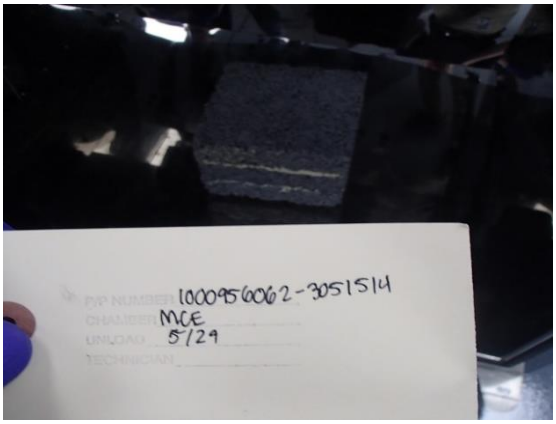
INDOOR AIR QUALITY EVALUATION FOLLOWING THE REQUIREMENTS OF CDPH/EHLB/STANDARD METHOD		
Product Description	Echo Flow	
Customer Information	SHREDDED TIRE INC RICHARD SPREEN 6742 NW 17TH AVE FORT LAUDERDALE FL 33309	
Testing Laboratory	UL Environment - Marietta, 2211 Newmarket Parkway, Marietta, GA 30067-9399 USA	
Product Category	Building Products	
Date Received	May 07, 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 to expose the finished surfaces only. The sample was placed inside the environmental chamber, and tested according to the specified protocol.	
Test Date	May 15, 2020 - May 29, 2020	
Product Area Exposed	six-sided area = 0.472 m^2	
Environmental Chamber ID and Volume	MCE - 1.00 m^3	
Product Loading Ratio	0.47 m^2/m^3	
Test Chamber Conditions	Air change rate: 1.00 ± 0.05 1/h Inlet air flow rate: 1.0001 ± 0.004 m^3/h	Temperature: 22.9ºC - 23.7ºC Relative Humidity: 50% RH ± 5% RH
Test Method	CDPH - CA Section 01350 *Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers* Version 1.2.	
Authorized by	Allyson M. McFry Chemistry Laboratory Director	
*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. 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.		

PHOTOGRAPH OF SAMPLE



RESULTS SUMMARY

Product Description	Echo Flow				
Environment	**Product Usage**	**Product Surface Area**	**Room Volume**	**Ventilation Rate (ACH)**	**Product Compliance?**
Classroom	wall	94.6 m²	231 m³	0.82	Yes
Office	wall	33.4 m²	30.6 m³	0.68	Yes
Residential	wall	562 m²	547 m³	0.23	Yes

PROJECT DESCRIPTION

The product was monitored for emissions of TVOC, individual VOCs, formaldehyde and other aldehydes over the 96-hour test period. Measurements were made and predicted exposures were calculated according to the CA Section 01350 protocol. As specified in this protocol, the results at 96 hours, after 10 days of conditioning, were compared to ½ (one-half) the current Chronic Reference Exposure Levels (CRELs), as adopted from the California OEHHA list. All identified VOCs were also compared to the California-EPA OEHHA Proposition 65 list and the California-EPA Air Resource Board list of Toxic Air Contaminants (TACs).

