Date Issued: November 25, 2020
Product ID#: 1000927818-2968006
Test Report #: 1000927818-2968006

RES2

GREENGUARD CERTIFICATION TEST REPORT					
Customer Information	BIO SLEEP CONCEPT INC CHRISTIAN MOURGUET 5919 INTERVALE DR RIVERSIDE CA 92506				
Product Description	6 inch Cotton and Wool Fiber Futon				
Test Group	Bedding - 01				
Category	Bedding				
Test Type	Certification	Year 2			
Test Method	UL 2821 "GREENGUARD Certification Program Method for Measuring and Evaluating Chemical Emissions From Building Materials, Finishes and Furnishings Using Dynamic Environmental Chambers"				
GREENGUARD & GREENGUARD Gold	**TVOC**	**Formaldehyde**	**Total Aldehydes**	**CREL/TLV**	**NMP**
	✓	✓	✓	✓	✓
✓ - meets criteria; X - over criteria					
Authorized by	Allyson McFry 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	EPA Exposure Factors Handbook	mattress	2.6	34.9	0.45

PHOTOGRAPH OF SAMPLE

GREENGUARD RESULTS SUMMARY

Product Description	6 inch Cotton and Wool Fiber Futon		
GREENGUARD & GREENGUARD Gold Acceptable IAQ Criteria		**168 Hour Product Measurement**	**Product Compliance for IAQ**
TVOC[a]	**≤ 0.22 mg/m³**	< 0.001 mg/m³	Yes
Formaldehyde	**≤ 0.0073 ppm**	< 0.001 ppm	Yes
Total Aldehydes[b]	**≤ 0.043 ppm**	< 0.001 ppm	Yes
1-Methyl-2-Pyrrolidinone	**≤ 0.16 mg/m³**	< 0.001 mg/m³	Yes
Individual VOCs	**≤ 1/100 TLV and ≤ ½ chronic REL**	See Below	

[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.

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.

Product Description	6 inch Cotton and Wool Fiber Futon				
COMPOUNDS FOUND WITH EXISTING TLV OR CHRONIC REL					
CAS Number	**Compound**	**1/100 TLV[a] (µg/m³)**	**½ CA Chronic REL[b] (µg/m³)**	**168 Hour Product Measurement (µg/m³)**	**Product Compliance for IAQ**
---	none	---	---	---	---

[a] American Conference of Governmental Industrial Hygienists. Threshold Limit Values for Chemical Substances and Physical Agents. Cincinnati, OH: ACGIH.
[b] http://www.oehha.ca.gov/air/allrels.html - Chronic Reference Exposure Levels (CRELs) Adopted by the State of California Office of Environmental Health Hazard Assessment (OEHHA).

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:

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	6 inch Cotton and Wool Fiber Futon		
Product Manufacture Date	Not Provided		
Product Collection Date	Not Provided		
Product Shipping Date	October 7, 2020		
Date Received	November 3, 2020		
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	November 10, 2020 - November 17, 2020**		
Area	one-sided area = 1.7757 m^2		
Environmental Chamber ID and Volume	ICG - 5.96 m^3		
Product Loading	0.30 m^2/m^3		
Test Conditions	1.00 ± 0.05 ACH 50% RH ± 5% RH 22.5ºC - 23.5ºC		
***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) 1-3F & Room 501, Building 2 (R&D Center A1), No. 25, South Huanshi Avenue, Nansha District, Guangzhou 511458, China
ULE - Cabiate	UL International Italia S.r.l ATTN: IAQ Laboratory Via Europa, 9, I – 22060 – Cabiate (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

