



## BRANZ Appraised

Appraisal No. 974 [2017]

## WET-SEAL DS411 EXTERIOR WATERPROOFING MEMBRANE

Appraisal No. 974 [2017]



### BRANZ Appraisals

Technical Assessments of products for building and construction.



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## Product

- 1.1 Wet-seal DS411 Exterior Waterproofing Membrane is a single part waterproofing membrane for use under ceramic or stone tile finishes on external decks and balconies.

## Scope

- 2.1 Wet-seal DS411 Exterior Waterproofing Membrane has been appraised for use as a waterproofing membrane for pedestrian decks and balconies within the following scope:
  - on substrates of plywood, compressed fibre cement sheet, or Scyon™ Secura™ exterior flooring on timber framing; and,
  - on substrates of concrete; and,
  - when protected from ultra-violet [UV] exposure and physical damage by ceramic or stone tiles; and,
  - where decks and balconies are designed and constructed such that deflections do not exceed 1/360<sup>th</sup> of the span.
- 2.2 The structural and weathertightness design for each specific structure is the responsibility of the building designer.
- 2.3 Tiling finishes are outside the scope of this Appraisal.
- 2.4 Installation of Wet-seal DS411 Exterior Waterproofing Membrane and accessories must be carried out by trained applicators, approved by Wet-seal Management Pty Ltd.

## Building Regulations

### National Construction Code Series [NCC 2016] Building Code of Australia [BCA]

- 3.1 In the opinion of BRANZ, Wet-seal DS411 Exterior Waterproofing Membrane, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the BCA:

#### BCA Volume 1 – Class 2 to Class 9 Buildings

**Part F1 – Damp and Weatherproofing.** Performance FP1.4. Wet-seal DS411 Exterior Waterproofing Membrane meets this requirement. See Paragraphs 13.1 – 13.7.

#### BCA Volume 2 – Class 1 and Class 10 Buildings

**Part 2.2 – Damp and Weatherproofing.** Performance P2.2.2. Wet-seal DS411 Exterior Waterproofing Membrane meets this requirement. See Paragraphs 13.1 – 13.7.



## Technical Specification

- 4.1 Materials supplied by Wet-seal Management Pty Ltd are as follows:
- **Wet-seal Exterior DS 411** - a one component, latex modified polyurethane waterproofing membrane for exterior applications. It is supplied as terracotta coloured liquid in 17 litre pails.
  - **Polyspun Enviro Fabric** - a high strength, spunbond polyester reinforcement for reinforcing the entire body of the membrane. It is supplied in rolls 142 mm or 1.0 m wide x 150 m long, and is coloured white.
  - **Polythene Foam Tape** - a foam tape used over structural sheet end or butt joints, and at the floor to wall junctions. It is supplied as a 1.0 mm thick x 25.0 or 75.0 mm wide tape.

## 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 Wet-seal DS411 Exterior Waterproofing Membrane. 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 Wet-seal DS411 Exterior Waterproofing Membrane is for use where an impervious waterproof membrane is required on decks and balconies to prevent damage to building elements and adjoining areas.
- 7.2 The membrane must be covered by ceramic or stone tile finishes. The finishes must protect the membrane from exposure to UV light and physical damage.
- 7.3 Movement and control joints may be required depending on the shape and size of the deck and the tiling finish. Design guidance can be found in the BRANZ Tiling Good Practice Guide.
- 7.4 Effective control of moisture in the structure must be considered due to the impermeability of the membrane.
- 7.5 Where the system abuts cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the BCA. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

### Substrates

#### Plywood

- 8.1 Structural plywood must be a minimum of 17 mm thick complying with AS/NZS 2269 treated to Hazard Level H3. The structural plywood must be supported with joists at a maximum spacing as detailed in AS 1684.3, Table 5.3. Fixings shall be as per "Technical Note on the Use of EWPAA Branded Structural Plywood As Exterior Decking". [Note: *LOSP treated plywood must not be used.*]

#### 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. Installation must be in accordance with instructions of the manufacturer.

### **Scyon™ Secura™ exterior flooring**

- 8.3 Scyon™ Secura™ exterior flooring must be manufactured to comply with the requirements of AS/NZS 2908.2 and must be installed in accordance with the manufacturers latest product installation guide at the time of installation with consideration to industry best practice.

### **Concrete**

- 8.4 Concrete substrates must be to a specific engineering design meeting the requirements of the BCA.

### **Durability**

#### **Serviceable Life**

- 9.1 Wet-seal DS411 Exterior Waterproofing Membrane, 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 tiling finishes with a design service life of 15-25 years. This is conditional on the membrane not being exposed to the weather or UV light for a total of more than 14 days.

### **Maintenance**

- 10.1 No maintenance of the membrane will be required provided significant substrate movement does not occur and the tiling finish remains intact. Regular checks must be made of 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 sealants.
- 10.2 In the event of damage to the waterproofing 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 the tiling finishes must remain clean. Cleaning materials that may affect polymer based membranes must not be used.

### **Outbreak of Fire**

- 11.1 Wet-seal DS411 Exterior Waterproofing Membrane must be protected or separated from fireplaces, heating appliances, chimneys and flues in accordance with the requirements of BCA Volume 1, Part G2 and Performance GP2.1, and BCA Volume 2, Part 2.3, Performance 2.3.3 and Part 3.7.3.

