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BRE GLOBAL LIMITED

CERTIFICATE NUMBER 157/11
ISSUED: November 2011
REPLACES CERTIFICATES
032/96, 033/96, 039/96, 050/98
and 115/05

CERTIFICATE OF ASSESSMENT

PRODUCTS
Therma Close cavity closer
Therma Close Type R cavity closer
Therma-Flect EPS and Therma-Flect PIR (Wall Board)
Therma-Flect EPS and Therma-Flect PIR (Roof Board)
Cavi-Mate EPS and Cavi-Mate Rock Fibre cavity closers

SUPPLIED BY
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SUMMARY

Yorkshire Building Services (Whitwell) Limited (YBS) produce a range of products for use in improving the thermal insulation of walls and roofs. This certificate covers the products in Table 1 below;

Table 1 Products and uses covered by this certificate

Therma Close	Insulated cavity closer and damp proof barrier for use around openings in masonry cavity walls.	38mm thick, extruded polystyrene foam bonded centrally to a 112.5 mm wide polyethylene damp-proof course with T-profile plastic positioning clips at 300 mm centres.
Therma Close Type R	Insulated cavity closer and damp proof barrier for use around openings in masonry cavity walls.	Extruded polystyrene foam (in widths to suit cavities as shown in Table 2) having continuous rigid and flexible PVC-U extrusions and co-extrusions bonded to each face,supplied with plastic tie clips.
Therma-Flect EPS and Therma-Flect PIR (Wall Boards)	Partial fill cavity wall insulation for improving thermal insulation in external walls of masonry.	Expanded polystyrene (EPS) and polyurethane (PIR) boards of thicknesses from 25 to 100 mm and size 450 mm by 1200 mm bonded to a 4 mm thick aluminium foil faced polyethylene bubble film multilayer laminate. Both supplied with plastic retaining clips and aluminium foil faced adhesive tape.

Therma-Flect EPS and Therma-Flect PIR (Roof Boards)	Combined thermal insulation and protection against wind driven rain and snow for use under slates or tiles at rafter level. The bubble foil layer may be located above or below the rafter.	Expanded polystyrene (EPS) board of thicknesses from 70 to 220 mm and polyurethane (PIR) board of thicknesses from 60 to 180mm both of sizes 540 mm x 1200 mm and 340mm x1200mm bonded to a 4 mm thick aluminium foil faced polyethylene bubble film multilayer laminate. Both supplied with plastics retaining clips and aluminium foil faced adhesive tape.
Cavi-Mate EPS and Cavi-Mate Rock fibre cavity closers	Cavity closer providing a damp-proof barrier and thermal insulation for use around openings in masonry cavity walls.	Rigid PVC-U extrusions filled with expanded polystyrene foam (EPS) or rock mineral wool (Rock Fibre) supplied in 3m and 6m lengths and widths to suit cavity sub frame profiles from 100 to 170mm in 5mm increments. Supplied with push-in plastic corner blocks and polypropylene fixing clips.

The characteristics of the products and their method of application have been reviewed with respect to the current Building Regulations, British and European Standards and other publications in the United Kingdom in November 2011.

The assessment is described in the following pages which form integral parts of this certificate and should be read in its entirety.

CONDITIONS OF USE

0.1 The products have been assessed for use in masonry cavity walls constructed to BS 5628 *Code of Practice for the use of masonry* or pitched roofs constructed to BS 5534 *Code of Practice for slating and tiling (including shingles)* as appropriate. (See table 1).

0.2 The products may be of use in other forms of construction but any such use is outside of the scope of this certificate.

0.3 Cavity closers and wall boards shall be fully enclosed within the masonry wall within one month of installation.

0.4 Therma-Flect partial fill cavity wall insulation is certified for use in buildings with correctly detailed masonry walls constructed to BS 5628-3 *Materials and components, design and workmanship*. A free airspace shall be retained with a minimum target width of 50mm.

0.5 Roof boards shall be fully protected with slates/tiles within one month of installation. The product shall not be left exposed to ultraviolet radiation at the eaves or elsewhere and shall be used in conjunction with a UV stabilised eaves skirt (outside the scope of this certificate).

0.6 Therma-Flect roof board is certified for use as a supported insulating roof underlay for installation on pitched roofs above 15 degrees pitch having a slate or tile covering designed in accordance with BS 5534. Boards may be fitted between the rafters with the bubble foil lapped over the rafters. Alternatively the boards may be fitted from below with the bubble foil lapped below the rafters and the joints sealed with adhesive tape, a separate roof underlay will then be needed below the slates or tiles. The supporting structure shall be designed and constructed to support the imposed loads.

0.7 None of the products shall be exposed to ketonic solvents or plasticisers and all shall be shielded from heat producing appliances.

0.8 The performance of each system depends on correct installation. Products shall be installed strictly in accordance with the certificate holder's installation instructions and the requirements of this certificate. All of the appropriate fixings specified by the manufacturer shall be used. The quality of installation achieved on site is not covered by this certificate. It is therefore recommended that the quality of installation and workmanship is subject to appropriate checks by a competent person for each installation.

STATEMENT
YBS Insulation products listed above are satisfactory for use within the stated conditions provided that they are used in accordance with the certificate holder's instructions and the requirements of this certificate.

CONFIRMATION
For and on behalf of BRE Certification

Director
Date: 4 November 2011

1. TECHNICAL SPECIFICATION

1.1 Description of Product

YBS Insulation products are used for improving the thermal insulation of masonry walls and traditional pitched roofs. This certificate covers the products described in table 1 above, described in more detail in the following sections and illustrated in Figures 1 - 7.

