BRANZ Appraised

Appraisal No. 484 [2018]

MAPEGUM WPS, MAPELASTIC, MAPELASTIC SMART AND MAPELASTIC AQUADEFENSE WET AREA MEMBRANES

Appraisal No. 484 (2018)

This Appraisal replaces BRANZ Appraisal No. 484 (2012)

Amended 06 October 2022

BRANZ Appraisals

Technical Assessments of products for building and construction.

MBP (NZ) Ltd

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Product

1.1 Mapegum WPS and Mapelastic AquaDefense are one-component, liquid-applied waterproofing membranes for internal applications under trafficable floor finishes.

1.2 Mapelastic and Mapelastic Smart are two-component liquid-applied waterproofing membranes suitable for internal applications on substrates under trafficable floor finishes.

Scope

2.1 Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes have been appraised for use as waterproofing membranes for the internal wet areas of buildings, within the following scope:

- on floor substrates of concrete, flooring grade particle board, plywood, fibre cement compressed 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 trafficable floor finishes; and,
- where floors are designed and constructed such that deflections do not exceed 1/360th of the span.

2.2 The use of Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes on concrete slabs where hydrostatic or vapour pressure is present is outside the scope of this Appraisal.

2.3 Movement and control joints in the substrate must be carried through the membrane and trafficable floor finish. The design and construction of the substrate and movement and control joints is specific to each building, and is therefore the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.

2.4 The trafficable floor finishes are outside the scope of this Appraisal.

2.5 The membranes must be installed by trained applicators, approved by MBP (NZ) Ltd, to the conditions of the Technical Data Sheet (TDS) of the products.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes, 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 and B2.3.2. Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes meet these requirements. See Paragraph 9.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.6. Interior wet area floors and walls incorporating Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes will meet this requirement. See Paragraphs 11.1-11.7.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes meet this requirement.

Technical Specification

4.1 Materials supplied by MBP (NZ) Ltd are as follows:

- **Mapegum WPS** - a one-part, fast drying, polymer-based, ready-to-use, liquid-applied membrane. It is supplied as a light grey-coloured paste in 5, 10 and 25 kg buckets.
- **Mapelastic** - a two-part, flexible, cementitious, liquid-applied membrane. It is supplied as a Part A powder in 24 kg multi-wall bags and a Part B liquid in 8 kg plastic containers. When dry, the membrane is grey in colour.
- **Mapelastic Smart** - a two-part, flexible, cementitious, liquid-applied membrane. It is supplied as a Part A powder in 20 kg multi-wall bags and a Part B liquid in 10 kg plastic containers. When dry, the membrane is light grey in colour.
- **Mapelastic AquaDefense** - a one-part, solvent-free, ultra-quick drying synthetic resin-based paste in water dispersion liquid-applied membrane. It is supplied as a light blue coloured paste in 15 kg drums.
- **Mapeband and Mapeband Gaskets** - a rubber-coated polyester tape for waterproofing expansion joints and sealing around drains and pipes. Available as a tape 120 mm wide in rolls 50 m long, and also in ready-made internal and external corners (90 and 270 degrees) and pipe gaskets 118 x 118 mm and 300 x 300 mm, "T" profiles 515 mm x 315 mm and cross profiles 515 x 515 mm.
- **Mapeband PE120** - a PVC fabric tape used to reinforce wall/wall and floor/wall joints. It is only used with Mapegum WPS and Mapelastic AquaDefense. Available as a tape 120 mm wide, in rolls 10 m and 50 m long, and also as preformed angles 90° and 270°.
- **Mapetex Sel** - a macro-holed non-woven fabric, used to reinforce the first and second layer of the waterproofing membranes. It is supplied as a polypropylene white fabric, in rolls 100 mm, 200 mm and 1 m wide x 25 m long.
- **Mapenet 150** - a glass fibre mesh used to reinforce the membranes. It is supplied as a blue mesh in rolls 1 m wide and 50 m long.
- **Mapeband SA** - a self-adhesive butyl rubber tape used to reinforce all joints. It is supplied as a 2 mm thick, 100 mm wide tape in rolls 25 m long.
- **Mapei Primer 3296** - an acrylic primer for absorbent surfaces. It is an opaque colour and supplied in 5 and 10 kg drums.

