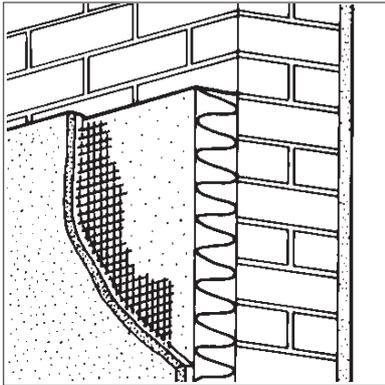


Product



• THIS DETAIL SHEET RELATES TO THE ALSECCO BASIC1 RAIL EXTERNAL WALL INSULATION SYSTEM, A SYSTEM EMPLOYING EXPANDED POLYSTYRENE INSULATION BOARDS AND GLASS-FIBRE REINFORCING MESH WITH RENDER FINISHES.

- The system is applied to the outside of external walls of masonry or dense concrete construction and is suitable for new or existing buildings.
- It is essential that the BASIC1 Rail system is installed and maintained in accordance with the conditions set out in the Design Data and Installation parts of this Certificate.
- See the Appendix for system summary.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the system's position regarding the Building Regulations, general information relating to the product, and the Conditions of Certification.

Technical Specification

1 Description

1.1 The Alsecco BASIC1 Rail External Wall Insulation System (see Figure 1) comprises:

- (1) Alsecco Rail System — a PVC-U track system comprising horizontal starter and holding tracks 2.5 m long and vertical T-rails 0.495 m long. Starter and holding tracks are secured to the substrate with Alsecco approved hammer drive screws.
- (2) Thermastick MK and MP — cement-based adhesives supplied as a powder to which clean water is added. Comprises limestone sand conforming to BS 1199 and 1200 : 1976, cement to BS 12 : 1996 and additives.
- (3) Alsecco insulation fixings — polythene-ribbed mushroom fixing with a 60 mm diameter retaining head and a central stainless steel, galvanized steel, polypropylene or nylon pin.
- (4) Expanded polystyrene insulation boards — 500 mm by 500 mm in a range of thicknesses from 20 mm to 200 mm, with a nominal density of 15 kgm⁻³ and a minimum compressive strength of 70 kNm⁻². Boards are manufactured to comply with the requirements for Grade SD (standard duty), type FRA (flame retardant additive) material to BS 3837-1 : 1986(1996) and incorporate grooved edges for insertion of the rails.
- (5) Alsecco Glass-fibre Mesh 32 — a one metre wide mesh of multi-stranded alkali-resistant glass fibres, having a polymer coating and a nominal weight of 160 gm⁻².
- (6) Armatop MP — a cement-based basecoat supplied as a powder to which clean water is added. Comprises limestone sand conforming to BS 1199 and 1200 : 1976, cement to BS 12 : 1996 and additives.
- (7) Armatop OZ — a polymer-based ready-mixed basecoat.
- (8) Top Primer P — an acrylic resin-based emulsion containing fine fillers, pigment and coalescing agent used as a bonding agent and pre-coat to control suction.
- (9) Top Primer Si — a silicate/acrylic resin-based emulsion containing fine fillers, pigment and coalescing agent used as a bonding agent and pre-coat to control suction.
- (10) Top Primer Sc — a silicone resin-based emulsion containing fine fillers, pigment and coalescing agent used as a bonding agent and pre-coat to control suction.
- (11) Orgatect R — a ready-mixed, acrylic-based, textured coating.
- (12) Miratect R — a pre-coloured polymer-modified cement-based render supplied as a powder to which clean water is added. Comprises limestone sand conforming to BS 1199 and 1200 : 1976, cement to BS 12 : 1996 and polymers.
- (13) Alsitect R — a pre-coloured ready-mixed, silicate-based, textured coating.
- (14) Silitect T — a pre-coloured ready-mixed, silicone-based, textured coating.

(15) Silitect R — a pre-coloured ready-mixed, silicone-based, textured coating.

(16) Orgatect T — a pre-coloured ready-mixed, acrylic-based, textured coating.

(17) Miratect T — a pre-coloured polymer-modified cement-based render supplied as a powder to which clean water is added. Comprises limestone sand conforming to BS 1199 and 1200 : 1976, cement to BS 12 : 1996 and polymers.

(18) Alsitect T — a pre-coloured ready-mixed, silicate-based, textured coating.

