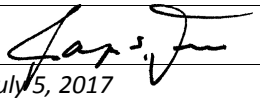
BERKELEY ANALYTICAL
815 Harbour Way South, Suite 6
Richmond, CA 94804-3614
Ph. 510-236-2325; Fax 510-236-2335
E-mail info@berkeleyanalytical.com

Product Sample Formaldehyde Emissions

Customer & Building Product Sample Information

Report Certification	
Report number	962-001-03A-Jul0517
Report date	Jul 5, 2017
Certified by (Name/Title)	Raja S. Tannous, Laboratory Director
Signature	
Date	*July 5, 2017*

Standards	
Test method	ASTM D6007
Analytical method	ASTM D5197
Preparation/Configuration	Deconstructed, back-to-back configuration, CARB SOP 9/13/2013

Customer Information	
Manufacturer or organization	Eternity Flooring
City/State/Country	Pacoima, CA USA
Contact name/Title	Jessica Palma, Manager
Phone number	818.361.0099

Product Sample Information	
Manufacturer (if not customer)	Same as above
Product name / Number	Rustic Olive - Exotic Collection / HXM5O
Lot Number	20170506
Product category	Laminate Flooring (09 62 19)
Core type	MDF/HDF
Manufacturing location or mill	Eternity Pacoima, CA
Date sample manufactured	May 6, 2017
Date sample collected	not provided
Sample selected & collected by	Customer
Date sample received by lab	Jun 16, 2017
Sample shipped / stored in	Vapor barrier
Condition of received sample	OK
Lab sample tracking number	**962-001-03A**
Conditioning start date & duration	Jun 22, 2017; 168 hours
Test start date & duration	Jun 29, 2017; 1 days (18 hours)

Formaldehyde Concentration Test Result

Test Results – The measured formaldehyde chamber concentration and the concentration adjusted to standard conditions of 25 °C and 50% relative humidity are presented in Table 1.

Table 1. Test results. Measured and standardized formaldehyde concentration (ppm)

Compound	Elapsed Time (h)	Chamber Concentration ($\mu g/m^3$)	Chamber Concentration (ppm)	Standardized Concentration (ppm)	Meets CARB Phase 2 Standard?*
Formaldehyde	18	73.4	0.060	0.055	Yes

*CARB Phase 2 standard for corresponding composite wood core material (Table 2)

CARB Phase 2 – The California Air Resources Board (CARB) Phase 2 formaldehyde emission standards are published in Final Regulation Order, Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products, Section 93120.2 Table 1, Title 17, California Code of Regulations. The emission standards are standardized chamber concentrations for composite wood core materials measured by primary method ASTM Standard Method E-1333. Secondary test method ASTM Standard Method D6007 has been shown to produce equivalent results. CARB Phase 2 formaldehyde emission standards are reproduced in Table 2.

Table 2. CARB Phase 2 Formaldehyde Emission Standards in parts-per-million (ppm)

Composite Wood Core Material	Phase 2 Effective Date	Specified Q/A Test Ratio (m/h)	Phase 2 Emission Standard (ppm)
Hardwood plywood (HWPW)	7/1/2012	1.173	**≤0.05**
Particleboard (PB)	1/1/2011	1.173	**≤0.09**
Medium Density Fiberboard (MDF)	1/1/2011	1.905	**≤0.11**
Thin MDF <8mm thick	1/1/2012	1.905	**≤0.13**

Test Standards & Procedures

Test Protocol Summary* – Formaldehyde emission testing is performed following ASTM Standard Method D6007. As employed herein, ASTM D6007 is a quality control test as defined by CARB. Particleboard and hardwood plywood panels (veneer core and composite core) are tested with an area-specific airflow rate (Q/A) = 1.173 m/h. MDF/HDF and thin MDF (<8mm thick) are tested with Q/A = 1.905 m/h. The specimen is placed directly into the conditioning environment and maintained at specified temperature and relative humidity (RH) conditions for the specified period. Conditioning formaldehyde concentration is ≤0.1 ppm. At the end of this period, the specimen is transferred to a small-scale chamber. Chamber parameters for the test are shown in Table 3.

Sampling and analysis for formaldehyde are performed following ASTM Standard Method D5197. Sample is collected at end of test period at 0.6 L/m for 60 min. The test result is determined as chamber formaldehyde concentration in parts-per-million (ppm) as shown in Calculation and Comments section. Measured chamber concentration is corrected to standard conditions of 25 °C and 50% RH. Chamber background formaldehyde concentration is ≤0.002 ppm unless otherwise noted.

*All standards identified in this section are included in Berkeley Analytical's scope of ISO/IEC17025 accreditation, Testing Laboratory TL-383, International Accreditation Service, www.iasonline.org

Test Standards & Procedures, Continued

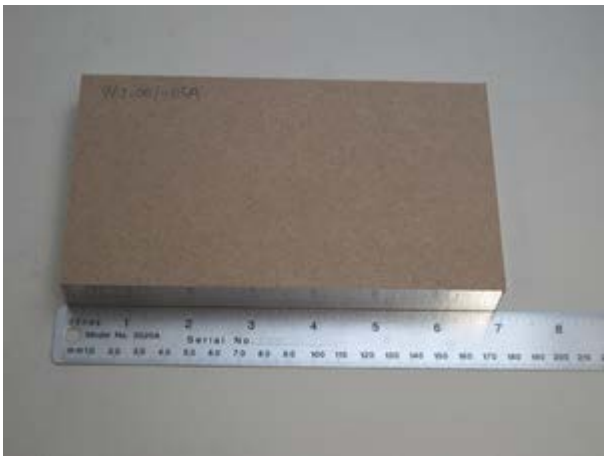
Test Specimen Preparation – Product sample was deconstructed following California Air Resources Board *Standard Operating Procedure for Finished Good Test Specimen Preparation Prior to Analysis of Formaldehyde Emissions from Composite Wood Products*, 9/13/2013. Bottom surface was removed by sanding. Sanded surfaces of specimen were exposed using back-to-back configuration. The test results are specific to the test item.

