

# Lakepine®



Lakepine®  
MDF



Lakepine®  
LIGHT



Lakepine®  
MR



Lakepine®  
ZERO™

another trade essential from  
THE **laminex** GROUP™

# Introduction

Trade Essentials® Lakepine® Medium Density Fibreboard (MDF) is a versatile wood panel product especially developed for the furniture and joinery industries.

## Product Description

Lakepine products have a homogeneous nature, which results in relative consistency from surface to core and high density edges. These characteristics allow intricate and precise machining and finishing techniques when producing high quality furniture and cabinetry components.

The flat smooth surface of this product is uniform, dense and free of knots and grain patterns, making finishing operations simpler and more economical. Lakepine is available in the following specifications:



**Lakepine®**  
MDF

### Lakepine® MDF

- Standard Medium Density Fibreboard, available in 3mm to 40mm.
- Average densities: **Less than 6mm:** 790kg/m<sup>3</sup>. **9mm to 30mm:** 700 to 750 kgs/m<sup>3</sup>. **Greater than 35mm:** 600 to 630 kgs/m<sup>3</sup>.
- Superior machining and finishing characteristics, strength and stability make it ideal as the prime component in many applications.
- Light brown in colour and is marked on the edge with Lakepine MDF brand.
- Majority of products comply with AS/NZS 1859 Part 2.

#### Uses:

- |                          |                            |   |                         |
|--------------------------|----------------------------|---|-------------------------|
| ■ Furniture              | ■ Cupboard doors           | ■ Stairs                                | ■ Audio visual cabinets |
| ■ Pianos                 | ■ Kitchen units            | ■ Table tops                            | ■ Chairs                |
| ■ Bathroom units         | ■ Office equipment         | ■ Shelving                              | ■ Laminate              |
| ■ Laundry units          | ■ Shop fittings            | ■ Moulding trim                         | ■ Pool tables           |
| ■ Vinyl & paper overlays | ■ Paint finishes           | ■ Wall & ceiling linings                | ■ Plastic laminates     |
| ■ Wood veneer overlays   | ■ Commercial shop fittings | ■ DAP or low pressure melamine overlays | ■ Furniture components  |



**Lakepine®**  
LIGHT

### Lakepine® LIGHT

- Lighter in weight than standard MDF but maintains excellent strength quality, surface smoothness and stability.
- Because of its lower density, it cuts accurately and easily, leaving a clean, true edge and it is much less demanding on machinery.
- The surface can be painted to achieve a high quality finish and provides a uniform substrate for overlaying.



**Lakepine®**  
MR

### Lakepine® MR

- Moisture Resistant MDF specifically developed to provide extra durability for furniture and joinery applications in interior areas subject to high humidity.

#### Uses:

- |   |                     |                                  |
|---|---------------------|----------------------------------|
| ■ Bathroom vanity units   | ■ Laundry cupboards | ■ Sealed or laminated bench tops |
| ■ Sealed partitions and wall linings in washrooms, toilets and changing rooms |                     |                                  |
| ■ Tropical and high humidity regions  |                     |                                  |



**Lakepine®**  
ZERO™

### Lakepine® ZERO™

- A low formaldehyde emitting MDF panel (E0) specifically developed for situations where lower formaldehyde emission levels are required.
- Similar uses as Lakepine MDF.



# Product Details

## Lakepine® MDF

Lakepine MDF is recommended for interior applications such as detailed joinery, lacquered furniture, furniture mouldings, built-in furniture, shelving, wall linings and partitions (if used with suitable feature joining systems) pattern making, toys, clocks and trophies.

In addition to the above interior joinery applications, the thicker Lakepine MDF (30mm - 40mm) is used for specialist applications such

as doors, benchtops, partitions and other projects where thick, sturdy panel construction is required.

The range up to 6mm is suitable for cupboard backs, drawer bottoms, curved panels, door skins and other applications requiring a thin panel.

