



BRANZ Appraised

Appraisal No. 1043 [2018]

EVOLIGHT S TORCH ON MEMBRANE SYSTEM

Appraisal No. 1043 [2018]



BRANZ Appraisals

Technical Assessments of products for building and construction.



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Product

- 1.1 Evolight S Torch On Membrane System is SBS modified, polyester reinforced, bitumen torch on membrane for roofs, decks and balconies.

Scope

- 2.1 Evolight S Torch On Membrane System has 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 of limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards 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 m²; and,
 - situated in NZS 3604 Wind Zones, up to, and including Extra High.
- 2.2 Evolight S Torch On Membrane System has 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 Evolight S Torch On Membrane System 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 downpipe direct discharge 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. The membranes must be installed by Mapei New Zealand Ltd approved installers.



Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Evolight S Torch On 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. Evolight S Torch On Membrane System meet this requirement. See Paragraph 10.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2. Evolight S Torch On Membrane System meet these requirements. See Paragraphs 13.1 - 13.9.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Evolight S Torch On Membrane System meet this requirement and will not present a health hazard to people.

Technical Specification

4.1 Materials supplied by Mapei New Zealand Ltd are as follows:

- Evolight S – 3.0 mm thick, torch applied, plastomeric bitumen waterproof membrane with ultra-light Reoxthene technology and an upper surface finish of talc/sand/lightweight polypropylene used as a base sheet in a multi-layer system. It is supplied in 1 m x 10 m rolls.
- Evolight S Mineral – 4.5 mm thick, torch applied, plastomeric bitumen waterproof membrane with ultra-light Reoxthene technology and an upper surface of slate granule [mineral] used as a cap sheet in a multi-layer system. It is supplied in rolls of 1 m x 10 m rolls in various colours
- Polyprimer HP 45 – is a bituminous primer used for all substrates prior to the application of the membranes. It is black in colour and supplied in 20 litre cans.

Handling and Storage

5.1 Handling and storage of all materials whether on or off site is under the control of the Mapei New Zealand 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 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Evolight S Torch On Membrane 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 Evolight S Torch On Membrane System is a fully bonded, torch on system for use on roofs, gutters, parapets, decks and balconies. 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. Mapei New Zealand Ltd should be consulted as to the suitability of any existing substrates prior to using Evolight S Torch On Membrane System.

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

7.3 The system requires a protection system for when anything other than irregular maintenance foot traffic is expected. Mapei New Zealand Ltd should be consulted for the best system to meet the design requirements.



Structure

- 8.1 Evolight S Torch On Membrane System is a fully bonded double layer system and is suitable for use in areas subject to maximum wind pressures of 6 kPa Ultimate Limit State.

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 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 Evolight S Torch On Membrane System is 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 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 Mapei New Zealand 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 Evolight S Torch On Membrane System from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 - C/AS6 and NZBC Verification Method C/VM1 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, Evolight S Torch On Membrane System will prevent the penetration of water and will therefore meet code compliance with Clause E2.3.2. The membrane is 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 Evolight S Torch On 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 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 must be completed by installers, approved by Mapei New Zealand Ltd.
- 14.2 Installation of substrates must be completed by tradespersons with an understanding of roof construction, in accordance with instructions given within the Mapei New Zealand 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 this membrane system is very complex and limited to approved installers only. The Mapei New Zealand 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:
- 17.2 Construction of substrates, including crack control and installation of bond breakers and movement control joints.
- 17.3 Moisture content of the substrate prior to the application of the membrane.
- 17.4 Acceptance of the substrate by the membrane installer prior to application of the membrane.
- 17.5 Installation of the membrane to the suppliers instructions.

Health and Safety

- 18.1 Safe use and handling procedures for Evolight S Torch On Membrane System is 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

- 19.1 The following is a summary of the testing of Evolight S Torch On Membrane System that has been undertaken:

Tensile strength, watertightness, flow resistance at elevated temperature, artificial aging, resistance to tearing, watertightness, resistance to impact, resistance to static load and cold flexibility.

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 Evolight S Torch On 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 Mapei New Zealand Ltd.
- 21.3 Quality on site is the responsibility of the Mapei New Zealand 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, Mapei New Zealand 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.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Business, Innovation and Employment, Third Edition July 2005 [Amendment 7, 1 January 2017].
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.



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20 December 2018

EVOLIGHTS TORCH ON
MEMBRANE SYSTEM



In the opinion of BRANZ, **Evolight S Torch On 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 **Mapei New Zealand 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. **Mapei New Zealand 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 **Mapei New Zealand 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 **Mapei New Zealand Ltd** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

20 December 2018