SUPERPINE®
by Laminex New Zealand™

Structural Flooring
Technical Manual

BRANZ Appraised
Appraisal No.1217 [2022]

50 YEARS
NZBC B2

Furniture, Fittings & Flooring
Licence No. 3208041

NEW ZEALAND MADE®

Laminex™ NEW ZEALAND

Edition 3.0 10.22

SuperPine®
Structual Flooring
Technical manual

Edition 3 – October 2022

SUPERPINE® by Laminex New Zealand™

Laminex™ NEW ZEALAND

Contents

1 Scope and interpretation

1.1 Compliance

SuperPine® particleboard has a BRANZ Appraisal, No. 1217 – covering use within the New Zealand Building Code. The current certificate can be viewed on their website – www.branz.co.nz.

BRANZ Appraised
Appraisal No.1217 [2022]

In the opinion of BRANZ, SuperPine® 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 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)].
- Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years, and B2.3.1 (b) 15 years.
- Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1.

1.2 Scope

The SuperPine® information in this manual has been specifically designed in accordance with AS/NZS 1170 to comply with the appropriate design loadings for domestic and commercial buildings.

SuperPine® panels are suitable for timber framed buildings within the scope of NZS 3604, clause 1.1.2 and those uses specifically designed within this manual.

Tables 1.1 and 1.2 together with Figure, 1.1 and 1.2 in NZS 3604 may be used to determine the scope.

SuperPine® has also been appraised for use in steel-framed intermediate floors that have been designed and constructed in accordance with NASH Standard Part2, Section 8.

1.3 Interpretation

Interpretation shall be as detailed in NZS 3604, clause 1.2 and the NASH Standard Part 2 Section 8.

1.4 Definitions

Definitions are those given in NZS 3604, clause 1.3.

1.5 Make sure your information is up to date

When specifying or installing Laminex New Zealand™ product, ensure you have the current technical manual. If you are not sure you do, or you need more information, visit **laminex.co.nz** or call Laminex New Zealand™ on 0800 303 606.

C1.3 In particular, the words “shall”or “must” identify a mandatory requirement and “should” or “recommend” is advisory. Clauses prefixed by “C” (such as these) are intended as comments.

2 General product description

2.1 SuperPine® material

SuperPine® is a high-density board manufactured by Laminex New Zealand™, primarily for use as structural flooring, under the trade mark SuperPine®.

2.2 Identification

All panels are ink marked on the underside with the product identification and a manufacturing traceability number.

All panels have a label on the upper face.

Superpine® Tongue & Groove has a white polypropylene tongue.

2.3 Uses

As a general guideline SuperPine® is suitable for the uses listed below:

- As pre-laid or post-laid flooring over traditional timber floor joists, engineered timber joists, such as “**I**” Joists, LVL and PosiSTRUT, or steel joists supports in single or double layer.
- As an overlay to concrete floor slabs or wooden floors.
- As floor diaphragms for the transfer of wind and earthquake loads.
- For general stair construction.
- For shelving and packaging.
- As carcass members for cabinetry.

2.3.1 Kitchens | Laundries

SuperPine® is suitable for use within open and closed area kitchens, and laundries provided the following conditions are meet:

Resilient sheet floor coverings with sealed joints (Polyvinylchloride)

- A sheet material or flexible underlayment is installed over the SuperPine®.
- The SuperPine® must be protected by a waterproof membrane that complies with AS/NZS 4858 or that is covered by a valid BRANZ Appraisal.
- Be contained by a water-stop.
- A floor drain waste is recommended.

Non-impervious flooring coverings (i.e. Ceramic tile, engineered wood planking and vinyl planking)

- Ceramic tile / rigid floor coverings installed over tile & slate fibre cement sheet underlay.
- The SuperPine® must be protected by a waterproof membrane that complies with AS/NZS 4858 or that is covered by a valid BRANZ Appraisal.
- All penetrations have a bandage reinforcement tape applied.
- Be contained by a water-stop.
- A floor drain waste is recommended.

Refer to E3/AS2 and the Internal Wet Area Membrane Code of Practice for more details.

2.4 SuperPine® types

SUPERPINE square edge

2.4.1 SuperPine® Square Edge

- SuperPine® Square Edge consists of 20mm nominally thick wood based structural particleboard.
- Panels are finished with a square edge.
- This is a general purpose product intended for all uses.
- SuperPine® Square Edge shall always be used when it is intended to clear finish the particleboard floor.

SUPERPINE tongue & groove

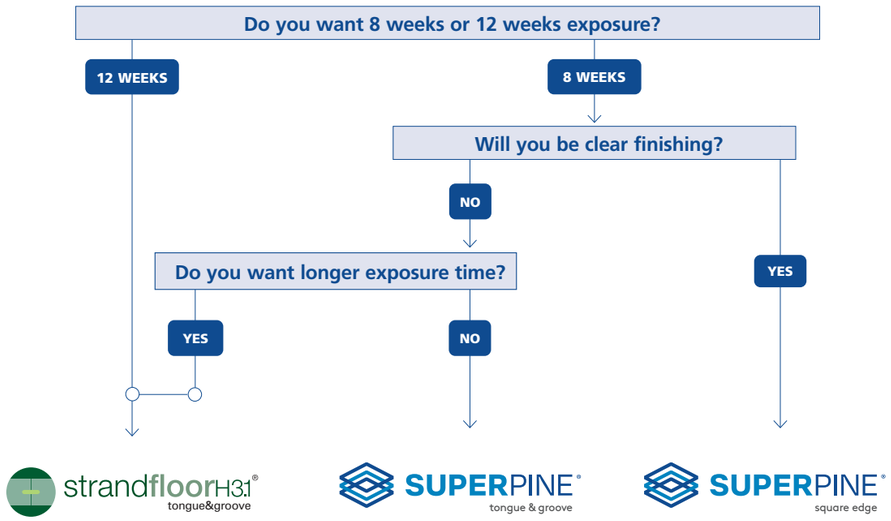
2.4.2 SuperPine® Tongue & Groove

- SuperPine® Tongue & Groove consists of 20mm nominally thick wood based structural particleboard, specifically marketed as flooring.
- It is identical to Square Edge in its manufacture with the addition of a polypropylene tongue, to one long edge, and a groove to the other.
- When correctly installed this gives the required shear strength and eliminates the need for timber nogs.
- There is a range of two panel sizes particularly designed for common joists centres.

2.5 Flooring guide

Figure 2.1 is a helpful guide when determining which product suits a particular application. Other considerations may be necessary but the flow chart is a good first step.

Figure 2.1



C2.4.1 This is to ensure that timber nogs are used to support edges – if Tongue & Groove product is used, cracking of surface coatings may eventuate due to slight differential movement.

C2.5 Refer section 5 – Flooring design.

3 Material properties

3.1 Description

SuperPine® is manufactured in New Zealand using Pinus Radiata wood particles, which provide a range of colour tones within the panel. The wood particles are bonded with melamine urea formaldehyde resin.

SuperPine® panels contain a wax emulsion. This is added to the adhesive during the manufacturing process to impart additional moisture resistance throughout the panel.

3.2 Panel dimensions

Table 3.1 gives panel dimensions for all products.

Table 3.1

Panel dimensions*			
	Panel sizes mm	**Weight (kg) per m2**	**Weight (kg) per panel**
Square Edge	3600 x 1200 x 20 2400 x 1200 x 20	13.8 13.8	60 40
Tongue & Groove	3600 x 1200 x 20 2400 x 1200 x 20	13.8 13.8	60 40

*All dimensions provided are approximate only and subject to manufacturing tolerances.

