



## Alpine Ultra HMR Technical Data Sheet

Alpine Ultra HMR is an Ultra High Moisture Resistant MDF panel developed specifically for use in a wide range of applications making it a suitable substrate for laminating of decorative surfaces for use in areas of frequent exposure to moisture. Alpine Ultra HMR also gives all the design freedom of interior MDF.

### What's so special about Alpine Ultra HMR MDF?

Alpine MDF is proud to be the first Australian manufacturer of MDF to utilize the polyurethane based MDI (Methylene Diphenyl Diisocyanate) resin I-BOND® by Huntsman. The use of MDI improves indoor air quality and helps meet more stringent regulations for the manufacturing of composite wood based products.

MDI provides a very strong bond with the wood particles as it reacts with the wood itself when put under intense heat, creating a non reversible chemical weld. It is a different and superior type of bond compared to the mechanical weld that the Formaldehyde based product produces. Unlike traditional Urea formaldehyde resins MDI resins do not break down gradually over time in the presence of moisture, improving the durability significantly.

### Improved Moisture Resistant Properties

All wood and wood-based products react to moisture and Alpine Ultra HMR is no exception. Wood cells expand and shrink slightly in width and length as they absorb or lose moisture. This phenomenon is not fully reversible, as relieved stresses do not completely recover.

The specially formulated MDI resin used in the production of Alpine Ultra HMR, increases the physical properties and durability of MDF and increases protection against thickness swell to create a premium composite panel for demanding conditions.

### NAF (No Added Formaldehyde)

MDI resin does not contain Formaldehyde of any type. However, all wood contains some Formaldehyde in its natural state so although no Formaldehyde is added in the manufacturing process minimal amounts of natural Formaldehyde are present which are far below any emission standards.

### Application

Alpine Ultra HMR is a highly durable engineered wood product (MDF) designed for use in areas where moisture may be present.

Alpine Ultra HMR is manufactured with tightly controlled and measured physical properties, has uniform density, is free of knots and splinters and can be cut, drilled and sawn like regular solid wood.

Alpine Ultra HMR, as with all wood products in external applications, must be coated on all surfaces and edges with an exterior based system to control both moisture uptake and moisture loss.

Alpine Ultra HMR is designed for use in areas that are protected from direct exposure to the weather.

## **Laminating**

Alpine Ultra HMR is an ideal substrate for laminating with natural wood veneer, vinyls, printed papers, foils, acrylic surfaces and melamine papers.

A balanced laminated panel would eliminate minor cupping or bowing. Care must be taken to ensure that conditions of very high press pressure, high press temperature and long press times do not exist during laminating. Satisfactory adhesion by cold cured adhesives relies on keying of the surface of Alpine Ultra HMR by light sanding. It is essential that a balancing of surfacing be provided on both surfaces to avoid board distortion. Veneering of Alpine Ultra HMR on one surface alters the balance of the material to absorb moisture; therefore the risk of board distortion is high. This practice is not advisable.

## **Painting**

Alpine Ultra HMR must have all surfaces completely sealed with a sealer undercoat and should have at least two (2) coats of exterior top coat paint, or as advised by the paint manufacturer, prior to being exposed to any area where moisture may be present.

Any other part of the panel where the raw board is exposed, i.e. after routing must have, unless the paint manufacturer advises otherwise, at least one (1) coat of primer and two (2) coats of top coat paint, applied prior to being exposed to any area where moisture may be present.

To avoid warping or cracking, dark colour paints must be avoided. The light reflective value (LRV) should be 50% or above and have the same or similar value for both interior and exterior coats.

Please refer to your paint supplier for the LRV of the paint to be applied.

Always use good quality paint, following the paint manufacturers instructions on the number of coats required, semi gloss or satin finish paints should be used.

## **Fixing, Finishing and Storage**

### **Stapling**

Staples can be used effectively for joint fitting. For best results it is helpful to add adhesive to the joint prior to assembly. When stapling into Alpine Ultra HMR, it is important to have good control of air pressure to avoid excessive penetration of staples and that multiple staples are inserted on a slight angle to offset the legs to each other. Staples inserted into the edges should be not less than 25mm from the corners.

### **Screws**

The position of screws inserted into the faces and edges of MDF should be decided in relation to board thickness and screw size. Screws inserted into the edges should be not less than 25mm from the corners. The screw must not be over tightened as further turning will reduce the holding strength. Alpine Ultra HMR provides good screw holding strength both in the faces and edges. The best results are obtained with the parallel thread screws such as the Twinfast or particle board screws. Conventional wood screws are not recommended. A pilot hole is essential to avoid splitting during edge screw fixing. Pilot holes should be drilled approximately 2-3 mm beyond the expected depth of insertions of the screws.

