



**BRANZ Appraised**  
Appraisal No. 1061 [2020]

## ARDEX WELDTEC EXPOSED MEMBRANE SYSTEMS

Appraisal No. 1061 [2020]



### BRANZ Appraisals

Technical Assessments of  
products for building and  
construction.



#### ARDEX New Zealand Limited

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#### BRANZ

##### BRANZ

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### Product

- 1.1 ARDEX WeldTec Exposed Membrane Systems are multi-ply, single-layer, polyester fabric waterproofing membranes which are fully bonded with heat welded joints and used for waterproofing building roofs and decks.

### Scope

- 2.1 ARDEX WeldTec Exposed Membrane Systems have been appraised as roof and deck waterproofing membranes on buildings within the following scope:
  - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with respect to building height and maximum floor plan areas; and,
  - with building structures designed and constructed to meet the requirements of the NZBC; and,
  - with roof and deck supporting structures of timber framing with substrates of plywood or fibre cement sheet; and,
  - with substrates of suspended concrete slabs; and,
  - situated in NZS 3604 Wind Zones, up to and including Extra High; and,
  - with decks that have a maximum area of 40 m<sup>2</sup>.
- 2.2 ARDEX WeldTec Exposed Membrane Systems have also be appraised for use as roof and deck waterproofing membranes on specifically designed buildings within the following scope:
  - with building structures designed and constructed to comply with the NZBC; and,
  - with roof and deck supporting structures of timber framing with substrates of plywood or fibre cement sheet; and,
  - situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 6 kPa; and,
  - with the weathertightness design of all junctions for each specific structure being the responsibility of the building designer.

*[Note: the design of these junctions has not been assessed by BRANZ and is outside the scope of this Appraisal.]*

- 2.3 Roofs and decks waterproofed with ARDEX WeldTec Exposed Membrane Systems must be designed and constructed in accordance with the following limitations:
  - nominally flat and pitched roofs and decks constructed to drain water to gutters and drainage outlets complying with the NZBC; and,
  - constructed with suitable falls; and,
  - with no integral roof gardens; and,
  - with no steps in level within the deck area, except into gutters; and,
  - with no downpipes directly discharging to decks.



- 2.4 The design and construction of the substrate and movement and control joints is specific to each building and therefore is the responsibility of the building designer and building contractor and is outside the scope of this appraisal.
- 2.5 The membranes must be installed by trained applicators, approved by ARDEX New Zealand Limited.

## Building Regulations

### New Zealand Building Code [NZBC]

- 3.1 In the opinion BRANZ, ARDEX WeldTec Exposed Membrane Systems, 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 WeldTec Exposed Membrane Systems meet this requirement. See Paragraph 10.1.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.1 and E2.3.2 ARDEX WeldTec Exposed Membrane Systems meet these requirements. See Paragraphs 13.1 - 13.8.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1 ARDEX WeldTec Exposed Membrane Systems meet this requirement and will not present a health hazard to people.

## Technical Specification

- 4.1 Materials supplied by ARDEX New Zealand Limited are as follows:
- **ARDEX WPM 712** is a weldable waterproofing membrane with properties which resist ageing from heat, sunlight and ozone. It is supplied in black rolls 1.2 mm thick, 1.4 m wide and 20 m long.
  - **ARDEX WPM 715** is a weldable waterproofing membrane with properties which resist ageing from heat, sunlight and ozone. It is supplied in black rolls 1.5 mm thick, 1.4 m wide and 20 m long.
  - **ARDEX WPM 717** is a weldable, fleece backed, waterproofing membrane with properties which resist ageing from heat, sunlight and ozone. It is supplied in black rolls 1.7 mm thick, 1.4 m wide and 20 m long.
  - **ARDEX WA 98** is a specifically formulated contact adhesive used for all applications of the WeldTec Exposed Membrane Systems. It is supplied in 4 and 20 litre containers.

