NSAI Agrément

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 and subsequent revisions**.

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 DHPLG**.**
- 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.atlas.com.pl/en.

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. Applicators must adhere to strict installation guidelines as specified by ATLAS.

This Certificate certifies compliance with the requirements of the Irish Building Regulations 1997 and subsequent revisions.

USE:
The systems are for the external insulation of:

(a) Existing concrete or masonry dwellings;
(b) New concrete or masonry commercial or industrial buildings, which are designed in accordance with the Irish Building Regulations 1997 and subsequent revisions.

The ATLAS/AVAL External Thermal Insulation Composite Systems are suitable for use up to a maximum of six storeys (18m) in height in purpose groups 1(a), 1(c), 1(d), 2(a), 2(b), 3, 4(a) and 4(b), and for use up to a maximum of five storeys (15 metres) in height in purpose group 1(b), as defined in TGD to Part B of the Building Regulations.

The systems have not been assessed for, and as a result are not suitable for, use with timber frame or steel frame construction, or for new dwellings.

In an Irish context, the appropriate 'Impact resistance' category should be specified as described in Section 4.1.2, specifically Table 2 of each Detail Sheet which lists a range of system build-ups and their corresponding impact resistance categories.

MANUFACTURE, DESIGN AND MARKETING:

The system is designed and manufactured by:

ATLAS Spółka z o.o.
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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.atlas.com.pl/en or can be presented by the Atlas's Foreign Markets Managers (or authorized representatives).

1.1 ASSESSMENT

The external insulation systems included in this Certificate, which have been tested in accordance with the requirements of ETAG 004 (ref. ETA 06/0081, 06/0173 and 07/0316) have been assessed against the specific requirements of the Irish Building Regulations, including method of installation, approval and training of installers, and maintenance requirements of the installed system.

In the opinion of NSAI Agrément, ATLAS/AVAL External Thermal Insulation Composite Systems, when installed by ATLAS trained and approved contractors registered with NSAI, in accordance with this Certificate and ATLAS specific design, can meet the requirements of the Irish Building Regulations 1997 and subsequent revisions, as indicated in Section 1.2 of this Agrément Certificate.

1.2 BUILDING REGULATIONS

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
Part B Vol 2 – Fire Safety
B9 – 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
- **Dwellings**
- **Buildings other than Dwellings**

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 (see Part 4 of this Certificate).

L2 – Conservation of Fuel and Energy
At interface junctions at windows and at junctions between elements, the ATLAS/AVAL External Thermal Insulation Composite Systems installation details have been assessed, and when installed in accordance with this Certificate and the Certificate holder's approved installation details, excessive heat losses and local condensation problems associated with thermal bridging will be avoided.

2.1 PRODUCT DESCRIPTION

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

The systems can be applied on a variety of existing vertical external surfaces such as brick or rendered masonry walls. They 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 passageways, internal walls and roofs (on the ceiling side) of garages or cellars adjacent to heated rooms.

The substrate on which ATLAS/AVAL External Thermal Insulation Composite Systems will be used must have a reaction to fire class A1 or A2-s1, d0 in accordance with IS EN 13501-1:2007+A1:2009.

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;
- Preliminary project assessment incorporating wind load calculations, U-value calculations, condensation risk analysis, impact resistance, substrate suitability and pull-out testing of fixings;
- Training, monitoring and review of licensed applicators in accordance with approved training and assessment procedures;
- Product supply and documentation control;
- Technical support and installation supervision;
- 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) Approval Scheme (See Section 2.4.1 of this Certificate).

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 holder's installation procedures, the requirements of this Certificate, and the Certificate holder's Code of Practice for approved contractors.
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 and office records.

2.4.2 General

The Certificate Holder prepares a bespoke site package for each project, including wind loading and U-value calculations, requirements for materials handling and storage, method statements for installation, building details, fixing requirements, 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 according with the project specific site package, including the Certificate holder's installation manual. Certificates of Compliance, Atlas guarantee and home owner's manual will be issued on successful completion and sign-off of completed projects.

Mineral wool batts and lamella fire stop must 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.

Details shown in this Certificate were developed to strike a balance between thermal efficiency and economic viability. To maximise thermal performance, reference should be made to the requirements of Section 2 of the Acceptable Construction Details document (ACD).

2.4.3 Site Survey and Preliminary Work

A comprehensive pre-installation survey of the property shall be carried out by a suitably qualified technical representative of the Certificate holder or a contractor approved by the Certificate holder and NSAI Agrément, and all key information is recorded on the site survey form. The pre-installation survey is also used to price the project and identify all the relevant factors/technical information which needs to be considered in the design of the external insulation system and important information to be included in the site specific pack. This pack would typically include wind load calculations and a fixing specification summary sheet, thermal bridging evaluation, condensation risk analysis, elemental wall U-value calculation, and a full set of project specific building details. The survey will also establish the suitability of the substrate, and the Certificate holder's technical representative will determine if pullout resistance testing is required and what substrate preparation is required.

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. Where the substrate contains dash, it must be levelled as much as possible with ATLAS Levelling Mortar prior to the application of the insulation boards/batts. Loose or flaking elements should be removed and defects filled in using ATLAS Plastering Mix (AVAL KT 111) or ATLAS ZW 330 Levelling Mortar. In case of weak, dusty or highly absorbent substrates, ATLAS Uni-grunt (AVAL KT 17) should be used.

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

2.4.4 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.
- The integrity of the existing substrate is assessed by checking the surface for loose render by tapping with a hammer and listening for a hollow sound. If render is loose it must be removed and replaced.
- At existing window and door frame reveals, the existing plaster reveals should only be removed if a minimum clearance of 30mm cannot be achieved between the reveal and the window/door frame. This clearance must allow for opening sections of window and door frames. This is to allow the application of insulation around the reveals and heads of the doors and windows to significantly reduce cold bridging.
- 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 Stopter K20 (AVAL KT 85) adhesive mortar can be applied in temperature between 0ºC and 5ºC, once temperatures do not fall below -5ºC 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 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.
- 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 provided a horizontal line for the installation the insulation panels as well as providing reinforcement to the lower edge of the system. In addition, the starter track serves as a bottom end closer to impede vermin and burrowing insects.
- 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.
- When adhesively fixing, care must be taken to ensure an appropriate amount of adhesive is used and that the appropriate adhesive spread and board fixing patterns are used. The adhesive must not be applied onto the sides or fill the gaps between insulation boards. Holes are drilled through the insulation boards and adhesive and into the substrate wall and the mechanical fixings are applied. Care must be taken to ensure the fixing holes are drilled sufficiently deep, perpendicular to the surface of the insulation.
- 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.
- Before applying adhesive to mineral wool, the boards must be cleared of dust and loose particles. The boards should be initially covered with adhesive by applying a thin layer using a smooth edge trowel in order to increase adhesion. On the surface of the mineral wool prepared as described above the actual adhesion layer can be applied as a thin layer using a notched trowel or using the "strip-point" method as described above.
- 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 between adjacent insulation boards. 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 should be avoided, but where gaps larger than 5mm cannot be practically avoided these gaps shall be filled with strips of the ETICS insulation material cut to size and sufficiently fixed to the substrate.
- At façade openings e.g. window and door opes, full insulation boards must be installed across these openings in elevation and then the insulation is cut back to reinstate the clearance at the opening. This method of installation will minimise the linear length of abutments and joints between boards at openings. In addition, vertical joints should be staggered. 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, where practicable, be insulated to minimise the effects of a cold bridging in accordance with the recommendations of the Acceptable Construction Details Document published by the DHPLG, Detail 2.21. to achieve a minimum R-value of 0.6m^{2}K/W as shown in Figure 7b. Ideally windows should be moved forward to the plane of the external insulation to limit the effects of thermal bridging at the reveal. Where

clearance is limited, strips of approved insulation should be installed to suit available margins and details recorded as detailed in Section 4.5 of this Certificate.

- To minimise the effects of cold bridging in all other junctions over and above windows and doors, designers should consider the recommendations of the Acceptable Construction Details Document (published by the DHPLG), Section 2 – External Wall Insulation. Where clearance is limited remove plaster at reveal, and strips of approved insulation (with better thermal resistance values) should be installed to suit available margins and details recorded as outlined in Section 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 m^2 for EPS/Elastified EPS/XPS and 8 (minimum) per m^2 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.
- Above two stories an additional stainless steel fire fixing is provided at a rate of 1 per m^2.
- For drilling holes in thin or cavity materials (hollow block), a drill with an engaged hammer action should not be used. Minimum pullout resistance of mechanical fixings must be established alternatively low pullout values will require an increased frequency of fixing.
- The heads of mechanical fixings cannot protrude beyond the plane of the boards, i.e. they should be exactly flush. Excessively deep insertion of fixing heads in the insulation material can cause cracking of the boards which in turn weakens the insulation. Filling indentations in these areas can cause thermal bridges and consequently may lead to plaster loosening in such areas.
- Refer to the Certificate holder's instructions and the project specific site package regarding the installation method and location of the stainless steel fixings through the reinforcing mesh where fire stops have been installed. Additional layers of mesh are also applied at these locations. Stainless steel fire fixings to be provided at a rate of one per square metre above two stories. The fixing design should take account of the extra duty required under fire conditions.
- 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 Section 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), and after the mechanical fixings have been installed, 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 external insulation 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 external insulation 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.
- Expansion joints should be used at intersections where movement in the structure is expected, and these should be incorporated into the project specific design provided by the Certificate holder. In the case of un-heated lean-to buildings, the external insulation system should continue around the lean-to.
- Prior to application of base coat and finish coat, all necessary protective measures such as taping off of existing window frames and covering of glass should be in place.
- The appropriate 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 is 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.
- Base profiles and corner profiles are fixed as specified in the site specific pack. Existing structural expansion joints should be extended through the surface of the external insulation system with full system expansion beads.
- 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

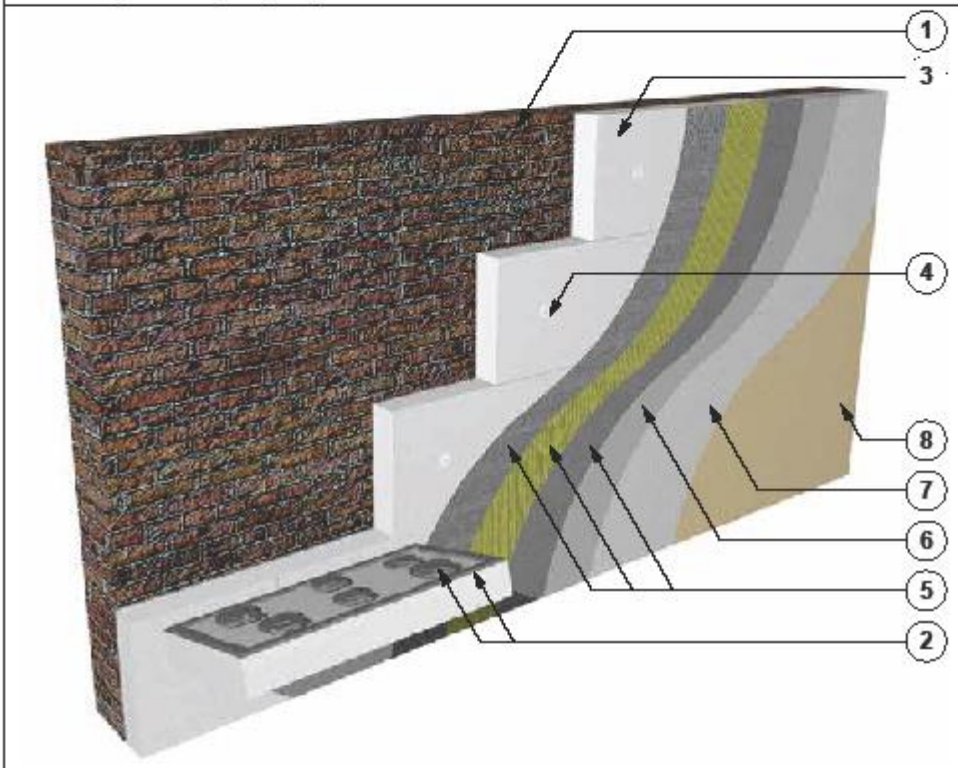
coats) shall be applied in accordance with the Certificate instructions.