### Lakepine® MDF Typical Physical Properties\* Determined by testing to AS/NZS 4266

Property	Unit	<10mm	10 - 19mm	20 - 29mm	30 -32mm	35mm	38mm	40mm
Moisture Content	%	7±1	7±1	7±1	7±1	7±1	7±1	7±1
Density	kg/m <sup>3</sup>	750	740-750	720	700-720	665	630	600
Internal Bond	kPa	900	850	800	750	700	700	650
Modulus of Rupture (MOR)	MPa	32	38	33	32	26	21	21
Modulus of Elasticity (MOE)	MPa	3200	3430	3240	3340	2700	2290	2290
Surface Soundness	MPa	N/A	1.3	1.5	1.4	1.3	1.2	1.1
Face Screw Holding	N	N/A	670	710	700	700	700	700
Edge Screw Holding	N	N/A	910	940	900	900	900	900
Surface Water Absorption	g/m <sup>2</sup>	120	90	90	100	100	100	100
Thickness Swell 24 hr	%	13	6	5	6	6	6	6
Dimensional Change Length/Width	%	0.31	0.25	0.23	0.21	0.21	0.21	0.21
Formaldehyde Emission	mg/L	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0

Table 1

### Lakepine® MDF general board weight

Thickness (mm)	3	4	4.75	6	9	12	16	18	25	30	35	38	40
Kg/m <sup>2</sup>	2.34	3.12	3.71	4.70	6.75	9.0	11.84	13.32	18.00	21.60	23.28	23.94	24.00

Table 2

### Sheet Tolerances

(Sheet tolerances meet or exceed AS/NZS 1859 Part 2).

Length and width: +/- 2.0mm Thickness: +/- 0.2mm

Squareness (maximum difference between diagonals): ≤ 2 per metre

Straightness (maximum deviation from line): 1.5mm per metre

### Lakepine® Light

Lakepine Light is lighter in weight than standard MDF but maintains excellent strength quality, surface smoothness and stability. The surface can be painted to achieve a high quality finish and provides a uniform substrate for overlaying.

Using Lakepine Light MDF is pure pleasure, it cuts accurately and easily, leaving a clean, true edge, and because of its lower density, it is much less demanding on you and your machines.

### Lakepine® Light Typical Physical Properties\*

Property	Unit	10 - 19mm	20 - 29mm
Moisture Content	%	7±1	7±1
Density	kg/m <sup>3</sup>	600	600
Internal Bond	kPa	600	600
Modulus of Rupture (MOR)	MPa	28	20
Modulus of Elasticity (MOE)	MPa	2600	2100
Surface Water Absorption	g/m <sup>2</sup>	110	110
Thickness Swell 24 hr	%	7	5

Table 3

### Lakepine® Light general board weight

Thickness (mm)	12	16	18	25
Kg/m <sup>2</sup>	7.2	9.6	10.8	15.0

Table 4

## Lakepine® MR

Lakepine MR is a moisture resistant Medium Density Fibreboard specifically developed to provide extra durability for furniture and joinery applications in interior areas subject to high humidity.

### Lakepine® MR Typical Physical Properties\*

Property	Unit	10 - 19 mm	20 - 29 mm
Moisture Content	%	7±1	7±1
Density	kg/m <sup>3</sup>	740-750	720
Internal Bond	kPa	1100	1000
Modulus Of Rupture (MOR)	MPa	42	40
Modulus Of Elasticity (MOE)	MPa	3500	3200
Surface Soundness	MPa	1.6	1.6
Face Screw Holding	N	840	840
Edge Screw Holding	N	1450	1450
Surface Water Absorption	g/m <sup>2</sup>	90	90
Thickness Swell 24 Hr	%	5	4
Dimensional Change Length/Width	%	0.25	0.23
Formaldehyde Emission	mg/L	≤1.0	≤1.0
Internal Bond After Wet Cyclic Test	kPa	>200	N/A
Thickness Swell After Wet Cyclic Test	%	6.0	N/A
Wet Bending Strength	MPa	N/A	>4

Table 5

### Lakepine® MR general board weight

Thickness (mm)	16	18
Kg/m <sup>2</sup>	11.84	13.32

Table 6

### Sheet Tolerances

As per Lakepine MDF.

