

Introducing Dongwha New Zealand

Established in 1997, the Dongwha New Zealand factory was the first Greenfield plant set up under the Resource Management Act (RMA) in New Zealand. Located alongside the state highway in picturesque Southland, New Zealand, the Dongwha New Zealand plant produces pine medium density fibreboard for both the domestic and export markets. From our very beginnings operational excellence and technological innovation have been our catch-words, matched by top level commitment to managing the land, air and water resources responsibly. Owned by Dongwha in partnership with the Laminex Group, the plant contributes approximately NZ\$43 million* in GDP annually to the local economy. Named Exporter of the Year for 2002, Dongwha New Zealand has a proud history of environmental stewardship, successful business and innovation.

* BERL, 2004 private study

The Dongwha New Zealand Process

The master ingredient for the Dongwha New Zealand manufacturing process is pine wood chips, produced from trees grown in plantation forests of Southland and Otago. A proportion of our wood resource is FSC® Certified as coming from Well-Managed Forest Sources. Rigorous quality checks ensure the purity of the raw material is controlled.

All wood chips pass a magnet that prevents metal fragments from entering the process, and any chips of less than 5mm or more than 40mm are removed. A good wash removes dirt and grit to ensure an even-toned end product and extend the life of cutting tools used to process the boards. Chips are then steamed under pressure at 180°C (380°F) before being

massaged into fibres between the rotating disks of a refiner. Resin is mixed with the wet fibre before warm air ducting completes the drying process. The heart of the MDF manufacturing process is the press. This is where the fluffy mat of fibre, resin and wax finally becomes board. All it takes is a little pressure and a lot of heat (up to 230°C). Our press is a Kusters 28 metre hydraulic continuous press which runs 24 hours, seven days a week producing approximately 170,000 cubic metres of panel each year.

Cut-to-length boards are cooled in a giant cooling wheel and then sanded. The Anthon saw cuts boards to the customer-specified size before the MDF is packaged for transportation to customers.



Exporting to the Pacific Rim

A large proportion of our product is shipped overseas, mainly to countries around the Pacific Rim, including China and the U.S.A. Our MDF is transported from the plant by road and rail to Port Chalmers. A shipment takes approximately 5 days to reach Melbourne, 14 days to Singapore, 24 days to Yantian or 30 days to reach Portland, Oregon. Most services leave fortnightly, using 40-foot general purpose containers.

Certifications Held

The Dongwha New Zealand operation has held TELARC SAI ISO 9001 certification since 1998. ISO is a Worldwide Organisation which leads companies to better operations, improved performance, and improved profitability through structured Quality Management Systems.

Certification to the TELARC SAI standard ISO 14001 was obtained in February 2001. This Environmental management system is designed to ensure industrial operations minimise their effects on the environment. It gives management, neighbours and customers an assurance that the company is not only complying with local or national requirements for sustainability and responsible use, but actively pursuing a path of continual improvement.

FSC® Certification

One of the most recognised certifications for sustainably managed wood sources in the world, FSC® was established in 1993 as an international non-profit, multi-stakeholder organization in response to concerns over the state of the forest, globally. Dongwha New Zealand hold this certification and are able to provide MDF panels that meet either FSC® mix or FSC® 100% requirements.

Environmental processes

We put extensive effort into managing our production processes, water and air resources to minimise our effect on the environment. Waste water from the manufacturing process is screened for solids and piped to aeration lagoons for treatment. Secondary and tertiary effluent treatment processes are used to reduce the biomass in the liquid to a level where it can safely be irrigated onto surrounding pasture to assist the growing of grass for stock feed.

Filters and fans, cleaning regimes and storage systems assist in keeping our work environment clean, clear and efficient. All waste products and emissions are monitored to meet the international standards of ISO 14001, a standard we have met since 2001, plus the strict national standards of our Resource Consent Conditions.

