



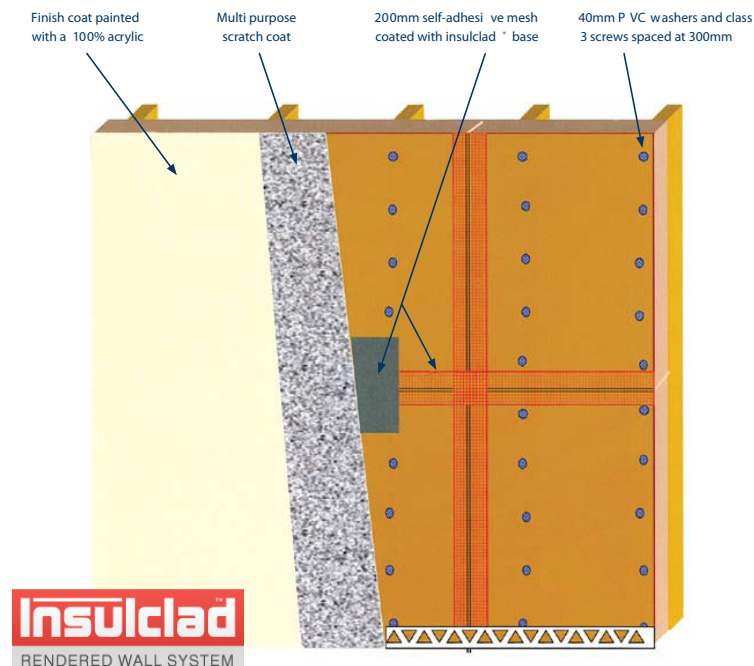
BRANZ Appraised

Appraisal No. 697 [2010]

INSULCLAD CAVITY SYSTEM

Appraisal No. 697 [2010]

Amended 27 August 2018



BRANZ Appraisals

Technical Assessments of products for building and construction.



Foamex Polystyrene Pty Ltd

31 Mavis Street
Revesby
NSW 2122
AUSTRALIA

Tel: +61 2 9773 1655

Fax: +61 2 9773 1907

Web: www.foamex.com.au

Web: www.insulclad.com.au



BRANZ

BRANZ

1222 Moonshine Rd,
RD1, Porirua 5381
Private Bag 50 908
Porirua 5240,
New Zealand
Tel: 04 237 1170
branz.co.nz



Product

- 1.1 The Insulclad Cavity System is an Exterior Insulation and Finishing System (EIFS) wall cladding. It is an external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.
- 1.2 The system consists of expanded polystyrene (EPS) panels (pre-meshed or plain), which are fixed over EPS battens to form a drained cavity. The render coating system consists of a fibreglass mesh reinforced base coat followed by the application of finishing renders. The chosen finishing render can be applied to give a range of different surface textures and is then finished with a 100% acrylic paint system.
- 1.3 The system incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall framing with a nominal 25 mm drained cavity.

Scope

- 2.1 The Insulclad Cavity System has been appraised as an external wall cladding system for buildings within the following scope:
 - Class 1 and Class 10 buildings and Class 2 to 9 buildings; and,
 - up to three storeys in height; and,
 - with floor plan area limited only by seismic and structural control joints; and,
 - constructed with timber framing in accordance with the BCA, or steel framing in accordance with the BCA; and,
 - situated in non-cyclonic wind zones up to, and including N3.
- 2.2 The structural and weathertightness design for each specific structure is the responsibility of the building designer.
- 2.3 The Insulclad Cavity System must only be installed on vertical, flat surfaces. The tops of parapets, sills and balustrades must have a minimum 5° slope and be waterproofed in accordance with the Technical Literature.
- 2.4 The system has been appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. *[The Appraisal of the Insulclad Cavity System relies on the joinery meeting the requirements of AS 2047 for the relevant wind zone.]*
- 2.5 Installation of components and accessories supplied by Foamex Polystyrene Pty Ltd and approved applicators must be carried out only by Foamex Polystyrene Pty Ltd approved applicators.

