



Test Report

Applicant	Fujian Qingke Tree Industry Co., Ltd
Address	No.1106, Qianqin, Qianqin Village, Dongqiao Town, Xiuyu District, Putian City
Sample Type	Structural Laminated Veneer Lumber
Test Standard	AS/NZS 4357.0

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Precautions

1. This test report is invalid without authorized approved signature, signature of verifier and approver.
2. This test report is invalid if being supplemented, deleted or altered.
3. Unless otherwise stated, the observations and test results in this report are relevant only to the sample(s) tested.
4. Objections to the test report must be submitted to Hongjun within 15 days of report received date. This report does not imply that the material, product, or service is or have ever been under Hongjun or ICTT certification program.
5. The test applicant is responsible for authenticity of sample information which not subject to verification of Hongjun.
6. The applicable decision rules of this test are: IEC Guide 115:2007 Procedure 2 - Accuracy method, do not subject to measurement uncertainty.

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1. Sample Description¹

Samples for test in this report were sampled and shipped to test laboratory by applicant on Nov 9th, 2021, packed well and kept in good conditions. Samples are produced from October 18th to October 20th, 2021 and production line located at No.1106, Qianqin, Qianqin Village, Dongqiao Town, Xiuyu District, Putian City, Fujian Province, China.

Samples were identified as Structural laminated veneer lumber by applicant. The cross-sectional dimension of laminated veneer lumber is 90mm×45mm. Wood species of laminated veneer lumber is larch. The dimension specification and quantity of samples obtained are shown in the table below:

Sampling Information			
Test Item	Specimen Specification (Length×Width×Thickness, mm)		Sample Size
Structural Properties			
Bending Strength and Apparent Modulus of Elasticity	On edge	1800×90×45	32
Beam Shear Strength	On edge	320×90×45	32
Tension Strength Parallel to Grain	Axial	3000×90×45	32
Compression Strength Parallel to Grain	Axial	3000×90×45	32

Notes:

1. Sample description information is provided by applicant, and sample arrived in test lab were already cut into specific specification as identified in this table. Please reference typical sample photos in Appendix II.

2. Adhesive Information²

The adhesive used is phenolic formaldehyde resin. Adhesive information is listed in the table below:

Adhesive Name	Type	Manufacturer
Phenolic Formaldehyde Resin Adhesive	902#	Self-made by Fujian Qingke Tree Industry Co., Ltd

Notes:

2. Adhesive information is provided by applicant.

3. Referenced Standards

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- ◆ AS/NZS 4063.1:2010 Characterization of structural timber-Part 1: Test methods
- ◆ AS/NZS 4357.0:2005 Structural laminated veneer lumber-Part 0: Specifications
- ◆ AS/NZS 4357.3:2006 Structural laminated veneer lumber-Part 3: Determination of structural properties—Evaluation methods
- ◆ AS 1720.1:2010 Timber structures-Part 1: Design methods

Unless specified, all test standards in this report are the version cited by AS/NZS 4357.0.

4. Test Description/ Environment

All test items in this report are specified by the applicant. The sample size and specification are according to AS/NZS 4357.0 for type testing. Test procedure complied corresponding test method requirement where those test methods are listed in section 3 of this report.

The test started on November 22nd, 2021 and completed on December 1st, 2021. During the test, the relative humidity and temperature of test environment are $(65 \pm 10) \%$ and $(20 \pm 5) ^\circ\text{C}$, respectively.

No individual test for which the time to failure was less than approximately 15 seconds during the whole test. Please reference Appendix II for typical failure samples.

5. Test Results

Structural Properties					
Test Item	Dimension Specification (mm)	Place Direction	Average Result ³	Characteristic Value ^{3,4,5}	Coefficient of Variation from Test Results (%)
In-grade Testing	90×45	Edgewise	E : 14009 MPa f_b : 59.5 MPa f_s : 5.2 MPa	E : - f_b : 51.3 MPa f_s : 4.8 MPa	E : 9.3 f_b : 13.8 f_s : 7.7
		Axial	f_t : 54.7 MPa f_c : 43.2 MPa	f_t : 49.7 MPa f_c : 38.6 MPa	f_t : 9.1 f_c : 10.6

Notes:

3. The results were adjusted to 12% moisture content in accordance with ISO 13061:2014. For detailed test data, please refer to Appendix I of test report.

4. The 5th percentile value estimated with 75% confidence shall be the characteristic value for strengths in bending(f_b), shear(f_s), tension(f_t) and compression(f_c) parallel to grain, which was determined in accordance with AS/NZS 4357.3.