New Zealand Sales Office

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Hong Kong Sales Office

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Facsimile: +852 2545 2096



MDF

High Performance MDF to bring your plans to life

Light, bright Southland pine is chosen from renewable plantation forests to provide finest quality raw material for MDF (Medium Density Fibreboard). A superbly smooth finish, uniform density and a finely textured complexion result in a range of MDF products for all your uses. Available on request as FSC® certified, we also offer products which meet LEED criteria. Created by a highly sophisticated, technologically efficient MDF manufacturing process, MDF can be delivered to you worldwide through either of our two sales offices. We invite you to work with our MDF. Cut it, shape it, make it your own. And, when the opportunity arises, tell us what you think. Your input matters to us and is a vital element in our manufacturing process.

Applications for MDF

The nucleus of our MDF range, MDF comes in a wide range of thicknesses and is ideal for interior applications such as joinery, lacquered furniture, furniture mouldings, built-in furniture, shelving, wall-linings, partitions, floor linings, pattern making, toys, clocks, trophies and many other possibilities. From 2.0mm to 36mm (0.09 in to 1.42 in) thick, MDF provides excellent machining, cutting, colour and reception to finish and is an excellent substrate for natural wood veneer, vinyls, printed papers, foils and melamine papers. Superior results every time. Our onsite MFB plant is able to take the raw board and laminate it before shipping direct to you.

Environmental Options - Low formaldehyde emission, and FSC® wood source

Our standard density MDF products are also available with low formaldehyde emissions, to meet the Japanese JIS A 5905 2003 F★★★ (F Three Star) and F★★★★ (F Four Star) standard. We can provide products which meet Phase 2 CARB emission standards. Other emission levels can be obtained to meet a range of formaldehyde emission requirements. All of our MDF products are available up to 100% FSC® certified wood source. This means that you are assured that the wood chips are sourced from sustainably managed forests.

MDF Aim Properties when tested to JIS A 5905

MDF

For further specifications and production information please visit

www.dongwha.co.nz

PROPERTY	METRIC	2.5 - 7mm	9.00mm	15.00mm	25.00mm
Density	kg/m ³	790	750	730	730
Weight	Kg/m ²	3.7	6.8	11.0	18.3
Panels	Per Pack	various	94	56	34
Internal Bond	MPa	1.4	0.9	0.9	0.8
Moisture Content	%	7.0	7.0	7.0	7.0
Thickness Swell	%	30	15	9	6
MOE	MPa	3700	3600	3500	3500
MOR	MPa	45	40	45	45

PROPERTY	IMPERIAL	0.098 - 0.276"	0.354"	0.591"	0.984"
Density	lb/ft ³	49	47	46	46
Weight	lb/ft ²	0.7	1.4	2.2	3.7
Panels	Per Pack	various	94	56	34
Internal Bond	lb/in ²	203	131	131	116
Moisture Content	%	7.0	7.0	7.0	7.0
Thickness Swell	%	30	15	9	6
MOE	lb/in ²	536500	522000	507500	507500
MOR	lb/in ²	6525	5800	6525	6525

GENERAL TOLERANCES	
Length/Width	+/- 2 mm (+/- 0.079 in)
Thickness Tolerance	+/- 0.15 mm (0.006 in)
Straightness	1.125 mm/m (0.015 in/ft)
Squareness	<1.5 mm/m (<0.018 in/ft)
Sanding grit	180

NOTE: These values represent typical values and are guidelines only. Please note that Dongwha New Zealand reserve the right to change product specifications without notice. For the most recent specifications please visit our website: www.dongwha.co.nz.

All Dongwha New Zealand production meets ISO9001 international standard, and the Dongwha New Zealand environment is managed according to ISO14001 international environmental management systems standard. This embodies our commitment to pursuing a path of continual improvement in environmental management.



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MDF
thin

Complements our MDF Range

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MDF – Thin

Representing our standard density products less than 8mm (0.31in) to a minimum of 2.0mm (0.08in), MDF-Thin is suitable for a wide range of interior applications such as wall linings, door skins, cabinetry, drawer bottoms, ceiling fan blades and picture frames.

MDF-Thin has a flat, smooth surface that provides an excellent substrate for the application of laminates, including natural wood veneer, vinyls, printed papers, foils and melamine papers. We can provide thinner panels down to 1.6mm (0.063in) in high density.