Building Regulations

National Construction Code Series Building Code of Australia (BCA)

- 3.1 In the opinion of BRANZ, the Insulclad Cavity System if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the BCA:

BCA Volume 1 - Class 2 to Class 9 Buildings

Part B1 - Structural Provisions: Performance Requirement BP1.1. The Insulclad Cavity System meets the requirements for actions arising from the following imposed actions: wind action, differential movement, creep and shrinkage [i.e. BP1.1(b) (iii), (x) and (xi)]. See Paragraphs 10.1 – 10.4.

Part F1 - Damp and Weatherproofing: Performance Requirement FP1.4. The Insulclad Cavity System meets this requirement. See Paragraphs 15.1 – 15.4.

BCA 2010 Volume 2 - Class 1 and Class 10 Buildings

Part 2.1 Structure: Performance Requirement P2.1. The Insulclad Cavity System meets the requirements for actions arising from the following imposed actions: wind action, differential movement, creep and shrinkage [i.e. BP1.1(b) (iii), (x) and (xi)]. See Paragraphs 10.1 – 10.4.

Part 2.2 Damp and Weatherproofing: Performance Requirement P2.2.2. The Insulclad Cavity System meets these requirements. See Paragraphs 15.1 – 15.4.

- 3.2 This is an Appraisal of an **Alternative Solution** in terms of Building Code of Australia compliance.

Technical Specification

- 4.1 System components and accessories supplied by Foamex Polystyrene Pty Ltd are as follows:

Expanded Polystyrene (EPS)

- Insulclad battens are manufactured from very high density [Class VH] expanded polystyrene (EPS) with a nominal density of 28 kg/m³. The battens are 25 mm thick by 45 mm wide.
- Insulclad Pre-Meshed Panels are 40, 50, 75 and 100 mm or greater thickness Class M EPS with a nominal density of 19 kg/m³. The panels are supplied 1200 mm wide x 2500 mm long and must be manufactured to meet the requirements of AS 1366 Part 3. The panels are factory coated with polymer modified cement-based render with an imbedded alkali-resistant fibreglass mesh.
- Plain EPS core panels are 40, 50, 60, 75 and 100 mm or greater thickness, Class M with a nominal density of 19 kg/m³, or Class H with a nominal density of 24 kg/m³. The panels are supplied in lengths ranging from 2.4 to 5.0 m x 1.2 m wide and must be manufactured to meet the requirements of AS 1366 Part 3.

Renderers

- **Insulclad Joint Patch & Primer Additive** is a liquid acrylic copolymer fine resin additive supplied in 1ltr, 5ltr or 20ltr bottles and mixed on site with Insulclad Base Render Plus and clean drinking water to a fine consistency. It is applied over the self-adhesive mesh over the joints of the Insulclad Pre-Meshed Panels. It is also used as a primer when mixed with Insulclad Base Render Plus to form a slurry consistency and is applied to all uPVC components to ensure good adhesion properties between render coatings and uPVC.
- **Insulclad Base Render Plus** is a polymer-modified, GP Portland cement-based render supplied in 20 kg bags and mixed on site with clean drinking water. It is applied as the base coat over plain EPS core panels in a minimum 2 mm layer followed by the embedment of fibreglass mesh reinforcement in the outer surface. Insulclad Base Render Plus can also be used as a second build coat over the Insulclad Pre-Meshed Panels and plain EPS core panels.
- **Insulclad or Ezytex Finishing Renderers** are a range of polymer-modified, Portland cement-based finishing renderers supplied in 20 kg bags and mixed on site with clean drinking water. They are available in Fine Skim, Medium Float, Coarse Float and Scratch and Drag to provide different surface finishes.

Paint System Specification

- At least two coats of a latex exterior paint system complying with any of Parts 7, 8, 9 or 10 of AS 3730 must be used over the finishing renders to make the system weathertight and give the desired finish colour to exterior walls. Paint colours must have a light reflectance value of 40% minimum regardless of gloss value. Proprietary paint systems have not been assessed and are therefore outside the scope of this Appraisal.

