# strandsarking®

Technical data sheet for
low slope membrane roofs

## DESCRIPTION, SCOPE AND APPLICATION

**Strandsarking**

- Is an engineered wood panel product specifically designed for use as a sarking under membrane roofs, profiled metal roofing, and roofing materials that require continuous support.
- Is suitable to be used in residential, commercial and industrial roofing applications with a minimum roof pitch of:
  - » Membrane roofs - 2 degrees
  - » Internal boxed gutters (within roof area), installed with a sheet membrane (refer limitations for liquid applied membranes).
  - » Profiled metal roofs,
    - ◦ trough profile (Standing seam) - 3 degrees
    - ◦ corrugated - 8 degrees
    - ◦ Trapezoidal - 4 degrees where crest height is less than 27mm or; 3 degrees where crest height is more than 27mm.
- Can be fastened to timber trusses, rafters or roof framing where the support in one direction does not exceed:
  - » Membrane roofs - 400mm
  - » Profiled metal roofs - 600mm (refer to allowable spans table)
- Can be used with roofing materials weighing up to 150 kg/m².
- Can be used in wind zones up to and including Extra High as specified in NZS 3604.
- Is nominally 16.3mm thick and has a textured surface to provide a more slip resistant surface than is available with smooth sanded panel products.
- Has been manufactured using sustainable plantation grown Radiata Pine, a highly durable formaldehyde free resin, wax to improve moisture resistance and non-solvent based organic preservative chemicals.
- Meets the requirements of hazard class H3.1.
- Meets the E zero classification for formaldehyde emissions when tested in accordance with AS/NZS 4266.16.
- Is identified by means of the words STRANDSARKING 165 64 H3.1 and the NZ Timber Preservation Council's WOODmark® symbol printed on the panel.

## LIMITATIONS

**Strandsarking should not be used:**

- On surfaces less than
  - » Membrane Roofs - less than 2 degrees, decks and trafficable areas
  - » Internal boxed gutters installed with liquid applied membranes.
  - » Profiled metal roofs - Trough profile 3 degrees
  - » Corrugated profile - 8 degrees
  - » Trapezoidal - 4 degrees where crest height is less than 27mm or; 3 degrees where crest height is more than 27mm.
- Where the permanent load of the roofing products supported on the panel exceeds the loads specified in the allowable imposed loads section (see page 2).
- As the substrate for mechanically fastened membranes, and liquid applied membranes that have not been appraised by BRANZ to determine that they are fit for purpose.
  - » In the following situations, unless specific design has been used: Where the eaves height is more than 10 metres above ground level (3 storeys).
  - » At elevations greater than 500 metres above sea level.
  - » As a diaphragm
  - » On buildings outside the scope of NZBC Acceptable Solution E2/AS1 paragraph 1.1.
  - » In locations where the wind category exceeds Extra High as specified in NZS 3604.

## INSTALLATION

- Check that roof trusses/rafters or framing provide an even surface for fastening the Strandsarking onto. Trusses/ rafters and framing should be shimmed as necessary in order to provide an even surface. If the top chords of trusses or rafters are warped

or bowed, install blocking to straighten.

