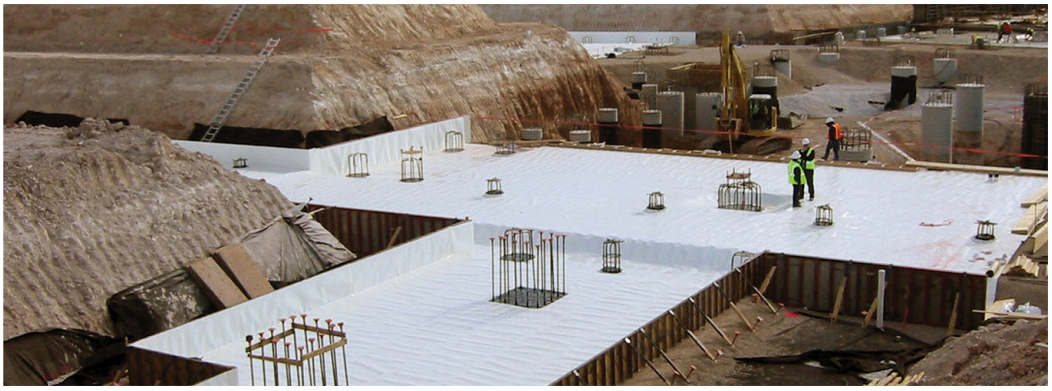
BRANZ Appraised
Appraisal No. 1158 [2021]

NURALITE DAMP PROOF AND TANKING MEMBRANES



Appraisal No. 1158 (2021)

Amended 25 November 2024

BRANZ Appraisals

Technical Assessments of products for building and construction.

Nuralite Waterproofing Limited
60D Leon Leicester Ave
Mount Wellington
Auckland 1060
Tel: 09 579 2046
Email: john@nuralite.co.nz
Web: www.nuralite.co.nz

BRANZ
1222 Moonshine Rd,
RD1, Porirua 5381
Private Bag 50 908
Porirua 5240,
New Zealand
Tel: 04 237 1170
branz.co.nz

Product

1.1 Nuralite Damp Proof and Tanking Membranes are self-adhesive, modified bitumen (Bituthene®) used as a DPM and a pre-applied multi-layered composite sheet waterproofing membrane (Preprufe®) for use as a DPM and tanking membrane on below ground structures.

1.2 Bituthene® is supplied as a self-adhering SBS polymer-rubber modified bitumen sheet in roll form and Preprufe® as a multi-layered composite sheet in roll form.

Scope

2.1 Nuralite Damp Proof and Tanking Membranes - Bituthene® has been appraised for use as a DPM within the following scope:

- on buildings subject to non-specific design under floor slabs complying with NZS 3604 and behind concrete masonry basement walls and under floor slabs complying with NZS 4229; and,
- in buildings subject to specific design with substrates of in-situ or precast concrete complying with NZS 3101 or concrete masonry complying with NZS 4230 and NZS 4210; and,
- where subsoil drainage and free draining granular backfill has been placed behind basement walls.

2.2 Nuralite Damp Proof and Tanking Membranes - Preprufe® has been appraised for use as a tanking membrane within the following scope:

- on buildings subject to specific design with substrates of in-situ or precast concrete complying with NZS 3101; and,
- where the membrane is subject to hydrostatic pressure with the pressure not to exceed 2 bar (20 m head of water).

2.3 Installation of Nuralite Damp Proof and Tanking Membranes must be completed by Nuralite Waterproofing Ltd approved installers, in accordance with the Nuralite Waterproofing Limited Technical Literature.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Nuralite Damp Proof and Tanking 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. Nuralite Damp Proof and Tanking Membranes meet this requirement. See Paragraph 9.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.3. Nuralite Damp Proof and Tanking Membranes meet this requirement. See Paragraphs 11.1–11.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Nuralite Damp Proof and Tanking Membranes meet this requirement.

Technical Specification

4.1 Materials supplied by Nuralite Waterproofing Limited and GCP Applied Technologies are as follows:

- **Bituthene® 3000** is a self-adhesive, modified bituminous membrane made up of 1.4 mm rubberised asphalt and 0.1 mm cross laminated polyethylene outer face for use as a below ground DPM. It is supplied in a roll 1.5 mm thick x 1 m wide x 20 m long.
- **Preprufe®160R Plus** is a pre–applied, multi-layered composite sheet comprising an HDPE film, pressure sensitive adhesive and a weather-resistant protective coating for use as a below ground DPM or a tanking membrane. Preprufe® 160R Plus is a thinner grade used for vertical applications. It is supplied in a roll 0.8 mm thick x 1.2 m wide x 36.8 m long.
- **Preprufe® 300R Plus** is a pre–applied, multi-layered composite sheet comprising a thick HDPE film, pressure sensitive adhesive and a weather-resistant protective coating for use as a below ground DPM or a tanking membrane. Preprufe® 300R Plus is a tougher grade used for horizontal applications. It is supplied in a roll 1.2 mm thick x 1.2 m wide x 30 m long.
- **Preprufe® Tape** is a pre–applied, multi-layered composite sheet comprising a thick HDPE film pressure sensitive adhesive, a weather-resistant protective coating and a self-adhesive underside used to detail all Preprufe® installations. It is supplied in a roll 1.2 mm thick x 100 mm wide x 15 m long.
- **Bituthene® Liquid Membrane LM** is a two component polyurethane mastic used to seal critical areas and details. It is supplied as a 5.7 L kit.
- **Bituthene® Primer WB-3000** is a water-based latex primer formulated to prime concrete surfaces prior to the application of Bituthene®. It is coloured black and is supplied in 20 kg containers.
- **Bituthene® Solvent Based Primer** is a bitumen-based solvent primer formulated to prime concrete surfaces prior to the application of Bituthene®. It is coloured black and is supplied in 20 L pails.
- **Nuraflux No 10 Primer** is a water-based adhesive for bitumen-based membranes. It is coloured black and supplied in 15 L pails.
- **Nuraflux QD Primer** is a quick-dry bitumen primer for a variety of substrates. It is coloured black and supplied in 25 L pails.
- **Preprufe® CJ Tape** is a two-sided, reinforced, pressure sensitive tape for sealing around penetrations and protrusions. It is supplied in rolls 15 m long and 200 mm wide.
- **Preprufe® Detail Tape** is a two-sided, highly aggressive tape used for detailing Preprufe®. It is supplied in rolls 15 m long and 20 mm wide.
- **Bitustick 4000** is a double-sided, self-adhesive waterproofing tape used to detail Bituthene®. It is supplied in rolls 12 m long and either 150 mm or 240 mm wide.
- **Nuradrain** is a high-density polyethylene dimpled sheet used for protection and drainage in below ground applications. It is coloured black and is supplied 20 m long and 2 m wide.