## Lakepine® ZERO™

Lakepine Zero is a low formaldehyde emitting MDF panel that meets the requirements of AS/NZS 1859 Part 2 for E0 which is classified as less than or equal to 0.5mg/L.

All other properties of Lakepine Zero are similar to Lakepine MDF, refer to Table 1.

## Composition

### Manufacture

The raw material used in Lakepine products is selected from a range of renewable plantation pine species. The panels are manufactured from dried wood fibres which are bonded together under heat and high pressure using urea-formaldehyde resin.

The pressed panels are fine-sanded to a smooth and consistent appearance and then sawn to size. All stages of manufacture are subject to rigid quality control with regular tests being made as the panels leave the production line.

### Identification

Sheets are light brown in colour and are marked on the edge with the specific Lakepine brand. Packs are clearly branded with a distinctive Lakepine label describing pack contents.

### Handling and Storage

Store away from moisture, heat and direct sunlight. Correct storage will eliminate sagging and distortion of sheets (refer Figure 1).

When stacking packs of Lakepine products, line gluts vertically one above the other.

At the time of dispatch Lakepine has a low moisture content. Because of this a minimum conditioning interval of 48 hours is required prior to use.

### Heat

Precautions must be taken to ensure that Lakepine product is kept clear from nearby sources of heat, such as free-standing fire places, space heaters, wall ovens, hot plates etc. The structural life of Lakepine may be impaired if surface temperatures exceed 50°C.

Manufacturers of heat appliances (such as previously mentioned) must be consulted to ascertain the clearances or protection required to ensure 50°C is not exceeded.

### Fungal and Insect Resistance

Lakepine will resist fungal and insect attack provided the board moisture content does not exceed 20% for extended periods of time.

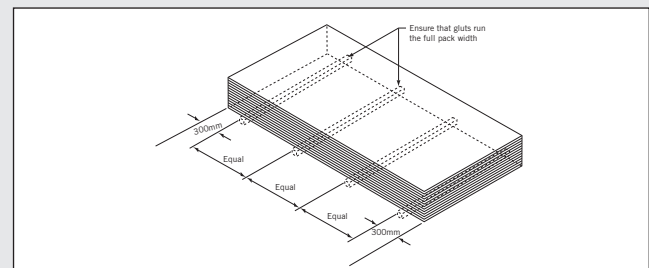


Figure 1

## Durability

When stored, handled and used in accordance with this document, Lakepine products will meet the durability requirements of NZBC B2.3(d) for furniture and joinery applications for five years.

The Laminex Group will not be liable to any person if the conditions as to storage, handling and use of Lakepine products as outlined within this document are not complied with.

Various assembly fittings, hardware items, coatings and glues are referred to within this document for use in conjunction with Lakepine products. These items must be used in accordance with the manufacturers instructions. The Laminex Group accepts no liability for the use of these proprietary products.

Lakepine products must be laminated, painted, stained or clear finished. Lakepine has superior machining and finishing characteristics, strength and stability making it ideal as the prime component in many applications.

# Working Recommendations

## Sawing

- Tungsten-tipped blades should be used for high quality and larger volumes.

Recommendations for Tungsten Carbide Tipped Saws and Dado Heads

Chip load/tooth: 0.15 - 0.25mm Radial clearance: 1 - 2 degrees.

Side clearance: 3 - 4 degrees. Tip to body: 0.64 - 1.00mm.

O.D. clearance: 20 - 22 degrees. Hook Angle: 10 - 15 degrees.

- Saw blades should have higher clearance angles and increased hook angles compared with normal wood working saws.
- Sawing equipment must be well maintained, with replacement of blades at the first sign of any visible deterioration of the cut edge.
- Correct feed speed is important as too slow a speed reduces the bite and can abrade tool tips.
- When cutting laminated Lakepine on a saw bench place the decorative surface uppermost. For double sided overlays, a bench-saw with a scribing saw or hollow ground main blade is essential to avoid chipout.

