



David Gorrell
Everkem Diversified Products Inc
5180 Indiana Ave
Winston Salem, NC 27106

Subject: Project 18729-030AA - Test Results

Thank you for choosing UL Environment, and its ISO/IEC 17025 accredited testing laboratory, for your analytical needs. Everkem Diversified Products Inc's "Trusil 100" was tested by our laboratory for low emitting materials.

Testing was conducted in small environmental chambers following the principles of ASTM D 5116 with the defined product specific test protocols and IAQ emission requirements of the State of California's Indoor Air Quality Program, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers" (aka CA Section 01350).

Calculations were performed using the parameters below to estimate the concentrations of VOCs of concern for use in a classroom environment and in an office environment.

Ventilation Rate	Room Volume	Product Surface Area
CLASSROOM		
0.82 air changes per hour (ACH)	12.2 m x 7.32 m x 2.59 m = 231 m ³ (40 x 24 x 8.5 ft = 8,160 ft ³)	119 m
PRIVATE OFFICE		
0.68 air changes per hour (ACH)	3.66 m x 3.05 m x 2.74 m = 30.6 m ³ (12 x 10 x 9 ft = 1,080 ft ³)	37.8 m

The product mentioned above as received and tested meets the Section 1350 requirements for use in a classroom and in an office with the above parameters.

If you have any questions or concerns about the test results, please contact your Account Manager at (888) 485-4733.

Sincerely,

A handwritten signature in black ink that reads "Allyson McFry".

Allyson M. McFry
Chemistry Laboratory Director

This report shall not be reproduced, except in full, without permission from UL. Results contained within this report only apply to the actual product tested under the testing conditions documented in this report.



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:	Everkem Diversified Products Inc
Product Description:	Trusil 100
Product Type:	Adhesives/Sealants
Sample Identification:	UL Environment's 18729-030AA
Manufactured Date:	11/17/2017
Test Completed on:	12/21/2017
Expiration Date:	01/05/2019

TEST RESULTS COMPARISON TO STANDARD CRITERIA

Environment:	CLASSROOM		OFFICE	
Surface Area:	119 m		37.8 m	
Criterion:	Criterion	Meets?	Criterion	Meets?
Individual VOC:	≤ ½ REL	Yes	≤ ½ REL	Yes
Formaldehyde:	≤ 9.0 µg/m ³	Yes	≤ 9.0 µg/m ³	Yes

Environment:	CLASSROOM	OFFICE
Surface Area:	119 m	37.8 m
TVOC:	0.5 mg/m ³ or less	0.5 mg/m ³ or less

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>

Reviewed By	 Allyson McFry Chemistry Laboratory Manager
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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.



**INDOOR AIR QUALITY EVALUATION
FOLLOWING THE REQUIREMENTS OF
CDPH/EHLB/STANDARD METHOD**

**PREPARED FOR:
EVERKEM DIVERSIFIED PRODUCTS INC**

MANUFACTURER INFORMATION

Manufacturer	Everkem Diversified Products Inc
Contact Name and Title	David Gorrell, Quality Assurance Director
Contact Address	5180 Indiana Ave Winston Salem, NC 27106
Contact Phone Number	(800) 638-3160

PRODUCT INFORMATION

Product Description	Trusil 100
Manufacturer Product ID	Not provided
Product Category	Adhesives/Sealants
Product Sub-Category	N/A
Manufacturing Location	Not provided
Date Manufactured	November 17, 2017
Date Collected	November 27, 2017
Date Shipped	November 27, 2017
Date Received	November 28, 2017

Released by:

A handwritten signature in black ink that reads "Allyson McFry".

