



BRANZ Appraised
Appraisal No. 1120 [2021]

BARRIERBOND WPM AND BARRIERBOND FAST (2P) EXTERIOR MEMBRANES

Appraisal No. 1120 [2021]



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 Barrierbond WPM and Barrierbond Fast (2P) Exterior Membranes are liquid-applied waterproofing membranes for use under ceramic or stone tile finishes on external decks and balconies.

Scope

- 2.1 Barrierbond WPM and Barrierbond Fast (2P) Exterior Membranes have been appraised for use as waterproofing membranes for buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
 - with timber supporting structures designed and constructed in accordance with the NZBC; and,
 - with a substrate of fibre cement compressed sheet; and,
 - with decks that have a maximum size of 40 m²; and,
 - situated in all Wind Zones of NZS 3604 up to, and including, Extra High.
- 2.2 Barrierbond WPM and Barrierbond Fast (2P) Exterior Membranes have also been appraised for use as waterproofing membranes on specifically designed buildings within the following scope:
 - with building structures subject to specific engineering design; and,
 - with deck and balcony supporting structures of timber framing with a substrate of fibre cement compressed sheet; or,
 - with a substrate of suspended concrete slab; and,
 - subjected to maximum wind pressures [Refer Paragraph 7.8]; 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 This Appraisal is limited to decks and balconies within the following scope:
 - constructed to suitable falls [Refer to Paragraphs 12.4-12.9]; and,
 - with the membranes continually protected from exposure to ultraviolet (UV) light and from physical damage by ceramic or stone tile finishes on a pedestal system; and,
 - with decks and balconies designed and constructed such that deflections do not exceed 1/360th of the span; and,
 - with no steps within the deck level, no integral roof gardens and no down pipes discharging directly onto the deck.
- 2.4 Building structural movement and control joints in the substrate must be carried through to the tile finish. The design and construction of the substrate and movement and control joints are specific to each building, and are therefore the responsibility of the building designer and building contractor and are outside the scope of this Appraisal.



- 2.5 Ceramic or stone tile finishes are outside the scope of this Appraisal.
- 2.6 The membranes must be installed by trained applicators, approved by Bonded Technologies Pty Ltd.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes, 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. Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes meet these requirements. See Paragraph 9.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2. Decks and balconies incorporating Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes meet these requirements. See Paragraphs 12.1-12.9.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes meet this requirement.

Technical Specification

- 4.1 Materials supplied by Bonded Technologies Pty Ltd are as follows:
 - **Barrierbond WPM Membrane** - is a Class III, highly elastomeric, one-part SBR waterproofing membrane. It is supplied as a liquid paste in 15 L containers.
 - **Barrierbond Fast [2P]**- is a fast drying, two-part waterproofing membrane. It is supplied as a powder in a 15 kg bag and liquid in 10 L pails, coloured light grey when mixed.
 - **Prepbond AP** - is an acrylic-based wall and floor primer for use on all porous substrates.
 - **Prepbond NP Grip** - is a solvent free primer specifically designed for use on all non-porous substrates.
 - **Bond Seal Tape** - Uncured butyl-rubber peel n stick tape (flexiseal system).

Handling and Storage

- 5.1 All materials must be stored inside, up off concrete floors, in dry conditions, out of direct sunlight and out of freezing conditions. The materials in the original unopened packaging have a shelf life of 12 months from date of manufacture. Once opened, the materials must be used within 3 months.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for reference to the current Technical Literature for the Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes. 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. The Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes listing on the BRANZ website excludes specific details. These details have not been assessed by BRANZ and are outside the scope of the Appraisal.

Design Information

General

- 7.1 Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes are for use on decks and balconies where an impervious waterproof membrane is required to prevent damage to building elements and adjoining areas.
- 7.2 The Barrierbond Fast [2P] product is designed to be used where a quicker curing time is required, such as in cool or humid conditions.

- 7.3 The membranes must be protected from exposure to UV light and from physical damage by ceramic or stone tile finishes adhered to the membranes or installed on a pedestal system.
- 7.4 The effective control of internal moisture must be considered at the design stage due to the impermeability of the membranes. Refer to the BRANZ Good Practice Guide - Membrane Roofing.
- 7.5 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.
- 7.6 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.
- 7.7 Timber framing supporting the substrates must be constructed such that deflections do not exceed 1/360th of the span. Where NZS 3604 is used, the allowable joist spans given in Table 7.1 shall be reduced by 20%.
- 7.8 Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes are suitable for use in areas subject to maximum wind pressures of 6 kPa Ultimate Limit State [ULS].

Substrates

Fibre Cement Compressed Sheet

- 8.1 Fibre cement compressed sheet must be manufactured to comply with the requirements of AS 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 instructions of the manufacturer.

Concrete

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

Durability

Serviceable Life

- 9.1 Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes, 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.

Maintenance

- 10.1 No maintenance of the membranes 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 tiling and any grout or sealant.
- 10.2 In the event of damage to the membranes, the tiling must be removed and the membrane repaired by removing the damaged portion and applying a patch as for new work.
- 10.3 Drainage outlets must be maintained to operate effectively, and tile finishes must be kept clean. Cleaning materials that may affect polymer based membranes must not be used.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes from heat sources such as fireplaces, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1, C/AS2 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.