3.3 Panel tolerances

Table 3.2 gives panel tolerances for all products (ex factory).

Table 3.2

Panel tolerances	
Length	+/- 1.5mm
Width	+/- 1.5mm
Thickness	+/- 0.2mm
Panel edge straightness	</=1mm/m on width </=2mm/m on length.
Panel squareness	The requirement is </=0.5mm/m. Diagonal of a 2400 is 2683, so the requirement is <1.25 for a 2400. Diagonal of a 3600 is 3795, so the requirement is <1.75 for a 3600.

3.4 Physical properties

SuperPine® Square Edge and SuperPine® Tongue & Groove is manufactured to meet or exceed the requirements of AS/NZS 1860.1:2017 Particleboard Flooring - Part 1: Specifications. The minimum requirements when tested using methods stated in AS/NZS 1860.1:2017 are listed below in Table 3.3.

Table 3.3 SuperPine® Square Edge & SuperPine® Tongue & Groove

Property	Units	AS/NZS performance criteria
Bending Strength (MoR)	MPa	17 min
Modulus of elasticity (MoE)	MPa	2650 min
Internal Bond Strength	MPa	0.50 min
24-hour Thickness Swell	%	14 max
Thickness Stability	%	25 max
Glue Bond Quality	MPa	2.9 min
Surface Water Absorption	g/m²	210 max

3.5 Formaldehyde

The formaldehyde content of SuperPine® complies with the limits specified in AS/NZS 1860.1:2017 Particleboard flooring Part 1 Specifications. The extractable formaldehyde content meets the requirements of E1.

When installed, emission levels can be controlled by room ventilation together with the sealing of the surface or finishing with a three-coat polyurethane coating system or the use of coverings such as foam-backed carpet, carpet with rubber underlay, vinyl or tiles. **Sealing or covering of the surface shall be carried out before the building is occupied.**

C3.5.1 Refer also Section 10 – Finishing and Section 12 – Health and Safety.

4 Durability

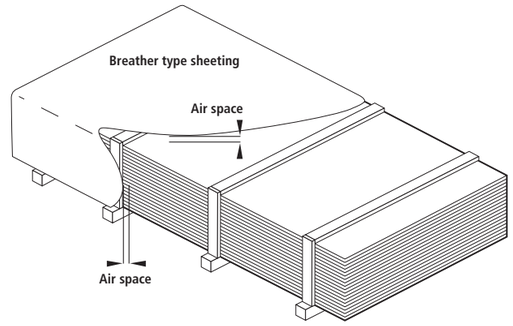
4.1 Producer statement

When stored, handled, installed and maintained in accordance with this document, SuperPine® panels will meet: **The durability performance requirements of NZBC B2.3.1 (a) for 50 years.**

The specifications, details and methods described herein shall be strictly observed to avoid building code non-compliance.

Laminex New Zealand™ will not be liable to any person or business if the conditions as to storage, handling, installation and maintenance of SuperPine® panels as outlined within this document are not complied with.

Figure 4.1



4.2 BRANZ product assessments

SuperPine® has a BRANZ Appraisal, No. 1217 – The current edition is published on the BRANZ website – www.branz.co.nz

The BRANZ opinion confirms that:

- SuperPine® will have an acceptably low level of risk of attack by insects such as borer or termites.
- SuperPine® will have a life of at least 50 years.

4.3 Durability conditions

The following conditions shall be met; otherwise the durability of SuperPine® will be compromised.

4.3.1 Handling and storage

- Panels shall be stored and handled so as to minimise surface and edge damage.
- Wherever possible panels shall be stored inside under cover. Outside storage shall be for short periods only. Panels shall not be stacked on wet concrete floors.
- The panels shall be flat stacked clear of the ground, on evenly placed, full width, level bearers. Bearers shall be of uniform thickness and shall extend across the full width of the stack (refer figure 4.1).
- When stored in external situations, panels shall be protected from the weather. A breather-type cover shall be used, supported clear of the top and sides of the panels using battens to allow air to circulate freely around the pack (refer figure 4.1).

4.3.2 Weathering

- SuperPine® Square Edge and SuperPine® Tongue & Groove shall not be exposed to weathering for more than eight weeks.
- Panel properties may be affected by moisture saturation and/or exposure to sub-zero temperatures.
- During the exposed period, do not allow water to pond on the surface. Remove water by sweeping and forming small holes adjacent to plate lines. Do not directly cover panels with sheeting or apply liquid sealers to any surface. Panels should weather in their raw condition to allow release of absorbed moisture.

4.3.3 Heat

- Panels shall be separated from fuel burning appliances, flues and chimneys in accordance with NZBC Clause C – AS/1.
- Panels shall not be subjected to temperatures exceeding 50˚C for a prolonged period.

4.3.4 Prohibited uses

- Panels shall not be used in covered exterior situations with no weather protection e.g. open verandas.
- Panels shall not be used as a substrate for roofing or decking membranes.
- Panels shall not be used in spa-pool rooms.
- Once installed and in use, panels shall not be subjected to conditions that will allow the continuing moisture content to be above 15%.
- Bathrooms, open closed shower & rooms.

4.3.5 Defects

- Before installation please check panels for defects.
- Contact your supplier for details on defected product.

C4.3.2 The “weather exposed” period includes the time that the panels are in an exposed condition when being transported or stored on site without covering. Panels will respond to changes in humidity and moisture content. Some grain raising may result. Loss of stiffness and strength can occur if panels are exposed to sub-zero conditions whilst saturated – i.e. ski lodges. If the exposure period cannot be met, then panels shall be post laid (once the structure is enclosed). Alternatively, sheet covering may be used providing it is indirect and adequate air space is maintained (“tent” effect).

C4.3.3 Over floor and under floor type heating systems may be used with SuperPine® products providing the operating temperature does not exceed 35ºC and the panel moisture content is less than 16%. The heating system manufacturer must be consulted prior to installation.

5 Floor design

5.1 Non-specific design

The following design information covers the use of SuperPine® when used for buildings detailed by 1.1.2(e) of NZS 3604 which is an acceptable solution of the New Zealand Building Code for buildings not requiring specific design.

5.1.1 Joist selection

Ranges of joists are now available, in solid timber, engineered timber (“**I** joists / LVL”), PoziStrut and steel. Each has its particular advantages and preferences.

The use of solid timber or “**I**” joists, with a moisture content of less than 15%, is strongly recommended and will provide the following benefits:

- Post construction shrinkage and distortion will be minimised, limiting fastener noise and nail popping.
- Deflection will be limited as dry timber is stronger and stiffer.
- In all cases joists are lighter and easier to handle – particularly with “**I**” joists.

In some cases it is hard to avoid the use of “wet” timber due to the treatment requirements of NZS 3602. If this is the case, care should be taken to select straight and undistorted material or consideration given to post laying of panels.

5.1.2 Domestic buildings

In domestic housing applications, joist support centres up to 600mm are acceptable for all SuperPine® products, in line with the floor loads described in Table 1.2 - “Imposed floor live load reference values” of NZS 3604.

a) If a more rigid floor is required, reduce support centres to 450mm or less.
b) For large floors, over 15m long, consider post laying or allow for expansion.
c) Ensure that adequate ventilation is provided in sub-floor areas.
d) When clear finish/coating is required, use only SuperPine® Square Edge.
e) Additional panel support will be required for high point loads such as pianos, billiard tables etc.

