BRANZ Appraised
Appraisal No. 1006 [2018]

RUBCO BUTYL MEMBRANE SYSTEMS

Appraisal No. 1006 (2018)

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 Rubco Butyl Membrane Systems are synthetic rubber waterproofing membranes designed to be used on roofs and decks.

1.2 The membranes are supplied as single-ply, flexible synthetic rubber sheet in roll form. The products are installed as single layer systems.

Scope

2.1 Rubco Butyl Membrane Systems have been appraised for use as roof and deck waterproofing membranes for 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 with regards to building height and floor plan area when subject to specific engineering design; and,
- with substrates of plywood sheet, Strandsarking (roofs only) or suspended concrete slab; and,
- with minimum falls for roofs of 1:30, plywood decks of 1:40 and suspended concrete slab of 1:60; and,
- with deck size limited to 40 m^2; and,
- situated within NZS 3604 Wind Zones up to, and including Extra High; or,
- situated in specific design wind pressures up to a maximum design differential Ultimate Limit State (ULS) of 3.0 kPa with the weathertightness detailing subject to specific design.

2.2 Roofs and decks must be designed and constructed with no steps within the deck level, no integral roof gardens, and no downpipe discharging directly onto the deck.

2.3 The design and construction of the substrate and movement and control joints is specific to each building, and is therefore the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.

2.4 The membranes must be installed by trained applicators, approved by The Rubber Roofing Co. Group Limited.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Rubco Butyl Membrane 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. Rubco Butyl Membrane Systems meet this requirement. See Paragraph 10.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2. Roofs and decks incorporating Rubco Butyl Membrane Systems meet these requirements. See Paragraphs 13.1 – 13.9.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Rubco Butyl Membrane Systems meet this requirement and will not present a health hazard to people.

Technical Specification

4.1 Materials supplied by The Rubber Roofing Co. Group Limited are as follows:

- **Butyl Membranes** - All membranes are single-ply, flexible synthetic rubber membranes. They are supplied in rolls nominally 1.4 m wide by 17.86 m long. Each roll is packed in polythene wrapper marked 'Butyl' with the thickness identified. Thicknesses available are 1.0, 1.5 and 2.25 mm in black; 1.2 mm in dove grey; and 1.5 mm in various colours.
- **Adhesive WA 98** - A specially formulated solvent-based adhesive for all Butyl applications. Supplied in 1, 4 and 20 litre containers.
- **Solvent WA 98** - A clean up solvent for WA 98 Adhesive.
- **Seam Primer** - A water resistant primer adhesive, used with seam tape for all Butyl laps.
- **Seam Tape** - Uncured cold gum tape used for all Butyl laps. Supplied in 50 mm x 30.5 m rolls.
- **Flashing Tape** - A malleable tape for moulding gussets, pipe flashings and awkward situations. Supplied in rolls 50-100 mm wide x 5 m long.
- **Butyl Sealant CA20P** - A specially designed and formulated sealant for sealing Butyl flashings into chases. Supplied in 375 mm tubes.
- **ARDEX Release Tape** - This is a pressure sensitive tape between two silicone release backings. One release backing is removed to allow the tape to be applied over all plywood joints. The other release backing is left in place to provide an unbonded area under the membrane which allows for substrate movement.
- **Detail Tape** - A semi-cured detail/flashing tape supplied in rolls 150 mm wide x 30.4 m long.
- **Overlay Tape** - A cured self-adhesive joint tape supplied in rolls 150 mm wide x 30.4 m long.

Handling and Storage

5.1 Handling and storage of all materials whether on or off site is under the control of the The Rubber Roofing Co. Group 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 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Rubco Butyl Membrane Systems. 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 When Rubco Butyl Membrane Systems are used for specifically designed buildings up to design differential 3.0 kPa ULS wind pressure, only the adhesion of the membrane to the substrate is covered within the scope of this Appraisal. All other aspects of the building, including weathertightness detailing, need to be specifically designed and are outside the scope of this Appraisal.

7.2 Rubco Butyl Membrane Systems are for use on roofs, decks and balconies where an impervious waterproof membrane is required to prevent damage to building elements and adjoining areas.