1.2 THERMA-CLOSE AND THERMA-CLOSE TYPE R

1.2.1 Therma-Close (Figure 1)

1.2.1.1 Therma-Close cavity closures are manufactured from 38mm thick, extruded polystyrene foam to BS EN 13164 *Thermal insulation products for buildings. Factory made products of extruded polystyrene foam (XPS).Specification* having a thermal conductivity of not more than 0.0335W/m.K, in widths to suit cavities as shown in Table 2.

1.2.1.2 One 38 mm thick face of the foam is bonded centrally to a 112.5 mm wide polyethylene damp-proof course to BS 6515 *Specification for polyethylene damp-proof courses for masonry*.

1.2.1.3 T-profile plastic positioning clips 50 mm by 38 mm by 30 mm, are adhered along one edge of the opposing 38 mm thick face of the foam at 300 mm centres. The resultant closures are available in 2.50 m prefabricated lengths. Non-standard width and insulation thickness formats are available to order but are outside the scope of this certificate.

1.2.2 Therma-Close Type R (Figure 2)

1.2.2.1 Therma-Close Type R cavity closures are manufactured from extruded polystyrene foam to BS EN13164 having a thermal conductivity of not more than 0.0335W/m.K in widths to suit cavities as shown in Table 2.

1.2.2.2 Continuous rigid and flexible PVC-U extrusions and co-extrusions are bonded to the faces of the foam insulation.

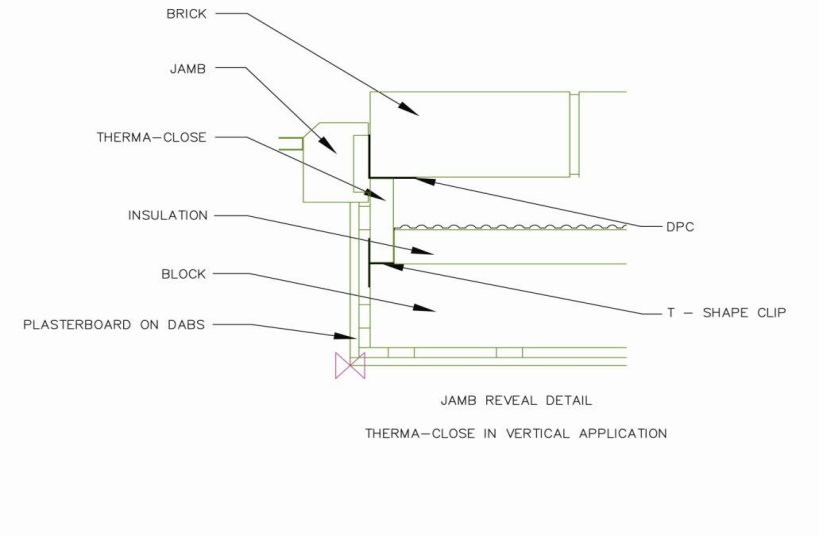
1.2.2.3 YBS plastics tie clips are used for securing the closure to the masonry. The clips can be secured with pins into the insulation or directly into the rigid PVC-U extrusions.

Table 2. PVC-U extrusion details for Therma-Close and Therma-Close Type R

Cavity	Therma-Close Thickness (mm)	Therma-Close Type R Thickness (mm)	Width (mm)
50	38	30	46
65	38	30	61
75	38	30	71
85	38	30	81
100	38	30	96
110	38	30	106
120	38	30	115
140	38	30	136
150	38	30	146
300	38	30	296
Note: Cavity width includes thickness of any cavity insulation, a clear cavity of 50mm must be maintained after allowance for insulation thickness.			

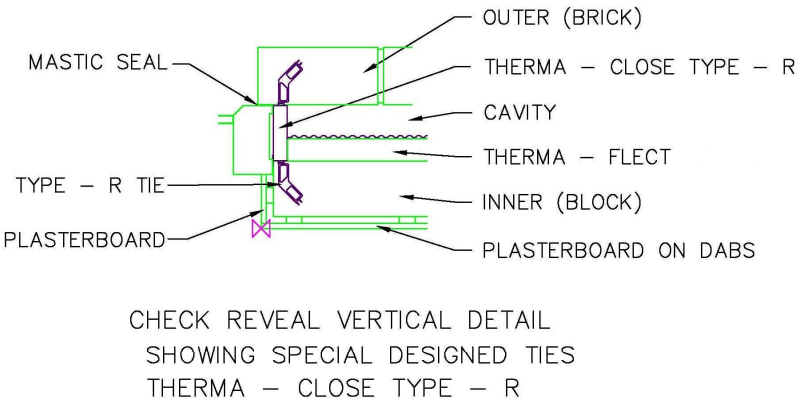
1.2.2.4 Both Therma-Close and Therma-Close R cavity closures are available in two formats to suit different window frame, door frame and window positions, they are referred to as “standard” and “check reveal”. See Figures 1 and 2.

Figure 1 Therma-Close standard reveal detail (Informative)



Cavity closer and frame shall overlap by at least 30mm

Figure 2 Therma Close Type R – check reveal detail (Informative)



1.3 THERMA-FLECT EPS WALL BOARD AND THERMA-FLECT PIR WALL BOARD

1.3.1 Therma-Flect EPS (wall board) (Figure 3)

Therma-Flect EPS wall boards are manufactured from square edged expanded polystyrene board to BS EN 13163 *Thermal insulation products for buildings. Factory made products of expanded polystyrene (EPS). Specification* Grade EPS70 with a thermal conductivity of not more than 0.030W/m.K of thicknesses from 25 to 100 mm and size 450 mm by 1200 mm. The expanded polystyrene board is bonded to a 4 mm thick aluminium foil faced polyethylene bubble film multilayer laminate, 500 mm by 1250 mm, which overlaps the right hand side and bottom edges of the polystyrene board by 50mm.