C5.1.2a See Section 7 – 7.4 Large floors.

C5.1.2b This is to ensure that timber nogs are used to support edges – if Tounge and Groove product is used, cracking of surface coatings may eventuate due to slight differential movement.

5.1.3 All other buildings

In all non-domestic building applications (i.e. residential, institutional, educational and other buildings) joist spacings for SuperPine® shall not exceed 600mm.

The floor loads, from Table 1.2 of NZS 3604, shall not be exceeded without specific design.

Special attention shall be given at the design stage to the effects of concentrated loadings, such as high density foot traffic, storage racks, hand trolley point loads etc.

Adequate cross flow ventilation shall be provided in all sub-floor areas for ground floor timber framed floors.

Where large areas of SuperPine® are laid e.g. gymnasiums, community halls, institutional type dwellings, farm buildings etc., it is important to ensure that careful consideration is given to the cross flow effect of sub-floor ventilation and that allowance is made for panel expansion.

Post laying is always the better option for large floors, particularly when clear finishing.

5.1.4 Structural diaphragms

SuperPine® Square Edge can be used for structural diaphragms. Design requirements for diaphragms to resist wind or seismic loads are given in NZS 3604.

- SuperPine® Square Edge complies if fixed in accordance with this manual.
- SuperPine® Tongue & Groove complies if fixed in accordance with this manual and joist centres do not exceed 450mm.

For floor diaphragms complying with NZS 4229 – Concrete Masonry Buildings Not Requiring Specific Engineering Design – SuperPine® Square Edge shall be used. Details shall be in accordance with NZS 4229.

C5.1.3 Residential, institutional, educational and other buildings as described in NZS 3604: clause 1.1.2 (e).
C5.1.4 See section 7 – Installation, for special fixing details.

5.2 Specific design, commercial and industrial use

SuperPine® flooring panels are suitable for residential and commercial flooring applications with a maximum frame spacing of 600mm centres for a maximum live load of 1.8 kN.

Flooring platforms where the live loads exceed 1.8 kN / 2kPa, must be specifically designed by either:

a) SuperPine® Flooring - Using the properties in Table 3.3 of this manual, or;
b) SuperPine® is to be replaced with Strandfloor®, which is to be installed within the scope of Tables 5.1 and 5.2 of the Strandfloor® Technical Manual.

5.3 Sub-floor ventilation

Sub-floor ventilation must be provided to all platform floors suspended above the ground to ensure the ongoing moisture content of the SuperPine® should not exceed 15%.

The following information shall be regarded as the minimum ventilation levels required. Failure to control moisture in the particleboard could result in a non-performance which Laminex New Zealand™ will not be responsible for.

5.3.1 Opening requirement

This requirement shall be met by the provision of evenly distributed openings in the foundation wall, at a rate of no less than 3500mm^2 for every m^2 of floor area. The openings shall be as near as possible to the underside of the plates and bearers and be positioned to allow effective cross flow.

Either one, or a combination of the following methods, may be used to construct ventilation openings:

- Continuous gaps, at least 20mm wide between baseboards, around the building perimeter.
- Perimeter wall ventilators with sufficient net open area spaced regularly, commencing 750mm from the wall corner and at intervals of no greater than 1.8m.
- A 50mm gap between the wall plates and a boundary joist at the ends of cantilevered floor joists and the wall plate and joist, where the bearer is cantilevered.
- Other regularly spaced openings that will provide adequate ventilation.

It is important to ensure that party walls, internal foundations, attached terraces, or any other impediment, do not obstruct the subfloor ventilation airflow, and that:

- No point of the ground is more than 7.5m from a ventilation opening, or;
- The subfloor ventilation rate is greater than ten air changes per hour for wet sites, or five air changes per hour for dry sites.

C5.3.1 All requirements in accordance with NZBC – E2/AS1 and NZS 3604.

5 FLOOR DESIGN

5.3.2 Vapour barriers

Where a sub-floor space cannot be adequately ventilated, the ground under a suspended floor shall be covered with a vapour barrier having a vapour flow resistance of no less than 50MN s/g, and a thickness of no less than 0.25mm.

Even with a vapour barrier, ventilation openings shall still be provided, but the net open area may be reduced to no less than 700mm² for every m² of floor area and be located to provide air cross flow in the subfloor space.

The vapour barrier shall be installed in a way that ensures:

- It covers the total ground area.
- Adjacent sheets are lapped no less than 75mm and laps are intermittently taped.
- The ground is shaped to prevent water accumulation on the vapour barrier.
- Water drains to the exterior.
- It is securely held in place by bricks, large stones, pegs or similar method.

Where floor area designs still do not meet the above criteria, consideration should be given to the use of mechanical draft ventilation systems that create a subfloor ventilation rate greater than ten air changes per hour for wet sites, or five air changes per hour for dry sites.

It is essential that all ventilation openings remain unrestricted and that vegetation is not allowed to cause obstructions over the life of the building.

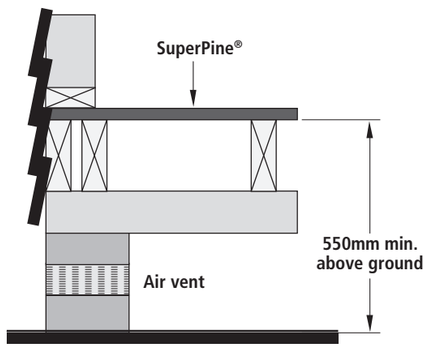
5.4 Ground clearance

A minimum clearance of 550mm between the surface of the ground beneath the building and the underside of the flooring panels shall be provided in order to give adequate sub-floor air capacity and to provide access for inspection of the sub-floor structure.

The clearance of 550mm may not be reduced, even when vapour barriers are installed. Vapour barriers only allow the reduction in the ventilation requirement not the clearance dimension.

For ground clearance detail, see Figure 5.1.

Figure 5.1



C5.3.2 It is strongly recommended that vapour barriers be installed regardless of the situation. Great advantages can be gained in the reduction of sub-floor moisture content for very little cost.

5.5 Fire ratings

SuperPine® can be used as flooring in detached dwellings that have no specific fire resistance rating requirements under the NZBC (Purpose Group SH).

For other types of occupancy, product use depends on the number of stories, the number of full and intermediate floors involved and whether the building is sprinklered etc.

The required fire resistance rating for floors and surface finish in NZBC Acceptable Solution C/AS1 shall be complied with.

SuperPine® has a Critical Radiant Flux (CRF) value of 2.2 kW/M2.

5.6 Insulation

While SuperPine® panels used to form an on-ground platform floor will contribute toward the building performance index of the building envelope, additional insulation material will be needed to achieve the thermal insulation requirements as detailed in NZBC H1.3.2. For the purposes of calculation the R-value of 20mm SuperPine® panels shall be taken as 0.17 m²K/W.

When fitting any insulation it is important to ensure the material that is chosen is installed in accordance with the insulation manufacturers' instructions. It is also critical to ensure that control of moisture in the sub-floor space is maintained as the efficiency of some insulation materials may be affected by elevated moisture levels.

5.7 Supporting timber

The moisture content of the support system at the time of laying and fixing the flooring panels can affect the performance of the total floor system. As wet framing dries it will shrink. This can reduce the effectiveness of the fixing, allowing movement of panels - resulting in floor squeaking and nail-head rise under vinyl flooring.

The use of kiln dried timber or engineered timber joists is therefore recommended.

Herringbone strutting in lieu of solid blocking will reduce the likelihood of a noisy floor. End nailing of solid blocks often result in squeaking and is hard to rectify once the structure is closed in.

