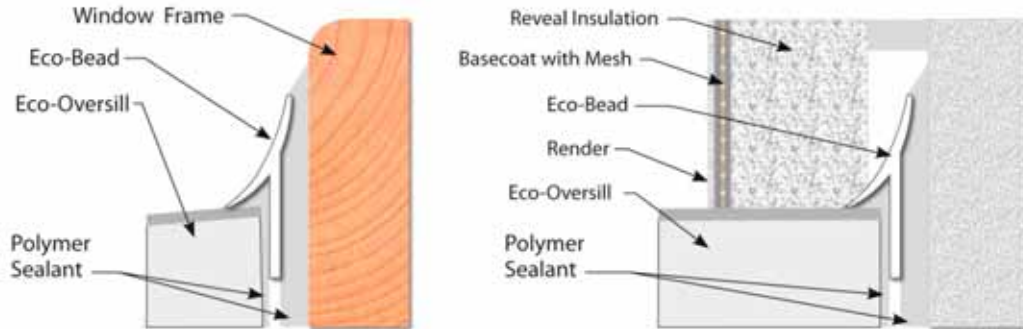


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| <ol style="list-style-type: none"> 1. Substrate 2. Insulation adhesive <ul style="list-style-type: none"> - ATLAS STOPTER K-10/AVAL KT 83 - ATLAS STOPTER K-20/AVAL KT 85 - ATLAS HOTER S/AVAL KT 53 - ATLAS HOTER U/AVAL KT 55 3. Thermal insulation <ul style="list-style-type: none"> - standard expanded polystyrene EPS - elastified expanded polystyrene EPS 4. Anchor 5. Window profile 6. Drip profile 7. Corner profile with mesh 8. Under window-sill profile 9. Reinforced layer <ul style="list-style-type: none"> - Insulation adhesive
ATLAS STOPTER K-20/AVAL KT 85 - Insulation adhesive
ATLAS HOTER U/AVAL KT 55 - Glass fibre reinforcing mesh 10. Render primer <ul style="list-style-type: none"> - ATLAS CERPLAST/AVAL KT 16
(with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 and acrylic render ATLAS CERMIT/AVAL KT 60/AVAL KT 64) | <ul style="list-style-type: none"> - ATLAS SILKAT ASX/AVAL KT 15
(with silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73) - ATLAS SILKON ANX/AVAL KT 76
(with silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75) <ol style="list-style-type: none"> 11. Render coat <ul style="list-style-type: none"> - Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 - Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64 - Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73 - Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75 12. Top paint coat (optional) <ul style="list-style-type: none"> - Acrylic paint ATLAS ARKOL E/AVAL KT 44 - Silicate paint ATLAS ARKOL S/AVAL KT 54
(with primer ATLAS ARKOL SX/AVAL KT 52) - Silicone paint ATLAS ARKOL N/AVAL KT 48
and ATLAS FASTEL/AVAL KT 46
(with primer ATLAS ARKOL NX/AVAL KT 47) - Silicone paint ATLAS FASTEL-NOVA 13. Mastic sealant 14. Sealing foam |
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Figure 7c.

Window Sill Detail with ECO-OVERSILL

Eco-Oversill Manufactured by
Eco-Oversill Ltd. (Patent No. S86111)



**Detail 1: Polymer Sealant & Eco-Beading
with Window Frame**

**Detail 2: Polymer Sealant & Eco-Beading
with Reveal Insulation**

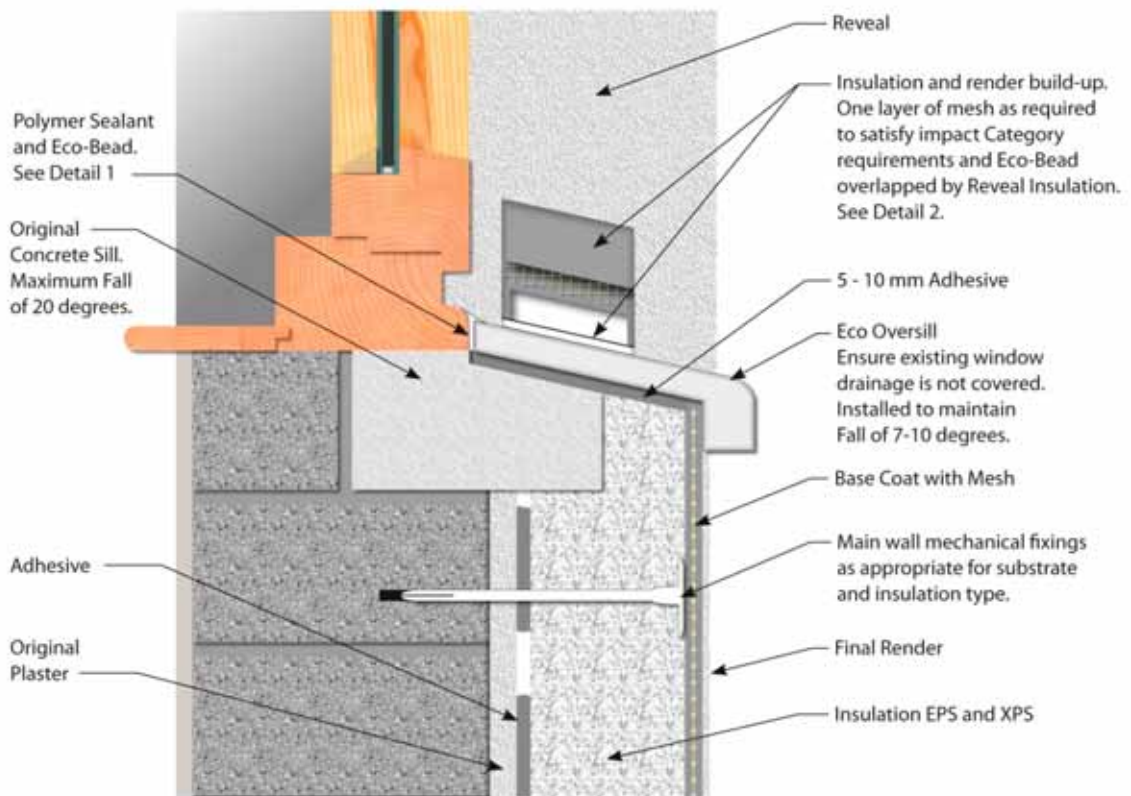
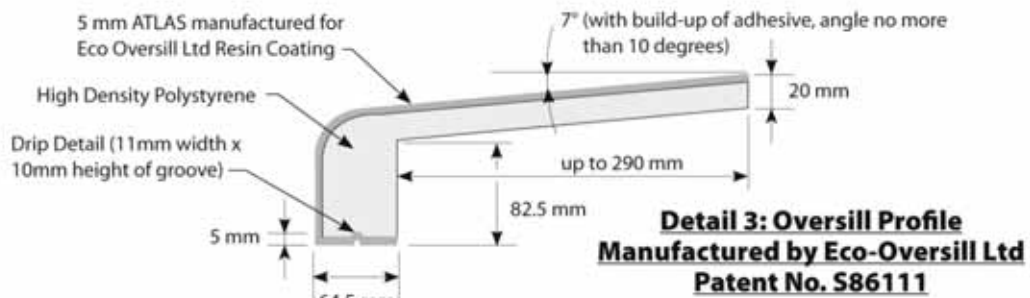
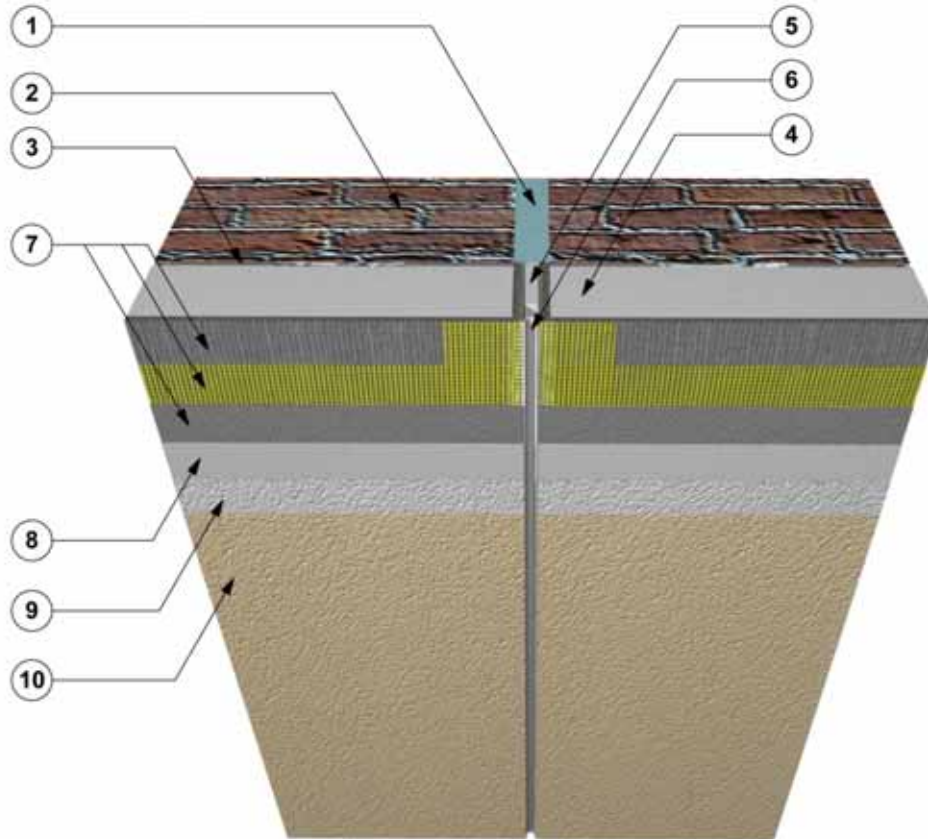


Figure 8.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme: Vertical expansion joint
(with a straight expansion joint profile)



1. Building structural expansion joint
2. Substrate
3. Insulation adhesive
 - ATLAS STOPTER K-10/AVAL KT 83
 - ATLAS STOPTER K-20/AVAL KT 85
 - ATLAS HOTER S/AVAL KT 53
 - ATLAS HOTER U/AVAL KT 55
4. Thermal insulation
 - standard expanded polystyrene EPS
 - elastified expanded polystyrene EPS
5. Additional stripe of insulation
6. Straight expansion joint profile
7. Reinforced layer
 - Insulation adhesive
ATLAS STOPTER K-20/AVAL KT 85
 - Insulation adhesive
ATLAS HOTER U/AVAL KT 55
 - Glass fibre reinforcing mesh
8. Render primer
 - ATLAS CERPLAST/AVAL KT 16
(with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 and acrylic render ATLAS CERMIT/AVAL KT 60/AVAL KT 64)

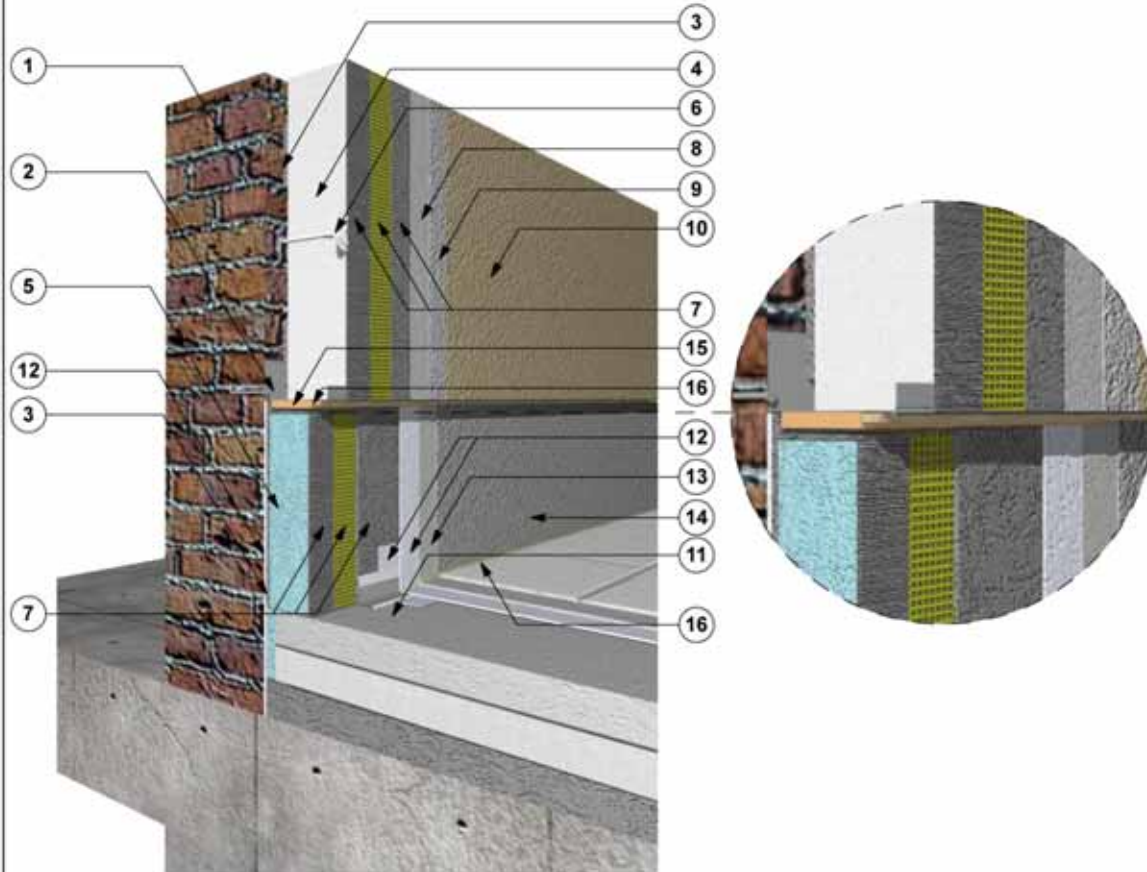
- ATLAS SILKAT ASX/AVAL KT 15
(with silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73)
 - ATLAS SILKON ANX/AVAL KT 76
(with silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75)
9. Render coat
 - Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137
 - Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64
 - Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73
 - Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75
 10. Top paint coat (optional)
 - Acrylic paint ATLAS ARKOL E/AVAL KT 44
 - Silicate paint ATLAS ARKOL S/AVAL KT 54
(with primer ATLAS ARKOL SX/AVAL KT 52)
 - Silicone paint ATLAS ARKOL N/AVAL KT 48
and ATLAS FASTEL/AVAL KT 46
(with primer ATLAS ARKOL NX/AVAL KT 47)
 - Silicone paint ATLAS FASTEL-NOVA

