SGS

Test Report

No.: SHD2717862 Date: DEC.05,2007

LIANYUNGANG DONGHAI DANUBE WOOD PRODUCTS CO.,LTD
EAST DONGHAI ROAD, PUNAN DEVELOPMENT ZONE, DONGHAI, LIANYUNGANG, JIANGSU PROVINCE, CHINA

The following sample(s) was/were submitted and identified by the client as:

Sample Description	: KING PLEX PREMIUM QUALITY WBP FILM FACED
Product	: FILM FACED PLYWOOD
Species	: COMBI POPLAR/ HARDWOOD
Size	: 18MMx1220MMx2440MM
Glue Type	: WBP
Color of The Film	: BROWN
Grammage	: 120 G/M^2
Manufacturer	: LIANYUNGANG DONGHAI DANUBE WOOD PRODUCTS CO., LTD.
Country of Original	: CHINA
Sample Receiving Date	: NOV.26,2007
Testing Period	: NOV.26,2007 TO NOV.30,2007
Test Performed	: SELECTED TEST(S) AS REQUESTED BY APPLICANT
Test Requested	: 1. MOISTURE CONTENT (REFER TO EN 322: 1993) 2. TOLERANCE ON MEAN DENSITY WITHIN A PANEL (REFER TO EN 323: 1993) 3. BONDING QUALITY (EN 314-1: 2004 & EN 314-2: 1993) 4. BENDING STRENGTH AND MODULUS OF ELASTICITY IN BENDING (REFER TO EN 310: 1993)
Test Result(s)	: FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S)
Conclusion	: THE TEST DATA WERE PROVIDED TO CLIENT FOR THEIR OWN ANALYSIS.

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Signed for and on behalf of
SGS-CSTC Ltd.

Colin Li
Section Head

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Member of the SGS Group (SGS SA)

Test Conducted :

As Per The Client's Requirements

Test result:

Test Property	Test Method	Test Requirements	Test Result
Moisture content	Refer To EN 322:1993	Cutting 4 pieces of the test samples which have a minimum initial mass of 20g. Weigh before drying to an accuracy of 0.01g. Then place the test pieces in the drying oven at (103±2)℃ until constant mass has been reached. After the test pieces have been cooled to approximately room temperature in the desiccators, weigh the test pieces to an accuracy of 0.01g. Calculate the moisture content M of each pieces, as a percentage by mass to the nearest 0.1%, to accordance with the following formula: M=(Mi-Md)/MdX100% Mi is the initial mass of the test piece, in gram; Md is the mass of the test piece after drying, in gram.	/ (See Result1) (M= 9.3%)
Tolerance on mean density within a panel	Refer To EN 323:1993	Cutting 6 pieces of the test samples which shall be square in shape, with sides of a nominal length of 50mm. Weigh each piece to an accuracy of 0.01g. Then measure the dimensions of each test piece in accordance with EN 325, as follows, 1. Measure the thickness, t, at the point of the intersection of the diagonals to an accuracy of 0.05 mm. 2. Measure b1 and b2, at two points, parallel to the edges of the test piece, along lines which pass through the centers of opposite edges to an accuracy of 0.1 mm. The density of each test piece (in kg/m^3) shall $\rho = \frac{m}{b1 \times b2 \times t} \times 10^6$. Where m is the mass of the test pieces in g.	/ (See Result 2) (P= 543.3 kg/m^3)

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Bonding quality	EN 314-1: 2004 & 314-2 :1993	**Requirement:** For each pretreatment both the mean shear strength and th mean apparent cohesive wood failure for a minimum of 10 test pieces per glueline, shall satisfy the criteria given in Table 1 for all three bonding classes. **Table 1:** **Mean shear strength, fv N/mm2** / **Mean apparent cohesive wood failure w %** 0.2<=fv<0.4 / >=80 0.4<=fv<0.6 / >=60 0.6<=fv<1.0 / >=40 1.0<=fv / No requirement The pretreatment are pretreatments are related to the bonding classes as given in Table 2. **Table 2:** **Pretreatments** (5.1.1 / 5.1.2 / 5.1.3 / 5.1.4) Class 1:dry interior: X / X / / Class 2: covered exterior: X / / X / X Class 3:non covered exterior Pre-treatments: 5.1.1 Immersion for 24 h in water at (20±3)℃. 5.1.2 Immersion for 6 h in boiling water followed by cooling in water at (20±3)℃, for 1 h.. 5.1.3 Immersion for 4 h in boiling water, then drying in the ventilated drying oven for 16 h to 20 h at (60±3)℃, then immersion in boiling water for 4 h, followed by cooling in water at (20±3)℃ for at	Pass (See Result 3)

