

Australian Wood Company Pty Ltd

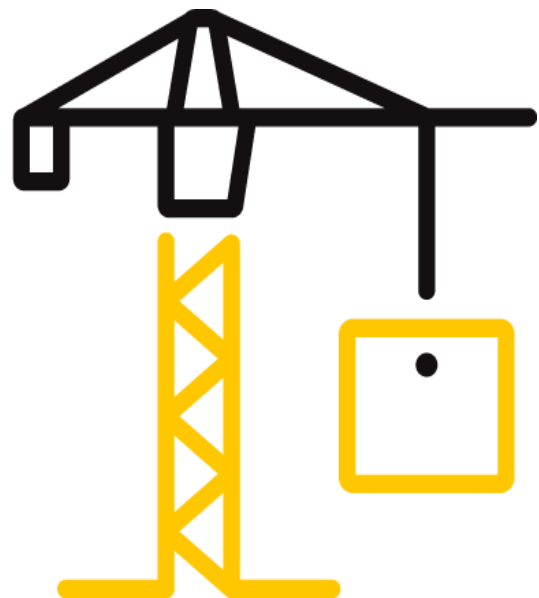
TEST REPORT

REPORT NUMBER
181022005SHF-001

ISSUE DATE
2018/11/21

PAGES
9

DOCUMENT CONTROL NUMBER
LFT-APAC-SHF-OP-10k
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Test Report

Issue Date: 2018/11/21

Intertek Report No. 181022005SHF-001

Applicant: Australian Wood Company Pty Ltd

Applicant Address: Unit 6, 4-20 Violet St, Revesby NSW 2212

Manufacturer: Jiangsu Senmao Bamboo & Wood Industry Co., LTD

Manufacturer Address Industrial Park, Zhang Zhu Town, Yixing City, Jiangsu Province, China 214231

Attn: Yongwen Yang

SUBJECT: Performance testing
Carbonized Paulownia Wall- Board

Brand Name: eLeVATe

Dear Sir,

This test report represents the results of our evaluation of the above referenced product(s) to the requirements contained in the following standards:

TEST METHODS AND STANDARDS
Refer to the next following Pages.

SAMPLE ID	MODEL	SPECIFICATION
S181022005SHF.001	SIENNA	1210*128*5mm

SAMPLE RECEIVED: 2018/10/19

TESTED FROM: 2018/10/22 TO 2018/11/21

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Test Items, Method and Results:

1. Test Standard:

CDPH/EHLB/Standard Method V1.2, 2017

Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers Version 1.2 - Emission testing method for California Specification 01350

2. Test Method: With reference to

ISO 16000-3:2011 Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air - Active sampling method;

ISO 16000-6:2011 Indoor air - Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA® sorbent, thermal desorption and gas chromatography using MS or MS/FID;

ISO 16000-9:2006 Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method;

ISO 16000-11:2006 Indoor air - Part 11: Determination of the emission of volatile organic compounds from building products and furnishing - Sampling, storage of samples and preparation of test specimens.

3. Test Procedure:

The sample was tested in the emission test chamber. After defined times, chamber air samples were collected. Samples analyzed for individual VOCs and TVOC were collected on sorbent tubes Tenax TA, and were detected by Automatic Thermal Desorption-Gas Chromatography/Mass Spectrometric (ATD-GC/MS). Samples analyzed for aldehydes were collected on DNPH cartridge, and were detected by High Performance Liquid Chromatography (HPLC).

4. Conditioning of the sample until testing date: 23°C±2°C, 50%±5%, 10days

5. Test condition:

Test chamber: 0.06 m³

Exposed sample surface area: 0.060 m²

Loading factor: 1.000 m²/m³

Supply air temper: 23°C±1°C

Supply air humidity: 50%±5% R.H.

Air exchange rate: 1.0 h⁻¹

Area specific flow rate: 1.000 m/h

Sampling: Tenax TA & DNPH cartridge

6. Test result:

Table 1 Evaluation for different scenarios

Modeling scenario	Verdict(Pass/Fail)
Standard school classroom (SC)	Pass
Private office (PO)	Pass
Single family residence (R)*	Pass

Remark: *The single family residence modeling scenario is not yet a requirement and is for informational purposes only.