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	6 inch Cotton and Wool Fiber Futon		
TVOC EMISSION FACTORS AND PREDICTED AIR CONCENTRATIONS			
Elapsed Exposure Hour*	**Emission Factor µg/m²•hr**	**Predicted Air Concentration** µg/m³**	
6	BQL	< 1	
24	BQL	< 1	
48	BQL	< 1	
72	BQL	< 1	
96	BQL	< 1	
168	BQL	< 1	
FORMALDEHYDE EMISSION FACTORS AND PREDICTED AIR CONCENTRATIONS			
Elapsed Exposure Hour*	**Emission Factor µg/m²•hr**	**Predicted Air Concentration****	
		µg/m³	**ppm**
6	BQL	< 1	< 0.001
24	BQL	< 1	< 0.001
48	BQL	< 1	< 0.001
72	BQL	< 1	< 0.001
96	BQL	< 1	< 0.001
168	BQL	< 1	< 0.001
TOTAL ALDEHYDE EMISSION FACTORS AND PREDICTED AIR CONCENTRATIONS			
Elapsed Exposure Hour*	**Emission Factor µg/m²•hr**	**Predicted Air Concentration****	
		µg/m³	**ppm**
6	25.5	4	0.002
24	15.1	3	0.002
48	26.8	3	0.001
72	8.1	2	0.001
96	6.7	2	0.001
168	BQL	< 1	< 0.001
1st Order Exponential Decay Constant = k_A = 0.011			

*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	6 inch Cotton and Wool Fiber Futon						
EMISSION FACTORS OF IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS							
CAS Number	**Compound**	**Elapsed Exposure Hour µg/m²•hr**					
		6	**24**	**48**	**72**	**96**	**168**
---	none	---	---	---	---	---	---

*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 4

Product Description	6 inch Cotton and Wool Fiber Futon						
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	25.5	15.1	26.8	8.1	6.7	
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.

TABLE 5

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		6 inch Cotton and Wool Fiber Futon					
CAS Number	**Compound**	**✓() = FOUND IN LISTING (CLASS)**					
		CAL PROP. 65	**NTP**	**IARC**	**CAL AIR TOXICS**	**CREL**	**TLV**
75-07-0	Acetaldehyde	✓(1)	✓(2B)	✓(2B)	✓(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
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
✓ = Found in Listing

ACGIH TLV American Conference of Governmental Industrial Hygienists Threshold Limit Values for Chemical Substances and Physical Agents.
✓ = Found in Listing.

CHAIN OF CUSTODY

INTERNAL Use Only			
Project #	1000927818		
Product #	2968006		
Order #	13290198		
Task Line	1.1	UL BU	
_____ of _____	91204		

2968006

Description
6 inch Cotton and Wool Fiber Futon

2968006

Customer: BIO SLEEP CONCEPT Inc

Received Date: 2020-NOV-05 07:46:00 AM

Aurora Project No.: 1000927818
Order No.: 13290198
Oracle Project No.:

3 of 3

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

GREENGUARD Test Information					
Test Type	☒ Certification Test • Annual/Initial Year 2			☐ Out-of-Scope Test	
	☐ Quarterly Test • Year Quarter			☐ Profile Study Test	
Service Line	☒ GREENGUARD ☒ GREENGUARD GOLD ☐ Other _____				
Test Group	**Bedding -01**				
Product Category	**Mattresses & Bedding**		**Subcategory**		
Application	☐ Floor/Ceiling	☐ Panel	☐ Wall	☐ Work Surface	☐ Other: _____
Wet Products Only	Coverage Rate		Density		Specific Gravity

Product and Company Information			
Product Description	**6 inch Cotton and Wool Fiber Futon**		
Manufacture ID#			
Company Name	**BIO SLEEP CONCEPT Inc**	**Date Manufactured**	mm/dd/yyyy
		Contact Name	**Christian Mourguet**
Address		**Job Title**	
		Contact Phone	
		Contact Email	**cmourguet@biosleepconcept.com**

Collection Information			
Collector Name		**Date Collected**	mm/dd/yyyy
Collector Phone		**Time Collected**	
Collector Signature		**Collection Location**	

Shipping Information			
Carrier	UPS		
Shipper Name		**Date Shipped**	mm/dd/yyyy 10/7/20
Shipper Phone		**Time Shipped**	
Shipper Signature		**Air Bill #**	1Z98E1020344895799

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 – Cabiate (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				Receiver Signature	
Condition Upon Arrival	☒ Acceptable	☐ Not Acceptable		Receive Date	11/3/20
Condition Notes				Receive Time	4:00 AM
Completed By	ULE	Based On	Program Testing Schedule	Date	03/20/2020

00-EN-F0853 – Issue 6.0