Figure 9.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:

Joint of external wall insulation with a terrace



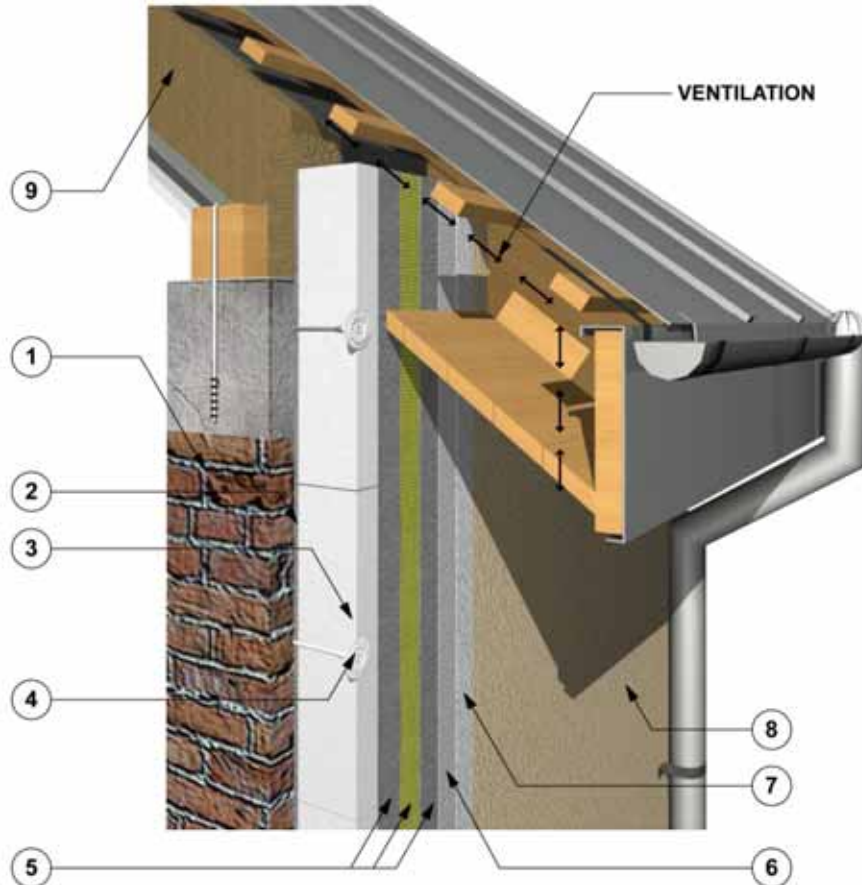
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| <ol style="list-style-type: none"> 1. Substrate 2. Starter track 3. Insulation adhesive <ul style="list-style-type: none"> - ATLAS STOPTER K-10/AVAL KT 83 - ATLAS STOPTER K-20/AVAL KT 85 - ATLAS HOTER S/AVAL KT 53 - ATLAS HOTER U/AVAL KT 55 4. Thermal insulation <ul style="list-style-type: none"> - standard expanded polystyrene EPS - elastified expanded polystyrene EPS 5. Thermal insulation <ul style="list-style-type: none"> - extruded polystyrene XPS 6. Anchor 7. Reinforced layer <ul style="list-style-type: none"> - Insulation adhesive ATLAS STOPTER K-20/AVAL KT 85 - Insulation adhesive ATLAS HOTER U/AVAL KT 55 - Glass fibre reinforcing mesh 8. Render primer <ul style="list-style-type: none"> - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 and acrylic render ATLAS CERMIT/AVAL KT 60/AVAL KT 64) - ATLAS SILKAT ASX/AVAL KT 15 (with silicate render ATLAS SILKAT/AVAL KT 72/AVAL KT 73) - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILKON/AVAL KT 74/AVAL KT 75) | <ol style="list-style-type: none"> 9. Render coat <ul style="list-style-type: none"> - Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 - Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64 - Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73 - Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75 10. Top paint coat (optional) <ul style="list-style-type: none"> - Acrylic paint ATLAS ARKOL E/AVAL KT 44 - Silicate paint ATLAS ARKOL S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52) - Silicone paint ATLAS ARKOL N/AVAL KT 48 and ATLAS FASTEL/AVAL KT 46 (with primer ATLAS ARKOL NX/AVAL KT 47) - Silicone paint ATLAS FASTEL-NOVA 11. ATLAS/AVAL KL 152 sealing tape 12. ATLAS WODER E/AVAL KL 51 sealing layer 13. Render primer <ul style="list-style-type: none"> - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 and acrylic render ATLAS CERMIT/AVAL KT 60/AVAL KT 64) 14. Render coat <ul style="list-style-type: none"> - Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 - Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64 15. Expanding tape 16. Mastic sealant |
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Figure 10a.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:

Wall insulation finishing at eaves - for buildings up to two and half stories high



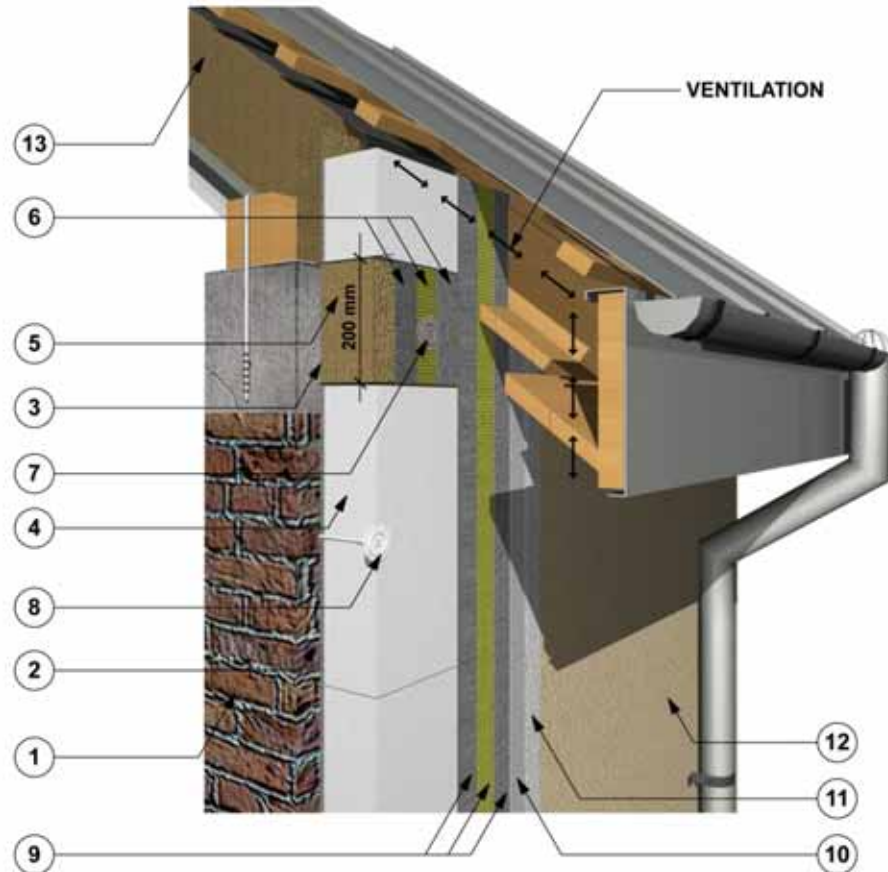
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| <ol style="list-style-type: none"> 1. Substrate 2. Insulation adhesive <ul style="list-style-type: none"> - ATLAS STOPTER K-10/AVAL KT 83 - ATLAS STOPTER K-20/AVAL KT 85 - ATLAS HOTER S/AVAL KT 53 - ATLAS HOTER U/AVAL KT 55 3. Thermal insulation <ul style="list-style-type: none"> - standard expanded polystyrene EPS - elastified expanded polystyrene EPS 4. Anchor 5. Reinforced layer <ul style="list-style-type: none"> - Insulation adhesive
ATLAS STOPTER K20/AVAL KT 85 - Insulation adhesive
ATLAS HOTER U/AVAL KT 55 - Glass fibre reinforcing mesh 6. Render primer <ul style="list-style-type: none"> - ATLAS CERPLAST/AVAL KT 16
(with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 and acrylic render ATLAS CERMIT/AVAL KT 60/AVAL KT 64) - ATLAS SILKAT ASX/AVAL KT 15
(with silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73) - ATLAS SILKON ANX/AVAL KT 76
(with silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75) | <ol style="list-style-type: none"> 7. Render coat <ul style="list-style-type: none"> - Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 - Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64 - Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73 - Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75 8. Top paint coat (optional) <ul style="list-style-type: none"> - Acrylic paint ATLAS ARKOL E/AVAL KT 44 - Silicate paint ATLAS ARKOL S/AVAL KT 54
(with primer ATLAS ARKOL SX/AVAL KT 52) - Silicone paint ATLAS ARKOL N/AVAL KT 48
and ATLAS FASTEL/AVAL KT 46
(with primer ATLAS ARKOL NX/AVAL KT 47) - Silicone paint ATLAS FASTEL-NOVA 9. Roof insulation |
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Figure 10b.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:

Wall insulation finishing at eaves - for three stories buildings and higher

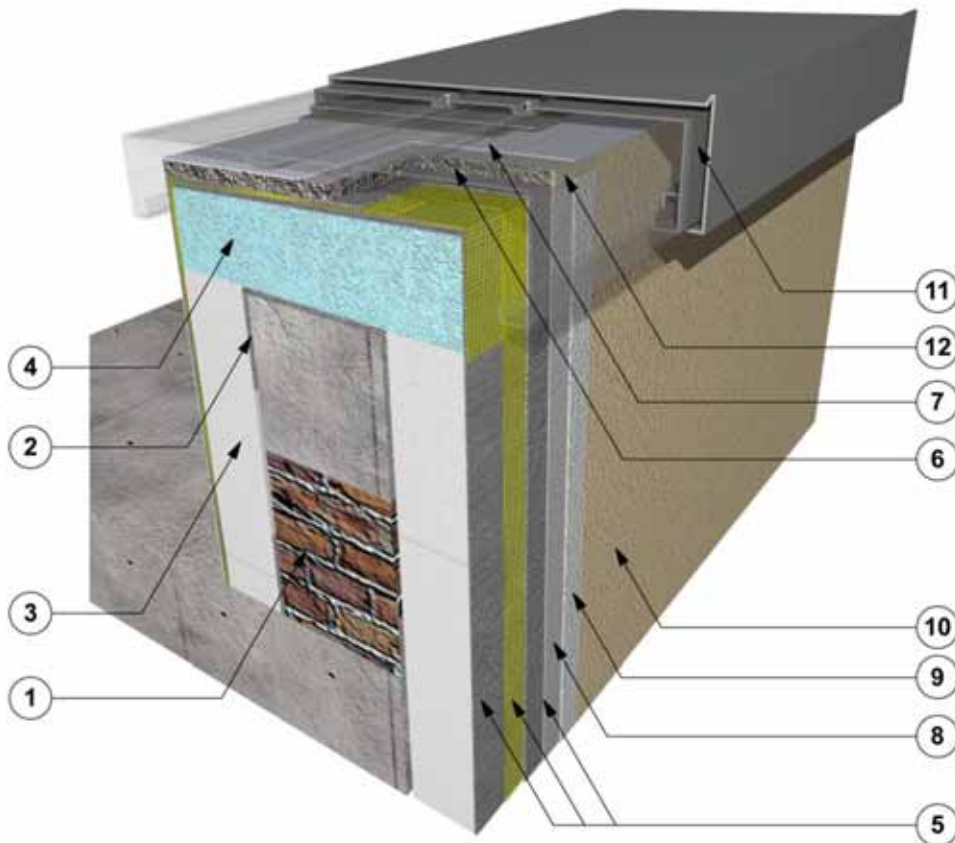


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| <ol style="list-style-type: none"> 1. Substrate 2. Insulation adhesive (EPS) <ul style="list-style-type: none"> - ATLAS STOPTER K-10/AVAL KT 83 - ATLAS STOPTER K-20/AVAL KT 85 - ATLAS HOTER S/AVAL KT 53 - ATLAS HOTER U/AVAL KT 55 3. Insulation adhesive (MW) <ul style="list-style-type: none"> - ATLAS ROKER W-20 /AVAL KT 190 4. Thermal insulation (EPS) <ul style="list-style-type: none"> - standard expanded polystyrene EPS - elastified expanded polystyrene EPS 5. Thermal insulation <ul style="list-style-type: none"> - mineral wool lamella Rockwool MW 6. Reinforced layer <ul style="list-style-type: none"> - ATLAS ROKER W-20 /AVAL KT 190 - glass fibre reinforced mesh 7. Anchor (fire resistance, stainless steel metal insulation supports, class A1) 8. Anchor 9. Reinforced layer <ul style="list-style-type: none"> - Insulation adhesive ATLAS STOPTER K20/AVAL KT 85 - Insulation adhesive ATLAS HOTER U/AVAL KT 55 - Glass fibre reinforcing mesh | <ol style="list-style-type: none"> 10. Render primer <ul style="list-style-type: none"> - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 and acrylic render ATLAS CERMIT/AVAL KT 60/AVAL KT 64) - ATLAS SILKAT ASX/AVAL KT 15 (with silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73) - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75) 11. Render coat <ul style="list-style-type: none"> - Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 - Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64 - Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73 - Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75 12. Top paint coat (optional) <ul style="list-style-type: none"> - Acrylic paint ATLAS ARKOL E/AVAL KT 44 - Silicate paint ATLAS ARKOL S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52) - Silicone paint ATLAS ARKOL N/AVAL KT 48 and ATLAS FASTEL/AVAL KT 46 (with primer ATLAS ARKOL NX/AVAL KT 47) - Silicone paint ATLAS FASTEL-NOVA 13. Roof insulation |
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Figure 11.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:
Flat roof attic insulation



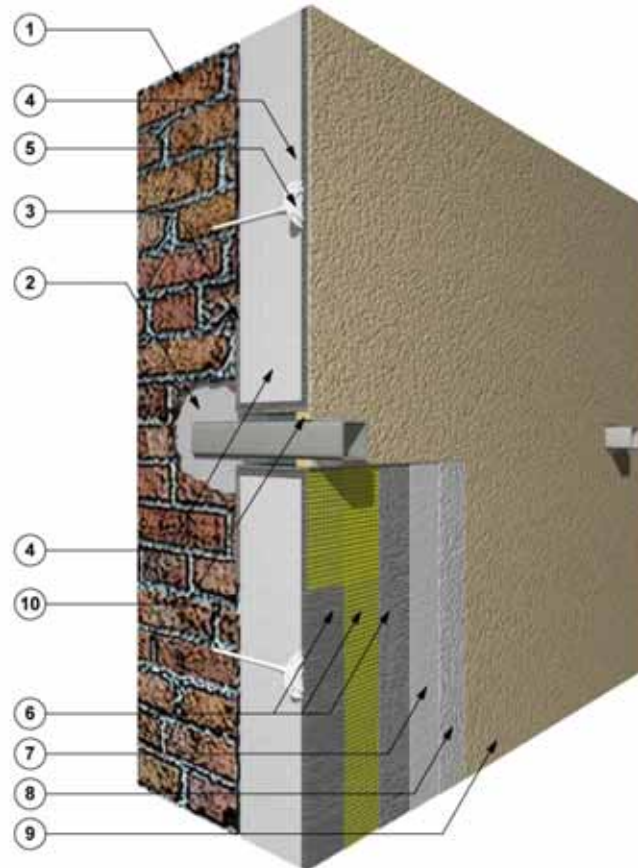
1. Substrate
2. Insulation adhesive
 - ATLAS STOPTER K-10/AVAL KT 83
 - ATLAS STOPTER K-20/AVAL KT 85
 - ATLAS HOTER S/AVAL KT 53
 - ATLAS HOTER U/AVAL KT 55
3. Thermal insulation
 - standard expanded polystyrene EPS
 - elastified expanded polystyrene EPS
4. Thermal insulation
 - extruded polystyrene XPS
5. Reinforced layer
 - Insulation adhesive ATLAS STOPTER K-20 /AVAL KT 85
 - Insulation adhesive ATLAS HOTER U/AVAL KT 55
 - Glass fibre reinforcing mesh
6. Cement fibre board
7. ATLAS WODER E/AVAL KL 51 sealing layer

8. Render primer
 - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 and acrylic render ATLAS CERMIT/AVAL KT 60/AVAL KT 64)
 - ATLAS SILKAT ASX/AVAL KT 15 (with silicate render ATLAS SILKAT/AVAL KT 72/AVAL KT 73)
 - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILKON/AVAL KT 74/AVAL KT 75)
9. Render coat
 - Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137
 - Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64
 - Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73
 - Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75
10. Top paint coat (optional)
 - Acrylic paint ATLAS ARKOL E/AVAL KT 44
 - Silicate paint ATLAS ARKOL S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
 - Silicone paint ATLAS ARKOL N/AVAL KT 48 and ATLAS FASTEL/AVAL KT 46 (with primer ATLAS ARKOL NX/AVAL KT 47)
 - Silicone paint ATLAS FASTEL-NOVA
11. Flashing
12. Mastic sealant

Figure 12.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme: Anchoring of a structural element through the external insulation system (e.g. railing)



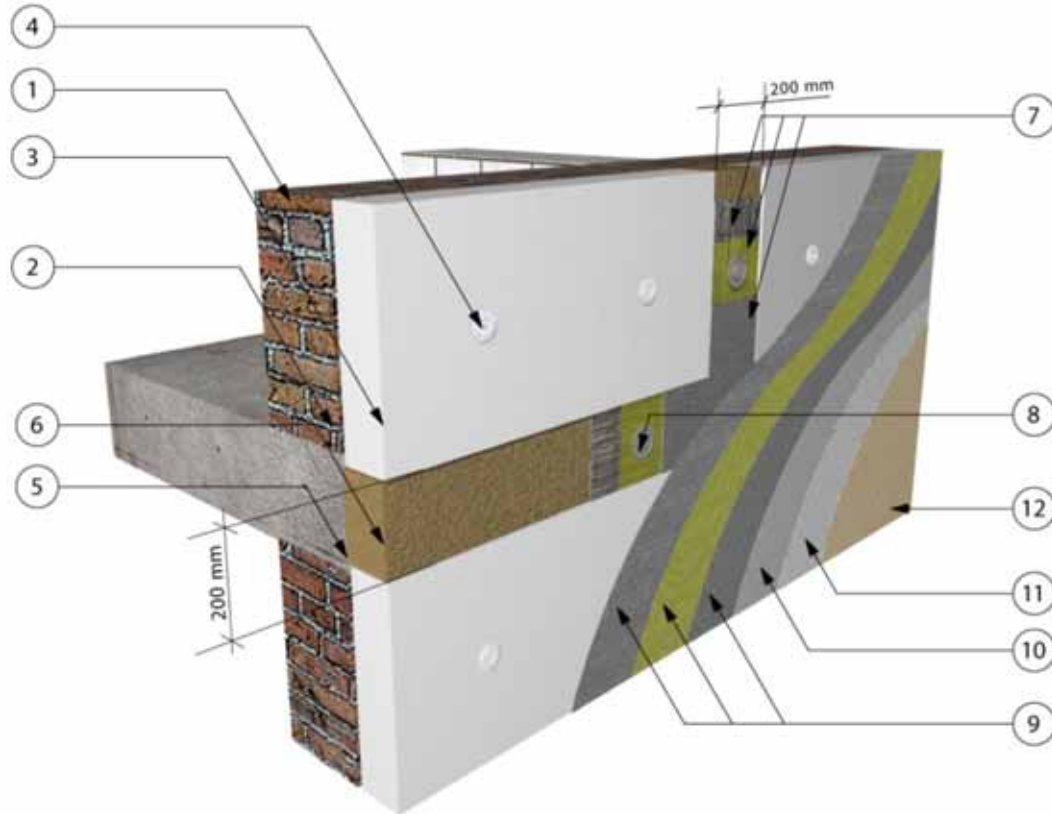
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| <ol style="list-style-type: none"> 1. Substrate 2. ATLAS MONTER assembly mortar 3. Insulation adhesive <ul style="list-style-type: none"> - ATLAS STOPTER K-10/AVAL KT 83 - ATLAS STOPTER K-20/AVAL KT 85 - ATLAS HOTER S/AVAL KT 53 - ATLAS HOTER U/AVAL KT 55 4. Thermal insulation <ul style="list-style-type: none"> - standard expanded polystyrene EPS - elastified expanded polystyrene EPS 5. Anchor 6. Reinforced layer <ul style="list-style-type: none"> - Insulation adhesive
ATLAS STOPTER K-20/AVAL KT 85 - Insulation adhesive
ATLAS HOTER U/AVAL KT 55 - Glass fibre reinforcing mesh 7. Render primer <ul style="list-style-type: none"> - ATLAS CERPLAST/AVAL KT 16
(with mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 and acrylic render ATLAS CERMIT/AVAL KT 60/AVAL KT 64) - ATLAS SILKAT ASX/AVAL KT 15 (with silicate render ATLAS SILKAT/AVAL KT 72/AVAL KT 73) - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILKON/AVAL KT 74/AVAL KT 75) | <ol style="list-style-type: none"> 8. Render coat <ul style="list-style-type: none"> - Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137 - Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64 - Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73 - Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75 9. Top paint coat (optional) <ul style="list-style-type: none"> - Acrylic paint ATLAS ARKOL E/AVAL KT 44 - Silicate paint ATLAS ARKOL S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52) - Silicone paint ATLAS ARKOL N/AVAL KT 48 and ATLAS FASTEL/AVAL KT 46 (with primer ATLAS ARKOL NX/AVAL KT 47) - Silicone paint ATLAS FASTEL-NOVA 10. Mastic sealant |
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Figure 13.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:

Installation of vertical and horizontal fire barriers

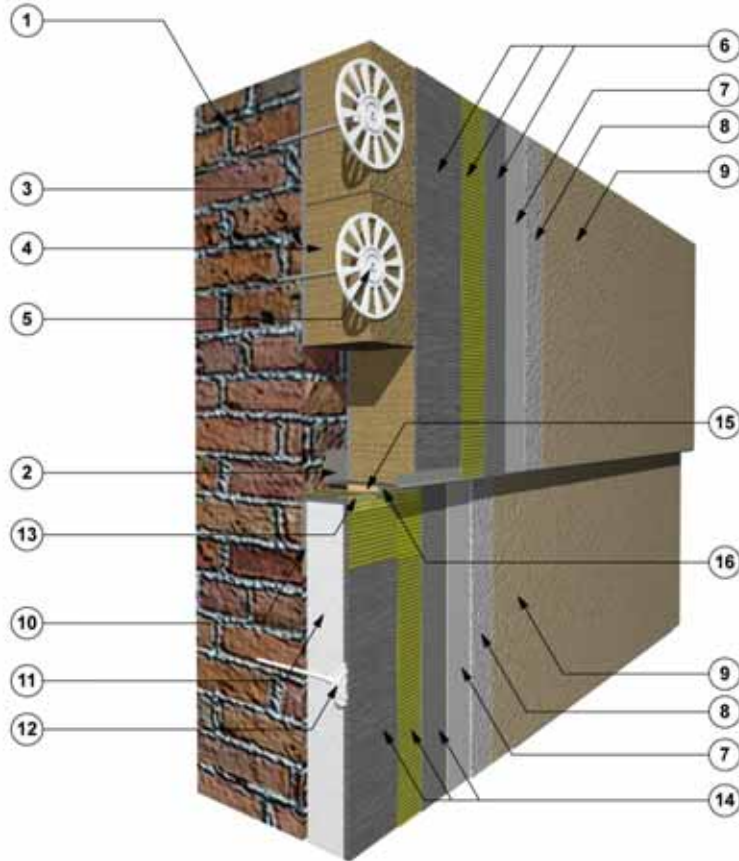


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| <p>1. Substrate</p> <p>2. Insulation adhesive (EPS)</p> <ul style="list-style-type: none"> - ATLAS STOPTER K-10/AVAL KT 83 - ATLAS STOPTER K-20/AVAL KT 85 - ATLAS HOTER S/AVAL KT 53 - ATLAS HOTER U/AVAL KT 55 <p>3. Thermal insulation</p> <ul style="list-style-type: none"> - standard expanded polystyrene EPS - elastified expanded polystyrene EPS <p>4. Anchors (with hammer in steel or nylon pin)</p> <p>5. Insulation adhesive (MW)</p> <ul style="list-style-type: none"> - ATLAS ROKER W-20/AVAL KT 190 <p>6. Thermal insulation</p> <ul style="list-style-type: none"> - mineral wool lamella ROCKWOOL (MW) <p>7. Reinforced layer</p> <ul style="list-style-type: none"> - Insulation adhesive ATLAS ROKER W-20/AVAL KT 190 - Glass fibre reinforcing mesh <p>8. Anchor (fire resistant, stainless steel, metal insulation supports, class A1)</p> <ul style="list-style-type: none"> - fixed through layer of mesh - @ 1 No. per 50 cm vertical centres (maximum), or 1 No. per linear metre (maximum) <p>9. Reinforced layer</p> <ul style="list-style-type: none"> - Insulation adhesive ATLAS STOPTER K-20/AVAL KT 85 - Insulation adhesive ATLAS HOTER U/AVAL KT 55 - Glass fibre reinforcing mesh | <p>10. Render primer</p> <ul style="list-style-type: none"> - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT/AVAL KT 35/AVAL KT 137) - ATLAS SILKAT ASX/AVAL KT 15 (with silicate render ATLAS SILKAT/AVAL KT 72/AVAL KT 73) - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILKON/AVAL KT 74/AVAL KT 75) <p>11. Render coat</p> <ul style="list-style-type: none"> - Mineral render ATLAS CERMIT/AVAL KT 35/AVAL KT 137 - Silicate render ATLAS SILKAT/AVAL KT 72/AVAL KT 73 - Silicone render ATLAS SILKON/AVAL KT 74/AVAL KT 75 <p>12. Top paint coat (optional)</p> <ul style="list-style-type: none"> - Silicate paint ATLAS ARKOL S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52) - Silicone paint ATLAS ARKOL N/AVAL KT 48 and ATLAS FASTEL/AVAL KT 46 (with primer ATLAS ARKOL NX/AVAL KT 47) - Silicone paint ATLAS FASTEL-NOVA |
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Figure 14.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme: Joint of the EPS - based insulation system with the mineral wool - based insulation system

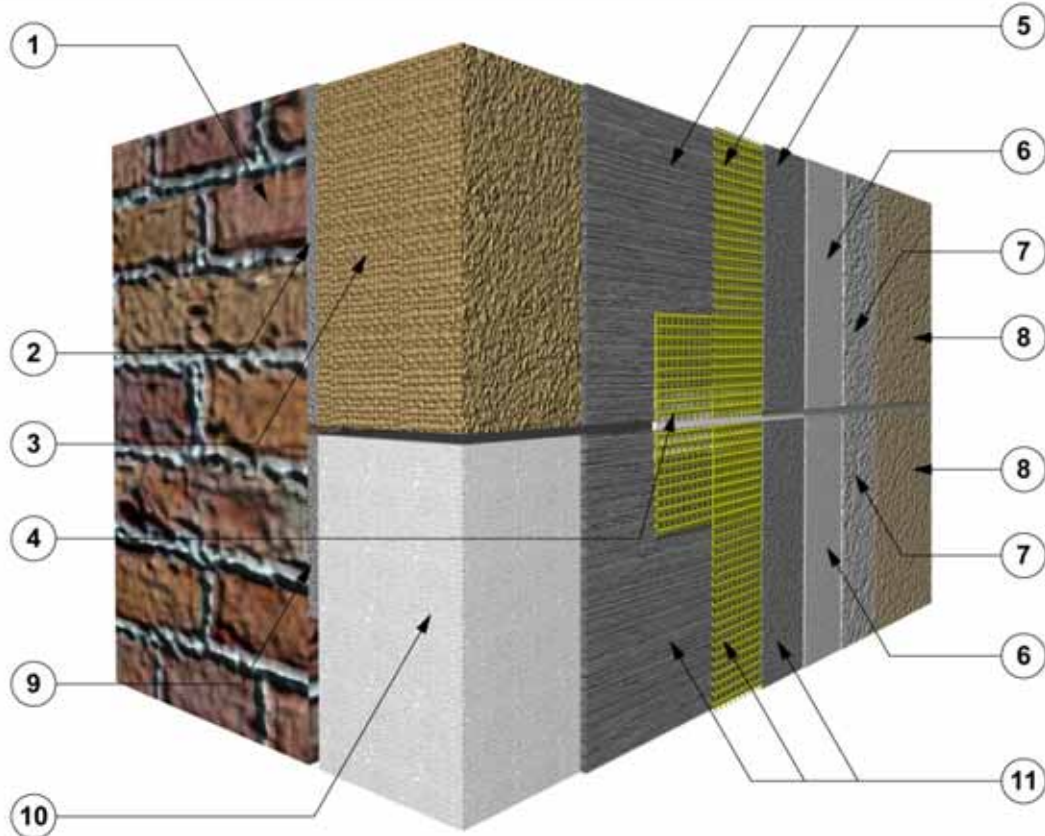


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| <ol style="list-style-type: none"> 1. Substrate 2. Starter track 3. Insulation adhesive (mineral wool boards)
- ATLAS ROKER W-20/AVAL KT 190 4. Thermal insulation
- mineral wool (MW) 5. Anchors (with hammer in steel pin) 6. Reinforced layer
- Insulation adhesive ATLAS ROKER W-20 /AVAL KT 190
- Glass fibre reinforcing mesh 7. Render primer
- ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT/AVAL KT 35/AVAL KT 137)
ATLAS SILKAT ASX/AVAL KT 15 (with silicate render ATLAS SILKAT/AVAL KT 72/AVAL KT 73)
- ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILKON/AVAL KT 74/AVAL KT 75) 8. Render coat
- Mineral render ATLAS CERMIT /AVAL KT 35/AVAL KT 137
- Acrylic render ATLAS CERMIT/AVAL KT 60 /AVAL KT 64
(NOTE: Do not use with mineral wool system)
- Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73
- Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75 | <ol style="list-style-type: none"> 9. Top paint coat (optional)
- Silicate paint ATLAS ARKOL S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
- Silicone paint ATLAS ARKOL N/AVAL KT 48 and ATLAS FASTEL/AVAL KT 46 (with primer ATLAS ARKOL NX/AVAL KT 47)
- Silicone paint ATLAS FASTEL-NOVA 10. Insulation adhesive (EPS)
- ATLAS STOPTER K-10/AVAL KT 83
- ATLAS STOPTER K-20/AVAL KT 85
- ATLAS HOTER S/AVAL KT 53
- ATLAS HOTER U/AVAL KT 55 11. Thermal insulation
- standard expanded polystyrene EPS
- elastified expanded polystyrene EPS 12. Anchor (with hammer in steel or nylon pin) 13. Corner profile with mesh 14. Reinforced layer
- Insulation adhesive ATLAS STOPTER K-20/AVAL KT 85
- Insulation adhesive ATLAS HOTER U/AVAL KT 55
- Glass fibre reinforcing mesh 15. Expanding tape 16. Mastic sealant |
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Figure 15.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme: Joint of the EPS - based insulation system with the mineral wool - based insulation system (with an expansion joint profile)



1. Substrate
2. Insulation adhesive (mineral wool boards)
- ATLAS ROKER W-20/AVAL KT 190
3. Thermal insulation
- mineral wool MW
4. Expansion joint profile
5. Reinforced layer
- Insulation adhesive
ATLAS ROKER W-20/AVAL KT 190
- Glass fibre reinforcing mesh
6. Render primer
- ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT/AVAL KT 35/AVAL KT 137)
- ATLAS SILKAT ASX/AVAL KT 15 (with silicate render ATLAS SILKAT/AVAL KT 72/AVAL KT 73)
- ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILKON/AVAL KT 74/AVAL KT 75)
7. Render coat
- Mineral render
ATLAS CERMIT/AVAL KT 35/AVAL KT 137
- Acrylic render ATLAS CERMIT /AVAL KT 60/AVAL KT 64
(NOTE: Do not use with mineral wool system)
- Silicate render ATLAS SILKAT /AVAL KT 72/AVAL KT 73
- Silicone render ATLAS SILKON /AVAL KT 74/AVAL KT 75

8. Top paint coat (optional)
- Silicate paint ATLAS ARKOL S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
- Silicone paint ATLAS ARKOL N/AVAL KT 48 and ATLAS FASTEL/AVAL KT 46 (with primer ATLAS ARKOL NX/AVAL KT 47)
- Silicone paint ATLAS FASTEL-NOVA
9. Insulation adhesive (EPS)
- ATLAS STOPPER K-10/AVAL KT 83
- ATLAS STOPPER K-20/AVAL KT 85
- ATLAS HOTER S/AVAL KT 53
- ATLAS HOTER U/AVAL KT 55
10. Thermal insulation
- standard expanded polystyrene EPS
- elastified expanded polystyrene EPS
11. Reinforced layer
- Insulation adhesive
ATLAS STOPPER K-20/AVAL KT 85
- Insulation adhesive
ATLAS HOTER U/AVAL KT 55
- Glass fibre reinforcing mesh

3. GENERAL

The system is designed by the Certificate Holder on a standard or project specific basis. The design will include for:

- a) The completion and recording of a site survey. For existing dwellings, U-value calculations, condensation risk analysis, pull-out resistance etc. should be based on the existing structure.
- b) Evaluation and preparation of substrate.
- c) Minimising risk of condensation in accordance with recommendations of BS 5250:2002 *Code of practice for control of condensation in buildings*. This includes the use of approved ATLAS detailing as shown in Figures 1 – 15 incorporating the requirements of the Acceptable Construction Details published by the DECLG.
- d) Thermal insulation provision to TGD to Part L of the Building Regulations 1997 to 2011.
- e) Resistance to impact and abrasion.
- f) Resistance to thermal stresses.
- g) Resistance to wind loading.
- h) Design of fixings to withstand design wind loadings, using a safety factor of 3 (three) for mechanical fixings and a safety factor of 9 (nine) for adhesive. In addition, fixings around window and door openings shall be at a maximum of 400mm centres in each board or section of board so as to provide positive and robust restraint over the life of the system.
- i) The design for wind loading on building greater than two stories should be checked by a chartered engineer in accordance with Eurocode 1: I.S EN 1991-1-4:2005 *General actions- Wind actions*.
- j) Design for fire resistance, fire spread and fire stopping. As defined in Cl. 4.2 and 4.3 of this Certificate.
- k) Design of a water management system to prevent ingress of water at movement joints, windows, doors, openings for services etc. Particular attention is required to ensure that window and sill design are coordinated to achieve a fully integrated design as shown in Figures 7a and 7b.
- l) Movement joints.
- m) A site specific maintenance programme for inclusion in the home owner's documentation.
- n) Durability requirements.

Detailing and construction must be to a high standard to prevent the ingress of water and to achieve the design thermal performance.

Window details should be designed such that, where possible, they can be removed and replaced from within the building. Consideration should be given to maximising improvement of thermal insulation at window reveals, door openings etc.

Adequate provision should be made at design and installation stage for the release of trapped moisture e.g. above window heads.

When designed and installed in accordance with this Certificate, the systems will satisfy the requirements of TGD to Part L of the Building Regulations. The design shall include for the elimination/minimising of cold bridging at window and door reveals, eaves and at ground floor level in compliance with Acceptable Construction Details published by the DECLG;

The system is intended to improve the weather resistance of the external walls. Seals to windows and doors shall be provided in accordance with the project specific site plan.

Care should be taken to ensure that any ventilation or drainage openings are not obstructed. Refer to section 4.6.2 of this Certificate.

In areas where electric cables can come into contact with expanded polystyrene, in accordance with good construction practice, all PVC sheathed cables should be run through ducting or be re-routed.

Domestic gas installations must not be adversely affected by the fitting of external insulation. If the external insulation has an impact on the gas service line/meter location, then Bord Gáis Networks must be contacted so that a suitable solution can be achieved. If altering a gas installation, a Registered Gas Installer (RGI) must be employed.

The durability of the render systems is influenced by the colour of the render used. The Certificate Holder recommend that where renders are used in thermal insulation systems, dark colors with a reflection coefficient of scattered light below 20% should be avoided. The use of dark color renders for such applications should not exceed 10% of facade surface.

This should be considered when choosing the finishing coat to be used. Exceptions include north facing or shaded walls. In case of the doubt, the advice of the Certificate holder should be sought.

In locations where frost heave is likely to occur, plinth insulation must be kept 10mm above ground level.

4.1 STRENGTH AND STABILITY

4.1.1 Wind Loading.

The ATLAS/AVAL External Thermal Insulation Composite Systems can be designed to withstand the wind pressures (including suction) and thermal stresses in accordance with the Building Regulations 1997 to 2011. The design for wind loading on building greater than two stories should be checked by a chartered engineer in accordance with Eurocode 1 *Actions on Structures: I.S EN 1991-1-4:2005. General Actions- Wind Actions*. A general factor of safety of 1.5 is applied to design wind loads.

b/ The design should include for preventing damage from impact by motor vehicles or other machinery. Preventative measures such a provision of protective barriers, or kerbs, should be considered.