Accessories

- **Reinforcing mesh** - alkali-resistant fibreglass mesh with a nominal mesh size of approximately 5 mm square and a weight of 165 g/m² for use in domestic and light commercial situations. Where a greater level of impact resistance is required, 360 g/m² alkali-resistant fibreglass mesh with a nominal mesh size of approximately 3 mm square is available.
- **uPVC components** - jamb flashing, base caps, corner beads, cavity vent strip and horizontal and vertical control joint flashings.
- **Insulclad Pre-Meshed Panels and EPS core panel fixings [timber frame]** - 10-gauge AS 3566 Corrosion Class 3 wood screws in mild or moderate industrial or marine environments and Corrosion Class 4 wood screws in severe marine environments. Refer to Table 1 for screw fixing lengths relative to selected panel thickness.
- **Insulclad Pre-Meshed Panels and EPS core panel fixings [steel frame]** - 10-gauge self-drilling AS 3566 Corrosion Class 3 screws in mild or moderate industrial or marine environments and Corrosion Class 4 screws in severe marine environments. Refer to Table 1 for screw fixing lengths relative to selected panel thickness.
- **Washers** - 40 mm diameter polypropylene washers.

Table 1: Panel Fixings

Insulclad System	Panel Thickness	Timber Frame Wood Screws 10-gauge	Steel Frame Steel Screws self drilling 10-gauge	Washer dia
Cavity System [25mm Cavity]	40	100mm	100mm	40mm
	50	100mm	100mm	40mm
	60	125mm	100mm	40mm
	75	125mm	125mm	40mm
	100	150mm	150mm	40mm

Note: For Insulclad Pre-Meshed Panels and EPS core panels greater than 100 mm thick, a minimum fixing penetration of 25 mm into the frame must be maintained.

- 4.2 Accessories used with the system which are supplied by the approved applicator are:
- **Cavity batten fixings** [if not already supplied by Foamex Polystyrene Pty Ltd] - 30 or 40 x 2.5 mm hot-dip galvanised steel flat head nails for timber frame, or construction adhesive for temporary fixing to sarking over timber or steel frame.
 - **Waterproof membrane tapes** - tapes covered by a valid BRANZ Appraisal for use as waterproofing membranes over tops of plastered parapets, balustrades, fixing blocks and the like.
 - **Flexible sealant** - paintable, UV stable MS sealant complying with Type F, Class 25LM of ISO 11600. EPS foam products are susceptible to chemical damage resulting from the use of sealants that contain solvents. The sealant must be free from solvents and having a VOC level of no more than 70g/Ltr Californian South Coast Air Quality Management District [rule 1168]. The sealant must be recommended by Foamex Polystyrene Pty Ltd.
 - **Window and door trim cavity air seal** - self-expanding, moisture cure polyurethane foam air seal for use around window, door and other wall penetration openings.

- **Adhesive** - EPS compatible adhesive for gluing uPVC components to the Insulclad Pre-Meshed Panels and EPS core panels as and where required. EPS foam products are susceptible to chemical damage resulting from the use of adhesives that contain solvents. Only solvent free adhesives with a VOC level of no more than 70g/Ltr or less Californian South Coast Air Quality Management District [rule 1168]. The adhesive must be recommended by Foamex Polystyrene Pty Ltd.
- 4.3 Accessories used with the system which are supplied by the building contractor are:
- **Sarking** – sarking complying with AS/NZS 4200, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall wraps.
 - **Sarking support** - polypropylene strap for securing the sarking in place and preventing bulging of the bulk insulation into the drainage cavity where cavity battens are installed at greater than 450 mm centres. *[Note: additional vertical battens may also be installed to provide support.]*
 - **Flexible sill and jamb flashing tapes** - flexible flashing tapes complying with ICBO Acceptance Criteria AC148, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
 - **Flashings** - including window and door joinery head flashing, parapet cap flashings and horizontal joint flashings. All terminations and junctions must be adequately flashed using materials which are compatible with the Insulclad Cavity System and comply with AS/NZS 2904.

Handling and Storage

- 5.1 Handling and storage of all materials supplied by Foamex Polystyrene Pty Ltd or the approved applicator, whether on or off site, are under the control of Foamex Polystyrene Pty Ltd approved applicators. Dry storage must be provided on site for the fibreglass mesh and renders. EPS panels and accessories must be protected from direct sunlight and physical damage, and should be stored flat and under cover. Liquid components must be stored in frost-free conditions.
- 5.2 Handling and storage of all materials supplied by the building contractor, whether on or off site, are under the control of the building contractor. Materials must be handled and stored in accordance with the relevant manufacturer's instructions.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Insulclad Cavity System. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Framing