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. The membrane products have a shelf life of 24 months from date of manufacture in the original unopened packaging. Once opened, the products must be used within 3 months.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Mapelastic Smart, Version 2013-4-2022-gb, 2022.
- Mapegum WPS, Version 2014-10-2020-en (IT), 2020.
- Mapelastic, Version 331-5-2018-gb, 2018.
- Mapelastic AquaDefense, Version 2013-11-2016-gb, 2016.

6.2 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 Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes are 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 Mapegum WPS and Mapelastic AquaDefense are designed to be used where a one-component product is preferred.

7.3 The membranes must be protected from physical damage by the application of trafficable floor finishes.

7.4 Movement and control joints may be required depending on the shape and size of the building or room, and the floor finish specified. Design guidelines can be found in the BRANZ Good Practice Guide: Tiling.

7.5 Timber framing 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. 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. Timber framing systems supporting the substrates must be constructed such that deflections do not exceed 1/360th of the span. Where NZS 3604 is used, the allowable joist spans given in Table 7.1 shall be reduced by 20%.

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.

8.2 The plywood must be laid with the face grain at right angles to the floor joists. The plywood must be supported with dwangs or framing with a maximum span of 400 mm in each direction, fixed with 10 g x 50 mm stainless steel countersunk head screws at 150 mm centres along the sheet edges and 200 mm through the body of the sheets.

Fibre Cement Compressed Sheet/Fibre Cement Sheet Tile Underlay

8.3 Fibre cement compressed sheet and tile underlay 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 a wet area substrate. Installation must be in accordance with the instructions of the manufacturer.

Particleboard

8.4 Particleboard must be specified for the end use in accordance with NZS 3602.

Concrete and Concrete Masonry

8.5 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 or NZS 4229 and concrete masonry to NZS 4229 and NZS 4230.

Wet Area Wall Linings

8.6 Plasterboard wall linings must be manufactured to comply with AS/NZS 2588, and be suitable for use in internal wet areas.

8.7 Fibre cement sheet must be suitable for use in wet areas and comply with AS/NZS 2908.2.

8.8 Installation of plasterboard or fibre cement wall linings must be carried out in accordance with the instructions of the manufacturer.

Durability

Serviceable Life

9.1 The Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area 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 trafficable floor 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 trafficable floor finish remains intact. Regular checks must be made of the floor finish to ensure it is sound and will not allow moisture to penetrate. Any issues must be repaired immediately by repairing the floor finish.

10.2 In the event of damage to a membrane, the trafficable floor finish must be removed and the membrane repaired by removing the damaged portion and applying a patch with sufficient overlap over the damaged section.

10.3 Drainage outlets must be maintained to operate effectively, and floor finishes must be kept clean.

Internal Moisture

11.1 Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes are impervious to water, and when appropriately designed and installed, will avoid the likelihood of water penetrating behind linings or entering concealed spaces.

11.2 Surfaces must be finished with a trafficable floor finish. A means of compliance with 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).

11.3 Falls in showers and shower areas must be a minimum of 1 in 50. In unenclosed showers, falls must extend a minimum of 1,500 mm out from the shower rose. Floor wastes and drainage flanges must be provided and the floor must fall to the outlet.

11.4 Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes are suitable for use to contain accidental overflow to meet NZBC Clause E3.3.2. A means of compliance for overflow is given in NZBC Acceptable Solution E3/AS1, Paragraph 2.

11.5 The waterproofing membrane must completely cover shower bases, and for unenclosed showers it must extend a minimum of 1,500 mm out from the shower rose. Further design guidance on waterproofing wet areas, including waterproofing walls and junctions can be obtained from AS 3740, the BRANZ Good Practice Guide: Tiling, and flooring and wall lining manufacturers.

11.6 Where water resistant wall finishes such as prefinished sheet materials are used, they must be installed as per the NZBC requirements. They must flash over the membrane a minimum of 30 mm.

