BRANZ Appraised

Appraisal No. 1020 (2023)

VILLAPLAST TORCH ON ROOFING SYSTEMS

Appraisal No. 1020 (2023)

This Appraisal replaces BRANZ Appraisal No. 1020 (2018)

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 Villaplast Torch On Roofing Systems are APP-modified, polyester reinforced, bitumen torch-on membranes for roofs, decks and balconies.

Scope

2.1 Villaplast Torch On Roofing Systems have been appraised as roof and deck waterproofing membranes 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 roofs of 1:30 and decks of 1:40; and,
- with deck size limited to 40 m^2; and,
- situated in NZS 3604 Wind Zones up to, and including, Extra High.

2.2 Villaplast Torch On Roofing Systems have also been appraised as roof and deck waterproofing membranes 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 Villaplast Torch On Roofing Systems must be designed and constructed in accordance with the following limitations:

- nominally flat or pitched roofs and decks 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 membranes 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 membranes must be installed by Torch-on Waterproofing Ltd approved installers.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Villaplast Torch On Roofing Systems, 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. Villaplast Torch On Roofing Systems meet this requirement. See Paragraph 10.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2. Villaplast Torch On Roofing Systems meet these requirements. See Paragraphs 13.1-13.9.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Villaplast Torch On Roofing Systems meet this requirement.

Technical Specification

4.1 Materials supplied by Torch-on Waterproofing Ltd are as follows:

- **Villas Villaplast PV 40** – a high performance, APP-modified bitumen torch-on waterproofing membrane used as a base layer in a double layer system. It is supplied in rolls 2.9 mm thick, 1 m wide by 10 m long. The upper surface is finished with fine sand.
- **Villas Villaplast PV 40 S** – a high performance, APP-modified bitumen torch-on waterproofing membrane used as a top layer in a double layer system. It is supplied in rolls 3.6 mm thick, 1 m wide by 10 m long. The upper surface is finished with a black mineral flake.
- **Villas Pormex Rapid ZTV** – a quick drying bituminous primer for all substrates. It is supplied as a black liquid in 15 L containers.

Handling and Storage

5.1 Handling and storage of all materials, whether on-site or off-site, is under the control of the Torch-on Waterproofing Ltd approved installers. 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:

- Villaplast Torch On Roofing Systems Details TRCH-01-TRCH-13, 01/2018-05/2018.

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 Villaplast Torch On Roofing Systems are fully bonded, torch-on systems for use on roofs, gutters, parapets, decks and balconies. They are 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. Torch-On Waterproofing Ltd should be consulted as to the suitability of any existing substrates prior to using Villaplast Torch On Roofing Systems.

7.2 The effective control of internal moisture must be considered at the design stage due to the impermeability of the membranes. Refer to the BRANZ Good Practice Guide: Membrane Roofing.

7.3 All the systems require a protection system for when anything other than irregular maintenance foot traffic is expected. Torch-on Waterproofing Ltd should be consulted for the best system to meet the design requirements.

Structure

8.1 Villaplast Torch On Roofing Systems as fully bonded double layer systems are 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. 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 refixed as for new plywood.

Durability

Serviceable Life

10.1 Villaplast Torch On Roofing Systems are expected to have a minimum durability of at least 15 years, with an expected serviceable life of 20 years, provided they are 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 membrane systems 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 Torch-On Waterproofing Ltd.

11.2 Special care must be taken when inspecting the membrane roof systems 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 Villaplast Torch On Roofing Systems 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 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 which aligns with details in NZBC Acceptable Solution E2/AS1.

13.2 When installed in accordance with this Appraisal and the Technical Literature, Villaplast Torch On Roofing Systems will prevent the penetration of water and will therefore meet code compliance with NZBC Clause E2.3.2. The membranes are impervious to water and will give a weathertight roof.

13.3 Roof, deck and balconies falls must be built into the substrate.

13.4 The minimum fall to roofs is 1 in 30, decks 1:40 and 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, a fall of 1 in 60 in the gutters is preferred).*

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 Villaplast Torch On Roofing Systems are 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.

13.7 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.

13.8 Penetrations and upstands of the membranes must be raised above the level of any possible flooding caused by the blockage of roof drainage.

13.9 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 membranes must be completed by installers approved by Torch-on Waterproofing Ltd.

14.2 Installation of substrates must be completed by tradespersons with an understanding of roof construction, in accordance with instructions given within the Torch-on Waterproofing Ltd Technical Literature and this Appraisal.

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 these membrane systems is very complex and limited to trained applicators only. The Torch-on Waterproofing Ltd 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 Villaplast Torch On Roofing Systems 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 Villaplast Torch On Roofing Systems undertaken by various organizations:

- Tensile strength, elongation, tear strength, watertightness, resistance to impact, resistance to static load and pliability at low temperature.
- BRANZ has reviewed the information and 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 Villaplast Torch On Roofing Systems 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 Torch-on Waterproofing Ltd.

21.3 Quality on-site is the responsibility of the Torch-on Waterproofing Ltd approved 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 supplier, Torch-on Waterproofing Ltd and this Appraisal.

Sources of Information

- AS/NZS 1170:2002 Structural Design action - general principles.
- AS/NZS 2269:2012 Plywood - Structural.
- BRANZ Good Practice Guide: Membrane Roofing, October 2015.
- BRANZ Bulletin No. 585 - Measuring Moisture in Timber and Concrete (R515).
- NZS 3101:2006 The design of concrete structures.
- 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.

BRANZ

In the opinion of BRANZ, Villaplast Torch On Roofing Systems 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 Torch-on Waterproofing 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. Torch-on Waterproofing 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 Torch-on Waterproofing 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 Torch-on Waterproofing Ltd or any third party.

For BRANZ

Chelydra Percy
Chief Executive
06 April 2023