## Feed speeds for sawing MDF

Cutting Saw Speeds 3600 rpm

Diameter per saw (mm)	250	300	350	400	450	500
Teeth per saw	60	72	84	96	108	120
Rim speed m/sec	47	56	66	75	85	94
Feed speed m/min	32	39	45	52	58	65

Table 7

- When using a portable electric saw, place the face on the underside. For double sided overlays use a backing board on the top face or cut oversize and trim with a router or planer.

## Bandsaws

The use of bandsaws for cutting Lakepine products is not recommended for long production runs. For short runs use a quality high speed steel blade with three teeth per 25mm.

## Drilling

Lakepine machines precisely so that exact diameter holes can be drilled provided the drill bit is sharp. For production line drilling it is advisable to use Tungsten-tipped drill bits. Drill speed should be as low as practicable when feeding in. To avoid polishing the hole wall, which could affect glue strength in the doweling operation, withdrawal speed should be as fast as possible.

## Routing and Edge Moulding

One of the main advantages of Lakepine is its edge shaping capability. Edge banding and timber mouldings are eliminated with the contoured designs made possible with Lakepine products' quality edge.

The feed speed of boards into the cutter heads is important. At too high a speed, knife marks will be visible and the surface rough. At too low a speed, the cutters will not bite into the board but will simply abrade, causing edge burning and damaged cutting tips. The best finish requiring a minimum of sanding can be achieved from the following optional settings.

## Recommended Feed Speeds for Routing and Moulding

Maximum Feed Speed (metre per minute) for Routing and Moulding:

Number of cutters	Cutter speed		
	3600rpm	5000rpm	7200rpm
1	5	7	10
2	10	14	20
3	15	21	30
4	20	28	40
6	30	42	60

Table 8

Tooling angles are generally greater than for natural wood, with hook angles between 10 and 25 degrees, and clearance angles 7 to 20 degrees, depending upon design. Face shear angles are usually 10 degrees.

## Profile Sanding

Sanding after moulding or routing produces a much smoother surface free of fuzz and eliminates the cost of fillers. Profile sanding can be by hand, however various polyurethane based abrasive wheels are available to fit to a low speed spindle or in line with a double end tenoner. These wheels can be shaped to the cutter profile using an abrasive paper glued to the desired edge profile. It should be remembered that the cutter and not the abrasive wheel determines the ultimate shape of the profile. Therefore the cutter must be well maintained because the abrasive wheel will not clean up areas of the profile which are poorly machined.

## Sanding

Lakepine is supplied ready sanded to a high quality smooth finish which is suitable for most applications and finishes. Water-based or spray-on finishes or textured coatings must not be used (refer to section on finishing). For the economic application of high gloss paints or very thin foils, a further light sanding with 200 grit or even 240 grit belts may be advisable. High sanding belt speeds in excess of 1500 metres per minute cut the fibres most efficiently.

## Dust Extraction

Sanding operations on Lakepine product produces a very fine, light dust. For efficient sanding, operator comfort and safety, an effective, positive dust removal system is essential. For information on extraction plant design data, contact The Laminex Group Customer Services department - phone 0800 303 606. Refer also to Health and Safety within this document.

## Hand Tools

Lakepine can also be simply worked with standard hand tools, which makes it ideal for intricate edge and face designs by craftsmen. For best results blades and cutters should be sharp at all times.

## Fixing and Jointing

Fixing and jointing techniques with Lakepine are similar to methods used with most other wood products.

## Balanced Laminations

When surface coated or laminated, Lakepine products, as with all wood panel products must be treated both sides to reduce panel cup or bow which could otherwise occur at different humidity conditions.

## Screwing

For best results and improved edge-screw holding over other types of wood panel products, the following should be observed.

