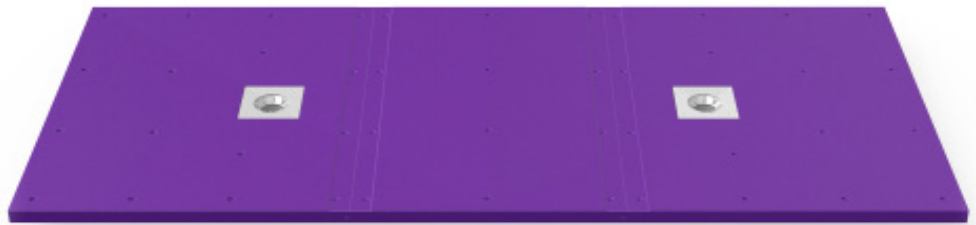




**BRANZ Appraised**  
Appraisal No. 1115 [2020]

## DEMTECH DECK AND BALCONY FLOOR PANELLING SYSTEM



**Appraisal No. 1115 [2020]**

### BRANZ Appraisals

Technical Assessments of  
products for building and  
construction.



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### Product

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

### Scope

- 2.1 Demtech Deck and Balcony Floor Panelling System has been appraised for use as a pre-formed waterproof deck and balcony panel system for buildings within the following scope:
  - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; or,
  - the scope of limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area when subject to specific engineering design; and,
  - with substrates of fibre cement compressed sheet, suspended concrete slab, or plywood; and,
  - with minimum falls for decks and balconies of 1:40; and,
  - with deck and balcony size limited to 40 m<sup>2</sup>; and,
  - situated in NZS 3604 Wind Zones up to, and including, Extra High.
- 2.2 Decks and balconies must be designed and constructed in accordance with the following limitations:
  - with the membranes continually protected from exposure to ultraviolet (UV) light and from physical damage by ceramic or stone tile finishes; and,
  - with no steps within the deck level and no down pipes discharging directly onto the deck.
- 2.3 Movement and control joints in the substrate must be carried through the waterproofing membrane and tile finish. The design and construction of the substrate and movement and control joints is specific to each building, and is therefore the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.
- 2.4 The waterproofing membrane and ceramic or stone tile finishes are outside the scope of this Appraisal.
- 2.5 The Demtech Deck and Balcony Floor Panelling System must be installed by Demtech Australia Pty Ltd trained installers.

## Building Regulations

### New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Demtech Deck and Balcony Floor Panelling System, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

**Clause B2 DURABILITY:** Performance B2.3.1 [b] 15 years and B2.3.2. Demtech Deck and Balcony Floor Panelling System meets these requirements. See Paragraph 10.1.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.1 and E2.3.2. Decks and balconies incorporating the Demtech Deck and Balcony Floor Panelling System contribute to meeting these requirements. See Paragraphs 13.1–13.9.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Demtech Deck and Balcony Floor Panelling System meets this requirement.

## Technical Specification

4.1 The Demtech Deck and 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-sealed with the BRANZ Appraised Cureflex waterproofing membrane, Appraisal No. 1002 [2018].

### Accessories

- **Balcony edge 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 balcony edge trim against the wall and the tray, and also used for the PVC unexposed flashings and waste system components.
- 4.2 Accessories used with the Demtech Deck and 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 floor panels of the Demtech Deck and Balcony Floor Panelling System are 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 Deck and Balcony Floor Panelling System 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 the Demtech Deck and 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 Deck and Balcony Floor Panelling System is for use on decks and balconies where an impervious waterproof system is required. It provides a screed replacement panelling system, allowing for a BRANZ appraised waterproofing membrane to be applied and then the direct adhesion of ceramic tiles.
- 7.2 The Demtech Deck and 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 Movement and control joints may be required depending on the shape and size of the deck, and the finish specified. Design guidelines for control joints for tiles can be found in the BRANZ Good Practice Guide: Tiling.

### 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 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 or 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 NZBC, such as concrete construction to NZS 3101.
- 8.3 Plywood must be a minimum of 17 mm thick complying with AS/NZS 2269, CD Grade Structural with the sanded C face upwards and treated to H3 [CCA treated]. LOSP treated plywood must not be used.
- 8.4 The plywood must be laid with the face grain at right angles to the floor joists. Joists must be at 400 mm centres maximum and the edges of the sheets must be supported with blocking or framing. The plywood must be fixed with 10 g x 50 mm stainless steel countersunk head screws at 150 mm centres along the sheet edges and 200 mm centres to all framing through the body of the sheets.

