



BRANZ Appraised
Appraisal No. 701 [2017]

ARDEX UNDERTILE EXTERNAL WATERPROOFING MEMBRANES

Appraisal No. 701 [2017]

This Appraisal replaces BRANZ
Appraisal No. 701 [2011]

Amended 21 September 2020



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 ARDEX Undertile External Waterproofing Membranes are premixed and two-part, liquid applied waterproofing membranes for use under ceramic or stone tile finishes on external decks and balconies.

Scope

- 2.1 ARDEX Undertile External Waterproofing Membranes have been appraised for use as waterproofing membranes for pedestrian decks and balconies within the following scope:
 - on substrates of plywood or compressed fibre cement sheet on timber frame construction; or,
 - 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 1/360th of the span.
- 2.2 The structural and weathertightness design for each specific structure is the responsibility of the building designer.
- 2.3 The ceramic or stone tile finishes are outside the scope of this Appraisal.
- 2.4 Installation of ARDEX Undertile External Waterproofing Membranes and accessories must be carried out by trained installers, approved by ARDEX Australia Pty Ltd

Building Regulations

National Construction Code Series [NCC 2019] Building Code Of Australia [BCA]

- 3.1 In the opinion of BRANZ, ARDEX Undertile External 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 BCA:

BCA Volume 1 – Class 2 to Class 9 Buildings

Part F1 – Damp and Weatherproofing. Performance FP1.4. ARDEX Undertile External Waterproofing Membranes meet 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. ARDEX Undertile External Waterproofing Membranes meet this requirement. See Paragraphs 13.1 – 13.7



Technical Specification

- 4.1 Materials supplied by ARDEX Australia Pty Ltd are as follows:
- **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 130 Builders Express** is a one part, water-based polyurethane-acrylic, ready-to-use, liquid applied, rapid setting membrane. It is supplied as light blue colour in 15 litre pails
 - **ARDEX WPM 155 Rapid Plus** is a one part, water-based polyurethane-acrylic, ready-to-use, liquid applied, rapid setting membrane. It is supplied as blue 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 an uncured butyl tape with a fleece layer that is used in the ARDEX WPM 155 Rapid Plus and ARDEX WPM 130 Builders Express 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 External Waterproofing 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 External Waterproofing Membranes are for use where impervious waterproof membranes are required on decks and balconies to prevent damage to building elements and adjoining areas.
- 7.2 The membranes must be covered with ceramic or stone tile finishes within 14 days. 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 Good Practice Guide - Tiling.
- 7.4 Effective control of moisture in the structure and from within the building 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

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 BCA.

Durability

Serviceable Life

- 9.1 ARDEX Undertile External 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 tile finishes with a design serviceable life of 15 – 25 years. This is conditional on the membranes 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. Repair can be carried out by applying a patch of suitable membrane.
- 10.3 Drains and outlets must be maintained to operate effectively, and tiling finishes must remain clean.

Outbreak of Fire

- 11.1 ARDEX Undertile External Waterproofing Membranes must be protected or separated from fireplaces, heating appliances, chimneys and flues in accordance with the requirements of BCA Volume 1, Performance G2 and Performance GP2.1, and BCA Volume 2, Performance P2.7.3 and Performance 3.10.7.

Spread of Fire

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

External Moisture

- 13.1 Decks and balconies must be designed and constructed to meet code compliance with BCA Volume 1, Performance F1 – Damp and waterproofing, Performance FP 1.4 and BCA Volume 2 Performance 2.2 – Damp and Weatherproofing, Performance P2.2.2. They must also take account of snowfalls in snow prone areas.
- 13.2 When installed in accordance with this Appraisal and the manufacturer's Technical Literature, ARDEX Undertile External Waterproofing Membranes will prevent the penetration of water and will therefore meet code compliance with Part F1 – Damp and waterproofing, Performance FP 1.4 and Part 2.2 – Damp and Weatherproofing, Performance P2.2.2. The membranes are impervious to water and will give a weathertight deck capable of accepting minor structural movements.
- 13.3 ARDEX Undertile External 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 BCA Volume 1, Performance F1 – Damp and waterproofing, Performance FP 1.4 and BCA Volume 2, Performance 2.2 – Damp and Weatherproofing, Performance P2.2.2.
- 13.4 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.
- 13.5 Deck and balcony falls must be built into the substrate and not created with mortar screeds applied over the membranes.
- 13.6 Allowance for deflection and settlement of the substrate must be made in the design of the deck or balcony.
- 13.7 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.



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 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

- 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 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 155 Rapid plus and ARDEX WPM 130 Builders Express 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 - 1.0 mm. Subsequent coats must be applied in an opposite direction to the previous coat.
- 16.4 Application can be made by roller (medium/long nap) or brush (long bristle).
- 16.5 In all situations, reinforcement provisions as set out in this Appraisal and the Technical Literature apply.
- 16.6 It is strongly recommended to protect the membrane with temporary covers until it is fully cured in case of mechanical damage or rain wetting.
- 16.7 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 tile adhesive must be confirmed with the adhesive manufacturer or ARDEX Australia Pty Ltd

Inspections

- 18.1 Critical areas of inspection for waterproofing systems 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 membranes.
 - Acceptance of the substrate by the membranes installer prior to application of the membrane.
 - Installation of the membranes 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

- 19.1 Additional information on ARDEX Undertile External Waterproofing Membranes and accessories is available in the Material Safety Data Sheets available from ARDEX Australia Pty Ltd

Basis of Appraisal

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

Tests

- 20.1 The following testing of 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 Testing of ARDEX WPM 002 Two Part Bathroom and Balcony has been undertaken by BRANZ for low temperature flexibility and peel adhesion after heat/humidity aging.
- 20.3 The following testing of ARDEX WPM 155 Rapid Plus and ARDEX WPM 130 Builders Express 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.
- 20.4 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 the ARDEX Undertile External Waterproofing Membranes by BRANZ technical experts.
- 21.2 Site inspections have been 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 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.
- 22.2 The quality management system of the membrane's manufacturer has been assessed by BRANZ 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 building design, and building contractors are responsible for the quality of installation of the framing system 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

- AS 3958.1: 2007 Ceramic Tiles - Guide to the installation of ceramic tiles.
- 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, BRANZ, April 2015.
- National Construction Code Series, Building Code of Australia 2019, Australian Building Codes Board.

Amendments

Amendment No. 1 dated 21 October 2019

This appraisal has been amended to update references to BCA from 2016 to 2019.

Amendment No. 2 dated 21 September 2020

This appraisal has been amended to update ARDEX WPM 155 Rapid to ARDEX WPM 155 Rapid Plus, to remove ARDEX WPM 001 and add in ARDEX WPM 130 Builders Express.



In the opinion of BRANZ, **ARDEX Undertile 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 **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