(19) Ancillary materials:

Alsecco profiles comprising aluminium base profile, aluminium or stainless steel edge profile, aluminium, stainless steel or galvanized corner profile with optional PVC-U nosing, aluminium, galvanized or stainless steel render stop profile, aluminium movement joint and aluminium or PVC-U expansion joint.

Alsecco profile fixings as approved by the BBA and Alsecco (U.K.) Ltd.

Alsecco heavy duty mesh comprising a one metre wide mesh of multi-stranded alkali-resistant glass fibres, having a polymer coating and a nominal weight of 330 gm⁻².

Alsecco sealing tape comprising precompressed expanding polyurethane foam tape.

Alsecco joint sealant comprising an acrylic-based sealant.

1.2 EPS insulation boards are fixed to the external surface of the wall using the rail system with Thermastick MK or MP adhesive (see Figure 2). Where required additional mechanical fixings are used to secure the insulation boards. The insulation boards are protected by a basecoat containing a glass-fibre reinforcement mesh. After allowing the basecoat to dry, a topcoat is applied to the required thickness. The combination of render basecoats and finish coats are given in Table 1.

1.3 All components are subject to routine in-factory quality control.

Table 1 Alsecco BASIC1 system summary

Components	Option 1	Option 2
Rail system	PVC-U	PVC-U
Adhesive	Thermastick MK or MP	Thermastick MK or MP
Insulation	expanded polystyrene	expanded polystyrene
Basecoat	Armatop MP	Armatop OZ
Reinforcement	Alsecco Glass-fibre Mesh 32	Alsecco Glass-fibre Mesh 32
Primer	Top Primer P, Sc and Si	Top Primer P and Sc
Finish coat	Orgatect R Miratect R Alsitect R Silitect T Silitect R Orgatect T Miratect T Alsitect T	Orgatect R

Figure 1 The Alsecco BASIC1 Rail External Wall Insulation System

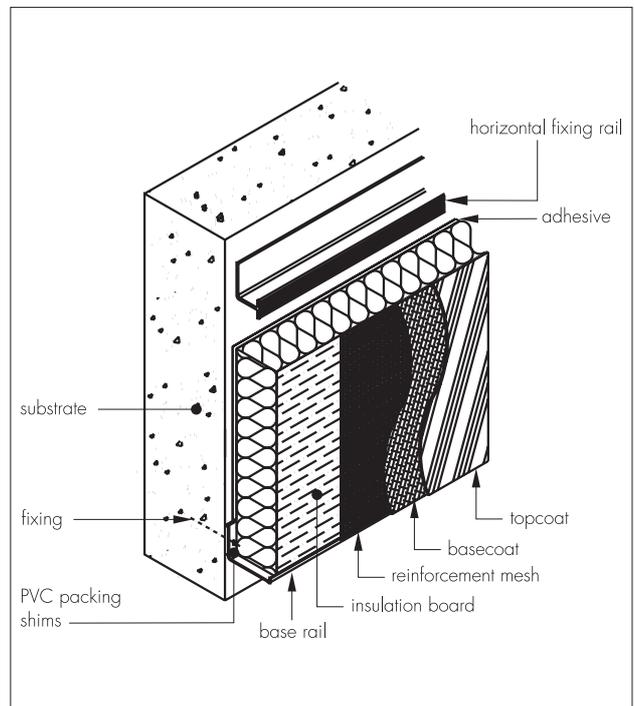
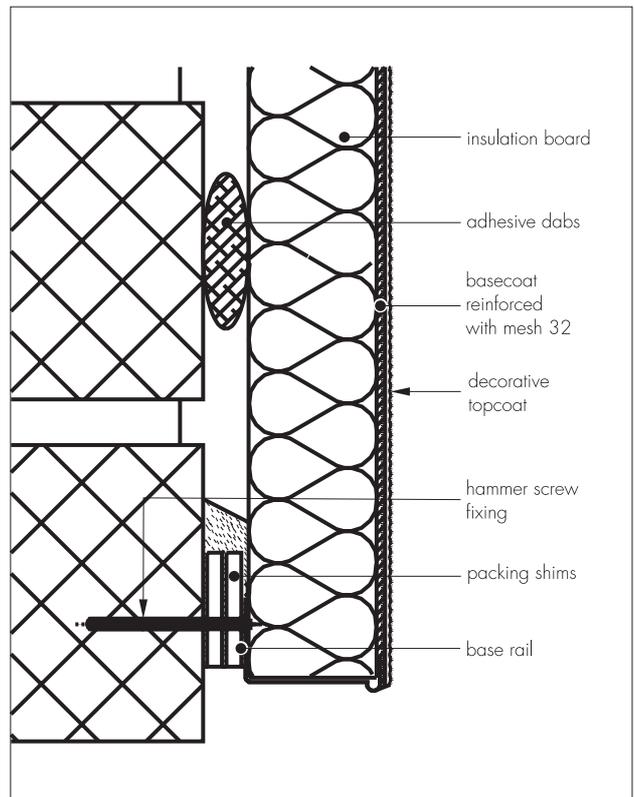


