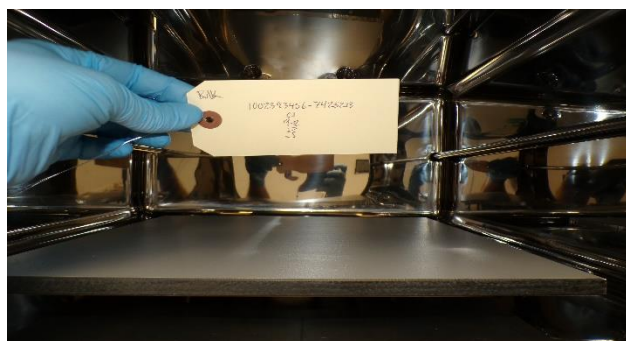


GREENGUARD CERTIFICATION TEST REPORT					
Customer Information	CROWN DECOR PVT. LTD. SOURABH SHARMA BUILDING ONE42, NORTH TOWER 401 TO 403 B/H ASHOK VATIKA, AMBLI BOPAL ROAD AHMEDABAD GUJARAT 380058 INDIA				
	Product Description High Pressure Laminates				
Test Group	Laminate Surfacing Materials - 01				
Category	Surfacing Materials				
Test Type	Certification		Year 12		
	Test Method UL 2821, UL GREENGUARD Certification Program Method for Measuring and Evaluating Chemical Emissions From Building Materials, Finishes and Furnishings, Edition 2, Revision Date 8/24/2022				
	Environment	TVOC	Formaldehyde	Total Aldehydes	CREL/TLV
GREENGUARD	Office	✓	✓	✓	✓
GREENGUARD Gold	Office	✓	✓	✓	✓
	Classroom	✓	✓	✓	✓
✓ - 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 and GREENGUARD Gold Office	CDPH/EHLB/Standard Method	worksurface (2-sided)	6.4	30.6	0.68
GREENGUARD Gold Classroom	CDPH/EHLB/Standard Method	worksurface (2-sided)	2.6	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 ½ CREL is 1.5 µg/m³.

PHOTOGRAPH OF SAMPLE



GREENGUARD RESULTS SUMMARY

Product Description		High Pressure Laminates	
GREENGUARD Acceptable IAQ Criteria		168 Hour Product Measurement	Product Compliance for IAQ
TVOC ^a	≤ 0.25 mg/m ³	< 0.001 mg/m ³	Yes
Formaldehyde	≤ 0.025 ppm	0.006 ppm	Yes
Total Aldehydes ^b	≤ 0.05 ppm	0.006 ppm	Yes
4-Phenylcyclohexene	≤ 0.0033 mg/m ³	< 0.001 mg/m ³	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
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.

TABLE 1

ENVIRONMENTAL CHAMBER STUDY PARAMETERS			
Product Description	High Pressure Laminates		
Product Manufacture Date	Not Provided		
Product Collection Date	Not Provided		
Product Shipping Date	August 16, 2024		
Date Received	August 21, 2024		
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	September 5, 2024 - September 12, 2024**		
Area	two-sided area = 0.1885 m ²		
Environmental Chamber ID and Volume	SC1 - 0.0943 m ³		
Product Loading	2.00 m ² /m ³		
Test Conditions	1.00 ± 0.05 ACH 50% RH ± 5% RH 22.1°C - 23.4°C		
*Accredited Laboratory Locations	Testing Laboratory	Analytical Laboratory	Technical Reporting Location
	ULE - Marietta	ULE - Marietta	ULE - Marietta

**Unable to confirm product meets all GREENGUARD sampling requirements. Date(s) not provided on the Chain of Custody.

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) Room 101, 201, 301, 501, 502, 503, Building A1, No.25. South of Huanshi Avenue, Nansha District, Guangzhou, Guangdong, 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
Normec	Normec Product Testing N.V. Honderdweg 13, 9320 Wetteren, 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		High Pressure Laminates		
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	11.4	5.7	2	
24	5.0	2.5	1	
48	3.9	1.9	1	
72	3.3	1.6	1	
96	3.1	1.6	< 1	
168	2.6	1.3	< 1	
1 st Order Exponential Decay Constant = $k_T = 0.005$				
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	71.5	35.8	11	0.009
24	48.5	24.3	8	0.006
48	55.8	27.9	8	0.006
72	47.8	23.9	8	0.006
96	49.6	24.8	8	0.006
168	46.5	23.3	7	0.006
1 st Order Exponential Decay Constant = $k_F = 0.001$				
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	80.7	40.4	12	0.009
24	52.6	26.4	8	0.006
48	58.1	29.1	8	0.006
72	47.8	23.9	8	0.006
96	49.6	24.8	8	0.006
168	46.5	23.3	7	0.006
1 st Order Exponential Decay Constant = $k_A = 0.001$				

*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](#).