### Structure

- 9.1 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. In all cases, framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and that all sheet edges are fully supported.
- 9.2 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 must be reduced by 20%.
- 9.3 Steel framing systems must comply with NASH requirements.
- 9.4 Existing decks or balconies must be inspected and be of good condition and have equivalent performance to a new deck or balcony. If present, mould or fungal growth on the substrate should be treated prior to fixing the Demtech Deck and Balcony Floor Panelling System. Demtech Australia Pty Ltd may need to be consulted for suitable anti-fungal products.
- 9.5 The Demtech Deck and Balcony Floor Panelling System is capable of resisting a uniformly distributed load of 1.5 kN/m<sup>2</sup> with minimal deflection.
- 9.6 The level of resistance to concentrated loads will depend upon the size and strength of the tiles used to cover the Demtech Deck and Balcony Floor Panelling System.

## Durability

### Serviceable Life

- 10.1 Demtech Deck and Balcony Floor Panneling 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 Deck and Balcony Floor Panneling System will be required provided significant substrate movement does not occur and the tile finish remains 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 Demtech Deck and Balcony Floor Panneling System, the tiling must be removed and the waterproofing membrane and floor panels 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.

## Prevention of Fire Occurring

- 12.1 Separation or protection must be provided to the Demtech Deck and Balcony Floor Panneling System from heat sources such as fireplaces, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 and C/AS2 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

## External Moisture

- 13.1 Decks and balconies 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 provided by the Technical Literature which gives details aligned with NZBC Acceptable Solution E2/AS1.
- 13.2 When installed in accordance with this Appraisal and the Technical Literature, Demtech Deck and Balcony Floor Panneling System will contribute to prevent the penetration of water and will therefore meet code compliance with NZBC Clause E2.3.2. The system is impervious to water and contributes to give a weathertight deck or balcony.
- 13.3 Demtech Deck and Balcony Floor Panneling System is impermeable, therefore a means of dissipating construction moisture must be provided in the building design and construction to meet code compliance with NZBC Clause E2.3.6.
- 13.4 The minimum fall to decks and balconies is 1 in 40. 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 Demtech Deck and Balcony Floor Panneling System and the tile finish.
- 13.5 Deck and balcony falls are built into the Demtech Deck and Balcony Floor Panneling System.
- 13.6 Allowance for deflection and settlement of the substrate must be made in the design of the deck or balcony to ensure falls are maintained and no ponding of water can occur.
- 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 deck or balcony does not drain to an external gutter or spouting.
- 13.8 Penetrations and upstands of the waterproofing membrane must be raised above the level of any possible flooding caused by blockage of deck and balcony 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.

## Installation Information

### Installation Skill Level Requirement

- 14.1 Installation of the floor substrates for the Demtech Deck and Balcony Floor Panelling System must be completed by or under the supervision of Licensed Building Practitioners with the relevant Licence Class.
- 14.2 The Demtech Deck and Balcony Floor Panelling System must be installed by Demtech Australia Pty Ltd trained installers.
- 14.3 Installation of the system must always be carried out in accordance with the Demtech Deck and Balcony Floor Panelling System Technical Literature and this Appraisal.

### Preparation of Substrates

- 15.1 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.
- 15.2 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. 585.
- 15.3 The moisture content of the timber substructure must be a maximum of 20% and fibre cement sheets must be dry at the time of membrane application. This will generally require the fibre cement sheets to be covered until just before the membrane is applied, to prevent rain wetting.
- 15.4 Substrates must be primed with a primer as specified by Demtech Australia Pty Ltd, and allowed to dry fully before the Demtech Deck and Balcony Floor Panelling System is installed.

### Panel Installation

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

### Tiling

- 17.1 Tiling must be carried out using a flexible polymer-modified cementitious based tile adhesive in accordance with the tile adhesive manufacturer's instructions.
- 17.2 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

- 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 Demtech Deck and 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

- 19.1 Safe use and handling procedures for the Demtech Deck and Balcony Floor Panneling 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

- 20.1 The following testing of the Demtech Deck and Balcony Floor Panneling 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.
- 20.2 Test methods and results have been reviewed by BRANZ and found to be satisfactory.

### Other Investigations

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

### Quality

- 22.1 The manufacture of the Demtech Deck and Balcony Floor Panneling 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.
- 22.2 The quality of supply to the market is the responsibility of Demtech Australia Pty Ltd.
- 22.3 Designers are responsible for the building design, and Licensed Building Practitioners are responsible for the quality of installation of the framing system and substrate.
- 22.4 Quality on site is the responsibility of the Demtech Australia Pty Ltd trained installers.
- 22.5 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/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.
- BRANZ Good Practice Guide - Membrane Roofing, October 2015.
- NZS 3101: 2006 Concrete Structures Standard.
- NZS 3604: 2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



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19 October 2020

DEMOTECH DECK AND BALCONY  
FLOOR PANELLING SYSTEM



In the opinion of BRANZ, the **Demtech Deck and 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

Date of Issue:

19 October 2020