


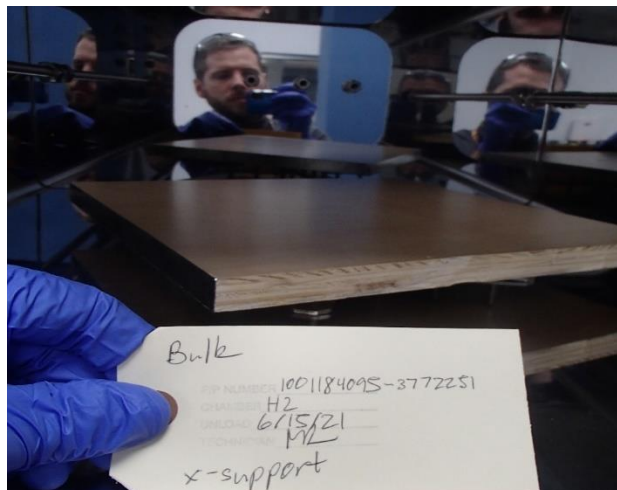


GREENGUARD CERTIFICATION TEST REPORT					
Customer Information	ROSEBURG FOREST PRODUCTS SOUTH L P DAWN GARCIA 3660 GATEWAY ST SPRINGFIELD OR 97477				
Product Description	Roseburg SkyPly® RediFinish Hardwood Plywood Panels				
Test Group	Plywood Products - 03				
Category	General Construction Materials				
Test Type	Certification		Year 6		
Test Method	UL 2821 "GREENGUARD Certification Program Method for Measuring and Evaluating Chemical Emissions From Building Materials, Finishes and Furnishings Using Dynamic Environmental Chambers"				
	Environment	TVOC	Formaldehyde	Total Aldehydes	CREL/TLV
GREENGUARD	Office	✓	✓	✓	✓
✓ - meets criteria; X - over criteria					
Authorized by	 Allyson M. McFry Chemistry Laboratory Director				

MODELING FOR PREDICTED AIR CONCENTRATION					
Certification Program	Environment Basis	Modeling Basis	Surface Area (m ²)	Room Volume (m ³)	ACH (1/hr)
GREENGUARD	CDPH/EHLB/Standard Method	wall	33.4	30.6	0.68

Note that certain environments and/or modeling scenarios may prevent assessment of low level CREL and TLV analytes due to the emissions being below the lower LOQ (0.04 µg). For example, benzene ½ CREL is 1.5 µg/m³.

PHOTOGRAPH OF SAMPLE



GREENGUARD RESULTS SUMMARY

Product Description		Roseburg SkyPly® RediFinish Hardwood Plywood Panels	
GREENGUARD Acceptable IAQ Criteria		168 Hour Product Measurement	Product Compliance for IAQ
TVOC ^a	≤ 0.5 mg/m ³	0.002 mg/m ³	Yes
Formaldehyde	≤ 0.05 ppm	0.005 ppm	Yes
Total Aldehydes ^b	≤ 0.10 ppm	0.006 ppm	Yes
Individual VOCs	all ≤ 1/10 TLV	----- ^c	Yes
^a “TVOC” is the sum of all VOCs measured via TD/GC/MS which elute between n-hexane (C ₆) and n-hexadecane (C ₁₆) quantified using calibration to a toluene surrogate. ^b “Total Aldehydes” is the sum of all measured normal aldehydes from formaldehyde to nonanal, plus benzaldehyde. Heptanal through nonanal are analyzed using TD/GC/MS. The remaining aldehydes are analyzed using HPL/UV methodology. All aldehydes are quantified to authentic standards. ^c All individual VOCs detected met the criteria of less than 1/10 the ACGIH established threshold limit values (TLVs).			

PROJECT DESCRIPTION

This study was conducted using a UL Environment's GREENGUARD test method following the requirements of GREENGUARD Certification program. The product was monitored for emissions of total volatile organic compounds (TVOC), formaldehyde, target list aldehydes, and other individual volatile organic compounds (VOCs) over a 168 hour exposure period. These emissions were measured and the resultant air concentrations were determined for each of the potential pollutants. Determination of compliance is based on predicted air concentrations modeled using the GREENGUARD program room loading.