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		least 1 h. 5.1.4 Immersion for (72±1) h in boiling water, followed by cooling in water at (20±3)℃ for at least 1 h. **Shear Test:** The shear test shall be carried out on wet pieces from which a wiping can be realized. The shear strength shall be calculated in N/mm2 according as following: $fv=\frac{F}{l \times b}$ F is the failing force of the test piece, in Newton; l1 is the length of the shear area in millimeters' b1 is the width of the share area in millimeters; **Apparent Cohesive Wood Failure:** After the shear test, the apparent cohesive wood failure shall be determined.	
Bending strength and modulus of elasticity in bending	Refer To EN 310:1993	The width of the test pieces shall be (50±1) mm. The length shall be 20 times the nominal thickness plus 50 mm, with a maximum length of 1050 mm and a minimum length of 150mm. Measure the width and thickness of each test piece. The load shall be applied at a constant rate of cross-head movement throughout the test according to test procedure, and measure the deflection in the middle of the test piece. Record the maximum load. The modulus of elasticity E_m (in N/mm^2), of each test piece, is calculated from the formula: $E_m = \frac{l_1^3 (F_2 . F_1)}{4bt^3 (a_2 - a_1)}$ Where l_1 is the distance between the centres of the supports, in millimetres b is the width of the test piece, in millimeters	/ (See Result 4) (Longitudinal Em: 3560.8 N/mm^2 Fm: 45.3 N/mm^2 Lateral: Em: 3191.3 N/mm^2 Fm: 43.6 N/mm^2)

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		t is the thickness of the test piece, in millimeters F_2-F_1 is the increment of load on the straight line portion of the load-deflection curve, in N. F_1 shall be approximately 10% and F_2 shall be approximately 40% of the maximum load a_2-a_1 is the increment of deflection at the mid-length of the test piece The bending strength f_m (in N/mm^2), of each test piece, is calculated from the formula: $f_m = \frac{3 F_{max} l_1}{2bt^2}$ Where F_{max} is the maximum load, in N	

Result 1: The result of the moisture content

	1#	2#	3#	4#	Average
Mi(g)	25.26	24.72	23.70	25.55	/
Md(g)	23.08	22.64	21.62	23.48	/
M (%)	9.4%	9.2%	9.6%	8.8%	9.3%

Result 2: The result of tolerance on mean density within a panel

	1#	2#	3#	4#	5#	6#	Average
m (g)	25.26	24.72	23.70	25.55	23.62	24.38	/
b1(mm)	50.3	50.4	50.5	50.5	50.6	50.4	/
b2(mm)	50.4	50.4	50.2	50.2	50.2	50.3	/
t (mm)	17.82	17.82	17.79	17.80	17.79	17.81	/
ρ(kg/m^3)	559.1	546.1	525.5	566.2	522.7	540.0	543.3

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Result 3: bonding quality for Class 3

No.	1	2	3	4	5	6	7	8	9	10
F(N)	645.6	580.0	866.1	1219.6	604.2	754.7	1012.3	852.5	1011.5	501.0
l(mm)	25.0	24.9	25.2	25.5	24.8	25.4	25.5	25.2	25.2	24.6
B(mm)	25.2	25.3	25.2	25.4	25.2	25.2	25.5	25.3	25.2	24.6
Fv(N/mm2)	1.02	0.92	1.36	1.88	0.97	1.17	1.57	1.34	1.63	0.81
Failure(%)	30%	60%	20%	50%	80%	30%	55%	60%	80%	50%
Request(%)	/	≥40%	/	/	≥40%	/	/	/	/	≥40%
Result	Pass									

Result 4: The results of bending strength and modulus of elasticity

	Longitudinal				Lateral			
	1#	2#	3#	Average	4#	5#	6#	Average
t(mm)	17.71	17.73	17.71	/	17.75	17.73	17.78	/
b(mm)	50.1	50.3	50.2	/	50.2	50.2	50.3	/
l1(mm)	354.2	354.6	354.2	/	355.0	354.6	355.6	/
Fmax(N)	1386.6	1326.6	1316.6	/	1293.2	1439.9	1159.9	/
F2(N)	554.6	530.6	526.6	/	517.3	576.0	464.0	/
F1(N)	138.7	132.7	131.7	/	129.3	144.0	116.0	/
a2(mm)	9.52	9.30	8.16	/	12.03	11.81	12.53	/
a1(mm)	4.94	4.95	3.56	/	7.19	6.49	8.13	/
Em(N/mm^2)	3625.1	3637.0	3420.2	3560.8	3193.8	3235.2	3144.8	3191.3
fm(N/mm^2)	46.9	44.6	44.4	45.3	43.5	48.5	38.9	43.6

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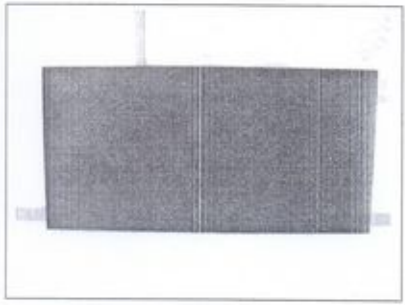
Sample Photo:



End of Report

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