



BRANZ Appraised
Appraisal No. 703 [2022]

SUPERSTRAND™ SARKING

Appraisal No. 703 [2022]

This Appraisal replaces BRANZ
Appraisal No. 703 [2016]



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 Superstrand™ Sarking is an engineered woodpanel sheet material for use as a roof sarking material under shingles and other similar types of roofing materials.
- 1.2 Superstrand™ Sarking is treated to hazard class H3.1.

Scope

- 2.1 Superstrand™ Sarking has been appraised for use on buildings within the following scope:
 - with timber roof framing designed in accordance with NZS 3604, NZS 4229 or timber roof members subject to specific design; and,
 - in NZS 3604 Wind Zones up to, and including, Extra High; and,
 - maximum eaves height of 10 m above the ground; and,
 - snow loads up to 1 kPa; and,
 - roof pitch of at least 10°; and,
 - with roof trusses or framing at maximum of 900 mm centres; and,
 - with roofing materials up to 150 kg/m².
- 2.2 The system must be installed in accordance with the Technical Literature.
- 2.3 Superstrand™ Sarking has not been appraised for the following situations:
 - as a diaphragm; or,
 - on flat roofs, decks, trafficable areas, or roofs with a pitch of less than 10°; or,
 - as a substrate for membrane roofs.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Superstrand™ Sarking, 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. Superstrand™ Sarking 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. Superstrand™ Sarking meets this requirement. See Paragraph 9.1.

Clause E2 EXTERNAL MOISTURE: Performance E.2.3.2. When used as part of the roofing system, Superstrand™ Sarking contributes to meeting this requirement. See Paragraphs 14.1 and 14.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Superstrand™ Sarking meets this requirement.

Technical Specification

Superstrand™ Sarking Sheets

- 4.1 Superstrand™ Sarking is manufactured from strands of radiata pine. The wood strands are bonded with a pMDI resin and are treated with a mineral 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 Range

Sheet Size [mm]	Nominal Mass Per Panel [kg]	Nominal Mass per m ² [kg]
3,600 x 1,200	48	11
3,600 x 800	32	11
2,400 x 1,200	32	11

- 4.2 Superstrand™ Sarking comes as square edge sheet. It is nominally 16.25 mm thick and has a textured surface on one face to provide a macro-texture for a more slip resistant surface than is available with smooth sanded panel products.

Accessories

- 4.3 Accessories used with Superstrand™ Sarking, which are supplied by the contractor, are fixings as described below:
- 75 mm x 3.15 mm diameter spiral rolled hot-dip galvanised flat head nails; or,
 - 75 mm x 3.15 mm diameter stainless steel annular-grooved flat head nails; or,
 - 40 mm x 3.45 mm diameter (6 g) stainless steel screws.

Handling and Storage

- 5.1 Superstrand™ Sarking must not be stored on wet concrete floors. Sheets must always be block-stacked on bearers at maximum 1,200 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, Superstrand™ Sarking 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 Superstrand™ Sarking. 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 Superstrand™ Sarking has been appraised for use as a roof sarking material under shingles or other similar types of roofing products weighing up to 150 kg/m².
- 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 A 3 mm gap must be left between each Superstrand™ Sarking panel in order to allow for normal expansion of the panels in service. Failure to provide an adequate gap may result in panels distorting, causing visual impairment to the plane of the roof.

- 7.4 A 5 mm clearance must be left between Superstrand™ Sarking 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.
- 7.5 The maximum allowable spans for different roof weights are given in Table 2.
- 7.6 Edges of panels at gutters or eaves must be protected by drip edges, flashings, fascia trims or similar.
- 7.7 Where blocking is required, this must be as close as possible to the edge of the Superstrand™ Sarking panel. The maximum cantilever length allowed along the edge of a panel is 120 mm.
- 7.8 Superstrand™ Sarking panels must be installed such that there is a minimum 100 mm air gap between the underside of the panel and any roof insulation material.
- 7.9 The maximum exposure period for Superstrand™ Sarking before being clad with the roofing system is 8 weeks.

Table 2: Maximum Spans

Maximum Imposed Cladding Weight	Maximum Span Between Support Centres
150 kg/m ²	600 mm
50 kg/m ²	900 mm

Structure

Mass

- 8.1 The approximate mass of the Superstrand™ Sarking is given in Table 1.

Snow

- 8.2 Superstrand™ Sarking is suitable for use in areas where buildings are designed for a 1 kPa snow loading. Superstrand™ Sarking 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, Superstrand™ Sarking is suitable for use in all NZS 3604 Wind Zones up to, and including, Extra High.