Allyson M. McFry
Chemistry Laboratory Director

EXECUTIVE SUMMARY

PROJECT DESCRIPTION

UL Environment, and its ISO/IEC 17025 accredited testing laboratories, presents the results of its indoor air evaluation of a product identified as “Trusil 100” submitted by Everkem Diversified Products Inc. UL Environment conducted this study using a product evaluation test protocol following California’s “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers” (aka CA Section 01350) (1). Test chamber methodology followed the guidance of ASTM D 5116 (2), volatile organic compound (VOC) analysis followed the methodology in EPA TO-17 (3) and ASTM D 6196 (4), and analysis for low molecular weight aldehydes, including formaldehyde and acetaldehyde, followed the methodology in ASTM D 5197 (5). The definition for total VOCs (TVOC) is from ISO 16000-6 (6). The quantifiable level for all compounds is 2 µg/m³. All identified target list compounds are quantified using authentic standards. Identified substances not on one of the designated toxics list are quantified using either authentic standards or surrogates and are notated appropriately.

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 (7). All identified VOCs were also compared to the California-EPA OEHHA Proposition 65 list (8) and the California-EPA Air Resource Board list of Toxic Air Contaminants (TACs) (9).

RESULTS

The calculation parameters and results for the tested product identified as “Trusil 100” are shown below:

Environment	Ventilation Rate (ACH)	Room Volume	Product Usage	Product Surface Area	Product Compliance?
CLASSROOM	0.82	12.2 m x 7.32 m x 2.59 m = 231 m ³ (40 x 24 x 8.5 ft = 8,160 ft ³)	Solid Surface Seam Sealer	119 m	Yes
OFFICE	0.68	3.66 m x 3.05 m x 2.74 m = 30.6 m ³ (12 x 10 x 9 ft = 1,080 ft ³)	Solid Surface Seam Sealer	37.8 m	Yes

TABLE 1

ENVIRONMENTAL CHAMBER STUDY PARAMETERS PREPARED FOR: EVERKEM DIVERSIFIED PRODUCTS INC PRODUCT 18729-030AA

Product Description:	ADHESIVES/SEALANTS; Trusil 100
Date Received at UL Environment:	November 28, 2017
Sample Preparation:	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, a $\frac{3}{8}$ " wide bead 11.5" long was applied to a foil-wrapped plate. The sample was immediately placed inside the environmental chamber, and tested according to the specified protocol.
Conditioning Period:	12/07/2017 - 12/17/2017
Test Period:	12/17/2017 - 12/21/2017
Product Area Exposed:	length = 0.2920 m
Chamber Volume:	0.0850 m ³
Product Loading Ratio:	3.44 m/m ³
Test Chamber Conditions:	Air change rate: 1.00 ± 0.05 1/h Inlet air flow rate: 0.0850 ± 0.004 m ³ /h Temperature: 22.0°C - 22.7°C Relative Humidity: 50% RH ± 5%

TABLE 2

**COMPARISON OF DATA TO CA SECTION 01350 TARGET CRELs
 AT 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING**

**PREPARED FOR: EVERKEM DIVERSIFIED PRODUCTS INC
 PRODUCT 18729-030AA; TRUSIL 100**

Compound Name	CAS Number	½ CREL (µg/m³)	Chamber Concentration (µg/m³)	Emission Factor ^{††} (µg/m·hr)	Classroom Predicted Concentration (µg/m³) ^{**}	Office Predicted Concentration (µg/m³) ^{**}	Meets ½ CREL? (Classroom/Office)
Acetaldehyde	75-07-0	70	BQL	BQL			Yes
Benzene	71-43-2	1.5	BQL	BQL			Yes
Carbon disulfide	75-15-0	400	BQL	BQL			Yes
Carbon tetrachloride	56-23-5	20	BQL	BQL			Yes
Chlorobenzene	108-90-7	500	BQL	BQL			Yes
Chloroform	67-66-3	150	BQL	BQL			Yes
Dichlorobenzene (1,4-)	106-46-7	400	BQL	BQL			Yes
Dichloroethylene (1,1)	75-35-4	35	BQL	BQL			Yes
Dimethylformamide (N,N-)	68-12-2	40	BQL	BQL			Yes
Dioxane (1,4-)	123-91-1	1,500	BQL	BQL			Yes
Epichlorohydrin*	106-89-8	1.5	BQL	BQL			Yes
Ethylbenzene	100-41-4	1,000	BQL	BQL			Yes
Ethylene glycol	107-21-1	200	BQL	BQL			Yes
Ethylene glycol monoethyl ether acetate	111-15-9	150	BQL	BQL			Yes
Ethylene glycol monoethyl ether	110-80-5	35	BQL	BQL			Yes