4.1.2 Impact Resistance

a/ The systems described in Table 1 of each of the Detail Sheets have been classified as defined in Table 2 of each detail sheet to be suitable for use as defined in ETAG 004 Cl 6.1.3.3 Table 8, as follows:

Category I: A zone readily accessible at ground level to the public and vulnerable to hard impacts but not subject to abnormally rough use. There are no restrictions on the use of Category I Systems.

Category II: A zone liable to impacts from thrown or kicked objects, but in public locations where the height of the system will limit the size of the impact; or at lower levels where access to the building is primarily to those with some incentive to exercise care. Class II excludes use on wall at ground level adjacent to a public footpath, but includes use on properties with their own private, walled in garden.

Category III: A zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects. Class III is taken to excluded the use on any wall at ground level.

Note: The above classifications do not include acts of vandalism.

4.2 BEHAVIOUR IN RELATION TO FIRE

See Table 3 of each of the applicable Detail Sheets for details of the fire classifications achieved.

- Systems that achieved a Class A2 or B Reaction to Fire Classification (see Table 3 of each of the Detail sheets) are suitable for use up to a maximum of six storeys (18 metres) in height on purpose groups 1(a), 1(b), 1(c), 2(a), 2(b), 3, 4(a) and 4 as defined in Technical Guidance Document (TGD) to Part B of the Building Regulations 1997 to 2011.
- Systems that achieved a Class C Reaction to Fire Classification (see Table 3 Detail sheets 2 and 3) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 18m high and for Flats and Maisonettes (Purpose Group 1(c)) not more than 10m high as defined in TGD to Part B of the Building Regulations 1997 to 2011. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.2 of TGD to Part B of the Building Regulations 1997 to 2011.
- Systems for which no Reaction to Fire performance has been determined are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 18m high. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.2 of TGD to Part B of the Building Regulations 1997 to 2011.

The mineral wool board is classed as non-combustible as per Table A8 (d) of TGD to Part B of the Building Regulations 1997 to 2011.

Table 1 – Typical U-Values³

ETICS Insulation	² Declared Thermal Conductivity ($\lambda_{90/90}$) of insulation (W/mK)	Thickness of insulation (mm)	U-Value (W/m ² K)
No ETICS system	-	-	2.14
EPS 70 White ¹	0.040	130	0.27
Graphite Enhanced EPS ¹	0.031	100	0.27
Mineral Wool ¹	0.038	130	0.27

¹ Designation Code of approved Insulation defined in Table 1 of each of the Detail Sheets

² The thermal conductivity (λ) value of the insulation to be used in all U-value calculations must be the $\lambda_{90/90}$ value

³ These values are based on a typical house of 215mm hollow block construction (Building Regulations 2011

Part L) with the following construction to (internal to external):

Plaster, gypsum (BS5250) -4mm

Render (BS5250) – 15mm

Hollow block 215mm (10mm Mortar joint)

External Render 19mm

Insulation material as specified (where applicable)

Render finish with mesh Basecoat (where applicable) as defined in the application Detail Sheet

Note: Calculation of U-Values will be required on individual projects to confirm a U-Value of 0.27 W/m²K (or better) has been achieved, based on the wall construction and the lambda value of the insulation used.

With regard to fire stopping of cavities and limitations on use of combustible materials, walls must comply with Sections B3.2, B3.3, B3.4 and B4 of TGD to Part B of the Building Regulations 1997 to 2011.

Stainless steel fire fixings to be provided at the rate of one per square metre above two stories. The fixing design should take account of the extra duty required under fire conditions.

Vertical and horizontal lamella fire barriers shall be provided at each compartment floor and wall, including the second floor level of a three-storey single occupancy house. Firebreaks should be adhesively bonded to the substrate and mechanically fixed with stainless steel fire fixings at 300mm centres.

The firestop should be of non-combustible material, i.e. Rockwool (slab of minimum density 120kg/m³), be at least 200mm high, continuous and unbroken for the full perimeter of the building and for the full thickness of the insulation, see Figure 10b and 13. Glass wool is not suitable for use as a firestop.

4.3 PROXIMITY OF HEAT PRODUCING APPLIANCES

Combustible material must be separated from a brick or block work chimney by at least 200mm from a flue, or 40mm from the outer surface of the brick or block work chimney, in accordance with Clause 2.15 of TGD to Part J of the Building Regulations 1997 to 2011. Metal fixings in contact with combustible materials should be at least 50mm from a flue.

4.4 THERMAL INSULATION

Assessments were carried out to verify that the requirements of Part L of the Building Regulations 1997 to 2011 can be achieved using the ATLAS/AVAL External Thermal Insulation Composite Systems.

The manufacturer's declared thermal conductivity values ($\lambda_{90/90}$) are 0.035 – 0.040 W/mK for the standard white EPS70 board, 0.031W/mK for the carbon-enhanced EPS70 board, 0.040W/mK for the Elastified EPS boards, and 0.038 W/mK for the mineral wool board. These have not been assessed by NSAI Agrément.

Table 1 shows typical insulation thickness to achieved the required 0.27 W/m²K U-Value.

Calculation of U-Values will be required on individual projects to confirm a U-Value of 0.27 W/m²K has been achieved, based on the wall construction and the insulation used. The thermal conductivity (λ) value of the insulation to be used in all U-value calculations must be the $\lambda_{90/90}$ value.

When the system is to be applied to a masonry cavity wall construction, consideration should be given to the treatment of the ventilated cavity. In order to maximise the thermal effectiveness of the improved U-value created by the external insulation system in a cavity wall/block of an external wall of a building, it is critical to significantly reduce or eliminate airflow within the cavity void. It is a requirement to fill or seal a cavity at all openings as this will prevent airflow and maximise the thermal effectiveness of the ATLAS/AVAL ETICS system. Ventilation to the building must be maintained in accordance with the requirements of TGD F of the Irish Building Regulations.

4.5 LIMITING THERMAL BRIDGING

The linear thermal transmittance ψ (Psi) describes the heat loss associated with junctions and around openings. Window and door reveal design used on the ATLAS/AVAL External Thermal Insulation Composite Systems have been assessed and when detailed in accordance with this certificate, can meet the requirements of Table D2 of Appendix D of TGD to Part L of the Building Regulations 1997 to 2011. When **all** bridged junctions within a building comply with the requirements of Table D1 of appendix D of TGD to Part L, the improved 'y' factor of 0.08 can be entered into the Dwelling Energy Assessment Procedure (DEAP) Building Energy Rating (BER) calculation.

Alternatively if **all** junctions can be shown to be equivalent or better than the Acceptable Construction Details, published by the DECLG then the improved 'y' factor of 0.08 can be used .i.e. R value = 0.6m²K/W for window/door reveals.

Where either of the above options are shown to be valid, or when the required values can not be achieved, all relevant details should be recorded on the 'Certificate of Compliance' for that project for use in future BER calculations.

' ψ ' values for other junction outside the scope of this certificate should be assessed in accordance with the BRE IP1/06 "Assessing the effects of thermal bridging at junctions and around openings" and BRE Report BR 497 "Conventions for calculating linear thermal transmittance and temperature factors" in accordance with Appendix D of TGD to Part L of the Building Regulations 1997 to 2011.

4.6 CONDENSATION RISK

Areas where there is a significant risk of interstitial condensation due to high levels of humidity should be identified during the initial site survey.

4.6.1 Internal Surface condensation.

When improving the thermal performance of the external envelope of a building through the use of external wall insulation, designers need to consider the impact of these improvements on other untouched elements of the building. As discussed in section 4.5 of this certificate thermally bridged section of the envelope such as window jambs, sills and eaves will experience a lower level of increased thermal performance. The degree of improvement to these junctions can be limited due to physical restrictions on site i.e. footpaths, soffit boards or hinges for windows.

When bridged junctions meet the requirements of TGP L appendix D table D2, the coldest internal surface temperature will satisfy the requirements of section D2, namely that the temperature factor shall be equal to or greater than 0.75. As a result best practice will have been adopted in order to limit the risk of internal surface condensation which can result in dampness and mould growth.

When site limiting factors give rise to substandard level of insulation at bridged junctions, guidance should be sought from the certificate holder as to acceptable minimum requirements.

4.6.2 Interstitial Condensation

An interstitial condensation risk analysis will be carried out by the Certificate Holder in accordance with BS 5250:2002, and the design modified as appropriate to reduce the risk of interstitial condensation to acceptable levels.

4.6.3 Ventilation

When installing the external insulation system, the works to be undertaken must not compromise the existing ventilation provisions in the home. When these existing ventilation provisions do not meet the requirements of Part F of the Building Regulations, the homeowner should be informed and remedial action should be taken before the external insulation system is installed.

4.7 MAINTENANCE

Adequate provision should be made for access and maintenance over the life of the system.

The system shall be inspected and maintained in accordance with the Certificate holder's instructions, as detailed in their Repair and Maintenance Method Statement, which is incorporated into the Home Owner's Manual.

Necessary repairs should be effected immediately and should be carried out in accordance with the Certificate holder's instructions.

Necessary repairs should be carried out immediately and must be in accordance with the Certificate holder's instructions. Repairs to plumbing etc. should also be carried out as required to prevent deterioration or damage, and to protect the integrity of the system.

Synthetic finishes may be subject to aesthetic deterioration due to exposure to UV light. They should be re-painted every 18 to 20 years to maintain appearance. Care should be taken to ensure that the synthetic finish used is compatible with the original system and that the water vapour transmission or fire characteristics are not adversely affected.

Sealants shall be subject to regular inspection (at least annually). They should be replaced as required and fully replaced every 18 to 20 years to maintain performance.

4.8 WEATHERTIGHTNESS

When designed and detailed in accordance with this Certificate, the system will prevent moisture from the ground coming in contact with the insulation. See Figures 6 and 9.

The external render has adequate resistance to water penetration when applied in accordance with the Certificate holder's instructions.

Joint designs, sealant specifications and recommendations for detailing at windows and doors were assessed and are considered adequate to ensure that water penetration will not occur, assuming that regular maintenance is carried out in accordance with the Certificate holder's instructions. See Figures 7a and 7b.

Windows and door openings must be weather sealed before application of the EWIS. These joints must be periodically inspected and resealed as required.

Recommendations for detailing at windows and doors have been assessed and are considered adequate to ensure that water penetration will not occur, assuming that regular maintenance is carried out in accordance with the Certificate holder's instruction.

4.9 DURABILITY

4.9.1 Design Life

An assessment of the life of the system was carried out. This included an assessment of:

- Design and installation controls;
- Proposed building heights;
- Render thickness and specification;
- Material specifications, including insulant, mesh, beading and fixings specifications;
- Joint design;
- Construction details;
- Maintenance requirements.

The assessment indicates that the system should remain effective for at least 30 years, providing that it is designed, installed and maintained in accordance with this Certificate. Any damage to the surface finish shall be repaired immediately and regular maintenance shall be undertaken as outlined in Section 4.7 of this Certificate.

4.9.2 Aesthetic Performance

As with traditional renders, the aesthetic performance of the systems, e.g. due to discolouration, soiling, staining, algal growth or lime bloom, is dependent on a range of factors such as:

- Type, colour and texture of surface finish;
- Water retaining properties of the finish;
- Architectural form and detailing;
- Building orientation/elevation;
- Local climate/atmospheric pollution.
- Proximity of vegetation.

Adequate consideration should be given at the design stage to all of the above to ensure that the level of maintenance necessary to preserve the aesthetics of the building is acceptable.

4.10 PRACTICABILITY

The practicability of construction and the adequacy of site supervision arrangements were assessed and considered adequate. The project specific designs and method statements for application, inspection and repair were reviewed and found to be satisfactory.

4.11 TESTS AND ASSESSMENTS WERE CARRIED OUT TO DETERMINE THE FOLLOWING

- Structural strength and stability.
- Behaviour in relation to fire.
- Impact resistance.
- Pull-out resistance of fixings.
- Thermal resistance.
- Hygrothermal Behaviour
- Condensation risk.
- Site erection controls.
- Durability of components.
- Dimensional stability of insulants.

4.12 OTHER INVESTIGATIONS

- (i) Existing data on product properties in relation for fire, toxicity, environmental impact and the effect on mechanical strength/stability and durability were assessed.
- (ii) The manufacturing process was examined including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.
- (iii) Special building details (e.g. ground level, window and door openings, window sill and movement joints) were assessed and approved for use in conjunction with this Certificate.
- (iv) Site visits were conducted to assess the practicability of installation the history of performance in use of the product.

