BRANZ Appraised
Appraisal No. 1126 [2021]

WELDTEC BELOW GRADE TANKING SYSTEM

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BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 WeldTec Below Grade Tanking System is a pre-applied or post-applied waterproofing membrane for use as a damp-proof membrane (DPM) or for below-ground tanking applications.

Scope

2.1 WeldTec Below Grade Tanking System has been appraised as a DPM or tanking membrane for use under floor slabs complying with NZS 3604 and under floor slabs complying with NZS 4229.

2.2 WeldTec Below Grade Tanking System has also been appraised for use as a tanking membrane on buildings subject to specific design within the following scope:

- where the design of the building will be the responsibility of the building designer; and,
- with clean, sound, continuous substrates of in-situ or precast concrete complying with NZS 3101 and AS/NZS 1170; and,
- where the membrane is adequately protected against damage in service; and,
- where subsoil drainage has been placed behind basement walls; and,
- where the membrane is subject to hydrostatic pressure and the pressure does not exceed the equivalent of a 20 m head of water.

2.3 Installation of WeldTec Below Grade Tanking System must be completed by ARDEX New Zealand Limited approved installers in accordance with the ARDEX New Zealand Limited Technical Literature.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, WeldTec Below Grade Tanking System, 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 (a) not less than 50 years. WeldTec Below Grade Tanking System meets this requirement. See Paragraph 9.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.3. WeldTec Below Grade Tanking System meets this requirement. See Paragraphs 11.1-11.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. WeldTec Below Grade Tanking System meets this requirement.

Technical Specification

4.1 Products supplied by ARDEX New Zealand Limited are as follows:

- **ARDEX WPM 1500** – is a post-applied or pre-applied, rubber based membrane, which is fully adhered with weldable joints. The ARDEX WPM 1500 has a fleece applied to allow the casing of wet concrete directly against it. It is supplied in rolls 1.5 mm thick, 1.40 m wide and 20 m long.
- **ARDEX WA 98** – is a specially formulated contact adhesive used for all post-applied ARDEX WPM 1500 applications. It is supplied in 4 and 20 L containers.
- **ARDEX WPM 1500 Circles** – ARDEX WPM 1500 membrane cut into circles used as a weldable detailing patch.
- **ARDEX WPM 1500 'L' Profile** – is a preformed profile for detailing internal and external corners.
- **ARDEX Flashing Tape** - under flashing penetrations.
- **ARDEX Detail Tape** - over flashing penetrations.
- **ARDEX Pressure Bar** - for sealing along top edge.
- **ARDEX Seam Plates and Fasteners** - for fixing in overlaps to hold vertically against formwork.
- **ARDEX CA 20 P** - general construction adhesive and sealant.
- **ARDEX DRS 10 GC** - drainage/protection board used in post-applied applications.
- **ARDEX WPM 1955 Waterstops**.

Handling and Storage

5.1 Handling and storage of all materials whether on-site or off-site is under the control of the installer. Dry storage must be provided for all products and the membranes must be protected from sunlight and ultraviolet (UV) radiation. Rolls of membrane must be stored on end.

Technical Specification

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for WeldTec Below Grade Tanking System. 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

Substrate Design

Walls

7.1 Substrate design must be in accordance with the NZBC to a relevant standard, such as NZS 3101 for concrete, and NZS 4229 or NZS 4230 for concrete masonry.

7.2 The substrate must have a surface finish that is smooth, clean and free from defects or irregularities which may damage the membrane or allow water to trap behind the membrane.

Control Joints

7.3 Where control or construction joints are formed in the structure where WeldTec Below Grade Tanking System is part of the design, please consult ARDEX New Zealand Limited for advice on selection of appropriate joint protection.

Concrete Slab-on-ground

7.4 Weldtec Below Grade Tanking System can be laid on 50-75 mm concrete blinding, well compacted sand blinding and well compacted site fill with a blinded topping.

7.5 Please consult ARDEX New Zealand Limited for other acceptable substrates for both horizontal and vertical applications. The structural concrete slab placed over the membrane must be a minimum of 100 mm thick.

Backfilling and Drainage

8.1 The membrane must be protected against damage by the placement of a protection material between the membranes and the granular fill.

8.2 The minimum requirement for backfilling is that a granular, free-draining material is used with the top of the backfill capped with an impervious clay fill that may be covered with topsoil if required. The impervious capping and topsoil must slope with a minimum of 1:30 fall away from the wall.

8.3 A minimum 100 mm diameter subsoil perforated drainage pipe must be installed at the bottom of the wall. The pipe must be covered with a geotextile filter fabric, be laid at a minimum 1:200 fall and discharge to a drainage outlet. Provision for cleaning the pipe must also be provided.

8.4 Backfilling should begin as soon as possible.

8.5 WeldTec Below Grade Tanking System, when used in a pre-applied application as tanking, no backfilling is required.

Durability

Service Life

9.1 WeldTec Below Grade Tanking System is a suitable DPM and tanking material, therefore it is expected to have a serviceable life of at least 50 years provided it is installed and maintained in accordance with this Appraisal, and is continually protected from sunlight and UV radiation.

