



BRANZ Appraised

Appraisal No.461 [2005]

BRANZ Appraisals

Technical Assessments of products
for building and construction

**BRANZ
APPRAISAL
CERTIFICATE
No. 461 (2005)**

Amended 15 May 2008

**PROTECTO WRAP
AFM®-WM WET AREA
MEMBRANE**

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Product

- 1.1 Protecto Wrap AFM®-WM membrane is manufactured from styrene-butadiene-styrene (SBS) modified asphalt with a laminated fabric top.
- 1.2 Protecto Wrap AFM®-WM membrane is an internal wet area waterproofing membrane for use under ceramic tiles. It is also used as a flexible layer to reduce the likelihood of tiles cracking due to building movement.
- 1.3 The membrane is self-adhesive on the underside. A release film protects the adhesive surface, and is removed during installation.



Scope

- 2.1 Protecto Wrap AFM®-WM membrane has been appraised for use as a waterproofing membrane for internal wet areas of buildings, within the following scope:
 - on floor substrates of concrete, flooring grade particle board, 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 ultra-violet (UV) exposure and physical damage by ceramic tiles; and,
 - where floors are designed and constructed such that deflections do not exceed 1/360th of the span.
- 2.2 The use of Protecto Wrap AFM®-WM membrane on concrete slabs where a hydrostatic or vapour pressure is present is outside the scope of this Certificate.
- 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 Certificate.
- 2.4 Tiling finishes are outside the scope of this Certificate.
- 2.5 Installation of the Protecto Wrap AFM®-WM membrane and accessories must be carried out only by Marshall Waterproofing NZ/Aus Ltd licenced applicators.

Note: An alternative anti-fracture membrane is available for use when a waterproofing membrane is not required. Protecto Wrap AFM® is similar to AFM®-WM membrane except without an overlap strip for waterproofing. This membrane is outside the scope of the NZBC and this Certificate. For further information please refer to Marshall Waterproofing NZ/Aus Ltd.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Protecto Wrap AFM®-WM membrane, if designed, used, installed and maintained in accordance with the statements and conditions of this Certificate, will meet or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1(b), 15 years. Protecto Wrap AFM®-WM membrane meets this requirement. See Paragraph 9.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.6. Interior wet area floors incorporating Protecto Wrap AFM®-WM membrane meet this requirement and also Functional Requirement E3.2(c). See Paragraphs 12.1 – 12.8.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Protecto Wrap AFM®-WM membrane meets this requirement and will not present a health hazard to people.

3.2 This Certificate appraises Protecto Wrap AFM®-WM membrane as an Alternative Solution in terms of New Zealand Building Code Compliance.

Technical Specification

4.1 Materials supplied by Marshall Waterproofing NZ/Aus are as follows:

Membrane

- Protecto Wrap AFM®-WM membrane is 1 mm thick and consists of a fabric reinforcement laminated to an SBS modified, rubberized, asphalt adhesive membrane with a 50 mm wide peel-and-stick side overlap strip. It is available in rolls 900 mm wide x 23 m long.

Accessories

- AFM500 Detail Tape is a 1 mm thick unreinforced conformable tape used for detailing internal corners, drains, posts and penetrations. The tape is installed prior to installation of the membrane.
- #6000 Primer is a water-based primer for use on indoor applications. It is used at full strength.
- JS160H Mastic is a rubberized, adhesive, liquid membrane used as a sealant at membrane terminations and at end laps; for seam sealing and for membrane repairs.

Handling and Storage

5.1 All materials must be stored in a dry place indoors, away from direct sunlight and heat, at temperatures between 10°C and 32°C. Materials must not be removed from the packaging until ready to use. The products have a shelf life of two years from the date of manufacture.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ Website for details of the current Technical Literature for Protecto Wrap AFM®-WM membrane. The Technical Literature must be read in conjunction with this Certificate. All aspects of design, use, installation and maintenance contained within the scope of this Certificate and the Technical Literature must be followed.

Design Information

General

7.1 Protecto Wrap AFM®-WM membrane is for use where an impervious waterproof membrane is required to floors to prevent damage to building elements and adjoining areas.

7.2 The membrane must be covered with ceramic tiles. The tiling finish 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 floor and the tiling finish. Design guidance can be found in the BRANZ Tiling Good Practice Guide.

Substrates

Plywood

8.1 Plywood must be a minimum of 17mm thick complying with AS/NZS 2269, CD Grade Structural with sanded C face upwards and treated to H3.2 (CCA treated). **LOSP treated plywood must not be used.** The Plywood must be supported with dwangs or framing with a maximum span of 400mm in each direction, fixed with 10g x 50mm stainless steel countersunk head screws at 150mm centres on the edges and 200mm through the body of the sheets.