- 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 +5º C or above 25º 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 8000-0:2014 *Workmanship on construction sites – Introduction and general principles* and IS EN 13914-1:2016 *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.
- When obstructions abut external walls such as a boundary wall, best practice would be to cut back the boundary wall to allow for the continuation of the external insulation system.
- 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

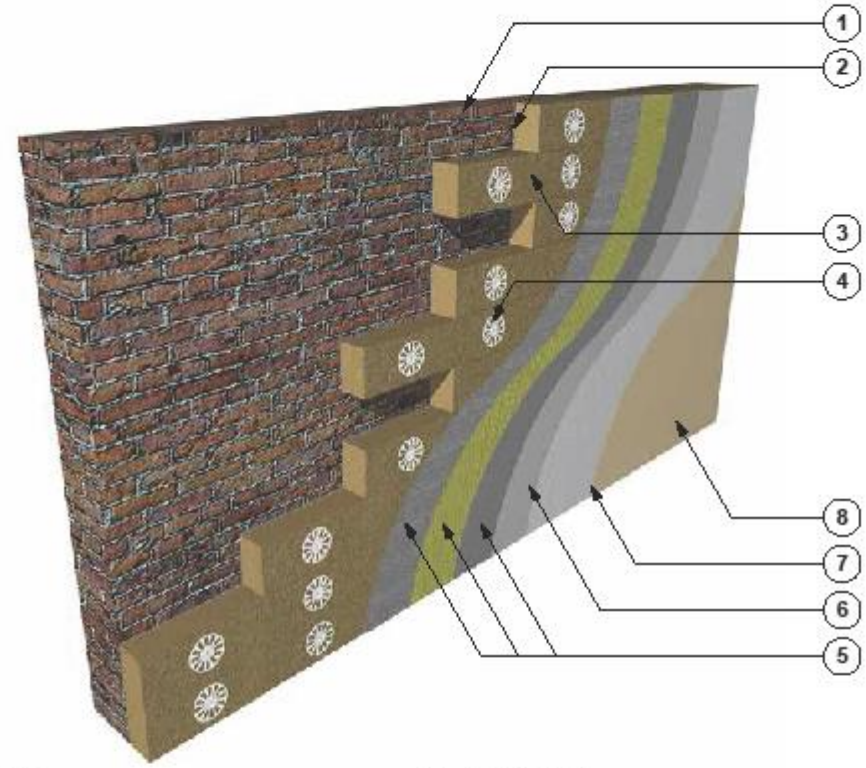


1. Substrate
2. Adhesive for thermal insulation fixing
   - ATLAS STOPTER K-20/AVAL KT 85
   - ATLAS HOTER S/AVAL KT 53
   - ATLAS HOTER U/AVAL KT 55
3. Thermal insulation
   - standard expanded polystyrene EPS
4. Anchor (mechanical fixing)
5. Reinforcing layer (base coat)
   - Insulation adhesive ATLAS STOPTER K-20/ AVAL KT 85
   - Insulation adhesive ATLAS HOTER U/AVAL KT 55
   - Fibreglass reinforcing mesh
6. Priming mass
   - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL, acrylic render ATLAS ACRYLIC/ AVAL ACRYLIC and acrylic-silicone render ATLAS ACRYLIC-SILICONE/AVAL ACRYLIC-SILICONE)
   - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILICONE/AVAL SILICONE and silicone-silicate render ATLAS SILICONE-SILICATE/AVAL SILICONE-SILICATE)
7. Rendering coat
   - Mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL
   - Acrylic render ATLAS ACRYLIC/AVAL ACRYLIC
   - Silicone render ATLAS SILICONE/ AVAL SILICONE
   - Acrylic-silicone render ATLAS ACRYLIC-SILICONE/ AVAL ACRYLIC-SILICONE
   - Silicone-silicate render ATLAS SILICONE- -SILICATE/AVAL SILICONE-SILICATE
8. Top paint coat (optional)
   - Acrylic paint ATLAS SALTA E/AVAL KT 44
   - Silicate paint ATLAS SALTA S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
   - Silicone paint ATLAS SALTA N (to be used optionally with ATLAS ACRYLIC, ATLAS ACRYLIC-SILICONE, ATLAS SILICONE, ATLAS SILICONE-SILICATE, ATLAS CERMIT MINERAL/AVAL MINERAL) (with primer ATLAS ARKOL NX/AVAL KT 47)
   - Silicone paint ATLAS SALTA/AVAL KT 46

Figure 3.

Thermal Insulation Composite Systems ATLAS/AVAL

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

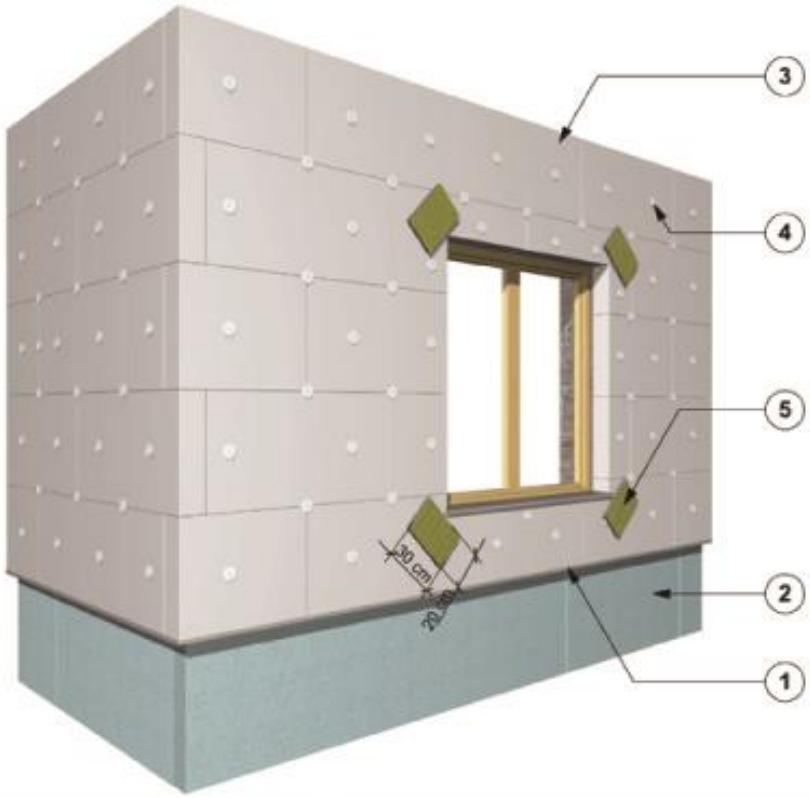


1. Substrate
2. Adhesive for thermal insulation fixing
   - ATLAS ROKER/AVAL KT 190
3. Thermal insulation
   - mineral wool (MW)
4. Anchor/ mechanical fixing (with hammer in steel pin)
5. Reinforcing layer (base coat)
   - Adhesive mortar ATLAS ROKER/AVAL KT 190
   - Fibreglass reinforcing mesh
6. Priming mass
   - ATLAS CERPLAST/AVAL KT 16
     (with mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL)
   - ATLAS SILKON ANX/AVAL KT 76
     (with silicone render ATLAS SILICONE/ AVAL SILICONE and silicone-silicate render ATLAS SILICONE-SILICATE/AVAL SILICONE--SILICATE)
7. Rendering coat
   - Mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL
   - Silicone render ATLAS SILICONE/ AVAL SILICONE
   - Silicone-silicate render ATLAS SILICONE--SILICATE/AVAL SILICONE-SILICATE
8. Top paint coat (optional)
   - Silicate paint ATLAS SALTA S/AVAL KT 54
     (with primer ATLAS ARKOL SX/AVAL KT 52)
   - Silicone paint ATLAS SALTA N
     (to be used optionally with ATLAS ACRYLIC, ATLAS ACRYLIC-SILICONE, ATLAS SILICONE, ATLAS SILICONE-SILICATE, ATLAS CERMIT MINERAL/AVAL MINERAL)
     (with primer ATLAS ARKOL NX/AVAL KT 47)
   - Silicone paint ATLAS SALTA/AVAL KT 46

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)

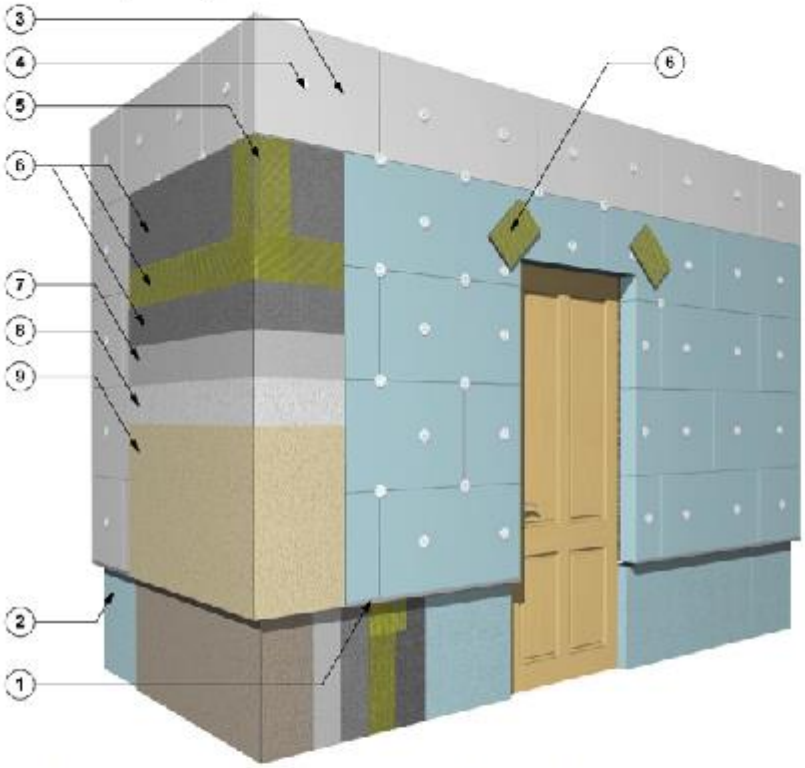


1. Starter track
2. Thermal insulation
   - extruded polystyrene XPS
3. Thermal insulation
   - standard expanded polystyrene EPS
4. Anchor
5. Corner profile with mesh
6. Reinforcing layer (base coat)
   - Adhesive mortar ATLAS STOPTER K-20/ AVAL KT 85
   - Adhesive mortar ATLAS HOTER U/AVAL KT 55
   - 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)

