

## Casali - BRANZ Appraisal



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**BRANZ Appraised**

Appraisal No.647 [2009]

BRANZ Appraisals

Technical Assessments of products  
for building and construction

**BRANZ  
APPRAISAL  
No. 647 (2009)**

Amended 10 March 2014

## **CASALI DERMABIT ROOF AND DECK MEMBRANE SYSTEM**

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## Product

1.1 Casali Dermabit Roof and Deck Membrane Systems are waterproofing membranes for nominally flat, pitched and curved roofs, gutters, parapets and decks. They are installed as multi-layer system with a mineral chip finished product or as a single layer system onto a concrete substrate under heavy protection such as paving slabs or a topping screed.

1.2 The products are supplied as torch-on, reinforced, polymer-modified bitumen sheets in roll form.



## Scope

2.1 Casali Dermabit Roof and Deck Membrane Systems have been appraised as roof and deck waterproofing membranes on buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with respect to building height and maximum floor plan areas; and,
- with building structures designed and constructed to meet the requirements of the NZBC; and,
- with roof and deck supporting structures of timber framing with substrates of plywood or fibre cement compressed sheet; and,
- with substrates of suspended concrete slabs; and,
- situated in NZS 3604 Wind Zones, up to, and including 'Extra High'; and,
- with decks that have a maximum area of 40 m<sup>2</sup>.

2.2 Casali Dermabit Roof and Deck Membrane Systems have also been appraised for use as roof and deck waterproofing membranes on specifically designed buildings within the following scope:

- with building structures designed and constructed to comply with the NZBC; and,
- with roof and deck supporting structures of timber framing with substrates of plywood or fibre cement compressed sheet; and,
- with substrates of suspended concrete slab; and,
- subjected to maximum wind pressures (Refer Paragraph 8.1); and,
- with the weathertightness design of all junctions being the subject of specific design by the designer.

*Note: The design of these junctions has not been appraised by BRANZ and is outside the scope of this Appraisal.*

2.3 Roofs and decks waterproofed with Casali Dermabit Roof and Deck Membrane Systems must be designed and constructed in accordance with the following limitations:

- nominally flat, curved or pitched roofs and decks constructed to drain water to gutters and drainage outlets complying with the NZBC; and,
- constructed to suitable falls (Refer Paragraph 14.3 and 14.4); and,
- with no integral roof gardens; and,
- no steps in level within the deck area, except into gutters; and,
- no downpipes direct discharge to decks; and,
- with membranes on decks protected from physical damage or UV light by ceramic or stone tile finishes or timber, resting on approved pedestal supports.

2.4 The design and construction of the substrate and movement and control joints is specific to each building, and therefore is the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.

2.5 The membranes must be installed by Allco Waterproofing Solutions Ltd Licensed and Trained Installers.

## Dermaprimer

- Solvent-based bituminous primer for priming all substrates prior to the installation of the membrane. It is available in 5, 10 and 20 litre containers.

## Reflex AR

- Protective, reflecting aluminium filled coating for reducing the effects of UV. It is supplied in 10 and 20 litre containers.

## Acrytop

- Protective acrylic coating for reducing the effect of UV. It is supplied in 20 kg containers.

## Handling and Storage

5.1 Handling and storage of all materials whether on or off site is under the control of the Allco Waterproofing Solutions Ltd Licensed and Trained installers. Dry storage must be provided for all products and the rolls of membrane must be stored in an upright position.

## Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Casali Dermabit Roof and Deck Membrane Systems. 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

### General

7.1 Casali Dermabit Roof and Deck Membrane Systems are for use on roofs, gutters, parapets and decks where an impervious waterproof membrane is required to prevent damage to building elements and adjoining areas. The products can be used on new or existing buildings. Allco Waterproofing Solutions Ltd should be consulted as to the suitability of any existing substrates prior to using Casali Dermabit Roof and Deck Membrane Systems.

7.2 The effective control of internal moisture must be considered at the design stage due to the impermeability of the membranes. Refer to BRANZ publication "Good Practice Guide - Membrane Roofing".

7.3 The Casali Dermabit Extra 4170 is designed for use on roofs and gutters as the first layer of a double layer system and all areas requiring detailing such as upstands, protrusions, rainwater heads and outlets. The Casali Dermabit Extra 43170 Ardesiato (Slated) is used as the top layer of a double layer system.