7.3 The 1.0 and 1.2 mm thick Butyl products are designed for use on roofs, gutters and decks with protection, and will accommodate light traffic. The 1.5 mm thick product is designed for walk out decks and high maintenance areas, and the 2.25 mm thick product is designed for heavy duty areas and is custom made on request.

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

7.5 Timber framing systems 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 that all sheet edges are fully supported.

Building to NZBC Acceptable Solution E2/AS1

7.6 NZBC Acceptable Solution E2/AS1 limits the size of decks to 40 m^2 as covered by the scope of this Appraisal. Rubco Butyl Membrane Systems are suitable for use on decks larger than 40 m^2. These decks are the subject of specific design and are outside the scope of this Appraisal.

Structure

8.1 Rubco Butyl Membrane Systems are fully bonded to the substrate and are suitable for use in areas subject to maximum wind pressure of design differential 3 kPa ULS subject to the limitations of the substrate.

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 a specific design is used (i.e. outside the scope of E2/AS1), the plywood thickness and fixing size may increase and centres may decrease to meet specific wind loadings.

Strandsarking

9.2 Strandsarking must be installed in accordance with the manufacturer's instructions and BRANZ Appraisal No. 946 (2016).

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.

Durability

Serviceable Life

10.1 Rubco Butyl Membrane Systems when subjected to normal conditions of environment and with proper maintenance can expect to have a serviceable life of at least 20 years.

Maintenance

11.1 No maintenance of the membrane is normally required provided significant substrate movement does not occur.

11.2 In the event of damage to the membrane, the membrane must be repaired by removing the damaged portion and applying a patch as for new work.

11.3 Drainage outlets must be maintained to operate effectively.

Prevention of Fire Occurring

12.1 Separation or protection must be provided to Rubco Butyl Membrane Systems 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 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 for buildings within the scope of NZBC Aceptable Solution E2/AS1 is given by the Technical Literature which matches details in NZBC Acceptable Solution E2/AS1.

13.2 When installed in accordance with this Appraisal and the Technical Literature, Rubco Butyl Membrane 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 or deck.

13.3 Rubco Butyl Membrane 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.

13.4 The minimum fall to roofs is 1 in 30, plywood decks 1 in 40, suspended concrete slab 1 in 60 and gutters 1 in 100 with no cross seams allowed in the gutter in accordance with NZBC Acceptable Solution E2/AS1 Paragraph 8.5.1. All falls must slope to an outlet. Inadequate falls will allow moisture to collect and may increase the risk of deterioration of the membranes. *[Note: Where possible, a minimum fall of 1 in 60 in gutters is preferred.]*

13.5 Roof and deck falls must be built into the substrate and not created with mortar screeds applied over the membranes.

13.6 Allowance for deflection and settlement of the substrate must be made in the design of the roof or deck to ensure falls are maintained and no ponding of water can occur.

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 deck or balcony does not drain to an external gutter or spouting.

13.8 Penetrations and upstands of the membrane must be raised above the level of any possible flooding caused by blockage of deck and balcony 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.

Water Supplies

14.1 Water is not contaminated by Rubco Butyl Membrane Systems. The first 25 mm of rainfall from a newly installed Rubco Butyl Membrane Systems roof must be discarded before drinking water collection starts. This is to remove residues which may have developed in the processes involved in the production of Rubco Butyl Membrane Systems.

14.2 Note that all water collected off roof surfaces made from any material is considered to be non-potable due to possible contamination from other sources. Water collection in this way can only be considered potable if it has been passed through a suitable sterilization system. Sterilization systems have not been assessed and are outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

15.1 Installation of substrates must always be carried out by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class, in accordance with the Rubco Butyl Membrane Systems Technical Literature and this Appraisal

15.2 Installation and finishing of components and accessories supplied by The Rubber Roofing Co. Group Limited and its approved applicators must be carried out in accordance with the Rubco Butyl Membrane Systems Technical Literature and this Appraisal by trained applicators, approved by The Rubber Roofing Co. Group Limited.