### Accessories

- **Solvent WA 98** - A clean up solvent for WA 98 Adhesive.
- **Flashing Tape** - A malleable under flashing tape for moulding gussets, pipe flashings and awkward situations. Supplied in rolls 50 - 100 mm wide x 5 m long.
- **ARDEX CA20P** - A specially designed and formulated sealant for securing WeldTec Flashings into chases. Supplied in 375 mm tubes.
- **ARDEX Release Tape**- A pressure sensitive tape between two silicone release backings. One release backing is removed to allow the tape to be applied over all sheet joints. The other release backing is left in place to provide an unbonded area under the membrane which allows for substrate movement.
- **ARDEX WPM 710 Detail Tape** - A semi-cured detail/flashing tape supplied in rolls 100, 150 and 300 mm wide x 20 m long.

## Handling and Storage

- 5.1 Handling and storage of all materials on or off site is the under the control of the trained applicators, approved by ARDEX New Zealand Limited. Dry storage must be provided for all products and the rolls must be stored in the upright position.



## Technical Literature

- 6.1 Refer to the Appraisal listing on the BRANZ website for details of the current Technical Literature for the ARDEX WeldTec Exposed Membrane Systems. 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 WeldTec Exposed Membrane Systems are for use on roofs, gutters, parapets and decks where an impervious waterproof membrane is required to prevent damage to building elements and adjoining areas. The products can be used on new or existing buildings. ARDEX New Zealand Limited must be consulted as to the suitability of any existing substrates prior to using ARDEX WeldTec Exposed Membranes.
- 7.2 The effective control of internal moisture must be considered at the design stage due to the impermeability of the membrane. Refer to BRANZ publication Good Practice Guide to Membrane Roofing.
- 7.3 Timber framing must comply with NZS 3604, or where specific engineering design is used, the framing shall be 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.
- 7.4 Roofs where regular foot traffic is expected i.e. for maintenance of lift equipment, a walkway over the membrane should be used to ensure the membrane is protected. ARDEX WeldTec Exposed Membrane Systems are designed for limited, irregular pedestrian access only.
- 7.5 Where it is expected that a deck will have heavy foot traffic, a secondary protection system should be used. ARDEX New Zealand Limited should be consulted as to best options for this protection.

### Structure

- 8.1 ARDEX WeldTec Exposed Membrane Systems when fully bonded are suitable for use in areas subject to a maximum wind pressure of 6 kPa Ultimate Limit State, subject to the limitations of the substrate.

### Substrates

#### Plywood

- 9.1 Plywood must be treated to H3 [CCA treated]. LOSP treated plywood must not be used. 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.

#### Fibre Cement Compressed Sheet

- 9.2 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 an external decking substrate. The fibre cement sheet must be of a thickness to meet the 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

- 9.3 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

- 10.1 ARDEX WeldTec Exposed Membrane Systems when subjected to normal conditions of environment and with proper maintenance can expect to have a serviceable life of at least 15 years.

## Maintenance

- 11.1 Maintenance requirements of ARDEX WeldTec Exposed Membrane Systems are provided by ARDEX New Zealand Limited.
- 11.2 In the event of damage to the membrane, the membrane must be repaired by removing the damaged portion and applying a patch as for new work.
- 11.3 Drainage outlets must be maintained to operate effectively.

## Prevention of Fire Occurring

- 12.1 Separation or protection must be provided to ARDEX WeldTec Exposed Membrane Systems from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1, C/AS2 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

## External Moisture

- 13.1 Roofs and decks 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 given in the Technical Literature.
- 13.2 When installed in accordance with this Appraisal and the Technical Literature, ARDEX WeldTec Exposed Membrane Systems 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 roof or deck.
- 13.3 ARDEX WeldTec Exposed Membrane Systems 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.
- 13.4 The minimum fall for roofs is 1 in 30. The minimum fall for plywood decks is 1 in 40, suspended concrete slab 1 in 60, and gutters 1 in 100. All falls must slope to an outlet. Inadequate falls will allow moisture to collect and increase the risk of deterioration of the membrane. *[Note: Where possible, BRANZ recommends falls in gutter to be 1 in 60.]*
- 13.5 Roof and deck falls must be built into the substrate.
- 13.6 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 roof or deck does not drain to an external gutter or spouting.
- 13.7 Penetrations and upstands of the membrane must be raised above the level of any possible flooding caused by blockage of roof drainage.
- 13.8 The design of details not covered by the Technical Literature is subject to specific weathertightness design and is outside the scope of this Appraisal.

