



**BRANZ Appraised**  
Appraisal No. 1019 [2018]

## PERMAPHALT MASTIC ASPHALT ROOF WATERPROOFING SYSTEM

**Appraisal No. 1019 [2018]**  
Amended 06 August 2021



### BRANZ Appraisals

Technical Assessments of  
products for building and  
construction.



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### Product

- 1.1 Permaphalt Mastic Asphalt Roof Waterproofing System is a polymer-modified, bitumen mastic asphalt for use as a waterproofing layer on a concrete substrate for roofs, decks, balconies and podiums.

### Scope

- 2.1 Permaphalt Mastic Asphalt Roof Waterproofing System has been appraised as a roof, deck, balcony and podium waterproofing system on buildings within the following scope:
- subject to specific structural and weathertightness design; and,
  - with substrates of suspended concrete slabs; 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 junctions for each specific structure being the responsibility of the building designer.
- 2.2 Roofs, decks, balconies and podiums with Permaphalt Mastic Asphalt Roof Waterproofing System must be designed and constructed in accordance with the following limitations:
- roofs, decks, balconies and podiums constructed to drain water to gutters and drainage outlets complying with the NZBC; and,
  - with no steps within the deck level, no integral roof gardens and no downpipes directly discharging to decks.
- 2.3 The design and construction of the substrate, 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 Permaphalt Mastic Asphalt Roof Waterproofing System must be installed by Neuchatel Limited trained installers.



## Building Regulations

### New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Permaphalt Mastic Asphalt Roof Waterproofing 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 [b] 15 years. Permaphalt Mastic Asphalt Roof Waterproofing System will meet this requirement. See Paragraph 10.1.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.1 and E2.3.2. Permaphalt Mastic Asphalt Roof Waterproofing System will meet these requirements. See Paragraphs 13.1–13.8.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Permaphalt Mastic Asphalt Roof Waterproofing System will meet this requirement.

## Technical Specification

- 4.1 Materials supplied by Neuchatel Limited are as follows:
- **Mastic asphalt** – Permaphalt polymer-modified mastic asphalt to NZS/BS 6925. Manufactured to BS EN ISO 9001 and tested to BS 476.3. Laid in two thicknesses of 10 mm each.
  - **Coarse aggregate** – for paving grades to be crushed rock to BS 1447. Coarse aggregate for grade IV flooring to be clean igneous, calcareous rock or siliceous material to NZS/BS 6925.
  - **Pre-coated chippings** – for paving grade mastic asphalt to BS 1447.
  - **Separating layer** – black sheathing felt.
  - **Expanded metal lath** – 0.55 mm thick bitumen-coated galvanised steel of a coating class not less than Z275 to AS 1397, slit and expanded.
  - **Bituminous primer** – applied to provide adhesion of vapour control layers.

## Handling and Storage

- 5.1 Handling and storage of all materials whether on-site or off-site is under the control of the Neuchatel Limited trained installers. Dry storage must be provided for all products and the blocks must be protected from heat sources and sources of contamination.

## Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Permaphalt Mastic Asphalt Roof Waterproofing 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

### General

- 7.1 The Permaphalt Mastic Asphalt Roof Waterproofing System is for use on roofs, decks, balconies and podiums where an impervious waterproofing system is required to prevent damage to building elements and adjoining areas.
- 7.2 The effective control of internal moisture must be considered at the design stage due to the impermeability of the waterproofing system. Refer to the BRANZ Good Practice Guide: Membrane Roofing.
- 7.3 Movement and control joints may be required depending on the shape and size of the deck.

### Structure

- 8.1 Permaphalt Mastic Asphalt Roof Waterproofing System is suitable for use in areas subject to maximum wind pressures of 6 kPa ULS.

## Substrate

### Concrete

- 9.1 Concrete substrate 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 Permaphalt Mastic Asphalt Roof Waterproofing System is expected to have a minimum durability of at least 15 years, with an expected serviceable life of 25 years, provided it is designed, used, installed and maintained in accordance with this Appraisal and the Technical Literature.

## Maintenance

- 11.1 No maintenance of the waterproofing system will be required provided significant substrate movement does not occur and the mastic asphalt remains intact. Regular checks must be made of the system to ensure it is sound and will not allow moisture to penetrate. Any cracks or damage must be repaired immediately by recoating with the topcoat system in accordance with the Neuchatel Limited Technical Literature and the manufacturer's recommendations.
- 11.2 Drainage outlets must be maintained to operate effectively and the finish must be kept clean.