TABLE 3

Product Description		High Pressure Laminates						
CHAMBER CONCENTRATIONS OF IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS								
CAS Number	Compound	Elapsed Exposure Hour (µg/m³)						
		0 (BG)	6	24	48	72	96	168
108-95-2	Phenol†	BQL	22.6	9.8	7.7	6.4	6.2	5.2
124-13-0	Octanal†	BQL	7.2	4.1	2.3			
124-19-6	Nonyl aldehyde (Nonanal)†	BQL	2.0					

TABLE 4

Product Description		High Pressure Laminates					
EMISSION FACTORS OF IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS							
CAS Number	Compound	Elapsed Exposure Hour (µg/m²·hr)					
		6	24	48	72	96	168
108-95-2	Phenol†	11.3	4.9	3.9	3.2	3.1	2.6
124-13-0	Octanal†	3.6	2.1	1.2			
124-19-6	Nonyl aldehyde (Nonanal)†	1.0					

*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		High Pressure Laminates						
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	71.5	48.5	55.8	47.8	49.6	46.5
66-25-1	Hexanal	BQL						
110-62-3	Pentanal	BQL						
123-38-6	Propanal	BQL						

TABLE 6

Product Description		High Pressure Laminates					
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	35.8	24.3	27.9	23.9	24.8	23.3
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.

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		High Pressure Laminates					
CAS Number	Compound	✓() = FOUND IN LISTING (CLASS)					
		CAL PROP. 65	NTP	IARC	CAL AIR TOXICS	CREL	TLV
50-00-0	Formaldehyde	✓(1)	✓(2A)	✓(1)	✓(IIA)	✓	✓
108-95-2	Phenol†			✓(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 (OEHA), 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 (OEHA). 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.

Date Issued: September 19, 2024
Product ID#: 1002393456-7425213
Test Report #: 1002393456-7425213
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BCM2

CHAIN OF CUSTODY

INTERNAL Use Only			
Project #	1002393456		
Product #	7425213		
Task Line	1.1	UL BU	
_____ of _____			
Description		7425213	
High Pressure Laminates			
Customer CROWN DECOR PVT. LTD.			
Received Date: 2024-AUG-30 11:20:29		LabWare Project No: 1002393456 Order No.: 15410963 Oracle Project No.: 4791414621	
2 of 2			
☐ Rush Request - Subject to upcharge. Customer must confirm with L *CUIYCA016*			
GREENGUARD Test Information			
Test Type	☒ Certification Test • Annual/Initial Year 12 ☐ Out-of-Scope Test		
Service Line	☒ GREENGUARD ☒ GREENGUARD GOLD ☐ Profile Study Test		
Test Group	Laminate Surfacing Products - 01		
Product Category	Surfacing Materials		
Application	☐ Floor/Ceiling ☐ Panel	Subcategory	☒ Solid Surfacing
Wet Products Only	Coverage Rate	Density	☒ Work Surface ☐ Other:
Specific Gravity			
Product and Company Information			
Product Description	LAMINATE SURFACE High pressure laminates - TS 2-30-24		
Manufacture ID#			
Company Name	Crown Decor		
Address	INDIA		
Date Manufactured			
Contact Name			
Job Title			
Contact Phone			
Contact Email			
Collection Information			
Collector Name			
Collector Phone			
Collector Signature			
Date Collected			
Time Collected			
Collection Location			
Shipping Information			
Carrier	HL		
Shipper Name			
Shipper Phone			
Shipper Signature			
Date Shipped	8/16/2024		
Time Shipped			
Air Bill #	78 83946980		
Sample Submitted to			
☐ UL Environment (Marietta) 2211 Newmarket Pkwy Suite 106 Marietta, GA 30067, USA	☐ UL Verification Services (Guangzhou) Building A1, 3F, Nansha Science and Technology Innovation Ctr. No. 25, South Huanshi Avenue, Nansha District, Guangzhou 511458, China	☐ UL International Italia S.r.l. ATTN: IAQ Laboratory Via Europa, 9 I - 22060 - Cabiato (Como), Italia	☐ 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	B. B. B. B.		
Condition Upon Arrival	☒ Acceptable ☐ Not Acceptable	Receiver Signature	
Condition Notes		Receive Date	8/21/24
Completed By	Based On	Receive Time	1315
Date			