7.4 Allco Waterproofing Solutions Ltd recommends the use of the EFVM<sup>®</sup> leak detection system for detecting capillary defects or breaches in the membrane system. Note this system has not been assessed by BRANZ and is outside the scope of this Appraisal.

7.5 NZBC Acceptable Solution E2/AS1 limits the size of decks to 40 m<sup>2</sup> as covered by Paragraph 2.1 of this Appraisal. Casali Dermabit Roof and Deck Membrane Systems are suitable for use on decks larger than 40 m<sup>2</sup>. These decks are the subject of specific design in accordance with Paragraph 2.2.

## Building Regulations

### New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Casali Dermabit Roof and Deck Membrane Systems, 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 NZBC:

**Clause B2 DURABILITY:** Performance B2.3.1 (b), 15 years and B2.3.2. Casali Dermabit Roof and Deck Membrane Systems meet this requirement. See Paragraph 10.1.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.1 and E2.3.2. Casali Dermabit Roof and Deck Membrane Systems meets these requirements. See Paragraphs 14.1 – 14.9.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Casali Dermabit Roof and Deck Membrane Systems meet this requirement and will not present a health hazard to people.

3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance. The membranes are an alternative to the membranes specified in NZBC Acceptable Solution E2/AS1, and an Alternative Solution subject to specific design for other buildings not covered within E2/AS1.

## Technical Specification

4.1 Materials supplied by Allco Waterproofing Solutions Ltd are as follows:

### Casali Dermabit Extra 4170

- 3 mm thick APAO modified bitumen, torch applied sheet waterproofing membrane used as a base layer in a double layer system. The lower face has a polyethylene film which is torched off during application and the upper face is finished with a multipurpose non woven polypropylene. It is supplied in 1 m x 10 m rolls.

### Casali Dermabit Extra 43170 Ardesiato (Slated)

- 4 mm thick APAO modified bitumen, torch applied sheet waterproofing membrane used as a cap sheet in a double layer system. The lower face has a propylene film which is torched off during application and an upper face finished with slate chips. It is supplied in 1 m x 10 m rolls.



## Structure

8.1 Casali Dermabit Roof and Deck Membrane Systems fully bonded double layer systems are suitable for use in areas subject to maximum wind pressures of 6 kPa Ultimate Limit State.

## Substrates

### Plywood

9.1 Plywood must be treated to H3 (CCA treated). **LOSP treated plywood must not be used.** Plywood must comply with NZBC Acceptable Solution E2/AS1 Paragraph 8.5.3 and 8.5.5. Where specific design is used (i.e. outside the scope of E2/AS1) the plywood thickness and fixing size may increase and centres may decrease to meet specific wind loadings. Timber framing must comply with NZS 3604, or where specific engineering design is used, the framing shall be of at least equivalent stiffness to the framing provisions of NZS 3604, or comply with the serviceability criteria of AS/NZS 1170. Timber framing supporting the substrates must be constructed such that deflections do not exceed 1/360<sup>th</sup> of the span. Where NZS 3604 is used, the allowable joist spans given in Table 7.1 shall be reduced by 20%. In all cases, framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and all sheet edges are fully supported.

### Concrete

9.2 Concrete substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101.

### Fibre Cement Compressed Sheet

9.3 Fibre cement compressed sheet must be manufactured to comply with the requirements of AS/NZS 2908.2 and must be specified by the manufacturer as being suitable for use as an external decking substrate. The fibre cement sheet must be of a thickness to meet specific structural design requirements and must be secured to the structure to resist wind uplift and all other forces acting on the deck, such as deflection from gravity and live loads. Installation must be in accordance with the instructions of the manufacturer.

### Existing Construction

9.4 A thorough inspection of the substrate must be made to ensure it is in fit condition and does not contain any materials that will adversely affect the performance of the membrane.

9.5 Repairs must be undertaken, where applicable, to ensure the substrate is sound, the joints are sealed, and the flashings are sound. Plywood substrates must be checked for screw fixings, and if necessary refixed as for new plywood.

## Durability

### Serviceable Life

10.1 Casali Dermabit Roof and Deck Membrane Systems, when subjected to normal conditions of environment and use, are expected to have a serviceable life of at least 15 years and be compatible with ceramic or stone tiling finishes with a design service life of 15-25 years.

### Chemical Resistance

10.2 Industrial air pollutants and windborne salt deposits should not significantly affect the durability of the membranes. However, the long term properties of the material may be affected by contact with petroleum-based products such as oils, greases and solvents.