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Table 2 24h, 48h and 96h Chamber Concentration and Emission Factor of Formaldehyde and TVOC

Parameter	CAS number	Chamber Concentration ($\mu\text{g}/\text{m}^3$)			Emission Factor ($\mu\text{g}/\text{m}^2\cdot\text{h}$)		
		24h	48h	96h	24h	48h	96h
Formaldehyde [#]	50-00-0	<2	<2	<2	<2	<2	<2
TVOC	/	45.4	15.2	<10	45.4	15.2	<10

Table 3 96h Chamber concentration and Emission Factor of all Target VOCs

No.	Compound Name	CAS Number	Chamber Concentration ($\mu\text{g}/\text{m}^3$)	Emission Factor ($\mu\text{g}/\text{m}^2\cdot\text{h}$)
1	Acetaldehyde [#]	75-07-0	<2	<2
2	Benzene	71-43-2	<2	<2
3	Carbon disulfide	75-15-0	<2	<2
4	Carbon tetrachloride	56-23-5	<2	<2
5	Chlorobenzene	108-90-7	<2	<2
6	Chloroform	67-66-3	<2	<2
7	Dichlorobenzene (1,4-)	106-46-7	<2	<2
8	Dichloroethylene (1,1)	75-35-4	<2	<2
9	Dimethylformamide (N,N-)	68-12-2	<2	<2
10	Dioxane (1,4-)	123-91-1	<2	<2
11	Epichlorohydrin	106-89-8	<2	<2
12	Ethylbenzene	100-41-4	<2	<2
13	Ethylene glycol	107-21-1	<2	<2
14	Ethylene glycol monoethyl ether	110-80-5	<2	<2
15	Ethylene glycol monoethyl ether acetate	111-15-9	<2	<2
16	Ethylene glycol monomethyl ether	109-86-4	<2	<2
17	Ethylene glycol monomethyl ether acetate	110-49-6	<2	<2
18	Formaldehyde [#]	50-00-0	<2	<2
19	Hexane (n-)	110-54-3	<2	<2
20	Isophorone	78-59-1	<2	<2
21	Isopropanol	67-63-0	<2	<2
22	Methyl chloroform	71-55-6	<2	<2
23	Methylene chloride	75-09-2	<2	<2
24	Methyl t-butyl ether	1634-04-4	<2	<2

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25	Naphthalene	91-20-3	<2	<2
26	Phenol	108-95-2	<2	<2
27	Propylene glycol monomethyl ether	107-98-2	<2	<2
28	Styrene	100-42-5	<2	<2
29	Tetrachloroethylene	127-18-4	<2	<2
30	Toluene	108-88-3	<2	<2
31	Trichloroethylene	79-01-6	<2	<2
32	Vinyl acetate	108-05-4	<2	<2
33~35	Xylenes, technical mixture (m-, o-, p-xylene combined)	108-38-3 95-47-6 106-42-3	<2	<2

Table 4 VOCs detected above lower limits of quantitation in air samples at 96h

Compound Name	CAS No.	SURROGATE ¹	CREL (µg/m ³) ²	CARB TAC ³	PROP 65 LIST ⁴	Chamber Concentration (µg/m ³)	Emission Factor (µg/m ² ·h)
Not Detected	/	/	/	/	/	/	/

Table 5 Top ten VOCs having the highest emission factors in 96h

Compound Name	CAS No.	SURROGATE ¹	CREL (µg/m ³) ²	CARB TAC ³	PROP 65 LIST ⁴	Chamber Concentration (µg/m ³)	Emission Factor (µg/m ² ·h)
Not Detected	/	/	/	/	/	/	/

Remark:

1. Indicates which non-listed VOCs were quantified using surrogate compounds, all other compounds were quantified using pure compounds.
2. Chronic Reference Exposure Level (CREL) as defined by California Office of Environmental Health Hazard Assessment.
3. Substance is listed on California Air Resource Board's (CARB) Toxic Air Contaminant (TAC) identification list.
4. Substance known to the state of California to cause cancer or reproductive toxicity according to California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)
5. # = indicates aldehydes identified and quantified by DNPH derivatization and HPLC/DAD analysis.
6. TVOC means sum of the concentrations of all identified and unidentified VOCs between and including n-pentane through n-heptadecane (i.e., C₅-C₁₇) as measured by the GC/MS TIC method and expressed as a toluene equivalent value.
7. Detection limit of individual compound = 2 µg/m³
Detection limit of TVOC = 10 µg/m³

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7. Estimated Concentration for different scenarios and evaluation of the requirement.

