



## BRANZ Appraised

Appraisal No. 995 [2018]

## BITUFLAME DPM MEMBRANES

Appraisal No. 995 [2018]



### BRANZ Appraisals

Technical Assessments of products  
for building and construction.



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## Product

- 1.1 bituFLAME DPM Membranes are damp-proof membranes (DPM) for basement retaining walls and floors. They are applied under floor slabs and foundations and to the exterior face of basement retaining walls to prevent water vapour penetrating to the interior face in spaces where moisture may cause damage.
- 1.2 The products are supplied as torch on, polymer-rubber modified bitumen sheets in roll form and are applied as single or double layer systems.

## Scope

- 2.1 bituFLAME DPM Membranes have been appraised as damp-proof membranes for use under floor slabs complying with NZS 3604 and as a damp-proof membrane behind concrete masonry basement walls and under floor slabs complying with NZS 4229.
- 2.2 bituFLAME DPM Membranes have also been appraised for use as a damp-proof 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 insitu or precast concrete complying with NZS 3101 and AS/NZS 1170 or concrete masonry complying with NZS 4230 and 4210; and,
  - where the membranes are adequately protected against damage during backfilling and in service; and,
  - where subsoil drainage and free draining granular backfill has been placed behind basement walls.
- 2.3 The products must be installed by trained applicators approved by Waterproofing Systems NZ Ltd.

## Building Regulations

### New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, bituFLAME DPM 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 [a] not less than 50 years. bituFLAME DPM Membranes meet this requirement. See Paragraph 11.1.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.3. bituFLAME DPM Membranes meet this requirement. See Paragraphs 13.1 – 13.3.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. bituFLAME DPM Membranes meet this requirement and will not present a health hazard to people.

## Technical Specification

4.1 Materials supplied by Waterproofing Systems NZ Ltd are as follows:

### bituFLAME DPM Membranes

- **bituFLAME® Sand** – is a 180 g/m<sup>2</sup> spunbonded composite polyester reinforced, APP modified -bitumen waterproofing membrane with an upper face finished with sand. The membrane is 3.0 mm thick and is supplied in a roll 1.0 m wide and 10.0 m long.
- **bituFLAME® Anti Root** – is a 180 g/m<sup>2</sup> spunbonded composite polyester reinforced, APP modified -bitumen waterproofing membrane with an upper face finished with sand and Preventol B2 added as a root inhibitor. This product is used where there maybe trees or shrubs growing next to where the DPM is being installed. The membrane is 4.0 mm thick and is supplied in a roll 1.0 m wide and 10.0 m long.

### Primers

- **bituPRIME** – is a water based bituminous primer designed to penetrate concrete and masonry surfaces. It is coloured black and supplied in 20 litres metal pails.

## Handling and Storage

5.1 Handling and storage of all materials whether on 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 UV radiation. Rolls of membrane must be stored on end.

## Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for bituFLAME DPM Membranes. 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

- 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

8.1 Where control or construction joints are formed in the substrate, Waterproofing Systems NZ Ltd must be consulted for use of the membranes over these joints.

### Concrete Slab-on-ground

9.1 The membranes must be laid on a minimum of 75 mm thickness of site concrete. The structural concrete slab placed over the membranes must be a minimum of 100 mm thick.

### Backfilling and Drainage

- 10.1 The membranes must be protected against damage by the placement of a protection material between the membranes and the granular fill.
- 10.2 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.
- 10.3 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.

## Durability

### Serviceable Life

- 11.1 bituFLAME DPM Membranes are suitable DPM materials [Modified bitumen sheet] therefore they are expected to have a serviceable life of at least 50 years provided they are installed and maintained in accordance with this Appraisal and are continually protected from sunlight and ultra-violet [UV] radiation.

## Maintenance

- 12.1 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.
- 12.2 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

- 13.1 bituFLAME DPM Membranes, when installed in accordance with this Appraisal and the Technical Literature, will prevent water vapour from penetrating to the interior face of basement retaining walls and floors in spaces where moisture may cause damage. The membranes have a vapour flow resistance of not less than 90 MN s/g.
- 13.2 The membranes are torch-on, and can be used to form sealed joints and to seal penetrations. The top edge of the membranes must be sealed to the wall as set out in the Technical Literature, and protected.
- 13.3 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

- 14.1 Installation of the membranes must be completed by Waterproofing Systems NZ approved applicators.

## System Installation

### Substrate Preparation

- 15.1 All 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 membranes.

### Priming

- 15.2 All substrates must be primed using bituPRIME before application of the membranes. Application instructions for bituPRIME is contained in the technical data sheets.

### Membrane Installation - Floors

- 15.3 Membranes must be installed in accordance with the Technical Literature. Sheet edges must be overlapped a minimum of 60 mm as marked on the sheets and end laps must be a minimum of 100 mm. The membranes must be inspected for damage and any damage must be repaired in accordance with the Technical Literature. The membranes must not be exposed to UV radiation for any longer than 14 days before the structural concrete slab is placed.

### **Membrane Installation - Walls**

15.4 Starting at the lowest point, the membranes must be installed in accordance with the Technical Literature. Sheet edges must be overlapped a minimum of 100 mm. End laps must be a minimum of 150 mm, with upper sheets lapped over lower sheets. Internal and external corners of single layer systems must be reinforced with an extra layer of membrane 300 mm wide. Where two layer systems are specified, lap joints must be staggered. 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.

### **Inspections**

15.5 The Technical Literature and the installation company's Quality Control sheets must be referred to during the inspection of the membrane installation by building consent authorities and territorial authorities.

### **Health and Safety**

16.1 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**

- 17.1 The following testing of bituFLAME DPM Membranes has been undertaken:
- Tensile strength, elongation, tear resistance, watertightness, flexibility at low temperature and flow resistance at elevated temperatures.
- 17.2 The above test methods and results have been reviewed by BRANZ and found to be satisfactory.

### **Other Investigations**

- 18.1 A durability opinion has been given by BRANZ technical experts.
- 18.2 Practicability of installation has been assessed by BRANZ and found to be satisfactory.
- 18.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

### **Quality**

- 19.1 The manufacture of the membranes and primers have 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.
- 19.2 The quality management system of the membrane manufacturer has been assessed and found to be satisfactory.
- 19.3 The quality of materials supplied to the market is the responsibility of Waterproofing Systems NZ Ltd.
- 19.4 Quality of installation on site is the responsibility of the Waterproofing Systems NZ Ltd approved applicator.
- 19.5 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 Waterproofing Systems NZ Ltd.
- 19.6 Building owners are responsible for the maintenance of the membrane systems in accordance with the instructions of Waterproofing Systems NZ Ltd.



### 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.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Business, Innovation and Employment, Third Edition July 2005 (including Amendment 7, 1 January 2017).
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



In the opinion of BRANZ, **bituFLAME DPM 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.

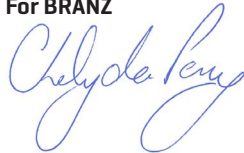
The Appraisal is issued only to **Waterproofing Systems NZ Ltd**, and is valid until further notice, subject to the Conditions of Appraisal.

### 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. **Waterproofing Systems 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 **Waterproofing Systems 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 **Waterproofing Systems NZ Ltd** or any third party.

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**For BRANZ**



**Chelydra Percy**

Chief Executive

Date of Issue:

26 January 2018