BRANZ Appraised
Appraisal No. 677 [2021]

STRANDFLOOR® H3.1 FLOORING

strandfloorH3.1® square edge

strandfloorH3.1® tongue&groove

Appraisal No. 677 (2021)

This Appraisal replaces BRANZ Appraisal No. 677 (2016)

Amended 09 July 2025

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 Strandfloor® H3.1 is an engineered woodpanel flooring material for use as interior flooring of residential and commercial buildings.

1.2 Strandfloor® H3.1 is treated to H3.1 for use in wet areas.

1.3 Strandfloor® H3.1 is available as both a square edge and as a tongue & groove system.

Scope

2.1 Strandfloor® H3.1 has been appraised for use as sheet flooring material on:

- suspended timber-framed floors that have been designed and constructed in accordance with NZS 3604, Section 7; or,
- steel-framed intermediate floors that have been designed and constructed in accordance with NASH Standard Part 2, Section 8.

2.2 Strandfloor® H3.1 has also been appraised for use as an overlay on concrete slab-on-ground floors, suspended concrete floors and suspended timber floors.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Strandfloor® H3.1 Flooring, 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 B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. Strandfloor® H3.1 Flooring meets the requirements for loads arising from self-weight, imposed gravity loads arising from use, earthquake, wind and impact [i.e. B1.3.3 (a), (b), (f), (h) and (j)]. See Paragraphs 8.1-8.8.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years and B2.3.1 (b) 15 years. Strandfloor® H3.1 Flooring meets these requirements. See Paragraphs 9.1-9.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Strandfloor® H3.1 Flooring meets this requirement. See Paragraphs 13.1 and 13.2.

Technical Specification

Strandfloor® H3.1 Sheets

4.1 Strandfloor® H3.1 sheet flooring is manufactured from strands of radiata pine. The wood strands are treated with a water-based organic preservative and insecticide, bonded with a pMDI resin and contain mineral wax-based water repellent throughout the thickness of the sheet. At manufacture, the sheets have an average density of 680 kg/m^3 and average moisture content of 10%. The sheets are identified by the product name printed on one face.

4.2 Strandfloor® H3.1 sheet flooring material is a wood-based high density board which has a plain wood colour. Strandfloor® H3.1 has a nominal thickness of 20 mm.

4.3 Strandfloor® H3.1 Tongue & Groove has the long edges of the sheets factory grooved with a 4.5 mm wide and 9.5 mm deep slot, and fitted on one side with a rigid opaque green polypropylene tongue. This forms a tongue & groove (shear key) joint between adjacent sheets.

4.4 Strandfloor® H3.1 is manufactured to the following tolerances:

- Thickness ±0.2 mm.
- Length and width ±1.5 mm.
- Squareness 0.5 mm/m.
- Sheet edges 1 mm/m maximum deviation from the line.

4.5 The product is available as set out in Tables 1 and 2.

Table 1: Strandfloor® H3.1 Square Edge

Sheets sizes (mm)	Approximate weight per sheet (kg)
3,600 x 2,400 x 20*	118
3,600 x 1,200 x 20	59
2,400 x 1,200 x 20	39

**Made to order.*

Table 2: Strandfloor® H3.1 Tongue & Groove

Sheet sizes (mm)	Approximate weight per sheet (kg)
3,600 x 1,200 x 20	59
2,400 x 1,200 x 20	39

Accessories

4.6 Accessories used with Strandfloor® H3.1, which are supplied by the contractor are:

- **Fixings** - refer to Table 7.3 in the referenced Technical Literature for the range of fixings that may be used to install Strandfloor® H3.1 flooring.
- **Adhesive** - BRANZ appraised adhesive suitable for adhering timber sheet material to timber framing or concrete as required.

Handling and Storage

5.1 Strandfloor® H3.1 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 which is supported clear of the sheet surface on battens, so that air can circulate freely around the stack.

5.2 For long-term storage, Strandfloor® H3.1 must be stored inside, in well-ventilated, dry conditions.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Strandfloor® Technical Manual, Edition 11, dated May 2024.

