



EPD

CERTIFICATION

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WAVERLY COLLECTION

Date Issued: March 4, 2022
 Product ID#: 1001393139-4463977
 Test Report #: 1001393139-4463977
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GREENGUARD CERTIFICATION TEST REPORT					
Customer Information	BESTILE S.L. SAMER SAKA PTA. TORRETA, S/N 147 ALCORA 12110 SPAIN				
Product Description	Watercolor				
Test Group	Porcelain Tiles - 01				
Category	Flooring / Wall				
Test Type	Certification	Year 3			
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	✓	✓	✓	✓
GREENGUARD Gold	Office	✓	✓	✓	✓
	Classroom	✓	✓	✓	✓
✓ - meets criteria; X - over criteria					
Authorized by	 Matteo Longoni EMEA + LA Operations Manager				

MODELING FOR PREDICTED AIR CONCENTRATION					
Certification Program	Environment Basis	Modeling Basis	Surface Area (m ²)	Room Volume (m ³)	ACH (1/hr)
GREENGUARD and GREENGUARD Gold Office	CDPH/EHLB/Standard Method	floor	11.1	30.6	0.68
GREENGUARD Gold Classroom	CDPH/EHLB/Standard Method	floor	89.2	231	0.82

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 1/2 CREL is 1.5 µg/m³.

PHOTOGRAPH OF SAMPLE





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GREENGUARD RESULTS SUMMARY

Table with 4 columns: Product Description, Watercolor, GREENGUARD Acceptable IAQ Criteria, 168 Hour Product Measurement, Product Compliance for IAQ. Rows include TVOC, Formaldehyde, Total Aldehydes, 4-Phenylcyclohexene, and Individual VOCs.

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.

Report Outline:

Table with 2 columns: Table ID, Link. Rows include 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), Appendix 1 (GREENGUARD Gold Results Summary).

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.



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TABLE 1

ENVIRONMENTAL CHAMBER STUDY PARAMETERS			
Product Description	Watercolor		
Product Manufacture Date	May 3, 2021		
Product Collection Date	December 21, 2021		
Product Shipping Date	December 21, 2021		
Date Received	December 23, 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. The sample was placed inside the environmental chamber and tested according to the specified protocol.		
Test Period	January 10, 2022 – January 17, 2022**		
Area	one-sided area = 0.105 m ²		
Environmental Chamber ID and Volume	SBC - 0.0893 m ³		
Product Loading	1.18 m ² /m ³		
Test Conditions	1.00 ± 0.05 ACH 50% RH ± 5% RH 23.0°C ± 2°C		
*Accredited Laboratory Locations	Testing Laboratory	Analytical Laboratory	Technical Reporting Location
	ULE - Cabiante	ULE - Cabiante	ULE - Marietta

**The manufacturing date was not within 10 days of receipt and testing of product.

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 - Cabiante	UL International Italia S.r.l ATTN: IAQ Laboratory Via Europa, 9, I – 22060 – Cabiante (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-1297.01.



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TABLE 2

Product Description	Watercolor			
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	109	93.0	50	
24	58.2	49.5	28	
48	40.9	34.9	20	
72	43.3	36.9	15	
96	15.4	13.1	11	
168	6.2	5.3	4	
1 st Order Exponential Decay Constant = $k_T = 0.013$				
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	BQL	BQL	< 1	< 0.001
24	BQL	BQL	< 1	< 0.001
48	BQL	BQL	< 1	< 0.001
72	BQL	BQL	< 1	< 0.001
96	BQL	BQL	< 1	< 0.001
168	BQL	BQL	< 1	< 0.001
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	BQL	BQL	< 1	< 0.001
24	BQL	BQL	< 1	< 0.001
48	BQL	BQL	< 1	< 0.001
72	BQL	BQL	< 1	< 0.001
96	BQL	BQL	< 1	< 0.001
168	BQL	BQL	< 1	< 0.001

*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](#).



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TABLE 3

Product Description		Watercolor						
CHAMBER CONCENTRATIONS OF IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS								
CAS Number	Compound	Elapsed Exposure Hour (µg/m³)						
		0 (BG)	6	24	48	72	96	168
71-36-3	1-Butanol (N-Butyl alcohol) [†]	BQL	124	91.8	63.8	69.4	27.8	16.6
142-96-1	n-Butyl ether	BQL	18.0	8.2	5.9	5.6	3.0	
104-76-7	1-Hexanol, 2-ethyl [†]	BQL	16.5	6.2	4.2	4.2	2.3	
590-01-2	Butyl propionate (Propanoic acid, butyl ester)	BQL	8.9	4.0	3.0	3.3	2.0	
141-32-2	Butyl acrylate (2-Propenoic Acid, butyl ester)	BQL	8.7	4.0	3.0	3.0		
123-86-4	Acetate, butyl	BQL	6.1	3.0	2.1	2.3		
109-21-7	Butanoic acid, butyl ester*	BQL	4.1					
78-92-2	2-Butanol (s-Butyl alcohol) [†]	BQL	3.0	3.1	3.1			
---	Hydrocarbons	BQL	2.7					
1120-21-4	Undecane	BQL	2.2					

TABLE 4

Product Description		Watercolor						
EMISSION FACTORS OF IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS								
CAS Number	Compound	Elapsed Exposure Hour (µg/m²•hr)						
		6	24	48	72	96	168	
71-36-3	1-Butanol (N-Butyl alcohol) [†]	105	78.0	54.3	59.0	23.6	14.1	
142-96-1	n-Butyl ether	15.3	7.0	5.0	4.8	2.6		
104-76-7	1-Hexanol, 2-ethyl [†]	14.0	5.3	3.5	3.6	1.9		
590-01-2	Butyl propionate (Propanoic acid, butyl ester)	7.5	3.4	2.6	2.8	1.7		
141-32-2	Butyl acrylate (2-Propenoic Acid, butyl ester)	7.4	3.4	2.5	2.6			
123-86-4	Acetate, butyl	5.2	2.5	1.8	1.9			
109-21-7	Butanoic acid, butyl ester*	3.5						
78-92-2	2-Butanol (s-Butyl alcohol) [†]	2.6	2.7	2.6				
---	Hydrocarbons	2.3						
1120-21-4	Undecane	1.9						

*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.



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TABLE 5

Product Description		Watercolor						
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						
100-52-7	Benzaldehyde	BQL						
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						
66-25-1	Hexanal	BQL						
110-62-3	Pentanal	BQL						
123-38-6	Propanal	BQL						

TABLE 6

Product Description		Watercolor						
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							
100-52-7	Benzaldehyde							
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							
66-25-1	Hexanal							
110-62-3	Pentanal							
123-38-6	Propanal							

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



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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.

Table with 7 columns: Product Description, CAS Number, Compound, CAL PROP. 65, NTP, IARC, CAL AIR TOXICS, CREL, TLV. Rows include 1-Butanol, 2-Butanol, Acetate, butyl, and Butyl acrylate.

†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

2A = probably carcinogenic to humans

2B = possibly carcinogenic to humans

3 = unclassifiable as to carcinogenicity to humans

4 = probably not 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. The GREENGUARD program does not include all Chronic Reference Exposure Levels (CRELs) adopted by the State of California Office of Environmental Health Hazard Assessment (OEHHA). For example, caprolactam and 2-butoxyethanol.

✓ = Found in Listing

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

✓ = Found in Listing.