Durability

Serviceable Life

- 9.1 Superstrand™ Sarking is expected to have a serviceable life of at least 15 years, provided the roof cladding is maintained and that the Superstrand™ Sarking is not exposed to the weather for more than 8 weeks during the construction period before installation of the roof.

Maintenance

- 10.1 Superstrand™ Sarking should not need 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. Roofing material 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 the Superstrand™ Sarking from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Verification Method C/VM1 and NZBC Acceptable Solution C/AS1, and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

Fire Affecting Areas Beyond the Fire Source

- 12.1 Fire rated roof construction systems incorporating Superstrand™ Sarking have not been assessed and are outside of the scope of this Appraisal.

Hazardous Building Materials

- 13.1 The primary adhesive used to manufacture Superstrand™ Sarking contains no formaldehyde. The amount of formaldehyde emitted by the Superstrand™ Sarking is significantly less than similar particleboards manufactured using melamine urea formaldehyde type adhesives. Formaldehyde emissions from Superstrand™ Sarking meet the E-zero classification when tested in accordance with AS/NZS 4266.1.
- 13.2 The level of formaldehyde emission will decrease with time. After installation, emission levels will be controlled by ventilation, formaldehyde will be generally restricted from entering habitable spaces by the ceiling lining.

External Moisture

- 14.1 Superstrand™ Sarking 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.
- 14.2 Superstrand™ Sarking, 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

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

Energy Efficiency

- 16.1 For the purposes of calculating the building performance index of the building envelope (refer to NZBC Clause H1.3.2) the R-value of Superstrand™ Sarking 16.25 mm sheets should be taken as 0.14 m²K/W.

Installation Information

Installation Skill Level Requirements

- 17.1 Installation must always be carried out in accordance with the Superstrand™ Sarking Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

General

- 18.1 Check that the roof framing provides an in-plane surface for fastening the Superstrand™ Sarking onto. Trusses or framing should be shimmed as necessary to provide this. If framing, or the top chord of trusses, are warped or bowed, install blocking to straighten.
- 18.2 Ensure that adequate roof space ventilation is provided.
- 18.3 Lay the Superstrand™ Sarking panels onto the roof framing in a staggered pattern.
- 18.4 Superstrand™ Sarking panels should be laid continuous over at least two spans (three trusses or framing members). Where this is not possible, then blocking must be used under the unsupported edges.
- 18.5 Fixings must be positioned no closer than 10 mm from the panel edges and at the maximum spacings 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

- 18.6 The roofing must be installed over the Superstrand™ Sarking within 8 weeks.

Health and Safety

19.1 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. A dust mask and eye protection must be worn when working with Superstrand™ Sarking. 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

- 20.1 The change in the physical properties of Superstrand™ Sarking, such as modulus of rupture, modulus of elasticity, internal bond strength, thickness swell and surface water absorption after natural weathering have been determined by BRANZ.
- 20.2 The thermal resistance of Superstrand™ Sarking has been determined by BRANZ.
- 20.3 Formaldehyde emission levels have been determined by testing by Juken New Zealand Ltd to AS/NZS 4266.1. The results of these tests have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

- 21.1 The Technical Literature for Superstrand™ Sarking has been reviewed by BRANZ and found to be satisfactory.

Quality

- 22.1 The manufacture of Superstrand™ Sarking 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.
- 22.2 The quality management systems of Juken New Zealand Ltd – Triboard Mill, Kaitaia have been assessed and registered by SGS as meeting the requirements of ISO 9001.
- 22.3 Juken New Zealand Ltd is responsible for the quality of the product supplied.
- 22.4 Quality of installation of the product on-site is the responsibility of the installer.
- 22.5 Maintenance of the roofing system is the responsibility of the building owner.

Sources of Information

- AS/NZS 1170:2002 Structural design actions.
- AS/NZS 4266.1:2017 Reconstituted wood-based panels – Methods of testing – Part 1: Base panels.
- NZS 3603:1993 Timber structures standard.
- NZS 3604:2011 Timber-framed buildings.
- NZS 4229:2013 Concrete masonry buildings not requiring specific engineering design.
- Ministry of Business, Innovation and Employment Record of amendments – Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



In the opinion of BRANZ, **Superstrand™ Sarking** 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 **Juken 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. **Juken 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 **Juken 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 **Juken New Zealand Ltd** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

08 April 2022