Fibre Cement Compressed Sheet/ Fibre Cement Sheet Tile Underlay

8.2 Fibre cement compressed sheet and tile underlay 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.

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 and NZS 3604 Concrete Slab-On-Ground Floors 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 covered by a valid BRANZ Appraisal for use in internal wet areas.

8.5 The Fibre Cement Compressed Sheet must be of a thickness to meet specific structural design requirements.

Durability

Serviceable Life

9.1 Protecto Wrap AFM®-WM membrane, 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 tiling finishes with a design service life of 15 – 25 years. This is conditional on the membrane not being exposed to UV light for a total of more than four weeks.

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 Protecto Wrap AFM®-WM membrane. See Paragraph 15.6.

10.3 Drains and outlets must be maintained to operate effectively, and tiling finishes must remain clean. Cleaning materials that could affect polymer modified asphalt must not be used.

Outbreak of Fire

11.1 Protecto Wrap AFM®-WM membrane must be protected or separated from fireplaces, heating appliances, chimneys and flues in accordance with the requirements of NZBC Acceptable Solution C/AS1 Part 9 for the protection of combustible materials.

Internal Moisture

12.1 Protecto Wrap AFM®-WM membrane is impervious to water and when adequately sealed will avoid the likelihood of water causing damage to building elements and adjoining areas and so meets Functional Requirement E3.2(c).

12.2 Protecto Wrap AFM®-WM membrane is suitable for use to achieve constraint of accidental overflow to meet NZBC Clause E3.3.2. A means of Code Compliance is given in NZBC Acceptable Solution E3/AS1 Paragraph 2.

12.3 Floor surfaces must be finished with ceramic tiles. A means of Code Compliance to NZBC Clause E3.3.3 is given in NZBC Acceptable Solution E3/AS1 Paragraph 3.1.1(b).

12.4 Protecto Wrap AFM®-WM membrane can be used to prevent water splash from penetrating behind linings or to concealed spaces and therefore meets NZBC Clause E3.3.6.

12.5 Design guidance on waterproofing membranes can be obtained from AS 3740, the BRANZ Tiling Good Practice Guide, and flooring and wallboard manufacturers.

12.6 Falls in showers and shower areas must be a minimum of 1 in 50. In unenclosed showers, falls must extend 1500 mm from the shower rose. Floor wastes must be provided and must fall to an outlet.

12.7 The Protecto Wrap AFM®-WM membrane 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.

12.8 BRANZ recommends the entire floor be covered by AFM®-WM membrane in bath, shower and spa rooms where timber or particleboard floors are used. This is also a requirement of particleboard manufacturers.

Installation Information

Installation Skill Level Requirements

13.1 Installation and finishing of materials supplied by Marshall Waterproofing NZ/Aus Ltd must be completed in accordance with the Technical Literature, by trained applicators licenced by Marshall Waterproofing NZ/Aus Ltd.

13.2 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 Certificate.

Preparation of substrates

14.1 Concrete slabs and plywood must be dry and sound before installation proceeds. Concrete slabs can be checked for dryness by using a hygrometer as set out in BRANZ Bulletin Number 424. 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.

14.2 The ambient and substrate temperatures must be between 7°C and 49°C before laying the membrane.

14.3 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.

14.4 Sheet materials must be installed in accordance with the relevant manufacturers instructions. All sheet edges must be supported by framing.

14.5 Plywood must be installed in accordance with NZBC Acceptable Solution E2/AS1 Third Edition June 2004 Paragraph 8.5.5.1 and the relevant manufacturer's instructions.

14.6 Substrates must be primed with #6000 Primer and allowed to cure before the membrane is installed. When fully cured the primer is tacky and will not come off the surface.

14.7 Primed surfaces must be covered with the membrane on the same day that the primer is applied, or they must be reprimed.

Membrane Installation

15.1 All corners (floor to wall) and areas around pipes, conduits and any other penetrations through the substrate must be primed with #6000 Primer and then taped with AFM500 Detail Tape. The tape must be formed to fit tightly to the penetrations and the substrate.

15.2 Drain openings must be primed with #6000 Primer and then taped with AFM500 Detail Tape. The tape must extend at least 150 mm beyond the perimeter of the drain.

15.3 The membrane is cut to the length necessary for it to extend 150 mm in all directions beyond the area to be covered. The first edge of the release paper is carefully removed and the membrane is then aligned and pressed into place. The release paper is continuously removed, exposing the adhesive underside, while the membrane is smoothed onto the primed surface. Continuing to smooth the membrane as it comes into contact with the primer is essential to achieving adhesion and preventing the trapping of air.