Report Outline:

Table 1	Environmental Chamber Study Parameters
Table 2	Emission Factors and Predicted Air Concentrations
Table 3	Chamber Concentrations of Identified VOCs
Table 4	Emission Factors of Identified VOCs
Table 5	Chamber Concentrations of Target List Aldehydes
Table 6	Emission Factor of Target List Aldehydes
Table 7	Supplemental Emissions Information
Chain of Custody	Chain of Custody

Download more information regarding UL's technical references and resources, product evaluation methodologies information, quality control program, and environmental chamber evaluations from our website [click here](#) or <https://www.ul.com/offerings/greenguard-certification>

For RSD, Quality Assurance Report or other quality documents, [Request](#) here or contact ULE.

TABLE 1

ENVIRONMENTAL CHAMBER STUDY PARAMETERS			
Product Description	Roseburg SkyPly® RediFinish Hardwood Plywood Panels		
Product Manufacture Date	May 27, 2021		
Product Collection Date	May 27, 2021		
Product Shipping Date	May 27, 2021		
Date Received	June 3, 2021		
Test Description	The product was received by UL Environment as packaged and shipped by the customer. The package was visually inspected and stored in a controlled environment immediately following sample check-in. Just prior to loading, the product was unpackaged and prepared for the required loading to expose the finished surfaces only. The sample was placed inside the environmental chamber and tested according to the specified protocol.		
Test Period	June 8, 2021 - June 15, 2021		
Area	two-sided area = 0.1842 m ²		
Environmental Chamber ID and Volume	SH2 - 0.0867 m ³		
Product Loading	2.12 m ² /m ³		
Test Conditions	1.00 ± 0.05 ACH 50% RH ± 5% RH 22.7°C - 23.6°C		
*Accredited Laboratory Locations	Testing Laboratory	Analytical Laboratory	Technical Reporting Location
	ULE - Marietta	ULE - Marietta	ULE - Marietta

The temperature range specification is 23°C ± 1°. The actual temperature range listed above may vary slightly. If the range is outside this specification, data was reviewed to ensure a negative impact did not occur.

*Accredited Laboratory Locations	
Location	Address
ULE - Marietta	UL Environment 2211 Newmarket Parkway, Marietta, GA 30067-9399 USA
ULE - Guangzhou	UL Verification Services (Guangzhou) 1-3F & Room 501, Building 2 (R&D Center A1), No. 25, South Huanshi Avenue, Nansha District, Guangzhou 511458, China
ULE - Cabiato	UL International Italia S.r.l ATTN: IAQ Laboratory Via Europa, 9, I – 22060 – Cabiato (Como), Italia
ULE - Vietnam	UL VS (VIET NAM) CO. LTD., Lot C5, Conurbation 2, Street K1, Cat Lai Industrial Zone, Thanh My Loi Ward, District 2, Ho Chi Minh City, Vietnam
UL - Shimadzu	Shimadzu Techno-Research, Inc. 1, Nishinokyo-Shimoaicho Nakagyo-ku, Kyoto 604-8436 Japan
KCL	Korea Conformity Laboratories #805, I-Valley, 149 Gongdan-ro Gunpo-si, Gyeonggi-do, 15849 Korea
Servaco	Servaco Product Testing N.V. Boertang 200 2400 MOL Belgium

This test is accredited and meets the requirements of ISO/IEC 17025 as verified by ANSI National Accreditation Board. Refer to certificate and scope of accreditation AT-1297.