Preparation of Substrates

16.1 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.

16.2 Concrete substrates can be checked for dryness by using a hygrometer, as set out in BRANZ Bulletin No. 585. The relative humidity of the concrete must be 75% or less before membrane application.

16.3 The moisture content of a timber substructure must be a maximum of 20% and plywood or Strandsarking sheets must be dry at the time of membrane application. This will generally require plywood or Strandsarking sheets to be covered until just before the membrane is laid, to prevent rain wetting.

16.4 In cases of extreme absorbency a priming coat of 50/50 solution of WA98 and adhesive solvent may be required. Consult with The Rubber Roofing Co. Group Limited if in doubt.

Membrane Installation

17.1 The membranes must be installed in accordance with the Technical Literature.

17.2 All joints in the plywood and Strandsarking substrate, and junctions of plywood and Strandsarking with other materials must have 25 mm wide ARDEX Release Tape applied before installation of the membrane.

17.3 The membranes must be unrolled without tension onto the prepared substrate and allowed to 'relax' for at least 20 minutes prior to installation.

17.4 Adhesive must be applied to both the membrane and the substrate, one half at a time. When the adhesive is tack dry, the sheet is rolled onto the substrate. The process is then repeated for the other half of the sheet. Joints in all membrane laps must be completed using ARDEX Seam Tape and Seam Primer.

Inspections

18.1 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 manufacturer's instructions.

Health and Safety

19.1 Safe use and handling procedures for the membrane system is provided in the Technical Literature. The products must be used in conjunction with the relevant Materials Safety Data Sheet for each membrane.

Basis of Appraisal

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

Tests

20.1 Tests have been carried out on the membranes by Materials and Quality Consultancy Ltd. This testing covered specific gravity, shore hardness, tensile strength, modulus of elongation, elongation at break, tensile and elongation retention after heat aging, tear strength, ozone resistance and water absorption as detailed in NZBC Acceptable Solution E2/AS1, Paragraph 8.5.4 (b). Results and test methods have been reviewed by BRANZ and found to be satisfactory.

20.2 Water vapour permeability tests have been undertaken by BRANZ in accordance with ASTM E96.

20.3 The adhesives, primers and seam tapes used with Rubco Butyl Membrane Systems meet the performance requirements of NZBC Acceptable Solution E2/AS1, Paragraph 8.5.4 (c). Results and test methods have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

21.1 An assessment was made of the durability of the Rubco Butyl Membrane Systems by BRANZ technical experts using NZBC B2/VM1 History of Use.

21.2 Site visits have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.

21.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

22.1 The manufacture of the Rubco Butyl Membrane Systems has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. The membrane manufacturer is the subject of AS/NZS ISO 9001: 2008 Certification by Telarc Limited.

22.2 The quality of supply of the products to the market is the responsibility of The Rubber Roofing Co. Group Limited.

22.3 Quality on site is the responsibility of trained applicators, approved by The Rubber Roofing Co. Group Limited.

22.4 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 the substrate manufacturer, The Rubber Roofing Co. Group Limited and this Appraisal.

22.5 Building owners are responsible for the maintenance of the membrane systems in accordance with the instructions of The Rubber Roofing Co. Group Limited and this Appraisal.

Sources of Information

- AS/NZS 2269: 2012 Plywood – Structural.
- ASTM E 96-02 Water vapour transmission of materials in sheet form, American Society of Testing Materials, Philadelphia, 1992.
- BRANZ Appraisal No. 946 (2016) Strandsarking for Low Slope Membrane Roofs.
- BRANZ Bulletin 585 - Measuring moisture in timber and concrete.
- Good Practice Guide - Membrane Roofing, BRANZ, October 2015.
- NZS 3101: 2006 Concrete structures standard.
- 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, 01 January 2017).
- 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, Rubco Butyl Membrane 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 The Rubber Roofing Co. Group 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. The Rubber Roofing Co. Group 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 The Rubber Roofing Co. Group 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 The Rubber Roofing Co. Group Limited or any third party.

For BRANZ

Chelydra Percy
Chief Executive

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11 July 2018