6.2 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 Strandfloor® H3.1 may be used as pre-laid or post-laid flooring for suspended timber floors designed to Section 7 of NZS 3604 or intermediate steel floors designed to Section 8 of NASH Standard Part Two. Strandfloor® H3.1 may also be used as a flooring overlay to concrete slab-on-ground floors and suspended concrete or timber floors.

7.2 When flooring is pre-laid, care must be taken in the planning and construction stages to ensure the building is closed in within the maximum exposure period of 12 weeks. If this is unlikely, then the flooring must be post-laid.

7.3 When pre-laid, an expansion gap of 40 mm is required at 25 m intervals over double joists or blocking. This 40 mm gap is filled after closing in. A minimum 8 mm clearance must be provided between panel edges and fixed objects such as bottom plates, columns, abutting concrete etc.

7.4 For timber and steel joists, the use of a construction adhesive is recommended in conjunction with mechanical fasteners, to help eliminate floor system movement, which could result in the undesirable generation of noise (squeaking). The use of adhesives for fixing Strandfloor® H3.1 in this application is outside the scope of this Appraisal.

Strandfloor® H3.1 Tongue & Groove Diaphragm Floors

7.5 Where Strandfloor® H3.1 Tongue & Groove is used for diaphragm floors, the joist spacing supporting the Strandfloor® H3.1 Tongue & Groove must be no greater than 450 mm centres. Strandfloor® H3.1 Tongue & Groove sheets must be laid with the long edges perpendicular to the joists and the short edges coincident with the joists. The nailing pattern to be used in fixing these sheets down must be in accordance with the Technical Literature.

Subfloor Ventilation

7.6 Where Strandfloor® H3.1 is laid over a subfloor framing system, all timber and flooring must be protected against damage from ground water moisture in accordance with the requirements of NZS 3604, Section 6. Cross-flow ventilation around the full perimeter of the building must be provided in accordance with the relevant requirements of NZS 3604, Section 6.14. In calculating the required number of vents, only the open unobstructed area of each vent unit shall be taken into account. Hot-air, steam systems, and relief or overflow pipes must not vent or drain into subfloor areas. To allow for adequate ventilation and access, a minimum clearance of 550 mm between the surface of the ground and the underside of the Strandfloor® H3.1 floor is required.

Concrete Floors

7.7 Concrete slab-on-ground floors, where Strandfloor® H3.1 is to be used as a flooring overlay, must be constructed using protective damp-proof membranes in accordance with NZS 3604, Section 7.5. The concrete surface must not deviate by more than 5 mm over 3 m. In addition, the substrate must be sound, dust free and dry. The relative humidity of air at the concrete surface must not exceed 75% prior to installation. Relative humidity must be determined in accordance with BRANZ Bulletin No. 644. It is important that where a construction joint exists in a concrete slab, a joint must also be formed in the flooring directly above.

Finishing

7.8 Strandfloor® H3.1 must be finished by sealing of the surface or finishing with a polyurethane coating system or other floor covering, as detailed in the Technical Literature, before occupancy.

Wet Areas

7.9 Strandfloor® H3.1 is treated to Hazard Class H3.1, and is therefore suitable for use in wet areas as specified by NZS 3602, Table 1C.3 and Note 7.

7.10 Wet areas are spaces where sanitary fixtures and sanitary appliances are located such as bathrooms, toilets, laundries and kitchens. There are two general categories of wet areas as follows:

- **Water Splash** – these are areas subject to intermittent splashing of water such as around baths, vanities, tubs and sinks.
- **Shower Areas (Spaces)** – these are areas subject to frequent and heavy water splash such as enclosed showers, unenclosed shower zones and showers over baths.

7.11 Where Strandfloor® H3.1 is used in shower areas, a waterproof membrane system specified for use with timber panel flooring must be used to protect the Strandfloor® H3.1. The waterproof membrane must comply with AS/NZS 4858 or be covered by a valid BRANZ Appraisal. Other water splash areas must be protected by an integrally waterproof sheet material (e.g. polyvinylchloride) with sealed joints or a waterproof membrane that complies with AS/NZS 4858 or that is covered by a valid BRANZ Appraisal.