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

Product Description	Echo Flow

COMPARISON OF DATA TO METHOD REQUIREMENTS AT 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING

Compound	**CAS Number**	**½ CREL (µg/m³)**	**Chamber Concentration (µg/m³)**	**Emission Factor†† (µg/m²•hr)**	**Classroom Predicted Concentration (µg/m³)****	**Office Predicted Concentration (µg/m³)****	**Residential Predicted Concentration (µg/m³)****	**Meets ½ CREL? (Classroom/ Office/ Residential)**
Acetaldehyde	75-07-0	70	6.9	14.6	7.3	23.4	65.2	Yes
Benzene	71-43-2	1.5	BQL	BQL	BQL	BQL	BQL	Yes
Carbon disulfide*	75-15-0	400	BQL	BQL	BQL	BQL	BQL	Yes
Carbon tetrachloride*	56-23-5	20	BQL	BQL	BQL	BQL	BQL	Yes
Chlorobenzene	108-90-7	500	BQL	BQL	BQL	BQL	BQL	Yes
Chloroform*	67-66-3	150	BQL	BQL	BQL	BQL	BQL	Yes
Dichlorobenzene (1,4-)	106-46-7	400	BQL	BQL	BQL	BQL	BQL	Yes
Dichloroethylene (1,1)*	75-35-4	35	BQL	BQL	BQL	BQL	BQL	Yes
Dimethylformamide (N,N-)*	68-12-2	40	BQL	BQL	BQL	BQL	BQL	Yes
Dioxane (1,4-)	123-91-1	1,500	BQL	BQL	BQL	BQL	BQL	Yes
Epichlorohydrin	106-89-8	1.5	BQL	BQL	BQL	BQL	BQL	Yes
Ethylbenzene	100-41-4	1,000	BQL	BQL	BQL	BQL	BQL	Yes
Ethylene glycol	107-21-1	200	BQL	BQL	BQL	BQL	BQL	Yes

Product Description	Echo Flow

COMPARISON OF DATA TO METHOD REQUIREMENTS AT 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING

Compound	CAS Number	½ CREL (µg/m³)	Chamber Concentration (µg/m³)	Emission Factor†† (µg/m²•hr)	Classroom Predicted Concentration (µg/m³)**	Office Predicted Concentration (µg/m³)**	Residential Predicted Concentration (µg/m³)**	Meets ½ CREL? (Classroom/ Office/ Residential)
Ethylene glycol monoethyl ether acetate*	111-15-9	150	BQL	BQL	BQL	BQL	BQL	Yes
Ethylene glycol monoethyl ether*	110-80-5	35	BQL	BQL	BQL	BQL	BQL	Yes
Ethylene glycol monomethyl ether acetate*	110-49-6	45	BQL	BQL	BQL	BQL	BQL	Yes
Ethylene glycol monomethyl ether*	109-86-4	30	BQL	BQL	BQL	BQL	BQL	Yes
Formaldehyde	50-00-0	9.0***	BQL	BQL	BQL	BQL	BQL	Yes
Hexane (n-)	110-54-3	3,500	BQL	BQL	BQL	BQL	BQL	Yes
Isophorone*	78-59-1	1,000	BQL	BQL	BQL	BQL	BQL	Yes
Isopropanol	67-63-0	3,500	BQL	BQL	BQL	BQL	BQL	Yes
Methyl chloroform*	71-55-6	500	BQL	BQL	BQL	BQL	BQL	Yes
Methyl t-butyl ether	1634-04-4	4,000	BQL	BQL	BQL	BQL	BQL	Yes
Methylene chloride*	75-09-2	200	BQL	BQL	BQL	BQL	BQL	Yes
Naphthalene	91-20-3	4.5	BQL	BQL	BQL	BQL	BQL	Yes
Phenol	108-95-2	100	BQL	BQL	BQL	BQL	BQL	Yes
Propylene glycol monomethyl ether*	107-98-2	3,500	BQL	BQL	BQL	BQL	BQL	Yes

Product Description	Echo Flow

COMPARISON OF DATA TO METHOD REQUIREMENTS AT 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING

Compound	CAS Number	½ CREL (µg/m³)	Chamber Concentration (µg/m³)	Emission Factor†† (µg/m²•hr)	Classroom Predicted Concentration (µg/m³)**	Office Predicted Concentration (µg/m³)**	Residential Predicted Concentration (µg/m³)**	Meets ½ CREL? (Classroom/ Office/ Residential)
Styrene	100-42-5	450	BQL	BQL	BQL	BQL	BQL	Yes
Tetrachloroethylene (perchloroethylene)	127-18-4	17.5	BQL	BQL	BQL	BQL	BQL	Yes
Toluene	108-88-3	150	BQL	BQL	BQL	BQL	BQL	Yes
Trichloroethylene	79-01-6	300	BQL	BQL	BQL	BQL	BQL	Yes
Vinyl acetate	108-05-4	100	BQL	BQL	BQL	BQL	BQL	Yes
Xylenes (m-, o-, p-)	1330-20-7	350	BQL	BQL	BQL	BQL	BQL	Yes

BQL denotes below quantifiable level of 0.04 µg for individual VOCs, with the exceptions benzene and epichlorohydrin which have a QL of 0.02 µg, based on a standard 18 L air collection volume.

