



# MDF/HDF SPECIFICATION



100% NATURAL WOOD FIBER



EU PRODUCT STANDARDS ACHIEVEMENT

# INTRODUCTORY INFORMATION

KES is operating two MDF production plants in Binh Phuoc with a total capacity of 500,000 m<sup>3</sup>/year, accounting for more than 20% of market share in Vietnam.

In which, MDF Dong Phu Factory is considered as one of the most modern and large-scale MDF factories in Vietnam today with production lines completely imported from Europe, with many advantages and outstanding features.



Capacity



Area

MDF Dong Phu Plant

**400.000**  
m<sup>3</sup>/year

**250.000**  
m<sup>2</sup>

Kim Tin MDF Plant

**100.000**  
m<sup>3</sup>/year

**240.000**  
m<sup>2</sup>

## WHY SHOULD YOU CHOOSE OUR PRODUCTS?

- **Modern** technology and equipment
- The products meet with the **international standards**, friendly with the environment
- **Fast** and professional delivery
- Commitment to providing the **best services** to customers

# QUALITY STANDARDS

## DIMENSION TOLERANCE

PRODUCT CATEGORY	TESTING TYPE	TEST METHOD	UNITS	RANGE OF THICKNESS PANEL					
				2.5 - 4.0	> 4.0 - 6.0	> 6.0 - 9.0	> 9.0 - 12.0	> 12.0 - 19.0	> 19.0 - 30
All Products	Thickness Tolerance	BSEN 324	mm	±0.2					
	Length & Width Tolerance	BSEN 324	mm	±2 (Trim Panel)					
				±2 (Free Trim Panel)					
	Squareness	BSEN 324	mm/m	±2					

## FORMALDEHYDE EMISSION LEVELS

TEST METHOD	UNITS	STANDARD		
ASTM D 6007-14 (Small Chamber)	(ppm)	CARB Phase 2: EPA TSCA Title VI	Thin Panel (≤8mm): ≤0.13	Thin Panel (>8mm): ≤0.11
JIS A 1460 (Desiccators)	(mg/l)	F****≤0.3	F***≤0.5	F**≤1.5
BSEN 120/ISO 12460-5 (Perforator)	(mg/100mg)	E0: ≤3.0	3.0≤E1≤9.0	9.0≤E2≤30

## SURFACE QUALITY STANDARD

Latex: Not over 3 dots and diameter ≤3mm per m<sup>2</sup>

## PHYSICAL & MECHANICAL PROPERTIES OF PRODUCT

PRODUCT CATEGORY	TESTING TYPE	TEST METHOD	UNITS	RANGE OF THICKNESS PANEL					
				2.5 - 4.0	> 4.0 - 6.0	> 6.0 - 9.0	> 9.0 - 12.0	> 12.0 - 19.0	> 19.0 - 30
MDF LBR	Average Density	BSEN 323	Kg/m <sup>3</sup>	N/A	N/A	680 - 700	680 - 700	670 - 690	N/A
	Board Moisture Content	BSEN 322	%	5.0 - 8.0					
	Internal Bond (IB-Dry) Average	BSEN 319	N/mm <sup>2</sup>	N/A	N/A	0.6	0.6	0.55	N/A
	Modulus of Rupture (MOR)	BSEN 310	N/mm <sup>2</sup>	N/A	N/A	22	20	18	N/A
	Modulus of Elasticity (MOE)	BSEN 310	N/mm <sup>2</sup>	N/A	N/A	2200	2200	2000	N/A
	Screw Holding (Surface)	BSEN 320	N	N/A	N/A	N/A	N/A	N/A	N/A
	Screw Holding (Edge)	BSEN 320	N	N/A	N/A	N/A	N/A	N/A	N/A
	Thickness Swelling (24h)	BSEN 317	% max	N/A	N/A	≤20	≤18	≤14	N/A