7.12 A floor waste is recommended where accidental flooding is possible. Floor wastes must be installed in accordance with the requirements of NZBC Acceptable Solution E3/AS1, Paragraph 2.2 or NZBC Acceptable Solution G13/AS1, Paragraph 3.4.

Exposure

7.13 Due to rain wetting before closing in, it may be possible for the moisture content of the pre-laid sheets to temporarily exceed the 18% level given in NZBC Acceptable Solution E2/AS1, Paragraph 10.2 c). Under normal circumstances, when used and installed as required by this Appraisal and the Technical Literature, this level of temporary wetting of Strandfloor® H3.1 is acceptable.

Structure

Density

8.1 Strandfloor® H3.1 Square Edge and Strandfloor® H3.1 Tongue & Groove sheets have a density of approximately 680 kg/m^3.

Loads

8.2 Strandfloor® H3.1 will support loads of up to 1.5 kPa in buildings built within the scope of NZS 3604 with maximum floor joist spacing of 600 mm centres. Strandfloor® H3.1 will support loads up to 3 kPa for all other non-domestic flooring applications built within the scope of NZS 3604 with maximum floor joist spacing of 600 mm centres. Point loads may reduce allowable floor joist spacing, please refer to the Floor Design section of the Technical Literature.

8.3 For steel-framed floors, Strandfloor H3.1® will support floor loads of up to 2 kPa in buildings built within the scope of NASH Standard Part Two with a maximum floor joist spacing of 600 mm

8.4 Floors built outside the scope of NZS 3604 or NASH Standard Part Two have not been assessed and are outside the scope of this Appraisal. These floors must be subject to specific design and Laminex New Zealand must be consulted for relevant design information, strength and stiffness.

8.5 For typical NZS 3604 and NASH Standard Part Two applications pre-laid over supports at the above spacings, the stiffness of the sheets will still be acceptable after exposure to the weather for 12 weeks for Strandfloor® H3.1. Post-laying of sheets avoids any loss in stiffness which may occur as a result of weathering.

Structural Diaphragms

8.6 Strandfloor® H3.1 has been appraised for use as a sheet material for diaphragms to resist lateral loads in NZS 3604 and NASH Part Two buildings. Such diaphragms must be detailed as required by Clause 7.3 of NZS 3604 or Section 5.5.4 of NASH Standard Part Two and the Technical Literature. Refer to the Technical Literature for suitable fastener types and fixing patterns for structural diaphragm floors.

Heat

8.7 Over-floor heating systems may be used with Strandfloor® H3.1 provided it is not subjected to a temperature exceeding 35°C.

8.8 Strandfloor® H3.1 must not be subjected to temperatures exceeding 50°C for prolonged periods.

Durability

9.1 Strandfloor® H3.1 meets the performance requirements of NZBC Clause B2.3.1 (a) not less than 50 years where the floor is a structural diaphragm or it is installed under structural walls, and the performance requirements of NZBC Clause B2.3.1 (b) at least 15 years in other situations.

Serviceable Life

9.2 Flooring systems based on Strandfloor® H3.1 can be maintained in a serviceable condition for at least 50 years, provided that:

- When pre-laid, the flooring has not been exposed to the weather for a period greater than 12 weeks; and,
- Appropriate measures have been taken to ensure the moisture content of the flooring is controlled in accordance with the provisions of NZBC Acceptable Solutions E2/AS1 and E3/AS1, the Technical Literature and this Appraisal; and,
- The flooring has not been exposed to further weathering, or subjected to water immersion, e.g. flooding, or to sub-zero temperatures while in a wet condition.

9.3 When sheets are used as a floor overlay fixed directly over concrete floors and the sheets do not perform any structural function (i.e. support loads), the NZBC does not require a minimum serviceable life for the covering. However, where slab-on-ground floors are permanently protected from ground moisture in accordance with NZS 3604, Section 7.5, a serviceable life of over 50 years is still possible.