††The emission factor (EF) is calculated from the chamber concentration (CC), the chamber air change rate (N_C), the chamber volume (V_C), and the product area exposed in the chamber (A_C) as: $EF = (CC*V_C*N_C)/A_C$.

**The predicted building exposure concentration (BC) is calculated from the emission factor (EF), the building air change rate (N_B), the building room volume (V_B), and the product area exposed in the building room (A_B) as: $BC = (EF*A_B)/(V_B*N_B)$. For more information on Predicted Concentration modeling parameters, click here.

***Guidance value per CA Standard Method

TABLE 2

Product Description	Echo Flow	
CHAMBER CONCENTRATIONS AND EMISSION FACTORS FOR TVOC AND FORMALDEHYDE AT 24, 48, AND 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING		
Elapsed Exposure Hour After 10 Days Conditioning	**Chamber Concentration ($\mu g/m^3$)**	**Emission Factor†† ($\mu g/m^2 \cdot hr$)**
TVOC†		
24	2,500	5,290
48	2,450	5,180
96	2,200	4,660
Formaldehyde‡		
24	BQL	BQL
48	BQL	BQL
96	BQL	BQL

BQL denotes below quantifiable level of 2 $\mu g/m^3$.
Exposure hours are nominal (± 1 hour).
†Defined as the sum of those VOCs that elute between the retention times of n-hexane (C_6) and n-hexadecane (C_{16}) on a non-polar capillary GC column quantified based on a toluene response factor.
‡ Compound identified and quantified by DNPH derivitization and HPLC/UV analysis.
††The emission factor (EF) is calculated from the chamber concentration (CC), the chamber air change rate (N_C), the chamber volume (V_C), and the product area exposed in the chamber (A_C) as: $EF = (CC*V_C*N_C)/A_C$.

TABLE 3

Product Description	Echo Flow

TEN MOST ABUNDANT IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS (VOCs) AND/OR ALDEHYDES AT 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING

CAS Number	Compound	Chamber Concentration (µg/m³)	Emission Factor†† (µg/m²•hr)	Calculated Predicted Exposure Concentration** (µg/m³)		
				Classroom	Office	Residential
---	**TVOC‡‡**	**2,200**	**4,660**	**2,320**	**7,470**	**20,800**
62199-06-8	Heptane, 5-ethyl-2,2,3-trimethyl-*	247	523	261	840	2,340
1000309-14-3	Sulfurous acid, decyl pentyl ester*	155	329	164	527	1,470
31295-56-4	Dodecane, 2,6,11-trimethyl*	154	327	163	525	1460
74645-98-0	Dodecane, 2,7,10-trimethyl*	152	322	161	517	1,440
62237-96-1	Decane, 2,2,5-trimethyl	147	311	155	499	1,390
62016-28-8	Octane, 2,2,6-trimethyl	133	282	141	453	1,260
17312-75-3	Nonane, 5-methyl-5-propyl*	114	242	121	388	1,080
1071-31-4	Octane, 2,2,7,7-tetramethyl*	110	234	117	375	1,040
54166-32-4	Octane, 2,6,6-trimethyl*	81.3	172	86	276	769
13475-82-6	Heptane, 2,2,4,6,6-pentamethyl*	66.6	141	70	226	630