15.4 Adjoining Protecto Wrap AFM®-WM membrane sheets are aligned with the overlap strip of the installed sheet, giving a 50 mm overlap. The lap joint must be firmly rolled to create a cohesive bond between the two membrane sheets.

15.5 End joints must be lapped a minimum of 150 mm and sealed using JS160H Mastic, in accordance with the Technical Literature.

15.6 After application, the membrane must be inspected, and any defects repaired. If the membrane is damaged or requires repair, the area must be cleaned and lightly primed with #6000 Primer to 150 mm beyond the damaged area. A patch of Protecto Wrap AFM®-WM membrane is cut and rolled on firmly. A troweled bead of JS160H Mastic must be applied to the edges of the patch.

Tiling

16.1 Tiling directly to the Protecto Wrap AFM®-WM membrane may be carried out immediately after the membrane has been laid.

16.2 All tiling must be carried out in accordance with AS 3958.1 and the BRANZ Tiling Good Practice Guide. The compatibility of tile adhesives must be confirmed with the adhesive manufacturer or Marshall Waterproofing NZ/Aus Ltd.

Inspections

17.1 The Technical Literature must be referred to during the inspection of Protecto Wrap AFM®-WM membrane installations by building consent authorities and territorial authorities.

Health and Safety

18.1 Extra precautions must be taken when using JS160H Mastic in areas where there is insufficient ventilation. Suitable respiratory equipment must be worn at all times.

18.2 Additional information on Protecto Wrap AFM®-WM membrane and accessories is available in the Material Safety Data Sheets available from Marshall Waterproofing NZ/Aus Ltd.

Basis of Appraisal

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

Tests

19.1 Tests have been carried out by Ramtech Laboratories Inc. in accordance with ICC Evaluation Services Acceptance Criteria for Waterproof Membranes used under Ceramic Tiles, AC 115 and ANSI 118.10. These tests covered fungus and micro-organism growth, seam strength, breaking strength, dimensional stability, waterproofness and shear strength to ceramic tiles. The test results were reviewed by BRANZ experts and found to be satisfactory.

19.2 Testing covering pliability, water resistance, tensile strength, elongation, nail sealability, peel adhesion, UV sunlamp exposure, bursting strength and peel strength have been undertaken by other organisations. The test results were reviewed by BRANZ experts and found to be satisfactory.

Other Investigations

20.1 An assessment was made of the durability of Protecto Wrap AFM®-WM membrane by BRANZ technical experts.

20.2 Site inspections were carried out by BRANZ to examine the practicability of installation.

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

Quality

21.1 The manufacture of Protecto Wrap AFM®-WM membrane has not been examined by BRANZ, but details of

the quality and composition of the materials used were obtained and found to be satisfactory. USA evaluation reports have been taken into consideration.

21.2 The quality of manufacture of Protecto Wrap AFM®-WM membrane is the responsibility of the Protecto Wrap Company.

21.3 The quality of supply to the market is the responsibility of Marshall Waterproofing NZ/Aus Ltd.

21.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the framing systems and the substrates.

21.5 Quality on site is the responsibility of the Marshall Waterproofing NZ/AUS Ltd licenced applicator.

21.6 Building owners are responsible for the maintenance of the ceramic tiles in accordance with the instructions in Paragraph 10.1 to 10.3.

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 3740 - 2004 Waterproofing of wet areas within residential buildings.
- AS 3958.1 - 1991 Guide to the installation of ceramic tiles.
- AS/NZS 2269: 1994 Plywood – structural.
- NZS 3101.1 & .2: 1995 The design of concrete structures.
- NZS 3602: 2003 Timber and wood-based products for use in buildings.
- Approved Document for New Zealand Building Code External Moisture Clause E2, Building Industry Authority, Third Edition June 2004.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992
- The Building Regulations 1992, up to, and including April 2003 Amendment.
- Tiling Good Practice Guide, BRANZ, March 2004.



BRANZ

In the opinion of BRANZ, Protecto Wrap AFM®-WM Wet Area Membrane is fit for purpose and will comply with the Building Code to the extent specified in this Certificate provided it is used, designed, installed and maintained as set out in this Certificate.

The Appraisal Certificate is issued only to the Certificate Holder, Marshall Waterproofing NZ/Aus Ltd, and is valid until further notice, subject to the Conditions of Certification.

Conditions of Certification

1. This Certificate:
 - 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. The Certificate Holder:
 - 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.
3. The product and the manufacture are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ.
4. BRANZ makes no representation 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 the Certificate Holder.
5. Any reference in this Certificate to any other publication shall be read as a reference to the version of the publication specified in this Certificate.

For BRANZ

J R Vial

M E Reed

Date of issue: 4 February 2005

Amendment No. 1, dated 15 May 2008.

The Appraisal has been amended to include wet area plasterboard substrates.