Maintenance

10.1 Adequate subfloor ventilation must be maintained by ensuring vegetation or other obstructions are kept away from vents in perimeter foundation walls. Where ground vapour barriers exist they must be maintained in a serviceable and effective condition.

10.2 In wet areas, impervious floor coverings (or waterproof membranes) must be maintained to ensure water cannot penetrate through to the Strandfloor® H3.1. Any floor wastes must be installed and maintained so as to remain unobstructed, drain to the outside of the building, and prevent Strandfloor® H3.1 from becoming wet.

Prevention of Fire Occurring

11.1 Separation or protection must be provided to Strandfloor® H3.1 from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Acceptable Solution C/AS1 and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

11.2 The serviceable life of the product may be affected if the surface temperature exceeds 50°C for long periods. Fuel-burning appliance manufacturers must therefore be consulted to ascertain the clearances or protection required to ensure that a 50°C surface temperature is not exceeded. Clearances specified in Part 7 of NZBC Acceptable Solution C/AS1 and NZBC Acceptable Solution C/AS2 may not be sufficient for some appliances.

Fire Affecting Areas Beyond the Fire Source

12.1 Strandfloor® H3.1 can be used as flooring in Risk Group SH dwellings, which have no specific fire requirements under the NZBC.

12.2 For Risk Groups other than SH, surface finish requirements for floors are given in NZBC Acceptable Solution C/AS2, Paragraph 4.17.3.

Hazardous Building Materials

13.1 The adhesive used to manufacture Strandfloor® H3.1 contains no formaldehyde. The amount of formaldehyde emitted by the Strandfloor® H3.1 is less than similar flooring materials manufactured using melamine urea formaldehyde type adhesives. Formaldehyde emissions from Strandfloor® H3.1 meet the Super 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 together with the sealing of the surface or finishing with a polyurethane system, or the use of coverings such as tiles, vinyl or carpets with foam or rubber underlays. Covering or sealing of the sheets must be carried out before the building is occupied.

Energy Efficiency

14.1 For the purposes of calculating the building performance index of the building envelope (refer to NZBC Clause H1.3.2) the R-value of Strandfloor® 20 mm sheets should be taken as 0.17 m^2K/W.

Installation Information

Installation Skill Level Requirements

15.1 All design and building work must be carried out in accordance with the Strandfloor® H3.1 Technical Literature and this Appraisal by competent and experienced tradespeople conversant with Strandfloor® H3.1. Where the work involves Restricted Building Work (RBW) this must be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

General

16.1 General installation of Strandfloor® H3.1 must be in accordance with the Technical Literature and the provisions of this Appraisal.

16.2 It does not generally matter which way up the Strandfloor® H3.1 sheets are laid. If the floor is to be finished with a clear finish, then all Strandfloor® H3.1 sheets should be laid with the printed face down.

16.3 Strandfloor® H3.1 Tongue & Groove does not need blocking under the tongue & groove joint.

16.4 Each sheet must span at least two floor joist spans (i.e. be continuous over three joists), except at floor edges where infill sheets may be required.

16.5 The moisture content of the floor framing timber must not exceed 18% when Strandfloor® H3.1 is installed.

16.6 Strandfloor® H3.1 must be fixed in accordance with Section 7.5 of the referenced Technical Literature at 150 mm centres around the perimeter of the sheets, and at 200 mm centres at intermediate supports.

16.7 Where Strandfloor® H3.1 is to be used as a diaphragm floor, then fixing must be in accordance with Section 7.6 of the Technical Literature. Strandfloor® Tongue & Groove requires the supporting joists to be at no more than 450 mm centres. Strandfloor® Square Edge sheets may have a joist spacing of up to 600 mm.

16.8 Where used as an overlay to timber substrates, the moisture content of the substrate must not exceed 15%.

16.9 Existing timber floor substrates must be re-punched and then coarse sanded flat prior to fixing the sheets in place.