5.1 National Standards Authority of Ireland ("NSAI") following consultation with NSAI Agrément has assessed the performance and method of installation of the product/process and the quality of the materials used in its manufacture and certifies the product/process to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this Certificate and in accordance with the manufacturer's instructions and usual trade practice. This Certificate shall remain valid for five years from date of issue so long as:

- (a) the specification of the product is unchanged.
- (b) the Building Regulations 1997 to 2011 and any other regulation or standard applicable to the product/process, its use or installation remains unchanged.
- (c) the product continues to be assessed for the quality of its manufacture and marking by NSAI.
- (d) no new information becomes available which in the opinion of the NSAI, would preclude the granting of the Certificate.
- (e) the product or process continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.
- (f) the registration and/or surveillance fees due to NSAI Agrément are paid.

5.2 The NSAI Agrément mark and certification number may only be used on or in relation to product/processes in respect of which a valid Certificate exists. If the Certificate becomes invalid the Certificate holder must not use the NSAI Agrément mark and certification number and must remove them from the products already marked.

5.3 In granting Certification, the NSAI makes no representation as to;

- (a) the absence or presence of patent rights subsisting in the product/process; or
- (b) the legal right of the Certificate holder to market, install or maintain the product/process; or
- (c) whether individual products have been manufactured or installed by the Certificate holder in accordance with the descriptions and specifications set out in this Certificate.

5.4 This Certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.

5.5 Any recommendations contained in this Certificate relating to the safe use of the certified product/process are preconditions to the validity of the Certificate. However the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this Certificate will satisfy the requirements of the Safety, Health and Welfare at Work Act 2005, or of any other current or future common law duty of care owed by the manufacturer or by the Certificate holder.

5.6 The NSAI is not responsible to any person or body for loss or damage including personal injury arising as a direct or indirect result of the use of this product or process.

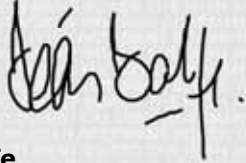
5.7 Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certification.

NSAI Agrément

This Certificate No. **10/0347** is accordingly granted by the NSAI to **ATLAS Spółka z o.o.** on behalf of NSAI Agrément.

Date of Issue: **June 2010**

Signed



Seán Balfe
Director of NSAI Agrément

Readers may check that the status of this Certificate has not changed by contacting NSAI Agrément, NSAI, 1 Swift Square, Northwood, Santry, Dublin 9, Ireland. Telephone: (01) 807 3800. Fax: (01) 807 3842. www.nsai.ie

Revisions: June 2011: To revise Impact Resistance category results, Illustrations and general statements.

April 2012: To revise Impact Resistance category, Fire Classification results and amend other general statements.

March 2013: To add insulated sill design.



ATLAS/AVAL Elastified EPS/EPS External Thermal Insulation Composite Systems

PRODUCT DESCRIPTION

This Detail Sheet relates to:

- The ATLAS/AVAL Elastified EPS/EPS Systems as defined in NSAI Agrément Certificate 10/0347 and as detailed in Table 1 of this Detail Sheet.

USE:

The systems are for use as an external insulation of for refurbishment/retrofit of existing masonry or concrete as follows:

- Systems that achieved a Class B Reaction to Fire Classification (see Table 3 of this Detail sheet) are Suitable for use up to a maximum of six storeys (18 metres) in height on purpose groups 1(a), 1(b), 1(c), 2(a), 2(b), 3, 4(a) and 4 as defined in Technical Guidance Document (TGD) to Part B of the Building Regulations 1997 to 2011.
- Systems that achieved a Class C Reaction to Fire Classification (see Table 3 of this Detail sheets) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 18m high and for Flats and Maisonettes (Purpose Group 1(c)) not more than 10m high as defined in TGD to Part B of the Building Regulations 1997 to 2011. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.2 of TGD to Part B of the Building Regulations 1997 to 2011.
- Systems for which no Reaction to Fire performance has been determined (see Table 3 of this Detail sheet) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 18m high. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.2 of TGD to Part B of the Building Regulations 1997 to 2011.

1.1 ASSESSMENT

In the opinion of NSAI Agrément, the ATLAS/AVAL Elastified EPS /EPS Systems, if used in accordance with this Detail Sheet, meets the requirements of the Building Regulations 1997 - 2011 as indicated in Section 1.2 of Certificate 10/0347

1.2 BUILDING REGULATIONS 1997 to 2011

This matter is dealt with in NSAI Agrément Certificate 10/0347.

2.1 PRODUCT DESCRIPTION

The ATLAS/AVAL Elastified EPS/EPS Systems consist of fixing thermal insulation made of Elastified EPS (expanded polystyrene) boards, or Standard EPS boards (White or graphite enhanced – See Table 1 of this Detail sheet) to the substrate and preparation of a reinforced layer, a render coating and, optionally, a paint coating on the insulation.

The system can be applied on new or existing external surfaces of vertical building wall (plastered or not) made of masonry or adhered materials, such as bricks and blocks (ceramic, lime-sand, stone, cellular concrete), or of concrete (poured at the construction site or in the form of prefabricated elements).

It can also be fixed on surfaces of horizontal or tilted structural elements provided that they are not directly exposed to precipitation. These may include ceilings over passages, internal walls and roofs (on the ceiling's side) of garages or cellars adjacent to heated rooms.

The substrate on which ATLAS will be used should have reaction to fire class: A1 or A2-s1 d0 according to EN 13501-1.

See Table 1 for the full list of components of the ATLAS/AVAL Elastified EPS/EPS Systems.

2.1 INSTALLATION

See CI 2.4 of Certificate No. 10/0347 for the installation instructions for the ATLAS/AVAL Elastified EPS/EPS Systems.

	Table 1 – ATLAS/AVAL Elastified EPS / EPS Systems Components	Thickness (mm)	Coverage (kg/m²)
Adhesives⁽¹⁾	ATLAS STOPTER K-10 (AVAL KT 83) / ATLAS STOPTER K-20 (AVAL KT 85) / ATLAS HOTER S (AVAL KT 53) / ATLAS HOTER U (AVAL KT 55): Cement based powder adhesives requiring addition of 0.20 to 0.22 l/kg of water.	-	4.0 to 5.0 ⁽²⁾ (powder)
Main wall Insulation	See Table 1A. for Standard and Elastified EPS specification - Standard and Elastified EPS – FRA/Aged. - Standard EPS- White and Graphite enhanced. Max density - 20kg/m ³ for Standard EPS / 15kg/m ³ for Elastified EPS.	20 to 250	-
Below DPC insulation	Swisspor HD EPS Hydroboard Insulation EPS-EN 13163-T2-P4-DS (70,-) 2-TR80, CFC/HCFC-free. Fire Class E. Aged Compressive Strength ≥ 150 kPa (Density ≥ 25kg/m ³)	-	50- 200
	XPS Insulation XPS -EN 13164 CFC/HCFC-free. Fire Class E. Aged		
Anchors	EJOT ST U, Fischer TERMOZ 8U, Hilti SX-FV, Hilti SD-FV8 Fischer TERMOZ 8N, EJOT Ejotharm STR U, EJOT SDM-T plus U, EJOT Ejotharm NT U, WKREȚ-MET-LIT and WKREȚ-MET-LIM, WKREȚ-MET-LFNØ8 and WKREȚ-MET- LFMØ8, WKREȚ-MET-LFNØ10 and WKREȚ-MET- LFMØ10, KOELNER KI8M or other anchors covered by ETA's issued against the requirements of ETAG 004.	-	-
Base coats	ATLAS STOPTER K-20 (AVAL KT 85)/ ATLAS HOTER U (AVAL KT 55) : Cement based powder adhesives requiring addition of 0.20 to 0.22 l/kg of water.	3.0 min ⁽⁴⁾	3.0 to 3.5 (powder)
Glass fibre meshes	SSA 1363 SM(100): Alkali and slide-resistant glass fibre mesh with a mesh size of 3.5mm x 3.5mm. Weight 155g/m ² . ⁽³⁾ VERTEX 145A/AKE 145A /R 117 A 101: Alkali and slide-resistant glass fibre mesh with a mesh size of 3.5mm x 4.0mm.	-	-
Key Coats	ATLAS CERPLAST (AVAL KT 16) - To be used with ATLAS CERMIT mineral (AVAL mineral) and ATLAS CERMIT acryl (AVAL acryl) finishing coats ATLAS SILKAT ASX (AVAL KT 15) - To be used with ATLAS SILKAT (AVAL silicate) finishing coat ATLAS SILKON ANX (AVAL KT 76) - To be used with ATLAS SILKON (AVAL silicone) finishing coat	-	0.25 to 0.35
Finishing coats	ATLAS CERMIT acryl (AVAL acryl) - Ready to use paste (particle size 1.5/2.0/3.0mm) ATLAS SILKAT (AVAL silicate) - Ready to use paste (particle size 1.5/2.0mm) ATLAS SILKON (AVAL Silicone)- Ready to use paste (particle size 1.5/2.0mm) ATLAS CERMIT mineral (AVAL mineral) – Powder requiring the addition of 0.18 to 0.26l/kg water (particle size 1.5/2.0/2.5/3.0mm)	Regulated by particle size	2.5 to 4.5 (paste) 2.5 to 3.5 (paste) 2.5 to 3.5 (paste) 2.5 to 5 (powder)
Primers	ATLAS ARKOL SX (AVAL KT 52) -To be used with ATLAS ARKOL S (AVAL KT 54) ATLAS ARKOL NX (AVALKT 47) - To be used with ATLAS ARKOL N and ATLAS FASTEL (AVAL KT 48 and AVAL KT 46)	-	0.05 to 0.20
Finishing coats Used optionally	ATLAS ARKOL E (AVAL KT 44)- Ready to use pigmented liquid ATLAS ARKOL S (AVAL KT 54)- Ready to use pigmented liquid ATLAS ARKOL N (AVAL KT 48)- Ready to use pigmented liquid ATLAS FASTEL (AVAL KT 46) - Ready to use pigmented liquid	-	0.125 to 0.25 0.2 to 0.28 0.125 to 0.25 0.125 to 0.25
Ancillary materials	Ancillary materials (mastics, corner strips) must be approved by the Certificate holder.	-	-

⁽¹⁾ Partially bonded (bonded surface shall be at least 40%) or fully bonded

⁽²⁾ Refers to fully bonded system

⁽³⁾ See Table 2 for Impact Resistance of Systems using SSA 1363 Glass Fibre Mesh

⁽⁴⁾ Minimum thicknesses shown. Double thickness of base coat required when second layer of mesh is used. See clause 2.4.4 for Certificate No. 10/0347 for application instructions of double mesh systems.

Table 1A – Standard EPS Characteristics

Insulation Characteristics		Required Values
Reaction to fire - EN 13501-1		Class E with a maximum density of -20.0kg/m ³ for Standard EPS - 15.0kg/m ³ for Elastified EPS
Thermal Resistance ¹ (m ² .K)/W		0.035 – 0.040: for the standard white EPS70 0.031: for the carbon-enhanced EPS70 0.040: for the Elastified EPS
Thickness (mm) - EN 823		± 1 (class 2)
Length (mm)- EN 822		± 2 (class L2) or ± 3 (class L1)
Width (mm) – EN 822		± 2 (class W2)
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		Cur 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 Absorbion (partial immersion) (kg/m ²) – EN 1609		≤ 1.0
Water vapour diffusion resistance factor (μ) EN 12086		20 to 60
Tensile strength perpendicular to the faces in dry conditions (kPa) - EN 1607		≥ 100 (TR 100) – Standard EPS ≥ 80 (TR 80) – Elastified EPS
Bending Strength (kPa) – EN 12089		≥ 75
Shear strength (Mpa) – EN 12090		0.02 ≤ f _{r,k} ≤ 0.10
Shear Modulus (Mpa) – EN 12090 - Standard EPS - Elastified EPS ²		1.0 ≤ G _m ≤ 3.0 0.3 ≤ G _m ≤ 1.0

^{1/} Manufacturers Declared Value ($\lambda_{90/90}$).

^{2/} Elastified EPS is manufactured from Standard EPS by short term high load pressing to reduce the products dynamic stiffness.

