



BRANZ Appraised
Appraisal No. 946 [2016]

STRANDSARKING FOR LOW SLOPE MEMBRANE ROOFS

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BRANZ Appraisals

Technical Assessments of products
for building and construction.

Laminex™
NEW ZEALAND

Laminex New Zealand

810 Great South Road

Penrose

Auckland

Tel: 0800 303 606

Web: www.laminexnewzealand.co.nz



BRANZ

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 Strandsarking is an engineered woodpanel sheet material treated to Hazard Class H3.1 for use as a roof sarking under membrane roofs.

Scope

2.1 Strandsarking has been appraised for use on buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with a minimum roof pitch of 2°; and,
- with timber roof framing designed in accordance with NZS 3604, or timber roof members subject to specific design; and,
- with roof framing at a maximum of 400 mm centres; and,
- in NZS 3604 Wind Zones up to and including Extra High; and,
- with membrane roofing systems in accordance with NZBC Acceptable Solution E2/AS1 or systems covered by a valid BRANZ Appraisal, subject to the approval of the membrane supplier.

2.2 Strandsarking has not been appraised for the following situations:

- as a diaphragm; or,
- on roofs less than 2° pitch; or,
- on decks; or,
- in trafficable areas.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Strandsarking for Low Slope Membrane Roofs, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the New Zealand Building Code:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. Strandsarking meets the requirements for loads arising from self-weight, gravity loads, temperature, snow, wind and creep [i.e. B1.3.3 (a), (b), (c), (g), (h) and (q)]. See Paragraphs 8.1 – 8.3.

Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years and B2.3.2. Strandsarking meets these requirements. See Paragraph 9.1.

Clause E2 EXTERNAL MOISTURE: Performance E.2.3.2. When used as part of the roofing system, Strandsarking will contribute to meeting this requirement. See Paragraphs 13.1 and 13.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Strandsarking meets this requirement and will not present a health hazard to people. See Paragraphs 12.1 and 12.2.

Technical Specification

Strandsarking Sheets

- 4.1 Strandsarking is manufactured from strands of Radiata pine. The wood strands are bonded with a pMDI resin and are treated with a wax-based water repellent and a water based organic preservative and insecticide throughout the thickness of the sheet. At manufacture, the sheets have an average density of 685 kg/m³ and average moisture content of 10%. The sheets are identified by the product name printed on one face. The sheet sizes and nominal masses are given in Table 1.

Table 1: Product Specification

Sheet Size [mm]	Nominal Mass Per Panel [kg]	Nominal Mass per m ² [kg]
3600 x 800 x 16.3	32	11

- 4.2 Strandsarking comes as square edge sheet. It has a textured surface to provide a macro-texture for a more slip resistant top surface than is available with smooth sanded panel products. It is branded on one face with the name of the product and date and time of manufacture.

Accessories

- 4.3 Accessories used with Strandsarking, which are supplied by the contractor, are fixings as described below:
- 50 mm x 4.8 mm diameter [10 gauge] stainless steel screws.

Handling and Storage

- 5.1 Strandsarking must not be stored on wet concrete floors. Sheets must always be block-stacked on bearers at maximum 1200 mm centres. For short-term storage, sheets must be protected from the weather with a waterproof breather-type cover that is supported clear of the sheet surface on battens, so that air can circulate freely around the stack.
- 5.2 For long-term storage, Strandsarking must be stored inside in well-ventilated, dry conditions.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Strandsarking. 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 Strandsarking has been appraised for use as a roof sarking material under membrane roofing systems in accordance with NZBC Acceptable Solution E2/AS1 or systems covered by a valid BRANZ Appraisal, subject to the approval of the membrane supplier.
- 7.2 Timber roof framing must comply with NZS 3604, or be to a specific design in accordance with NZS 3603 and AS/NZS 1170.
- 7.3 For design in accordance with NZS 3604, roofs [including cladding and Strandsarking] weighing up to 25 kg/m² may still be considered a Light Roof.
- 7.4 Refer to the membrane roofing supplier as to whether a gap between Strandsarking panels is required.
- 7.5 A 5 mm clearance must be left between Strandsarking panels and any other elements protruding through the roof such as vent pipes. Greater clearances than this may be required around flues and chimneys. Refer to Paragraph 11.1.



- 7.6 The maximum allowable spacing for supporting roof framing is 400 mm. All edges of Strandsarking must be fully supported.
- 7.7 Edges of panels at gutters or eaves must be protected by drip edges, flashings, fascia trims or similar.
- 7.8 Strandsarking panels must be installed such that there is a minimum 25 mm air gap between the underside of the panel and any roof insulation material.
- 7.9 Ventilation to the roof space must be provided as specified by the membrane roofing supplier.
- 7.10 The maximum exposure period for Strandsarking before being clad with a membrane roofing system is 8 weeks.
- 7.11 The Strandsarking and the timber substructure must be a maximum moisture content of 20% when a membrane is installed.

Structure

Mass

- 8.1 The approximate mass of the Strandsarking is given in Table 1.

Snow

- 8.2 Strandsarking is suitable for use in areas where buildings are designed for a 1 kPa ground snow loading. Strandsarking is able to take snow loads of up to 4.5 kPa, however this will require specific engineering design of the supporting structure, and is outside the scope of this Appraisal.

