

**PHYSICAL PROPERTIES
PB, PB-HMR, MDF**

**MAIN PROPERTIES OF PB
REFERENCE: BRITISH STANDARD EN 14323 : 2004**

MAIN PROPERTIES OF **PARTICLE BOARD** FOLLOW BY EN 312 : 2010
STANDARD SIZE : 4'X8',6'X8' Thickness : 9-38 mm.

PROPERTIES	UNIT	BOARDS FOR INTERIOR FITMENTS (INCLUDING FURNITURE)					TEST METHOLD
		RANGES OF NOMINAL THICKNESS (MM)					
		>6-13	>13-20	>20-25	>25-32	>32-38	
THICKNESS TOLERANCE	mm	±0.3					EN 324-1
LENGTH & WIDTH TOLERANCE	mm	±5.0					EN 324-1
MOISTURE CONTENT	(%)	5 - 13					EN 322
SURFACE SOUNDNESS (SS)	N/mm ²	0.8					EN 311
DENSITY	kg/m ³	660-720	640-690	620-670	600-650	600-650	EN 323
DENSITY TOLERANCE **	kg/m ³	± 10%					EN 323
MODULUS OF RUPTURE (MOR)	N/mm ²	11.0	11.0	10.5	9.5	8.5	EN 310
MODULUS OF ELASTICITY (MOE)	N/mm ²	1,800	1,600	1,500	1,350	1,200	EN 310
INTERNAL BOND (IB)	N/mm ²	0.40	0.35	0.30	0.25	0.20	EN 319
INTERNAL BOND (IB) AFTER THREE CYCLIC TEST	N/mm ²	-					EN 321,319
THICKNESS SWELLING AFTER THREE CYCLIC TEST	Max(%)	-					EN 321,317
THICKNESS SWELLING : 24 hrs	Max(%)	-					EN 317
SCREW HOLDING	N	N/A	ON FACE 500*, ON EDGE 300*				EN 320
FORMALDEHYDE CONTENT : CLASS (E1)	mg/100g oven dry board	Content ≤ 8					EN 120
: CLASS (E2)	mg/100g oven dry board	8 < Content ≤ 20					
FORMALDEHYDE EMISSION : CARB	ppm	≤ 0.09					ASTM D6007

Remark :
* Screw retaining test is not applicable to board of thickness less than 15 mm.
**Density : Tolerance on density within a board = 10% (EN323)

**MAIN PROPERTIES OF PB
REFERENCE: BRITISH STANDARD EN 14323 : 2004**

MAIN PROPERTIES OF **PARTICLE BOARD** FOLLOW BY EN 312 : 2010
STANDARD SIZE : 4'X8',6'X8' Thickness : 9-38 mm.

PROPERTIES	UNIT	BOARDS FOR INTERIOR FITMENTS (INCLUDING FURNITURE)					TEST METHOLD
		RANGES OF NOMINAL THICKNESS (MM)					
		>6-13	>13-20	>20-25	>25-32	>32-38	
THICKNESS TOLERANCE	mm	±0.3					EN 324-1
LENGTH & WIDTH TOLERANCE	mm	±5.0					EN 324-1
MOISTURE CONTENT	(%)	5 - 13					EN 322
SURFACE SOUNDNESS (SS)	N/mm ²	0.8					EN 311
DENSITY	kg/m ³	680-740	670-730	660-720	650-710	650-710	EN 323
DENSITY TOLERANCE **	kg/m ³	± 10%					EN 323
MODULUS OF RUPTURE (MOR)	N/mm ²	15.0	14.0	12.0	11.0	9.0	EN 310
MODULUS OF ELASTICITY (MOE)	N/mm ²	2,050	1,950	1,850	1,700	1,550	EN 310
INTERNAL BOND (IB)	N/mm ²	0.45	0.45	0.40	0.35	0.30	EN 319
INTERNAL BOND (IB) AFTER THREE CYCLIC TEST	N/mm ²	0.15	0.13	0.12	0.10	0.09	EN 321,319
THICKNESS SWELLING AFTER THREE CYCLIC TEST	Max(%)	14.0	13.0	12.0	12.0	11.0	EN 321,317
THICKNESS SWELLING : 24 hrs	Max(%)	17.0	14.0	13.0	13.0	12.0	EN 317
SCREW HOLDING	N	N/A	ON FACE 500*, ON EDGE 300*				EN 320
FORMALDEHYDE CONTENT : CLASS (E1)	mg/100g oven dry board	Content ≤ 8					EN 120
: CLASS (E2)	mg/100g oven dry board	8 < Content ≤ 20					
FORMALDEHYDE EMISSION : CARB	ppm	≤ 0.09					ASTM D6007

Remark :
* Screw retaining test is not applicable to board of thickness less than 15 mm.
**Density : Tolerance on density within a board = 10% (EN323)

**MAIN PROPERTIES OF MDF
REFERENCE: BRITISH STANDARD EN 14323 : 2004**

MAIN PROPERTIES OF **MEDIUM DENSITY FIBREBOARD (MDF)** FOLLOW BY EN 622-1:2003, EN 622-5 :2006
STANDARD SIZE: 4'X8',6'X8' THICKNESS : 2-40 mm.