Compound Name	CAS Number	½ CREL (µg/m³)	Chamber Concentration (µg/m³)	Emission Factor ^{††} (µg/m•hr)	Classroom Predicted Concentration (µg/m³)**	Office Predicted Concentration (µg/m³)**	Meets ½ CREL? (Classroom/Office)
Ethylene glycol monomethyl ether acetate	110-49-6	45	BQL	BQL			Yes
Ethylene glycol monomethyl ether	109-86-4	30	BQL	BQL			Yes
Formaldehyde	50-00-0	9.0***	BQL	BQL			Yes
Hexane (n-)	110-54-3	3,500	BQL	BQL			Yes
Isophorone	78-59-1	1,000	BQL	BQL			Yes
Isopropanol	67-63-0	3,500	BQL	BQL			Yes
Methyl chloroform	71-55-6	500	BQL	BQL			Yes
Methyl t-butyl ether	1634-04-4	4,000	BQL	BQL			Yes
Methylene chloride	75-09-2	200	BQL	BQL			Yes
Naphthalene	91-20-3	4.5	BQL	BQL			Yes
Phenol	108-95-2	100	BQL	BQL			Yes
Propylene glycol monomethyl ether	107-98-2	3,500	BQL	BQL			Yes
Styrene	100-42-5	450	BQL	BQL			Yes
Tetrachloroethylene (perchloroethylene)	127-18-4	18	BQL	BQL			Yes
Toluene	108-88-3	150	BQL	BQL			Yes
Trichloroethylene	79-01-6	300	BQL	BQL			Yes
Vinyl acetate	108-05-4	100	BQL	BQL			Yes
Xylenes (m-, o-, p-)	1330-20-7	350	BQL	BQL			Yes

BQL denotes below quantifiable level of 2 µg/m³ (instrument calibration using authentic standard).

^{††}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: $EF = (CC \cdot V_c \cdot N_c) / A_c$.

*Denotes compound is within volatility range of method but no calibration standard was available.

**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: $BC = (EF \cdot A_b) / (V_b \cdot N_b)$. Prediction based on a standard classroom solid surface seam sealer usage of 119 m in a 231 m³ room with 0.82 ACH or on a standard office solid surface seam sealer usage of 37.8 m in a 30.6 m³ room with 0.68 ACH.

***Guidance value per CA Standard Method

TABLE 3

**CHAMBER CONCENTRATIONS AND EMISSION FACTORS
 FOR TVOC AND FORMALDEHYDE AT 24, 48, AND 96 HOURS
 FOLLOWING 10 DAYS OF CONDITIONING**

**PREPARED FOR: EVERKEM DIVERSIFIED PRODUCTS INC
 PRODUCT 18729-030AA; TRUSIL 100**

ELAPSED EXPOSURE HOUR AFTER 10 DAYS CONDITIONING	CHAMBER CONCENTRATION (µg/m³)	EMISSION FACTOR^{††} (µg/m•hr)
TVOC[†]		
24	720	210
48	750	220
96	640	190
Formaldehyde[‡]		
24	BQL	BQL
48	BQL	BQL
96	BQL	BQL

BQL denotes below quantifiable level of 2 µg/m³.

Exposure hours are nominal (± 1 hour).

[†]Defined as the sum of those VOCs that elute between the retention times of n-hexane (C₆) and n-hexadecane (C₁₆) 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: $EF = (CC \cdot V_c \cdot N_c) / A_c$.

