



BRANZ Appraised

Appraisal No. 702 [2017]

ARDEX UNDERTILE WET AREA MEMBRANES

Appraisal No. 702 [2017]

This Appraisal replaces BRANZ
Appraisal No. 702 [2011]



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



ARDEX Australia Pty Ltd

20 Powers Road

Seven Hills

NSW

Tel: 1300 788 780

Fax: 1300 780 102

Web: www.ardexaustralia.com



BRANZ

BRANZ

1222 Moonshine Rd,

RD1, Porirua 5381

Private Bag 50 908

Porirua 5240,

New Zealand

Tel: 04 237 1170

branz.co.nz



Product

- 1.1 ARDEX Undertile Wet Area Membranes are premixed and two-part, liquid applied waterproofing membranes for use under ceramic or stone tile finishes in internal wet areas.

Scope

- 2.1 ARDEX Undertile Wet Area Membranes have been appraised for use as waterproofing membranes for internal wet areas of buildings, within the following scope:
 - on floor substrates of concrete, flooring grade particleboard, plywood, compressed fibre cement sheet and fibre cement sheet tile underlay, and on wall substrates of concrete, concrete masonry, cement render, wet area fibre cement sheet lining systems and wet area plasterboard lining systems; and,
 - when protected from physical damage by ceramic or stone tile finishes and,
 - where floors are designed and constructed such that deflections do not exceed 1/360th of the span.
- 2.2 The use of ARDEX Undertile Wet Area Membranes on concrete slabs where a hydrostatic or vapour pressure is present is outside the scope of this Appraisal.
- 2.3 Movement and control joints in the substrate must be carried through to the tile finish. The design and construction of the movement and control joints is specific to the building and therefore is 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 Installation of the ARDEX Undertile Wet Area Membranes must be carried out by trained installers, approved by ARDEX Australia Pty Ltd.

Building Regulations

National Construction Code Series [NCC 2016] Building Code Of Australia [BCA]

- 3.1 In the opinion of BRANZ, ARDEX Undertile Wet Area Membranes, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal will meet the following performance requirements of the BCA:

BCA Volume 1 – Class 2 to Class 9 Buildings

Part F1 – Damp and weatherproofing. Performance FP 1.7. ARDEX Undertile Wet Area Membranes meet this requirement. See Paragraph 13.1 – 13.6

BCA Volume 2 – Class 1 and Class 10 Buildings

Part 2.4 – Health and amenity. Performance P2.4.1. ARDEX Undertile Wet Area Membranes meet this requirement. See Paragraph 13.1 – 13.6

Technical Specification

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

- **ARDEX WPM 001 Premixed Bathroom and Balcony** is a one part, polymer-based, ready-to-use, liquid-applied membrane containing micro-fibres, supplied as a light blue thixotropic paste in 6.5 kg [approximately 5 litres] and 20 kg [approximately 15 litres] pails.
- **ARDEX WPM 002 Two Part Bathroom and Balcony** is a fast drying, two part, flexible, cementitious-based, liquid applied membrane containing micro-fibres. It is supplied as WPM 002 Part A Liquid in 20 kg pails and WPM 002 Part B Powder in 20 kg multi-wall bags. When dry, the membrane is light grey in colour.
- **ARDEX WPM 155 Rapid** is 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.
- **ARDEX WPM 265 Primer** is a water-based primer used to seal substrates and enhance the adhesion of the membranes. It is supplied as a red coloured liquid in 20 kg plastic containers.
- **ARDEX STB Tape** is a uncured butyl tape with a fleece layer that is used in the ARDEX WPM 155 Rapid under tile waterproofing system.

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 ARDEX Undertile Wet Area Membranes. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained within the scope of this Appraisal and the Technical Literature must be followed.

Design Information

General

- 7.1 ARDEX Undertile Wet Area Membranes are for use where an impervious waterproof membrane is required to floors and walls to prevent damage to building elements and adjoining areas.
- 7.2 The membranes must be protected from physical damage by the application of ceramic or stone tile finishes.
- 7.3 Movement and control joints may be required depending on the shape and size of the floor and the tiling finish. Design guidance can be found in the BRANZ Good Practice Guide - Tiling.
- 7.4 In all cases, framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and all sheet edges are fully supported. Timber framing systems supporting the substrates must be constructed such that deflections do not exceed 1/360th of the span.