PROPERTIES	UNIT	RANGES OF NOMINAL THICKNESS (MM)									TEST METHOLD	
		1.5-2.5	>2.5-4	>4-6	>6-9	>9-12	>12-15	>15-19	>19-30	>30-40		
THICKNESS TOLERANCE	mm	±0.2									±0.3	EN 324-1
LENGTH & WIDTH TOLERANCE	mm	±5.0 mm									EN 324-1	
DENSITY	kg/m ³	800-850	790-830	760-800	740-780	720-760	690-730	670-710	640-680	600-640	EN 323	
TOLERANCE ON MEAN DENSITY WITH A PANEL	kg/m ³	±7%									EN 323	
MODULUS OF RUPTURE (MOR)	N/mm ²	23.0	23.0	23.0	23.0	22.0	20.0	20.0	18.0	17.0	EN 310	
MODULUS OF ELASTICITY (MOE)	N/mm ²	None	None	2,700	2,700	2,500	2,200	2,200	2,100	1,900	EN 310	
INTERNAL BOND (IB)	N/mm ²	0.65	0.65	0.65	0.65	0.60	0.55	0.55	0.55	0.50	EN 319	
MOISTURE CONTENT	%	4-11									EN 322	
THICKNESS SWELLING :24 hrs.	%	45.0	35.0	30.0	17.0	15.0	12.0	12.0	10.0	8.0	EN 317	
SCREW HOLDING :FACE	N	N/A						1,000*			EN 320	
:EDGE	N	N/A						800*				
FORMALDEHYDE CONTENT : CLASS (E1)	mg/100g oven dry board	Contents≤8									EN 120	
: CLASS (E2)	mg/100g oven dry board	8<Contents≤30										
FORMALDEHYDE EMISSION : CARB	ppm	≤0.13**					≤0.11				ASTM D6007	

Remark :
* Screw withdrawal test on board of ≥15 mm. thickness
**Thin MDF maximum thickness 8 mm

PHYSICAL PROPERTIES MDF-HMR, HDF, HDF-HMR

MAIN PROPERTIES OF MEDIUM DENSITY FIBREBOARD (V313)

PHYSICAL, MECHANICAL AND CHEMICAL PROPERTIES OF MEDIUM DENSITY FIBREBOARDS
A GRADE FOR NORMAL TYPE REFERENCE BY EN 622-1:2003, EN 622-5:2006

PROPERTIES	UNIT	REQUIREMENTS FOR GENERAL PURPOSE FOR USE IN HUMID CONDITIONS (TYPE MDF.H)									TEST METHOLD	
		RANGES OF NOMINAL THICKNESS (MM)										
		1.5-2.5	>2.5-4	>4-6	>6-9	>9-12	>12-15	>15-19	>19-30	>30-40		
ASTM D6007	mm	± 0.2									± 0.3	EN 324-1
LENGTH & WIDTH TOLERANCE	mm	± 5.0										EN 324-1
DENSITY	kg/m ³	810 - 860	800 - 840	770 - 810	750 - 790	730 - 770	700 - 740	680 - 730	650 - 690	610 - 650	EN 323	
TOLERANCE ON MEAN DENSITY WITH A PANEL	kg/m ³	+ 7 %									EN 323	
MODULUS OF RUPTURE (MOR)	N/mm ²	27.0	27.0	27.0	27.0	26.0	24.0	24.0	22.0	17.0	EN 310	
MODULUS OF ELASTICITY (MOE)	N/mm ²	2,700	2,700	2,700	2,700	2,500	2,400	2,400	2,300	2,200	EN 310	
INTERNAL BOND (IB)	N/mm ²	0.70	0.70	0.70	0.80	0.80	0.75	0.75	0.75	0.70	EN 319	
OPTION 1												
INTERNAL BOND (IB) AFTER CYCLIC TEST : (Min)	N/mm ²	0.35	0.35	0.35	0.30	0.25	0.20	0.20	0.15	0.10	EN 321, 319	
THICKNESS AFTER CYCLIC TEST : Max.	(%)	50.0	40.0	25.0	19.0	16.0	15.0	15.0	15.0	15.0	EN 321, 317	
OPTION 2												
INTERNAL BOND (IB) AFTER BOIL TEST : (Min)	N/mm ²	0.20	0.20	0.20	0.15	0.15	0.12	0.12	0.12	0.10	EN 1087-1	
MOISTURE CONTENT	%	4 - 11									EN 322	
THICKNESS SWELLING : 24 hr. (Max)	%	35.0	30.0	18.0	12.0	10.0	8.0	8.0	7.0	7.0	EN 317	
SCREW HOLDING : Face	(N)	N/A						1,000*			EN 320	
: Edge	(N)	N/A						800*				
FORMALDEHYDE CONTENT : CLASS (E1)	mg/100g oven dry board	Content ≤ 8									EN 120	
: CLASS (E2)	mg/100g oven dry board	8 < Content ≤ 30										
FORMALDEHYDE EMISSION : CARB	ppm	≤ 0.13**				≤ 0.11					ASTM D6007	