5. The average value for modulus of elasticity(E) shall be the characteristic value for modulus of elasticity.

6. The F-grades shall be assigned according to Table H2.1 of AS 1720.1, which is shown below.

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TABLE H2.1
CHARACTERISTIC VALUES FOR DESIGN—F-GRADES—BENDING AND SHEAR FOR BEAMS, TENSION, COMPRESSION AND ELASTIC MODULI PARALLEL TO GRAIN

Stress grade	Characteristic values, MPa						
	Bending (f'_b)	Tension parallel to grain		Shear in beam (f'_s)	Compression parallel to grain (f'_c)	Short duration average modulus of elasticity parallel to the gain, MPa (E)	Short duration average modulus of rigidity, MPa (G)
		Hardwood	Softwood				
		(f'_t)					
F34	84	51	42	6.1	63	21 500	1 430
F27	67	42	34	5.1	51	18 500	1 230
F22	55	34	29	4.2	42	16 000	1 070
F17	42	25	22	3.6	34	14 000	930
F14	36	22	19	3.3	27	12 000	800
F11	31	18	15	2.8	22	10 500	700
F8	22	13	12	2.2	18	9 100	610
F7	18	11	8.9	1.9	13	7 900	530
F5	14	9	7.3	1.6	11	6 900	460
F4	12	7	5.8	1.3	8.6	6 100	410

Reporter: *Deng tong tui*

Verifier: *Ji lu*



Approver: *[Signature]*

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Appendix I - Test Data

1. Bending Strength and Modulus of Elasticity

Specimen No	Mid-Span Width (mm)	Mid-Span Thickness (mm)	Ultimate Load (N)	P/Δ (N/mm)	12% MC Bending Strength (MPa)	12%MC MOE (MPa)
1	44.97	90.86	18359.0	587	63.8	14547
2	44.49	90.87	18504.6	549	66.1	13832
3	43.72	90.76	14123.2	480	50.7	12291
4	45.26	91.27	15536.6	550	56.9	13679
5	46.13	90.63	17519.8	577	59.3	14022
6	43.50	90.39	15532.0	508	55.8	13177
7	45.50	90.90	17230.0	572	58.2	13925
8	45.14	90.72	16559.4	522	56.7	12904
9	45.93	90.11	16762.8	588	58.7	14690
10	45.94	91.02	15963.0	576	52.6	13770
11	44.52	90.02	14686.6	547	53.0	14120
12	44.58	90.17	16959.4	539	62.2	13926
13	43.15	90.27	16576.2	482	60.8	12700
14	43.45	90.13	15414.0	503	55.7	13175
15	44.94	90.68	19132.2	590	70.1	14971
16	44.6	90.27	15297.4	585	55.4	15017
17	45.34	90.92	17692.8	579	60.9	14197
18	44.31	90.11	15460.6	558	58.8	14667
19	44.14	91.02	16636.0	581	57.5	14501
20	45.11	90.73	16321.4	558	59.5	14066
21	44.35	90.94	15411.6	543	53.9	13593
22	44.83	90.82	17582.2	545	60.7	13531
23	44.37	90.35	14655.8	498	54.3	12902
24	44.76	90.9	15789.2	587	58.4	14894
25	44.86	91.08	15476.2	560	55.2	13944
26	43.98	90.47	17022.6	560	64.4	14625
27	44.34	90.48	17633.0	515	65.5	13308
28	44.04	90.98	16278.4	580	58.5	14684
29	44.88	90.14	18355.6	578	64.6	14679
30	44.70	90.11	17432.7	569	66.0	14854
31	44.13	90.35	18456.2	560	68.1	14532
32	45.02	90.33	16443.8	563	62.4	14556