Substrates

Plywood

8.1 Structural plywood must be a minimum of 17 mm thick complying with AS/NZS 2269. LOSP treated plywood must not be used. The structural plywood must be supported with joists at a maximum spacing as detailed in AS 1684.3, Table 3.2. The plywood must be fixed with either 2.8 mm diameter flathead or bullet head hand driven nails, or 2.5 mm diameter gun-driven nails with a length not less than 2.5 times the thickness of the plywood sheet. The plywood must be fixed at 150 mm centres along the sheet ends and 300 mm centres at intermediate joists and along noggings.

Particleboard Sheet Flooring

8.2 Particleboard flooring shall be selected and installed in accordance with AS 1860.

Fibre Cement Compressed Sheet / Fibre Cement Sheet Tile Underlay

- 8.3 Fibre cement compressed sheet and tile underlay 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 a wet area membrane substrate. Installation must be carried out in accordance with the instructions of the manufacturer.

Concrete and Concrete Masonry

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

Wet Area Wall Linings

- 8.5 Plasterboard wall linings must be manufactured to comply with AS/NZS 2588 and be suitable for use in internal wet areas.
- 8.6 Fibre cement sheet must be suitable for use in wet areas and comply with AS/NZS 2908.2.
- 8.7 Installation of plasterboard or fibre cement wall linings must be carried out in accordance with the instructions of the manufacturer.

Durability

Serviceable Life

- 9.1 ARDEX Undertile Wet Area 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 tile finishes with a design serviceable 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 ceramic or stone tile 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 sealant.
- 10.2 In the event of damage to the membranes, the tiles 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 ceramic or stone tile finishes must be kept clean.

Outbreak of Fire

- 11.1 ARDEX Undertile Wet Area Membranes must be protected or separated from fireplaces, heating appliances, chimneys and flues in accordance with the requirements of BCA Volume 1, Part G2, Performance GP 2.1, and BCA Volume 2, Part 3.7.3 and Performance 2.3.3.

Spread of Fire

- 12.1 ARDEX Undertile Wet Area Membranes are considered an exempt building material, as listed in BCA, Specification C1.10.

Internal Moisture

- 13.1 ARDEX Undertile Wet Area Membranes can be used to prevent water from penetrating behind fittings and linings or into concealed spaces and therefore meets BCA Volume 1, Part F1 – Damp and weatherproofing, Performance FP 1.7 and BCA Volume 2, Part 2.4 – Health and amenity, Performance P 2.4.1.
- 13.2 Floor surfaces must be finished with ceramic or stone tiles.
- 13.3 Design guidance on waterproofing membranes can be obtained from AS 3740, the BRANZ Good Practice Guide – Tiling, and flooring and wallboard manufacturers.
- 13.4 Falls within shower areas must be between 1:60 and 1:80 and other wet areas between 1:80 to 1:100. In unenclosed showers, falls must extend 1500 mm from the shower rose. Floor wastes and drainage flanges must be provided and must fall to an outlet.



- 13.5 The ARDEX Undertile Wet Area Membranes must completely cover shower bases and extend 1500 mm out from the shower rose for unenclosed showers. The membrane must extend a minimum of 150 mm above the shower floor and over any nib. Water resistant wall finishes must flash over the membrane.
- 13.6 BRANZ recommends the entire floor be covered by ARDEX Undertile Wet Area Membranes in bath, shower and spa rooms where timber is used. This is also a requirement of particleboard manufacturers.

Installation Information

Installation Skill Level Requirements

- 14.1 Installation and finishing of materials supplied by ARDEX Australia Pty Ltd must be completed in accordance with the Technical Literature, by trained installers, approved by ARDEX Australia Pty Ltd.
- 14.2 Installation of substrates must be completed by tradespersons with an understanding of internal wet area construction, in accordance with instructions given within the Technical Literature and this Appraisal.