16.10 When used as an overlay on timber substrates or as a second layer over a pre-laid single layer, sheets must be fixed with mechanical fasteners or adhesive with fasteners, ensuring that sheet joints do not coincide with joints in the substrate.

16.11 Where used as an overlay to tongue & groove timber flooring, the joints in the Strandfloor® H3.1 must not coincide with the joints in the tongue & groove flooring.

16.12 Where used as an overlay to concrete, the concrete surface must not deviate by more than 5 mm over 3 m. In addition, the substrate must be sound, dust free and dry. The relative humidity of air at the concrete surface must not exceed 75% prior to installation. Relative humidity must be determined in accordance with BRANZ Bulletin No. 644. As a general guide for new concrete slabs, one month of drying time must be allowed for each 25 mm thickness of concrete.

16.13 When used as an overlay on concrete, sheets must be bonded using a full spread of approved adhesive (refer to the Technical Literature).

16.14 Continuously-laid bottom plates to walls in pre-laid situations must be cut away at openings as soon as possible, in order to allow ponded water to drain or be removed.

16.15 Protection required to prevent damage to the flooring during other construction processes must be provided in a manner which allows sheets exposed to the weather to dry quickly. For this reason temporary weather protection such as plastic sheeting or liquid sealers must not be used directly on sheet surfaces.

Finishing

17.1 Covering or sealing of the Strandfloor® H3.1 must be carried out after the building is fully closed-in but before it is occupied. Details for finishing are provided in the Technical Literature.

17.2 Covering or sealing must not be carried out until the moisture content of the flooring is less than 15%.

17.3 Some coating and adhesive manufacturers may require lower moisture contents for optimum performance when their products are used on Strandfloor® H3.1 Flooring. The instructions of these manufacturers must be followed when their products are used on Strandfloor® H3.1 Flooring.

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. A dust mask and eye protection must be worn when working with Strandfloor® H3.1. 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 The change in the physical properties of the Strandfloor® H3.1, 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.

19.2 The density, modulus of rupture, modulus of elasticity, internal bond, and deflection under concentrated load (stiffness) of Strandfloor® H3.1 have been determined by BRANZ.

19.3 Strength capacity and deflection under concentrated load (stiffness) of Strandfloor® H3.1 exposed to the weather for 12 weeks, have been determined by BRANZ.

19.4 The thermal resistance of Strandfloor® H3.1 has been determined by BRANZ.

19.5 Formaldehyde emission levels have been determined by testing to AS/NZS 4266.1. The results of these tests have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

20.1 The Technical Literature for Strandfloor® H3.1 has been reviewed by BRANZ and found to be satisfactory.

Quality

21.1 The manufacture of Strandfloor® H3.1 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 The quality management systems of the Strandfloor® H3.1 production have been assessed and registered by SGS as meeting the requirements of ISO 9001.

21.3 Laminex New Zealand is responsible for the quality of the product supplied.

21.4 Quality of installation of the product on-site is the responsibility of the installer.

21.5 Maintenance of the flooring system is the responsibility of the building owner.

Sources of Information

- AS 3566.1:2002 Self-drilling screws for the building and construction industries.
- AS/NZS 1170:2002 Structural design actions.
- AS/NZS 4266.1:2017 Reconstituted wood-based panels – Methods of testing - Part 1: Base panels.
- AS/NZS 4858:2004 Wet area membranes.
- BRANZ Bulletin No. 644 Solid timber strip flooring on a concrete slab..
- NZS 3602:2003 Timber and wood-based products for use in building.
- NASH Standard Part Two: Light steel-framed buildings.
- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 09 July 2025

This Appraisal has been amended to update the Appraisal Holder company name, include steel framing built within the scope of NASH Standard Part Two, Section 8 and update the Technical Literature reference.

BRANZ

In the opinion of BRANZ, Strandfloor® H3.1 Flooring 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 Fletcher Building Products Ltd t/a 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. Fletcher Building Products Ltd t/a 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 Fletcher Building Products Ltd t/a 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 Fletcher Building Products Ltd t/a Laminex New Zealand or any third party.

For BRANZ

Chelydra Percy
Chief Executive

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