## Water Supplies

- 14.1 Water is not contaminated by ARDEX WeldTec Exposed Membrane Systems. The first 25 mm of rainfall from a newly installed ARDEX WeldTec Exposed Membrane Systems roof must be discarded before drinking water collection starts. This is to remove residues which may have developed in the processes involved in the production of ARDEX WeldTec Exposed Membrane Systems.
- 14.2 Note that all water collected off roof surfaces made from any material is considered to be non-potable due to possible contamination from other sources. Water collection in this way can only be considered potable if it has been passed through a suitable sterilization system. Sterilization systems have not been assessed and are outside the scope of this Appraisal.



## Installation Information

### Installation Skill Level Requirement

- 15.1 Installation of the membranes must be completed by trained applicators, approved by ARDEX New Zealand Limited.
- 15.2 Installation of substrates must always be carried out in accordance with the ARDEX WeldTec Exposed Membrane Systems Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant Licence Class.

### Preparation of Substrates

- 16.1 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.
- 16.2 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.
- 16.3 The moisture content of a timber substructure must be a maximum of 20% and the plywood or fibre cement sheet must be dry at time of membrane application. This will generally require plywood or fibre cement sheets to be covered until just before the membrane is laid, to prevent rain wetting.

### Membrane Installation

- 17.1 The installation of these membrane systems is very complex and limited to Licensed and trained installers only. The ARDEX New Zealand Limited Applicators Manual should be referred in all instances for the correct procedures.

### Inspections

- 18.1 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 Technical Literature instructions.

### Health and Safety

- 19.1 Safe use and handling procedures for ARDEX WeldTec Exposed Membrane Systems is provided in the Technical Literature. The products must be used in conjunction with the relevant Materials Safety Data Sheet.

## Basis of Appraisal

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

### Tests

- 20.1 Testing has been carried out on the membranes by various organisations for tensile strength, elongation, joint peel and shear strength, cold bending after UV aging, static load resistance, water pressure resistance, water vapour permeability, shear / joint strength, adhesion to plywood, peel adhesion, resistance to aging, resistance to impact, resistance to frost, resistance to freeze/thaw, elongation, seam strength, breaking strength, low temperature brittleness point, water absorption and resistance to UV.
- 20.2 Results and test methods have been reviewed by BRANZ and found to be satisfactory.



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### Other Investigations

- 21.1 A durability opinion has been given on ARDEX WeldTec Exposed Membrane Systems by BRANZ technical experts.
- 21.2 Site inspections have been carried out by BRANZ to examine the practicability of installation, and to examine completed installations.
- 21.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

### Quality

- 22.1 The manufacture of ARDEX WeldTec Exposed Membrane Systems has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 22.2 The quality of supply of the product to the market is the responsibility of ARDEX New Zealand Limited.
- 22.3 Quality on site is the responsibility of the trained applicators, approved by ARDEX New Zealand Limited.
- 22.4 Designers are responsible for the building 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.
- 22.5 Building owners are responsible for the maintenance of ARDEX WeldTec Exposed Membrane Systems in accordance with the instructions of ARDEX New Zealand Ltd and this Appraisal.

### Sources of Information

- AS/NZS 1170: 2002 Structural Design action – general principles.
- AS/NZS 2269: 2012 Plywood – structural.
- AS 2908.2- 1992 Cellulose-Cement Products
- BRANZ Good Practice Guide, Membrane Roofing, October 2015.
- NZS 3101: 2006 Concrete structures standard.
- NZS 3604: 2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



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**BRANZ**

In the opinion of BRANZ, **ARDEX WeldTec Exposed Membrane Systems** 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 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.

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For BRANZ

**Chelydra Percy**

Chief Executive

Date of Issue:

15 May 2020