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 Literature

6.1 This Appraisal must be read in conjunction with:

- Bituthene 3000 Technical Data Sheet, September 2020.
- Preprufe 300R Plus & 160R Plus Technical Data Sheet, September 2020.

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

Substrate Design

Walls – Bituthene®

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 substrate, Nuralite Waterproofing Limited must be consulted for use of the membranes over these joints.

Concrete Slab-on-ground

7.4 The membranes must be laid on a minimum of 50 mm thickness of site concrete or well compacted sand or well compacted fines. The structural concrete slab placed over the membranes must be a minimum of 100 mm thick.

Backfilling and Drainage

Bituthene® Range

8.1 The membranes 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.

Preprufe® Range

8.5 As Preprufe® is a pre-applied DPM tanking membrane, on specifically designed substrates, there is no backfilling required.

Durability

Serviceable Life

9.1 Nuralite Damp Proof and Tanking Membranes are suitable DPM and tanking materials, 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 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 Nuralite Damp Proof and Tanking Membranes, 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 membranes have a vapour flow resistance of not less than 90 MN s/g.

11.2 The membranes 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.

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 Installation of the membranes must be completed by Nuralite Waterproofing Limited approved installers.

System Installation – Bituthene® Range

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 membranes.

Priming

13.2 All substrates must be primed before application of the membranes. The supplier of the membranes, Nuralite Waterproofing Limited, should be contacted to confirm the most suitable primer. Application instructions for the primers are contained in the technical data sheets.

Membrane Installation – Walls

13.3 Starting at the lowest point, the membranes must be installed in accordance with the Technical Literature. Sheet edges must be overlapped a minimum of 50 mm as marked on the sheets. 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.

Membrane Installation – Floors

13.4 Membranes must be installed in accordance with the Technical Literature. Sheet edges must be overlapped a minimum of 50 mm as marked on the sheets and end laps must be a minimum of 150 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 two months before the structural concrete slab is placed.

System Installation – Preprufe® Range

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 voids greater than 12 mm. Grout must be used around all penetrations such as utility conduits for stability.

Membrane Installation

14.2 Preprufe® membranes must be installed to all areas required to achieve a waterproof finish in accordance with Nuralite Waterproofing Limited Technical Literature. Temperatures must be greater than -4°C during installation.

14.3 The HDPE film face with the blue selvedge edge strip must be facing the prepared substrate and the treated white adhesion coating surface with the green selvedge edge strip must be facing the new concrete.

14.4 The end laps must be accurately positioned and staggered to avoid build up of layers. Sheets must overlap the previous sheet by a minimum of 75 mm (side and end laps). The underside of the sheet must be clean, dry and free from contamination before making the overlaps.

14.5 Vertical lengths greater than 2.4 m must be mechanically fastened under the vertical laps at 0.6 m intervals using flat head nails or fixings suitable for the substrate. Fixings are to be placed through the lap so that the membrane lays flat to enable heavy rolling. Fixings within the sheet must be covered with a patch of Preprufe® Tape.

14.6 All cut ends or laps must be completed using Preprufe® Tape.

14.7 Concrete must be placed within 40 days.

Inspections

14.8 The Technical Literature and the installation company's Quality Control sheets must be referred to during the inspection of the membrane installation.

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 The following testing of Nuralite Damp Proof and Tanking Membranes has been undertaken:

- Tensile strength, elongation, nail tear, water vapour permeability, low temperature flexibility after heat ageing, static indentation, dynamic indentation, unrolling at low temperatures, resistance to water pressure (also tested on joints), peel resistance from concrete heat aged, resistance to sliding, tensile strength of joints, chisel impact, air leakage, shear strength of joints, water vapour transmission, tensile strength, tear resistance, watertightness and resistance to static loading.

16.2 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 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.

18.2 The quality of materials supplied to the market is the responsibility of Nuralite Waterproofing Limited.

18.3 Quality of installation on-site is the responsibility of the Nuralite Waterproofing Limited approved installers.

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 Nuralite Waterproofing Limited.

18.5 Building owners are responsible for the maintenance of the membrane systems in accordance with the instructions of Nuralite Waterproofing 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.

Amendments

Amendment No. 1, dated 25 November 2024

This Appraisal has been amended to correct the thickness of the site concrete in Paragraph 7.4.

BRANZ

In the opinion of BRANZ, Nuralite Damp Proof and Tanking 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 Nuralite Waterproofing 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. Nuralite Waterproofing 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 Nuralite Waterproofing 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 Nuralite Waterproofing Limited or any third party.

For BRANZ

Chelydra Percy
Chief Executive

Date of Issue:
16 April 2020