MDF-Thin can be bent and shaped to suit a multitude of purposes from archways, curved partitions and cabinets to reception counters. It is also suitable to cover uneven surfaces to provide a base underneath carpet and other floor coverings, and as a lining for walls. The lighter tone of MDF makes it a natural choice for laminating with white, light-coloured or thin overlays. We recommend that you avoid using MDF-Thin in high moisture or high heat areas. As with all our products, we can produce your panels using FSC® environmentally friendly chain-of-custody certified wood source.

MDF-Thin Aim Properties when tested to JIS A 5905

MDF thin

For further specifications and production information please visit

www.dongwha.co.nz

PROPERTY	METRIC	2.5 - 7mm
Density	kg/m ³	790
Weight	Kg/m ²	3.7
Panels	Per Pack	various
Internal Bond	MPa	1.4
Moisture Content	%	7.0
Thickness Swell	%	30
MOE	MPa	3700
MOR	MPa	45

PROPERTY	IMPERIAL	0.098 - 0.276"
Density	lb/ft ³	49
Weight	lb/ft ²	0.7
Panels	Per Pack	various
Internal Bond	lb/in ²	203
Moisture Content	%	7.0
Thickness Swell	%	30
MOE	lb/in ²	536500
MOR	lb/in ²	6525

GENERAL TOLERANCES	
Length/Width	+/- 2 mm (+/- 0.079 in)
Thickness Tolerance	+/- 0.15 mm (0.006 in)
Straightness	1.125 mm/m (0.015 in/ft)
Squareness	<1.5 mm/m (<0.018 in/ft)
Sanding grit	180

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MDF

FSC®

Chain of Custody Certified Wood Source



MDF - FSC®

We proudly bring you MDF-FSC® where the panel fibre has been sourced from well-managed and sustainable forests. The full range of MDF products can be made to meet Scientific Certification Systems (SCS) Independent certification and also provide an opportunity for LEED credits under Materials and Resources Section (7.0). Our MDF-FSC® has been independently certified by Scientific Certification Systems (SCS) in accordance with the rules of the Forest Stewardship Council A.C. (FSC®). Our Chain-Of-Custody Certificate reference SCS-COC-000383, and our Controlled Wood reference is SCS-CW-000383. Depending on your

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specific requirements, we can provide our full range of products with either a mix of FSC® wood fibre or 100% content wood fibre from controlled wood forests, allowing you the confidence that your selection of raw materials will satisfy your environmentally designed project.

LEED Credits

For a LEED Credit opportunity, request 100% FSC® certified wood (Materials and Resources Section 7.0).

Low Formaldehyde

Our standard density MDF products are also available with low formaldehyde emissions, to meet the Japanese JIS A 5905-2003 F★ ★ ★ (F Three Star) and F★ ★ ★ ★ (F Four Star) standard. We can provide products which meet Phase 2 CARB emission standards. Other emission levels can be obtained to meet a range of formaldehyde emission requirements, just ask your Sales Representative.

MDF-FSC® Aim Properties when tested to JIS A 5905

MDF

FSC®

For further specifications and production information please visit

www.dongwha.co.nz

PROPERTY	METRIC	2.5 - 7mm	9.00mm	15.00mm	25.00mm
Density	kg/m ³	790	750	730	730
Weight	Kg/m ²	3.7	6.8	11.0	18.3
Panels	Per Pack	various	94	56	34
Internal Bond	MPa	1.4	0.9	0.9	0.8
Moisture Content	%	7.0	7.0	7.0	7.0
Thickness Swell	%	30	15	9	6
MOE	MPa	3700	3600	3500	3500
MOR	MPa	45	40	45	45

PROPERTY	IMPERIAL	0.098 - 0.276"	0.354"	0.591"	0.984"
Density	lb/ft ³	49	47	46	46
Weight	lb/ft ²	0.7	1.4	2.2	3.7
Panels	Per Pack	various	94	56	34
Internal Bond	lb/in ²	203	131	131	116
Moisture Content	%	7.0	7.0	7.0	7.0
Thickness Swell	%	30	15	9	6
MOE	lb/in ²	536500	522000	507500	507500
MOR	lb/in ²	6525	5800	6525	6525