11.7 BRANZ recommends the entire floor be covered by a waterproof membrane for bath, shower and spa rooms where timber and plywood floors are used.

Installation Information

Installation Skill Level Requirement

12.1 Installation of the membranes must be completed by trained applicators approved by MBP [NZ] Ltd

12.2 Installation of substrates must always be carried out in accordance with the Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant Licence Class.

Preparation of Substrates

13.1 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.

13.2 The relative humidity of concrete substrates must be 75% or less before membrane application. The concrete substrates can be checked for dryness by using a hygrometer as set out in BRANZ Bulletin No. 585.

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 must have a reinforcement installed as set out in the Technical Literature.

13.4 Refer to the product manufacturer for correct priming requirements.

Membrane Installation

14.1 Installation must not be undertaken where the substrate surface temperature is below 8°C or above 35°C.

14.2 Mapelastic and Mapelastic Smart require the liquid and powder to be mixed and left to stand for 5 minutes before re-mixing, then applying. Mapegum WPS and Mapelastic AquaDefense must be thoroughly stirred before application.

14.3 The membranes must be applied in a minimum of two coats, at the rates set out in the Technical Literature. Subsequent coats must be applied in an opposite direction to the previous coat. The total finished system thickness of the Mapegum WPS and Mapelastic AquaDefense membranes must be a minimum of 1 mm and the Mapelastic and Mapelastic Smart Membranes must be a minimum of 2 mm.

14.4 Application can be made by roller [medium/long nap], brush [long bristle], or a notched steel trowel [finished with a flat steel trowel].

14.5 Reinforcement fabric or Mapeband is bedded into the wet layer between coats to provide movement protection at wall/wall and wall/floor junctions, or any other areas such as joints in the flooring substrate, floor cracks, or around penetrations in the membrane. In all other situations, reinforcement provisions as set out in this Appraisal and the Technical Literature apply.

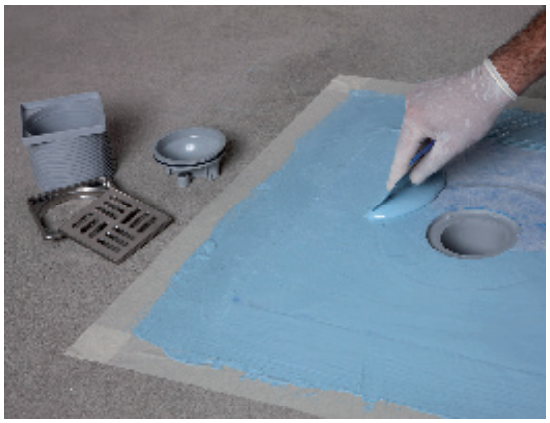
14.6 Clean up may be undertaken with water.

14.7 For further information, refer to the Technical Literature.

Floor Finishes

15.1 The membranes must be fully cured before installing the trafficable floor finish. The cured membranes 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 the BRANZ Good Practice Guide: Tiling. The compatibility of the tile adhesive must be confirmed with the adhesive manufacturer or MBP [NZ] Ltd.



Impregnating Drain Vertical fabric with Mapelastic AquaDefense

Application of Mapeband to a wall-floor joint with Mapelastic AquaDefense

Application of the first coat of Mapelastic AquaDefense

Application of the second coat of Mapelastic AquaDefense

Inspections

16.1 The Technical Literature must be referred to during the inspection of membrane installations.

16.2 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, particularly installation to the correct thickness and use of reinforcement.
- Membrane curing and integrity prior to the installation of floor finish including protection from mechanical damage during curing and prior to installation.