- Ensure that adequate roof space ventilation is provided (see page 3).
- The Strandsarking panels can be laid with the long edge perpendicular to the trusses/ rafters or framing support in a staggered pattern. The ends of each sheet will be supported by truss/rafter or framing (see fig 1 and 2, page 2).
- The Strandsarking panels shall be fastened to the trusses or framing in accordance with the fasteners section on page 2.
- Strandsarking panels can be tightly butted and fastened hard up to each other. However, roofing suppliers have held different views on the requirements for timber substrates. The fixing instruction in this document should be used as a guide or starting point only and designers must detail joints that allow for expansion in accordance with practices recommended by the chosen membrane or profiled metal roofing supplier's requirements. Already noted in installation section of low slope & pitched roofs.
- Allow a 5mm clearance between the Strandsarking panel and other elements protruding through the roof such as vent pipes etc. Greater clearances than this may be required around flues and chimneys, see below.
- Strandsarking must be separated from flues and/or chimneys. Part 7 of NZBC Acceptable Solution C/AS1-C/AS6 and NZBC Verification Method C/VM1 provide methods of separation and protection of combustible materials from heat sources.
- Edge of panels at gutters or eaves should be protected by drip edges, flashings, fascia trims or similar . This aids in preventing moisture ingress into the Strandsarking in these areas. Where the design of the Strandsarking results in the underside of the Strandsarking being exposed to possible moisture ingress (where the panel may protrude beyond the fascia line etc.) the underside of the panel must be sealed with an appropriate exterior coating. Refer to Fig 3.
- Strandsarking panels must be blocked as close as practical along all free edges.
- Strandsarking panels should be installed such that there is a minimum 25mm air gap between the underside of the panel and any roof insulation material. This gap must be maintained in all situations for the life of the Strandsarking.
- Cover the Strandsarking with a Branz approved roof underlayment as soon as practical in order to minimise the Strandsarking being exposed to the weather unnecessarily.