GENERAL TOLERANCES	
Length/Width	+/- 2 mm (+/- 0.079 in)
Thickness Tolerance	+/- 0.15 mm (0.006 in)
Straightness	1.125 mm/m (0.015 in/ft)
Squareness	<1.5 mm/m (<0.018 in/ft)
Sanding grit	180

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MDF mouldings



Superior face and edge machining

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MDF - Mouldings

MDF-Mouldings are available in a wide range of thicknesses, and can be used for everything from walls and ceilings to vanities and shelving. This product can also be used to create architraves, skirtings and mouldings. MDF-Mouldings makes an excellent substrate for a natural wood veneer, vinyls, printed papers, foils and melamine

papers. It is not recommended for external use. This product gives a smooth finish after machining. MDF-Mouldings is also available on demand in thicknesses less than 12 mm (0.47 in), contact your local sales office for further details.

MDF-Mouldings Aim Properties when tested to JIS A 5905

MDF mouldings

For further specifications and
production information
please visit

www.dongwha.co.nz

PROPERTY	METRIC	12.00mm	18.00mm	25.00mm
Density	kg/m ³	730	730	730
Weight	Kg/m ²	8.8	13.1	18.3
Panels	Per Pack	70	47	34
Internal Bond	MPa	1.3	1.3	1.3
Moisture Content	%	7.0	7.0	7.0
Thickness Swell	%	7	6	6
MOE	MPa	3700	3700	3500
MOR	MPa	50	50	50
Formaldehyde	mg/L	0.5	0.5	0.5

PROPERTY	IMPERIAL	0.472"	0.709"	0.984"
Density	lb/ft ³	46	46	46
Weight	lb/ft ²	1.8	2.7	3.7
Panels	Per Pack	70	47	34
Internal Bond	lb/in ²	189	189	189
Moisture Content	%	7.0	7.0	7.0
Thickness Swell	%	7	6	6
MOE	lb/in ²	536500	536500	507500
MOR	lb/in ²	7250	7250	7250

GENERAL TOLERANCES

Length/Width	+/- 2 mm (+/- 0.079 in)
Thickness Tolerance	+/- 0.15 mm (0.006 in)
Straightness	1.125 mm/m (0.015 in/ft)
Squareness	<1.5 mm/m (<0.018 in/ft)
Sanding grit	180

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MDF light

Approximately 10% less dense than MDF

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MDF - Light

MDF-Light is low-density fibreboard that will perform well in situations where a lightweight end product is desired. It is similar in density to many species of timber used for commercial applications and it is easy to work with. With an average density approximately 10% lighter than standard MDF, machine-tool blades will last longer, and shipping weights are reduced.

Available in thicknesses from 6 to 36 mm (0.24 in to 1.42 in), MDF-Light is suitable for interior fittings such as doors and wall linings. It can also be used for more creative applications, such as furniture, shop-fittings, interior signage and toys. The lighter tone of MDF-Light makes it a natural choice for laminating with white or light-coloured overlays.

Contact your local sales office for further information.

MDF-Light Aim Properties when tested to JIS A 5905

MDF light

For further specifications and production information please visit

www.dongwha.co.nz

PROPERTY	METRIC	9.00mm	15.00mm	25.00mm
Density	kg/m ³	620	600	600
Weight	Kg/m ²	5.6	9.0	15.0
Panels	Per Pack	94	56	34
Internal Bond	MPa	0.9	0.8	0.8
Moisture Content	%	7.0	7.0	7.0
Thickness Swell	%	15	9	7
MOE	MPa	3000	2600	2600
MOR	MPa	36	37	35

PROPERTY	IMPERIAL	0.354"	0.591"	0.984"
Density	lb/ft ³	39	37	37
Weight	lb/ft ²	1.1	1.8	3.1
Panels	Per Pack	94	56	34
Internal Bond	lb/in ²	131	116	116
Moisture Content	%	7.0	7.0	7.0
Thickness Swell	%	15	9	7
MOE	lb/in ²	435000	377000	377000
MOR	lb/in ²	5220	5365	5075

GENERAL TOLERANCES	
Length/Width	+/- 2 mm (+/- 0.079 in)
Thickness Tolerance	+/- 0.15 mm (0.006 in)
Straightness	1.125 mm/m (0.015 in/ft)
Squareness	<1.5 mm/m (<0.018 in/ft)
Sanding grit	180

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MDF ultralight

Approximately
30% less dense
than MDF

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MDF - Ultra Light

MDF-UltraLight has been produced with an average density that is approximately 30% lighter than MDF product. Panels can be laminated and machined, however these operations do require more care in order to produce a high quality result.