TABLE 4

**CHAMBER CONCENTRATIONS, EMISSION FACTORS, AND
 PREDICTED EXPOSURE CONCENTRATIONS
 FOR THE TVOC & TEN MOST ABUNDANT IDENTIFIED INDIVIDUAL
 VOLATILE ORGANIC COMPOUNDS (VOCs) AND/OR ALDEHYDES
 AT 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING**

**PREPARED FOR: EVERKEM DIVERSIFIED PRODUCTS INC
 PRODUCT 18729-030AA; TRUSIL 100**

CAS NUMBER	COMPOUND	CHAMBER CONC. (µg/m³)	EMISSION FACTOR ^{††} (µg/m·hr)	CALCULATED PREDICTED EXPOSURE CONCENTRATION ^{**} (µg/m³)	
				Classroom	Office
---	TVOC ^{‡‡}	640	190	120	340
540-97-6	Cyclohexasiloxane, dodecamethyl	350	100	64	190
541-02-6	Cyclopentasiloxane, decamethyl	200	58	36	110
141-63-9	Pentasiloxane, dodecamethyl	59	17	11	31
629-62-9	Pentadecane	8.4	2.4	1.5	4.4
128-37-0	2,6-Di-tert-butyl-4-methylphenol (BHT) [†]	4.1	1.2	0.8	2.2
556-67-2	Cyclotetrasiloxane, octamethyl	3.9	1.1	0.7	2.0
629-59-4	Tetradecane [†]	3.3	1.0	0.6	1.8

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: $EF = (CC \cdot V_c \cdot N_c) / A_c$.

^{‡‡}Defined as the sum of those VOCs that elute between the retention times of n-hexane (C₆) and n-hexadecane (C₁₆) 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: $BC = (EF \cdot A_B) / (V_B \cdot N_B)$. Prediction based on a standard classroom solid surface seam sealer usage of 119 m in a 231 m³ room with 0.82 ACH or on a standard office solid surface seam sealer usage of 37.8 m in a 30.6 m³ room with 0.68 ACH.

TABLE 5
VOC PREDICTED AIR CONCENTRATIONS AND REGULATORY INFORMATION
AT 96 HOURS FOLLOWING 10 DAYS OF CONDITIONING

PREPARED FOR: EVERKEM DIVERSIFIED PRODUCTS INC
PRODUCT 18729-030AA; TRUSIL 100

CAS NUMBER	COMPOUND IDENTIFIED	CHAMBER CONC. (µg/m³)	EMISSION FACTOR ^{††} (µg/m·hr)	PREDICTED EXPOSURE CONCENTRATION ^{**} (µg/m³)		✓ INDICATES PRESENCE ON LIST		
				Classroom	Office	CA PROP 65	CA AIR TOXIC	CREL
---	none	---	---	---	---	---	---	---

[†]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: $EF = (CC \cdot V_c \cdot N_c) / A_c$.

^{**}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: $BC = (EF \cdot A_B) / (V_B \cdot N_B)$. Prediction based on a standard classroom solid surface seam sealer usage of 119 m in a 231 m³ room with 0.82 ACH or on a standard office solid surface seam sealer usage of 37.8 m in a 30.6 m³ room with 0.68 ACH.