Maintenance

10.1 Annual inspections must be made of the membranes' top edge seal and protection, the backfill capping, and the drainage pipe to ensure all are functioning as originally designed.

10.2 If required, the drainage pipe must be cleared to remove any sediment or silt build-up. The slope of the backfill capping must be maintained at all times.

External Moisture

11.1 WeldTec Below Grade Tanking System, when installed in accordance with this Appraisal and the Technical Literature, will prevent water vapour (DPM) and water (tanking) from penetrating to the interior face of basement retaining walls and floors in spaces where moisture may cause damage. The membrane have a vapour flow resistance of not less than 90 MN s/g.

11.2 The membrane can be used to form sealed joints and to seal penetrations. The top edge of the membrane must be sealed to the wall as set out in the Technical Literature, and protected.

11.3 Building designers must ensure junctions with other membranes, such as at the floor/wall junction, form a waterproof joint. These junctions have not been assessed and are outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

12.1 All design and building work must be carried out in accordance with the WeldTec Below Grade Tanking System Technical Literature and this Appraisal. All building work must be undertaken by ARDEX New Zealand Limited approved installers. Where the work involves Restricted Building Work this must also be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant License class.

System Installation

Substrate Preparation

13.1 All vertical surfaces must be checked to ensure they are dry, clean, smooth and free from sharp edges, loose or foreign materials, oil, grease or other deleterious material that may affect adhesion or may damage the membrane.

Priming

13.2 All substrates must be primed before installation of the membrane in post-applied applications. The supplier of the membrane, ARDEX New Zealand Limited, should be contacted to confirm the most suitable primer. Application instructions for the adhesive is contained in the Technical Data sheets.

Membrane Installation - Walls

13.3 Starting at the lowest point, the membrane must be installed in accordance with the Technical Literature. Sheet edges must be overlapped a minimum of 50 mm. End laps must be a minimum of 150 mm, with upper sheets lapped over lower sheets. Internal and external corners must be reinforced with an extra layer of membrane 300 mm wide. Protection material must be installed before backfilling. Backfilling must commence immediately after the membranes are installed to ensure the membranes is not left exposed to sunlight or UV radiation for greater than 30 days.

Membrane Installation - Floors

13.4 The membrane must be installed in accordance with the Technical Literature. Sheet edges must be overlapped a minimum of 100 mm with a minimum weld of 50 mm and end laps must be a minimum of 100 mm. The membrane must be inspected for damage and any damage must be repaired in accordance with the Technical Literature. The membrane must not be exposed to UV radiation for any longer than 14 days before the structural concrete slab is placed.

System Installation

Site Preparation

14.1 All surfaces are to be sound and solid to eliminate movement during concrete placement. Substrate must be regular and smooth with no gaps or any high or low areas of 1-10 mm. Grout must be used around all penetrations such as utility conduits for stability.

Membrane Installation

14.2 Weldtec Below Grade Tanking System membranes must be installed to all areas required to achieve a waterproof finish in accordance with ARDEX New Zealand Limited Technical Data. Temperatures must be between 5°C and 30°C during installation.

14.3 Cut the membrane to convenient lengths for installation, carefully align the membrane and roll it out with the ribbed surface uppermost.

14.4 The end joints of the Weldtec Below Grade Tanking System sheets must be fully sealed using electric welders. A minimum weld of 50 mm is required when using hand operated welders. Weld temperatures shall be suitable at time of application and test welds shall be carried out prior to welding and throughout the day. Where required on specific projects the test welds should be documented by the installer and records kept in a QA file to be handed to ARDEX New Zealand Limited on request.

14.5 Concrete must be placed within 14 days and be a minimum strength of 10 N/mm^2 before stripping of any formwork supporting the membrane. Premature stripping may result in a loss of adhesion between the membrane and the concrete.

Inspections

14.6 The Technical Literature and the installation company's Quality Control sheets must be referred to during the inspection of the membrane installation. Depending on the application, all welds should be checked by pick after cooling.

Health and Safety

15.1 Safe use and handling procedures for the membranes are provided in the Technical Literature.

Basis of Appraisal

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

Tests

16.1 Testing has been carried out on the membranes by various organisations for bond strength [peel adhesion], cyclic movement, dimensional stability, elongation at break, heat ageing, temperature resistance, tensile strength and water vapour transmission rate.

Test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

17.1 A durability opinion has been given by BRANZ technical experts.

17.2 Practicability of installation has been assessed by BRANZ and found to be satisfactory.

17.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

18.1 The manufacture of the membrane and adhesive have been examined by BRANZ and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

18.2 The quality of materials supplied to the market is the responsibility of ARDEX New Zealand Limited.

18.3 Quality of installation on-site is the responsibility of the ARDEX New Zealand Limited approved installer.

18.4 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 ARDEX New Zealand Limited.

18.5 Building owners are responsible for the maintenance of the membrane systems in accordance with the instructions of ARDEX New Zealand Limited.

Sources of Information

- NZS 3101: 2006 Concrete structures standard.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4229: 2013 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230: 2004 Design of reinforced concrete masonry structures.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

BRANZ

In the opinion of BRANZ, WeldTec Below Grade Tanking System 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.

For BRANZ

Chelydra Percy
Chief Executive

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16 April 2021