Remark : * Test on 15 mm. and above. | ** Thin board ≤ 8 mm.

MAIN PROPERTIES OF HIGH DENSITY FIBREBOARD (HDF)

PHYSICAL, MECHANICAL AND CHEMICAL PROPERTIES OF HIGH DENSITY FIBREBOARDS (HDF HMR)
A GRADE FOR NORMAL TYPE REFERENCE BY EN 622-1:2003, EN 622-5:2006

PROPERTIES	UNIT	HDF							TEST METHOLD	
		RANGES OF NOMINAL THICKNESS (MM)								
		1.5-2.5	>2.5-4	> 4-6	> 6-9	> 9-12	> 12-15	> 15-19		
THICKNESS TOLERANCE	mm	± 0.2							EN 324-1	
LENGTH & WIDTH TOLERANCE	mm	± 5.0							EN 324-1	
DENSITY	kg/m ³	≥ 800							EN 323	
TOLERANCE ON MEAN DENSITY WITH A PANEL	kg/m ³	+ 7 %							EN 323	
MODULUS OF RUPTURE (MOR)	N/mm ²	23.0	23.0	23.0	23.0	22.0	20.0	20.0	EN 310	
MODULUS OF ELASTICITY (MOE)	N/mm ²	None	None	2,700	2,700	2,500	2,200	2,200	EN 310	
INTERNAL BOND (IB)	N/mm ²	0.65	0.65	0.65	0.65	0.60	0.55	0.55	EN 319	
OPTION 1										
INTERNAL BOND (IB) AFTER CYCLIC TEST : (Min)	N/mm ²								EN 321, 319	
THICKNESS AFTER CYCLIC TEST : Max.	(%)								EN 321, 317	
OPTION 2										
INTERNAL BOND (IB) AFTER BOIL TEST : (Min)	N/mm ²								EN 1087-1	
MOISTURE CONTENT	%	4 - 11							EN 322	
THICKNESS SWELLING : 24 hr. (Max)	%	45.0	35.0	30.0	17.0	15.0	12.0	12.0	EN 317	
SCREW HOLDING : Face	(N)	N/A						1,000*		EN 320
: Edge	(N)	N/A						800*		
FORMALDEHYDE CONTENT : CLASS (E1)	mg/100g oven dry board	Content ≤ 8							EN 120	
: CLASS (E2)	mg/100g oven dry board	8 < Content ≤ 30								
FORMALDEHYDE EMISSION : CARB	ppm	≤ 0.13**				≤ 0.11			ASTM D6007	

Remark : * Test on 15 mm. and above. | ** Thin board ≤ 8 mm.

MAIN PROPERTIES OF HIGH MOISTURE RESISTANT HIGH DENSITY FIBREBOARD (HDF-HMR)

PHYSICAL, MECHANICAL AND CHEMICAL PROPERTIES OF HIGH DENSITY FIBREBOARDS (HDF HMR)
A GRADE FOR NORMAL TYPE REFERENCE BY EN 622-1:2003, EN 622-5:2006