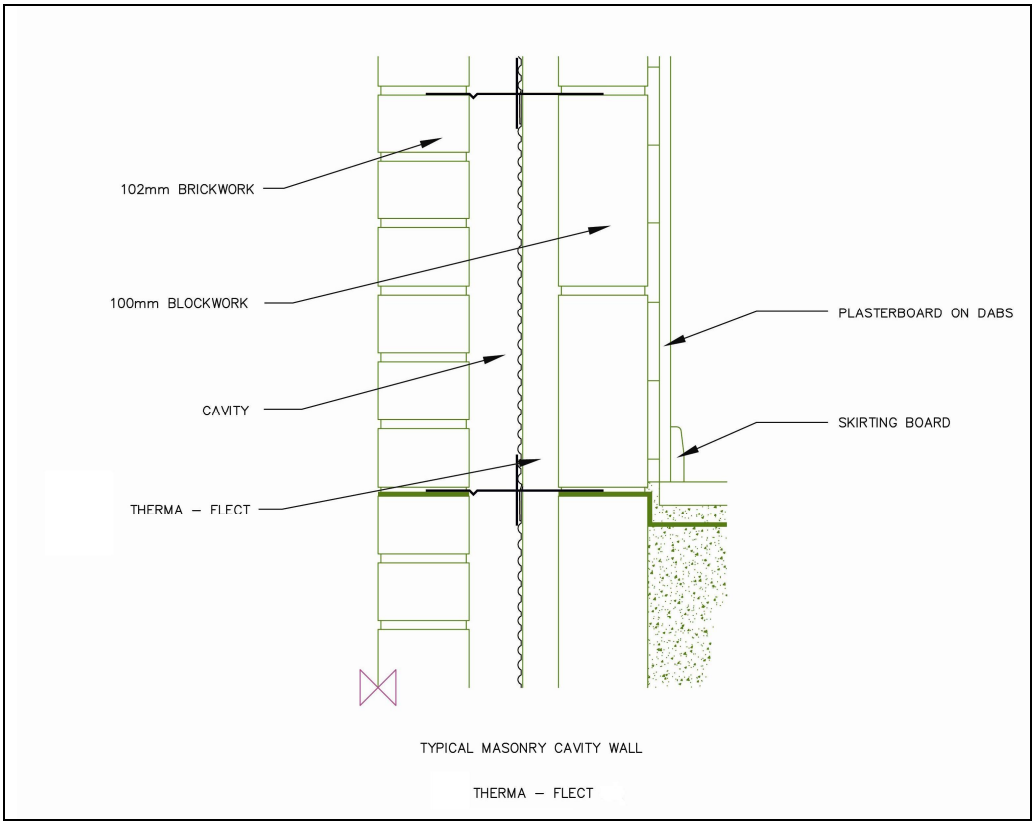
1.3.2 Therma-Flect PIR (wall board) (Figure 3)

Therma-Flect PIR wall boards are manufactured from square edged polyurethane board to BS EN 13165 *Thermal insulation products for buildings. Factory made rigid polyurethane foam (PUR) products. Specification* with a thermal conductivity of not more than 0.022W/m.K of thicknesses from 25 to 100 mm and size 450 mm by 1200 mm. The polyurethane board is bonded to a 4 mm thick aluminium foil faced polyethylene bubble film multilayer laminate, 500 mm by 1250 mm, which overlaps the right hand side and bottom edges of the polyurethane board by 50mm.

1.3.3 YBS Retaining Clips which are suitable for fixing to generally available wall ties are used to retain the boards against the cavity face of the inner leaf.

1.3.4 YBS Corner Tape is an aluminium foil faced adhesive tape for securing the overlapping bubble film at corners.

Figure 3 Therma- Flect wall board used in masonry cavity wall (Informative)



1.4 THERMA-FLECT EPS ROOF BOARD and THERMA-FLECT PIR ROOF BOARD

1.4.1 Therma-Flect EPS (roof board) (Figure 4)
Therma-Flect EPS Roof Board is a laminate assembled with square edged expanded polystyrene board manufactured to BS EN 13163 grade EPS 70 with a thermal conductivity not greater than 0.030W/m.K, of thicknesses from 70 to 220 mm and sizes 540 mm x 1200 mm, or 340mm x1200mm. The expanded polystyrene board is bonded to a 4 mm thick aluminium foil faced polyethylene bubble film multilayer laminate, 700 mm x 1300 mm, or 500mm x 1300mm, which overlaps the sides and bottom edge of the polystyrene board.

1.4.2 Therma-Flect PIR (roof board) (Figure 4)
Therma-Flect PIR Roof Board is a laminate assembled with square edged polyurethane board manufactured to BS EN 13165 with a thermal conductivity not more than 0.022 W/m.K of thicknesses from 60 to 180 mm and sizes 540 mm x 1200 mm, or 340mm x1200mm. The polyurethane board is bonded to a 4 mm thick aluminium foil faced polyethylene bubble film multilayer laminate, 700 mm x 1300 mm, or 500mm x 1300mm, which overlaps the sides and bottom edge of the polyurethane board.

1.4.3 YBS aluminium foil tape is a 50mm wide faced sealing tape for taping laps when the foil is positioned below the rafters to provide a vapour check.

1.4.4 TF Roof Board Super Clips are pre-bonded to Therma-Flect roof boards for securing the board in the required position.