Figure 2 Typical section at base level



2 Delivery and site storage

2.1 The insulation is delivered to site wrapped in polythene. Each pack carries the product identification and batch numbers.

2.2 Components are delivered to site in the bags and quantities as listed in Table 2. Each bag carries the product identification, manufacturer's batch number and the BBA identification mark incorporating the number of this Certificate.

2.3 The insulation should be stored on a firm, clean, level base, off the ground and under cover until required for use. Care must be taken when handling the insulation to avoid damage.

2.4 The insulation boards must be protected from prolonged exposure to sunlight either by storing opened packs under cover or re-covering with opaque polythene sheeting. Care must be taken to avoid contact with solvents or materials containing volatile organic components such as coal tar, pitch, timber newly treated with creosote, etc. The boards must not be exposed to open flame or other ignition sources.

2.5 The powder adhesives, basecoat and topcoats must be stored in dry conditions, off the ground, and be protected from moisture.

2.6 The basecoats and topcoats must be stored in a safe area, under cover, and protected from excessive heat and frost at all times.

Table 2 Component supply details

Component	Quantity and packaging
Adhesives and Armatop MP	25 kg paper bag
Alsecco Glass-fibre Mesh 32	1 metre wide rolls, 50 metre length
Alsecco Heavy Duty Mesh	1 metre wide rolls, 25 metre length
Primer	10 or 15 litre plastic drum
Basecoats/topcoats	25 kg polyethylene bag, drum or paper bag

Design Data

3 Strength and stability

3.1 The Alsecco BASIC1 Rail External Wall Insulation System has adequate resistance to impact and abrasion where walls are exposed and have some protection, eg walls of private dwellings and walls of communal dwellings above ground-floor level. Where the system may be exposed to severe impact, eg mechanical or malicious, appropriate design measures, eg supplementary reinforcement, introduction of planting areas to restrict access etc, should be considered to reduce the risk of damage.

3.2 The system as specified in this Detail Sheet can be designed to withstand the thermal stresses and wind pressures (including suction) normally experienced in the United Kingdom. The system can also be designed in accordance with CP 3 : Chapter V-2 : 1972 or BS 6399-2 : 1997 to withstand the increased wind loads associated with tall buildings (greater than 12 metres) and areas of high exposure. This may require the use of additional mechanical fixings (see section 8 of this Detail Sheet).

4 Properties in relation to fire



4.1 In the opinion of the BBA, the use of the system will not introduce any additional hazard in respect of behaviour in fire when compared with a system using traditional sand/cement render finishes.

4.2 The system is classified Class 0 as described in the national Building Regulations:

England and Wales

Approved Document B, paragraph A12

Scotland

Technical Standards, Part E, E6.1 in the *Provisions deemed to satisfy*, Table 2

Northern Ireland

Technical Booklet E, paragraph 2.4.

4.3 The behaviour in fire of external wall insulation systems is the subject of recommendations by the Building Research Establishment which, for this system, makes no restriction on the height of the building to be treated provided that:

- (a) fire barriers, eg mineral fibre 200 mm high and of the same thickness as the insulation, are included at every floor level from the third storey
- (b) the reinforcing mesh and surface coating mortar is returned to the masonry at each fire barrier and fixed to restrict possible detachment.

4.4 Alternative fire barriers may be approved using full-scale multi-storey fire tests (BRE Fire Note 9). Confirmation of any approved alternative should be obtained from the BBA.

5 Proximity of flues

When the system is installed in close proximity to certain flue pipes the relevant provisions of the national Building Regulations should be met:

England and Wales

Approved Document J

Scotland

Technical Standards, Part F

Northern Ireland

Technical Booklet L.

6 Thermal insulation

6.1 For the purpose of U value calculations to determine if the requirements of the Building, or other statutory, Regulations are met, the thermal conductivity (λ value) of the insulation may be taken as $0.037 \text{ Wm}^{-1}\text{K}^{-1}$.