TABLE 2

Product Description		Roseburg SkyPly® RediFinish Hardwood Plywood Panels		
TVOC CHAMBER CONCENTRATIONS, EMISSION FACTORS AND PREDICTED AIR CONCENTRATIONS				
Elapsed Exposure Hour*	Chamber Concentration $\mu\text{g}/\text{m}^3$	Emission Factor $\mu\text{g}/\text{m}^2\cdot\text{hr}$	Predicted Air Concentration** $\mu\text{g}/\text{m}^3$	
0 (Background)	BQL	BQL	---	
6	46.1	21.6	35	
24	13.1	6.2	10	
48	8.7	4.1	7	
72	6.9	3.2	6	
96	6.3	3.0	4	
168	2.1	1.0	2	
1 st Order Exponential Decay Constant = $k_T = 0.012$				
FORMALDEHYDE CHAMBER CONCENTRATIONS, EMISSION FACTORS AND PREDICTED AIR CONCENTRATIONS				
Elapsed Exposure Hour*	Chamber Concentration $\mu\text{g}/\text{m}^3$	Emission Factor $\mu\text{g}/\text{m}^2\cdot\text{hr}$	Predicted Air Concentration**	
			$\mu\text{g}/\text{m}^3$	ppm
0 (Background)	BQL	BQL	---	---
6	17.2	8.1	13	0.011
24	12.7	6.0	9	0.007
48	10.7	5.0	9	0.007
72	10.5	4.9	8	0.007
96	10.3	4.9	8	0.006
168	8.7	4.1	6	0.005
1 st Order Exponential Decay Constant = $k_F = 0.002$				
TARGET LIST ALDEHYDES CHAMBER CONCENTRATIONS, EMISSION FACTORS AND PREDICTED AIR CONCENTRATIONS				
Elapsed Exposure Hour*	Chamber Concentration $\mu\text{g}/\text{m}^3$	Emission Factor $\mu\text{g}/\text{m}^2\cdot\text{hr}$	Predicted Air Concentration**	
			$\mu\text{g}/\text{m}^3$	ppm
0 (Background)	BQL	BQL	---	---
6	31.1	14.6	23	0.014
24	19.3	9.1	13	0.009
48	14.7	6.9	13	0.008
72	15.0	7.1	12	0.007
96	14.4	6.8	11	0.007
168	12.4	5.8	9	0.006
1 st Order Exponential Decay Constant = $k_A = 0.003$				

*Exposure hours are nominal (± 1 hour).

BQL = Below quantifiable level of 0.04 μg based on a standard 18 L air collection volume for VOCs and 0.1 μg based on a standard 45 L air collection volume for aldehydes.

**Predicted Air Concentrations are based on GREENGUARD modeling predicted concentration parameters. For more information [click here](#).

TABLE 3

Product Description		Roseburg SkyPly® RediFinish Hardwood Plywood Panels						
CHAMBER CONCENTRATIONS OF IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS								
CAS Number	Compound	Elapsed Exposure Hour (µg/m³)						
		0 (BG)	6	24	48	72	96	168
104-76-7	1-Hexanol, 2-ethyl†	BQL	39.9	16.0	9.6	7.0	5.9	2.7
3333-52-6	Tetramethylbutanedinitrile*†	BQL	6.9					
100-52-7	Benzaldehyde	BQL	4.3	2.9	2.5	2.4	2.5	2.1
7473-98-5	2-Hydroxy-iso-butyrophenone*	BQL	3.2					
103-11-7	2-Propenoic acid, 2-ethylhexyl ester (2-Ethylhexyl acrylate)	BQL	2.8					
123-86-4	Acetate, butyl	BQL	2.5					
108-88-3	Toluene (Methylbenzene)	BQL	2.4					

TABLE 4

Product Description		Roseburg SkyPly® RediFinish Hardwood Plywood Panels						
EMISSION FACTORS OF IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS								
CAS Number	Compound	Elapsed Exposure Hour (µg/m²·hr)						
		6	24	48	72	96	168	
104-76-7	1-Hexanol, 2-ethyl†	18.8	7.5	4.5	3.3	2.8	1.3	
3333-52-6	Tetramethylbutanedinitrile*†	3.2						
100-52-7	Benzaldehyde	2.0	1.4	1.2	1.1	1.2	1.0	
7473-98-5	2-Hydroxy-iso-butyrophenone*	1.5						
103-11-7	2-Propenoic acid, 2-ethylhexyl ester (2-Ethylhexyl acrylate)	1.3						
123-86-4	Acetate, butyl	1.2						
108-88-3	Toluene (Methylbenzene)	1.1						

*Indicates NIST/EPA/NIH best library match only based on retention time and mass spectral characteristics.

†Denotes quantified using multipoint authentic standard curve. Other VOCs quantified relative to toluene.

Quantifiable level is 0.04 µg based on a standard 18 L air collection volume.