Figure 4(a) Therma-Flect ridge detail (Informative)

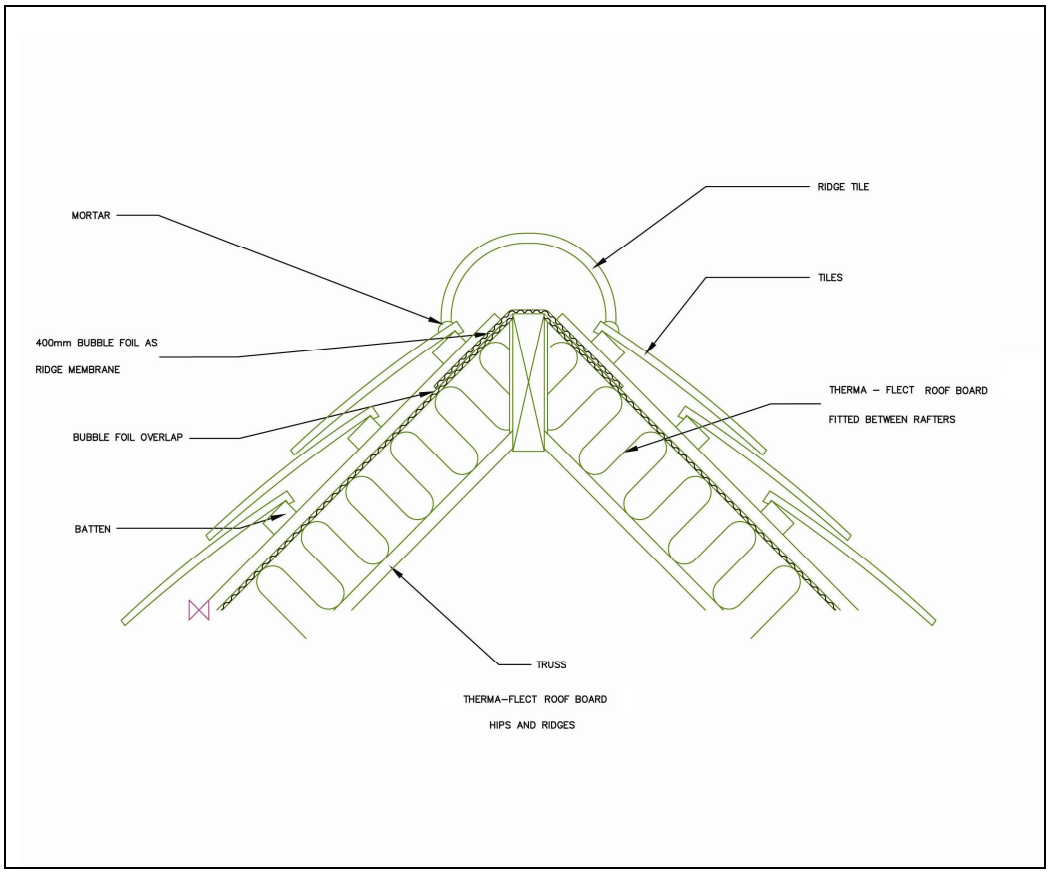


Figure 4(b) Therma-Flect detail at rafter

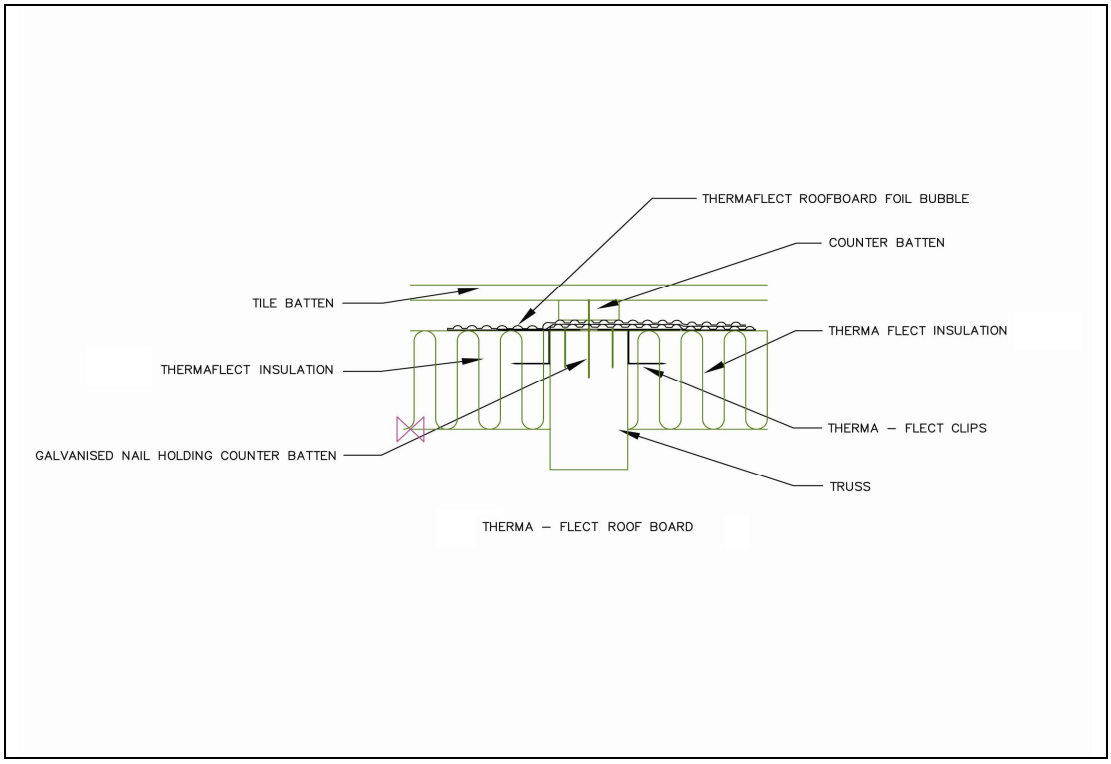
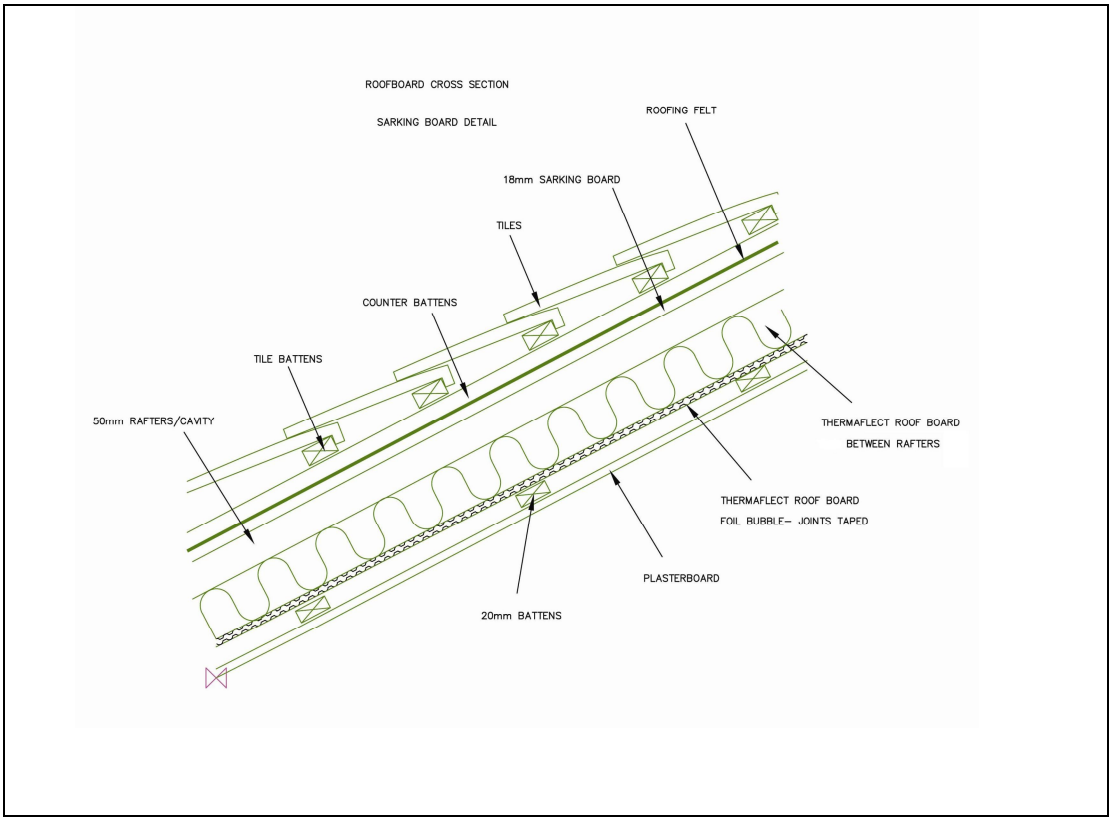


Figure 4(c) Therma-Flect fitted from below rafter (Informative)



1.5 CAVI-MATE EPS (Figure 6) and CAVI-MATE ROCK FIBRE (Figure 7)

1.5.1 Cavi-Mate PVC-U profiles, see Figure 5, are manufactured from continuous rigid PVC-U extrusions. Cavi-Mate closers are available to suit window frame, door frame and window positions within the wall. See Figures 6 and 7. The products are supplied with push-in corner blocks to enable a rigid rectangular profile to be assembled and positioned prior to masonry construction.

1.5.2 Cavi-Mate is factory fitted with insulation and produced in standard lengths of 3m or 6m for cutting as required. Each Cavi-Mate product is available to provide cavity sub frame profiles from 100mm to 170mm in 5mm increments. Two sizes of extruded section profile are used each having an extended leg which is trimmed at the YBS factory to suit the cavity width required.

1.5.3 Cavi-Mate EPS is filled with expanded polystyrene foam to BS EN 13163 and Cavi-Mate Rock Fibre is filled with rock mineral wool. The thermal conductivity of both insulants is not more than 0.038W/m.K.

1.5.4 YBS polypropylene fixing clips are used for connection to masonry jambs and sills.

Figure 5: Cavi-Mate PVC-U profiles (Informative)