Exposure hours are nominal (± 1 hour).
VOC data obtained by scanning GC/MS; identification of compound made by retention time and mass spectral characteristics.
†Quantified using multipoint authentic standard curve. Other VOCs quantified relative to toluene.
*Identification based on NIST mass spectral database only.
‡Compound identified and quantified by DNPH derivitization and HPLC/UV analysis.
††The emission factor (EF) is calculated from the chamber concentration (CC), the chamber air change rate (N_C), the chamber volume (V_C), and the product area exposed in the chamber (A_C) as: $EF = (CC*V_C*N_C)/A_C$.
‡‡Defined as the sum of those VOCs that elute between the retention times of n-hexane (C_6) and n-hexadecane (C_{16}) on a non-polar capillary GC column quantified based on a toluene response factor.
**The predicted building exposure concentration (BC) is calculated from the emission factor (EF), the building air change rate (N_B), the building room volume (V_B), and the product area exposed in the building room (A_B) as: $BC = (EF*A_B)/(V_B*N_B)$. For more information on Predicted Concentration modeling parameters, click here.

TABLE 4

Product Description	Echo Flow

VOC PREDICTED AIR CONCENTRATIONS AND REGULATORY INFORMATION AT 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING

CAS Number	Compound	Chamber Concentration (µg/m³)	Emission Factor†† (µg/m²•hr)	Predicted Exposure Concentration** (µg/m³)			✓ Indicates Presence On List		
				Classroom	Office	Residential	CA PROP 65	CA AIR TOXIC	CREL
71-36-3	1-Butanol (N-Butyl alcohol)†	2.6	5.5	2.7	8.8	24.6		✓(IVB)	
108-10-1	2-Pentanone, 4-methyl (Methyl isobutyl ketone, MIBK)†	39.8	84.4	42.2	135	377	✓(2)	✓(IVA)	
75-07-0	Acetaldehyde	6.9	14.6	7.3	23.4	65.2	✓(1)	✓(IIA)	✓

†Quantified using multipoint authentic standard curve. Other VOCs quantified relative to toluene.
‡Compound identified and quantified by DNPH derivitization and HPLC/UV analysis.
††The emission factor (EF) is calculated from the chamber concentration (CC), the chamber air change rate (N_C), the chamber volume (V_C), and the product area exposed in the chamber (A_C) as: $EF = (CC*V_C*N_C)/A_C$.
**The predicted building exposure concentration (BC) is calculated from the emission factor (EF), the building air change rate (N_B), the building room volume (V_B), and the product area exposed in the building room (A_B) as: $BC = (EF*A_B)/(V_B*N_B)$. For more information on Predicted Concentration modeling parameters, click here.
CAL Prop. 65: California Health and Welfare Agency, Proposition 65 Chemicals
1 = known to cause cancer
2 = known to cause reproductive toxicity

CAL Toxic Air Contaminant:
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.
IVB) 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.

Chronic REL: California Office of Environmental Health Hazard Assessment (OEHHA), Chronic Reference Exposure Levels
✓ = Found in Listing

Product Description	Echo Flow

CHAIN OF CUSTODY

3051514
Description: Echo Flow
Customer: Shredded Tire
Aurora Project #: 1000956062
Rec. Date: 5/7/20

INTERNAL Use Only			
Project #	1000956062		
Product #	3051514		
Order #	13311823		
Task Line	1.1	UL BU	
_____ of _____			

1000300888 CUUCCE046

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

Product Emissions Test Information				
Test Type Request (These options have specific protocol)	◉ CA01350 CDPH/EHLB ☑ Office	☑ Classroom	☑ Residential	
	○ Odor Evaluation	○ MRT UL 2824	○ GLP (24 hour)	○ GLP (336 hour)
	○ GREENGUARD Screening (24 hr TVOC, VOCs, & aldehydes w/ modeling)	Modeling:		
Other Test Type Request				
Comments	Specify test method, non-standard sample preparation, modeling parameters, etc. CA01350 per quote # 1101851232			

Product Category	General Construction Material	**Subcategory**	Insulation
Application	○ Floor/Ceiling ○ Panel ◉ Wall ○ Work Surface ○ Other: _____		
Wet Products Only	Coverage Rate	Density	Specific Gravity