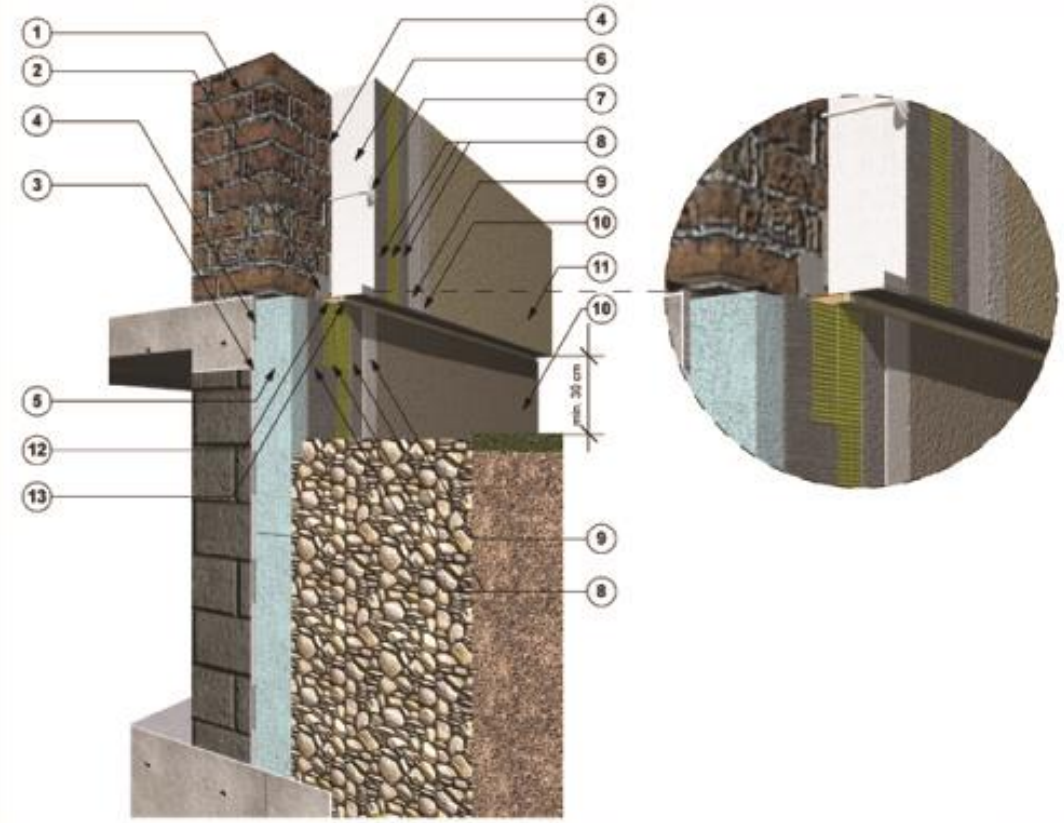


1. Starter track
2. Thermal insulation
   - extruded polystyrene XPS
3. Thermal insulation
   - standard expanded polystyrene EPS
4. Anchor (mechanical fixing)
5. Corner profile with mesh
6. Reinforcing layer (base coat)
   - Adhesive mortar ATLAS STOPTER K-20/ AVAL KT 85
   - Adhesive mortar ATLAS HOTER U/AVAL KT 55
   - Fibreglass reinforcing mesh
7. Priming mass
   - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL, acrylic render ATLAS ACRYLIC/ AVAL ACRYLIC and acrylic-silicone render ATLAS ACRYLIC-SILICONE/AVAL ACRYLIC-SILICONE)
   - ATLAS SILKAT ASX/AVAL KT 15
   - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILICONE/ AVAL SILICONE and silicone-silicate render ATLAS SILICONE-SILICATE/AVAL SILICONE-SILICATE)
8. Rendering coat
   - Mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL
   - Acrylic render ATLAS ACRYLIC/AVAL ACRYLIC
   - Silicate render ATLAS SILICATE/AVAL SILICATE
   - Silicone render ATLAS SILICONE/ AVAL SILICONE
   - Acrylic-silicone render ATLAS ACRYLIC-SILICONE/ AVAL ACRYLIC-SILICONE
   - Silicone-silicate render ATLAS SILICONE- -SILICATE/AVAL SILICONE-SILICATE
9. Top paint coat (optional)
   - Acrylic paint ATLAS SALTA E/AVAL KT 44
   - Silicate paint ATLAS SALTA S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
   - Silicone paint ATLAS SALTA N (to be used optionally with ATLAS ACRYLIC, ATLAS ACRYLIC-SILICONE, ATLAS SILICONE, ATLAS SILICONE-SILICATE, ATLAS CERMIT MINERAL/AVAL MINERAL) (with primer ATLAS ARKOL NX/AVAL KT 47)
   - Silicone paint ATLAS SALTA/AVAL KT 46

Figure 6a.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:
Base and plinth insulation

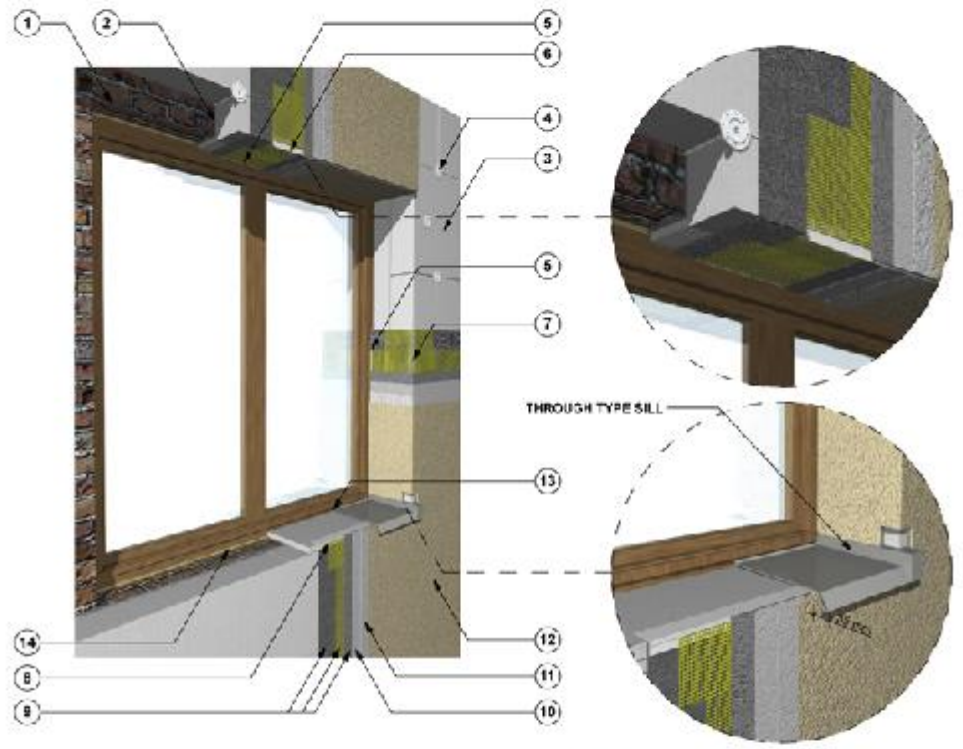


1. Substrate
2. Starter track
3. ATLAS WODER E waterproofing
4. Adhesive for thermal insulation fixing
   - ATLAS STOPTER K-20/AVAL KT 85
   - ATLAS HOTER S/AVAL KT 53
   - ATLAS HOTER U/AVAL KT 55
5. Thermal insulation
   - extruded polystyrene XPS
6. Thermal insulation
   - standard expanded polystyrene EPS
7. Anchor (mechanical fixing)
8. Reinforcing layer (base coat)
   - Adhesive mortar ATLAS STOPTER K-20/ AVAL KT 85
   - Adhesive mortar ATLAS HOTER U/AVAL KT 55
   - Fibreglass reinforcing mesh
9. Priming mass
   - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL, acrylic render ATLAS ACRYLIC/ AVAL ACRYLIC and acrylic-silicone render ATLAS ACRYLIC-SILICONE/AVAL ACRYLIC-SILICONE)
   - ATLAS SILKAT ASX/AVAL KT 15 (NOTE: Do not use with EPS boards)
   - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILICONE/ AVAL SILICONE and silicone-silicate render ATLAS SILICONE-SILICATE/AVAL SILICONE-SILICATE)
10. Rendering coat
    - Mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL
    - Acrylic render ATLAS ACRYLIC/AVAL ACRYLIC
    - Silicate render ATLAS SILICATE/AVAL SILICATE (NOTE: Do not use with EPS boards)
    - Silicone render ATLAS SILICONE/AVAL SILICONE
    - Acrylic-silicone render ATLAS ACRYLIC-SILICONE/ AVAL ACRYLIC-SILICONE
    - Silicone-silicate render ATLAS SILICONE-SILICATE/AVAL SILICONE-SILICATE
11. Top paint coat (optional)
    - Acrylic paint ATLAS SALTA E/AVAL KT 44
    - Silicate paint ATLAS SALTA S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
    - Silicone paint ATLAS SALTA N (to be used optionally with ATLAS ACRYLIC/ ATLAS ACRYLIC-SILICONE, ATLAS SILICONE, ATLAS SILICONE-SILICATE, ATLAS CERMIT MINERAL/AVAL MINERAL) (with primer ATLAS ARKOL NX/AVAL KT 47)
    - Silicone paint ATLAS SALTA/AVAL KT 46
12. Expanding tape
13. Mastic sealant

Figure 7a.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:
Window reveal insulation