Timber Framed Buildings

- 7.1 The Insulclad Cavity System is suitable for use with Class 2 to Class 9 timber framed buildings that have been specifically designed in accordance with AS 1720.1.
- 7.2 The Insulclad Cavity System is suitable for use with Class 1 and Class 10 timber framed buildings that have been specifically designed in accordance with AS 1684.2 and AS 1684.4.
- 7.3 In all cases studs must be at maximum 600 mm centres. Nogs must be fitted flush between the studs at maximum 800 mm centres.
- 7.4 Timber framing must have a maximum moisture content of 24% at the time of the EPS panel application. *[If EPS panels are fixed to framing with a moisture content of greater than 24% problems may occur at a later date due to excessive timber shrinkage.]*

Steel Framing

- 7.5 The Insulclad Cavity System is suitable for use with Class 2 to Class 9 steel framed buildings that have been specifically designed in accordance with AS/NZS 4600.
- 7.6 The Insulclad Cavity System is suitable for use with Class 1 and Class 10 steel framed buildings that have been specifically designed in accordance with AS/NZS 4600 or NASH - Residential and low-rise steel framing – Part 1 Design criteria.
- 7.7 The minimum framing specification is 'C' section studs and nogs of overall section size of 75 mm web and 32 mm flange. Steel thickness must be minimum 0.55 mm. In all cases studs must be at maximum 600 mm centres. Nogs must be fitted flush between the studs at maximum 800 mm centres.

EPS Panel Setout

- 7.8 All Insulclad Pre-Meshed Panels and EPS core panel edges must be supported and fixed through the cavity battens to the framing. Horizontal panel edges must be supported at fixing locations with maximum 100 mm long cavity spacers. At the base of the wall, the Insulclad Pre-Meshed Panels and EPS core panels must hang 50 mm below the supporting framing.
- 7.9 Additional framing will be required at soffits, internal and external corners and window and door openings for the support and fixing of sheet edges.

General

- 8.1 Openings in the cavity vent strip must provide a minimum ventilation opening area of 1000 mm² per lineal metre of wall.
- 8.2 At ground level, finished surfaces, such as footpaths, must be kept clear of the bottom edge of the cladding system by a minimum of 100 mm, and unpaved surfaces by 175 mm.
- 8.3 At balcony, deck or roof/wall junctions, the bottom edge of the Insulclad Cavity System must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing by a minimum of 35 mm.
- 8.4 All buildings must have barriers to airflow in the form of interior linings with all joints stopped, or alternatively, unlined gables and walls must incorporate a rigid sheathing, e.g. fibre cement or plywood sheet. Where rigid sheathings are used, the fixing length must be increased by a minimum of the thickness of the sheathing.
- 8.5 Where the system abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the BCA. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

Electrical Cables

- 8.6 PVC sheathed electrical cables must be prevented from direct contact with the Insulclad Pre-Meshed Panels and EPS core panels. When cables must penetrate the Insulclad Pre-Meshed Panels and EPS core panels for exterior electrical connections, the cable must be directly supported by passing through an electrical conduit.

Termites

- 8.7 Where the building is required to be protected from subterranean termite attack, the building must be protected by a barrier system that complies with the requirements of AS 3660.1. The selected system must be compatible with the use of EPS in the system.

Control Joints

9.1 Control joints must be constructed in accordance with the Technical Literature, and be provided as follows:

- Horizontal control joints - at maximum 6 m centres; at floor levels in timber framed construction and at floor levels in steel framed construction where significant movement is expected.
- Vertical control joints - at maximum 20 m centres; aligned with any control joint in the structural framing or substrate; where the system abuts different cladding types, where the system covers different substrate materials or where significant structural movement occurs such as changes in roofline, building shape, or structural system.

[Note: Horizontal and Vertical Control joints must be located over structural supports. The design of vertical control joints where the system abuts different cladding types is outside the scope of this Appraisal and is the responsibility of the designer - see Paragraph 8.5.]

Inter-storey Junctions

9.2 Inter-storey drained joints must be provided for walls over 2 storeys in height. Inter-storey junctions must be constructed in accordance with the Technical Literature.

[Note: It is the responsibility of the building designer to determine the requirements for barriers to vertical fire spread at inter-storey junctions.]

