



BRANZ Appraised
Appraisal No. 1002 [2018]

CUREFLEX EXTERNAL WATERPROOFING MEMBRANES

Appraisal No. 1002 [2018]

BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 Cureflex Membranes are liquid applied waterproofing membranes for use under ceramic or stone tile finishes on external decks and balconies.

Scope

- 2.1 Cureflex 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 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 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 membranes 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 membranes 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 Demtech Australia Pty Ltd.



Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Cureflex 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. Cureflex Membranes meets these requirements. See Paragraph 9.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2. Decks and balconies incorporating Cureflex Membranes meet these requirements. See Paragraphs 12.1 – 12.9.

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

Technical Specification

4.1 Materials supplied by Demtech Australia Pty Ltd are as follows:

- **Cureflex – SLR 2000 Membrane:** a Class III, higher elastomeric, one part SBR waterproofing membrane. It is supplied as a dark blue liquid paste in 5 and 15 litre containers.
- **Cureflex PCM – 17:** a fast drying, two-part waterproofing membrane. It is supplied as a powder in 15 kg bag and a liquid in 10 litre pails, coloured light grey when mixed.
- **LS 151 Primer:** a specially formulated primer for enhancing adhesion to smooth or dense surfaces. It is supplied as a blue viscous paste in 1, 2, 5 and 15 litre containers.
- **PG57 Primer Liquid Additive:** a full strength, non-tacky, styrene acrylic polymer used to prime porous substrates to improve adhesion. It is supplied as a white milky liquid in 5 and 15 litre containers.

Handling and Storage

5.1 All materials must be stored inside, up off concrete floors, in dry conditions, out of direct sunlight and 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 Cureflex 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.

Design Information

General

- 7.1 Cureflex 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 membranes 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 publication 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. Design guidelines for control joints for tiles can be found in the BRANZ Good Practice Guide: Tiling.



- 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

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 the 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 Cureflex Membranes, 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

- 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.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to Cureflex 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 provided 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, Cureflex 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 Cureflex 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 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 tile 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 installers, approved by Demtech Australia Pty Ltd 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 License Class, in accordance with the instructions given within the Demtech Australia Pty Ltd 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 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.
- 14.4 Substrates must be primed with a primer as specified by Demtech Australia Pty Ltd, 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 Cureflex SLR 2000 Membrane must be thoroughly stirred before application. Cureflex 2 Part PCM-17 requires Part A and Part B to be mixed as per the installation instruction in the correct ratio.
- 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 a different direction to the previous coat. The total finished thickness of the Cureflex SLR 2000 Membrane must be 1.20 mm minimum and Cureflex 2 Part PCM-17 must be 1.50 mm minimum.
- 15.4 Membranes application can be made by roller (medium/long nap) or brush (long bristle).
- 15.5 The installation and use of a reinforcement or bond breaker must comply with the instructions in the Technical Literature.
- 15.6 Clean up may be undertaken with water.

Tiling

- 16.1 The membranes must be fully cured before tiling. The cured membrane must be protected at all times to prevent mechanical damage, so may require temporary protection 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 the tile adhesive must be confirmed with the adhesive manufacturer or Demtech Australia Pty 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.

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 Material Safety Data Sheet.

Basis of Appraisal

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

Tests

- 19.1 The following testing of Cureflex Membranes 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 Cureflex Membranes 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 Although not required by the standard AS/NZS 4858 as water vapour transmission testing had already shown compliance, additional testing of Cureflex Membranes was also undertaken by Amdel Limited for suitability over particleboard in accordance with AS/NZS 4858, Appendix C, and found to be satisfactory.
- 19.4 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 Cureflex 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 of supply to the market is the responsibility of Demtech Australia Pty Ltd.
- 21.3 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the framing system and substrate.
- 21.4 Quality on site is the responsibility of the trained installers, approved by Demtech Australia Pty Ltd.
- 21.5 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 2908.2: 2000 Cellulose-cement products – Flat sheet.
- AS/NZS 1170: 2002 Structural design actions
- 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 Concrete Structures Standard.
- 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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WATERPROOFING MEMBRANES



In the opinion of BRANZ, **Cureflex 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 **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.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

11 July 2018