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 has been undertaken by various organisations:

- Mapegum WPS and Mapelastic Wet Area Membranes in accordance with; EN 14891 for initial tensile adhesion strength, tensile strength after water contact, tensile adhesion strength after heat ageing, tensile adhesion strength after contact with lime water, tensile adhesion strength after contact with chlorine water, tensile adhesion strength after freeze-thaw cycles, waterproofing and crack bridging ability; DIN 53504 for tensile strength and maximum elongation after exposure to air and water immersion (Mapegum WPS only) and; Mapei internal method for water absorption after exposure and water immersion.
- Mapelastic Smart in accordance with EN 1502-4 for bond strength to concrete, freeze thaw, flexibility, static and dynamic crack bridging, water vapour permeability, impermeability to water and bond strength after water immersion, heat ageing, freeze-thaw and alkali ageing.
- Mapelastic in accordance with; EN 14891 for crack bridging after 28 days exposure to air, crack bridging after 7 days exposure to air and 21 days immersion in water, adhesion to concrete surface after 28 days exposure to air, adhesion to concrete surface after 28 days exposure to air and 21 days immersion in water; DIN 52615 for resistance to water vapour transmission and; Mapei internal method for deformability under low temperatures.
- Mapegum WPS in accordance with; EN 1384 for tensile adhesion strength after exposure and water immersion; UNI 8202/22 for water absorption after exposure and water immersion and; DIN 53505 for shore A hardness.
- Mapelastic AquaDefense in accordance with AS/NZS 4858 Appendix A including effect of heat ageing, bleach, detergent and water on tensile and elongation, water vapour transmission to ASTM E96-92 and cyclic movement resistance requirements of AS/NZS 4858 Appendix B. Testing to ANSI 118.10-1999 including seam strength, breaking strength, dimensional stability, resistance to fungi, static head and shear strength to ceramic tile and cement mortar. Also tensile adhesion on a plywood substrate and low temperature flexibility of the membrane.

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

18.3 Testing of Mapegum WPS and Mapelastic has been undertaken by BRANZ for durability in accordance with AS/NZS 4858, Appendix A covering tensile strength and elongation after immersion in water, bleach, detergent, and after heat ageing.

18.4 Testing for suitability of Mapelastic over particleboard in accordance with AS/NZS 4858, Appendix C has been undertaken by BRANZ and found to be satisfactory.

Other Investigations

19.1 An assessment was made of the durability of the Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes by BRANZ technical experts.

19.2 Site inspections have been carried out by BRANZ to examine 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 membranes 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.

20.2 The quality management system of the membranes manufacturer has been assessed and found to be satisfactory.

20.3 The quality of supply of the membrane system materials to the market is the responsibility of MBP (NZ) Ltd.

20.4 Quality on-site is the responsibility of the MBP (NZ) Ltd trained applicators.

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

20.6 Building owners are responsible for the maintenance of the trafficable floor finish in accordance with the instructions of MBP (NZ) Ltd.

Sources of Information

- AS 3958.1:2007 Guide to the installation of ceramic tiles.
- AS/NZS 1170:2002 Structural design actions.
- AS/NZS 2908.2:2000 Cellulose-cement products – Flat sheet.
- AS/NZS 2269:2012 Plywood-Structural.
- AS/NZS 4858:2004 Wet area membranes.
- BRANZ Good Practice Guide: Tiling, April 2015.
- DIN 53504 May 1994 Determination of tensile stress/strain properties of rubber.
- EN 1348: 1997/A1 Adhesives for tiles – Determination of tensile adhesion strength for cementitious adhesives.
- EN 14891 March 2003 Liquid applied waterproofing membranes for use beneath ceramic tiling – Definitions, specifications and test methods.
- NZS 3101:2006 The design of concrete structures.
- NZS 3602:2003 Timber and wood-based products for use in buildings.
- NZS 3604:2011 Timber-framed buildings.
- NZS 4229:2013 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230:2004 Code of Practice for the design of masonry structures.
- UNI 8202 – 22: 1987 Building. Water proof sheets. Determination of behaviour in water.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 25 February 2021

This Appraisal has been amended to update the Appraisal holder.

Amendment No. 2, dated 06 October 2022

This Appraisal has been amended to include trafficable floors and to remove Mapelastic Turbo.

BRANZ

In the opinion of BRANZ, Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic Aquadefense Wet Area 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 MBP (NZ) 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. MBP (NZ) 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 MBP (NZ) 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 MBP (NZ) Ltd or any third party.

For BRANZ

Chelydra Percy
Chief Executive

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09 February 2018