# QUALITY STANDARDS

PRODUCT CATEGORY	TESTING TYPE	TEST METHOD	UNITS	RANGE OF THICKNESS PANEL					
				2.5 - 4.0	> 4.0 - 6.0	> 6.0 - 9.0	> 9.0 - 12.0	> 12.0 - 19.0	> 19.0 - 30
MDF LMR	Average Density	BSEN 323	Kg/m3	N/A	N/A	680 - 700	680 - 700	670 - 690	N/A
	Board Moisture Content	BSEN 322	%	5.0 - 8.0					
	Internal Bond (IB-Dry) Average	BSEN 319	N/mm2	N/A	N/A	0.6	0.6	0.55	N/A
	Modulus of Rupture (MOR)	BSEN 310	N/mm2	N/A	N/A	22	20	20	N/A
	Modulus of Elasticity (MOE)	BSEN 310	N/mm2	N/A	N/A	2200	2200	2000	N/A
	Screw Holding (Surface)	BSEN 320	N	N/A	N/A	N/A	N/A	N/A	N/A
	Screw Holding (Edge)	BSEN 320	N	N/A	N/A	N/A	N/A	N/A	N/A
	Thickness Swelling (24h)	BSEN 317	% max	N/A	N/A	≤16	≤14	≤10	N/A

PRODUCT CATEGORY	TESTING TYPE	TEST METHOD	UNITS	RANGE OF THICKNESS PANEL					
				2.5 - 4.0	> 4.0 - 6.0	> 6.0 - 9.0	> 9.0 - 12.0	> 12.0 - 19.0	> 19.0 - 30
MDF Standard (MBR) & Latex Free (MLF)	Average Density	BSEN 323	Kg/m3	800 - 820	780 - 800	750 - 780	720 - 750	700 - 740	660 - 700
	Board Moisture Content	BSEN 322	%	5.0 - 8.0					
	Internal Bond (IB-Dry) Average	BSEN 319	N/mm2	0.65	0.65	0.65	0.6	0.55	0.55
	Modulus of Rupture (MOR)	BSEN 310	N/mm2	23	23	23	22	20	18
	Modulus of Elasticity (MOE)	BSEN 310	N/mm2	N/A	2700	2700	2500	2200	2100
	Screw Holding (Surface)	BSEN 320	N	N/A	N/A	N/A	N/A	1050	1000
	Screw Holding (Edge)	BSEN 320	N	N/A	N/A	N/A	N/A	850	850
	Thickness Swelling (24h)	BSEN 317	% max	≤35	≤30	≤17	≤15	≤12	≤10
	Surface Absorbtion (Toluence Test)	in-House	mm (min)	Grade A : ≥120 Grade B : ≥80			Grade A : ≥150 Grade B : ≥80		

PRODUCT CATEGORY	TESTING TYPE	TEST METHOD	UNITS	RANGE OF THICKNESS PANEL					
				2.5 - 4.0	> 4.0 - 6.0	> 6.0 - 9.0	> 9.0 - 12.0	> 12.0 - 19.0	> 19.0 - 30
MDF Moisture Resistance (HMR)	Average Density	BSEN 323	Kg/m3	800 - 820	780 - 800	750 - 780	720 - 750	700 - 740	660 - 700
	Board Moisture Content	BSEN 322	%	5.0 - 8.0					
	Internal Bond (IB-Dry) Average	BSEN 319	N/mm2	0.7	0.7	0.8	0.8	0.75	0.75
	Modulus of Rupture (MOR)	BSEN 310	N/mm2	27	27	27	26	24	22
	Modulus of Elasticity (MOE)	BSEN 310	N/mm2	2700	2700	2700	2500	2400	2300
	Screw Holding (Surface)	BSEN 320	N	N/A	N/A	N/A	N/A	1050	1000
	Screw Holding (Edge)	BSEN 320	N	N/A	N/A	N/A	N/A	850	850
	Thickness Swelling (24h)	BSEN 317	% max	≤30	≤18	≤12	≤10	≤8	≤7
	Surface Absorbtion (Toluence Test)	in-House	mm (min)	Grade A : ≥120 Grade B : ≥80			Grade A : ≥150 Grade B : ≥84		