## Maintenance

11.1 The membrane roof and deck systems, including any areas with a UV coating applied, must be regularly (at least annually) checked for damage, rubbish, debris or coating breakdown. Damage, such as small punctures and tears must be repaired and coatings reapplied as recommended by Allco Waterproofing Solutions Ltd.

11.2 Special care must be taken when inspecting the membrane roof and deck systems to ensure the continuing prevention of moisture ingress, and repairs must be undertaken where required.

11.3 Drainage outlets must be maintained to operate effectively.

## Prevention of Fire Occurring

12.1 Separation or protection must be provided to Casali Dermabit Roof and Deck Membrane Systems from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

## External Moisture

13.1 Roofs and decks must be designed and constructed to shed precipitated moisture. They must also take account of snowfalls in snow prone areas. A means of meeting code compliance with NZBC Clause E2.3.1 is given by the Technical Literature which aligns with details in NZBC Acceptable Solution E2/AS1.

13.2 When installed in accordance with this Appraisal and the Technical Literature, Casali Dermabit Roof and Deck Membrane Systems will prevent the penetration of water and will therefore meet code compliance with Clause E2.3.2. The membranes are impervious to water and will give a weathertight roof or deck.

13.3 Roof and deck falls must be built into the substrate and not created with mortar screeds applied over the membrane.

13.4 The minimum fall to roofs is 1 in 30, decks is 1 in 40 and gutters are 1 in 100. All falls must slope to an outlet. Inadequate falls will allow moisture to collect and increase the risk of deterioration of the membrane. *(Note: Where possible a fall of 1 in 60 in the gutters is preferred.)*

13.5 Allowance for deflection and settlement of the substrate must be made in the design of the roof to ensure falls are maintained and no ponding of water can occur.

13.6 Casali Dermabit Roof and Deck Membrane Systems are impermeable; therefore a means of dissipating construction moisture must be provided in the building design and construction to meet code compliance with Clause E2.3.6.

13.7 Drainage flanges must be used for any outlet and must be fitted with a grate or cage to reduce potential sources of blockages. An overflow must be provided where the roof does not drain to an external gutter or spouting.

13.8 Penetrations and upstands of the membranes must be raised above the level of any possible flooding caused by the blockage of roof drainage.

13.9 The design of details not covered by the Technical Literature is subject to specific weathertightness design and is outside the scope of this Appraisal.

## Water Supplies

14.1 Water is not contaminated by Casali Dermabit Roof and Deck Membrane Systems.

14.2 The first 25 mm of rainfall from a newly installed Casali Dermabit Roof and Deck Membrane Systems roof must be discarded before drinking water collection starts. This is to remove residues which may have developed in the processes involved in the production of a Casali Dermabit Roof and Deck Membrane Systems membrane roof.

14.3 Though Casali Dermabit Roof and Deck Membrane Systems won't contaminate water, it must be noted that all water collected off roof surfaces made from any material is considered to be non-potable due to possible contamination from other sources. Water collection in this way can only be considered potable if it has been passed through a suitable sterilization system. Sterilization systems such as this have not been assessed and are outside the scope of this Appraisal.

## Installation Information

### Installation Skill Level Requirement

15.1 Installation of the membranes must be completed by Allco Waterproofing Solutions Ltd Licensed and Trained Installers.

15.2 Installation of substrates must be completed by tradespersons with an understanding of roof construction, in accordance with instructions given within the Allco Waterproofing Solutions Ltd Technical Literature and this Appraisal.

### Preparation of Substrates

16.1 Substrates must be dry, clean and stable before installation commences. Surfaces must be smooth and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents. All surface defects must be filled to achieve an even and uniform surface.

16.2 The relative humidity of concrete substrates must be 75% or less before membrane application. The concrete can be checked for dryness by using a hygrometer, as set out in BRANZ Bulletin No. 424.

16.3 The moisture content of the plywood and timber substructure must be a maximum of 20% and the plywood and fibre cement compressed sheets must be surface dry at time of membrane application. This will generally require plywood and fibre cement compressed sheets to be covered until just before the membrane is laid, to prevent rain wetting.

16.4 All substrates must be primed with Dermaprimer and left to dry (4-5 hours) before the membrane is installed.

### Membrane Installation

17.1 The membranes must be installed in accordance with the Technical Literature.

17.2 All roof and deck to wall junctions must have a 20 mm x 20 mm wooden fillet installed at the junction. Concrete substrate junctions must have a 20 mm x 20 mm cement mortar fillet installed. All external edges must be chamfered to a 5 mm radius to remove sharp edges.