Table 3. Chamber conditions for test

Parameter	Symbol	Units	Value
Tested specimen exposed area	A_S	m^2	0.035
Chamber volume	V_C	m^3	0.067
Inlet gas flow rate	Q_C	m^3/h	0.067 (0.064-0.070)
Area-specific airflow rate	Q_C/A_S	m/h	1.90
Temperature		^oC	25.5
Relative humidity		%	52.3
Test period duration		h	18

Photographs of Tested Product Specimen

Photo Documentation – The product sample specimen is photographed following specimen preparation. The top and bottom faces of the specimen are photographed.



Calculaton and Comments

Equation Used in Calculation – Chamber concentration is converted from µg/m^3 to ppm, using Equation 1:

$$C = (M \times 24.47) / (V \times 30.03) / 1000 \qquad (1)$$

where:

C = Formaldehyde parts-per-million in air, ppm,
M = Mass of formaldehyde in sample, µg,
V = Volume of air sample at standard conditions (25 ^{o}C, 101 kPa), L,
30.03 = Molecular weight of formaldehyde,
24.47 = µL of formaldehyde gas in 1 µmol at 25 ^{o}C, 101 kPa, and
1000 = Conversion factor.

Calculated formaldehyde concentration is rounded to nearest 0.01 ppm. Measured concentration is adjusted to standard conditions of 25 ^{o}C and 50% RH using conversion factors in ASTM Standard Method D6007, Annex Tables A1.1 and A2.1, respectively.

Comments: None

END OF REPORT

berkeley analytical

Ship to: 815 Harbour Way South, No. 6 Richmond, CA 94804
(Ph) 510-236-2325, (Fx) 510-236-2335
info@berkeleyanalytical.com

Chain of Custody for ASTM D6007 Emission Test

A Separate COC must be completed for EACH product/material sample
A link to Berkeley Analytical's Services Agreement is included in this workbook. By submitting samples, customer acknowledges and accepts these terms & conditions unless a prior written contract is in effect.

Berkeley Analytical Quotation Number:	170614-2
Purchase Order (enter company & number):	3917

Requested Test	
Test Method to be performed	ASTM D6007
Test results acceptance criterion	CARB ATCM Phase 2
Test schedule	7-day Conditioning, 20-hrs Test
CARB Phase 2 Screening Test?	☐ Yes ☒ No
TPC Certification Test?	☐ Yes ☒ No If Yes TPC #:

Customer Information	
Company:	ETERNITY FLOORING
Street Address:	9880 SAN FERNANDO RD
City/State/Zip(postal code):	PACOIMA CA 91331
Country:	USA
Contact Name & Title (for reporting):	JESSICA PALMA MANAGER
Contact Phone/Fax Numbers:	818.361.0099 / 818 480 7844
Contact E-mail Address:	JESSICA@ETERNITYFLOORING.COM
Financially Responsible Co.:	ETERNITY FLOORING

For Berkeley Analytical Use:		
Report ID		
Billing Reference		

Customer Instructions for Sample Prep., Test Type, schedule, etc.

Small-scale, composite wood Formaldehyde emission screening test or TPC Certification test by ASTM D6007 with sampling and analysis by ASTM D5197. Deconstruction of finished product following CARB SOP if required. CARB Phase 2 acceptance criterion, 7 days conditioing unless shorter time is specified followed by chamber test with sampling for formaldehyde in 16 to 20 hours interval.

Manufacturer (if different from customer)	
Company :	
City/State/Country:	
Contact Name/Title:	
Phone Number/E-mail Address:	

Sample Details		
Product Commercial Name*:	RUSTIC OLIVE - EXOTIC Collection	
Product Commercial Part No.:	HXM50	
Manufacturer Lot / Batch No. *:	20170506	
Date Manufactured *:	05-06-17	
Product Category & Use *:	FLOORING	
Sample Construction Material *:	LAMINATE/HDF	
Plant Name & Location *:	ETERNITY PACOIMA, CA	
Collection Location within Plant :	WAREHOUSE	
Date & Time Collected* :		
Number of Sample Pieces *:	Photo(s) of Collection Location:	☐ Yes
Sample Collected by *:	JESSICA	
Phone/Fax Numbers*:	818 361 0099 / 818 480 7844	
E-mail Address*:	JESSICA@ETERNITYFLOORING.COM	

Customer Authorizes Laboratory to Submit Copies of Test Report to:	
Contact/E-mail Address:	JESSICA / JESSICA@ETERNITYFLOORING.COM
Organization:	ETERNITY
Contact/E-mail Address:	
Organization:	

Shipping Details	
Packed & Shipped By:	JESSICA
Shipping Date :	6/14/17
Carrier/Airbill Number :	GSO / 536494272

For Berkeley Analytical Use Only	
Condition of Shipping Package:	ok
Condition of Sample:	ok
Lab Tracking Number:	962-001-03A

Astrisk (*) See Notes Tab

Sample Handling

Relinquished By	Received By*	Signature	Date	Company
JESSICA PALMA	ALEC HUANG	Jessica Palma	6/14/17	ETERNITY
		Alec Huang	6-16-17	BKA