



BRANZ Appraised

Appraisal No. 727 [2011]

ARDEX UNDERTILE SHEET MEMBRANE [WPM 750 AND WPM 1000]

Appraisal No. 727 [2011]

Amended 09 July 2013



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000] is a synthetic rubber membrane for use in internal wet areas to be covered with ceramic or stone tiles.

Scope

- 2.1 Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000] has been appraised for use as waterproofing membrane for internal wet areas of buildings, within the following scope:
- on floor substrates of concrete, plywood, compressed fibre cement sheet and fibre cement sheet tile underlay, and on wall substrates of concrete, concrete masonry, 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 $1/360^{\text{th}}$ of the span.
- 2.2 The use of Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000] on concrete slabs where hydrostatic or vapour pressure is present from below 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 substrate and movement and control joints is specific to each building, and 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 applicators, approved by Ardex New Zealand Limited.

Building Regulations

New Zealand Building Code [NZBC]

- 3.1 In the opinion of BRANZ, Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000] 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. Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000] meets this requirement. See Paragraph 9.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.6. Interior wet area floors and walls incorporating Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000] will meet this requirement. See Paragraphs 11.1- 11.6.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000] meets this requirement and will not present a health hazard to people.

- 3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

Technical Specification

- 4.1 Materials supplied by Ardex New Zealand Limited are as follows:

- **Ardex Undertile Sheet Membrane [WPM 750]** - A single ply synthetic rubber membrane with polypropylene filaments welded to both sides, this enables better wetting out by water based adhesives. It is supplied as a 0.75 mm thick, 1.4m wide x 20m long roll.
- **Ardex Undertile Sheet Membrane [WPM 1000]** - A single ply synthetic rubber membrane with polypropylene filaments welded to both sides, this enables better wetting out by water based adhesives. It is supplied as a 1.2 mm thick, 1.4 m wide x 20 m long roll.
- **Ardex WPM 09A – Solvent Free Adhesive** - A solvent free adhesive for bonding Undertile Butynol [WPM 750 and WPM 1000] to all substrates. It is supplied in 15 litre containers.
- **Ardex WPM 09C – Catalyst** - A solvent free catalyst for Ardex WPM 09A Solvent free Adhesive to speed up adhesive cure in adverse conditions. It is supplied in 5 litre containers.
- **Ardex Clamp Waste Outlet** - A floor waste outlet designed to clamp the membrane and supplied as part of the system. The plumbing aspects of the floor waste outlet has not been assessed by BRANZ and are outside the scope of this Appraisal.
- **Preformed Corners and Profile** - Preformed corners and a right angle profile are available. The corners are 60 mm x 60 mm x 60 mm and the right angle profile is 150 mm x 70 mm with the length made to order.

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.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000]. 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 Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000] is for use in buildings where an impervious waterproof membrane is required to floors and walls to prevent damage to building elements and adjoining areas.
- 7.2 The membrane 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 building or room, and the tile finish specified. Design guidelines can be found in the BRANZ "Good Practice Guide Tiling".
- 7.4 Timber framing systems 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. Timber framing systems 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 shall be reduced by 20%. 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.
- 7.5 Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000] must not be used to bridge or cover over existing expansion, control, construction, cold or saw cut joints.

Substrates

Plywood

- 8.1 Plywood must be a minimum of 17 mm thick complying with AS/NZS 2269, CD Grade Structural with sanded C face upwards and treated to H3 [CCA treated]. LOSP treated plywood must not be used. The plywood must be supported with dwangs or framing with a maximum span of 400 mm in each direction and fixed with 10 g x 50 mm stainless steel countersunk head screws at 150 mm centres on the edges and 200 mm through the body of the sheets.

Fibre Cement Compressed Sheet / Fibre Cement Sheet Tile Underlay

- 8.2 Fibre cement compressed sheet must be manufactured to comply with the requirements of AS 2908.2 and must be specified by the manufacturer as being suitable for use as a wet area substrate. Fibre cement sheet tile underlay must be suitable for use in internal wet areas. Installation must be in accordance with the instructions of the manufacturer.

Concrete and Concrete Masonry

- 8.3 Concrete and concrete masonry substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101, concrete slab-on-ground to NZS 3604, and concrete masonry to NZS 4229 and NZS 4230.

Wet Area Wall Linings

- 8.4 Plasterboard wall linings must be manufactured to comply with AS/NZS 2588 and be suitable for use in internal wet areas.
- 8.5 Fibre cement sheet manufactured to comply with the requirements of AS 2908.2 and must be specified by the manufacturer as being suitable for use in wet areas.

Durability

Serviceable Life

- 9.1 Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000], 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 service 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 tile finish remains intact. Regular checks must be made of the 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, grouts and sealants.
- 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 ceramic or stone tile finishes must be kept clean.