**Fig 1**

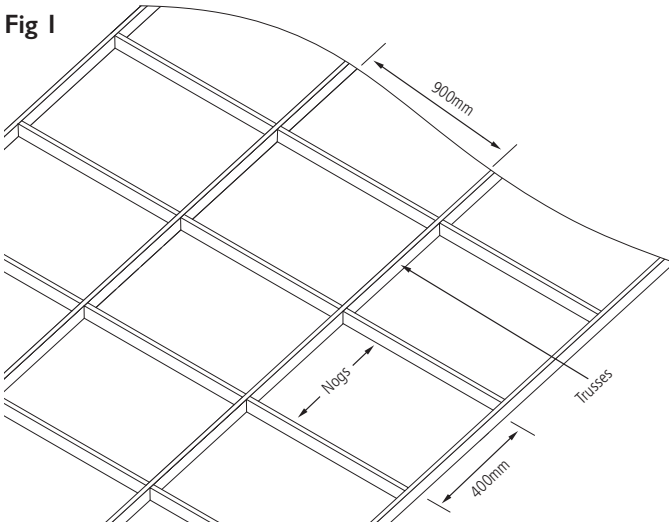



**Fig 2**

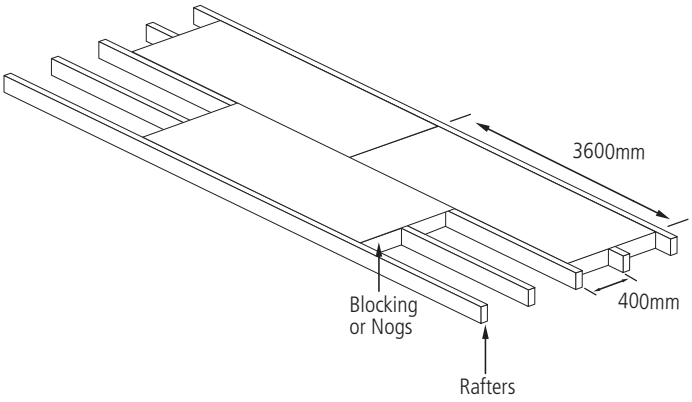



**Fig 3**

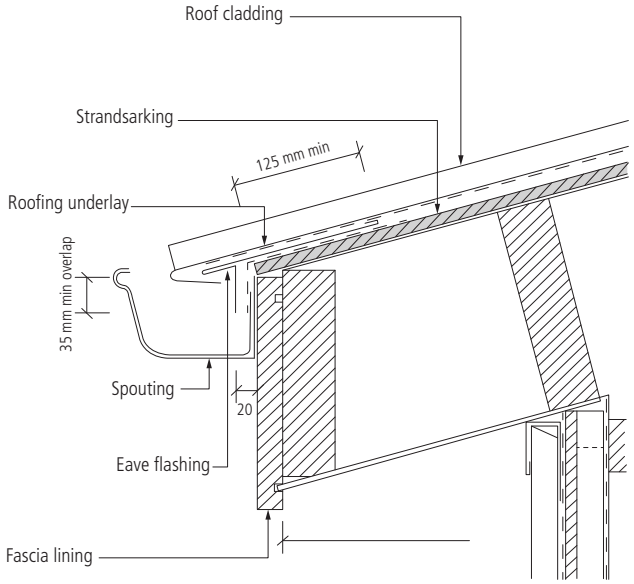
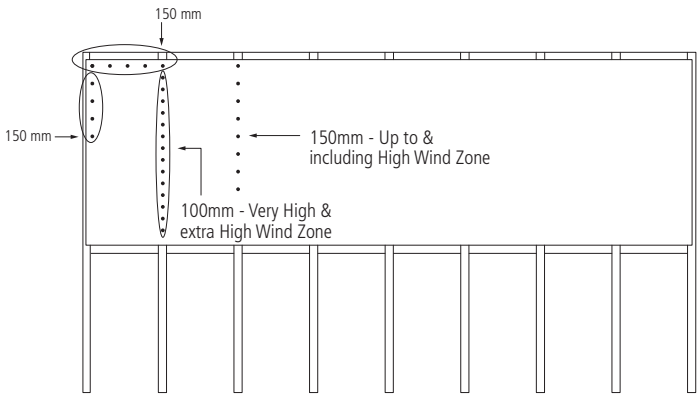



**Fig 4**



## FASTENERS

**Strandsarking panels forming roofs from 2° and up to 10° are to be fixed to timber roof framing or trusses with:**

• 50mm x 10 gauge (4.8mm) stainless steel screws

**The maximum panel fixing centres required for non-specific design wind-load areas (as per NZS 3604) are as follows:** (Refer to Figure 4)

| Wind zone as per NZS 3604 | Fixing centres (mm) | |
|---|---|---|
| | Panel ends and edges (where possible) | Intermediate supports |
| Up to and including MEDIUM | 150 | 150 |
| HIGH | 150 | 150 |
| VERY HIGH | 150 | 100 |
| EXTRA HIGH | 150 | 100 |

**Allowable Imposed Loads:**

Strandsarking panels are capable of carrying imposed cladding loads of up to 150kg/m$^2$ when spans in one direction do not exceed 600mm centres and the supporting framing has been designed to take these loads.

## SIZES AND WEIGHTS

Strandsarking is available in the following panel sizes.

| Sheet size (mm) | Nominal mass per panel (kg) | Nominal mass per m² (kg) |
|---|---|---|
| 3600 x 800 | 32 | 11 |

## VENTILATION

**A well ventilated ceiling cavity is critical to the overall performance of a roof. Good ventilation fulfils two main functions:**

- It reduces moisture build up within the ceiling cavity by allowing the moisture to be vented to the outside.
- It reduces the temperature of the ceiling cavity.

It can also reduce the surface temperature of the roofing material by allowing a flow of air on the underside of the Strandsarking. A general rule of thumb is that ventilation openings of at least 1/300th of the ceiling plan area is desirable, with the ventilation points being adequately distributed to ensure cross flow ventilation. The preference is for venting to be placed at the eaves and ridges. Designers should confer with roofing material suppliers and or HVAC engineers in order to ascertain the specific venting details and requirements for the particular roof system. Extra care must be taken when forming skillion roofs to ensure that cross flow ventilation is maintained at all times and to all areas of the ceiling cavity. Consideration must be given to the effect of insulation in the ceiling cavity when calculating ventilation requirements.

Where the Strandsarking has been exposed for a period of time care must be taken to ensure the moisture content of the panels is at or below 20%. Where the performance of the membrane can be affected by a build-up of moisture in the substrate, consideration must be given to providing a drainage plane immediately below the membrane. This is usually in the form of a proprietary layer that is compatible with the membrane that is installed over the top of the Strandsarking.

Where rigid roofing materials such as standing seam roofs etc. are laid over Strandsarking, it is recommended that a drainage plane layer is positioned over the Strandsarking prior to the roofing material being installed.

## DURABILITY

When Strandsarking is handled, installed and maintained in accordance with this literature it will meet the provisions of NZBC Clause B2 Durability (B2.3.1 (b)) and as such is expected to have a serviceable life of at least 15 years.