Table 6 Parameters to be used for estimation of VOC concentrations

Scenario	Room Size(m ³)	Wall coverings Area (m ²)	Effective outdoor air change rate (h ⁻¹)	Air Flow Rate (m ³ /h)
Standard school classroom	231	94.6	0.82	191
Private office	30.6	33.4	0.68	20.7
Single family residence	547	562	0.23	127

Remark:

The above parameters are cited from section 01350 table 4-2, 4-3, for Standard school classroom, and table 4-4, 4-5 for Private office, and table B-1, B-2 for single family residence.

Table 7 Estimated Concentration of all Target VOCs for different scenarios and evaluation of the requirement

No.	Compound Name	CAS Number	Estimated concentration (µg/m ³)			Allowable Concentration (µg/m ³)	Verdict (Pass/Fail)		
			SC	PO	R		SC	PO	R
1	Acetaldehyde [#]	75-07-0	<1.0	<3.2	<8.9	70	Pass	Pass	Pass
2	Benzene	71-43-2	<1.0	<3.2*	<8.9*	1.5	Pass	Pass	Pass
3	Carbon disulfide	75-15-0	<1.0	<3.2	<8.9	400	Pass	Pass	Pass
4	Carbon tetrachloride	56-23-5	<1.0	<3.2	<8.9	20	Pass	Pass	Pass
5	Chlorobenzene	108-90-7	<1.0	<3.2	<8.9	500	Pass	Pass	Pass
6	Chloroform	67-66-3	<1.0	<3.2	<8.9	150	Pass	Pass	Pass
7	Dichlorobenzene (1,4-)	106-46-7	<1.0	<3.2	<8.9	400	Pass	Pass	Pass
8	Dichloroethylene (1,1)	75-35-4	<1.0	<3.2	<8.9	35	Pass	Pass	Pass
9	Dimethylformamide (N,N-)	68-12-2	<1.0	<3.2	<8.9	40	Pass	Pass	Pass
10	Dioxane (1,4-)	123-91-1	<1.0	<3.2	<8.9	1500	Pass	Pass	Pass
11	Epichlorohydrin	106-89-8	<1.0	<3.2*	<8.9*	1.5	Pass	Pass	Pass
12	Ethylbenzene	100-41-4	<1.0	<3.2	<8.9	1000	Pass	Pass	Pass
13	Ethylene glycol	107-21-1	<1.0	<3.2	<8.9	200	Pass	Pass	Pass
14	Ethylene glycol monoethyl ether	110-80-5	<1.0	<3.2	<8.9	35	Pass	Pass	Pass
15	Ethylene glycol monoethyl ether acetate	111-15-9	<1.0	<3.2	<8.9	150	Pass	Pass	Pass
16	Ethylene glycol monomethyl ether	109-86-4	<1.0	<3.2	<8.9	30	Pass	Pass	Pass

