BRANZ Appraised

Appraisal No. 777 [2017]

RUBBERGUARD, RUBBERGUARD ROCKET AND RUBBERGUARD FC EXTERNAL WATERPROOFING MEMBRANES

Appraisal No. 777 (2017)

This Appraisal replaces BRANZ Appraisal No. 777 (2012)

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 Rubberguard Waterproofing Membranes are single and two part waterproofing membranes for use under ceramic or stone tile finishes on external decks and balconies.

Scope

2.1 Rubberguard Waterproofing Membranes have 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 regards to building height and floor plan area when subject to specific engineering design; and,
- with substrates of 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 m^2; 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 ultra violet (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 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 membranes must be installed by trained applicators, approved by Cemix Construction Products Ltd.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Rubberguard Waterproofing 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. Rubberguard Waterproofing Membranes will meet these requirements. See Paragraph 9.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2. Decks and balconies incorporating Rubberguard Waterproofing Membranes will meet these requirements. See Paragraphs 12.1 - 12.9.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Rubberguard Waterproofing Membranes will meet this requirement and will not present a health hazard to people.

Technical Specification

4.1 Materials supplied by Cemix Construction Products Ltd are as follows:

- **Rubberguard** - A styrene-butadiene copolymer-based, one-part, ready-to-use, liquid-applied membrane supplied as a beige thixotropic paste in 10 and 15 litre pails.
- **Rubberguard Rocket** - A quick drying, latex based, two-part, flexible, cementitious-based, liquid-applied membrane. It is supplied as Rubberguard Rocket liquid in 10 litre pails and Rubberguard Rocket powder in 15 kg bags. When dry, the membrane is light grey in colour.
- **Rubberguard FC** - A one part, water-based polyurethane-acrylic, ready-to-use, liquid applied, rapid setting membrane. It is supplied as blue/grey colour in 4 and 15 litre pails.
- **Rocket Prime** - Specially formulated to prime smooth and dense surfaces. It is used to prime non-porous or dense substrates prior to the application of the membranes. It is supplied as a light tan coloured liquid in 5 and 20 litre pails.
- **Rubberguard GP** - A modified copolymer latex based primer for porous surfaces. It is used to prime porous substrates prior to the application of the membranes. It is supplied as a white coloured liquid in 1, 4 and 20 litre pails.
- **Cemix Enviroflex** - A premium grade, highly flexible, polymer engineered, recycled rubber modified cement based water resistant tile adhesive for interior and exterior application. It is supplied as a grey powder 20 kg bags.
- **Cemix Flexiset** - A highly flexible polymer engineered, rubber modified cement based water resistant tile adhesive for interior and exterior application. It is supplied as a grey powder 20 kg bags.
- **Cemix Rubberflex** - A premium grade, highly flexible polymer engineered, rubber modified cement based water resistant tile adhesive for interior and exterior application. It is supplied as a grey powder 20 kg bags.

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 details of the current Technical Literature for Rubberguard Waterproofing 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.

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Design Information

General

7.1 Rubberguard Waterproofing 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 Rubberguard Rocket and Rubberguard FC membrane products are 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.

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 publication 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 the AS/NZS 1170 series. 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%.

Substrates

Fibre Cement Compressed Sheet

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 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 Rubberguard Waterproofing 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.

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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 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.

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 may affect polymer based membranes must not be used.

Prevention of Fire Occurring

11.1 Separation or protection must be provided to Rubberguard Waterproofing Membranes 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

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 gives details aligned with NZBC Acceptable Solution E2/AS1.

12.2 When installed in accordance with this Appraisal and the Technical Literature, Rubberguard Waterproofing 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 Rubberguard Waterproofing 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 is 1 in 40. The minimum fall to gutters are 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 membrane 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 applicators, approved by Cemix Construction Products Ltd, that have experience in the application of waterproofing membranes and understand waterproofing principles.

13.2 Installation of substrates must always be carried out in accordance with the Rubberguard Waterproofing Membranes Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

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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 18% and fibre cement compressed sheets must be surface dry at time of membrane application. This will generally require fibre cement sheets to be covered until just before the membrane is laid, to prevent rain wetting.

14.4 Substrates must be primed with Rubberguard GP or Rocket Prime as appropriate, and allowed to dry fully before the membranes are 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 Rubberguard Rocket liquid and Rubberguard Rocket powder must be mixed and left to stand for 5 minutes before re-mixing, then applying. Rubberguard and Rubberguard FC 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 1.0 - 1.5 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 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 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 Cemix Construction Products Ltd.

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.

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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 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 Rubberguard has been undertaken by ARDEX Australia Pty Ltd research and development laboratory: water vapour transmission; water absorption; tensile strength and elongation before and after UV exposure, immersion in bleach, immersion in industrial detergent and immersion in water. Test methods and results were reviewed by BRANZ and found to be satisfactory.

19.2 The following testing of Rubberguard was undertaken by the Commonwealth Scientific Industrial Research Organisation (CSIRO) Australia:

- In accordance with ANSI A118.10 for ICBO Evaluation Service - dimensional stability; waterproofness; shear strength to ceramic tile and cement mortar; and fungal and micro-organism resistance.
- In accordance with AS 1145 - behaviour under cyclic strain.

19.3 Testing of Rubberguard has been undertaken by BRANZ for low temperature flexibility and peel adhesion after heat/humidity aging.

19.4 The following testing of Rubberguard FC was undertaken by various organisations:

- Durability testing to AS/NZS 4858 Appendix A including effect of heat aging, bleach, detergent and water on tensile strength and elongation.
- Cyclic movement resistance requirements of AS/NZS 4858:2004 Appendix B.
- Water Vapour Transmission using both wet and dry cup methods from ASTM E96.
- Water transmission behaviour following the procedures of AS/NZS 4858 Appendix C.
- 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 Rubberguard Waterproofing Membranes 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 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 membranes' manufacturer has been assessed by BRANZ and found to be satisfactory.

21.3 The quality of supply to the market is the responsibility of Cemix Construction Products Ltd.

21.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the framing system and the substrates.

21.5 Quality on site is the responsibility of trained applicators, approved by Cemix Construction Products Ltd.

21.6 Building owners are responsible for the maintenance of the ceramic or stone tiles in accordance with the instructions of Cemix Construction Products Ltd.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Sources of Information

- AS 3958.1: 2007 Ceramic Tiles - Guide to the installation of ceramic tiles.
- AS/NZS 1170 Series - Structural design actions.
- AS/NZS 2908.2: 2000 Cellulose-cement products - Flat sheet.
- AS/NZS 4858: 2004 Wet area membranes.
- BRANZ Bulletin 585 - Measuring moisture in timber and concrete.
- Good Practice Guide - Tiling, BRANZ, April 2015.
- Good Practice Guide - Membrane Roofing, BRANZ, October 2015.
- NZS 3101: 2006 The design of concrete structures.
- NZS 3604: 2011 Timber framed buildings.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Business, Innovation and Employment, Third Edition July 2005 (Amendment 7, 01 January 2017).
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

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BRANZ

In the opinion of BRANZ, Rubberguard, Rubberguard Rocket and Rubberguard FC External Waterproofing 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 Cemix Construction Products 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. Cemix Construction Products 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 Cemix Construction Products 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 Cemix Construction Products Ltd or any third party.

For BRANZ

Chelydra Percy
Chief Executive

Date of Issue:
20 December 2017

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