### Type of Screw

The choice of screw is most important, especially when fixing into the edge of Lakepine panels. Recommended are particleboard screws.

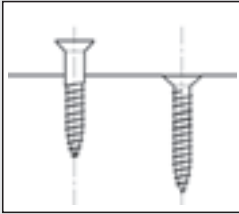


Figure 2

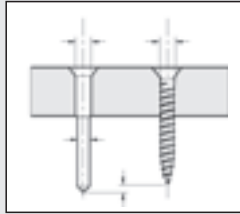


Figure 3

### Screw Gauge

Maximum screw gauges when edge fixing into Lakepine are :

Board Thickness (mm)	9	12	16	18	25	30	35	38	40
Maximum Screw Gauge	5	6	7	8	9	10	12	12	12

Table 9

### Pilot Holes

Correct pilot holes are essential to avoid splitting of board edges.

Screw Gauge	3	4	5	6	7	8	9	10	12
Pilot Hole Size (mm)	1.0	2.0	2.4	2.6	2.7	3.0	3.3	3.5	4.1

Table 10

The pilot hole should be 3mm longer than the screw length. (Refer Figure 3).

It is important not to fix edge screws closer than 25mm from the corner of the board. Do not over tighten screws as further turning after screws are tight will reduce the holding power.

### Nailing

Effective nailing can be achieved with Lakepine using Annular grooved nails and Helical spiral nails. Nailing is not recommended into edges of 9mm and 12mm Lakepine because of possible splitting. Nails should be no greater than 50mm x 2.2mm.

### Airgun Nails

Airgun nailing is suitable for volume production. Adjust air pressure to ensure that the nail head is driven just below the surface.

### Stapling

When stapling into Lakepine panels it is important to regulate the air pressure to avoid excessive penetration of the staple. The top of the staple should be just below the surface to achieve the best holding power. In general, the staple length should be about twice the thickness of the board being fixed. (Refer Table 11).

### Recommended Staples

Thickness (mm)	Staple code No.	Length (mm)
12	L12/L13	20 -25
16	L15	32
18	L17	36

Table 11

When stapling into the edge, do not fix closer than 25mm from the corner of the Lakepine panel. Staples should be angled so that each leg is in a separate plane of the board. (Refer Figure 4).

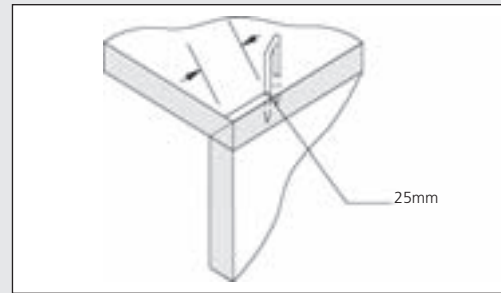


Figure 4

### Dowelling

Dowelling is also recommended for jointing Lakepine panels. The hole diameter should be slightly larger than the dowel. (Refer Figures 5 & 5a) This will allow good adhesive coverage and avoid splitting of the edge. For best results dowels should be given total glue coverage and inserted with a thumb push. Glue formulation may have to be slightly thicker to avoid excessive penetration.

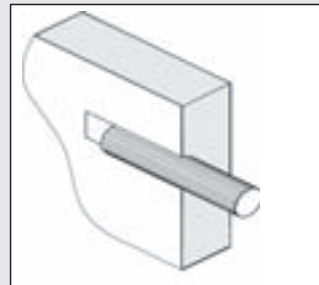


Figure 5

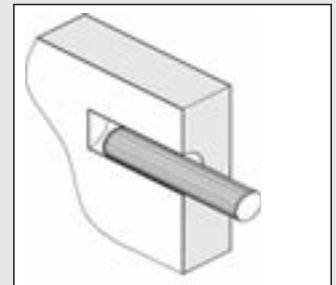


Figure 5a

### Adhesives

Lakepine can be glued with most of the commercial brands of adhesives available on the market (adhesive manufacturer's instructions must be adhered to). Urea formaldehyde, PVAs and animal glues are most common. Consult the adhesive manufacturer's instructions on the use of each adhesive.