### **External Moisture**

- 12.1 Decks and balconies must be designed and constructed to meet code compliance with BCA Volume 1, Part F1 – Damp and weatherproofing, Performance FP 1.4 and Part 2.2 – Damp and weatherproofing, Performance P2.2.2. They must also take account of snowfalls in snow prone areas.
- 12.2 When installed in accordance with this Appraisal and the manufacturer's Technical Literature, Wet-seal DS411 Exterior Waterproofing Membrane will prevent the penetration of water and will therefore meet code compliance with BCA Volume 1, Part F1 – Damp and weatherproofing, Performance FP 1.4 and Part 2.2 – Damp and weatherproofing, Performance P2.2.2. The membrane is impervious to water and will give a weathertight deck or balcony capable of accepting minor structural movements.
- 12.3 Wet-seal DS411 Exterior Waterproofing Membrane is impermeable, therefore a means of dissipating construction moisture must be provided in the building design and construction to meet code compliance with BCA Volume 1, Part F1 – Damp and weatherproofing, Performance FP 1.4 and Part 2.2 – Damp and weatherproofing, Performance P2.2.2.
- 12.4 BRANZ recommends a minimum fall to decks and balconies of 1:40 and that 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.

## Installation Information

### Installation Skill Level Requirement

- 13.1 Installation and finishing of materials supplied by Wet-seal Management Pty Ltd and its approved applicators must be completed in accordance with the Technical Literature, by trained applicators approved by Wet-seal Management Pty Ltd.
- 13.2 Installation of substrates must be completed by tradespersons with a thorough understanding of deck and balcony construction, in accordance with instructions given within the substrate manufacturers Technical Literature and this Appraisal.

### Preparation of Substrates

- 14.1 Substrates must be dry and sound before installation commences. Concrete slabs can be checked for dryness by using a hygrometer. The relative humidity of the concrete surface must be 75% or less, and the moisture content for plywood must be a maximum of 20%, before laying the membrane.
- 14.2 Surfaces must be smooth and free from sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents. All surface defects must be filled to achieve a smooth and uniform surface.
- 14.3 Substrates must be primed with the recommended primer for 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 Wet-seal DS411 Exterior Waterproofing Membrane must be thoroughly stirred before application.
- 15.3 The membrane must be applied using the minimum three step method 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 membrane must be a minimum of 1 mm.
- 15.4 The membrane must be applied using a textured roller for the first step prior to the fabric being laid, and a medium nap roller for the final coats. A brush is used for all detailing work.
- 15.5 In all situations, reinforcement provisions as set out in 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 membrane must be fully cured 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 and the BRANZ Good Practice Guide - Tiling. The compatibility of tile adhesive must be confirmed with the adhesive manufacturer or Wet-seal Management 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 product must be used in conjunction with the relevant Materials Safety Data Sheet for the membrane.

## Basis of Appraisal

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

### Tests

- 19.1 The following testing of Wet-seal DS411 Exterior Waterproofing Membrane has been undertaken:
- AS/NZS 4858 Appendix A including effects of heat ageing, bleach, detergent and water on tensile and elongation, water vapour transmission, cyclic movement resistance requirements of AS/NZS4858: 2004 Appendix B, water absorption, peel adhesion, dry pull-off / tensile adhesive test on plywood, dry pull-off / tensile adhesive test on fibre cement, puncture resistance and low temperature flexibility.
- 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 Wet-seal DS411 Exterior Waterproofing Membrane 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 membrane 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 manufacturer has been assessed by BRANZ and found to be satisfactory.
- 21.3 The quality of supply to the market is the responsibility of Wet-seal Management Pty 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 the Wet-seal Management Pty Ltd Approved and Trained Applicators.
- 21.6 Building owners are responsible for the maintenance of the stone or ceramic tiles in accordance with the instructions of Wet-seal Management Pty Ltd.



### Sources of Information

- AS 1684.3:2010 Residential timber-framed construction – Cyclonic areas
- AS 3958.1: 1991 Guide to the installation of ceramic tiles.
- AS/NZS 1170:2002 Structural design actions
- AS/NZS 2269: 2012 Plywood - Structural.
- AS/NZS 2908.2: 2000 Cellulose-cement products – Flat sheet.
- AS/NZS 4858 - 2004 Wet area membranes.
- Good Practice Guide – Tiling [3rd Edition], BRANZ, April 2015.
- National Construction Code Series, Building Code of Australia 2016 – Australian Building Codes Board.
- Technical Note on the Use of EWPAA Branded Structural Plywood As Exterior Decking – PAA Engineered Wood Products Association of Australasia.



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11 August 2017

WET-SEAL DS411 EXTERIOR  
WATERPROOFING MEMBRANE



In the opinion of BRANZ, **Wet-seal DS411 Exterior Waterproofing Membrane** 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 **Wet-seal Management 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. **Wet-seal Management 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 **Wet-seal Management 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 **Wet-seal Management Pty Ltd** or any third party.

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For BRANZ

**Chelydra Percy**

Chief Executive

Date of Issue:

11 August 2017