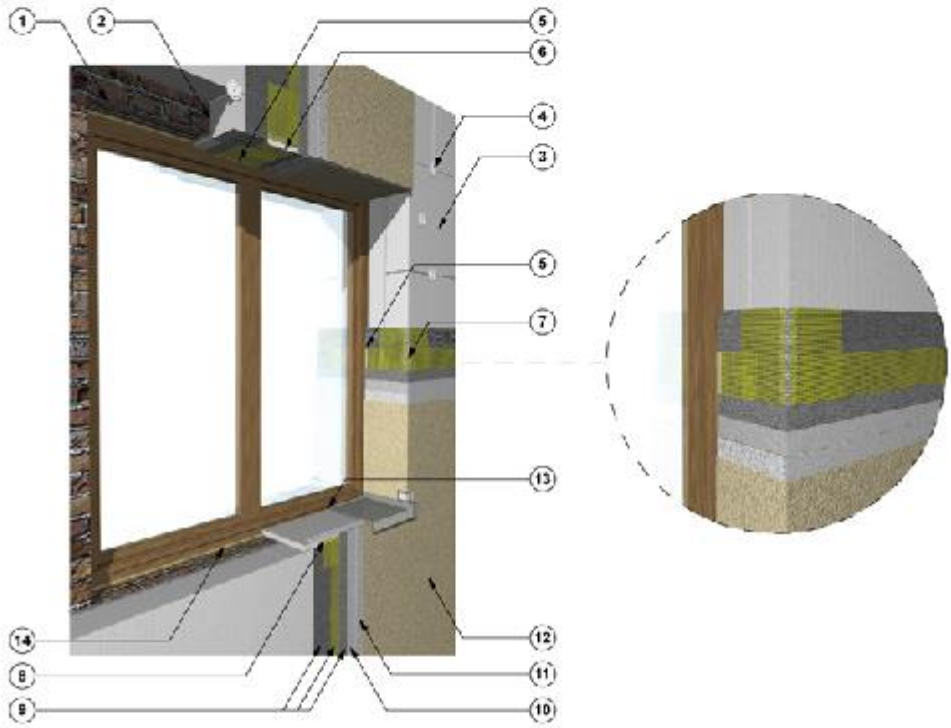


1. Substrate
2. Adhesive for thermal insulation fixing
   - ATLAS STOPTER K-20/AVAL KT 85
   - ATLAS HOTER S/AVAL KT 53
   - ATLAS HOTER U/AVAL KT 55
3. Thermal insulation
   - standard expanded polystyrene EPS
4. Anchor (mechanical fixing)
5. Window profile
6. Drip profile
7. Corner profile with mesh
8. Under window-sill profile
9. Reinforcing layer (base coat)
   - Adhesive mortar ATLAS STOPTER K-20/ AVAL KT 85
   - Adhesive mortar ATLAS HOTER U/AVAL KT 55
   - Fibreglass reinforcing mesh
10. Priming mass
    - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL, acrylic render ATLAS ACRYLIC/ AVAL ACRYLIC and acrylic-silicone render ATLAS ACRYLIC-SILICONE/AVAL ACRYLIC-SILICONE)
    - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILICONE/ AVAL SILICONE and silicone-silicate render ATLAS SILICONE-SILICATE/ AVAL SILICONE-SILICATE)
11. Rendering coat
    - Mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL
    - Acrylic render ATLAS ACRYLIC/AVAL ACRYLIC
    - Silicone render ATLAS SILICONE/AVAL SILICONE
    - Acrylic-silicone render ATLAS ACRYLIC--SILICONE/AVAL ACRYLIC-SILICONE
    - Silicone-silicate render ATLAS SILICONE--SILICATE/AVAL SILICONE-SILICATE
12. Top paint coat (optional)
    - Acrylic paint ATLAS SALTA E/AVAL KT 44
    - Silicate paint ATLAS SALTA S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
    - Silicone paint ATLAS SALTA N (to be used optionally with ATLAS ACRYLIC, ATLAS ACRYLIC-SILICONE, ATLAS SILICONE, ATLAS SILICONE-SILICATE, ATLAS CERMIT MINERAL/AVAL MINERAL) (with primer ATLAS ARKOL NX/AVAL KT 47)
    - Silicone paint ATLAS SALTA/AVAL KT 46
13. Mastic sealant
14. Sealing foam

Figure 7b.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:
Window reveal insulation

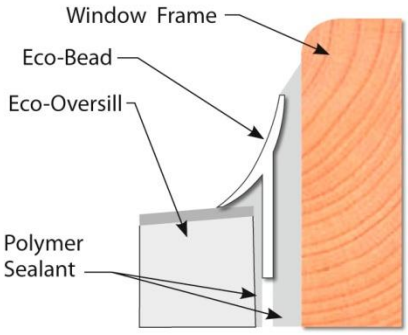


1. Substrate
2. Adhesive for thermal insulation fixing
   - ATLAS STOPTER K-20/AVAL KT 85
   - ATLAS HOTER S/AVAL KT 53
   - ATLAS HOTER U/AVAL KT 55
3. Thermal insulation
   - standard expanded polystyrene EPS
4. Anchor (mechanical fixing)
5. Window profile
6. Drip profile
7. Corner profile with mesh
8. Under window-sill profile
9. Reinforcing layer (base coat)
   - Adhesive mortar ATLAS STOPTER K-20/AVAL KT 85
   - Adhesive mortar ATLAS HOTER U/AVAL KT 55
   - Fibreglass reinforcing mesh
10. Priming mass
    - ATLAS CERPLAST/AVAL KT 16
      (with mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL, acrylic render ATLAS ACRYLIC/ AVAL ACRYLIC and acrylic-silicone render ATLAS ACRYLIC-SILICONE/AVAL ACRYLIC-SILICONE)
    - ATLAS SILKON ANX/AVAL KT 76
      (with silicone render ATLAS SILICONE/ AVAL SILICONE and silicone-silicate render ATLAS SILICONE-SILICATE/AVAL SILICONE--SILICATE)
11. Rendering coat
    - Mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL
    - Acrylic render ATLAS ACRYLIC/AVAL ACRYLIC
    - Silicone render ATLAS SILICONE/AVAL SILICONE
    - Acrylic-silicone render ATLAS ACRYLIC--SILICONE/AVAL ACRYLIC-SILICONE
    - Silicone-silicate render ATLAS SILICONE--SILICATE/AVAL SILICONE-SILICATE
12. Top paint coat (optional)
    - Acrylic paint ATLAS SALTA E/AVAL KT 44
    - Silicate paint ATLAS SALTA S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
    - Silicone paint ATLAS SALTA N (to be used optionally with ATLAS ACRYLIC, ATLAS ACRYLIC-SILICONE, ATLAS SILICONE, ATLAS SILICONE-SILICATE, ATLAS CERMIT MINERAL/AVAL MINERAL) (with primer ATLAS ARKOL NX/AVAL KT 47)
    - Silicone paint ATLAS SALTA/AVAL KT 46
13. Mastic sealant
14. Sealing foam

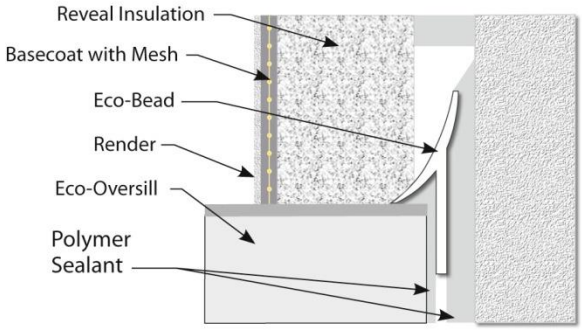
Figure 7c.

Window Sill Detail with ECO-OVERSILL

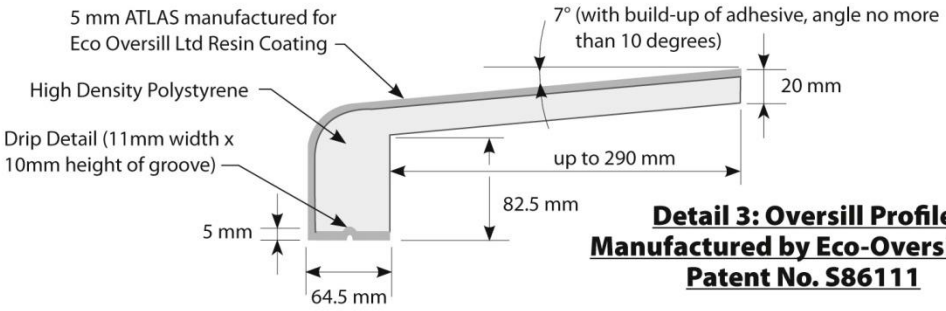
Eco-Oversill Manufactured by
Eco-Oversill Ltd. (Patent No. S86111)



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



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



Detail 3: Oversill Profile Manufactured by Eco-Oversill Ltd Patent No. S86111

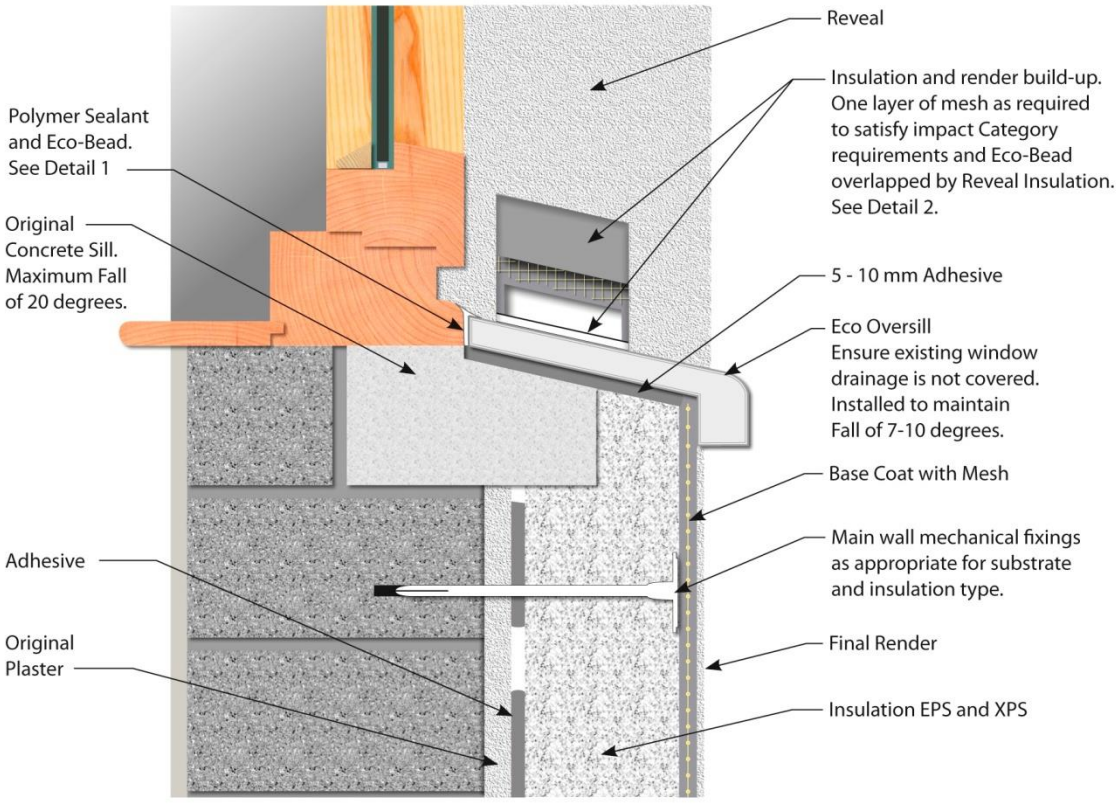
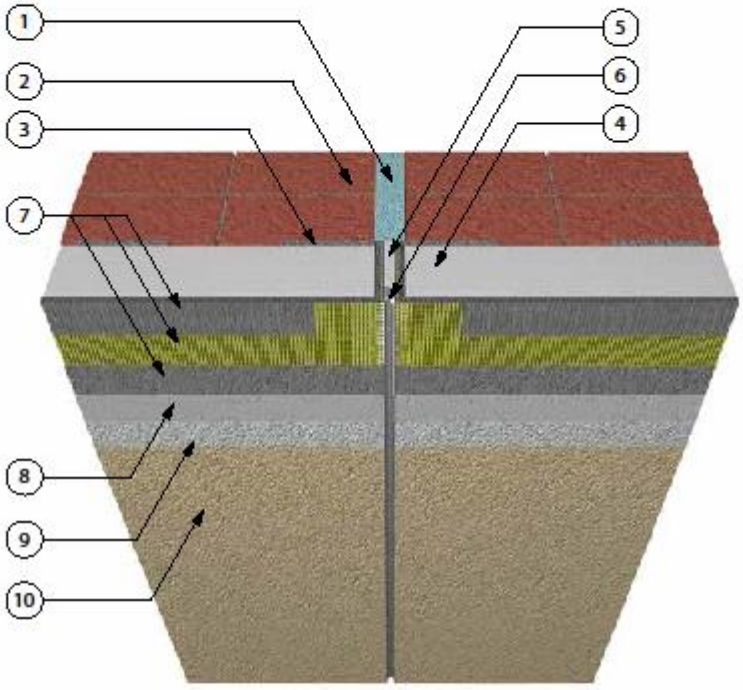


Figure 8.