MDF-UltraLight is suitable for interior applications where weight of the finished assembly is an important consideration. Caravan

and mobile home fittings are good applications for MDF-UltraLight. Try MDF-UltraLight as a substrate for overlaid benchtops either as a single thickness panel or in multiple laminated panels to give the desired bulk. It is available in thicknesses from 6 mm to 36 mm (0.24 in to 1.42 in).

Contact your local sales office for further information.

MDF-Ultralight Aim Properties when tested to JIS A 5905

MDF ultralight

For further specifications and
production information
please visit

www.dongwha.co.nz

PROPERTY	METRIC	12.00mm	18.00mm	25.00mm
Density	kg/m ³	520	520	520
Weight	Kg/m ²	6.2	9.4	13.0
Panels	Per Pack	70	47	34
Internal Bond	MPa	0.5	0.7	0.7
Moisture Content	%	7.0	7.0	7.0
Thickness Swell	%	12	7	7
MOE	MPa	2600	2600	2600
MOR	MPa	27	24	15

PROPERTY	IMPERIAL	0.472"	0.709"	0.984"
Density	lb/ft ³	32	32	32
Weight	lb/ft ²	1.3	1.9	2.7
Panels	Per Pack	70	47	34
Internal Bond	lb/in ²	73	94	94
Moisture Content	%	7.0	7.0	7.0
Thickness Swell	%	12	7	7
MOE	lb/in ²	377000	377000	377000
MOR	lb/in ²	3915	3480	2175

GENERAL TOLERANCES	
Length/Width	+/- 2 mm (+/- 0.079 in)
Thickness Tolerance	+/- 0.15 mm (0.006 in)
Straightness	1.125 mm/m (0.015 in/ft)
Squareness	<1.5 mm/m (<0.018 in/ft)
Sanding grit	180

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HDF

high density

Thin with superior surface

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HDF-High Density

HDF-High Density was developed for use where physical property integrity and surface finish are important. The average density of more than 880 kg/m³ (55 lb/ft³) ensures high core strength and face density.

HDF-High Density can substitute veneer cross bands in hardwood veneered plywoods by providing a superior smooth surface to reduce potential surface defects such as telegraphing of expensive, thin surface veneers. Its high internal bond is able to withstand most hot-press conditions.

The high quality surface of HDF-High Density also makes an excellent white board substrate allowing application of paint or laminate. In the electronics industry, the hard uniform properties of our 2.5mm (0.10 in) product perform well as backer board in the printed circuit board (PCB) manufacturing process.

Contact your local sales office for further information.

HDF-High Density Aim Properties when tested to JIS A 5905

HDF high density

For further specifications and production information please visit

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PROPERTY	METRIC	UF Resin			Phenolic Resin		
		1.6mm	2.3mm	2.5mm	1.6mm	2.3mm	2.5mm
Density	kg/m ³	900	940	880	900	940	880
Weight	Kg/m ²	1.4	2.2	2.2	1.4	2.2	2.2
Panels	Per Pack	380	265	340	380	265	340
Internal Bond	MPa	1.7	2.0	1.5	1.7	2.0	1.5
Moisture Content	%	7.0	7.0	7.0	7.0	6.5	7.0
Thickness Swell	%	30	30	30	30	28	30
MOE	MPa	5000	5000	5000	4600	4600	4600
MOR	MPa	45	55	55	45	65	55

PROPERTY	IMPERIAL	0.063"	0.091"	0.098"	0.063"	0.091"	0.091"
Density	lb/ft ³	56	59	55	56	59	55
Weight	lb/ft ²	0.3	0.4	0.5	0.3	0.4	0.5
Panels	Per Pack	380	265	340	380	265	340
Internal Bond	lb/in ²	247	290	218	247	290	218
Moisture Content	%	7.0	7.0	7.0	7.0	6.5	7.0
Thickness Swell	%	30	30	30	30	28	30
MOE	lb/in ²	725000	725000	725000	667000	667000	667000
MOR	lb/in ²	6525	7975	7975	6525	9425	7975

