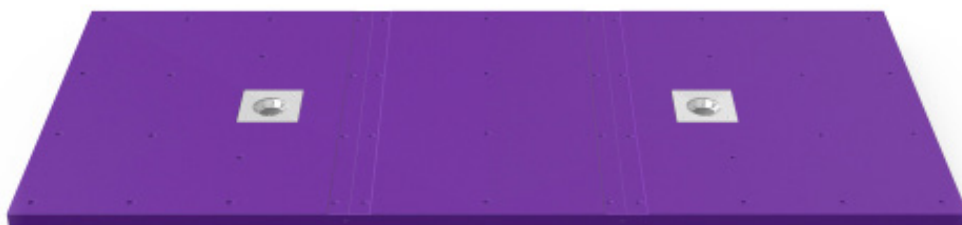




**BRANZ Appraised**  
Appraisal No. 1116 [2020]

## DEMTECH BALCONY FLOOR PANELLING SYSTEM

Appraisal No. 1116 [2020]



### BRANZ Appraisals

Technical Assessments of  
products for building and  
construction.



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### Product

- 1.1 The Demtech Balcony Floor Panelling System is a prefabricated waterproof panel system for use under a waterproofing membrane and ceramic or stone tile finishes on external balconies.

### Scope

- 2.1 Demtech Balcony Floor Panelling System has been appraised for use as a pre-formed waterproof panelling system for pedestrian balconies within the following scope:
- on substrates of plywood or compressed fibre cement sheet on timber or steel frame construction; or,
  - on substrates of concrete; and,
  - when protected from ultraviolet (UV) exposure and physical damage by ceramic or stone tiles; and,
  - with minimum falls for balconies of 1:100; and,
  - where balconies are designed and constructed such that deflections do not exceed 1/360<sup>th</sup> of the span.
- 2.2 The structural and weathertightness design for each specific structure is the responsibility of the building designer.
- 2.3 The waterproofing membrane and ceramic or stone tile finishes are outside the scope of this Appraisal.
- 2.4 Installation of the Demtech Balcony Floor Panelling System and accessories must be carried out by Demtech Australia Pty Ltd trained installers.

### Building Regulations

#### Building Code of Australia (BCA)

- 3.1 In the opinion of BRANZ, the Demtech Balcony Floor Panelling 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 National Construction Code (NCC):

#### NCC 2019 Building Code of Australia - Volume One [NCC Volume One]

**Part F1 – DAMP AND WEATHERPROOFING:** Performance FP1.4. The Demtech Balcony Floor Panelling System contributes to meeting this requirement. See Paragraphs 14.1-14.9.

#### NCC 2019 Building Code of Australia - Volume Two [NCC Volume Two]

**Part 2.2 – DAMP AND WEATHERPROOFING:** Performance P2.2.2. The Demtech Balcony Floor Panelling System contributes to meeting this requirement. See Paragraph 14.1-14.9.

## Technical Specification

- 4.1 The Demtech Balcony Floor Panelling System consists of the following components:
- **Floor panels** - made from a high density polyurethane foam with a factory-applied protective coating. They are supplied in various dimensions. They are factory waterproofed with the BRANZ Appraised Cureflex waterproofing membrane, Appraisal No. 1002 [2018].

### Accessories

- **Aluminium trim** - used as a perimeter around the floor panels.
  - **PVC flashings** - used in unexposed areas to flash the wall to the floor panels.
  - **Waste system** - specified by Demtech Australia Pty Ltd and covered by a WaterMark certification.
  - **Construction adhesive** - specified by Demtech Australia Pty Ltd, used to adhere the floor panels to the substrate.
  - **Sealant** - specified by Demtech Australia Pty Ltd, used to seal the aluminium trim against the wall and the panels, and also used for the PVC unexposed flashings and waste system components.
- 4.2 Accessories used with the Demtech Balcony Floor Panelling System which are supplied by the building contractor, such as the BRANZ appraised waterproofing membrane, the tile adhesive and tiles, are outside the scope of this Appraisal.

## Handling and Storage

- 5.1 The Demtech Balcony Floor Panelling System is supplied wrapped on pallets with plastic sleeves. These must be stored inside, in dry conditions, out of direct sunlight and extremes of temperature. Care must be taken to avoid damage to the edges, ends and surfaces of the components. Demtech Balcony Floor Panelling System floor panels must always be carried on edge.

## Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Demtech Balcony Floor Panelling 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

### General

- 7.1 The Demtech Balcony Floor Panelling System is for use on balconies where an impervious waterproof system is required to prevent damage to building elements and adjoining areas.
- 7.2 The Demtech Balcony Floor Panelling System must be protected from exposure to UV light and from physical damage by ceramic or stone tile finishes within seven days.
- 7.3 The effective control of internal moisture must be considered at the design stage due to the impermeability of the waterproofing membrane that is factory applied to the panels. Refer to the BRANZ Good Practice Guide: Membrane Roofing.
- 7.4 Movement and control joints may be required depending on the shape and size of the balcony, and the finish specified. Design guidelines for control joints for tiles can be found in the BRANZ Good Practice Guide: Tiling.
- 7.5 Where the system abuts 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.