6 Specification clauses

6.1 General

The clauses listed below are those recommended to be used when specifying SuperPine® products for all building uses as covered by NZS 3604 1.1.2 (e).

It will be necessary to edit those particular sections that apply to the specific project documentation.

6.2 Recommended clauses

6.2.1 Documents referred to

Documents referred to in this section are:

- AS/NZS 1860.1 Particleboard flooring Part 1: Specifications.
- NZS 3604 Timber framed buildings.
- BRANZ Appraisal 1217 (see BRANZ website for current edition).

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

6.2.2 Manufacturers documents

Confirm current status of documentation held:

- By visiting Laminex New Zealand™ website – **laminex.co.nz**.
- Or call Laminex New Zealand™ customer services department – **0800 303 606**.

6.2.3 Materials

- SuperPine® Square Edge.
- SuperPine® Tongue & Groove.

6.2.4 Components

- Nails – 60mm x 3.1 /2.8 annular grooved gun nails or annular grooved particleboard nails.
- Screws – (for timber joists) – 45mm x 8g (minimum size) self drilling screws.
- Adhesive – Elastomeric construction or polyurethane paste adhesive (in continuous beads).
- Screws – (for steel joists) – 45mm x 10g Tek self drilling screws corrosion resistant.
- Simpson Strong Tie 50 x 10 gauge screw - SSTWSV50SA.
- Simpson Strong Tie 50 x 10 gauge stainless steel screw - SSWSC2BSA10.

6.2.5 On-site conditions

Take delivery of and accept packets of SuperPine®, dry and undamaged. Reject all damaged material. Store on a level, firm base, well ventilated and completely protected from weather and damage, all as manufacturers requirements.

Avoid distortion and contact with damaging substances. Protect edges and surfaces from damage. Use a sufficient number of people to lift and lay sheets with ease.

Do not commence work until the substrate is plumb and level, in true alignment and to the particleboard manufacturer's requirements.

6.2.6 Application

a) Adhesive application – Use construction adhesive to joists in conjunction with mechanical fixing. Apply adhesive in a continuous 5mm bead to all floor joists. Apply adhesive in continuous 5mm bead to sheet ends and edges (square edge panels) where they butt together.

b) Nail fixing – Nail panel ends (and panel edges for Square Edge) at 150mm centres 10mm from the edge. Nail intermediates at maximum 200mm, with all nails slightly skewed except for corner vertical nails.

c) Screw fixing – Screw panel ends (and panel edges for Square Edge panels) at 150mm centres 10mm from the edge. Screw intermediate support at maximum 200mm. For Tongue & Groove panels, locate screws 15mm from the edge to avoid tongue damage. Pre-drill the panel for screw fixing.

C6.2.2 It is important to ensure that all on-site personnel have access to up to date information. Products are not used in isolation, but as part of a process. Particular details of handling, storage, installation, finishing and protection, can vary from what is considered the norm.

C6.2.3 Select the appropriate material by referring to Section 2 – Product description and Section 5 – Floor design.

C6.2.4 Select the appropriate component by referring to Section 7 – Installation.

C6.2.5 Refer Section 4 – Durability.

C6.2.6a Refer to Section 7 – Installation – for double nailing requirements for diaphragm floors.

7 Installation

7.1 General

The following information applies to all SuperPine® products.

- Continuous support shall be provided at the building perimeter.
- Place traceability number down and label up.
- Panels shall be close butted together without being placed under pressure by mechanical cramping.
- Panels shall be staggered when used as a diaphragm and it is recommended that staggering is used for general use.
- Each panel shall span at least two floor joist spacings (i.e. supported over three consecutive joists) except where part panels provide the necessary infill at the building edge.
- A minimum of 8mm clearance shall be made between edges and any fixed object e.g. bottom plates, masonry walls, abutting concrete floors, structural columns etc. This is to accommodate linear expansion that may occur during the weather exposure period and eliminate moisture transfer from concrete to SuperPine®.
- To stop permanent staining do not leave materials (scaffolding, nails, etc.) on panels during wet conditions and avoid spills of cement, paint, tea, etc.
- If adhesive is being used apply a continuous 5mm bead to the top of the joists (and nogs if used) just prior to each sheet being positioned and fixed in place.

C7.1 Where a part panel is necessary, consideration should be given to the specific location and potential loads. If the area is likely to carry regular foot traffic or heavy concentrated loads, consideration should be given to installing nogs/dwangs at centres matching the joist spacings.

7.2 SuperPine® Square Edge

The following information applies to SuperPine® Square Edge panels only.

- Support shall be provided to all panel edges and ends by way of joists and nogs/dwangs.
- All supporting timber shall be a minimum of ex 100mm x 50mm.
- For joist spacings of 400mm or 600mm, panels can be laid with, or across the joists (refer figure 7.1 and 7.2).
- For joist spacings of 450mm panels shall be laid across the joists (refer figure 7.2).

When Square Edge panels are to be clear finished, ensure panel sizes, types and batches are not mixed.

Figure 7.1

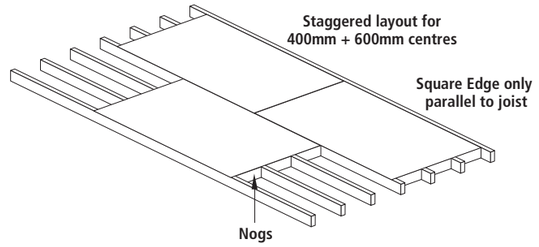
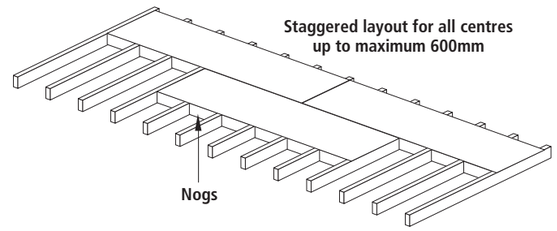


Figure 7.2



C7.2 This will ensure that shading between panels does not occur – five digit number on underside of panel is a batch number.

7.3 SuperPine® Tongue & Groove

The following information applies to all SuperPine® Tongue & Groove panels, it also outlines techniques used in the laying of Tongue and Groove panels.

a) Panels shall always be laid across the joists. (For panel orientation - refer figure 7.2 on page 19 and figure 7.3 below).

b) Lay the first row with the Julian number down and the tongue aligned to the perimeter of the floor. (refer figure 7.3)

c) Ends of sheets should be close butted and centred over joists.

d) Check the grooved edge, for straightness, with a string line.

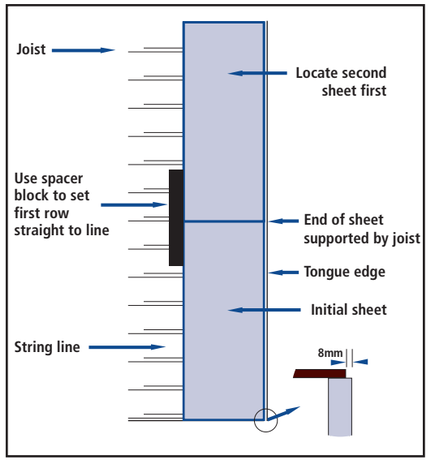
e) Fix panels with only sufficient fastenings to avoid movement – this will stop any distortion of the grooved edge prior to further installation.

f) Allow for a stagger of at least one joist space and position the first sheet of the second row, with the tongue adjacent to the groove of the first row.

g) Apply a thin bead of adhesive along the top of each tongue before insertion into the the groove.

h) Lay a blocking piece (an off-cut of minimum ex 150 x 50 timber 1.4m long) across the joists, in the centre of the panel, on the grooved edge.