**Table 2 – ATLAS/AVAL Elastified EPS / EPS Systems
 Impact Resistance**

Rendering System: Insulation, Base Coat, Key Coat with Finishing Coat indicated	Finishing Coat	Impact Resistance using Glass Fibre Mesh ⁽¹⁾
Standard EPS + base coat ATLAS STOPTER K-20/AVAL KT 85 (with relevant key coat according to table 1) + Finishing Coat indicated	ATLAS CERMIT mineral/ AVAL mineral	Category III
	ATLAS CERMIT acryl/ AVAL acryl ⁽²⁾	Category II
	ATLAS SILKAT/ AVAL silicate ⁽³⁾	Category III
	ATLAS SILKON/ AVAL silicone ⁽³⁾	Category II
Standard EPS + base coat ATLAS HOTER U/AVAL KT 55 (with relevant key coat according to table 1) + Finishing Coat indicated	ATLAS CERMIT mineral/ AVAL mineral	Category III
	ATLAS CERMIT acryl/ AVAL acryl ⁽³⁾	Category II
	ATLAS SILKAT/ AVAL silicate ⁽³⁾	
	ATLAS SILKON/ AVAL silicone ⁽³⁾	
Elastified EPS + base coat ATLAS STOPTER K-20/AVAL KT 85 (with relevant key coat according to table 1) + Finishing Coat indicated	ATLAS CERMIT mineral/ AVAL mineral	Category III
	ATLAS CERMIT acryl/ AVAL acryl	Category II
	ATLAS SILKAT/ AVAL silicate	
	ATLAS SILKON/ AVAL silicone	
Elastified EPS + base coat ATLAS HOTER U/AVAL KT 55 (with relevant key coat according to table 1) + Finishing Coat indicated	ATLAS CERMIT mineral/ AVAL mineral	Category III
	ATLAS CERMIT acryl/ AVAL acryl	Category II
	ATLAS SILKAT/ AVAL silicate	
	ATLAS SILKON/ AVAL silicone	

⁽¹⁾ Single layer of glass fibre mesh SSA 1363 SM(100). Weight 155g/m²

⁽²⁾ Double of layer SSA 1363 Glass Fibre Mesh provides a Category I Impact Resistance on ATLAS STOPTER K20 adhesive + priming mass ATLAS CERPLAST + acrylic render ATLAS CERMIT. See clause 2.4.4 for Certificate No. 10/0347 for application instructions of double mesh systems.

⁽³⁾ Double of layer SSA 1363 Glass Fibre Mesh provides a Category II Impact Resistance on applicable systems including ATLAS STOPTER K-20/AVAL KT 85 base coat with ATLAS SILKAT/ AVAL silicate Finishing Coat. See clause 2.4.4 for Certificate No. 10/0347 for application instructions of double mesh systems.

- See Cl 4.1.2 of Certificate 10/0347 for definitions of Category I / II/ III

**Table 3 – ATLAS/AVAL Elastified EPS / EPS Systems
Reaction to Fire**

Rendering System: Above DPC Adhesive, Base and Finishing Coats (shown in Table 1) with and compatible primer as indicated hereafter	Maximum declared organic content	Declared flame retardant content	Reaction to fire class according to EN 13501-1
ATLAS/ AVAL ETICS with mineral/ inorganic based rendering system: <ul style="list-style-type: none"> • Adhesive: STOPTER K10 (AVAL KT 83), STOPTER K20 (AVAL KT 85), HOTER U (AVAL KT 55), HOTER S (AVAL KT 53) • Base coats: STOPTER K20 (AVAL KT 85), HOTER U, (AVAL KT 55) • Finishing coats: Mineral finishes CERMIT/AVAL KT 137, AVAL KT 35, (with key coat CERPLAST/AVAL KT 16) or Silicate finishes SILKAT/AVAL KT 72, AVAL KT 73 (with key coat SILKAT ASX/AVAL KT 15) • Decorative coats : ARKOL E/AVAL KT 44, ARKOL S/AVAL KT 54 (with primer ARKOL SX/AVAL KT 52), ARKOL N/AVAL KT 48,(with primer ARKOL NX/AVAL KT 47), FASTEL NOVA/AVAL KT 46 (with primer ARKOL NX/AVAL KT 47) 	<p align="center">≤3.5 %</p> <p align="center">≤4.9 %</p> <p align="center">≤19.9 %</p>	<p align="center">0%</p>	<p align="center">B-s1, d0</p>
ETICS ATLAS/ ETICS AVAL with organic based rendering system: <ul style="list-style-type: none"> • Adhesives: STOPTER K10 (AVAL KT 83), STOPTER K20 (AVAL KT 85), HOTER U (AVAL KT 55), HOTER S (AVAL KT 53) • Base coats: STOPTER K20 (AVAL KT 85), HOTER U, (AVAL KT 55) • Finishing coats: Acrylic finishes CERMIT/AVAL KT 60, AVAL KT 64, (with key coat CERPLAST/AVAL KT 16) or Silicone finish SILKON/AVAL KT 74 , AVAL KT 75 (with key coat SILKON ANX/AVAL KT 76) • Decorative coats : ARKOL E /AVAL KT 44, ARKOL N /AVAL KT 48, FASTEL NOVA AVAL KT 46 (with relevant primers). 	<p align="center">≤3.5 %</p> <p align="center">≤4.9 %</p> <p align="center">≤19.9 %</p>	<p align="center">0%</p>	<p align="center">B-s2, d0</p>



ATLAS/AVAL Roker MW External Thermal Insulation Composite Systems

PRODUCT DESCRIPTION

This Detail Sheet relates to:

- The ATLAS/AVAL ROKER MW Systems as defined in NSAI Agrément Certificate 10/0347 and as detailed in Table 1 of this Detail Sheet.

USE:

The systems are for use as an external insulation of for refurbishment/retrofit of existing masonry or concrete as follows:

- Systems that achieved a Class A2 or B Reaction to Fire Classification (see Table 3 of each of the Detail sheets) are Suitable for use up to a maximum of six storeys (18 metres) in height on purpose groups 1(a), 1(b), 1(c), 2(a), 2(b), 3, 4(a) and 4 as defined in Technical Guidance Document (TGD) to Part B of the Building Regulations 1997 to 2011.

- Systems for which no Reaction to Fire performance has been determined (see Table 3 of each of Detail sheets 1 and 2) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 18m high. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.2 of TGD to Part B of the Building Regulations 1997 to 2011

See Table 2 for the Impact Resistance of the various base coat/finish coat combinations. Cl 4.1.2 of NSAI Agrément Certificate 10/0347 should be referenced for restrictions on use that apply.

1.1 ASSESSMENT

In the opinion of NSAI Agrément, the ATLAS/AVAL ROKER MW Systems, if used in accordance with this Detail Sheet, meets the requirements of the Building Regulations 1997 - 2011 as indicated in Section 1.2 of Certificate 10/0347.

1.2 BUILDING REGULATIONS 1997 to 2011

This matter is dealt with in NSAI Agrément Certificate 10/0347.

2.1 PRODUCT DESCRIPTION

The ATLAS/AVAL ROKER Systems consist of fixing thermal insulation made of mineral wool (MW) panels and mineral wool lamella (See Table 1 of this Detail sheet) to the substrate and preparation of a reinforced layer, a render coating and, optionally, a paint coating on the insulation. The system can be applied on new or existing external surfaces of vertical building walls (plastered or not) made of masonry or adhered materials, such as bricks and blocks (ceramic, lime-sand, stone, cellular concrete), or of concrete (poured at the construction site or in the form of prefabricated elements).

It can also be fixed on surfaces of horizontal or tilted structural elements provided that they are not directly exposed to precipitation. These may include ceilings over passages, internal walls and roofs (on the ceiling's side) of garages or cellars adjacent to heated rooms.

The substrate on which ATLAS will be used should have reaction to fire class: A1 or A2-s1 d0 according to EN 13501-1.

See Table 1 for the full list of components of the ATLAS/AVAL ROKER MW System.

2.2 INSTALLATION

See CI 2.4 of Certificate No.10/0347 for the installation instructions for the ATLAS/AVAL ROKER MW Systems.

	Table 1 – ATLAS/AVAL ROKER MW Systems Components	Thickness (mm)	Coverage (kg/m²)
Adhesives⁽¹⁾	ATLAS ROKER W-20 (AVAL KT 190) : Cement based powder adhesives requiring addition of 0.20 to 0.25 l/kg of water.	-	4.5 to 5.5 ⁽²⁾ (powder)
Insulation	MW-EN 13162-T5-DS(TH)-CS(10)40-TR15-WS-WL(P)-MU1 MW-EN 13162-T4-DS(TH)-CS(10)40-TR15-WS-WL(P)-MU1 MW-EN 13162-T5-DS(TH)-CS(10)40-TR100-WS-WL(P)-MU1 MW-EN 13162-T5-DS(TH)-CS(10)30-TR10-WS-WL(P)-MU1 MW-EN 13162-T5-DS(TH)-CS(10/Y)50-TR80-WS-WL(P)-MU1	20 to 250	-
Anchors	EJOT ST U, Fischer TERMOZ 8U, Hilti SX-FV, Hilti SD-FV8 Fischer TERMOZ 8N, EJOT Ejotherm STR U, EJOT SDM-T plus U, EJOT Ejotherm NT U, WKREȚ-MET-LIT and WKREȚ-MET-LIM, WKREȚ-MET-LFNØ8 and WKREȚ-MET- LFMØ8, WKREȚ-MET-LFNØ10 and WKREȚ-MET- LFMØ10, KOELNER KI8M or other anchors covered by ETA's issued against the requirements of ETAG 004.	-	-
Base coats	ATLAS ROKER W-20 (AVAL KT 190) : Cement based powder adhesives requiring addition of 0.20 to 0.25 l/kg of water.	5.0 min.	5.5 to 6.5 (powder)
Glass fibre meshes	SSA 1363 SM(100) : Alkali and slide-resistant glass fibre mesh with a mesh size of 3.5mm x 3.5mm VERTEX 145A/AKE 145A /R 117 A 101 : Alkali and slide-resistant glass fibre mesh with a mesh size of 3.5mm x 4.0mm.	-	-
Key Coats	ATLAS CERPLAST (AVAL KT 16) -To be used with ATLAS CERMIT mineral (AVAL mineral) finishing coats ATLAS SILKAT ASX (AVAL KT 15) - To be used with ATLAS SILKAT (AVAL silicate) finishing coat ATLAS SILKON ANX (AVAL KT 76) - To be used with ATLAS SILKON (AVAL silicone) finishing coat	-	0.25 to 0.35
Finishing coats	ATLAS CERMIT mineral (AVAL mineral) – Powder requiring the addition of 0.18 to 0.26l/kg water (particle size 1.5/2.0/2.5/3.0mm) ATLAS SILKAT (AVAL silicate) - Ready to use paste (particle size 1.5/2.0mm) ATLAS SILKON (AVAL Silicone) - Ready to use paste (particle size 1.5/2.0mm)	Regulated by particle size	2.5 to 4.5 (powder) 2.5 to 3.5 (paste) 2.5 to 3.5 (paste)
Primers	ATLAS ARKOL SX (AVAL KT 52) -To be used with ATLAS ARKOL S (AVAL KT 54) ATLAS ARKOL NX (AVALKT 47) - To be used with ATLAS ARKOL N and ATLAS FASTEL (AVAL KT 48 and AVAL KT 46)	-	0.05 to 0.20
Finishing coats Used optionally	ATLAS ARKOL S (AVAL KT 54) - Ready to use pigmented liquid ATLAS ARKOL N (AVAL KT 48) - Ready to use pigmented liquid ATLAS FASTEL (AVAL KT 46) - Ready to use pigmented liquid	-	0.20 to 0.28 0.125 to 0.25 0.125 to 0.25
Ancillary materials	Ancillary materials (mastics, corner strips) must be approved by the Certificate holder.	-	-

⁽¹⁾ Partially bonded (bonded surface shall be at least 40%) or fully bonded for panels and fully bonded for lamella
⁽²⁾ Refers to fully bonded system

Table 2 – ATLAS/AVAL ROKER MW Systems
Impact Resistance

Rendering System: Insulation, Base Coat, Key Coat with Finishing Coat indicated	Finishing Coat	<u>Impact Resistance</u> using Glass Fibre Mesh ⁽¹⁾
MW panels+ base coat ATLAS ROKER W-20/AVAL KT 190 (with relevant key coat according to table 1) + Finishing Coat indicated	ATLAS CERMIT mineral/ AVAL mineral	Category III
	ATLAS SILKAT/ AVAL silicate	Category II
	ATLAS SILKON / AVAL Silicone	Category II
MW lamella+ base coat ATLAS ROKER W-20/AVAL KT 190 (with relevant key coat according to table 1) + Finishing Coat indicated	ATLAS CERMIT mineral/ AVAL mineral	Category III
	ATLAS SILKAT/ AVAL silicate	Category II
	ATLAS SILKON / AVAL Silicone	Category II

⁽¹⁾ Single layer of glass fibre mesh SSA 1363 SM(100) or VERTEX 145A/AKE 145A/R 117 A 101
 • See Cl 4.1.2 of Certificate 10/0347 for definitions of Category I / II/ III

Table 3 – ATLAS/AVAL ROKER MW Systems
Reaction to Fire

Rendering System: Above DPC Adhesive, Base, Finishing Coats and Decorative (shown in Table 1) with and compatible primer as indicated hereafter	Maximum declared organic content of the rendering system	Declared flame retardant content of the rendering system	Reaction to fire class according to EN 13501-1
ATLAS/ AVAL ROKER ETICS with mineral/ inorganic based rendering system: <ul style="list-style-type: none"> • MW of thickness 20mm to 250 mm • Adhesives: ATLAS ROKER W-20 (AVAL KT 190) • Base coats: ATLAS ROKER W-20 (AVAL KT 190) • Finishing coats: Mineral finishes CERMIT/AVAL KT 137, AVAL KT 35* (with key coat CERPLAST/AVAL KT 16) or Silicate finishes SILKAT/AVAL KT 72, AVAL KT 73 (with key coat SILKAT ASX/AVAL KT 15) • Decorative finishes: ARKOL S/AVAL KT 54 (with primer ARKOL SX/AVAL KT 52), ARKOL N/AVAL KT 48 (with primer ATLAS ARKOL NX/AVAL 47), FASTEL NOVA/AVAL KT 46 (with primer ARKOL NX/AVAL KT 47). 	<p align="center">≤4.05%</p> <p align="center">≤4.9%</p> <p align="center">≤18.60%</p>	<p align="center">0%</p>	<p align="center">A2-s2, d0</p>
ETICS ATLAS/ ETICS AVAL with organic based rendering system: <ul style="list-style-type: none"> • MW of thickness 20mm to 250 mm • Adhesives: ATLAS ROKER W-20 (AVAL KT 190) • Base coats: ATLAS ROKER W-20 (AVAL KT 190) • Finishing coats: Silicone finishes SILKON/AVAL KT 74, AVAL KT 75 * with key coat ATLAS SILIKON ANX (AVAL KT 76) • Decorative finishes: ARKOL N/AVAL KT 48 (with primer ATLAS ARKOL NX/AVAL 47), FASTEL NOVA/AVAL KT 46 (with primer ARKOL NX/AVAL KT 47). 	<p align="center">≤4.05%</p> <p align="center">≤8.4%</p> <p align="center">≤18.6%</p>	<p align="center">0%</p>	<p align="center">B-s1, d0</p>
All other configurations	<p align="center">-</p>	<p align="center">-</p>	<p align="center">No performance determined</p>



ATLAS XPS

External Thermal Insulation Composite System

PRODUCT DESCRIPTION

This Detail Sheet relates to:

- The ATLAS XPS System as defined in NSAI Agrément Certificate 10/0347 and as detailed in Table 1 of this Detail Sheet.