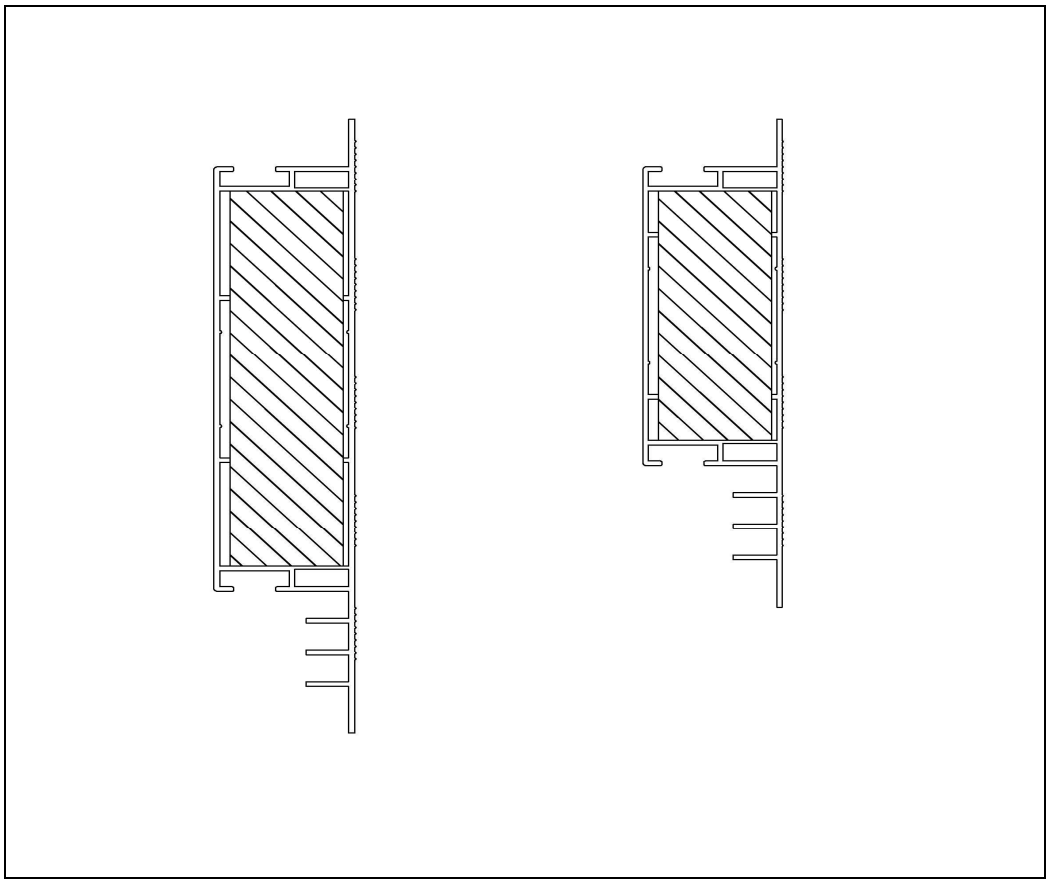
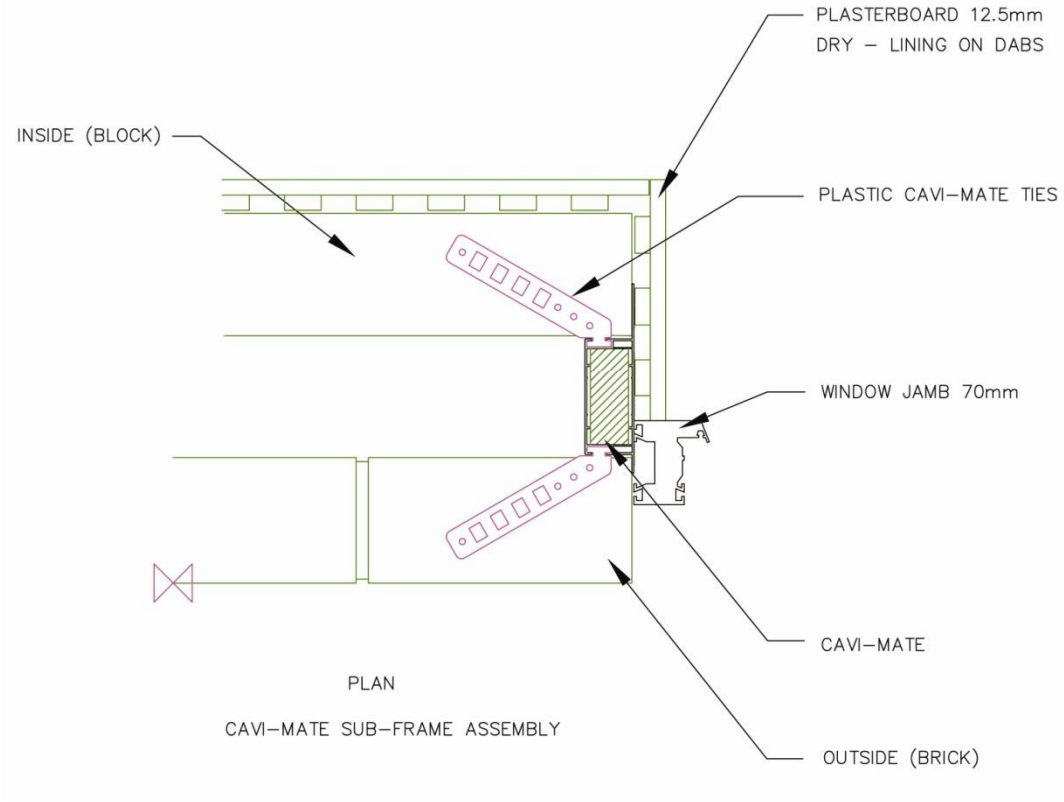
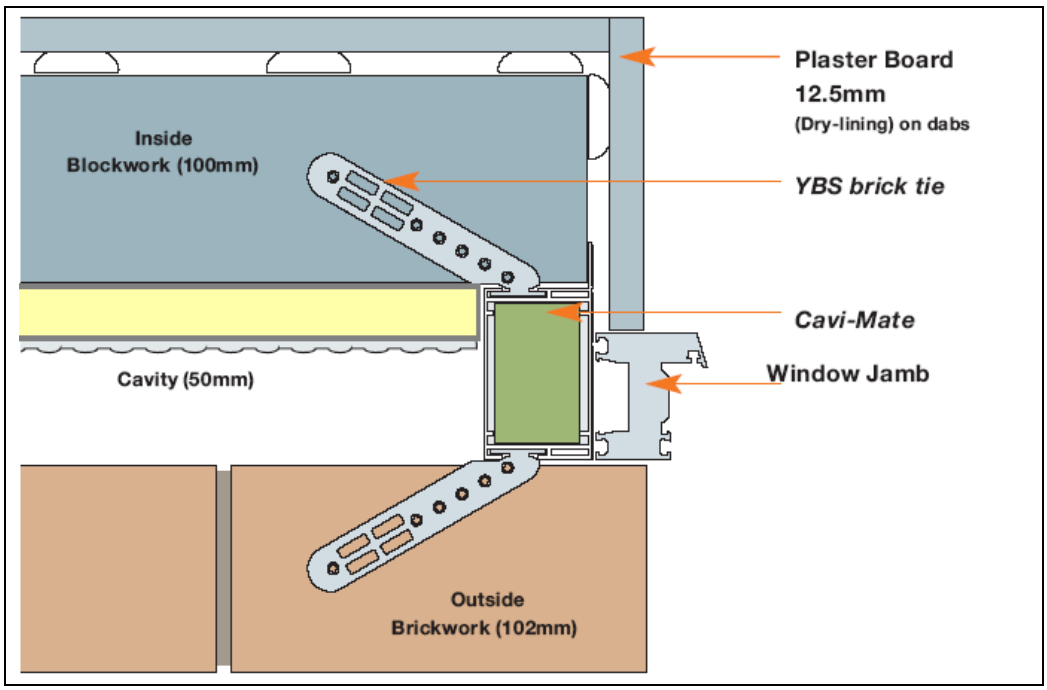