Structure

Mass

10.1 The mass of the Insulclad Cavity System is approximately 7 kg/m².

Impact Resistance

10.2 The system has adequate resistance to impacts likely to be encountered in normal residential use. Where a greater level of impact protection is required a heavier grade of reinforcing mesh may be used. The likelihood of impact damage to the system when used in light commercial situations should be considered at the design stage, and appropriate protection such as the installation of bollards and barriers should be considered for vulnerable areas.

Wind Zones

10.3 The Insulclad Cavity System is suitable for use in non-cyclonic wind zones up to, and including N3.

Insulclad Pre-Meshed Panels and EPS Core Panel Fixing

10.4 Insulclad Pre-Meshed Panels and EPS core panels must be fixed through the cavity battens and cavity spacers to the wall framing at the maximum centres specified in Table 2.

Table 2: Insulclad Pre-Meshed Panels and EPS Core Panel Fixing Centres for Edges and Intermediate Studs

BCA Wind Class	Maximum fixing centres [mm] with studs at maximum 600 mm centres	Maximum fixing centres [mm] with studs at maximum 400 mm centres
N1	300 ¹	300 ¹
N2	300 ¹	300 ¹
N3	200 ²	300 ¹

1. One fixing is required into each dwang and top and bottom plates at mid-nog length.
2. Fixings are also required into each dwang at 200 mm centres and top and bottom plates at mid-nog.

Durability

Serviceable Life

- 11.1 The Insulclad Cavity System is expected to have a serviceable life of at least 30 years provided the system is maintained in accordance with this Appraisal, and the fixings, EPS panels and render are continuously protected by a weathertight coating and remain dry in service.

Maintenance

- 12.1 Regular maintenance is essential to ensure the performance requirements of the BCA are continually met and to ensure the maximum serviceability of the system.
- 12.2 Regular cleaning [at least annually] of the surface coating is required to remove grime, dirt and organic growth and to maximise the life and appearance of the coating. Grime may be removed by brushing with a soft brush, warm water and detergent. Solvent based cleaners must not be used.
- 12.3 Annual inspections must be made to ensure that all aspects of the cladding system, including the finishing system, base render, flashings and any sealed joints remain in a weatherproof condition. Any cracks, damaged areas or areas showing signs of deterioration which would allow water ingress, must be repaired immediately. Sealant, coatings and the like must be repaired in accordance with the instructions of Foamex Polystyrene Pty Ltd.
- 12.4 Minimum ground clearances as set out in this Appraisal and the Technical Literature must be maintained at all times during the life of the system. *[Failing to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of the Insulclad Cavity System.]*

Heating Appliances, Fireplaces, Chimneys and Flues

- 13.1 The Insulclad Cavity System has not been assessed for construction associated with heating appliances and must not be used as such.

Fire

BCA Volume 2 – Class 1 and Class 10 Buildings

- 14.1 The Insulclad Cavity System is suitable for use on exterior walls positioned a minimum of 900 mm from an allotment boundary [other than the boundary adjoining a road alignment or other public space], and on walls positioned a minimum of 1.8 m from another building on the same allotment [other than an appurtenant Class 10 building or a detached part of the same Class 1 building]. Insulclad Cavity System installations on walls positioned outside of these restrictions have not been assessed and are outside the scope of this Appraisal.

BCA Volume 1 – Class 2 to Class 9 Buildings

- 14.2 The fire hazard indices of the Insulclad Cavity System have not been assessed and are outside the scope of this Appraisal. Where required, Foamex Polystyrene Pty Ltd should be consulted for compliance information.

BCA Bush Fire Zones

- 14.3 The use of the Insulclad Cavity System on buildings located within designated bush fire zones shall be restricted by the requirements of AS 3959.
- 14.4 The building designer is responsible for determining the Bushfire Attack Level for the building in accordance with AS 3959, which will in turn determine whether the Insulclad Cavity System is suitable for use.

Damp and Weatherproofing

- 15.1 The Insulclad Cavity System, when installed in accordance with this Appraisal and the Technical Literature, prevents the penetration of moisture that could cause undue dampness or damage to building elements.
- 15.2 The drainage cavity must be sealed off from the roof and sub-floor space to prevent the transfer of moisture laden air.