Product and Company Information			
Product Description	Echo Flow		
Manufacture ID#	N/A	**Product Commercial Name**	Echo Flow
Company Name	Shredded Tire Inc	**Date Manufactured**	04/30/2020
		Contact Name	Adnan Velic
Address	6742 NW 17th Ave	**Job Title**	Technical Director
	Fort Lauderdale, FL	**Contact Phone**	954-774-7187
	33309	**Contact Email**	adnan@shreddedtire.com

Collection Information			
Collector Name	Adnan Velic	**Date Collected**	04/30/2020
Collector Phone	954-774-7187	**Time Collected**	4:30 pm
Collector Signature		**Collection Location**	Fort Lauderdale, FL

Shipping Information			
Carrier	FEDEX		
Shipper Name	Adnan Velic	**Date Shipped**	05/05/2020
Shipper Phone	954-774-7187	**Time Shipped**	10:40 am
Shipper Signature		**Air Bill #**	770386238719

Sample Submitted to

◉ **UL Environment (Marietta)** 2211 Newmarket Parkway 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	○ Other

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	5/7/20
Condition Notes		Receive Time	10:00 AM
Completed By	Based On		Date

00-EN-F0852 – Issue 3.0

VOC EMISSION RESULTS COMPARISON TO STANDARD

Standard referenced: *CDPH/EHLB/Standard Method V1.2 (January 2017) "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers" (aka CA Section 01350).*

PRODUCT SAMPLE INFORMATION

Manufacturer	Shredded Tire Inc
Product Description	Echo Flow
Product Type	Building Products
UL Sample Identification	1000956062-3051514
Manufactured Date	April 30, 2020
Test Completed Date	May 29, 2020
UL Report #	1000956062-3051514
Report Date	June 9, 2020

TEST RESULTS COMPARISION TO STANDARD CRITERIA

Environment	**Classroom**		**Office**		**Residential**	
Surface Area	94.6 m²		33.4 m²		562 m²	
	Criterion	**Meets?**	**Criterion**	**Meets?**	**Criterion**	**Meets?**
Individual VOC	≤ ½ CREL	Yes	≤ ½ CREL	Yes	≤ ½ CREL	Yes
Formaldehyde	≤ 9.0 µg/m³	Yes	≤ 9.0 µg/m³	Yes	≤ 9.0 µg/m³	Yes

Environment	**Classroom**	**Office**	**Residential**
Surface Area	94.6 m²	33.4 m²	562 m²
TVOC	Between 0.5 and 5.0 mg/m³	5.0 mg/m³ or more.	5.0 mg/m³ or more.

TVOC comparison is based on LEED BD+C: New Construction v4 (LEED v4), Indoor environmental quality (EQ) category/Low-emitting materials credit/Emissions and content requirements/General emissions evaluation.
http://www.usgbc.org/node/2614095?return=/credits/new-construction/v4/indoor-environmental-quality

Authorized by	Allyson McFry Chemistry Laboratory Manager

Complete testing and data results are presented in UL Environment Report

Disclaimer: This Comparison affirms that: 1) the product sample was tested according to the referenced standard; 2) the measured VOC emissions were evaluated for the defined exposure scenario(s); and 3) if so indicated above that the results meet the criteria of the referenced standard(s). UL Environment did not select the samples, determine if the samples were representative of production samples, witness the production of test samples, or were we provided with information relative to the formulation or identification of component materials used in the test samples. The test results apply only to the actual samples tested. The issuance of this Comparison in no way implies Listing, Classification or Recognition by UL and does not authorize the use of UL Listing, Classification or Recognition Marks or any other reference to UL on the product or system. UL Environment authorizes the above named company to reproduce this Comparison provided it is reproduced in its entirety. The name, brand or marks of UL cannot be used in any packaging, advertising, promotion or marketing relating to the data in this Comparison, without UL's prior written permission. UL, its subsidiaries, employees and agents shall not be responsible to anyone for the use or nonuse of the information contained in this Comparison, and shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use of, or inability to use, the information contained in this Comparison.