Figure 6: Cavi-Mate EPS – Standard Reveal Detail (Informative)



Cavity closer and frame shall overlap by at least 30mm

Figure 7: Cavi-Mate Rock Fibre Check Reveal detail (Informative)



2. PRODUCT PERFORMANCE

2.1 Structure

2.1.1 The YBS Insulation products covered by this certificate do not provide any contribution to the building structure other than supporting their own weight with the following exception.

2.1.2 Therma-Flect EPS and Therma-Flect PIR (Roof Board) when fixed between timber rafters using the retaining clips provided will transfer wind loading from the boards to the timber structure. The manufacturer's advice should be sought as to the clip fixing and spacing required for differing exposures.

2.2 Fire performance

2.2.1 The YBS insulation products covered by this certificate have not been assessed for fire performance.

2.3 Environment

2.3.1 When used in accordance with the manufacturer's instructions and published guidance (referenced in this certificate) the products covered by this certificate will contribute to the resistance of water penetration through walls and roofs and can reduce the risk of surface and/or interstitial condensation.

2.3.2 Therma-Close and Cavi-Mate cavity closers provide a separation between inner and outer wall leafs which includes an impervious damp proofing layer.

2.3.3 Therma-Flect wall boards provide partial fill cavity insulation board which when positioned and secured within the cavity between masonry inner and outer leafs in accordance with the manufacturer's instructions will not provide a path for water to cross the cavity.

2.3.4 Therma-Flect EPS Roof Board is intended to provide a method to enhance the water resistance of new roofs as a secondary waterproofing layer below roofing tiles or slates. Water penetration resistance tests with the aluminium foil facing towards the underside of the tiles have confirmed that Therma-Flect EPS Roof Board is water resisting, and when installed in a roof constructed in accordance with BS 5534, the product will resist the passage of water to the interior of the building. See figures 4(a) and 4(b).

2.3.4.1 When used directly below tiling, with the aluminium foil facing towards the underside of the tiles, Therma-Flect Roof Board shall be considered for design purposes as a permeable membrane and the lap joints shall not be sealed as the junctions between boards are relied upon to allow moisture laden air to escape to the outside.

2.3.4.2 When installed with the aluminium foil facing away from the underside of the tiles (see figure 4(c), the joints shall be sealed. The water vapour resistance, when sealed, is greater than 250 MNs/g. A separate roof underlay shall be used between the boards and the slates or tiles.

2.3.4.3 When installed in accordance with this certificate and the appropriate clauses of BS 5250 *Code of practice for control of condensation in buildings* Therma-Flect Roof Board will not promote surface or interstitial condensation. Condensation is considered to be unlikely to occur with the constructions described in section 2.3.4. However, condensation risk calculations should be undertaken using the method of assessment given in BS 5250 to ensure harmful condensation is not developed for the intended application. Provision shall be made in the roof design to provide, as a

minimum, ventilation equivalent to the requirements of BS 5534 for each designed roof pitch. Eaves openings and/or tile ventilators with an equivalent opening area may be considered a practicable method of achieving adequate ventilation. Ridge ventilators shall be considered only in combination with low level ventilation.

2.4 Thermal

2.4.1 The YBS products listed provide a means of enhancing thermal performance of walls and roofs.

2.4.2 The minimum resistance paths of Therma-Close, Therma-Close R, Cavi-Mate EPS and Cavi-Mate Rock Fibre have been calculated in accordance with the guidance given in BRE IP 8/08 *Determining the minimum thermal resistance of cavity closers*. The resistances were calculated for the minimum 30mm overlap of frame and closer. The calculated values all meet the minimum value of 0.45 m^2k/W required by Accredited Construction Details contained in the relevant Building Regulations.

2.4.3 The thermal properties of Therma-Flect roof and wall boards have been established from the thermal conductivity of the board materials used and the measured thermal resistance of the 4mm thick aluminium foil faced polyethylene bubble film multilayer laminate. The values in table 3 below may be used to calculate the thermal performance of walls and roofs using the calculation method set out in BR 443 *Conventions for U-value calculations*

Table 3 Thermal properties of Therma-Flect wall and roof boards

	Thermal conductivity of board (λ) W/m.K	Thermal resistance of bubble film laminate $m^2.K/W$	Thermal resistance of airspace with low emissivity foil adjacent to cavity. m^2K/W	
			Unventilated air space (1)	Ventilated air space (2)
Therma-Flect EPS wall board	0.030	0.124	0.665	0.29
Therma-Flect PUR wall board	0.022	0.124	0.665	0.29
Therma-Flect EPS roof board	0.030	0.124	0.454	0.17
Therma-Flect PUR roof board	0.022	0.124	0.454	0.17
(1) Values calculated in accordance with BR 443 (4.8.2) for low emissivity surfaces having a certificated emissivity value with the foil adjacent to an **unventilated** airspace of width at least 25mm.				
(2) Values taken from BR 443 (4.8.6) for low emissivity surfaces with the foil adjacent to a **ventilated** airspace and a cladding that provides protection from wind.				
(3) Values for airspaces are based on foil surfaces being installed undamaged in locations where they will not be subject to deposition of dust in service.				

