



BRANZ Appraised

Appraisal No. 475 [2025]

FLEXI-SEAL® EXTERIOR WATERPROOFING SYSTEM



Appraisal No. 475 [2025]

This Appraisal replaces BRANZ
Appraisal No. 475 [2019]

BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 Flexi-Seal® Exterior Waterproofing System is a liquid-applied waterproofing membrane system for use under ceramic or stone tile finishes on exterior decks and balconies.

Scope

- 2.1 Flexi-Seal® Exterior Waterproofing System has been appraised for use as a deck and balcony waterproofing membrane for buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; or,
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area when subject to specific engineering design; and,
 - with substrates of plywood, fibre cement compressed sheet or suspended concrete slab; and,
 - with minimum falls for decks and balconies of 1:40; and,
 - with deck and balcony size limited to 40 m²; 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 membrane 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 downpipes discharging directly onto the deck.
- 2.3 Movement and control joints in the substrate must be carried through the 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 ceramic or stone tile finishes are outside the scope of this Appraisal.
- 2.5 The membrane must be installed by trained installers, approved by DGL Bondlast.

Building Regulations

New Zealand Building Code [NZBC]

3.1 In the opinion of BRANZ, Flexi-Seal® Exterior Waterproofing 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. Flexi-Seal® Exterior Waterproofing System meets these requirements. See Paragraph 9.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2. Decks and balconies incorporating Flexi-Seal® Exterior Waterproofing System meet these requirements. See Paragraphs 12.1–12.9.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Flexi-Seal® Exterior Waterproofing System meets this requirement.

Technical Specification

4.1 Materials supplied by DGL Bondlast are as follows:

- **Flexi-Seal® PUD** is a single-part, water-based polyurethane modified, flexible waterproofing membrane. It is coloured blue and supplied in 4 and 15 L pails.
- **Universal Primer** is a green liquid concentrated primer for concrete and wet area plasterboard substrates.
- **RL20 Grey** is a two-part epoxy primer used to spot prime galvanised nails and screw heads, as well as PVC and steel waste traps, and to prime plywood and particle board substrates.
- **Flexi-Seal® Reinforcing Bandage** is a polyester, woven bandage used in conjunction with Universal Primer as a bond breaking mechanism to reinforce wall/wall and wall/floor junctions as well as cracks in concrete floors.
- **Butylseal Tape** is a butyl rubber tape used to detail wall/wall joints and all exterior joints. It is available in a roll of 80 or 150 mm wide and 15 m long.
- **Aftek FlexPro50FC or NPT U-Seal 500** are polyurethane compounds designed to fill control joints such as in concrete floors.

Handling and Storage

5.1 All materials must be stored inside, away from direct sunlight, heat and flame, in a dry space, at temperatures between 6°C and 32°C. Materials must not be removed from their containers until ready to use. The products in the original unopened packaging have a shelf life of 12 months from the date of manufacture. Once opened, the materials must be used within 3 months.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Flexi-SEAL PUD, V1, dated 8 August 2023.

6.2 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 Flexi-Seal® Exterior Waterproofing System is 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 membrane 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 membrane. 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 deck, and the finish specified.
- 7.5 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.
- 7.6 Timber framing supporting the substrates must be constructed such that deflections do not exceed $1/360^{\text{th}}$ of the span. Where NZS 3604 is used, the allowable joist spans given in Table 7.1 must be reduced by 20%.

Substrates

Plywood

- 8.1 Plywood must be a minimum of 17 mm thick complying with AS/NZS 2269, CD Grade Structural with sanded C face upwards and treated to H3 [CCA treated]. LOSP treated plywood must not be used. The plywood must be supported with dwangs or framing with a maximum span of 400 mm in each direction, fixed with 10 g x 50 mm stainless steel countersunk head screws at 150 mm centres on the edges and 200 mm through the body of the sheets.

Fibre Cement Compressed Sheet

- 8.2 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 and installed as per the manufacturer's instructions.

Concrete

- 8.3 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 Flexi-Seal® Exterior Waterproofing 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 designed serviceable life of 15–25 years.