Figure 7.3



i) Stand on the blocking piece and strike with a heavy hammer to drive the panel tongue into the groove of the first row.

j) It will assist if a second person can stand on the joint between the two rows.

k) Fix, as before and continue the process to complete the second row – the first row can now be fully fixed.

l) Subsequent rows are similarly installed to complete the floor.

Table 7.1 gives an indication of the quantity of fixings required for SuperPine® panels. Extra fixings may be required for diaphragm floors. C/A equals construction adhesive cartridges (375ml). Refer 7.6 Diaphragm floors.

Table 7.1

Fixing quantities Tongue & Groove panels				
Panel size (mm)	**3600 x 1200**		**2400 x 1200**	
Joist centres	Nails (number)	C/A (cartridge)	Nails (number)	C/A (cartridge)
600mm	53	0.6	39	0.4
450mm	67	0.7	N/A	N/A
400mm	74	0.8	53	0.5

C7.3a At this stage the tongue in the first row is redundant and can be removed for use elsewhere, if required.
C7.3b Refer 7.6 Diaphragm floors.

7.4 Large floors

A large floor is one with a length or width exceeding 15m.

All large floors that are pre-laid (exposed to weather) shall provide for panel expansion.

This can be achieved by:

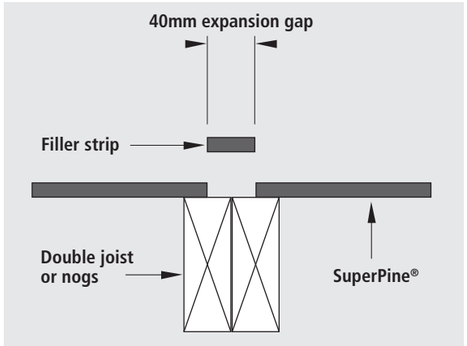
a) Leaving out one row of flooring panels across the building width at centres not exceeding 15m until the structure is completely closed in.

b) Providing a 40mm wide expansion gap under partition lines or other hidden situations, at no greater than 15m intervals (refer figure 7.4). Insert a filler strip on completion.

All large floors that are post-laid (not exposed to weather) do not require expansion provisions.

It is essential that no exposure of any type occur.

Figure 7.4



7.5 Fixing

The type and position of the fastening chosen is important for long-term performance. Incorrectly fixed panels and high moisture content in timber may lead to squeaking floors which can be difficult to remedy at a later date.

Table 7.3 on page 22 gives details of acceptable fastener types. All others, including staples, are unacceptable.

Perimeter fixing shall be 10mm from the panel edges.

C7.3a Ensure that the 8mm clearance is maintained around the perimeter and between fixed objects. Where a double joist is not available, use rows of double nogs.

7.5.1 Adhesive

Adhesive is recommended for use in conjunction with mechanical fastening.

Adhesive should be applied in a continuous 5mm bead to all floor joists.

Refer to Table 7.2 for a list of adhesive options.

Table 7.2

Adhesive Options		
Timber Joists	Sika Nailbond® Premium	5mm continuous bead to the top of teach joist and between sheets at ends and edges, 2mm bead to the top of the tongue.
	Bostik Alpha Grip	
	Gorilla Grip	
	HB Fuller Sturdi Bond™	
Steel Joists	Sikaflex® 123 MS Bond	
	Gorilla 940FC	
	Gorilla MS Sealant	
Note: Check with adhesive supplier to ensure adhesives not listed are suitable.		

Table 7.3

Fastener types					
Timber Joists (includes SG8, LVL8 & I-Beams)	**Minimum size**	**Fixing centres mm**		**Diaphragm (NZS3604)**	
		Perimeter	Intermediates	Square Edge	T&G
Annular Grooved particleboard flooring nails	60 x 3.1	150	200	✓	
Galvanised jolt head nails	60 x 2.8 / 3.1	150	200	✓	
Self drilling screws corrosion resistant	45mm x 8 gauge	150	200		
Simpson Strongtie SS Screw	50mm x 10 gauge (SSWSC2BSA10)	150	200		
Simpson Strongtie Zinc Screw	50mm x 10 gauge (WSV50SA)	150	200	✓	✓
Beck Scrail SubLok Pro	57mm x 2.8 gauge	150	200		
Delfast Round head Coil Nail	50mm x 2.8 gauge	150	200		
Steel Joists					
Self drilling corrosion resistant Tek screws	45mm x 10g Tek	150	200		

7.5.2 Nails

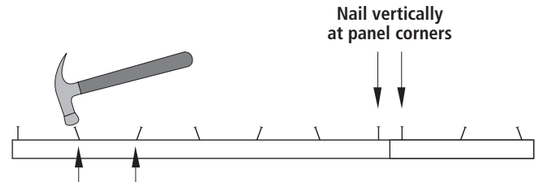
Hand-driven nails shall initially be driven flush with the surface. Punching of nails must take place after building is closed in – just prior to sanding. This allows for the moisture content of joists to dry during building construction.

Hand-driven nail fastening usually provides a better finish for clear coatings than power-driven nails.

To improve lateral holding, nails shall be slightly angled and be driven parallel to the sheet edge (refer figure 7.5).

When using power-driven nails, set the depth adjuster attachment on the power tool to drive nails flush with the surface of the panel. This will allow hand punching to take place just prior to sanding.

Figure 7.5



The use of the pre-punching mechanism increases the risk of squeaky floors, as any timber shrinkage that occurs as the supports dry out is not taken up later as is the case when the punching process is carried out at sanding and floor finishing stage.

7.5.3 Screws

For a satisfactory result with screws it is essential to first drill pilot holes. This will avoid fibre being driven ahead of the screw and being deposited on the top of the joist, adding to potential movement and noise.

When using screws, it is important to initially finish flush, to allow retightening just prior to sanding.

C7.5.2 Hand nailing will generally give the best result as more control can be exercised. The best possible result will be achieved with the proper use of annular grooved hand driven nails used in conjunction with adhesive.

C7.5.3 Care should be taken when retightening screws, as heads are liable to shear, particularly if rusting has occurred.

7.6 Diaphragm floors

SuperPine® Tongue & Groove

- o Simpson Strongtie screw type WSV50SA are to be used for SuperPine® Tongue & Grove diaphragm floors.
- o The maximum joist spacing is 450mm and additional fixings are required.
- o Fixings for T&G diaphragm floors are placed in accordance with Figure 7.6.