- 15.3 The details given in the Technical Literature for weather sealing are based on the design principle of having a first and second line of defence against moisture entry for all joints, penetrations and junctions. The ingress of moisture must be excluded by detailing joinery and wall interfaces as shown in the Technical Literature. Weathertightness details that are developed by the designer are outside the scope of this Appraisal and are the responsibility of the designer for compliance with the BCA.
- 15.4 The use of the Insulclad Cavity System where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirement for junctions, penetrations, etc to remain weather resistant.

Hazardous Building Materials

- 16.1 The Insulclad Cavity System will not present a health hazard to people in normal use.

Thermal Resistance

- 17.1 Unless better information is available for a specific design case, the thermal resistance [centre of cavity R-value] of the Insulclad Cavity System is as given in Table 3. The R-values have been calculated using the following wall system construction:
- Internal lining: 10 mm thick plasterboard.
 - Wall frame: Timber or steel frame with studs at 600 mm centres and nogs at 800 mm centres [standard frame cavity with no insulation].
 - Sarking: Flexible sarking in accordance with AS/NZS 4200.
 - Cladding cavity: Formed with 25 mm thick cavity battens at 600 mm centres creating an air gap between the sarking and the cladding.
 - Cladding: Expanded Polystyrene [EPS] fixed to the wall frame over the cavity battens in the following options:
 - 40, 50, 60, 75 or 100 mm thick Class S with a nominal density of 16 kg/m³
 - 40, 50, 60, 75 or 100 mm thick Class M with a nominal density of 19 kg/m³
 - 40, 50, 60, 75 or 100 mm thick Class H with a nominal density of 24 kg/m³
 - Coating: 3-5 mm thick cement based render.

Table 3: Centre of Cavity R-values for the Insulclad Cavity System

Polystyrene Type	Assumed k-value @ 23°C	Thickness [mm]	Assumed R-value ¹	Insulclad Cavity System Centre of Cavity R-Value
Class S	0.043	40	0.93	1.42
		50	1.16	1.65
		60	1.40	1.89
		75	1.74	2.23
		100	2.33	2.82
Class M	0.041	50	0.98	1.47
		50	1.22	1.71
		60	1.46	1.95
		75	1.83	2.32
		100	2.44	2.93
Class H	0.039	40	1.03	1.52
		50	1.28	1.77
		60	1.54	2.03
		75	1.92	2.41
		100	2.56	3.05

Notes:

1. The stated thermal resistances are the minimum values required for compliance with AS 1366.3.
 2. In accordance with BCA Volume One, Section J1.2, and BCA Volume Two, Section 3.12.1.1, where required, the EPS panel insulation must comply with AS/NZS 4859.1.
- 17.2 Where a thermal break is required in steel frame construction, the thermal break must be in accordance with BCA Volume One, Section J1.5 [c][iii], or BCA Volume Two Section 3.12.1.4 [b][ii].

Installation Information

Installation Skill Level Requirements

- 18.1 Installation and finishing of components and accessories supplied by Foamex Polystyrene Pty Ltd and the approved applicators must be completed by trained applicators, approved by Foamex Polystyrene Pty Ltd.
- 18.2 Installation of the accessories supplied by the building contractor must be completed by tradespersons with an understanding of Exterior Insulation and Finishing System wall claddings, in accordance with instructions given within the Insulclad Cavity System Technical Literature and this Appraisal.

System Installation

Sarking and Flexible Sill and Jamb Flashing Tape

- 19.1 The selected sarking and flexible sill and jamb tape system must be installed by the building contractor in accordance with the sarking and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the Insulclad Cavity System. Sarking must be installed horizontally and be continuous around corners. The sarking must be lapped 75 mm minimum at horizontal joints and 150 mm minimum over studs at vertical joints. Particular attention must be paid to the installation of the sarking and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed wall framing in the opening is protected.

Aluminium Joinery Installation

- 19.2 Aluminium joinery and associated flashings must be installed by the building contractor in accordance with the Technical Literature. A 7.5-10 mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed after the joinery has been secured in place.

Insulclad Cavity System

- 19.3 The system must be installed in accordance with the Technical Literature by Foamex Polystyrene Pty Ltd approved applicators.
- 19.4 The Insulclad render system must only be applied when the air and substrate temperature is within the range of +5°C to +38°C.