6.2 The requirement for limiting heat loss through the building fabric will be satisfied if the U values of the building elements, including thermal bridging, do not exceed the maximum values in the

relevant Elemental Approach given in the national Building Regulations:

England Wales

Approved Document L1.

Scotland

Technical Standards Part J.

Northern Ireland

Technical Booklet F.

6.3 Guidance is also given in these documents on selecting the thickness of insulation required to enable a wall to achieve the desired U value. Alternative approaches are also described which allow for some flexibility in design of U values for individual constructional elements.

6.4 Where insulation boards have not been continued into window or door reveals due to a lack of clearance there will be a risk of cold bridging at these points. Where door and window frames are to be replaced it is recommended that their size be adjusted to permit the reveals to be insulated.

6.5 Depending on constructional details, cold bridging can also occur at the eaves and at ground-floor level, and care should be taken to minimise this, eg roof or loft insulation should continue over the wall head, ensuring that ventilation openings are not obstructed.

7 Durability



7.1 The results of accelerated ageing tests in accordance with MOAT No 22 : 1988 indicate that the system is durable. The system should remain effective for at least 30 years, provided any damage to the surface finish is repaired immediately, and regular maintenance is undertaken including checks on joints in the system and on external plumbing fittings to identify leakage of rainwater into the system, enabling steps to be taken to correct the defects.

7.2 The finishes may become soiled in time, the rate depending on the locality. The appearance can be restored by a powerwash at 30.0 bar maximum pressure and 30°C maximum temperature or, if required, by the application of a further finish of paint, but great care must be taken not to adversely affect the water vapour transmission characteristics of the systems.

Installation

8 Site survey and preliminary work

Trial tests are conducted on the walls of the building to determine the pull-out strength of the rail fastenings and insulation fixings. The number of fixings required is calculated using the test data, the relevant wind speed data for the site and, in the absence of a formal requirement, a safety factor of 3.

9 Procedure

General

9.1 Application is carried out in accordance with Alsecco (U.K.) Ltd's current installation instructions.

9.2 Application of coating materials must not be carried out at temperatures below 5°C or above 30°C, nor if exposure to frost is likely, and the coating must be protected from rapid drying. Weather conditions should therefore be monitored to ensure correct curing conditions.

9.3 All rendering should be in accordance with the relevant recommendations of BS 5262 : 1991 and BS 8000-10 : 1995.

Positioning and securing insulation boards

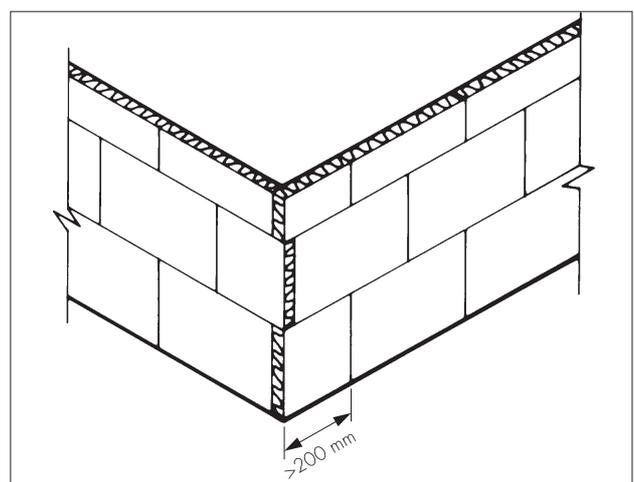
9.4 The starter track is secured to the external wall above the damp-proof course using the approved profile fixings at a maximum of 300 mm centres (see Figure 2). Rail connectors are inserted at all rail joints.

9.5 Thermastick MK or MP is prepared by mixing each bag with 4.5 litres or 5.5 litres of water, respectively. A dab of adhesive is applied to the centre of the board and should cover at least 20% of the surface.

9.6 The first row of boards is positioned in the starter track and the T-rails are inserted at vertical joints between the rebated boards. After positioning the boards, the horizontal holding tracks are installed into the grooves at the top edges. The holding tracks are fastened to the substrate with hammer drive screws at maximum 300 mm centres, subsequent rows of boards are installed using the same procedure.