Thermal Insulation Composite Systems ATLAS/AVAL

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

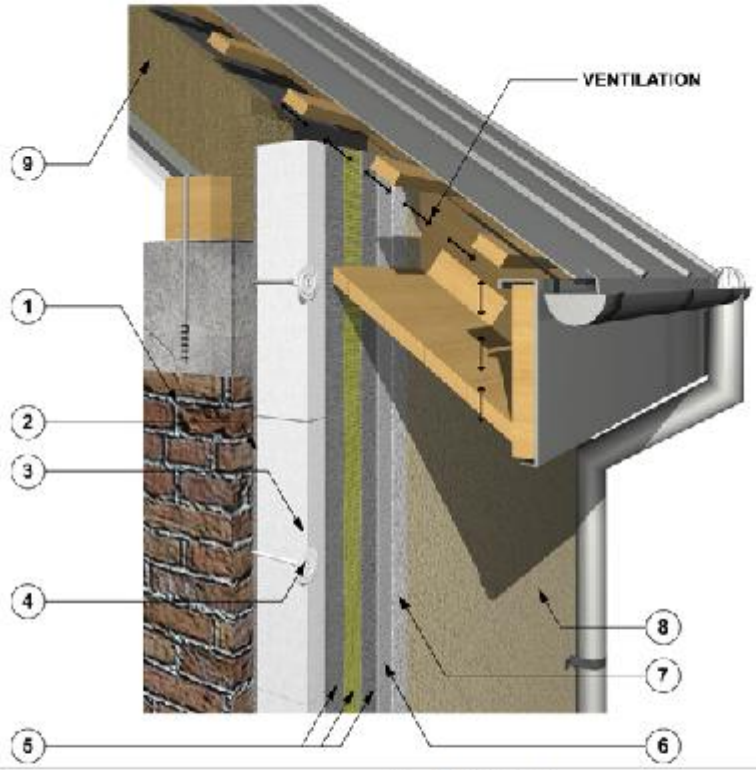


1. Building structural expansion joint
2. Substrate
3. Adhesive for thermal insulation fixing
   - ATLAS STOPTER K-20/AVAL KT 85
   - ATLAS HOTER S/AVAL KT 53
   - ATLAS HOTER U/AVAL KT 55
4. Thermal insulation
   - standard expanded polystyrene EPS
5. Additional strip of insulation
6. Straight expansion joint profile
7. Reinforcing layer (base coat)
   - Adhesive mortar ATLAS STOPTER K-20/ AVAL KT 85
   - Adhesive mortar ATLAS HOTER U/AVAL KT 55
   - Fibreglass reinforcing mesh
8. Priming mass
   - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL, acrylic render ATLAS ACRYLIC/ AVAL ACRYLIC and acrylic-silicone render ATLAS ACRYLIC-SILICONE/AVAL ACRYLIC-SILICONE)
   - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILICONE/ AVAL SILICONE and silicone-silicate render ATLAS SILICONE-SILICATE/ AVAL SILICONE-SILICATE)
9. Rendering coat
   - Mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL
   - Acrylic render ATLAS ACRYLIC/AVAL ACRYLIC
   - Silicone render ATLAS SILICONE/AVAL SILICONE
   - Acrylic-silicone render ATLAS ACRYLIC-SILICONE/ AVAL ACRYLIC-SILICONE
   - Silicone-silicate render ATLAS SILICONE- -SILICATE/AVAL SILICONE-SILICATE
10. Top paint coat (optional)
    - Acrylic paint ATLAS SALTA E/AVAL KT 44
    - Silicate paint ATLAS SALTA S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
    - Silicone paint ATLAS SALTA N (to be used optionally with ATLAS ACRYLIC, ATLAS ACRYLIC-SILICONE, ATLAS SILICONE, ATLAS SILICONE-SILICATE, ATLAS CERMIT MINERAL/AVAL MINERAL) (with primer ATLAS ARKOL NX/AVAL KT 47)
    - Silicone paint ATLAS SALTA/AVAL KT 46

Figure 10a.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:
Wall insulation finishing at eaves – for buildings up to two and half stories high

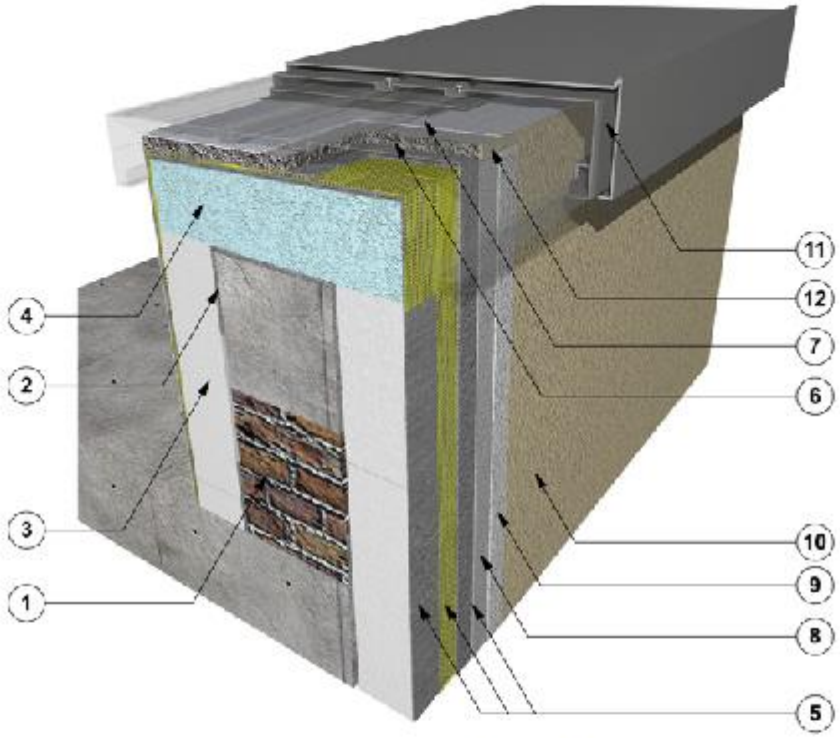


1. Substrate
2. Adhesive for thermal insulation fixing
   - ATLAS STOPTER K-20/AVAL KT 85
   - ATLAS HOTER S/AVAL KT 53
   - ATLAS HOTER U/AVAL KT 55
3. Thermal insulation
   - standard expanded polystyrene EPS
4. Anchor (mechanical fixing)
5. Reinforcing layer (base coat)
   - Adhesive mortar ATLAS STOPTER K-20/AVAL KT 85
   - Adhesive mortar ATLAS HOTER U/AVAL KT 55
   - Fibreglass reinforcing mesh
6. Priming mass
   - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL, acrylic render ATLAS ACRYLIC/AVAL ACRYLIC and acrylic-silicone render ATLAS ACRYLIC--SILICONE/AVAL ACRYLIC-SILICONE)
   - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILICONE/ AVAL SILICONE and silicone-silicate render ATLAS SILICONE-SILICATE/ AVAL SILICONE-SILICATE)
7. Rendering coat
   - Mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL
   - Acrylic render ATLAS ACRYLIC/AVAL ACRYLIC
   - Silicone render ATLAS SILICONE/ AVAL SILICONE
   - Acrylic-silicone render ATLAS ACRYLIC--SILICONE/AVAL ACRYLIC-SILICONE
   - Silicone-silicate render ATLAS SILICONE--SILICATE/AVAL SILICONE-SILICATE
8. Top paint coat (optional)
   - Acrylic paint ATLAS SALTA E/AVAL KT 44
   - Silicate paint ATLAS SALTA S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
   - Silicone paint ATLAS SALTA N (to be used optionally with ATLAS ACRYLIC, ATLAS ACRYLIC-SILICONE, ATLAS SILICONE, ATLAS SILICONE-SILICATE, ATLAS CERMIT MINERAL/AVAL MINERAL) (with primer ATLAS ARKOL NX/AVAL KT 47)
   - Silicone paint ATLAS SALTA/AVAL KT 46
9. Roof thermal insulation

Figure 11.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:
Flat roof attic insulation