# QUALITY STANDARDS

PRODUCT CATEGORY	TESTING TYPE	TEST METHOD	UNITS	RANGE OF THICKNESS PANEL					
				2.5 - 4.0	> 4.0 - 6.0	> 6.0 - 9.0	> 9.0 - 12.0	> 12.0 - 19.0	> 19.0 - 30
MDF MBR-S	Average Density	BSEN 323	Kg/m3	N/A	N/A	680 - 700	680 - 700	670 - 690	660 - 670
	Board Moisture Content	BSEN 322	%	5.0 - 8.0					
	Internal Bond (IB-Dry) Average	BSEN 319	N/mm2	N/A	N/A	0.65	0.60	0.55	0.45
	Modulus of Rupture (MOR)	BSEN 310	N/mm2	N/A	N/A	23	22	20	18
	Modulus of Elasticity (MOE)	BSEN 310	N/mm2	N/A	N/A	2700	2500	2200	2000
	Screw Holding (Surface)	BSEN 320	N	N/A	N/A	N/A	N/A	N/A	N/A
	Screw Holding (Edge)	BSEN 320	N	N/A	N/A	N/A	N/A	N/A	N/A
	Thickness Swelling (24h)	BSEN 317	% max	N/A	N/A	≤20	≤18	≤14	≤13

PRODUCT CATEGORY	TESTING TYPE	TEST METHOD	UNITS	RANGE OF THICKNESS PANEL					
				2.5 - 4.0	> 4.0 - 6.0	9	12	17	> 19.0 - 30
HDF HBR	Average Density	BSEN 323	Kg/m3	N/A	N/A	≥890	≥840	≥800	N/A
	Board Moisture Content	BSEN 322	%	5.0 - 8.0					
	Internal Bond (IB-Dry) Average	BSEN 319	N/mm2	N/A	N/A	≥1.4	≥1.2	≥0.75	N/A
	Modulus of Rupture (MOR)	BSEN 310	N/mm2	N/A	N/A	≥45	≥35	≥28	N/A
	Modulus of Elasticity (MOE)	BSEN 310	N/mm2	N/A	N/A	≥3300	≥2900	≥2500	N/A
	Screw Holding (Surface)	BSEN 320	N	N/A	N/A	N/A	N/A	850	N/A
	Screw Holding (Edge)	BSEN 320	N	N/A	N/A	N/A	N/A	1050	N/A
	Thickness Swelling (24h)	BSEN 317	% max	N/A	N/A	≤16	≤14	≤10	N/A
	Surface Absorbtion (Tolouence Test)	in-House	mm(min)	Grade A :≥120 Grade B :≥80			Grade A :≥150 Grade B :≥80		

PRODUCT CATEGORY	TESTING TYPE	TEST METHOD	UNITS	RANGE OF THICKNESS PANEL					
				2.5 - 4.0	> 4.0 - 6.0	9	12	17	> 19.0 - 30
HDF HMR	Average Density	BSEN 323	Kg/m3	N/A	N/A	≥890	≥840	≥800	N/A
	Board Moisture Content	BSEN 322	%	5.0 - 8.0					
	Internal Bond (IB-Dry) Average	BSEN 319	N/mm2	N/A	N/A	≥1.4	≥1.2	≥0.75	N/A
	Modulus of Rupture (MOR)	BSEN 310	N/mm2	N/A	N/A	≥45	≥35	≥28	N/A
	Modulus of Elasticity (MOE)	BSEN 310	N/mm2	N/A	N/A	≥3300	≥2900	≥2500	N/A
	Screw Holding (Surface)	BSEN 320	N	N/A	N/A	N/A	N/A	850	N/A
	Screw Holding (Edge)	BSEN 320	N	N/A	N/A	N/A	N/A	1050	N/A
	Thickness Swelling (24h)	BSEN 317	% max	N/A	N/A	≤10	≤9	≤8	N/A
	Surface Absorbtion (Tolouence Test)	in-House	mm(min)	Grade A :≥120 Grade B :≥80			Grade A :≥150 Grade B :≥84		

**KES**  
*joining happiness*



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