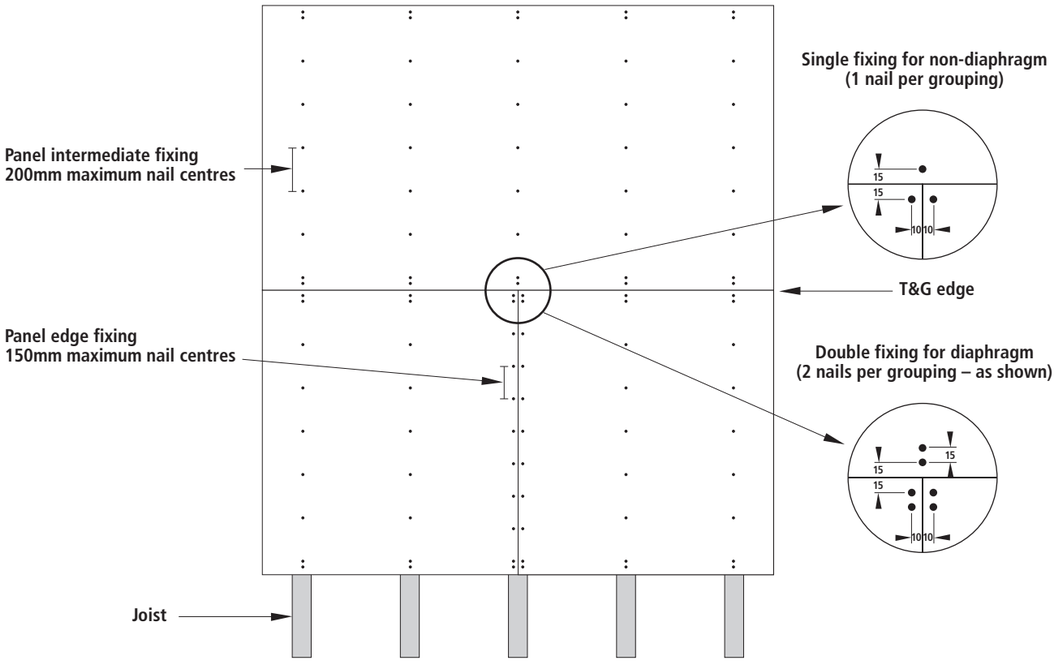
SuperPine® Square Edge

- o There are no additional requirements for the use of SuperPine® Square Edge in diaphragm floors
- o Use screws or nails as per table 7.3.

7.6.1 Screw fixing

Simpson Strongtie screw type WSV50SA has been approved for fixing SuperPine® flooring diaphragms within the scope of NZS3604.

Figure 7.6



7.7 Double layer installation

The bottom layer of SuperPine® shall be laid as for single layer flooring panels.

The top layer shall be laid in a similar pattern with edges of panels offset in each direction from the bottom layer edges.

All panel ends shall be located centrally over joists or blocking to ensure positive fixing and nail length increased to 75mm.

When installing a double layer flooring system, allow for the installation of the second layer after closing in and when all sub-trade work is completed. This will provide a clean unweathered surface for clear finishing.

Moisture content of the first layer must be at 15% or below before the second layer is installed.

Refer to Section 8, Flooring overlays for installation details of second layer of SuperPine® flooring.

7.8 Avoiding “squeaking and creaking”

Drying timber is a major cause of panel movement that can lead to a noisy floor.

SuperPine® itself does not create noise, but common causes of creaking or squeaking floors are:

- o Poor alignment of the joists bearing surfaces, creating gaps resulting in uneven stress on fixings.
- o Shrinkage as the joists dry out – timber shrinks across the grain, leaving a gap between the underside of the sheet and the top of the joist.
- o Using long span joists which allow the floor to deflect more and creak at the solid blocking fixings.
- o Insufficient and loose strutting or blocking of the joists.
- o Swelling of the SuperPine® panels exposed to the weather. Swollen edges of the panel may not bear tightly on the joists when they dry. Sanding may level the thickened edge, but this does not rectify the underside. Nails shall therefore be punched and/or screws re-tightened just prior to sanding.
- o Insufficient fixings holding the panels to the support system.
- o Panels not being fully fixed down when laid.
- o Foot traffic in the house working the panels down the shank of the nails onto the top of the joists often leading to squeaking as the nail shafts work in the SuperPine® panels.
- o Power fastenings being over-driven into the panel core.
- o Hand fixed nailing being punched off at the initial fastening stage with no allowances made for any subsequent movement as drying of materials occurs.
- o Nails being positioned too close to the panel edges.

The following good practice will help to avoid a noisy floor:

- o When possible, use dry joists.
- o For new buildings, reduce the joist span or increase joist depth to reduce deflection (prop green long span joists at mid span until they are dry).
- o Level the joist tops before laying the flooring panels.
- o Ensure dry solid blocking or herringbone strutting is fitted tightly to stiffen floor in accordance with NZS 3604.
- o If using solid blocking fit as late as possible so that joists are drier and shrinkage will be less.
- o Herringbone strutting is preferred as it can be tightened from the underside after timber is dry and before ceilings are fixed to upper floor joists.
- o Lay flooring panels with staggered joints.
- o Don’t cramp flooring panels tightly together.
- o Drive fastenings flush with the top surface of the board at time of laying.
- o Leave punching of nails as long as possible.
- o Use adhesive/nail fixing system where possible and completely nail off at time of laying.

8 Flooring overlays

8.1 General

Laminex New Zealand™ manufactures or distributes a range of panel products suitable for overlaying existing concrete and wooden floors for commercial and domestic requirements.

There is a panel suitable for most flooring overlay applications, including:

- All SuperPine® products
- Lakepine® MDF
- Trade Essentials® Particleboard (medium density particleboard)
- Trade Essentials® Hardboard
- Strandboard®
- All Strandfloor® products

This section is specific to SuperPine®, for others refer to individual publications.

All other sections of this manual apply equally to this section.

Overlays are only intended for interior use and should not be exposed to weathering. The fixing of overlays should not be carried out until the structure is closed and the substrate is waterproof and dry.

8.2 Uses

Overlays can be used for:

- Refurbishing uneven and damaged tongue and groove wooden floors.
- Re-leveling damaged and uneven concrete floors in commercial premises prior to laying carpet, vinyl, parquet or floor tiles.
- Upgrading of school and community halls, gymnasium floors and stages, to meet the requirements for dancing, indoor bowling and other sporting activities.
- Structural upgrades of wooden flooring in existing commercial buildings.
- As a substrate for solid timber tongue and groove overlays.

8.3 Pre-conditioning

To ensure equilibrium of product, panels should be conditioned (left separated and standing vertically) in the installation location for at least 48 hours, prior to commencing fixing.

8.4 Direct floor overlay

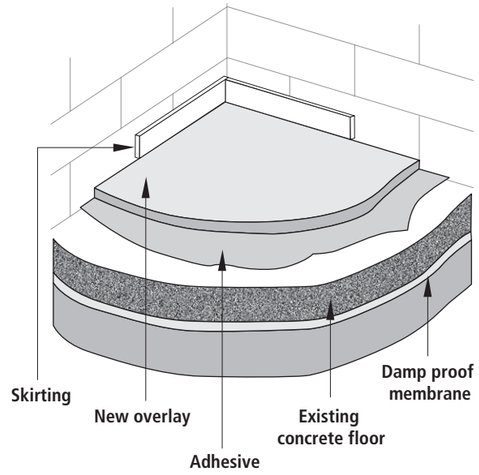
Full spread adhesives recommendations*

- SikaBond® T-55 Flooring Adhesive
- Gorilla MS Flooring Adhesive
- Ardex AF 480 MS Adhesive

**Refer to adhesive manufacturer's technical literature for application instructions.*

All SuperPine® products may be attached directly to existing concrete or timber floors (refer figure 8.1).

Figure 8.1



8.4.1 Timber substrates

For best results when direct overlaying, use a combined nail/full spread adhesive method. This eliminates any tendency for "drumming" in the new floor. A construction adhesive is recommended and should be applied as a full spread, to the manufacturer's instructions.

Existing tongue and groove wooden floors shall be refixed and repunched as applicable, and then coarse sanded to provide a flat substrate. Ensure that there are no protruding nails prior to machine sanding.

When overlaying a tongue and groove timber floor, or existing particleboard floor, ensure that the joints in the new panels do not occur directly above parallel joins in the base floor.