17.3 The membrane must be unrolled without tension onto the prepared substrate and allowed to 'relax' for at least 30 minutes prior to installation.

17.4 The membrane is installed from the lowest point and each layer is installed across the roof fall allowing a 100 mm side overlap and a 200 mm end overlap. The cap sheet layer must be offset against the base sheet layer.

## Inspections

18.1 Critical areas of inspection for waterproofing systems are:

- Construction of substrates, including crack control and installation of bond breakers and movement control joints.
- Moisture content of the substrate prior to the application of the membrane.
- Acceptance of the substrate by the membrane installer prior to application of the membrane.
- Installation of the membrane to the manufacturer's instructions.

## Health and Safety

19.1 Safe use and handling procedures for Casali Dermabit Roof and Deck Membrane Systems are provided in the Technical Literature. The products must be used in conjunction with the relevant Material Safety Data Sheets for each membrane.

## Basis of Appraisal

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

### Tests

20.1 The following is a summary of the testing and test reports on Casali Dermabit Roof and Deck Membrane Systems:

- ICITE for polyester reinforcement, coating mass, tensile strength, elongation, tear strength, dimensional stability, low temperature flexibility, heat resistance, unrolling at low temperatures, slip resistance, water pressure, static and dynamic indentation, fatigue cycling, peel resistance, air pressure and tensile strength of joints.
- British Board of Agrément evaluation for the issue of the current BBA Certificate covering these products.
- BRANZ for adhesion to plywood substrates.

The above test methods and results have been reviewed by BRANZ and found to be satisfactory.

### Other Investigations

21.1 A durability opinion has been provided by BRANZ technical experts.

21.2 Installation of the membranes has been assessed by BRANZ for practicability of installation and found to be satisfactory.

21.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

### Quality

22.1 The manufacture of the membranes has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. The manufacturer of Casali Dermabit Roof and Deck Membrane Systems has been assessed and registered as meeting the requirements of Directive 89/106/EEC.

22.2 The quality of the supply of products to the New Zealand market is the responsibility of Allco Waterproofing Solutions Ltd.

22.3 Quality on site is the responsibility of the Allco Waterproofing Solutions Ltd Licensed and Trained Installers.

22.4 Designers are responsible for the building design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of Allco Waterproofing Solutions Ltd and this Appraisal.

22.5 Building owners are responsible for the maintenance of the membrane systems and tiling/timber protection systems in accordance with the instructions of Allco Waterproofing Solutions Ltd and this Appraisal.

### Sources of Information

- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2269: 2008 Plywood – structural.
- AS/NZS 2908.2: 2000 Cellulose-cement products - Flat sheet.
- BBA Certificate No. 95/3099, Casali Dermabit Extra 4170 4 mm and 43170 Ardesiato (Slated) Roof Waterproofing Membranes.
- BRANZ Good Practice Guide – Membrane Roofing, reprint October 2003.
- NZS 3101: 2006 The design of concrete structures.
- NZS 3604: 2011 Timber-framed buildings.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (Amendment 5, 1 August 2011).
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

#### **Amendment No. 1, dated 29 July 2011.**

This Appraisal has been amended to update Section 15, Water Supplies.

#### **Amendment No. 2, dated 31 January 2012.**

This Appraisal has been amended to update clause changes as required by the introduction of NZS 3604: 2011 and NZBC Acceptable Solution E2/AS1 Third Edition, Amendment 5.

#### **Amendment No. 3, dated 4 July 2012.**

This Appraisal has been amended to include decks.

#### **Amendment No. 4, dated 23 August 2013.**

This Appraisal has been amended to update clause changes as required by the introduction of NZBC Fire Clauses C1 – C6 Protection from Fire and A3 Building Importance Levels.

#### **Amendment No. 5, dated 10 March 2014.**

This Appraisal has been amended to clarify deck sizes.



## BRANZ

In the opinion of BRANZ, **Casali Dermabit Roof and Deck Membrane Systems** are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Allco Waterproofing Solutions 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. **Allco Waterproofing Solutions 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.
3. 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.
4. 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 **Allco Waterproofing Solutions Ltd**.
5. 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.
6. BRANZ provides no certification, guarantee, indemnity or warranty, to **Allco Waterproofing Solutions Ltd** or any third party.

For BRANZ

P Burghout  
Chief Executive

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