USE: The systems are for use as an external insulation of for refurbishment/retrofit of existing masonry or concrete as follows:

- Systems that achieved a Class A2 or B Reaction to Fire Classification (see Table 3 of this Detail sheets) are Suitable for use up to a maximum of six storeys (18 metres) in height on purpose groups 1(a), 1(b), 1(c), 2(a), 2(b), 3, 4(a) and 4 as defined in Technical Guidance Document (TGD) to Part B of the Building Regulations 1997 to 2011.

- Systems that achieved a Class C Reaction to Fire Classification (see Table 3 of this Detail sheets) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 18m high and for Flats and Maisonettes (Purpose Group 1(c)) not more than 10m high as defined in TGD to Part B of the Building Regulations 1997 to 2011. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.2 of TGD to Part B of the Building Regulations 1997 to 2011.

See Table 3 for the Impact Resistance of the various base coat/finish coat combinations. Cl 4.1.2 of NSAI Agrément Certificate 10/0347 should be referenced for restrictions on use that apply.

1.1 ASSESSMENT

In the opinion of NSAI Agrément, the ATLAS XPS System, if used in accordance with this Detail Sheet, meets the requirements of the Building Regulations 1997 - 2011 as indicated in Section 1.2 of Certificate 10/0347.

1.2 BUILDING REGULATIONS 1997 to 2011

This matter is dealt with in NSAI Agrément Certificate 10/0347.

2.1 PRODUCT DESCRIPTION

The ATLAS XPS System consist of fixing thermal insulation made of extruded polystyrene boards (XPS), (See Table 1 of this Detail sheet) to the substrate and preparation of a reinforced layer, a render coating and, optionally, a paint coating on the insulation.

The system can be applied on new or existing external surfaces of vertical building wall (plastered or not) made of masonry or adhered materials, such as bricks and blocks (ceramic, lime-sand, stone, cellular concrete), or of concrete (poured at the construction site or in the form of prefabricated elements). It is particularly suited to ground course, foundations and basement walls.

It can also be fixed on surfaces of horizontal or tilted structural elements provided that they are not directly exposed to precipitation. These may include ceilings over passages, internal walls and roofs (on the ceiling's side) of garages or cellars adjacent to heated rooms.

The substrate on which ATLAS will be used should have reaction to fire class: A1 or A2-s1 d0 according to EN 13501-1.

See Table 1 for the full list of components of the ATLAS XPS System.

2.3 INSTALLATION

See Cl 2.4 of Certificate No. 10/0347 for the installation instructions for the ATLAS XPS Systems.

	Table 1 – ATLAS XPS System Components	Thickness (mm)	Coverage (kg/m²)
Adhesives⁽¹⁾	ATLAS STOPTER K-10 (AVAL KT 83) / ATLAS STOPTER K-20 (AVAL KT 85) / ATLAS HOTER S (AVAL KT 53) / ATLAS HOTER U (AVAL KT 55): Cement based powder adhesives requiring addition of 0.20 to 0.22 l/kg of water.	-	4.0 to 5.0 ⁽²⁾ (powder)
Insulation	XPS-EN 13164-T2-CS(10/Y)200-DS(TH)-TR100-WL(T)1.5 XPS-EN 13164-T1-CS(10/Y)250-DS(TH)-TR100-WL(T)1.5	20 to 200	-
Anchors	EJOT ST U, Fischer TERMOZ 8U, Hilti SX-FV, Hilti SD-FV8 Fischer TERMOZ 8N, EJOT Ejotherm STR U, EJOT SDM-T plus U, EJOT Ejotherm NT U, WKREȚ-MET-LIT and WKREȚ-MET-LIM, WKREȚ-MET-LFNØ8 and WKREȚ-MET- LFMØ8, WKREȚ-MET-LFNØ10 and WKREȚ-MET- LFMØ10, KOELNER KI8M or other anchors covered by ETA's issued against the requirements of ETAG 004.	-	-
Base coats	ATLAS STOPTER K-20 (AVAL KT 85)/ ATLAS HOTER U (AVAL KT 55): Cement based powder adhesives requiring addition of 0.20 to 0.22 l/kg of water.	3.0 min ⁽⁴⁾	3.0 to 3.5 (powder)
Glass fibre meshes	SSA 1363 SM(100): Alkali and slide-resistant glass fibre mesh with a mesh size of 3.5mm x 3.5mm. Weight 155g/m ² VERTEX 145A/AKE 145A /R 117 A 101: Alkali and slide-resistant glass fibre mesh with a mesh size of 3.5mm x 4.0mm.	-	-
Key Coats	ATLAS CERPLAST (AVAL KT 16) - To be used with ATLAS CERMIT mineral (AVAL mineral) and ATLAS CERMIT acryl (AVAL acryl) finishing coats ATLAS SILKAT ASX (AVAL KT 15) - To be used with ATLAS SILKAT (AVAL silicate) finishing coat ATLAS SILKON ANX (AVAL KT 76) - To be used with ATLAS SILKON (AVAL silicone) finishing coat	-	0.25 to 0.35
Finishing coats	ATLAS CERMIT SN (AVAL KT 137) - Mineral - Powder requiring the addition of 0.18 – 0.24 l/kg water (particle size 1.5/2.0/3.0mm)	Regulated by particle size	2.5 to 4.5 (powder)
	ATLAS CERMIT DR (AVAL KT 35) - Mineral - Powder requiring the addition of 0.18 – 0.24 l/kg water (particle size 2.0/3.0mm) -		
	ATLAS CERMIT N (AVAL KT 60) - Acrylic - Ready to use paste (particle size 1.5/2.0/3.0mm)	Regulated by particle size	2.5 to 4.5 (paste)
	ATLAS CERMIT R (AVAL KT 64) - Acrylic - Ready to use paste (particle size 2.0/3.0mm)		
	ATLAS SILKAT N (AVAL KT 72) - Silicate - Ready to use paste (particle size 1.5/2.0mm)	Regulated by particle size	2.5 to 3.5 (paste)
	ATLAS SILKAT R (AVAL KT 73) - Silicate - Ready to use paste (particle size 2.0mm)		
	ATLAS SILKON N (AVAL KT 74) - Silicone - Ready to use paste (particle size 1.5/2.0mm)	Regulated by particle size	2.5 to 3.5 (paste)
ATLAS SILKON R (AVAL KT 75) - Silicone - Ready to use paste (particle size 2.0mm)			
Primers	ATLAS ARKOL SX (AVAL KT 52) -To be used with ATLAS ARKOL S (AVAL KT 54) ATLAS ARKOL NX (AVALKT 47) - To be used with ATLAS ARKOL N and ATLAS FASTEL (AVAL KT 48 and AVAL KT 46)	-	0.05 to 0.20
Finishing coats Used optionally	ATLAS ARKOL E (AVAL KT 44) - Ready to use pigmented liquid ATLAS ARKOL S (AVAL KT 54) - Ready to use pigmented liquid ATLAS ARKOL N (AVAL KT 48) - Ready to use pigmented liquid ATLAS FASTEL (AVAL KT 46) - Ready to use pigmented liquid	-	0.12 to 0.25 0.2 to 0.28 0.125 to 0.25 0.125 to 0.25
Ancillary materials	Ancillary materials (mastics, corner strips) must be approved by the Certificate holder.	-	-

⁽¹⁾ Partially bonded (bonded surface shall be at least 40%) or fully bonded

⁽²⁾ Refers to fully bonded system

⁽³⁾ See Table 2 for Impact Resistance of Systems using SSA 1363 Glass Fibre Mesh

⁽⁴⁾ Minimum thicknesses shown. Double thickness of base coat required when second layer of mesh is used. See clause 2.4.4 for Certificate No. 10/0347 for application instructions of double mesh systems.

**Table 2 – ATLAS XPS System
 Impact Resistance**

Rendering System: Insulation, Base Coat, Key Coat with Finishing Coat indicated	Finishing Coat ⁽²⁾	Impact Resistance ⁽¹⁾	
		Single Layer Glass Fibre Mesh	Double Layer Glass Fibre Mesh
XPS + base coat ATLAS STOPTER K-20 (with relevant key coat according to table 1) + Finishing Coat indicated	ATLAS CERMIT SN ATLAS CERMIT DR	Category III	Category III
	ATLAS CERMIT N ATLAS CERMIT R		Category II
	ATLAS SILKAT N ATLAS SILKAT R		Category III
	ATLAS SILKON N ATLAS SILKON R		Category III
XPS+ base coat ATLAS HOTER U (with relevant key coat according to table 1) + Finishing Coat indicated	ATLAS CERMIT SN ATLAS CERMIT DR	Category III	Category III
	ATLAS CERMIT N ATLAS CERMIT R		Category II
	ATLAS SILKAT N ATLAS SILKAT R	Category II	Category III
	ATLAS SILKON N ATLAS SILKON R	Category III	

⁽¹⁾ Impact resistance of rendering system utilizing Glass fiber mesh SSA 1363 SM(100). Weight 155g/m²
⁽²⁾ See Table 1 of this Detail Sheet for equivalent AVAL Finish Coat Codes
 • See Cl 4.1.2 of Certificate 10/0347 for definitions of Category I / II/ III

**Table 3 – ATLAS XPS System
Reaction to Fire**

Rendering System: ETICS ATLAS XPS with rendering system indicated hereafter:	Maximum declared organic content	Class according to EN 13501-1
<ul style="list-style-type: none"> • XPS of thickness 20mm to 200mm • Adhesives: ATLAS STOPTER K-10, ATLAS STOPTER K-20, ATLAS HOTER S or ATLAS HOTER U. • Base coats: ATLAS STOPTER K20 (AVAL KT 85), ATLAS HOTER U (AVAL KT 55) • Finishing coats ⁽¹⁾: (with key coats according to Table 1): ATLAS CERMIT SN, ATLAS CERMIT DR, ATLAS SILKAT N or ATLAS SILKAT R • Decorative finishes: (with primers according to Table 1): ATLAS ARKOL E, ATLAS ARKOL S, ATLAS ARKOL N or ATLAS FASTEL 	<p align="center">Adhesives ≤3.5 %</p> <p align="center">Base coat ≤3.5 %</p> <p align="center">Finishing Coat ≤4.904 %</p> <p align="center">Decorative coats ≤13.50 %</p>	<p align="center">B-s2, d0</p>
<ul style="list-style-type: none"> • XPS of thickness 20mm to 200mm • Adhesives: ATLAS STOPTER K-10, ATLAS STOPTER K-20, ATLAS HOTER S or ATLAS HOTER U. • Base coats: ATLAS STOPTER K20, ATLAS HOTER U. • Finishing coats ⁽¹⁾: (with key coats according to Table 1): ATLAS CERMIT N, ATLAS CERMIT R, ATLAS SILKON N, or ATLAS SILKON R • Decorative finishes: (with primers according to Table 1): ATLAS ARKOL E, ATLAS ARKOL S, ATLAS ARKOL N or ATLAS FASTEL 	<p align="center">Adhesives ≤3.5 %</p> <p align="center">Base coat ≤3.5 %</p> <p align="center">Finishing Coat ≤10.28 %</p> <p align="center">Decorative coats ≤13.50 %</p>	<p align="center">C-s2, d0</p>

⁽¹⁾ See Table 1 of this Detail Sheet for equivalent AVAL Finish Coat Codes