9.7 The boards must be pressed firmly against the wall and butted tightly together with the vertical joints staggered by at least 200 mm (see Figure 3). Joints between boards which are greater than 2 mm should be filled with slivers of insulation board or Alsecco PU foam. Gaps greater than 10 mm should be closed by repositioning or, where appropriate, cutting boards to fit. Any gaps, high spots or irregularities are removed by lightly planing with a rasp over the whole surface.

Figure 3 Arrangement of insulation boards



9.8 To fit around details such as doors and windows, the boards may be cut with a sharp knife or a fine-tooth saw. If required, purpose-made window sills are fitted. They are designed to prevent water ingress and incorporate drips to shed water clear of the system.

9.9 Installation continues until the whole wall is completely covered including, where appropriate, the building soffits.

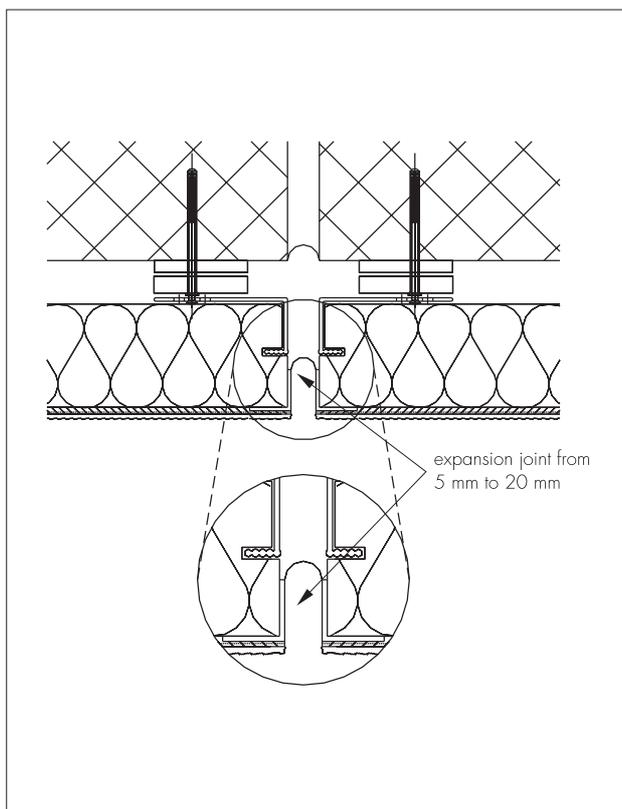
9.10 Prior to the reinforcement coat, pre-compressed sealing tape is inserted at window and door frames, overhanging eaves, gas and electric meter boxes, wall vents, or where the render abuts any other building material or surface.

9.11 Angle beads are fixed to all building corners and to door and window heads and jambs using the basecoat renders

Movement joints

9.12 Generally, movement joints are not required in the system but, if an expansion joint is incorporated in the substrate, a movement joint must be provided in the insulation system (see Figure 4).

Figure 4 Vertical movement joint



Reinforcing

9.13 Armatop MP is prepared by mixing each bag with 5.5 litres of water and is applied to a thickness of 3 mm to 4 mm over the insulation boards, using a stainless steel trowel.

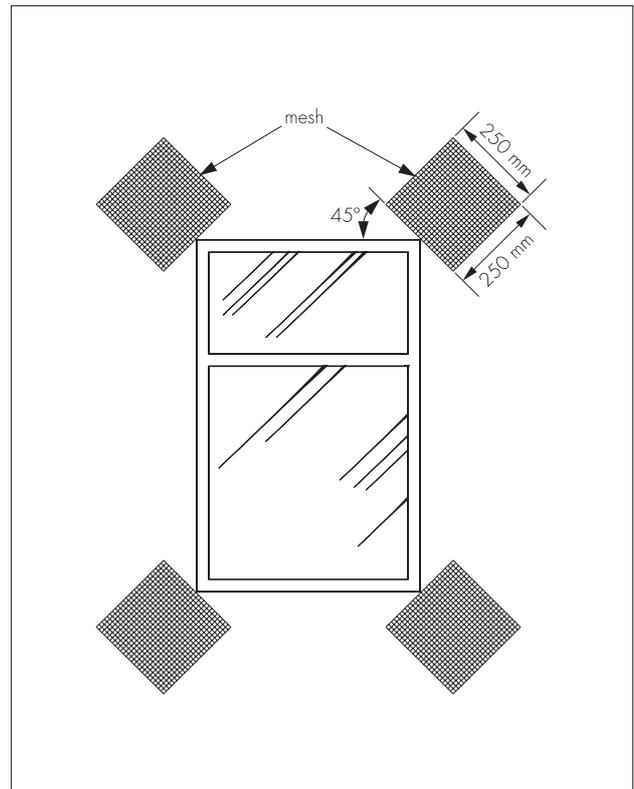
9.14 Armatop OZ is ready-mixed and is applied to a thickness of 2 mm to 3 mm over the insulation boards, using a stainless steel trowel.