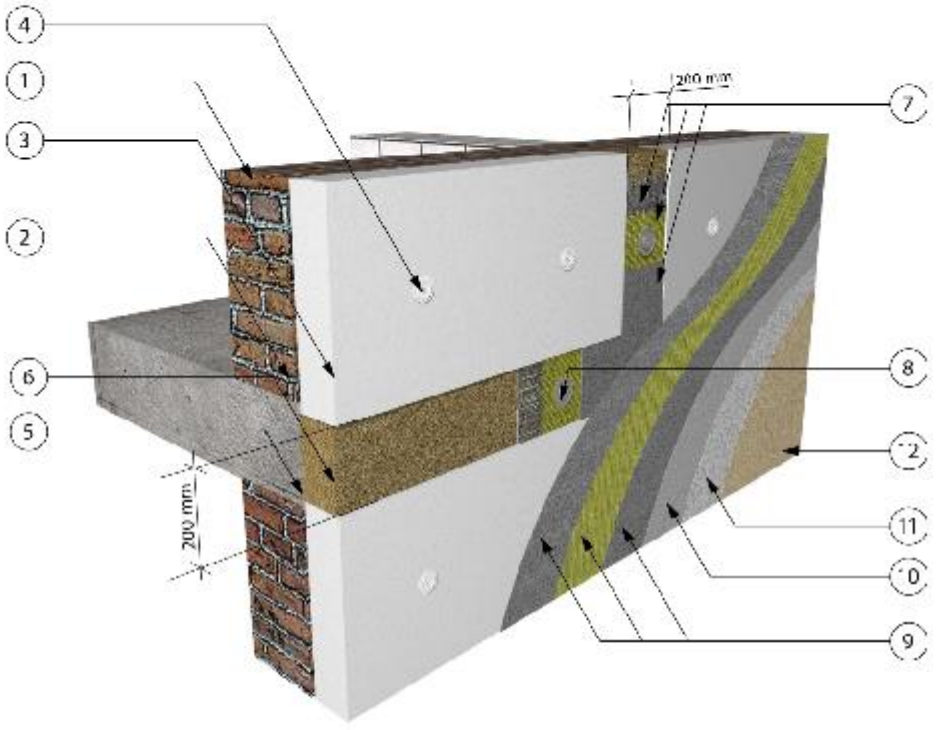


1. Substrate
2. Adhesive for thermal insulation fixing
   - ATLAS STOPTER K-20/AVAL KT 85
   - ATLAS HOTER S/AVAL KT 53
   - ATLAS HOTER U/AVAL KT 55
3. Thermal insulation
   - standard expanded polystyrene EPS
4. Thermal insulation
   - extruded polystyrene XPS
5. Reinforcing layer (base coat)
   - Adhesive mortar ATLAS STOPTER K-20/AVAL KT 85
   - Adhesive mortar ATLAS HOTER U/AVAL KT 55
   - Fibreglass reinforcing mesh
6. Cement fibre board
7. ATLAS WODER E/AVAL KL 51 waterproofing
8. Priming mass
   - ATLAS CERPLAST/AVAL KT 16
     (with mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL, acrylic render ATLAS ACRYLIC/ AVAL ACRYLIC and acrylic-silicone render ATLAS ACRYLIC-SILICONE/ AVAL ACRYLIC-SILICONE)
   - ATLAS SILKON ANX/AVAL KT 76
     (with silicone render ATLAS SILICONE/ AVAL SILICONE and silicone-silicate render ATLAS SILICONE-SILICATE/ AVAL SILICONE-SILICATE)
9. Rendering coat
   - Mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL
   - Acrylic render ATLAS ACRYLIC/AVAL ACRYLIC
   - Silicone render ATLAS SILICONE/AVAL SILICONE
   - Acrylic-silicone render ATLAS ACRYLIC- -SILICONE/AVAL ACRYLIC-SILICONE
   - Silicone-silicate render ATLAS SILICONE- -SILICATE/AVAL SILICONE-SILICATE
10. Top paint coat (optional)
    - Acrylic paint ATLAS SALTA E/AVAL KT 44
    - Silicate paint ATLAS SALTA S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
    - Silicone paint ATLAS SALTA N (to be used optionally with ATLAS ACRYLIC, ATLAS ACRYLIC-SILICONE, ATLAS SILICONE, ATLAS SILICONE-SILICATE, ATLAS CERMIT MINERAL/AVAL MINERAL) (with primer ATLAS ARKOL NX/AVAL KT 47)
    - Silicone paint ATLAS SALTA/AVAL KT 46
11. Flashing
12. Mastic sealant

Figure 13.

Thermal Insulation Composite Systems ATLAS/AVAL

Detail scheme:
Installation of vertical and horizontal fire barriers

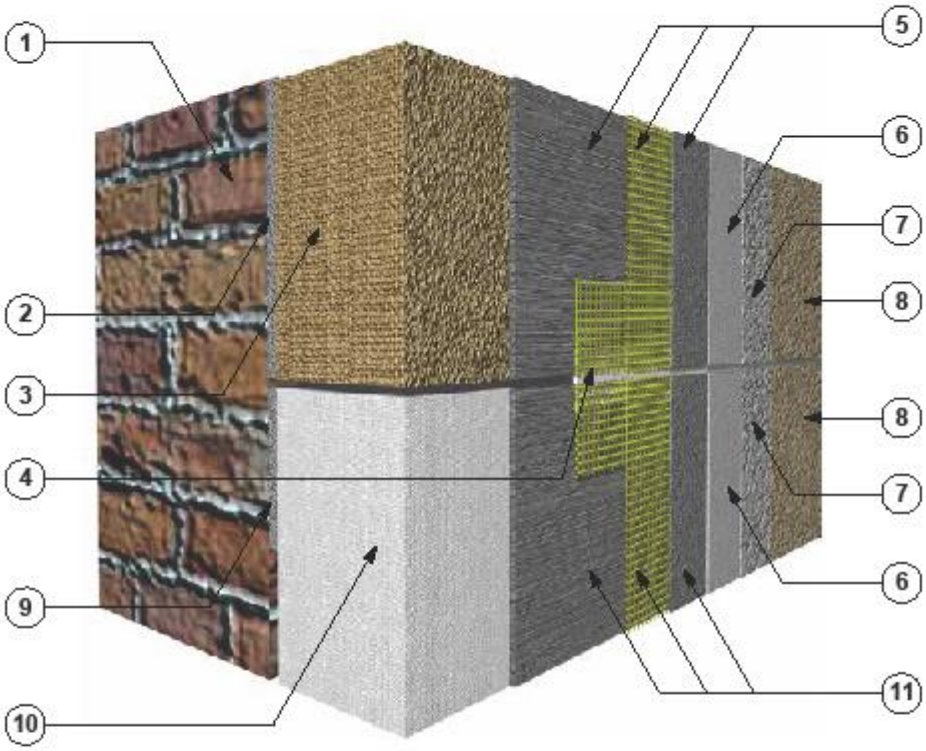


1. Substrate
2. Adhesive for thermal insulation fixing (EPS)
   - ATLAS STOPTER K-20/AVAL KT 85
   - ATLAS HOTER S/AVAL KT 53
   - ATLAS HOTER U/AVAL KT 55
3. Thermal insulation
   - standard expanded polystyrene EPS
4. Anchors (mechanical fixings - with hammer-in steel or nylon pin)
5. Adhesive for thermal insulation fixing (MW)
   - ATLAS ROKER/AVAL KT 190
6. Thermal insulation
   - mineral wool lamella Rockwool (MW)
7. Reinforcing layer (base coat)
   - Adhesive mortar ATLAS ROKER W-20/AVAL KT 190
   - Fibreglass reinforcing mesh
8. Anchor (fire rated, stainless steel metal insulation supports, class A1)
   - fixed through layer of mesh
   - @ 1 No. per 40 cm vertical centres (maximum) or 1 No. per linear metre (maximum)
9. Reinforcing layer (base coat)
   - Adhesive mortar ATLAS STOPTER K-20/AVAL KT 85
   - Adhesive mortar ATLAS HOTER U/AVAL KT 55
   - Fibreglass reinforcing mesh
10. Priming mass
    - ATLAS CERPLAST/AVAL KT 16 (with mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL)
    - ATLAS SILKON ANX/AVAL KT 76 (with silicone render ATLAS SILICONE/ AVAL SILICONE and silicone-silicate render ATLAS SILICONE-SILICATE/ AVAL SILICONE-SILICATE)
11. Rendering coat
    - Mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL
    - Silicone render ATLAS SILICONE/AVAL SILICONE
    - Silicone-silicate render ATLAS SILICONE-SILICATE/AVAL SILICONE-SILICATE
12. Top paint coat (optional)
    - Acrylic paint ATLAS SALTA E/AVAL KT 44
    - Silicate paint ATLAS SALTA S/AVAL KT 54 (with primer ATLAS ARKOL SX/AVAL KT 52)
    - Silicone paint ATLAS SALTA N (to be used optionally with ATLAS ACRYLIC, ATLAS ACRYLIC-SILICONE, ATLAS SILICONE, ATLAS SILICONE-SILICATE, ATLAS CERMIT MINERAL/AVAL MINERAL) (with primer ATLAS ARKOL NX/AVAL KT 47)
    - Silicone paint ATLAS SALTA/AVAL KT 46

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. Adhesive for thermal insulation fixing (MW)
   - ATLAS ROKER/AVAL KT 190
3. Thermal insulation
   - mineral wool (MW)
4. Reinforcing layer (base coat)
   - Adhesive mortar ATLAS ROKER/AVAL KT 190
   - Fibreglass reinforcing mesh
6. Priming mass
   - ATLAS CERPLAST/AVAL KT 16
     (with mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL)
   - ATLAS SILKON ANX/AVAL KT 76
     (with silicone render ATLAS SILICONE/ AVAL SILICONE and silicone-silicate render ATLAS SILICONE-SILICATE/ AVAL SILICONE-SILICATE)
7. Rendering coat
   - Mineral render ATLAS CERMIT MINERAL/ AVAL MINERAL
   - Acrylic render ATLAS ACRYLIC/AVAL ACRYLIC
     (NOTE: Do not use with mineral wool system)
   - Silicone render ATLAS SILICONE/ AVAL SILICONE
   - Acrylic-silicone render ATLAS ACRYLIC-SILICONE/ AVAL ACRYLIC-SILICONE
     (NOTE: Do not use with mineral wool system)
   - Silicone-silicate render ATLAS SILICONE--SILICATE/AVAL SILICONE-SILICATE
8. Top paint coat (optional)
   - Acrylic paint ATLAS SALTA E/AVAL KT 44
     (NOTE: Do not use with mineral wool system)
   - Silicate paint ATLAS SALTA S/AVAL KT 54
     (with primer ATLAS ARKOL SX/AVAL KT 52)
   - Silicone paint ATLAS SALTA N,
     (to be used optionally with ATLAS ACRYLIC, ATLAS ACRYLIC-SILICONE, ATLAS SILICONE, ATLAS SILICONE-SILICATE, ATLAS CERMIT MINERAL/AVAL MINERAL)
     (with primer ATLAS ARKOL NX/AVAL KT 47)
   - Silicone paint ATLAS SALTA/AVAL KT 46
9. Adhesive for thermal insulation fixing (EPS)
   - ATLAS STOPTER K-20/AVAL KT 85
   - ATLAS HOTER S/AVAL KT 53
   - ATLAS HOTER U/AVAL KT 55
10. Thermal insulation
    - standard expanded polystyrene EPS
11. Reinforcing layer (base coat)
    - Adhesive mortar ATLAS STOPTER K-20/ AVAL KT 85
    - Adhesive mortar ATLAS HOTER U/AVAL KT 55
    - Fibreglass reinforcing mesh

3. GENERAL

The system is designed by the Certificate Holder on a standard or project specific basis. Where the external insulation system is being applied to improve the thermal performance of an existing building, the agent/distributor of the system will assess the building and give advice on how to maximise the benefits of the external insulation system for that building. 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 5250:2016 *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 SR 54:2014 *Code of practice for the energy efficient retrofit of dwellings* and, where possible, meeting all of the Acceptable Construction Details published by the DHPLG.
d) Thermal insulation provision to TGD to Part L of the Building Regulations.
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, with best practice being to move the window forward. 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 DHPLG.

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. 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. A general factor of safety of 1.5 is applied to design wind loads.

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.
   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.
   Category III: A zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects.

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

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.

4.2 BEHAVIOUR IN RELATION TO FIRE

The reaction to fire classification according to IS EN 13501-1:2007 *Fire classification of construction products and building elements – Classification using data from reaction to fire tests* for the ATLAS/AVAL External Thermal Insulation Composite Systems are defined in Table 3 of each of the applicable Detail Sheets.