Form-ULID-004211 (DCS:00-EN-F0853) -
Issue 6.1

APPENDIX 1

GREENGUARD GOLD RESULTS SUMMARY

Product Description		High Pressure Laminates		
COMPLIANCE WITH GREENGUARD GOLD STANDARD				
GREENGUARD Gold Acceptable IAQ Criteria		168 Hour Predicted Concentration**		Product Compliance for IAQ
		Office	Classroom	
TVOC	≤ 0.22 mg/m³	< 0.001 mg/m³	< 0.001 mg/m³	Yes
Formaldehyde	≤ 0.0073 ppm	0.0058 ppm	0.0025 ppm	Yes
Total Aldehydes	≤ 0.043 ppm	0.006 ppm	0.002 ppm	Yes
1-Methyl-2-Pyrrolidinone	≤ 0.16 mg/m³	< 0.001 mg/m³	< 0.001 mg/m³	Yes
Individual VOCs	≤ 1/100 TLV and ≤ ½ chronic REL	See Below		

**Predicted Air Concentrations are based on GREENGUARD Gold modeling predicted concentration parameters.

TOP TEN MOST ABUNDANT IDENTIFIED VOCS, INCLUDING ALDEHYDES					
CAS Number	Compound	168 Hour Chamber Concentration (µg/m ³)	168 Hour Emission Factor (µg/m ² ·hr)	Predicted Air Concentration** (µg/m ³)	
				Office	Classroom
50-00-0	Formaldehyde [‡]	46.5	23.3	7	3
108-95-2	Phenol [†]	5.2	2.6	1	0.3

CHEMICALS OF CONCERN WITH EXISTING TLV, CREL, CA PROP 65 OR CAL TOXIC AIR CONTAMINANT VALUES									
CAS Number	Compound	168 Hour Chamber Concentration (µg/m³)	168 Hour Emission Factor (µg/m²·hr)	168 Hour Predicted Concentration** (µg/m³)		✓ INDICATES PRESENCE ON LIST			
						CA PROP 65	CA TAC	CA CREL ^b	ACGIH TLV
				Office	Classroom				
50-00-0	Formaldehyde [‡]	46.5	23.3	7	3	✓(1)	✓(IIA)	✓	✓
108-95-2	Phenol [†]	5.2	2.6	1	0.3		✓(IIA)	✓	✓

COMPARISON OF COMPOUNDS FOUND WITH EXISTING TLV AND/OR CHRONIC REL						
CAS Number	Compound	1/100 TLV ^a (µg/m ³)	½ CA Chronic REL ^b (µg/m ³)	168 Hour Predicted Concentration** (µg/m ³)		Product Compliance
				Office	Classroom	
108-95-2	Phenol	190	100	1	0.3	Yes

^aAmerican Conference of Governmental Industrial Hygienists. Threshold Limit Values for Chemical Substances and Physical Agents. Cincinnati, OH.

^bChronic Reference Exposure Levels (CRELs) adopted by the State of California Office of Environmental Health Hazard Assessment (OEHHA). Note that Gold assessment is only for the CDPH Table 4-1 CRELs, but other CRELs are included for informational purposes only. Also, not all OEHHA CRELs are pulled into this assessment. For example, caprolactam and 2-butoxyethanol are not included.

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

[‡]Indicates compound identified and quantified by DNPH derivitization and HPLC/UV analysis with multipoint authentic standard.

*Identification based on NIST mass spectral database only.

**Predicted Air Concentrations are based on modeling predicted concentration parameters shown [above](#).