



BRANZ Appraised

Appraisal No. 944 [2022]

NEUCHATEL TORCH APPLIED MEMBRANE SYSTEM

Appraisal No. 944 [2022]

This Appraisal replaces BRANZ
Appraisal No. 944 [2017]

Amended 24 April 2024



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



Neuchâtel Waterproofing Limited

120 Foundry Road
Silverdale
Auckland 0092
Tel: 021 840 660

Email: scott@neuchatel.co.nz

Web: www.neuchatel.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 The Neuchâtel Torch Applied Membrane System is a double-layer torch-on membrane system for roofs and decks. The membrane products (both base and cap sheet) are manufactured from spun-bonded polyester-reinforced, modified bitumen.

Scope

- 2.1 The Neuchâtel Torch Applied Membrane System has been appraised as a roof and deck waterproofing membrane system on buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; or,
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area when subject to specific structural design; and,
 - with substrates of plywood or suspended concrete slab; and,
 - with minimum falls for plywood roofs of 1:30, plywood decks of 1:40 and suspended concrete slab of 1:60; and,
 - with deck size limited to 40 m²; and,
 - situated in NZS 3604 Wind Zones up to, and including, Extra High.
- 2.2 The Neuchâtel Torch Applied Membrane System has also been appraised as a roof and deck waterproofing membrane system on buildings within the following scope:
 - subject to specific structural and weathertightness design; and,
 - with substrates of plywood or suspended concrete slab; 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.
- 2.3 Roofs and decks waterproofed with the Neuchâtel Torch Applied Membrane System must be designed and constructed in accordance with the following limitations:
 - nominally flat roofs and decks and pitched roofs 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 the deck; and,
 - with the deck membrane system continually protected from physical damage by a pedestal protection system.
- 2.4 The design and construction of the substrate and movement and control joints is specific to each building, and therefore is the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.
- 2.5 The membrane system must be installed by Neuchâtel Waterproofing Limited approved applicators.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the Neuchatel Torch Applied Membrane 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. The Neuchatel Torch Applied Membrane System meets this requirement. See Paragraphs 10.1 and 10.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2. The Neuchatel Torch Applied Membrane System meets these requirements. See Paragraphs 13.1-13.8.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The Neuchatel Torch Applied Membrane System meets this requirement.

Technical Specification

4.1 Materials supplied by Neuchatel Waterproofing Limited are as follows:

- **Viapol Systema** – a torch-on, elastoplastomeric polymer bitumen (BPP) membrane, reinforced with non-woven polyester fabric that is glass stabilised. It is used as a base layer in a double-layer system. It is coloured black and supplied in rolls 3 mm thick, 1 m wide and 10 m long.
- **Viapol Systema Mineral** – a torch-on, elastoplastomeric polymer bitumen (BPP) membrane, reinforced with non-woven polyester fabric that is glass stabilised with a mineral chip finish. It is used as the top layer in a double-layer system. It is coloured grey/green and supplied in rolls 4.5 kg/m², 1 m wide and 10 m long.
- **Viabit** – a solvent-based, bituminous primer for all substrates. It is coloured black and supplied in 10 and 20 L cans.

Handling and Storage

5.1 Handling and storage of all materials, whether on-site or off-site, is under the control of the Neuchatel Waterproofing Limited approved applicators. Dry storage must be provided for all products and the rolls of membrane must be stored in an upright position.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Neuchatel Torch on Membrane Detail Drawings, Version 001, dated 18 March 2024.

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 The Neuchatel Torch Applied Membrane System is a fully bonded, double-layer torch-on system for use on roofs, decks, gutters and parapets. It is used where an impervious waterproof membrane is required to prevent damage to building elements and adjoining areas. The products can be used on new or existing buildings. Neuchatel Waterproofing Limited should be consulted as to the suitability of any existing substrates prior to using the Neuchatel Torch Applied Membrane System.
- 7.2 The effective control of internal moisture must be considered at the design stage due to the impermeability of the membrane. Refer to the BRANZ Good Practice Guide: Membrane Roofing.
- 7.3 Where regular foot traffic on the roof is envisaged i.e. maintenance of lift equipment, a walkway should be installed to ensure the membrane system is protected. The Neuchatel Torch Applied Membrane System is designed for limited, irregular pedestrian access only.
- 7.4 The Neuchatel Torch Applied Membrane System, when used on decks, requires a pedestal protection system. Neuchatel Waterproofing Limited should be contacted for the best system to meet design requirements.

Structure

- 8.1 The Neuchatel Torch Applied Membrane System, as a fully bonded double-layer system, is suitable for use in areas subject to maximum wind pressures of 6 kPa ULS.

Substrates

Plywood

- 9.1 Plywood must be treated to H3 [CCA treated]. LOSP treated plywood must not be used. Plywood must comply with NZBC Acceptable Solution E2/AS1, Paragraph 8.5.3 and 8.5.5.1 [excluding 8.5.5.1 g) i)]. Where specific design is used, [i.e. outside the scope of NZBC Acceptable Solution E2/AS1] the plywood thickness and fixing size may increase and centres may decrease to meet specific wind loadings. 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.

Concrete

- 9.2 Concrete substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101.

Existing Construction

- 9.3 A thorough inspection of the substrate must be made to ensure it is in fit condition and does not contain any materials that will adversely affect the performance of the membrane.
- 9.4 Repairs must be undertaken, where applicable, to ensure the substrate is sound, the joints are sealed, and the flashings are sound. Plywood substrates must be checked for screw fixings, and if necessary re-fixed as for new plywood.