9.15 The basecoats are applied progressively, working in 1 metre sections in a vertical or horizontal direction.

9.16 The reinforcement mesh is immediately embedded into the wet basecoat, and overlapping at all mesh joints should not be less than 100 mm.

9.17 Additional pieces of reinforcing mesh (250 mm by 250 mm) are used diagonally at the corners of openings as shown in Figure 5.

Figure 5 Additional reinforcement at openings



9.18 The mesh should be free of wrinkles and fully embedded in the basecoat.

9.19 Prior to the render coat, a bead of joint sealant is gun applied at window and door frames, overhanging eaves, gas and electric meter boxes, wall vents, or where the render abuts any other building material or surface.

9.20 Stop beads are positioned vertically, eg at party wall positions where the adjoining house does not require treatment.

Finishing

9.21 The basecoats should be left to dry thoroughly before application of the decorative finishes. Depending on conditions the drying time should be at least 24 hours before the top coat primer P, Sc or Si is applied. The top coat primer is allowed at least two to six hours before applying the Miratect R and T finish coats and 120 hours for the synthetic resin finish coats.

9.22 The finish coats are applied to the thicknesses specified in Table 3 using spray equipment or a stainless steel trowel.

Table 3 Minimum thickness of finish coat

Finish coat	Option		Minimum thickness (mm)
	1	2	
Orgatect R	✓	—	1.5
Miratect R	✓	—	2.0
Alsitect R	✓	—	1.5
Silitect T	✓	—	1.5
Silitect R	✓	—	1.5
Orgatect T	✓	—	1.5
Miratect T	✓	—	2.0
Alsitect T	✓	—	1.5
Orgatect R	—	✓	1.5
Silitect T	—	✓	1.5
Silitect R	—	✓	1.5
Orgatect T	—	✓	1.5

9.23 Continuous surfaces should be completed without a break.

9.24 At the tops of walls the system should be protected by an adequate overhang (see Figure 6) or by an adequately sealed purpose-made flashing.

9.25 Care should be taken in the detailing of the system around openings and projections (see Figures 7, 8 and 9).

9.26 On completion of the installation, external fittings, eg rainwater goods, are securely fixed to timber grounds or extended fixings that have been built into the system during installation.