TABLE 5

Product Description		Roseburg SkyPly® RediFinish Hardwood Plywood Panels						
CHAMBER CONCENTRATIONS OF TARGET LIST ALDEHYDES								
CAS Number	Compound	Elapsed Exposure Hour (µg/m³)						
		0 (BG)	6	24	48	72	96	168
4170-30-3	2-Butenal	BQL						
75-07-0	Acetaldehyde	BQL	4.0	2.2				
100-52-7	Benzaldehyde	BQL	6.7	4.4	4.0	4.5	4.1	3.7
5779-94-2	Benzaldehyde, 2,5-dimethyl	BQL						
529-20-4	Benzaldehyde, 2-methyl	BQL						
620-23-5 / 104-87-0	Benzaldehyde, 3- and/or 4-methyl	BQL						
123-72-8	Butanal	BQL						
590-86-3	Butanal, 3-methyl	BQL						
50-00-0	Formaldehyde	BQL	17.2	12.7	10.7	10.5	10.3	8.7
66-25-1	Hexanal	BQL	3.2					
110-62-3	Pentanal	BQL						
123-38-6	Propanal	BQL						

TABLE 6

Product Description		Roseburg SkyPly® RediFinish Hardwood Plywood Panels						
EMISSION FACTORS OF TARGET LIST ALDEHYDES								
CAS Number	Compound	Elapsed Exposure Hour (µg/m²·hr)						
		6	24	48	72	96	168	
4170-30-3	2-Butenal							
75-07-0	Acetaldehyde	1.9	1.0					
100-52-7	Benzaldehyde	3.2	2.1	1.9	2.1	1.9	1.7	
5779-94-2	Benzaldehyde, 2,5-dimethyl							
529-20-4	Benzaldehyde, 2-methyl							
620-23-5 / 104-87-0	Benzaldehyde, 3- and/or 4-methyl							
123-72-8	Butanal							
590-86-3	Butanal, 3-methyl							
50-00-0	Formaldehyde	8.1	6.0	5.0	4.9	4.9	4.1	
66-25-1	Hexanal	1.5						
110-62-3	Pentanal							
123-38-6	Propanal							

Quantifiable level is 0.1 µg is based on a standard 45 L air collection volume.

TABLE 7

SUPPLEMENTAL EMISSIONS INFORMATION

The table below represents this product's identified chemical emissions found on certain regulatory lists. This list only provides a statement regarding possible health effects associated with this compound and not the relative risks of exposure. Proper interpretation of the risks associated with exposure to a given regulated compound requires a more detailed evaluation of toxicological activity. Certain purchasing programs may require this information be submitted.

Product Description		Roseburg SkyPly® RediFinish Hardwood Plywood Panels					
CAS Number	Compound	✓() = FOUND IN LISTING (CLASS)					
		CAL PROP. 65	NTP	IARC	CAL AIR TOXICS	CREL	TLV
103-11-7	2-Propenoic acid, 2-ethylhexyl ester (2-Ethylhexyl acrylate)			✓(3)			
75-07-0	Acetaldehyde	✓(1)	✓(2B)	✓(2B)	✓(IIA)	✓	✓
123-86-4	Acetate, butyl						✓
50-00-0	Formaldehyde	✓(1)	✓(2A)	✓(1)	✓(IIA)	✓	✓
3333-52-6	Tetramethylbutanedinitrile†						✓
108-88-3	Toluene (Methylbenzene)	✓(2)		✓(3)	✓(IIA)	✓	✓

†Denotes quantified using multipoint authentic standard curve

CAL Prop. 65: California Health and Welfare Agency, Proposition 65 Chemicals

1 = known to cause cancer

2 = known to cause reproductive toxicity

NTP: National Toxicology Program

2A = known to be carcinogenic to humans

2B = reasonably anticipated to be carcinogenic to humans

IARC: International Agency on Research of Cancer

1 = carcinogenic to humans

3 = unclassifiable as to carcinogenicity to humans

2A = probably carcinogenic to humans

4 = probably not carcinogenic to humans

2B = possibly carcinogenic to humans

California Air Toxics

I = Substances identified as Toxic Air Contaminants, known to be emitted in California, with a full set of health values reviewed by the Scientific Review Panel.

IIA = Substances identified as Toxic Air Contaminants, known to be emitted in California, with one or more health values under development by the Office of Environmental Health Hazard Assessment for review by the Scientific Review Panel.

IIB= Substances NOT identified as Toxic Air Contaminants, known to be emitted in California, with one or more health values under development by the Office of Environmental Health Hazard Assessment for review by the Scientific Review Panel.

III = Substances known to be emitted in California and are NOMINATED for development of health values or additional health values.

IVA = Substance identified as Toxic Air Contaminants, known to be emitted in California and are TO BE EVALUATED for entry into Category III.

IVBA =Substance NOT identified as Toxic Air Contaminants, known to be emitted in California and are TO BE EVALUATED for entry into Category III.