### Block Laminating

Edge-cracking may occur when gluing several sheets of panels together face-to-face, into thick blocks.

## Design Considerations

When used as a wall or ceiling lining attention must be given to site storage, pre-conditioning at point of installation and provision of specified joint clearances to ensure the effects of moisture uptake during and after installation are minimized.

Panel pre-conditioning prior to installation is of utmost importance, especially during periods of high rainfall and accompanying high humidity. Refer figure 6.

Installation of Lakepine panels as wall or ceiling linings must not take place until the structure is closed in and waterproof.

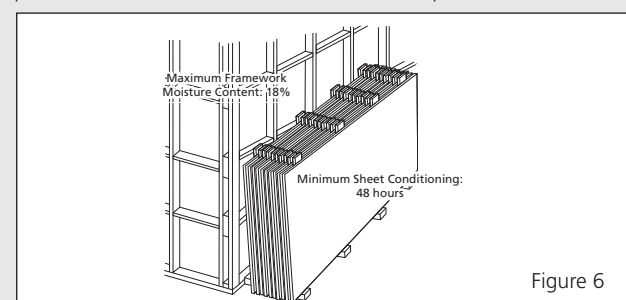


Figure 6

### Framework Setout

Lakepine panels must not be placed in close proximity to framework with moisture content in excess of 18%. Allow for the stud, rafter, beams etc. to accommodate a minimum 2mm expansion gap at panel edges especially where large areas or long walls are to be covered. Where panels are abutting structural elements including beams and posts, or any concrete/masonry products, a minimum clearance of 10mm is recommended.

Framework Support Centres				
Wall Lining			Ceiling Lining	
Panel Thickness (mm)	Stud Centres (mm)	Dwang Centres (mm)	Joist/Truss Centres (mm)	Dwang Centres (mm)
12	400	1200	450	1200
	450	1200	600	1200
	600	800	900	600
			1200	600
18	400		900	1200
	450		1200	900
	600	1200		

Table 12

## Finishing

The following recommendations are a general guide to finishing Lakepine products. For specialist coatings please contact the coating manufacturer for their advice. To avoid problems please follow the paint suppliers instructions.

### Finishing Limitations

All faces and surfaces of Lakepine products must be sealed or covered before service.

Lakepine products are not to be used for a flush plaster stopped wall or ceiling lining that is to be subsequently wall papered or painted. (Exceptions to this apply to proprietary glued drywall partition systems.)

The application of water based fillers or spray applied textured coatings is not recommended.

Water based paints and undercoats can cause raising of board fibre which will require de-nibbing before subsequent coatings.

## Preparation

### Edge Preparation

The edge finish achieved on Lakepine products can be comparable with the quality of the face provided care is taken in sanding and sealing.

- Sand edges with a 120 to 150 grit paper followed by 240 to 320 grit paper.
- Remove all dust.
- Be careful if using air guns that the compressor filters are clean i.e. no oil or water, this will avoid contaminating the surface before painting.
- In polishing shops, edges should be sealed on the same day as sanding since moisture in the air may cause the fibres to stand up and give an unsatisfactory factory finish.
- A very light sand after sealing will also improve the edge finish.

### Surface Preparation

- Lightly sand all surfaces to be painted with a 240 to 320 grit paper.
- Remove all dust.

### Stopping

All nail/staple/screw holes shall be filled with solvent based proprietary fillers. Avoid the use of water based filler especially plaster based fillers.

Fillers must be used in accordance with the filler manufacturers' instructions. Sand level and finish off with 240 – 320 grit paper.

When a high quality paint or lacquer finish is required and joints need to be sealed, a two pot epoxy filler is suggested. This will seal joints and reduce the chance of paint cracks due to humidity changes.