Figure 6 Roof eaves detail

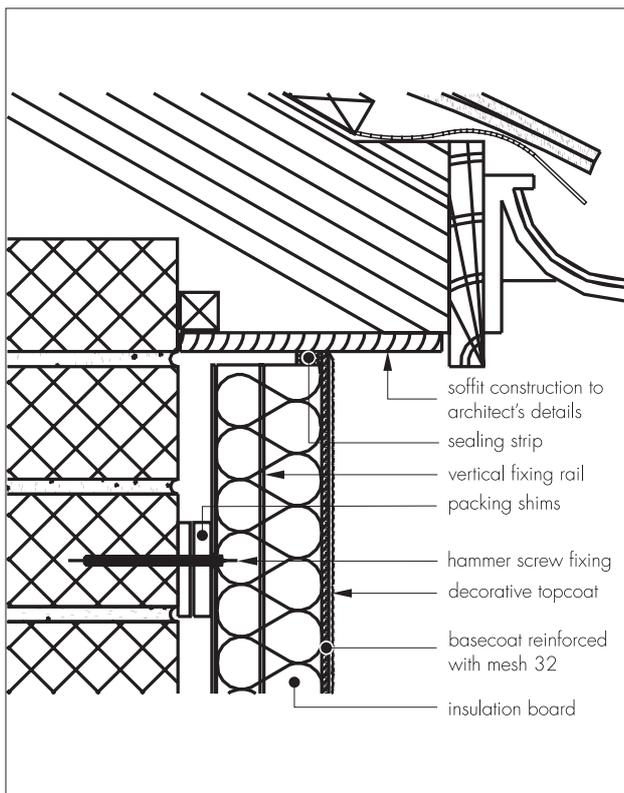


Figure 7 Insulated window detail

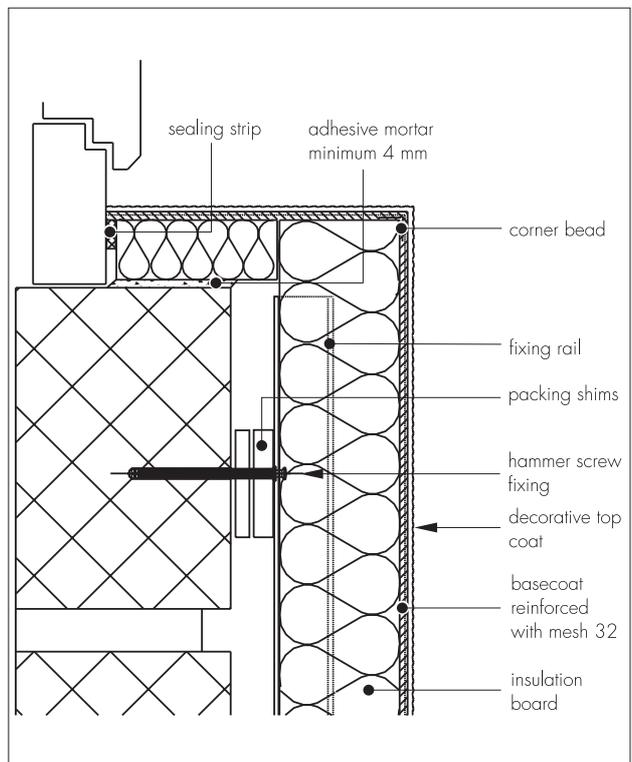


Figure 8 External corner detail

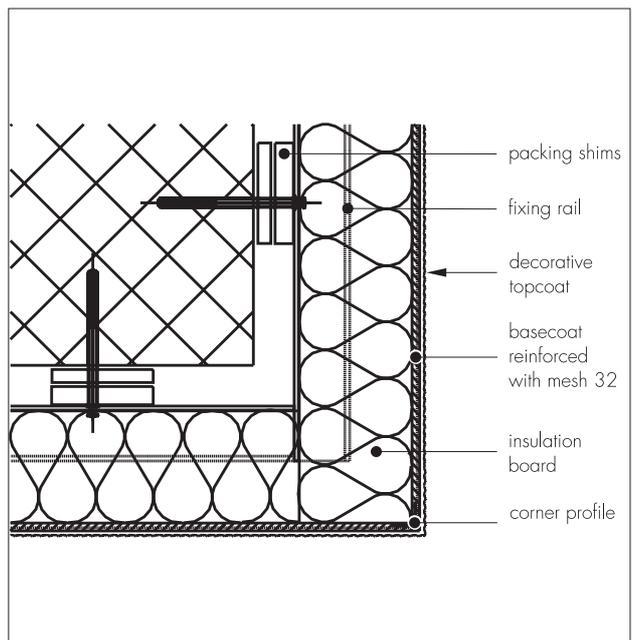
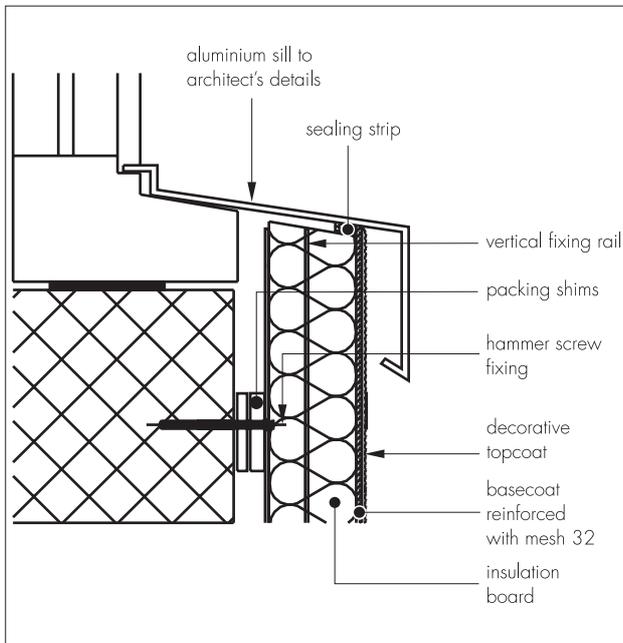


Figure 9 Window sill detail



Technical Investigations

The following is a summary of the technical investigations carried out on The Alsecco BASIC 1 Rail External Wall Insulation System.