V = Substance identified as Toxic Air Contaminants, and NOT KNOWN TO BE EMITTED from stationary source facilities in California based on information from the AB 2588 Air Toxic "Hot Spots" Program and the California Toxic Release Inventory.

VI = Substances identified as Toxic Air Contaminants, NOT KNOWN TO BE EMITTED from stationary source facilities in California, and are active ingredients in pesticides in California.

CREL: California Office of Environmental Health's Hazard Assessment (OEHHA), Chronic Reference Exposure Levels

✓ = Found in Listing

ACGIH TLV American Conference of Governmental Industrial Hygienists Threshold Limit Values for Chemical Substances and Physical Agents.

✓ = Found in Listing.

Date Issued: June 22, 2021
 Product ID#: 1001184095-3772251
 Test Report #: 1001184095-3772251
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 BCM2

CHAIN OF CUSTODY

INTERNAL Use Only	
Project #	1001184095
Product #	3772251
Order #	□□□□□□□□□□ 13766011
Task Line	3.1 UL BU
_____ of _____	



Place UL barcode here



Rush Request – Subject to upcharge. Customer must confirm with UL prior to submitting product.

GREENGUARD Test Information			
Test Type	<input checked="" type="checkbox"/> Certification Test • Annual/Initial Year <u>6</u>		<input type="checkbox"/> Out-of-Scope Test
	<input type="checkbox"/> Quarterly Test • Year Quarter		<input type="checkbox"/> Profile Study Test
Service Line	<input checked="" type="checkbox"/> GREENGUARD <input type="checkbox"/> GREENGUARD GOLD <input type="checkbox"/> Other _____		
Test Group	Plywood Products - 03		
Product Category	Building Construction Materials	Subcategory	
Application	<input type="checkbox"/> Floor/Ceiling <input type="checkbox"/> Panel <input type="checkbox"/> Wall	<input type="checkbox"/> Work Surface <input type="checkbox"/> Other: _____	
Wet Products Only	Coverage Rate	Density	Specific Gravity
Product and Company Information			
Product Description	Roseburg SkyPly® RediFinish Hardwood Plywood Panels		
Manufacture ID#	Roseburg Forest Products		
Company Name	Roseburg	Date Manufactured	05/27/2021
		Contact Name	Dawn Garcia
Address		Job Title	
		Contact Phone	
		Contact Email	D a w n G @ r f p c o . c o
Collection Information			
Collector Name	Mitchell Black	Date Collected	05/27/2021
Collector Phone	541-530-2357	Time Collected	5:15 Am
Collector Signature	<i>Mitchell Black</i>	Collection Location	Dillard ply
Shipping Information			
Carrier	UPS		
Shipper Name	Candi Gaedecke	Date Shipped	05/27/2021
Shipper Phone	(541) 679-3311	Time Shipped	10:00am
Shipper Signature	<i>C. Gaedecke</i>	Air Bill #	12 7R1 271 03 9830 8107
Sample Submitted to			
<input type="checkbox"/> UL Environment (Marietta) 2211 Newmarket Pkwy Suite 106 Marietta, GA 30067, USA	<input type="checkbox"/> UL Verification Services (Guangzhou) Building A1, 3F, Nansha Science and Technology Innovation Ctr. No. 25, South Huanshi Avenue, Nansha District, Guangzhou 511458, China	<input type="checkbox"/> UL International Italia S.r.l. ATTN: IAQ Laboratory Via Europa, 9 I - 22060 - Cabiante (Como), Italia	<input type="checkbox"/> UL VS (Vietnam) Co., Ltd. Lot C5, Conurbation 2, Street K1, Cat Lai Industrial Zone Thanh My Loi Ward, District 2 Ho Chi Minh City, Vietnam
Post Testing Sample Disposition			
(Sample will be disposed of 30 days after report is issued if information below is not provided)			
Return Shipping Co.		Customer Shipping Acct #	
Internal Use Only – Receiving Information			
Receiver Name	<i>UPS</i>	Receiver Signature	<i>[Signature]</i>
Condition Upon Arrival	<input checked="" type="checkbox"/> Acceptable <input type="checkbox"/> Not Acceptable	Receive Date	6-3-21
Condition Notes		Receive Time	12:50 PM
Completed By	ULE	Based On	Program Testing Schedule
		Date	03/31/2021

00-EN-F0853 – Issue 6.0