The use of thermosetting glues in joints is also essential when finishes such as high quality paint or lacquer is required. It is also preferable on high quality finishes not to screw, nail or staple through the face of the cabinet or desk top etc. Instead some form of hidden joint system should be used. This will avoid sink back of fillers or show through of joints after they have been coated.

### NOTE:

The sanding operation is extremely important to achieving the desired final finish. All raised fibres should be removed by sanding the surfaces prior to each subsequent coat being applied. Ensure all surfaces are free of dust prior to the application of the next coat.

## Brush Paint Application

### Priming

The first application of primer undercoat is critical to the final finish. This is the application which effectively seals the Lakepine MDF component.

To obtain the best results:

- The first coat should not be thinned.
- Wait the specified drying time before lightly sanding.
- Sand with 280 to 320 grit paper.

### Finishing

- Apply the second coat in accordance with the paint manufacturer's instructions.
- Wait the specified time for drying.
- Lightly scuff sand the surface with 320 grit sand paper.
- Ensure all sanding dust is removed.
- Repeat the above recommendations for the third coat application.
- If additional finish build-up is required, repeat the preceding steps.

## Spray Coating Application

Use of spray equipment is not covered in this document.

Users of spray equipment should seek advice from the particular manufacturer or supplier of the equipment being used for instruction.

### Sealing

The first coat of sealer is critical to a successful final finish.

- The first coat should only be thinned enough to allow the paint to atomise for spraying. This will assist drying speed and enhance the final finish. Note: One coat is usually sufficient.
- When a high quality finish is required, the first sealer coat should be a medium coat followed by a full coat.
- A 280 to 320 grit denib between coats will enhance finish quality.

### Finishing

- After drying, lightly scuff sand the surface with 320 grit sand paper.
- Remove all dust before applying further coats. Note: Coatings should be applied according to coating manufacturer's instructions.
- Lightly scuff sand the surface between each coat with a 320 grit sand paper and remove all dust.



## Liability

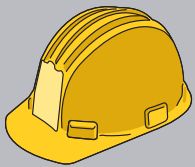
The Laminex Group™ will not be liable to any person if the instructions as to storage, use and installation of Lakepine as outlined in this brochure are not complied with.

Any proprietary products referred to in this brochure must be used in accordance with the relevant manufacturer's instructions. The Laminex Group accepts no liability for these proprietary products.

Nothing contained in this paragraph or elsewhere in this brochure affects any rights a person may have under the Consumer Guarantees Act 1993.

This brochure supersedes all previous issues.

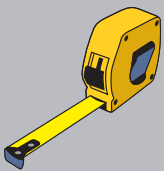
All Acts, Codes and Standards referred to in this brochure are the current editions at the date of brochure publication.



## Health and Safety

### Health and safety precautions must be taken when working with wood products.

- Exposure to wood dust and/or to 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.
- Storage areas containing large quantities of board must be adequately ventilated.
- Work areas must be well ventilated and kept clean. Sawing, sanding and machining equipment must be fitted with dust extractors to ensure that dust levels are kept within standards laid down by Worksafe Australia, Occupational Health and Safety New Zealand, or the specific country of use. If not, a dust mask conforming with AS/NZS 1715 and AS/NZS 1716 and eye protection conforming with AS/NZS 1337 must be worn.
- Offcuts, shavings and dust must be disposed of in a manner which 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 must be sealed.
- For further information and safety data information, please phone The Laminex Group Customer Services Department.



## Technical Support:

As not all product use options can be described in this brochure, additional end use and specifying information is available as a complimentary service. The information contained in this brochure must not be reproduced or published in whole or in part without the prior consent of The Laminex Group. The Laminex Group reserves the right to revise without notice any information contained in this brochure. Please contact The Laminex Group Customer Services Department to check the currency of information contained in this brochure.

## Contact Details:

For more product information or order enquiries please phone **The Laminex Group** on **0800 303 606** to speak with a representative from The Laminex Group or fax **0800 303 707**.

[www.thelaminexgroup.co.nz](http://www.thelaminexgroup.co.nz)