10 Investigations

10.1 Hygrothermal tests were conducted in accordance with MOAT No 22 : 1988.

10.2 An examination was made of data relating to wind pull-off resistance.

11 Other investigations

Data used for the BBA approval of The Alsecco BASIC 1 Rail External Wall Insulation System was used in support of the assessment (see Detail Sheet 2 of this Certificate).

Bibliography

- BS 12 : 1996 *Specification for Portland cement*
- BS 1199 and 1200 : 1976 *Specifications for building sands from natural sources*
- BS 3837 *Expanded polystyrene boards*
BS 3837-1 : 1986(1996) *Specification for boards manufactured from expandable beads*
- BS 5262 : 1991 *Code of practice for external renderings*
- BS 6399 *Loading for buildings*
BS 6399-2 : 1997 *Code of practice for wind loads*
- BS 8000 *Workmanship on building sites*
BS 8000-10 : 1995 *Code of practice for plastering and rendering*
- CP 3 *Code of basic data for the design of buildings*
CP 3 : Chapter V *Loadings*
CP 3 : Chapter V-2 : 1972 *Wind loads*
- MOAT No 22 : 1988 *UEAtc Directives for the Assessment of External Insulation Systems for Walls (Expanded Polystyrene Insulation Faced with a Thin Rendering)*



On behalf of the British Board of Agrément

Date of issue: 12th December 2000


Chief Executive

Appendix — System summary

1 System

Rail system	PVC-U track system incorporating starter rail, holding rails and T-rails.
Adhesives	Thermastick MK and MP — a cement-based adhesive supplied as a powder to which clean water is added.
Insulation	SD FRA grade expanded polystyrene boards. Nominal density of 15 kgm^{-3} and minimum compressive strength 70 kPa.
Reinforcement	Mesh of multi-stranded, alkali-resistant glass fibres with a polymer coating — nominal weight of 160 gm^{-2} . (Heavy duty mesh to the same specification but with a nominal density of 330 gm^{-2}).
Basecoat	Armatop MP — cement-based basecoats supplied as a powder to which clean water is added. Armatop OZ — a polymer-based basecoat.
Primer	Top Primer P — an acrylic resin-based emulsion containing fine fillers, pigment and coalescing agent used as a bonding agent and pre-coat to control suction. Top Primer Si — a silicate/acrylic resin-based emulsion containing fine fillers, pigment and coalescing agent used as a bonding agent and pre-coat to control suction. Top Primer Sc — a silicon resin-based emulsion containing fine fillers, pigment and coalescing agent used as a bonding agent and pre-coat to control suction.
Finishes	Orgatect R — a ready-mixed, acrylic-based, textured coating. Miratect R — a polymer-modified cement-based render supplied as a powder to which clean water is added. Alsitect R — a ready-mixed, silicate-based, textured coating. Silitect T — a ready-mixed, silicone-based, textured coating. Silitect R — a ready-mixed, silicone-based, textured coating. Orgatect T — a ready-mixed, acrylic-based, textured coating. Miratect T — a polymer-modified cement-based render supplied as a powder to which clean water is added. Alsitect T — a ready-mixed, silicate-based, textured coating.

2 Thermal properties

Thermal conductivity of insulation boards

$0.037 \text{ Wm}^{-1}\text{K}^{-1}$

U values

Using values given in Table A15 of Approved Document L1 (1995 edition) to the Building Regulations 1991 (as amended) (England and Wales), the thermal insulation values for a typical 225 mm brick external wall (density 1700 kgm^{-3}) with 10 mm plasterboard:

Insulation thickness (mm)	U value ($\text{Wm}^{-2}\text{K}^{-1}$)
20	0.86
40	0.59
50	0.51
70	0.40
100	0.30
120	0.26

3 Impact resistance

The system is suitable for use where walls are exposed but have some protection, eg walls of private dwellings and walls of communal dwellings above ground-floor level. Where the system may be exposed to severe impact, eg mechanical or malicious damage, appropriate design measures should be considered to reduce the risk of damage.

4 Properties in relation to fire

The system is classified Class 0 as defined in the appropriate Building Regulations.

5 Design wind loading and resistance to suction⁽¹⁾

Using CP 3 : Chapter V-2 : 1972, the system can be designed to withstand all expected suction wind loadings.

6 Durability

Assessed life

At least 30 years (with normal maintenance).

(1) BS 6399-2 : 1997 may also be used to generate design calculations.