## Substrates

### Floor linings

- 8.1 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 balcony 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 balcony, such as deflection from gravity and live loads. Installation must be in accordance with the instructions of the manufacturer.
- 8.2 Concrete substrates must be to a specific engineering design meeting the requirements of the BCA, AS 3600 and AS 2870.
- 8.3 Structural plywood must be a minimum of 17 mm thick complying with AS/NZS 2269. LOSP treated plywood must not be used. The structural plywood must be supported with joists at a maximum spacing as detailed in AS 1684.3, Table 3.2. The plywood must be fixed with either 2.8 mm diameter flathead or bullet head hand-driven nails, or 2.5 mm diameter gun-driven nails with a length not less than 2.5 times the thickness of the plywood sheet. The plywood must be fixed at 150 mm centres along the sheet ends and 300 mm centres at intermediate joists and along noggings.

## Structure

- 9.1 Existing balconies must be inspected and be of good condition and have equivalent performance to a new balcony. If present, mould or fungal growth on the substrate should be treated prior to fixing the Demtech Balcony Floor Panelling System. Demtech Australia Pty Ltd may need to be consulted for suitable anti-fungal products.
- 9.2 All substrates, new and existing, will be structurally suitable for tiling when the maximum deflection of the floor joists is 1/360<sup>th</sup> of the span.
- 9.3 The Demtech Balcony Floor Panelling System is capable of resisting a uniformly distributed load of 1.5 kN/m<sup>2</sup> with minimal deflection. The level of resistance to concentrated loads will depend upon the size and strength of the tiles used to cover the Demtech Balcony Floor Panelling System.

## Durability

### Serviceable Life

- 10.1 Demtech Balcony Floor Panelling System, when subjected to normal conditions of environment and use, is expected to have a serviceable life of at least 15 years and be compatible with ceramic or stone tile finishes with a design serviceable life of 15-25 years.

## Maintenance

- 11.1 No maintenance of the Demtech Balcony Floor Panelling System will be required provided significant substrate movement does not occur and the waterproofing membrane and tile finish remain intact. Regular checks must be made of the tiling to ensure it is sound and will not allow moisture to penetrate. Any cracks or damage must be repaired immediately by repairing the tiles, grout and sealant.
- 11.2 In the event of damage to the waterproofing membrane, the tiling must be removed and the membrane repaired by removing the damaged portion and applying a patch as for new work.
- 11.3 Drainage outlets must be maintained to operate effectively, and tile finishes must be kept clean.

## Outbreak of Fire

- 12.1 The Demtech Balcony Floor Panelling System must be protected or separated from fireplaces, heating appliances, chimneys and flues in accordance with the requirements of NCC Volume One, Performance GP 2.1, and NCC Volume Two, Performance P2.3.3 and Performance 3.7.3.

## Spread of Fire

- 13.1 The Demtech Balcony Floor Panelling System is considered an exempt building material, as listed in NCC Specifications C1.10.

## Damp and Weatherproofing

- 14.1 Balconies must be designed and constructed to meet code compliance with NCC Volume One, Performance FP1.4 and NCC Volume Two Performance P2.2.2. They must also take account of snowfalls in snow prone areas.
- 14.2 When installed in accordance with this Appraisal and the Technical Literature, Demtech Balcony Floor Panelling System will prevent the penetration of water and will therefore contribute to meeting code compliance with NCC Volume One Performance FP 1.4 and NCC Volume Two Performance P2.2.2. The panels are impervious to water and will give a weathertight balcony.
- 14.3 Demtech Balcony Floor Panelling System is impermeable, therefore a means of dissipating construction moisture must be provided in the building design and construction to meet code compliance with BCA.
- 14.4 The minimum fall to balconies is 1 in 100. The minimum fall to gutters is 1 in 100 and all falls must slope to an outlet. Inadequate falls will allow moisture to collect and increase the risk of deterioration of the membrane and tile finish.
- 14.5 Balcony falls must be built into the substrate and not created with mortar screeds applied over the waterproofing membrane.
- 14.6 Allowance for deflection and settlement of the substrate must be made in the design of the balcony to ensure falls are maintained and no ponding of water can occur.
- 14.7 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 balcony does not drain to an external gutter or spouting.
- 14.8 Penetrations and up-stands of the waterproofing membrane must be raised above the level of any possible flooding caused by blockage of balcony drainage.
- 14.9 The design of details not covered by the Technical Literature is subject to specific weathertightness design and is outside the scope of this Appraisal.