### Exposure to weather during construction and storage

Strandsarking has a high degree of durability. However, it is not desirable to leave Strandsarking exposed to the weather for longer than is necessary as some discoloration is possible and curling of the surface strand may occur. Adequate protection must be provided if and when Strandsarking packs are stored on site prior to their use (see handling and storage). Notwithstanding this, the maximum period of exposure to the weather of Strandsarking should not exceed 8 weeks. This includes any exposure onsite through to complete installation of the roof covering material.

### Humidity, solar driven moisture and condensation

Once the roof covering is installed, the moisture content of the Strandsarking should not reach a moisture content of more than 20% for prolonged periods of time. This can occur in situations where condensation forms on the Strandsarking and/or where leaks occur in the roof covering and/or where rain soaked roof coverings allows moisture to be driven into the Strandsarking by the effect of the sun. Strandsarking has been treated to the hazard class H3.1 to provide resistance from fungal decay; however this should not be regarded as a substitute for proper installation, maintenance or adequate ventilation of the roof space.

### Insect resistance

To further enhance the durability, an insecticide has been added to Strandsarking. This provides protection against attack from the likes of borer and termites under normal use.

## DESIGN CRITERIA

- The design has been carried out using loads derived from NZS 3604 with the use of design combination factors as specified in AS/NZS 1170 and deflection limits as suggested in AS/ NZS 1170.
- When designing at low pitch (at or below 5°) consideration will need to be given to the possibility of ponding due to plant installations on the roof surface at a later date and/or possible long term sag. If the life of the roofing membrane being installed could be affected if ponding does occur, consideration must be given to decreasing the spacing of the timber support system, increasing the dimensions of the timber support system or increasing the pitch of the roof.
- The panel and fixing designs have been carried out to the New Zealand timber code NZS 3603.
- The design has been carried out on the basis that the maximum temperature and humidity in the ceiling space is 66°C and 80%RH sustained for up to 24 hours. Further testing on the panel will be required should these values be exceeded.
- The characteristic panel strength and stiffness values, as shown below, were derived from tests carried out at the conditions described in bullet point above, but otherwise in accordance with AS/NZS4063.

Characteristic strength 23.9 MPa

Characteristic stiffness 4150 MPa

Note The characteristic strength was derived from the 5th percentile value and the characteristic stiffness from the mean value, as defined in AS/ NZS 4063.

## HANDLING AND STORAGE

- Always stack Strandsarking horizontally, Always stack Strandsarking horizontally, supported by bearers at maximum 1200mm centres and laid on a flat, level and dry surface.
- Avoid damage to Strandsarking faces and edges.
- For prolonged storage on site (more than 3 days), protect the Strandsarking panels with tarpaulins or similar.

To prevent moisture build up under covers, ensure that there is an air gap between any covering and the Strandsarking to allow air circulation around the pack. This includes the top surface of the top sheet.

## SAFE WORK PRACTICES

- Exposure to wood dust and/or to formaldehyde may cause irritation to the eyes, respiratory system and skin, which may cause sensitisation resulting in asthma. On-going skin contact may result in dermatitis.
- Wood dust is classified as a known carcinogen. Repeated exposure to wood dust over many years may cause nasal cancer.
- Formaldehyde is classified as a known carcinogen.
- Work areas must be kept clean and well ventilated. Sawing, sanding and machining equipment must be fitted with dust extractors to ensure dust levels are kept within standards laid down by Occupational Health and Safety New Zealand. If not, a dust mask conforming to AS/NZS1715 and AS/NZS1716 and eye protection conforming to AS/NZS 1337 must be worn.
- Offcuts, shavings and dust must not be burnt in domestic situations. Disposal should be to approved landfills in accordance with the requirements of local waste authorities, or in industrial incinerators..

For further information and Material Safety Data Sheets, please contact Laminex New Zealand®. **Technical support:** Not all use options and technical information can be described herein. Additional end use and specifying information is available as a complimentary service.



For further information and to check the currency of the information contained in this brochure please contact **Laminex New Zealand** or visit **www.laminexnewzealand.co.nz**