Inspections

- 19.5 The Technical Literature must be referred to during the inspection of Insulclad Cavity System installations.

Health and Safety

- 20.1 Safe use and handling procedures for the components that make up the Insulclad Cavity System are provided in the relevant manufacturer's Technical Literature.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

21.1 The following testing has been completed by BRANZ:

- BRANZ expert opinion on BCA Damp and Weatherproofing compliance for the Insulclad Cavity System was based on testing and evaluation of all details within the scope and as stated within this Appraisal. The Insulclad Cavity System was tested to the New Zealand Building Code Verification Method E2/VM1. The testing assessed the performance of the foundation detail, window head, jamb and sill details, meter box head, jamb and sill details, vertical and horizontal control joints, internal and external corners and balustrade to wall junction with a plastered cap. In addition to the weathertightness test, the details contained within the Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the system will meet the performance levels of the BCA for exterior wall claddings.
- Wind face load and fastener pull through testing for EIFS cladding systems. BRANZ determined design wind suction pressures, and by comparing these pressures with AS/NZS 1170 pressure coefficients, the fixing requirements were determined for timber and steel framed walls.
- Adhesion of the render to the substrate and other renders in the EIFS cladding system. BRANZ completed the tensile adhesion testing in accordance with ASTM E2134.

Other Investigations

- 22.1 The performance of Insulclad External Insulation and Finishing Systems in New Zealand since 1985 has been considered.
- 22.2 Structural, durability and weathertightness opinions have been given by BRANZ technical experts.
- 22.3 The Clear-Wall R-values for the Insulclad Cavity System have been calculated by BRANZ technical experts.
- 22.4 Site visits have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.
- 22.5 The manufacturer's Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

- 23.1 The manufacture of the renders has been examined by BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 23.2 The quality of materials, components and accessories supplied by Foamex Polystyrene Pty Ltd are the responsibility of Foamex Polystyrene Pty Ltd.
- 23.3 Quality on site is the responsibility of the Foamex Polystyrene Pty Ltd approved applicators.
- 23.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems, sarking and joinery, air seals and joinery flashings in accordance with Foamex Polystyrene Pty Ltd's instructions.
- 23.5 Building owners are responsible for the maintenance of the Insulclad Cavity System in accordance with Foamex Polystyrene Pty Ltd's instructions.

Sources of Information

- AS 1366.3 - 1992 Rigid cellular plastic sheets for thermal insulation - Rigid cellular polystyrene - Moulded [RC/PS-M].
- AS 1684.2 - 2010 Residential timber frame construction - Non-cyclonic areas.
- AS 1684.4 - 2010 Residential timber frame construction - Simplified - Non-cyclonic areas.
- AS 1720.1 - 2010 Timber structures - Design methods.
- AS 2047 - 1999 Windows in buildings - Selection and installation.
- AS 3566 - 2002 Self-drilling screws for the building and construction industries.
- AS 3660.1 - 2000 Termite management - New building work.
- AS 3959 - 2009 Construction of buildings in bushfire-prone areas.
- AS/NZS 2904: 1995 Damp-proof courses and flashings.
- AS/NZS 4600: 2005 Cold-formed steel structures.
- AS/NZS 4859.1: 2002 Materials for the thermal insulation of buildings - General criteria and technical provisions.
- National Construction Code Series, Building Code of Australia 2013, Australian Building Codes Board.

Amendments

Amendment No. 1, dated 16 May 2012.

The Insulclad Cavity System Appraisal has been amended to change the Appraisal Holder, to remove nail fixings as a method of installation and to update references to the National Construction Code Series.

Amendment No. 2, dated 6 September 2013.

The Appraisal has been amended to change the product names.

Amendment No. 3, dated 11 April 2018.

The Appraisal has been amended to adjust the technical specification of the components.

Amendment No. 4 dated 27 August 2018.

The Appraisal has been amended to add Insulclad Base Render Plus.



In the opinion of BRANZ, **Insulclad Cavity System** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Foamex Polystyrene Pty Ltd**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Foamex Polystyrene Pty Ltd**:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Foamex Polystyrene Pty Ltd**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Foamex Polystyrene Pty Ltd** or any third party.

For BRANZ



Pieter Burghout

Chief Executive

Date of Issue:

23 December 2010