PROPERTIES	UNIT	HDF HMR							TEST METHOLD	
		RANGES OF NOMINAL THICKNESS (MM)								
		1.5-2.5	>2.5-4	> 4-6	> 6-9	> 9-12	> 12-15	> 15-19		
THICKNESS TOLERANCE	mm	± 0.2							EN 324-1	
LENGTH & WIDTH TOLERANCE	mm	± 5.0							EN 324-1	
DENSITY	kg/m ³	≥ 800							EN 323	
TOLERANCE ON MEAN DENSITY WITH A PANEL	kg/m ³	+ 7 %							EN 323	
MODULUS OF RUPTURE (MOR)	N/mm ²	27.0	27.0	27.0	27.0	26.0	24.0	24.0	EN 310	
MODULUS OF ELASTICITY (MOE)	N/mm ²	2,700	2,700	2,700	2,700	2,500	2,400	2,400	EN 310	
INTERNAL BOND (IB)	N/mm ²	0.70	0.70	0.70	0.80	0.80	0.75	0.75	EN 319	
OPTION 1										
INTERNAL BOND (IB) AFTER CYCLIC TEST : (Min)	N/mm ²	0.35	0.35	0.35	0.30	0.25	0.20	0.20	EN 321, 319	
THICKNESS AFTER CYCLIC TEST : Max.	(%)	50.0	40.0	25.0	19.0	16.0	15.0	15.0	EN 321, 317	
OPTION 2										
INTERNAL BOND (IB) AFTER BOIL TEST : (Min)	N/mm ²	0.20	0.20	0.20	0.15	0.15	0.12	0.12	EN 1087-1	
MOISTURE CONTENT	%	4 - 11							EN 322	
THICKNESS SWELLING : 24 hr. (Max)	%	35.0	30.0	18.0	12.0	10.0	8.0	8.0	EN 317	
SCREW HOLDING : Face	(N)	N/A						1,000*		EN 320
: Edge	(N)	N/A						800*		
FORMALDEHYDE CONTENT : CLASS (E1)	mg/100g oven dry board	Content ≤ 8							EN 120	
: CLASS (E2)	mg/100g oven dry board	8 < Content ≤ 30								
FORMALDEHYDE EMISSION : CARB	ppm	≤ 0.13**				≤ 0.11			ASTM D6007	

Remark : * Test on 15 mm. and above. | ** Thin board ≤ 8 mm.

MAIN PROPERTIES OF FLAME RETARDANT MEDIUM DENSITY FIBREBOARD

PHYSICAL, MECHANICAL AND CHEMICAL PROPERTIES OF **FLAME RETARDANT MEDIUM DENSITY FIBREBOARD**
A GRADE FOR NORMAL TYPE REFERENCE BY EN 622-1:2003, EN 622-5:2006

PROPERTIES	UNIT	RANGES OF NOMINAL THICKNESS (MM)									TEST METHOD
		1.5-2.5	>2.5-4	>4-6	>6-9	>9-12	>12-15	>15-19	>19-30	>30-40	
THICKNESS TOLERANCE	mm	± 0.2									EN 324-1
LENGTH & WIDTH TOLERANCE	mm	± 5.0									EN 324-1
DENSITY	kg/m ³	780-820	780-820	740-780	740-780	720-760	690-730	670-710	640-680	600-640	EN 323
DENSITY TOLERANCE **	kg/m ³	± 7%									EN 323
MODULUS OF RUPTURE (MOR)	N/mm ²	23.0	23.0	23.0	23.0	22.0	20.0	20.0	18.0	17.0	EN 310
MODULUS OF ELASTICITY (MOE)	N/mm ²	None	None	2,700	2,700	2,500	2,200	2,200	2,100	1,900	EN 310
INTERNAL BOND (IB)	N/mm ²	0.65	0.65	0.65	0.65	0.60	0.55	0.55	0.55	0.50	EN 319
MOISTURE CONTENT	%	4 - 11									EN 322
THICKNESS SWELLING : 24 hr. (Max)	%	45.0	35.0	30.0	17.0	15.0	12.0	12.0	10.0	8.0	EN 317
SCREW HOLDING : FACE	N	N/A						1,000*			EN 320
: EDGE	N	N/A						800*			
FORMALDEHYDE CONTENT : CLASS (E1)	mg/100g oven dry board	Content ≤ 8									EN 120
: CLASS (E2)	mg/100g oven dry board	8 < Content ≤ 20									
THE CLASSIFICATION OF THE SURFACE SPREAD OF FLAME OF PRODUCTS	-	Class 1									BS 476: Part 7:1997

Remark :
*Test on 15 mm. and above. | ** Thin board ≤ 8 mm.

PHYSICAL PROPERTIES OF MELAMINE SURFACE
REFERENCE: BRITISH STANDARD EN 14323: 2004



ความทนทานต่อการขีดข่วน
Resistance to Scratches



ความทนทานต่อแรงขัด
Resistance to Abrasion



การทนทานต่อความร้อน
Resistance to Heat



ความต้านทานต่อไอน้ำ
Steam Resistance



การเกาะของคราบสกปรกต่างๆ
Resistance to Stains



ความต้านทานต่อการแตกร้าว
Resistance to Cracks



ความต้านทานต่อบุหรี่
Resistance to Cigarette Burn

Product Information of High Pressure Laminate

Thickness : 0.8 mm

Size : Available in 4'x8' (1,220 x 2,440 mm)

Surface Finishes

BW	- Bark Wood	DM	- Dry Matt
NW	- Natural Wood	M	- Matt
SW	- Smooth Wood	S	- Soft
B	- Brush	SL	- Soft Light
G	- Gloss	SM	- Soft Matt
CS	- Chessy	ST	- Stone Texture
L	- Leather	T	- Texture
		TX	- Textile