## Prevention of Fire Occurring

- 12.1 Separation or protection must be provided to the Permaphalt Mastic Asphalt Roof Waterproofing System from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

## External Moisture

- 13.1 Roofs, decks, balconies and podiums must be designed and constructed to shed precipitated moisture. They must also take into account of snowfalls in snow prone areas. A means of meeting code compliance with NZBC Clause E2.3.1 is giving by the Technical Literature.
- 13.2 When installed in accordance with this Appraisal and Technical Literature, Permaphalt Mastic Asphalt Roof Waterproofing System will prevent the penetration of water and will therefore meet code compliance with NZBC Clause E2.3.2. The system is impervious to water and will give a weathertight roof.
- 13.3 Roofs, decks, balconies and podium falls must be built into the substrate.
- 13.4 The minimum fall to the roofs, decks, balconies and podiums must be specified by the designer.
- 13.5 Allowance for deflection and settlement of the substrate must be made in the design of the roof to ensure falls are maintained and no ponding of water can occur.
- 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 roofs, decks, balconies and podiums does not drain to an external gutter or spouting.
- 13.7 Penetrations and upstands of the membranes must be raised above the level of any possible flooding caused by the 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.

## Installation Information

### Installation Skill Level Requirement

- 14.1 Installation of the Permaphalt Mastic Asphalt Roof Waterproofing System must be completed by trained installers, approved by Neuchatel Limited.
- 14.2 Installation of substrates must always be carried out in accordance with the Permaphalt Mastic Asphalt Roof Waterproofing System Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

### Preparation of Substrates

- 15.1 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.
- 15.2 The concrete must be cured for a minimum of 28 days or reach a minimum of 25 MPa.

### Permaphalt Installation

- 16.1 Permaphalt blocks should be re-melted in a purpose made asphalt mixer. When it has attained a molten condition, it should be agitated continuously to ensure a uniform consistency. When re-melting, do not exceed a maximum temperature of 230°C.
- 16.2 Permaphalt is applied using a wooden float to a uniform thickness. On horizontal areas, Permaphalt is usually laid in two coats to a nominal thickness of 20 mm on a separating membrane of black sheathing felt with 50 mm lapped joints.
- 16.3 On completion of the roof, the final coat is rubbed with coarse sharp sand using a wooden float.

### Inspections

- 17.1 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 system.
  - Acceptance of the substrate by the system installer prior to application of the system.
  - Installation of the system to the manufacturer's instructions, particularly installation to the correct thickness, use of reinforcement and a slop resistance finish.
  - System curing and integrity prior to the installation of topcoat, including protection from moisture, frost and mechanical damage during curing.

### Health and Safety

- 18.1 Safe use and handling procedures for the Permaphalt Mastic Asphalt Roof Waterproofing System is provided in the Technical Literature.

## Basis of Appraisal

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

### Tests

- 19.1 The following testing of Permaphalt Mastic Asphalt Roof Waterproofing System has been undertaken by various organisations:
  - Tensile strength, elongation, dimensional stability, water vapour permeability, ring and ball softening point, hardness retention, resistance to water pressure, flow resistance, static indentation and hard body impact.

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

### Other Investigations

- 20.1 An assessment was made of the durability of the Permaphalt Mastic Asphalt Roof Waterproofing System by BRANZ technical experts.
- 20.2 Site inspections have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.
- 20.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

### Quality

- 21.1 The manufacture of the Permaphalt Mastic Asphalt Roof Waterproofing System 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.
- 21.2 The quality of supply of the Permaphalt Mastic Asphalt Roof Waterproofing System materials to the market is the responsibility of Neuchatel Limited.
- 21.3 Quality on-site is the responsibility of the Neuchatel Limited trained installers.
- 21.4 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, Neuchatel Limited and this Appraisal.
- 21.5 Building owners are responsible for the maintenance of the system in accordance with the instructions of Neuchatel Limited.

### Sources of Information

- AS/NZS 1170:2002 Structural design actions.
- BRANZ Good Practice Guide: Membrane Roofing, October 2015.
- NZS 3101:1995 The design of concrete structures.
- Ministry of Business, Innovation and Employment Record of Amendments - Acceptable Solutions, Verification Methods and Handbooks.
- The Building Regulations 1992.

### Amendments

#### Amendment No. 1, dated 06 August 2021.

This Appraisal has been amended to reflect building code updates relating to fire.



In the opinion of BRANZ, **Permaphalt Mastic Asphalt Roof Waterproofing System** 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 **Neuchatel 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. **Neuchatel 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 **Neuchatel 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 **Neuchatel Limited** or any third party.

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**For BRANZ**



**Chelydra Percy**

Chief Executive

Date of Issue:

03 August 2018