Maintenance

- 10.1 No maintenance of the membrane will be required provided significant substrate movement does not occur and the tile finish remains intact. Regular checks must be made of the tiled areas to ensure they are sound and will not allow moisture to penetrate. Any cracks or damage must be repaired immediately by repairing the tiles, grout and sealant.
- 10.2 In the event of damage to the membrane, 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 could affect polymer-based membranes must not be used.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to the Flexi-Seal® Exterior Waterproofing System from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Acceptable Solution C/AS1 and NZBC Acceptable Solution C/AS2 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 in the Technical Literature which gives details aligned with NZBC Acceptable Solution E2/AS1.
- 12.2 When installed in accordance with this Appraisal and the Technical Literature, Flexi-Seal® Exterior Waterproofing System will prevent the penetration of water and will therefore meet code compliance with NZBC Clause E2.3.2. The membrane is impervious to water and will give a weathertight deck or balcony.
- 12.3 Flexi-Seal® Exterior Waterproofing 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.
- 12.4 The minimum fall to decks and balconies is 1 in 40. The minimum fall to gutters is 1 in 60 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 and not created with mortar screeds applied over the membrane.
- 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 is subject to specific weathertightness design and is outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

- 13.1 Installation of the membrane must be completed by trained installers, approved by DGL Bondlast that have experience in the application of waterproofing membranes and understand waterproofing principles.
- 13.2 Installation of substrates must be completed by, or under the supervision of, Licensed Building Practitioners with the relevant Licence Class, in accordance with the instructions given within the DGL Bondlast Technical Literature and this Appraisal.

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 a timber substructure must be a maximum of 20% and fibre cement and plywood sheet must be dry at time of membrane application. This will generally require plywood and fibre cement sheets to be covered until just before the membrane is laid, to prevent rain wetting.
- 14.4 Fibre cement sheet substrates must be primed with Universal Primer diluted 1:1 with water and allowed to cure before the membrane is installed.
- 14.5 Universal Primer must be used to prime all plastic waste traps and plywood substrates.

Membrane Installation

- 15.1 Installation must not be undertaken where the substrate surface temperature is below 6°C or above 35°C.
- 15.2 Flexi-Seal® PUD must be thoroughly stirred before application.
- 15.3 The membrane must be applied in a minimum of two coats at the coverage rates set out in the Technical Literature. Subsequent coats must be applied in the opposite direction to the previous coat.
- 15.4 Membrane application can be made by roller [medium/long nap], brush [long bristle], or a rubber grouting blade.
- 15.5 Plywood, compressed sheet and concrete deck substrates must have the Butylseal Tape installed at wall/floor junctions or expansion joints. In all other situations, reinforcement provisions as set out in this Appraisal and the Technical Literature apply.
- 15.6 It is strongly recommended that the membranes are 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 membrane must be cured for at least 24 hours in summer and 48 hours in winter before tiling. The cured membrane 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. The compatibility of tile adhesive must be confirmed with DGL Bondlast.

Inspections

- 17.1 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, particularly installation to the correct thickness and use of reinforcement.
 - Membrane 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 system are provided in the Technical Literature. The products must be used in conjunction with the relevant Materials 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 Flexi-Seal® Exterior Waterproofing System has been undertaken by the following organisations:
- BRANZ – durability, water absorption, thermal stability, shear, adhesion, static water head resistance and water vapour transmission.
 - CSIRO, Australia – testing to the requirements of AS/NZS 4858.
- 19.2 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 Flexi-Seal® Exterior Waterproofing System by BRANZ technical experts.
- 20.2 Site inspections were carried out by BRANZ to examine the practicability of installation.
- 20.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

- 21.1 The manufacture of the Flexi-Seal® Exterior Waterproofing System has been examined by BRANZ and found to be satisfactory.
- 21.2 The quality management system of the membrane's manufacturer has been assessed and found to be satisfactory.
- 21.3 The quality of supply to the market is the responsibility of DGL Bondlast.
- 21.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the framing and substrates systems in accordance with the instructions of the substrate manufacturer, DGL Bondlast and this Appraisal.
- 21.5 The quality of installation on-site is the responsibility of the DGL Bondlast approved and trained installers.

Sources of Information

- AS 3740:2021 Waterproofing of domestic wet areas.
- AS 3958.1:2007 Guide to the installation of ceramic tiles.
- AS/NZS 2269:2012 Plywood – structural.
- AS/NZS 2908.2:2000 Cellulose-cement products – Flat sheet.
- BRANZ Bulletin 585 – Measuring moisture in timber and concrete.
- BRANZ Good Practice Guide: Membrane Roofing, [Second Edition], October 2015.
- NZS 3101:2006 Concrete structures.
- NZS 3109:1997 Concrete construction.
- NZS 3602:2003 Timber and wood-based products for used in buildings.
- NZS 3603:1994 Timber 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.



In the opinion of BRANZ, **Flexi-Seal® Exterior Waterproofing 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 **DGL Operations Ltd t/a DGL Bondlast**, 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. **DGL Operations Ltd t/a DGL Bondlast:**
 - 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 quality of work;
 - 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 **DGL Operations Ltd t/a DGL Bondlast**.
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 **DGL Operations Ltd t/a DGL Bondlast** or any third party.

For BRANZ



Claire Falck

Chief Executive

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15 May 2025