Durability

Serviceable Life

- 10.1 The Neuchatel Torch Applied Membrane System is expected to have a minimum durability of at least 15 years, with an expected serviceable life of 20 years, provided it is designed, used, installed and maintained in accordance with this Appraisal and the Technical Literature.

Chemical Resistance

- 10.2 Industrial air pollutants and windborne salt deposits should not significantly affect the durability of the membranes. However, the long term properties of the material may be affected by contact with low molecular weight petroleum distillates.

Maintenance

- 11.1 The Neuchatel Torch Applied Membrane System must be regularly [at least annually] checked for damage, rubbish and debris. Damage, such as small punctures and tears must be repaired as recommended by Neuchatel Waterproofing Limited.
- 11.2 Special care must be taken when inspecting the membrane roof system to ensure the continuing prevention of moisture ingress, and repairs must be undertaken where required.
- 11.3 Drainage outlets must be maintained to operate effectively.

Prevention of Fire Occurring

- 12.1 Separation or protection must be provided to the Neuchatel Torch Applied Membrane System from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Acceptable Solution C/AS1 and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.



External Moisture

- 13.1 Roofs and decks must be designed and constructed to shed precipitated moisture. They must also take account of snowfalls in snow prone areas. A means of meeting code compliance with NZBC Clause E2.3.1 is given by the Technical Literature.
- 13.2 When installed in accordance with this Appraisal and the Technical Literature, the Neuchatel Torch Applied Membrane System will prevent the penetration of water and will therefore meet code compliance with NZBC Clause E2.3.2. The membrane system is impervious to water and will give a weathertight roof or deck.
- 13.3 The minimum fall for roofs is 1 in 30, for plywood decks 1 in 40, suspended concrete slab 1 in 60 and for gutters is 1 in 100. All falls must slope to an outlet. Inadequate falls will allow moisture to collect and increase the risk of deterioration of the membrane. *[Note: Where possible, BRANZ recommend a fall of 1 in 60 for gutters.]*
- 13.4 The Neuchatel Torch Applied Membrane System is impermeable; therefore a means of dissipating construction moisture must be provided in the building design and construction to meet code compliance with NZBC Clause E2.3.6.
- 13.5 Roof and deck falls must be built into the substrate.
- 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 roof does not drain to an external gutter or spouting.
- 13.7 Penetrations and upstands of the membrane system must be raised above the level of any possible flooding caused by 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 Neuchatel Torch Applied Membrane System must be completed by trained applicators, approved by Neuchatel Waterproofing Limited
- 14.2 Installation of substrates must always be carried out in accordance with the Neuchatel Torch Applied Membrane System Technical Literature and this Appraisal, by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant License 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 relative humidity of concrete substrates must be 75% or less before membrane application. The concrete can be checked for dryness by using a hygrometer, as set out in BRANZ Bulletin No. 585.
- 15.3 The moisture content of the plywood and timber substructure must be a maximum of 20% and the plywood sheets must be dry at time of membrane application. This will generally require plywood sheets to be covered until just before the membrane is laid, to prevent rain wetting.

Membrane Installation

- 16.1 The installation of the Neuchatel Torch Applied Membrane System is very complex and limited to trained applicators only. The Neuchatel Waterproofing Limited Technical Literature should be referred to in all instances for the correct procedures.



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 membrane.
 - Acceptance of the substrate by the membrane installer prior to application of the membrane.
 - Installation of the membrane to the suppliers instructions.

Health and Safety

- 18.1 Safe use and handling procedures for the Neuchatel Torch Applied Membrane System are provided in the Technical Literature. The products must be used in conjunction with the relevant Material Safety Data Sheets for each membrane.

Basis of Appraisal

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

Tests

- 19.1 The following is a summary of the testing of the Neuchatel Torch Applied Membrane System undertaken by various organisations:
- Tensile strength (new and aged), water absorption, water vapour transmission, watertightness, lap joint strength, cycling movement, peel resistance, low temperature flexibility, heat resistance, resistance to impact and QUV aging.
 - BRANZ has reviewed the information and have found it to be satisfactory.

Other Investigations

- 20.1 A durability opinion has been provided by BRANZ technical experts.
- 20.2 Installation of the membranes has been assessed by BRANZ for practicability and found to be satisfactory.
- 20.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

- 21.1 The manufacture of the Neuchatel Torch Applied Membrane 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 product to the market is the responsibility of Neuchatel Waterproofing Limited.
- 21.3 Quality on-site is the responsibility of the Neuchatel Waterproofing Limited approved applicators.
- 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 supplier, Neuchatel Waterproofing Limited and this Appraisal.

Sources of Information

- AS/NZS 1170:2002 Structural design action - General principles.
- AS/NZS 2269:2012 Plywood - Structural.
- BRANZ Bulletin No. 585 - Measuring moisture in timber and concrete.
- BRANZ Good Practice Guide: Membrane Roofing (Second Edition), October 2015.
- NZS 3101:2006 Concrete structures standard.
- NZS 3604:2011 Timber-framed buildings.
- 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 October 2023

This Appraisal has been amended to update the Appraisal name and Appraisal Holder.

Amendment No. 2, dated 24 April 2024

This Appraisal has been amended to update the fire wording, update membrane thicknesses and added the minimum fall requirements for suspended concrete slab. This Appraisal has also been amended to update the Appraisal Holder's address and logo, and to include the Technical Literature information.



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14 June 2022

NEUCHATEL TORCH APPLIED
MEMBRANE SYSTEM



In the opinion of BRANZ, **Neuchatel Torch Applied Membrane 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 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. **Neuchatel 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 **Neuchatel 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 **Neuchatel Waterproofing Limited** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

14 June 2022