Preparation of substrates

- 15.1 Substrates must be dry and sound before installation proceeds. 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.
- 15.2 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.
- 15.3 Sheet materials must be installed in accordance with the relevant manufacturer's instructions. All sheet edges must be supported by framing.
- 15.4 Plywood must be installed in accordance with the BCA and the relevant manufacturer's instructions.
- 15.5 Substrates must be primed with ARDEX WPM 265 Primer and allowed to dry fully before the membrane is installed.

Membrane Installation

- 16.1 Installation must not be undertaken where the substrate surface temperature is below 10°C or above 35°C.
- 16.2 ARDEX WPM 002 Two Part Bathroom and Balcony liquid and dry components must be mixed and left to stand for 5 minutes before re-mixing, then applying. ARDEX WPM 001 Premixed Bathroom and Balcony and ARDEX WPM 155 Rapid must be thoroughly stirred before application.
- 16.3 The membranes must be applied in a minimum of two coats at the rates set out in the Technical Literature to give a total finished thickness of 0.5 - 1.2 mm. Subsequent coats must be applied at an opposite direction to the previous coat.
- 16.4 Application can be made by roller (medium/long nap), brush (long bristle), or a flat steel trowel.
- 16.5 Reinforcement fabric is recommended as the carrier mechanism for the liquid membrane when detailing internal wet area corners sealed with neutral cure silicone. Reinforcement is not required where the optional ARDEX STB Tape has been used in internal corners. ARDEX WPM 155 Rapid can be installed with ARDEX STB Tape in place of the reinforcement tape, applied prior to any liquid membrane.
- 16.6 Clean up may be undertaken with water.

Tiling

- 17.1 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.
- 17.2 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 ARDEX Australia Pty Ltd.

Inspections

- 18.1 Critical areas of inspection 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 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 mechanical damage during curing and prior to tile installation.

Health and Safety

- 19.1 Safe use and handling procedures for the membranes are provided in the Technical Literature. The materials 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

- 20.1 The following testing of ARDEX WPM 001 Premixed Bathroom and Balcony and ARDEX WPM 002 Two Part Bathroom and Balcony 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.
- 20.2 The following testing of ARDEX WPM 001 Premixed Bathroom and Balcony 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.
- 20.2 Test methods and results were reviewed by BRANZ and found to be satisfactory.
- 20.3 Testing of ARDEX WPM 001 Premixed Bathroom and Balcony and ARDEX WPM 002 Two Part Bathroom and Balcony have been undertaken by BRANZ for low temperature flexibility and peel adhesion after heat/humidity aging.
- 20.4 The following testing of ARDEX WPM 155 Rapid 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.
- 20.5 The above test methods and results have been reviewed by BRANZ and found to be satisfactory.



Other Investigations

- 21.1 An assessment was made of the durability of ARDEX Undertile Wet Area Membranes by BRANZ technical experts.
- 21.2 Site inspections were carried out by BRANZ to examine the practicability of installation.
- 21.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

- 22.1 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.
- 22.2 The quality management system of membrane's manufacturer has been assessed and found to be satisfactory.
- 22.3 The quality of supply to the market is the responsibility of ARDEX Australia Pty Ltd.
- 22.4 Designers are responsible for the substrate design, and building contractors are responsible for the quality of installation of the framing systems and substrates.
- 22.5 Quality on site is the responsibility of trained installers, approved by ARDEX Australia Pty Ltd.
- 22.6 Building owners are responsible for the maintenance of the ceramic or stone tiles in accordance with the instructions of ARDEX Australia Pty Ltd.

Sources of Information

- ANSI 118.10: 1999 Load bearing, bonded, waterproof membranes for thin-set ceramic tile and dimension stone installations.
- AC 115 Interim Criteria for Waterproof Membranes for Flooring and Shower Liners.
- AS 1860 - 1998 Installation of Particle Board.
- AS 3740 - 2004 Waterproofing of wet areas within residential buildings.
- 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 2269: 2012 Plywood - structural.
- AS/NZS 4858: 2004 Wet area membranes.
- Good Practice Guide - Tiling, BRANZ, April 2015.
- National Construction Code Series, Building Code of Australia 2016, Australian Building Codes Board.



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BRANZ

In the opinion of BRANZ, **ARDEX Undertile Wet Area 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 **ARDEX 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. **ARDEX 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 **ARDEX 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 **ARDEX Australia Pty Ltd** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

17 January 2018