Systems that achieve a Class A2 or B Reaction to Fire Classification are suitable for use up to a maximum of six storeys (18 metres) in height on purpose groups 1(a), 1(c), 1(d), 2(a), 2(b), 3, 4(a) and 4(b), and for use up to a maximum of five storeys (15 metres) in height on purpose group 1(b), as defined in TGD to Part B of the Building Regulations.

Systems that achieve a Class C Reaction to Fire Classification are suitable for use up to the maximum storey heights as for Class A2 or B, but with the added restriction they may not be used on a wall which is less than 1m away from a boundary, as defined in TGD to Part B of the Building Regulations. Reference should be made to Sections 4.1 and 4.2 of TGD to Part B of the Building Regulations, and to Sections 4.4 and 4.5 of TGD to Part B Volume 2 of the Building Regulations.

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 15m high. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Sections 4.1 and 4.2 of TGD to Part B of the Building Regulations, and to Sections 4.4 and 4.5 of TGD to Part B Volume 2 of the Building Regulations.

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

With regard to fire stopping and limitations on use of combustible materials, walls must comply with Sections 3.2, 3.3, 3.4 and 4 of TGD to Part B of the Building Regulations, and Sections 3.5, 3.6, 3.7 and 4 of TGD to Part B Volume 2 of the Building Regulations. Stainless steel fire fixings must be provided at the rate of one per square metre when specified. The fixing design should take account of the extra duty required under fire conditions.

Table 1 – Typical U-Values [3]			
ETICS Insulation	**[2] Declared Thermal Conductivity ($\lambda_{90/90}$) of insulation (W/mK)**	**Thickness of insulation (mm)**	**U-Value (W/m²K)**
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 b the $\lambda_{90/90}$ value
[3] These values are based on the 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.

Vertical and horizontal lamella fire barriers shall be provided at each compartment floor and wall, with stainless steel fixings provided at 400mm vertical centres and 400mm horizontal centres respectively, including the second floor level of a three-storey single occupancy house (see Diagram 12 of TGD to Part B Volume 2 of the Building Regulations). Firebreaks should be fully adhesively bonded to the substrate (i.e. ribbons or dabs of adhesive are not acceptable) and mechanically fixed with stainless steel fire fixings at 400mm centres. The fire barrier shall be of non-combustible material (i.e. lamella, 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 (see Clause 3.6.3 of TGD to Part B Volume 2 of the Building Regulations for types of suitable 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 2.5.6 of TGD to Part J of the Building Regulations. 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 can be achieved using the ATLAS/AVAL External Thermal Insulation Composite Systems. The manufacturer's declared thermal conductivity values ($\lambda_{90/90}$) taken from their CE Marking Declarations of Performance 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 achieve minimum U-values of 0.27 W/m²K (retrofit only) for different construction types.

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 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, consideration should be given to the treatment of the ventilated cavity. In order to ensure the thermal effectiveness of the external insulation system, it is critical to eliminate airflow within the cavity void. It is essential to seal the cavity to achieve an unventilated air layer. This

eliminates heat losses due to airflow within the cavity circumventing the external insulation system. Best practice is to fill the cavity void with an NSAI Agrément approved Cavity Wall Insulation (CWI) system. Ventilation to the building must be maintained in accordance with the requirements of TGD to Part F of the 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 TGD to Part L of the Building Regulations.

When **all** bridged junctions within a building comply with the requirements of Table D2 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. If **all** junctions can be shown to be equivalent or better than the Acceptable Construction Details, published by the DHPLG then the values published in Table D2 apply.

Where either of the above options are shown to be valid, or when the required values cannot 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 BRE IP1/06 *Assessing the effects of thermal bridging at junctions and around openings* and BRE 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.

As per Acceptable Construction Details, a minimum thermal resistance of 0.6m^{2}K/W should be provided at window reveals, heads and sills.

4.6 CONDENSATION RISK

Areas where there is a significant risk of 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 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 sections 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 Appendix D Table D2 of TGD to Part L of the Building Regulations, 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 to be 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 levels 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 5250:2016, 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, including the ventilation of suspended timber floors, where existing vents must be sleeved across the rising wall and sealed.

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 must be taken before the external insulation system is installed.

4.7 MAINTENANCE

Adequate provision should be made in the initial design phase for access and maintenance over the life of the system.

Regular inspections should be made over the life of the system. The system shall be inspected and maintained in accordance with the Certificate holder's instructions, as detailed in the Repair and Maintenance Method Statement, which is incorporated into the Building Owner's Manual.

- Visually inspect the render and architectural details for signs of damage or water ingress (at least annually).
- Necessary repairs must be carried out immediately and must be in accordance with the Certificate holder's instructions to prevent deterioration or damage, and to protect the integrity of the system.
- Sealants shall be subject to regular inspection (at least annually).
- Sealants should be replaced as required and fully replaced every 18 to 20 years to maintain

performance.
- 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.

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.

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 30years subject to normal use, regular inspection and maintenance; 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.

It is important to note that the durability of the render system is entirely dependent on the correct installation of the product in accordance with this Certificate, the manufacturer's instructions, IS EN 13914-1**Error! Reference source not found.** and ongoing c are and maintenance as described in Clause 4.7 of this Certificate. Critical details include rendering at window sills, raised features, junctions with eaves and verges, and the use of suitably designed overhangs and flashings. Reference should be made to IS EN 13914-1**Error! Reference source not found.** f or general advice on design, in particular on the use of angle, stop and movement joint beads.

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.

Where cleaning of the walls is required, for example in the case of algae growth, the procedure in the Repair and Maintenance Document must be followed which contains detailed information on the removal of algae. It is the homeowner's responsibility to inspect the walls every year and clean when required; however the homeowner may contract the approved installer to provide this service.

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 and 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 latest revision so long as:

(a) the specification of the product is unchanged.

(b) the Building Regulations 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

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

Kevin D. Mullaney
Director of Certification, NSAI

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:** Impact resistance results and illustrations revised.
- **April 2012:** Impact resistance and fire classification results revised.
- **March 2013:** Insulated sill design added.
- **09 July 2018:** References to Building Regulations and standards updated.
- **23 June 2023:** References to Building Regulations updated.
- **10 February 2025:** Revised Sections 4.7 and 4.9.1.

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 system is for use as external insulation for refurbishment/retrofit of existing masonry or concrete buildings, up to a maximum of six storeys (18 metres) in height in purpose groups 1(a), 1(c), 2(a), 2(b), 3, 4(a) and 4(b), and for use up to a maximum of five storeys (15m) in height in purpose group 1(b) as defined in TGD to Part B of the Irish Building Regulations 1997 and subsequent revisions.

Part One / Certification 1

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 Irish Building Regulations 1997 and subsequent revisions, as indicated in Section 1.2 of Certificate 10/0347

1.2 BUILDING REGULATIONS
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 Cl 2.4 of Certificate No. 10/0347 for the installation instructions for the ATLAS/AVAL Elastified EPS/EPS 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
Thickness (mm) - EN 823		T1
Length (mm)- EN 822		L2
Width (mm) – EN 822		W2
Squareness (mm/m) – EN 824		S5
Flatness (mm/m) – EN 825		P5
Surface condition		Cut surface (homogeneous and without "skin")
Dimensional Stability	**Laboratory conditions – EN 1603**	DS(N)2
	Specified temperature and humidity – EN 1604	DS(70,-)1 or DS(70,-)2
Water Absorbtion (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_{rk} ≤ 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.

optionally	**ATLAS Salta N** – Ready to use pigmented liquid **ATLAS Salta (AVAL KT 46)** – Ready to use pigmented liquid	-	0.22 to 0.36 0.22 to 0.37
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/AVAL Elastified EPS / EPS Systems **Impact Resistance**		
Rendering System: Insulation, Base Coat, Key Coat with Finishing Coat indicated	**Finishing Coat**	**Impact Resistance**
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 Acrylic/AVAL Acrylic	**Category III**
	ATLAS Silicone/AVAL Silicone[(1)]	**Category III (Category I with double mesh)**
	ATLAS Acrylic-Silicone/AVAL Acrylic-Silicone	**Category III**
	ATLAS Silicone-Silicate/AVAL Silicone-Silicate	**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 Acrylic/AVAL Acrylic	**Category III**
	ATLAS Silicone/AVAL Silicone[(1)]	**Category III (Category I with double mesh)**
	ATLAS Acrylic-Silicone/AVAL Acrylic-Silicone	**Category III**
	ATLAS Silicone-Silicate/AVAL Silicone-Silicate	**Category II**
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 Acrylic/AVAL Acrylic	**Category III**
	ATLAS Silicone/AVAL Silicone	**Category III**
	ATLAS Acrylic-Silicone/AVAL Acrylic-Silicone	**Category III**
	ATLAS Silicone-Silicate/AVAL Silicone-Silicate	**Category II**
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 Acrylic/AVAL Acrylic	**Category III**
	ATLAS Silicone/AVAL silicone	**Category III**
	ATLAS Acrylic-Silicone/AVAL Acrylic-Silicone	**Category III**
	ATLAS Silicone-Silicate/AVAL Silicone-Silicate	**Category II**
[(1)] Double layer of ATLAS 165 Mesh with TR-100 EPS provides a Category I Impact Resistance on ATLAS STOPTER K20/AVAL KT 85 or ATLAS HOTER U/AVAL KT 55 adhesive + priming mass ATLAS SILIKON ANX/AVAL KT 76 + silicone render ATLAS Silicone. See Clause 2.4.4 of this Certificate 10/0347 for application instructions of double mesh systems.		

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: • **Adhesive:** STOPTER K20 (AVAL KT 85), HOTER U (AVAL KT 55), HOTER S (AVAL KT 53) • **Mesh:** SSA 1363 SM(100) • **Base coats:** STOPTER K20 (AVAL KT 85), HOTER U, (AVAL KT 55) • **Finishing coats:** Mineral finishes: ATLAS CERMIT mineral/AVAL mineral (with key coat CERPLAST/AVAL KT 16) • **Decorative coats :** SALTA E/AVAL KT 44, SALTA S/AVAL KT 54 (with primer ARKOL SX/AVAL KT 52), SALTA N (with primer ARKOL NX/AVAL KT 47), SALTA/AVAL KT 46 (with primer ARKOL NX/AVAL KT 47)	≤ 3.5% ≤ 4.9% ≤ 19.9%	0% (no flame retardant)	**B-s1, d0**
ATLAS/AVAL ETICS with organic based rendering system: • **Adhesives:** STOPTER K20 (AVAL KT 85), HOTER U (AVAL KT 55), HOTER S (AVAL KT 53) • **Mesh:** ATLAS 150 mesh, ATLAS 165 mesh • **Base coats:** STOPTER K20 (AVAL KT 85), HOTER U, (AVAL KT 55) • **Finishing coats:** Acrylic finishes ATLAS Acrylic-Silicone/AVAL Acrylic-Silicone (with key coat CERPLAST/AVAL KT 16), Silicone finish ATLAS Silicone/AVAL Silicone (with key coat SILKON ANX/AVAL KT 76) or hybrid finish ATLAS Silicone-Silicate/AVAL Silicone-Silicate (with key coat SILKON ANX/AVAL KT 76) • **Decorative coats :** SALTA N/AVAL KT 48 (with primer ARKOL NX/AVAL KT 47)	≤ 3.5% ≤ 10.57% ≤ 22.7%	0% (no flame retardant)	**C-s2, d0**

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 system is for use as external insulation for refurbishment/retrofit of existing masonry or concrete buildings, up to a maximum of six storeys (18 metres) in height in purpose groups 1(a), 1(c), 2(a), 2(b), 3, 4(a) and 4(b), and for use up to a maximum of five storeys (15m) in height in purpose group 1(b) as defined in TGD to Part B of the Irish Building Regulations 1997 and subsequent revisions.