## Installation Information

### Installation Skill Level Requirement

- 15.1 Installation of the substrates for the Demtech Balcony Floor Panelling System must be completed by tradespeople with an understanding of exterior construction.
- 15.2 Installation of the Demtech Balcony Floor Panelling System must always be carried out in accordance with the Demtech Balcony Floor Panelling System's Technical Literature, by Demtech Australia Pty Ltd trained installers.

### Preparation of Substrates

- 16.1 Substrates must be dry, clean, level and secure 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 installation. The concrete can be checked for dryness by using a hygrometer, as set out in BRANZ Bulletin No. 585.
- 16.3 The moisture content of the timber substructure must be a maximum of 20% and fibre cement sheets must be dry at the time of installation. This will generally require the fibre cement sheets to be covered until just before the waterproofing membrane is applied, to prevent rain wetting.
- 16.4 Substrates must be primed with a primer as specified in the Technical Literature from Demtech Australia Pty Ltd, and allowed to dry fully before the Demtech Balcony Floor Panelling System is installed:

### Panel Installation

- 17.1 It is recommended that the installer dry fit the components of the Demtech Balcony Floor Panelling System before final fixing to ensure a good fit.
- 17.2 The installation of the Demtech Balcony Floor Panelling System must be in accordance with the instructions given within the Demtech Australia Pty Ltd Technical Literature and this Appraisal.
- 17.3 After the Demtech Balcony Floor Panelling System is installed, a suitable BRANZ Appraised waterproofing membrane suitable for use on exterior balconies shall be installed.

### Tiling

- 18.1 Tiling must be carried out using a flexible polymer-modified cementitious based tile adhesive in accordance with the tile adhesive manufacturer's instructions.
- 18.2 Tiling must be undertaken in accordance with AS 3958.1 and the BRANZ Good Practice Guide: Tiling. The compatibility of the tile adhesive must be confirmed with the adhesive manufacturer or Demtech Australia Pty Ltd.

### Inspections

- 19.1 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 Demtech Balcony Floor Panelling System.
  - Acceptance of the substrate by the panel system installer prior to application of the panel system.
  - Installation of the panel system to the manufacturer's instructions, particularly use of the correct reinforcement.

### Health and Safety

- 20.1 Safe use and handling procedures for the Demtech Balcony Floor Panelling System are provided in the Technical Literature. The products must be used in conjunction with the relevant Material Safety Data Sheet.

### Basis of Appraisal

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

### Tests

- 21.1 The following testing of the Demtech Balcony Floor Panelling System has been undertaken by the following organisations:
  - Amdel Limited, Australia – water absorption; tensile strength and elongation; shore A hardness; water vapour transmission; accelerated weathering and low temperature flexibility.
  - CSIRO, Australia – mass per unit area and gravimetric thickness; tensile strength and elongation at break; tensile strength and elongation at break after UV exposure, including immersion in water, bleach and detergent; loss on heating; moving joint test and cyclic strain.
- 21.2 Test methods and results have been reviewed by BRANZ and found to be satisfactory.

### Other Investigations

- 22.1 An assessment was made of the durability of Demtech Balcony Floor Panelling System by BRANZ technical experts.
- 22.2 Site inspections were carried out by BRANZ to examine the practicability of installation.
- 22.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

### Quality

- 23.1 The manufacture of the Demtech Balcony Floor Panelling System has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 23.2 The quality of supply to the market is the responsibility of Demtech Australia Pty Ltd.
- 23.3 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the framing system and substrate.
- 23.4 Quality on site is the responsibility of the Demtech Australia Pty Ltd trained installers.
- 23.5 Building owners are responsible for the maintenance of the ceramic or stone tiles in accordance with the instructions of the ceramic or stone tile supplier.

### Sources of Information

- AS 3958.1: 2007 Ceramic Tiles - Guide to the installation of ceramic tiles.
- AS 4654.1 - 2012 Waterproofing membranes for external above-ground use Materials.
- AS 4654.2 - 2012 Waterproofing membranes for external above-ground use.
- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2908.2: 2000 Cellulose-cement products - Flat sheet.
- AS/NZS 4858 - 2004 Wet area membranes.
- BRANZ Bulletin No. 585 - Measuring moisture in timber and concrete.
- BRANZ Good Practice Guide - Tiling, April 2015.
- National Construction Code, Building Code Australia 2019, Australian Building Codes Board.



In the opinion of BRANZ, the **Demtech Balcony Floor Panelling 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 **Demtech Australia 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. **Demtech Australia 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 **Demtech Australia 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 **Demtech Australia Pty Ltd** or any third party.

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**For BRANZ**



**Chelydra Percy**

Chief Executive

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