Internal Moisture

- 11.1 Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000] is impervious to water and when appropriately designed and installed will avoid the likelihood of water penetrating behind linings or entering concealed spaces.
- 11.2 Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000] is suitable for use to contain accidental overflow to meet NZBC Clause E3.3.2. A means of Code Compliance for overflow is given in NZBC Acceptable Solution E3/AS1 Paragraph 2.
- 11.3 Surfaces must be finished with ceramic or stone tile finishes. A means of Code Compliance to NZBC Clause E3.3.3 and E3.3.4 is given in NZBC Acceptable Solution E3/AS1 Paragraph 3.1.1 [b], 3.1.2 [b] and 3.3.1 [b].
- 11.4 Falls in showers and shower areas must be a minimum of 1 in 50. In unenclosed showers, falls must extend a minimum of 1500 mm out from the shower rose. Floor wastes must be provided and the floor must fall to the outlet.
- 11.5 The waterproofing membrane must completely cover shower bases, and for unenclosed showers it must extend a minimum of 1500 mm out from the shower rose. Further design guidance on waterproofing wet areas, including waterproofing walls and junctions can be obtained from AS 3740, BRANZ "Good Practice Guide Tiling", and flooring and wallboard manufacturers.
- 11.6 Where water resistant wall finishes such as prefinished sheet materials are used, they must flash over the membrane a minimum of 30mm.

Installation Information

Installation Skill Level Requirement

- 12.1 Installation of the membrane must be completed by Ardex New Zealand Limited trained and approved applicators that have experience in the application of waterproofing membranes and understand waterproofing principles.
- 12.2 Installation of substrates must be completed by tradespersons with an understanding of internal wet area construction, in accordance with instructions given within the Ardex New Zealand Limited Technical Literature and this Appraisal.

Preparation of Substrates

- 13.1 Substrates must be dry, clean and stable, with surfaces that are even and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents before installation commences.
- 13.2 The relative humidity of the concrete must be 75% or less before membrane application. Concrete substrates can be checked for dryness by using a hygrometer as set out in BRANZ Bulletin No. 585. The plywood and timber substructure shall have a maximum moisture content of 20%.
- 13.3 All voids, cracks, holes, joints and excessively rough areas must be filled to achieve an even and uniform surface. Junctions of substrate abutments, such as at wall/floor and wall/wall junctions greater than 3 mm must be detailed and installed as set out in the Technical Literature.

Membrane Installation

- 14.1 Installation must not be undertaken where the substrate surface temperature is below 5°C or above 35°C.
- 14.2 The membrane must be applied as per the Technical Literature.
- 14.3 Adhesive application can be made by brush, roller or sprayer.
- 14.4 Clean up of the adhesive may be undertaken with water.

Tiling

- 15.1 The installed membrane must be protected at all times to prevent mechanical damage, so may require temporary covers until the finishing is completed.
- 15.2 Tiling must be undertaken in accordance with AS 3958.1 and BRANZ "Good Practice Guide Tiling". The compatibility of the tile adhesive must be confirmed with Ardex New Zealand Limited.

Inspections

- 16.1 Critical areas of inspection 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.

Health and Safety

- 17.1 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

- 18.1 The following testing of Ardex Undertile Sheet Membrane [WPM 750] has been undertaken by various organisations:
 - Testing to AS/NZS 4858: 2004.
 - Testing for cyclic movement, adhesion to substrates, resistance to aging, resistance to water, resistance to chemicals and water absorption.

The above test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

- 19.1 An assessment was made of the durability of the Ardex Undertile Sheet Membrane [WPM 750 and WPM 1000] by BRANZ technical experts.
- 19.2 Site visits have been carried out by BRANZ to assess the practicability of installation and to examine completed installations.
- 19.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

- 20.1 The manufacture of the membrane has been examined by BRANZ and details regarding the quality and composition of the materials were obtained by BRANZ and found to be satisfactory.
- 20.2 The quality management system of the membrane's manufacturer has been assessed and found to be satisfactory.
- 20.3 The quality of manufacture of the membrane is the responsibility of the manufacturer.
- 20.4 The quality of supply of the membrane system materials to the market is the responsibility of Ardex New Zealand Limited.

- 20.5 Quality on site is the responsibility of the Ardex New Zealand limited approved and trained applicators.
- 20.6 Designers are responsible for the substrate design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of the substrate manufacturer, Ardex New Zealand Limited and this Appraisal.
- 20.7 Building owners are responsible for the maintenance of the tiling or stone finishing systems in accordance with the instructions of Ardex New Zealand Limited Ltd.

Sources of Information

- AS 2908.2: 2000 Cellulose-cement products - flat sheet.
- AS 3740: 2010 Waterproofing of wet areas within residential buildings.
- AS 3958.1: 1991 Guide to the installation of ceramic tiles.
- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 4858: 2004 Wet area membranes.
- AS/NZS 2269: 2008 Plywood - Structural.
- NZS 3101: 1995 The design of concrete structures.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4229: 1999 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230: 1990 Code of practice for the design of masonry structures.
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.
- Good Practice Guide Tiling, BRANZ, March 2004.
- Good Practice Guide Membrane Roofing, BRANZ, October 2003.

Amendments

Amendment No. 1, dated 9 July 2013.

This Appraisal has been amended to include Ardex Undertile Sheet Membrane [WPM 1000].



In the opinion of BRANZ, **Ardex Undertile Sheet Membrane [WPM 750 And WPM 1000]** 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 **Ardex New Zealand Limited**, 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 New Zealand Limited:**
 - 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 New Zealand Limited**.
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 New Zealand Limited** or any third party.

For BRANZ



Pieter Burghout

Chief Executive

Date of Issue:

12 August 2011