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17	Ethylene glycol monomethyl ether acetate	110-49-6	<1.0	<3.2	<8.9	45	Pass	Pass	Pass
18	Formaldehyde [#]	50-00-0	<1.0	<3.2	<8.9	9	Pass	Pass	Pass
19	Hexane (n-)	110-54-3	<1.0	<3.2	<8.9	3500	Pass	Pass	Pass
20	Isophorone	78-59-1	<1.0	<3.2	<8.9	1000	Pass	Pass	Pass
21	Isopropanol	67-63-0	<1.0	<3.2	<8.9	3500	Pass	Pass	Pass
22	Methyl chloroform	71-55-6	<1.0	<3.2	<8.9	500	Pass	Pass	Pass
23	Methylene chloride	75-09-2	<1.0	<3.2	<8.9	200	Pass	Pass	Pass
24	Methyl t-butyl ether	1634-04-4	<1.0	<3.2	<8.9	4000	Pass	Pass	Pass
25	Naphthalene	91-20-3	<1.0	<3.2	<8.9*	4.5	Pass	Pass	Pass
26	Phenol	108-95-2	<1.0	<3.2	<8.9	100	Pass	Pass	Pass
27	Propylene glycol monomethyl ether	107-98-2	<1.0	<3.2	<8.9	3500	Pass	Pass	Pass
28	Styrene	100-42-5	<1.0	<3.2	<8.9	450	Pass	Pass	Pass
29	Tetrachloroethylene	127-18-4	<1.0	<3.2	<8.9	17.5	Pass	Pass	Pass
30	Toluene	108-88-3	<1.0	<3.2	<8.9	150	Pass	Pass	Pass
31	Trichloroethylene	79-01-6	<1.0	<3.2	<8.9	300	Pass	Pass	Pass
32	Vinyl acetate	108-05-4	<1.0	<3.2	<8.9	100	Pass	Pass	Pass
33~35	Xylenes, technical mixture (m-, o-, p-xylene combined)	108-38-3 95-47-6 106-42-3	<1.0	<3.2	<8.9	350	Pass	Pass	Pass
36	TVOC	—	<5.0	<16.1	<44.3	—	—	—	—

Remark:

1. The Allowable Concentration is cited from Section 01350 table 4-1, no requirement for TVOC.
- 2.*Individual VOC of concern is below lower limits of quantitation for modeled scenario.

Table 8 Estimated Concentration of non-listed VOCs for different scenarios

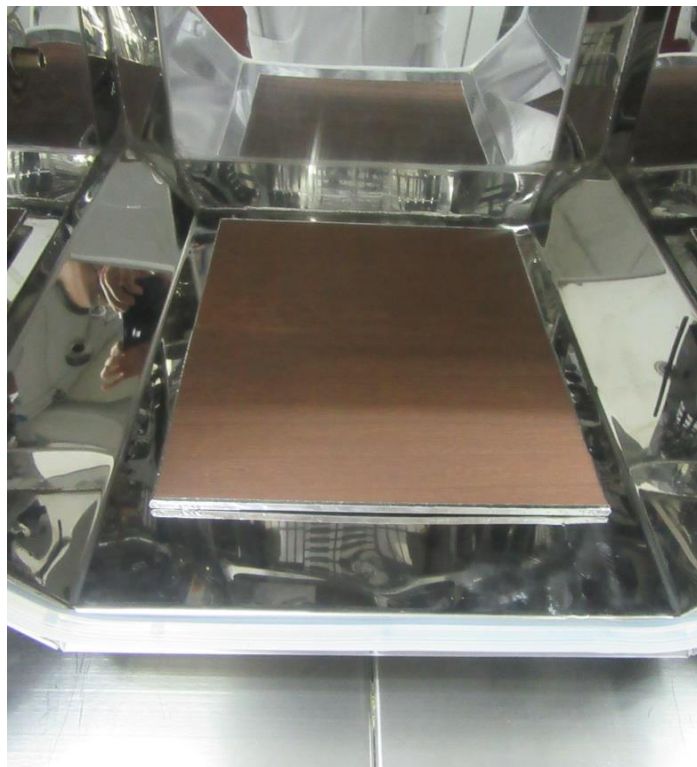
No.	Compound Name	CAS Number	Estimated concentration (µg/m ³)		
			SC	PO	R
1	Not Detected	/	/	/	/

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Test Photo:



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APPENDIX: SAMPLE RECEIVED PHOTO




REPORT AUTHORIZED

When signed with physical or electronic signature, the contents of this report have been prepared and approved per Intertek's quality process in accordance with ISO 17025.

Flora Fan
Name: Flora Fan
Title: Reviewer

Grace Wang
Name: Grace Wang
Title: Project Engineer



Revision:

NO.	DATE	CHANGES	AUTHOR	REVIEWER
181022005SHF-001	2018/11/21	First issue	Grace Wang	Flora Fan