## **Machining**

Alpine Ultra HMR can be worked easily with standard wood working machinery. The homogenous nature of MDF ensures that a good finish can be achieved on the edges. Tungsten carbide cutters and saws are recommended.

## **Storage**

The method of manufacturing MDF ensures a balanced construction resulting from the uniform distribution of fibres throughout the thickness of the board. The maintenance of this inherent flatness is dependent upon the use of correct storage and handling procedures. Without these, boards may develop a permanent set under their own weight particularly if they are not adequately supported on a flat pallet or by sufficient bearers during any storage period.

The following storage procedures are recommended:

- 1.** MDF sheets should preferably be stored horizontally and lifted clear of the floor using dry bearers as supports.
- 2.** Where individual bearers are used they should be of equal thickness and placed at not more than 800mm intervals for boards of 15mm thickness or more. Closer spacing is required for thinner boards.
- 3.** The bearers supporting successive layers should be in vertical alignment.
- 4.** Stacks of boards should have flush sides to minimise damage to protruding edges or overhanging corners.
- 5.** Vertical storage of small numbers of boards is acceptable provided the boards are well supported close to vertical position.
- 6.** The storage area should be well ventilated and the conditions should be reasonably dry. An average relative humidity of 50% will maintain board moisture content in the range 7-9%.
- 7.** Boards should be fully protected from the weather during transportation and storage.
- 8.** One or two scrap boards should be placed on top of stacked boards, to reduce the effect of short term changes in environmental conditions.
- 9.** MDF Mouldings for skirting and architraves must be stacked on bearers or kept wrapped in plastic when storing on freshly poured, less than 28 days, concrete.

## **Conditioning**

A minimum of 3-4 days conditioning is recommended to allow Alpine Ultra HMR to reach equilibrium moisture content with its surroundings but this can only be achieved if air is allowed to move freely over both surfaces to reduce the risk of the boards warping.

## **Sanding and Finishing**

Special attention to sanding edges gives excellent results. Use 120 grit paper followed by 240 or 320 grit paper.

## **Stopping**

Stop all nail and staple holes with a low shrinkage wood filler. Match and blend colours as required to suit. Lightly sand with 320 grit paper before priming.

## Specifications

Tolerances on Nominal Dimensions							
Specifications	Units	Thickness Range and Typical Values					
		3.2 mm	6 mm	9 mm	12 mm	16 mm	18 mm
Thickness Tolerance	mm	+/-0.2	+/-0.2	+/-0.2	+/-0.2	+/-0.2	+/-0.2
Length and Width Tolerance	mm/m	+/-2.0	+/-2.0	+/-2.0	+/-2.0	+/-2.0	+/-2.0
Squareness (max Diagonal)	mm/m	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0

Technical Data - Typical Values							
Specifications	Units	Thickness Range and Typical Values					
		3.2 mm	6 mm	9 mm	12 mm	16 mm	18 mm
Density	kg/m <sup>3</sup>	850	780	780	780	760	760
Internal Bond	Mpa	1.50	1.20	1.20	1.10	1.10	1.10
Moisture Content	%	7.5+/- 1.5	7.5+/- 1.5	7.5+/- 1.5	7.5+/- 1.5	7.5+/- 1.5	7.5+/- 1.5
Modulus of Rupture	MPa	45	45	45	45	45	44
Modulus of Elasticity	MPa	3800	3100	3100	3200	3400	3600
Screw Holding Face	N	N/A	N/A	N/A	N/A	≥500	≥500
Screw Holding Edge	N	N/A	N/A	N/A	N/A	≥500	≥500
Thickness Swell (24 Hr 20°C)	%	19.5	13.0	7.5	5.7	4.2	3.7
Thickness Swell (2 hr 70°C)	%	20.0	18.0	14.0	14.0	13.0	11.5
Thickness Swell (1 hr Boil)	%	38	25	19	19	18	16
Wet Bending Strength (MoR-a)	Mpa	18.5	17.0	16.0	15.0	14.0	13.5
Formaldehyde Emission	mg/L	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

## Warranty

Where Alpine Ultra HMR is not installed as outlined within this Technical Data Sheet any warranty claim will be void. The Alpine MDF warranty will not cover Alpine Ultra HMR panels that have been fully exposed to the weather, either prior to installation or after.