GENERAL TOLERANCES	
Length/Width	+/- 2 mm (+/- 0.079 in)
Thickness Tolerance	+/- 0.15 mm (0.006 in)
Straightness	1.125 mm/m (0.015 in/ft)
Squareness	<1.5 mm/m (<0.018 in/ft)
Sanding grit	180

NOTE: These values represent typical values and are guidelines only. Please note that Dongwha New Zealand reserve the right to change product specifications without notice. For the most recent specifications please visit our website: www.dongwha.co.nz.

All Dongwha New Zealand production meets ISO9001 international standard, and the Dongwha New Zealand environment is managed according to ISO14001 international environmental management systems standard. This embodies our commitment to pursuing a path of continual improvement in environmental management.



New Zealand Sales Office

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MDF crossbands for doors

60 or 90 min fire rated component

We use renewable pine plantation forests from Southland, New Zealand to ensure MDF (Medium Density Fibreboard) encompasses quality and sustainability. We are committed to ensuring the properties of our panel meet stringent environmental and utility guidelines. By using MDF, you also support sustainable management of the world's resources. Available on request as FSC® certified, we also offer products which meet LEED criteria.

Talk to our Sales Agents at either of our two sales offices about LEED credits, CARB requirements and FSC® products.

MDF - Crossbands for Doors



MDF-Crossbands for Doors are designed with the uniformity and durability ideal to withstand laminating process and enhance the lasting quality of your end use. The smoothness and light colour allows huge scope for face veneer finishes and enhances the visual appearance of exposed edge doors. When overlaid on a mineral core both our 1.8mm (0.072) and 2.3mm (0.092in) high density panel have 90-minute certification as a Fire Rated component with Underwriters Laboratories Inc® and Warnock-Hersey (Intertek/ETL Semko). On request we can provide 1.6mm (0.063 in) crossband with 60-minute fire rating on any

certified core. As with all our products, MDF-Crossbands for Doors is also available in 100% FSC® wood source.

LEED Credits

LEED Credits are supported for our crossband products under Indoor Environmental Quality (Section 4.4). For a further LEED Credit opportunity, request 100% FSC® certified wood (Materials and Resources Section 7.0).

Fire Rating (maximum in minutes)

	Underwriters Ltd  <small>This MDF product conforms to UL108 and also conforms to UL10C UBC 7-2 (1997)</small>		ITS (Warnock-Hersey) 	
	GP Core	Algoma & Marshfield Core	GP Core	Algoma & Marshfield Core
1.6mm HPL	60	90	60*	60*
Veneer	60	90	60*	60*
1.8mm HPL	90	90	60	60
Veneer	90	90	90	90
2.3mm HPL	90	90	60*	90*
Veneer	90	90	90*	90*

All ratings Phenolic or Urea resin except *. * Urea resin only

MDF-Crossbands for Doors Aim

Properties when tested to JIS A 5905

MDF crossbands for doors

For further specifications and
production information
please visit

www.dongwha.co.nz

PROPERTY	METRIC	UF Resin		Phenolic Resin	
		1.6mm	2.3mm	1.6mm	2.3mm
Density	kg/m ³	900	940	900	940
Weight	Kg/m ²	1.4	2.2	1.4	2.2
Panels	Per Pack	380	265	380	265
Internal Bond	MPa	1.7	2.0	1.7	2.0
Moisture Content	%	7.0	7.0	7.0	6.5
Thickness Swell	%	30	30	30	28
MOE	MPa	5000	5000	4600	4600
MOR	MPa	45	55	45	65

PROPERTY	IMPERIAL	0.063"	0.091"	0.063"	0.091"
Density	lb/ft ³	56	59	56	59
Weight	lb/ft ²	0.3	0.4	0.3	0.4
Panels	Per Pack	380	265	380	265
Internal Bond	lb/in ²	247	290	247	290
Moisture Content	%	7.0	7.0	7.0	6.5
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