External Moisture

- 12.1 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 given by the Technical Literature which provides details aligned with NZBC Acceptable Solution E2/AS1.
- 12.2 When installed in accordance with this Appraisal and the Technical Literature, Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes will prevent the penetration of water and will therefore meet code compliance with NZBC Clause E2.3.2. The membranes are impervious to water and will give a weathertight deck or balcony.
- 12.3 Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes are 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.
- 12.4 The minimum fall to decks and balconies must be 1 in 40 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 tiling finish.
- 12.5 Deck and balcony falls must be built into the substrate.
- 12.6 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.
- 12.7 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.
- 12.8 Penetrations and upstands of the membranes must be raised above the level of any possible flooding caused by blockage of deck and balcony drainage.
- 12.9 The design of details not covered by the Technical Literature and, junction details for buildings covered by Paragraph 2.3 of this Appraisal, are subject to specific weathertightness design and are outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

- 13.1 Installation of the membranes must be completed by trained applicators, approved by Bonded Technologies Pty Ltd, who have experience in the application of waterproofing membranes and understand waterproofing principles.
- 13.2 Installation of substrates must be completed in accordance with instructions given within the Bonded Technologies Pty Ltd Technical Literature and this Appraisal by, or under the supervision of a Licensed Building Practitioner [LBP] with the relevant Licence Class.

Preparation of Substrates

- 14.1 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.
- 14.2 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.
- 14.3 The moisture content of the timber substructure must be a maximum of 20% and fibre cement sheets must be dry at time of membrane application. This will generally require the fibre cement sheets to be covered until just before the membrane is laid, to prevent rain wetting.
- 14.4 Substrates must be primed with Prepbond AP or Prepbond NP Grip depending on the substrate and allowed to dry fully before the membrane is installed.



Membrane Installation

- 15.1 Installation must not be undertaken where the substrate surface temperature is below 5°C or above 35°C.
- 15.2 Barrierbond Fast [2P] liquid and Barrierbond Fast [2P] powder must be mixed and left to stand for 5 minutes before re-mixing, then applying. Barrierbond WPM Membrane must be thoroughly stirred before application.
- 15.3 The membranes must be applied in a minimum of two coats at the rates set out in the Technical Literature. Subsequent coats must be applied in an opposite direction to the previous coat. The total finished system thickness of the membranes must be a minimum of 1.2 mm.
- 15.4 Application can be made by roller (medium/long nap), brush (long bristle), or a non-edge serrated flat steel trowel.
- 15.5 In all situations, reinforcement provisions as set out in this Appraisal and the Technical Literature apply.
- 15.6 It is strongly recommended that the membrane is protected with temporary covers until it is fully cured in case of mechanical damage or rain wetting.
- 15.7 Clean up may be undertaken with water.

Tiling

- 16.1 The membranes must be fully cured before tiling. The cured membranes must be protected at all times to prevent mechanical damage, so may require temporary covers until the finishing is completed.
- 16.2 Tiling must be undertaken in accordance with AS 3958.1 and the BRANZ Good Practice Guide - Tiling. The compatibility of tile adhesive must be confirmed with the adhesive manufacturer or Bonded Technologies Pty Ltd.

Inspections

- 17.1 Critical areas of inspection for waterproofing systems are:
 - Construction of substrates, including crack control and installation of under flashings and movement control joints.
 - Moisture content of the substrate prior to the application of the membranes.
 - Acceptance of the substrate by the membrane installer prior to application of the membrane.
 - Installation of the membrane to the manufacturer's instructions, particularly installation to the correct thickness and use of reinforcement.
 - Membranes curing and integrity prior to the installation of tiles, including protection from moisture, frost and mechanical damage during curing.

Health and Safety

- 18.1 Safe use and handling procedures for the membrane systems are provided in the Technical Literature. The products must be used in conjunction with the relevant Material Safety Data Sheet for each membrane.

Basis of Appraisal

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

Tests

- 19.1 The following testing of Barrierbond WPM Membrane 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.
- 19.2 The following testing of Barrierbond Fast [2P] has been undertaken by Amdel Limited, Australia - wet area durability testing in accordance with AS/NZS 4858 covering immersion in water, bleach, detergent, and heat ageing; UV ageing; water absorption; low temperature flexibility and water vapour transmission.
- 19.3 The above test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

- 20.1 An assessment was made of the durability of the Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes by BRANZ technical experts.
- 20.2 Site inspections have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.
- 20.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

- 21.1 The manufacture of the membranes 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.
- 21.2 The quality management system of the membrane's manufacturer has been assessed by BRANZ and found to be satisfactory.
- 21.3 The quality of supply of the membrane system materials to the market is the responsibility of Bonded Technologies Pty Ltd.
- 21.4 Quality on site is the responsibility of the trained applicators, approved by Bonded Technologies Pty Ltd.
- 21.5 Designers are responsible for the structure and substrate design, and building contractors are responsible for the quality of construction of the structure and substrate systems in accordance with the instructions of the substrate manufacturer, Bonded Technologies Pty Ltd and this Appraisal.
- 21.6 Building owners are responsible for the maintenance of the tiling systems in accordance with the instructions of Bonded Technologies Pty Ltd.



Sources of Information

- AS 2908.2: 2000 Cellulose-cement products - Flat sheet.
- AS 3958.1 - 2007 Ceramic tiles - Guide to the installation of ceramic tiles.
- ASTM D2919 - 01 Standard test method for determining durability of adhesive joints stressed in shear by tension loading.
- AS/NZS 1170: 2002 Structural design actions.
- BRANZ Bulletin No. 585 Measuring Moisture in Timber and Concrete, June 2015.
- BRANZ Good Practice Guide - Membrane Roofing, October 2015.
- BRANZ Good Practice Guide - Tiling, April 2015.
- NZS 3101: 2006 The design of concrete structures.
- 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.



In the opinion of BRANZ, **Barrierbond WPM and Barrierbond Fast [2P] Exterior Membranes** 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 **Bonded Technologies 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. **Bonded Technologies 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 **Bonded Technologies 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 **Bonded Technologies Pty Ltd** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

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