2.5 Durability

No maintenance is required provided that the products remain protected by the roof or wall claddings as appropriate.

3. BUILDING REGULATIONS

3.1 YBS Insulation products, when used in accordance with this certificate and the certificate holder's installation instructions, can assist in demonstrating that the works within which they are installed will meet the stated Requirements of the following building regulations and standards:

3.2 The Building Regulations (England & Wales) 2000 (as amended)
AD C2 Resistance to moisture
AD L Conservation of fuel and power
Regulation 7 – Materials & Workmanship

3.3 The Building (Scotland) Amendment Regulations 2010
Regulation 8 – Fitness and durability of materials and workmanship.
Regulation 9: Section 3 – Environment

3.4 The Building Regulations (Northern Ireland) 2000
Part B – Materials & Workmanship
Part C – Preparation of site and resistance to moisture.
Part F – Conservation of fuel and power

3.5 CDM regulations

Construction (Design and Management) Regulations 2007
Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

This certificate should form part of the information used by the client, planning co-ordinator, designer and contractors to discharge their responsibilities under these regulations.

4. INSTALLATION

The performance of the products depends on correct delivery, storage and handling and installation in accordance with the certificate holder's installation instructions. The quality of installation actually achieved on specific sites is not covered by this certificate. Therefore it is recommended that the quality of installation and workmanship is subject to appropriate checks by a competent person for each installation.

5. TECHNICAL INVESTIGATIONS

5.1 Assessment has been made of the product designs, with reference to their application and practicality of installation which was found to be suitably addressed by the manufacturer's installation instructions.

5.2 Quality Control

Traceable quality records are maintained by the manufacturer. The manufacturer carries out checks at regular intervals to ensure the quality of each product is maintained within its defined product specification. BRE Certification undertakes regular monitoring of the factory production by audits on the manufacture of each product against an agreed Quality Plan.

5.3 Standards

The following British, European and other Standards have been referred to for this assessment

BS EN 12667:2001	Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Products of high and medium thermal resistance

BS EN 12664:2001	Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Dry and moist products of medium and low thermal resistance
BS EN 12939:2001	Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Thick products of high and medium thermal resistance
BS EN 845-1: 2003 +A1:2008	Specification for ancillary components for masonry. Ties, tension straps, hangers and brackets
BS 5250:2002	Code of practice for control of condensation in buildings
BS 5534:2003 +A1:2010	Code of practice for slating and tiling (including shingles)
BS 5628-1: 1985	Code of practice for the use of masonry. Structural use of unreinforced masonry
BS 5628-3: 2005	Code of practice for the use of masonry. Materials and components, design and workmanship
BS 6515:1984	Specification for polyethylene damp-proof courses for masonry
BS EN 1027: 2000	Windows and doors. Watertightness. Test method
BS EN 13163: 2008	Thermal insulation products for buildings. Factory made products of expanded polystyrene (EPS). Specification
BS EN 13164: 2008	Thermal insulation products for buildings. Factory made products of extruded polystyrene foam (XPS). Specification
BS EN 13165: 2008	Thermal insulation products for buildings. Factory made rigid polyurethane foam (PUR) products. Specification
BS EN ISO 6946:2007	Building components and building elements. Thermal resistance and thermal transmittance. Calculation method

5.4 BRE Publications

Report 262: 2002	Thermal insulation: avoiding risks (3rd Edition)
Report 443: 2006	Conventions for U-value calculations
IP 8/08	Determining the minimum thermal resistance of cavity closers
GBG 68-1-2: 2006	Installing thermal insulation: good site practice

5.5 Accredited Construction details June 2007

Accredited (indicative) Detail Number: MC1-WD-04

Accredited (indicative) Detail Number: MC1-WD-05

Accredited (indicative) Detail Number: MC1-WD-06

6. CONDITIONS OF CERTIFICATE USE

6.1 Validity

This certificate will be valid for three years from the date of issue. It will remain valid in so far as:

(a) The materials and method of manufacture are unchanged or BRE Certification has assessed any changes and found them to be satisfactory.

(b) The designs and specifications are unaltered from those examined by BRE Certification.

(c) Certificate holder continues to have the product checked by BRE Certification.

6.2 Health and Safety

This certificate and the recommendations herein do not purport in any way to restate the requirements of the Health and Safety at Work Act 1974 or any statutory or common law duty of care which exists now or in the future: nor is compliance with these recommendations to be assumed as satisfying the requirements of the said Act or any existing or future statutory or common law duty of care.

6.3 References to Other Documentation

Where reference is made in this certificate to any Act of Parliament, Regulation, Code of Practice, British or other Standard or other publications, it shall be construed as reference to such publication in the form in which it is in force at the date of issue of the certificate.

6.4 Patents

BRE Certification make no representational warranty that any patent or similar industrial property right is valid or that the manufacture, use, sale, lease or any other dealing or disposition of the product in whole or in part is not an infringement of any patent or industrial property right not owned by the certificate holder.

6.5 Confirmation of validity

Confirmation that a certificate is current may be obtained from the BRE Certification website (www.redbooklive.com).