Wind Zones

- 8.3 When fixed in accordance with the Technical Literature and this Appraisal, Strandsarking is suitable for use in all NZS 3604 Wind Zones, up to, and including Extra High.

Durability

Serviceable Life

- 9.1 Strandsarking is expected to have a serviceable life of at least 15 years, provided the roof membrane is maintained and the Strandsarking is not exposed to the weather for more than 8 weeks during the construction period before installation of the roof. Strandsarking will have a serviceable life compatible with typical membrane roofing systems.

Maintenance

- 10.1 Strandsarking should need no maintenance during its serviceable life. Any areas of damage that are noticed should be repaired immediately.
- 10.2 Adequate ventilation must be maintained to ensure the suitable ongoing performance of the roof. Membrane roofing suppliers should be consulted in order to ascertain the specific venting details and requirements for their particular system.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to Strandsarking 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.

Hazardous Building Materials

- 12.1 The adhesive used to manufacture Strandsarking contains no formaldehyde and the amount emitted is significantly less than particleboards manufactured using melamine urea formaldehyde type adhesives. Formaldehyde emissions from Strandsarking meet the E zero classification when tested in accordance with AS/NZS 4266.16.
- 12.2 The level of formaldehyde emission will decrease with time. After installation, emission levels will be controlled by ventilation. Formaldehyde will generally be restricted from entering habitable spaces by the ceiling lining.



External Moisture

- 13.1 Strandsarking must only be used under membranes that meet the requirements of the NZBC, such as those covered by NZBC Acceptable Solution E2/AS1, or membranes covered by a valid BRANZ Appraisal, subject to the approval of the membrane supplier.
- 13.2 Strandsarking when installed in accordance with the Technical Literature and this Appraisal will assist in the total roofing system compliance with NZBC Clause E2.

Internal Moisture

- 14.1 Adequate roof space ventilation is necessary to ensure roof space moisture levels and temperatures are controlled. Membrane roofing suppliers should be consulted in order to ascertain the specific venting details and requirements for their particular system.

Energy Efficiency

- 15.1 For the purposes of calculating the building performance index of the building envelope [refer NZBC H1.3.2] the R-value of Strandsarking 16.3 mm sheets should be taken as 0.14 m²K/W.

Installation Information

Installation Skill Level Requirements

- 16.1 Installation must always be carried out in accordance with the Strandsarking for Low Slope Roofs Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant Licence Class.

General

- 17.1 Ensure that adequate roof space ventilation is provided.
- 17.2 Lay the Strandsarking panels onto the roof framing in a staggered pattern.
- 17.3 Fixings must be positioned no closer than 10 mm from the panel edges. Maximum fastener spacings are given in Table 3.

Table 3: Nail Fixing Requirements

Wind Zone as per NZS 3604	Fixing Centres [mm]	
	Panel Ends	Intermediate Supports
Up to and including High	150	150
Very High and Extra High	150	100

- 17.4 The membrane roofing system must be installed over the Strandsarking within 8 weeks.

Health and Safety

- 18.1 Exposure to wood dust may cause irritation to the respiratory system and skin and may cause sensitisation resulting in asthma, and by skin contact resulting in dermatitis. As with any timber product, a dust mask and eye protection must be worn when working with Strandsarking. Work areas must be ventilated and kept clean. Machinery used must be fitted with dust extractors. Off cuts, shavings and dust must be disposed of in accordance with the requirements of local authorities.



Basis of Appraisal

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

Tests

- 19.1 A BRANZ durability assessment of the physical properties of Strandsarking, such as modulus of rupture, modulus of elasticity, internal bond strength, thickness swell and surface water absorption after natural weathering have been undertaken and found to be satisfactory.
- 19.2 The thermal resistance of Strandsarking has been determined by BRANZ.
- 19.3 Formaldehyde emission levels have been determined by testing by Juken New Zealand Limited to AS/NZS 4266.16. The results of these tests have been reviewed by BRANZ and found to be satisfactory.
- 19.4 A review of structural calculations relating to Strandsarking has been undertaken by BRANZ and found to be satisfactory.

Other Investigations

- 20.1 The Technical Literature for Strandsarking has been reviewed by BRANZ and found to be satisfactory.

Quality

- 21.1 The manufacture of Strandsarking has been examined by BRANZ, including methods adopted for quality control. Details of the manufacturing processes, and quality and composition of the raw materials used were obtained and found to be satisfactory.
- 21.2 Laminex New Zealand is responsible for the quality of the product supplied.
- 21.3 Quality of installation of the product on site is the responsibility of the Licensed Building Practitioner.
- 21.4 Maintenance of the roofing system is the responsibility of the building owner.

Sources of Information

- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 4266.16: 2004 Reconstituted wood based panels - Methods of test. Method 16: Formaldehyde emission - Dessicator method.
- NZS 3603: 1993 Timber structures standard.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4229: 2013 Concrete masonry buildings not requiring specific engineering design.
- 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 6, 14 February 2014].
- Ministry of Building, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.



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In the opinion of BRANZ, **Strandsarking for Low Slope Membrane Roofs** 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 **Laminex New Zealand**, 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. **Laminex New Zealand**:
 - 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 **Laminex New Zealand**.
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 **Laminex New Zealand** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

22 December 2016