All clearances, fastening and finishing detail applies equally where described elsewhere in this manual.

8.4.2 Concrete substrates

For best results when direct overlaying onto concrete, use a full spread adhesive method. This reduces panel movement and "drumming".

Mechanical fixing of direct overlays on concrete floors should be avoided.

A construction adhesive is recommended and should be applied as a full spread, to the manufacturer's instructions.

Full spread adhesives recommendations*

- SikaBond® T-55 Flooring Adhesive
- Gorilla MS Flooring Adhesive
- Ardex AF 480 MS Adhesive

**Refer to adhesive manufacturer's technical literature for application instructions.*

C8.4.1 Refer section 7 – Installation, for fixing specifications.

C8.4.2 Concrete waterproofing additives do not guarantee a dry substrate. A membrane is the only safe solution.

C8.4.2 BRANZ Bulletin No. 585 Measuring Moisture in Timber and Concrete, describes the whole process and how measurements shall be taken.

Localised defects in the existing floor (i.e. exceeding 5mm undulations per 3m in any direction) shall be matrix filled to a leveled surface as applicable, and high spots ground flat.

The prepared floor surface shall be clean, sound and dust free.

New and old concrete floor slabs shall be dry before laying. As a guide for new concrete, allow one-month drying time per 25mm of floor slab thickness.

There are a number of "rule of thumb" methods to determine if concrete is sufficiently dry to install overlays. The only true method is to measure the relative humidity of the concrete surface, using a flooring hygrometer (refer figure 8.2).

The reading shall be below 70% before the laying of SuperPine® can be considered.

Substrates shall be free from wax, oil, moisture, grease, dirt and dust or loose material.

Construction joints shall be formed in the overlay to coincide with those in the concrete substrate. Bridging construction joints is not recommended.

Before applying adhesive the floor shall be vacuumed, cleaned, and wiped over with a damp mop.

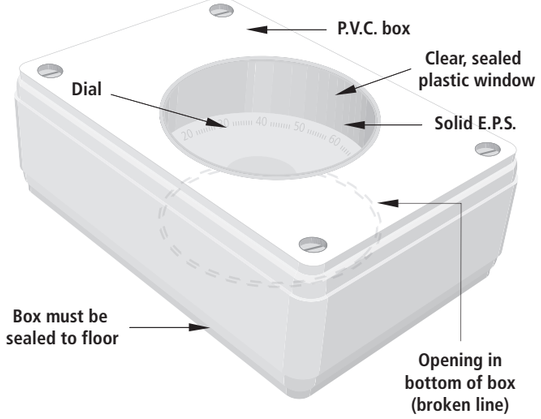
Apply full spread adhesive to the manufacturer's specifications.

All clearances, fastening and finishing details apply equally where described elsewhere in this manual.

Temporary even pressure (e.g. sandbags) should be laid over the floor area until the adhesive has cured. Pay particular attention to square-edged panel intersections, where it is necessary to eliminate surface differentials.

Prohibit traffic over the new floor until the new adhesive is fully cured as recommended by the adhesive manufacturer.

Figure 8.2



C8.4.2 The adhesive shall be full spread. Spot or bead application may lead to "drumming".

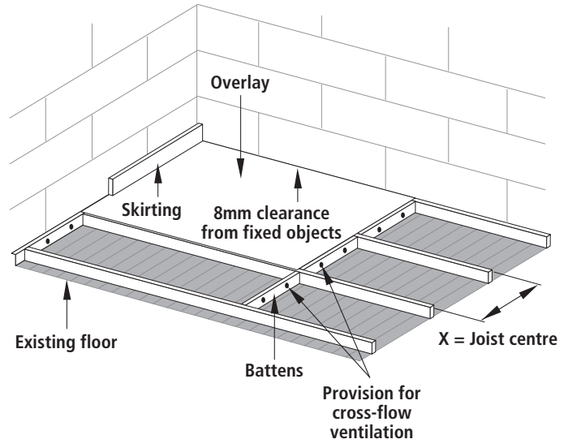
8.5 Indirect floor overlay

SuperPine® Square Edge can be used for indirect overlays, up to spans of 600mm.

Flooring panels are fastened to timber battens fixed to the existing concrete or timber surface, dependent on end application (refer figures 8.3).

Increased floor stiffness will be achieved when closer support centres are used.

Figure 8.3



C8.5 Refer section 5 - Floor design, for all joist spacings.

C8.5 BRANZ Bulletin No. 585 Measuring Moisture in Timber and Concrete, describes the whole process and how measurements shall be taken.

8 FLOOR OVERLAYS

Provision shall be made for cross flow air change within the new floor cavity especially when overlaying concrete substrates (refer figure 8.3).

Where large floor areas are to be installed, effective cross flow ventilation between battens is essential and a surface moisture barrier may be required.

New and old concrete floor slabs shall be dry before laying and the use of a hygrometer is essential.

The reading shall be below 70% before the laying of SuperPine® can be considered.

Ensure battening accommodates any excessive sub-floor undulations and ensure "hold downs" are secure.

Sub-floor framing moisture content shall not exceed 18%.

9 Finishing

9.1 General preparation

SuperPine® flooring panels provide an ideal substrate for most types of floor finishes. All floors will require sanding prior to covering or coating.

All SuperPine® material shall not remain in a permanently raw unfinished condition. After the building is completed and before occupation panels shall be finished with floor coverings such as carpet, sheet vinyl, ceramic tiles etc., or a coating system.

Table 9.1

Floor sanding			
Surface finish	**Cut**	**Sander type**	**Paper grit**
Clear coating	First	Drum	60 – 80
	Second	Disc	100
	Third	Disc, Sander	120 – 150
Other finishes	Single	Drum / Belt	60 – 100
(Carpet, vinyl, wet area membranes etc.)			

Prior to applying floor finishes, nails shall be punched or screws retightened, to give a maximum penetration into the panel of 2mm. All panels should be sanded in line with Table 9.1. Excessive sanding of SuperPine® or using too coarse a paper will reduce the thickness of the panel thereby affecting the structural strength of the panel and will result in colour variations when clear coatings are applied.

9.2 Dry areas

The following applies to areas that are not supplied with water from a water supply system:

9.2.1 Sheet vinyl and vinyl planking

a) The moisture content of panels shall be checked prior to laying of vinyl. The maximum moisture content shall not exceed 15% especially at panel edges before any finishing takes place. Covering of SuperPine® with higher moisture content can result in an unsatisfactory visual appearance owing to panel shrinkage as it dries out over a period of time.

b) Carefully sand the entire floor area as required in table 9.1.

c) Prior to the application of sheet vinyl or vinyl planks / tiles, either a flexible floor leveling underlayment for wooden floors, or sheet underlayment as per vinyl suppliers technical data, shall be applied to the surface of the panels. Always refer to the vinyl manufacturers technical data for installation of underlayment.

9.2.2 Carpet

o Carefully sand the entire floor area as required in table 9.1.

C9.1.1a Refer section 11 – Health and safety.

C9.1.1b Penetration in excess of 2mm may affect the tightness of the fastening.

C9.2.1a It is not recommended to lay vinyl or vinyl planking directly to SuperPine® flooring. Subsequent movement of fastenings can cause filler to rise up resulting in show through. Building settlement and shrinkage can result in fastener and sheet join show through.

C9.2.1b The sheet vinyl manufacturer will specify a suitable sealer.