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2. Beam Shear Strength

Specimen No	Width (mm)	Thickness (mm)	Ultimate Load (N)	12% MC Shear Strength (MPa)
1	44.61	90.81	34871.8	5.5
2	43.53	90.17	31724.6	5.4
3	45.34	90.76	33959.0	5.4
4	43.76	90.29	30074.8	5.0
5	45.64	91.23	33696.0	5.3
6	45.03	90.76	34994.0	5.4
7	45.53	90.06	34316.6	5.4
8	45.44	90.49	32521.8	5.3
9	43.31	90.18	35474.8	5.7
10	45.71	90.97	31710.8	4.8
11	44.80	90.13	33513.8	5.4
12	44.94	90.17	32165.4	5.2
13	45.38	90.34	34672.8	5.5
14	45.05	90.81	33467.2	5.2
15	43.97	90.58	34155.4	5.6
16	44.44	90.14	34241.8	5.4
17	44.94	90.33	30697.8	4.8
18	44.06	90.98	30893.4	4.9
19	45.09	90.33	31698.0	5.2
20	44.26	90.61	32734.6	5.1
21	44.21	91.05	32871.4	5.2
22	44.19	90.44	32678.0	5.3
23	45.16	90.40	34346.6	5.3
24	44.03	90.46	32922.4	5.4
25	45.07	90.60	31593.4	5.0
26	45.22	91.09	30787.6	4.8
27	44.87	90.52	30082.8	4.9
28	44.70	90.32	31575.0	5.1
29	45.21	91.05	31354.4	5.0
30	44.21	90.68	34936.6	5.7
31	44.09	90.85	33137.7	5.1
32	44.42	90.02	33518.0	5.5

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3. Tension Strength Parallel to Grain

Specimen No	Width (mm)	Thickness (mm)	Ultimate Load (N)	12% MC Tension Strength (MPa)
1	90.41	45.37	238761.6	54.7
2	90.48	44.88	254649.0	58.4
3	90.23	44.18	245410.8	56.7
4	90.40	45.20	245986.0	55.7
5	91.00	44.67	253848.8	58.1
6	90.91	45.04	222366.6	50.2
7	90.18	44.67	249470.4	57.3
8	91.01	44.39	237363.8	54.3
9	90.46	45.10	236502.6	53.5
10	90.98	44.48	254677.4	59.2
11	90.41	44.81	254851.8	59.2
12	90.72	45.02	223170.2	50.7
13	91.02	44.16	248977.2	57.0
14	90.13	44.81	229549.4	52.7
15	90.70	44.26	241631.0	55.5
16	91.09	44.88	227730.2	52.2
17	90.19	43.95	236194.4	55.8
18	90.29	43.99	224384.2	53.1
19	90.91	44.25	225526.4	51.4
20	90.15	44.38	242586.2	55.6
21	90.93	44.08	240350.8	56.4
22	90.33	44.60	245948.8	56.7
23	90.89	44.57	246934.8	57.0
24	90.82	44.13	231790.6	54.0
25	90.86	44.13	229230.0	53.4
26	90.35	45.10	228231.6	52.0
27	90.67	45.19	244908.0	54.9
28	90.90	44.89	229242.6	52.6
29	90.21	44.35	241923.2	56.2
30	90.89	44.9	241831.0	54.6
31	90.99	44.72	236555.7	53.9
32	90.56	44.25	203188.2	46.8

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4. Compression Strength Parallel to Grain



Specimen No	Width (mm)	Thickness (mm)	Ultimate Load (N)	12% MC Compression Strength (MPa)
1	90.32	44.93	239738.2	47.9
2	91.19	44.81	212122.0	41.3
3	90.99	43.89	239824.4	48.9
4	90.85	44.93	239174.8	45.7
5	90.35	43.17	213719.4	42.2
6	90.64	43.94	229597.4	41.8
7	90.59	45.26	257055.6	46.1
8	90.96	45.72	234686.2	45.1
9	90.32	45.68	261486.6	50.7
10	90.63	44.86	231825.4	41.9
11	90.58	44.21	239200.6	46.3
12	90.38	44.45	214226.2	42.7
13	90.81	44.79	213148.4	41.7
14	90.56	44.31	232491.8	43.2
15	91.02	44.87	217841.8	40.3
16	90.40	44.62	219207.2	41.0
17	91.15	45.06	226631.4	41.9
18	90.96	44.04	233214.6	43.7
19	90.44	45.21	230915.0	41.5
20	91.02	44.25	226096.0	42.7
21	91.09	44.72	232640.6	42.5
22	90.10	44.28	215681.2	41.6
23	90.78	44.85	228576.6	45.8
24	91.18	44.95	224843.0	43.3
25	90.72	44.29	233185.6	42.1
26	90.59	44.76	224829.2	42.4
27	91.12	44.55	224031.2	42.2
28	90.73	45.38	212205.4	39.2
29	90.52	45.37	240408.4	43.9
30	90.62	44.16	207117.3	38.8
31	90.64	44.92	218623.1	40.8
32	90.46	44.56	234719.9	44.0

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Appendix II – Typical Sample Photos

	
Bending Properties Test Specimen	Beam Shear Strength Test Specimen

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