Part One / Certification 1

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 Irish Building Regulations 1997 and subsequent revisions, as indicated in Section 1.2 of Certificate 10/0347.

1.2 BUILDING REGULATIONS
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 Cl 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/m^2)
Adhesives[1]	**ATLAS ROKER W-20 (AVAL KT 190):** Cement based powder adhesives requiring addition of 0.22 to 0.24 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	**WKRĘT-MET ŁMXΦ10 and ŁTX Φ10, KOELNER TFIX-8M, KOELNER TFIX-8S and TFIX-8ST, KOELNER KI-10, KI-10PA and KI-10M, KOELNER KI-10N and KI-10NS, ejotherm STR U and SDK-U, ejotherm NT U and NK U, ejotherm SDM-T plusU, SDF-K plus and SDF-S plus, Hilti SD-FV, Fischer TERMOZ 8N and 8NZ, Fisher TERMOZ PN8, BRAVOLL PTH-S 60/8-La, BRAVOLL PTH-SL 60/8-La** 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 0.22 to 0.24 l/kg of water.	4.0 to 5.0	5.5 to 6.5 (powder)
Glass fibre meshes	**SSA 1363 SM(100):** Alkali- and slide-resistant glass fibre mesh with mesh size of 3.5 x 3.5mm **ATLAS 150:** Alkali- and slide-resistant glass fibre mesh with mesh size of 4.5 x 5.0mm **ATLAS 165:** Alkali- and slide-resistant glass fibre mesh with mesh size of 3.7 x 3.9mm	-	-
Key Coats	**ATLAS CERPLAST (AVAL KT 16)** -To be used with ATLAS CERMIT mineral/AVAL mineral finishing coats **ATLAS SILKON ANX (AVAL KT 76) -** To be used with ATLAS Silicone/AVAL Silicone, ATLAS Silicone-Silicate/AVAL Silicone-Silicate finishing coats	-	0.25 to 0.35
Finishing coats	**ATLAS CERMIT mineral/AVAL mineral** – Powder requiring the addition of 0.23 to 0.26l/kg water (particle size 1.5/2.0/3.0mm) **ATLAS Silicone/AVAL Silicone** - Ready to use paste (particle size 1.5/2.0mm) **ATLAS Silicone-Silicate/AVAL Silicone-Silicate -** Ready to use paste (particle size 1.5/2.0mm)	Regulated by particle size	2.5 to 4.0 (powder) 2.5 to 3.2 (paste) 2.5 to 3.2 (paste)
Primers	**ATLAS ARKOL SX (AVAL KT 52)** -To be used with ATLAS SALTA S (AVAL KT 54) **ATLAS ARKOL NX (AVAL KT 47)** - To be used with ATLAS SALTA (AVAL KT 46), ATLAS SALTA N	-	0.05 to 0.20
Decorative coats Used optionally	**ATLAS SALTA S (AVAL KT 54)**- Ready to use pigmented liquid **ATLAS SALTA N -** Ready to use pigmented liquid **ATLAS SALTA (AVAL KT 46)** - Ready to use pigmented liquid	-	0.30 to 0.33 0.22 to 0.36 0.22 to 0.37
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 1A – Mineral Wool (MW) Panels and Lamella Characteristics	
Insulation Characteristics	**Required Values**
Reaction to fire - EN 13501-1	Class A1
Thickness (mm) - EN 823	T5
Dimensional stability under specified temperature and humidity – EN 1604	DS(TH)
Short-term water absorption (partial immersion) – EN 1609	WS
Long-term water absorption (partial immersion) – EN 12087	WL(P)
Water vapour diffusion resistance factor (μ) – EN 12086	1
Tensile strength perpendicular to the faces in dry conditions – EN 1607	MW panels: TR10 or TR15 Lamella: TR80 or TR100
Tensile strength perpendicular to the faces in wet conditions (kPa) – ETAG 004 Clause 5.2.4.1.2	MW panels: ≥5.0 (TR10) or ≥7.5 (TR15) Lamella: ≥40 (TR80) or ≥50 (TR100)
Shear strength (MPa) – EN 12090	MW panels: - Lamella: ≥0.02
Shear modulus (Mpa) – EN 12090	MW panels: - Lamella: ≥1.0

Table 2 – ATLAS/AVAL ROKER MW Systems **Impact Resistance**		
Rendering System: Insulation, Base Coat, Key Coat with Finishing Coat indicated	**Finishing Coat**	**Impact Resistance** using Glass Fibre Mesh
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 Silicone/AVAL Silicone	**Category III**
	ATLAS Silicone-Silicate/AVAL Silicone-Silicate	**Category I**
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 Silicone/AVAL Silicone	**Category I**
	ATLAS Silicone-Silicate/AVAL Silicone-Silicate	**Category I**

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**	**Declared flame retardant content**	**Reaction to fire class according to EN 13501-1**
ATLAS/ AVAL ROKER ETICS with mineral/ inorganic based rendering system: • **MW of thickness 20mm to 250 mm** • **Adhesive:** ATLAS ROKER W-20/AVAL KT 190 • **Base coat:** ATLAS ROKER W-20 /AVAL KT 190 • **Finishing coats:** Mineral finishes ATLAS CERMIT mineral/AVAL mineral (with key coat CERPLAST/AVAL KT 16) • **Decorative coats:** SALTA S/AVAL KT 54 (with primer ARKOL SX/AVAL KT 52), SALTA (with primer ARKOL NX/AVAL KT 47), SALTA/AVAL KT 46 (with primer ARKOL NX/AVAL KT 47)	≤4.05% ≤4.9% ≤18.60%	0%	**A2-s2, d0**
ATLAS/AVAL ROKER ETICS with organic based rendering system: • **MW of thickness 20mm to 250 mm** • **Adhesives** ATLAS ROKER W-20/AVAL KT 190 • **Mesh:** ATLAS 150 mesh, ATLAS 165 mesh • **Base coat:** ATLAS ROKER W-20/AVAL KT 190 • **Finishing coats:** Silicone finishes ATLAS Silicone/AVAL Silicone (with key coat SILKON ANX/AVAL KT 75), ATLAS Silicone-Silicate/AVAL Silicone-Silicate (with key coat SILKON ANX/AVAL KT 76) • **Decorative coats:** SALTA S/AVAL KT 54 (with primer ARKOL SX/AVAL KT 52), SALTA N (with primer ARKOL NX/AVAL KT 47), SALTA/AVAL KT 46 (with primer ARKOL NX/AVAL KT 47)	≤4.05% ≤10.57% ≤22.7%	0%	**A2-s2, d0**
All other configurations			**No performance determined**

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 system is for use as external insulation for refurbishment/retrofit of existing masonry or concrete buildings, up to a maximum of six storeys (18 metres) in height in purpose groups 1(a), 1(c), 2(a), 2(b), 3, 4(a) and 4(b), and for use up to a maximum of five storeys (15m) in height in purpose group 1(b) as defined in TGD to Part B of the Irish Building Regulations 1997 and subsequent revisions.

Part One / Certification 1

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 Irish Building Regulations 1997 and subsequent revisions, as indicated in Section 1.2 of Certificate 10/0347.

1.2 BUILDING REGULATIONS
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.

2.2 INSTALLATION

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

Table 1A – XPS Characteristics	
Insulation Characteristics	**Required Values**
Reaction to fire - EN 13501-1	Class E Thickness: up to 200mm Density: up to 40.0kg/m^3
Thickness - EN 823	T1 or T2
Length – EN 822	±8mm
Width – EN 822	±8mm
Squareness – EN 824	≤5mm/m
Flatness – EN 825	≤6mm
Dimensional stability under specified temperature and humidity – EN 1604	DS(70,90)
Short-term water absorption (partial immersion) (kg/m^2) – EN 1609	≤1.0
Water vapour diffusion resistance factor (μ) – EN 12086	100 to 200
Tensile strength perpendicular to the faces in dry conditions – EN 1607	TR100
Shear strength (MPa) – EN 12090	≥0.02
Shear modulus (Mpa) – EN 12090	≥1.0

	(AVAL KT 46), ATLAS SALTA N		
Decorative coats Used optionally	**ATLAS SALTA E (AVAL KT 44)** - Ready to use pigmented liquid **ATLAS SALTA S (AVAL KT 54)**- Ready to use pigmented liquid **ATLAS SALTA N** - Ready to use pigmented liquid **ATLAS SALTA (AVAL KT 46)** - Ready to use pigmented liquid	-	0.23 to 0.38 0.30 to 0.33 0.22 to 0.36 0.22 to 0.37
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

Table 2 – ATLAS XPS System Impact Resistance		
Rendering System: Insulation, Base Coat, Key Coat with Finishing Coat indicated	**Finishing Coat [2]**	**Single Standard Mesh Layer[1]**
XPS + base coat **ATLAS STOPTER K-20** (with relevant key coat according to table 1) **+ Finishing Coat indicated**	ATLAS CERMIT mineral/AVAL mineral ATLAS Silicate/AVAL Silicate	**Category III**
XPS+ base coat **ATLAS HOTER U** (with relevant key coat according to table 1) **+ Finishing Coat indicated**	ATLAS CERMIT mineral/AVAL mineral ATLAS Silicate/AVAL Silicate	
[1] 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**	**Declared flame retardant content**	**Reaction to fire class according to EN 13501-1**
• **XPS of thickness 20mm to 200mm** • **Adhesives:** ATLAS STOPTER K-20, ATLAS HOTER S or ATLAS HOTER U • **Mesh:** SSA 1363 SM(100) • **Base coats:** ATLAS STOPTER K20 (AVAL KT 85), ATLAS HOTER U (AVAL KT 55) • **Finishing coat[1]:** ATLAS CERMIT mineral/AVAL mineral (with key coat CERPLAST/AVAL KT 16), ATLAS Silicate/AVAL Silicate (with key coat SILIKAT ANX (AVAL KT 15) • **Decorative finishes:** SALTA E/AVAL KT 44, SALTA S/AVAL KT 54 (with primer ARKOL SX/AVAL KT 52), SALTA N (with primer ARKOL NX/AVAL KT 47), SALTA/AVAL KT 46 (with primer ARKOL NX/AVAL KT 47)	≤3.5 % ≤4.9 % ≤13.5 %	**0%**	**B-s2, d0**
[1] See Table 1 of this Detail Sheet for equivalent AVAL Finish Coat Codes			