9.2.3 Clear finish

a) Where a premium finish is required, post laying of the SuperPine® should be considered.

b) When clear coating, use only SuperPine® Square Edge product.

c) Hand-driven nailing will usually give a better finish than power-driven nails.

d) Panel sizes and batch numbers should not be mixed if an overall uniform appearance is desired.

e) Flooring intended for clear finishing shall be kept clean and free from staining, soiling and abrasion.

f) When clear finishing large floor areas, e.g. halls and gymnasiums, etc. - post laying of the floor is recommended.

g) The moisture content of panels shall be checked prior to coating. The maximum moisture content shall not exceed 15% especially at panel edges before any finishing takes place. Coating of SuperPine® with higher moisture content can result in an unsatisfactory visual appearance owing to panel shrinkage as it dries out over a period of time.

h) Clear coatings should provide protection in normal domestic building applications for a limited period. The clear coating manufacturer's application instructions shall be strictly followed and their requirements for periodic recoating shall be adhered to.

The following sequence is required for clear coating.

- Ensure floor panels are dry, at or below 15% moisture content.
- Punch nails just prior to sanding.
- Fill nails holes with a compatible filler colour matched to the SuperPine®.
- Carefully sand the entire floor area as required in table 9.1.
- Remove dust from the entire floor surface and skirtings by broom and vacuum cleaner.
- Apply the first coat of polyurethane in accordance with the manufacturer's instructions.
- Sand and apply further coats as required by coating manufacturer.
- At all times strictly follow the coating manufacturer's instructions.

9.2.4 Sports court markings

It is recommended that painted court markings be carried out prior to clear finishing and follow the requirements of the final coating manufacturer.

9.3 Wet areas

SuperPine® is NOT approved for use in bathrooms, open and closed shower rooms.

C9.2.3b This is to ensure that timber nogs are used to support edges.

C9.2.3d This will ensure that shading between panels does not occur – identification numbers printed on one face of the panels are batch numbers.

C9.2.4 Best results are achieved when specialist applicators carry out the work. Should any imperfections appear in panel surfaces during coating, cease work and contact the panel supplier or the coating manufacturer.

10 Maintenance

10.1 Ongoing maintenance

The occupier or owner, throughout the life of the building, shall maintain the following specific areas.

10.1.1 Floor coverings

- Floor coverings and coatings shall be maintained to ensure the SuperPine® surface is protected.
- Floor wastes in adjacent rooms shall remain unobstructed and drain to the outside of the building.

10.1.2 Sub-floor space

- The sub-floor space shall continue to receive ventilation throughout the life of the building.
- Air vents in the foundation enclosure perimeter of the building shall not be obstructed by shrubs and gardens, etc. or any building extensions including decks. Building extensions shall allow for the continued compliance with sub-floor ventilation requirements.
- Vapour barriers required to provide adequate moisture control in the sub-floor areas shall be maintained in an effective condition.
- Clothes drier vents or steam vents shall not be allowed to exit into the sub-floor space. All relief valves or overflow pipes shall discharge outside of the building.

10.2 General precautions

- SuperPine® shall not be re-exposed to weather during renovations or extensions.
- Where heavy floor loads are intended such as iron-framed pianos or billiard tables etc., professional engineering advice should be sought to avoid undesired deflection or surface failure.

10.3 Accidental flooding

- In any adjacent area where accidental flooding may occur, such as where water holding whiteware appliances are installed, a floor waste is recommended.
- If for any reason flooding should occur, care shall be taken to ensure that the panels can dry out quickly. Removal of carpets or other loose laid floor coverings may be necessary.
- It is essential that air be allowed to circulate around the panels and the replacement of floor coverings etc. shall not be considered until the SuperPine® is below 15% moisture content.

If required, Laminex New Zealand™ will test samples to verify continued fitness for use.

11 Health and safety

11.1 Working conditions

Health and safety precautions shall be taken when working with wood panel products.

- Exposure to wood dust and/or formaldehyde may cause irritation to the eyes, respiratory system and skin, and may cause sensitisation resulting in asthma, and by skin contact resulting in dermatitis.
- Wood dust is classified as a known carcinogen. Repeated inhalation of wood dust over many years may cause nasal cancer. Formaldehyde is classified as a known carcinogen. For more information visit Worksafe.govt.nz.
- Storage areas containing large quantities of SuperPine® shall be adequately ventilated.
- Work areas shall be well ventilated and kept clean.
- Sawing, sanding and routing equipment should be fitted with dust extractors such that dust levels are kept within standards outlined by Worksafe Australia, Worksafe New Zealand or the specific country of use. If not, wear a Dust Mask conforming with AS/NZS 1715 and AS/NZS 1716 and eye protection conforming with AS/NZS 1337.
- Offcuts, shavings and dust shall be disposed of in a manner that avoids the generation of dust and in accordance with the requirements of local waste authorities.
- In end use applications, all product surfaces exposed to occupied space shall be sealed as a minimum.
- Health monitoring should be arranged for workers routinely exposed to wood dust.
- Woodworking equipment should be equipped with guards as supplied and must be operated in accordance to manufacturer's instructions.

11.2 Formaldehyde

11.2.1 Control

When installed, emission levels can be controlled by room ventilation and covering of the surface. The surface shall be sealed or covered with a coating system or alternatively, with a floor covering such as foam-backed carpet, carpet with rubber underlay, sheet vinyl or ceramic tiles.

Sealing or covering of the surface shall be carried out before the building is occupied.

When it is anticipated that the building may be closed for long periods of time, "trickle" ventilators shall be provided.

11.2.2 Formaldehyde facts

Formaldehyde is a clear, naturally occurring gas, which is given off by plants, animals and human beings as part of the normal life process.

Formaldehyde is used in a wide range of consumer products and scientific and industrial processes. Formaldehyde is biodegradable, being destroyed by exposure to the atmosphere and by biological processes in soil and water, plants, animals and human beings.

Because some people can react to low levels of formaldehyde exposure, all possible sources of emissions in homes should be checked.

Among the factors which can lead to a build-up of formaldehyde levels in some homes are:

- Unsealed or uncovered reconstituted wood flooring.
- Unpainted or unsealed reconstituted wood products such as door jambs, scotias and skirting boards, doors and plywood.
- Unpainted or unsealed furniture made out of reconstituted wood products like cupboards, chests of drawers and kitchen and laundry units.
- Thermal backed curtaining and upholstery.
- LPG-Fuelled heaters and cookers (unflued).
- Cooking with hot oil.
- Cigarette smoke.

11.2.3 Risks

Formaldehyde is a natural gas, which will break down when exposed to the atmosphere, but in confined spaces this dissipation is slower.

Formaldehyde is irritating to the nose and throat, eyes and skin. Some people are hypersensitive to formaldehyde and experience allergic reactions resembling asthma. They also experience runny noses and skin reactions.

11.2.4 Detecting formaldehyde

Air-borne formaldehyde is detectable by smell at about 0.3 – 0.4 parts per million (ppm) and at this level may cause mild eye irritation for some people.

At 0.5 ppm, some people notice a mild effect in the throat. At 1.0 ppm and over, watering of the eye begins. At 10.0 ppm, intolerable irritant effects on the nose and throat are felt.

C11.2.4 See Section 3 - Material properties for information about SuperPine® formaldehyde emission levels.

12 Product warranty

12.1 SuperPine® warranty information

Please refer to a separate warranty document on the website. For more information visit **laminex.co.nz** or **call 0800 303 606.**

Notes

VISIT US

laminex.co.nz

CALL US

0800 303 606

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