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

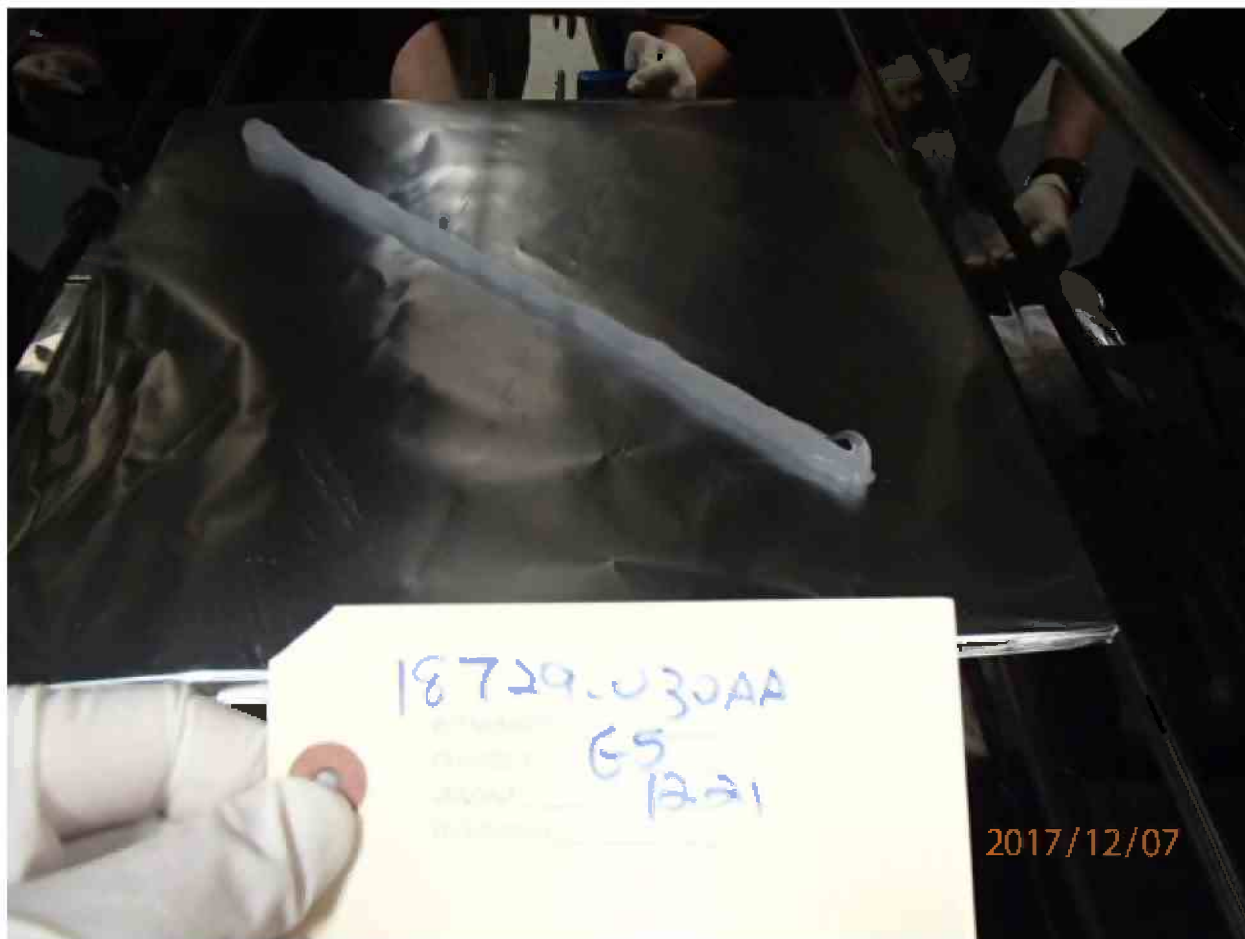
✓ = Found in Listing

REFERENCES

1. The State of California's Indoor Air Quality Program, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers" Version 1.2. https://archive.cdph.ca.gov/programs/IAQ/Documents/CDPH-IAQ_StandardMethod_V1_2_2017.pdf.
2. ASTM D 5116, "Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products." ASTM, West Conshohocken, PA, 2010.
3. EPA TO-17, "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air - Second Edition," United States Environmental Protection Agency, www.epa.gov/ttn/amtic/files/ambient/airtox/to-17r.pdf, 1999.
4. ASTM D 6196 "Practice for the Selection of Sorbents and Pumped Sampling/ Thermal Desorption Analysis Procedures for Volatile Organic Compounds in Air." ASTM, West Conshohocken, PA, 2009.
5. ASTM D 5197, "Test Method for Determination of Formaldehyde and Other Carbonyl Compounds in Air (Active Sampler Methodology)." ASTM, West Conshohocken, PA, 2009.
6. ISO 16000-6, "Indoor air -- Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA sorbent, thermal desorption and gas chromatography using MS/FID," 2004.
http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=30147,
7. California Environmental Protection Agency; Chronic Reference Exposure Levels; The Office of Environmental Health Hazard Assessment (OEHHA);
<http://www.oehha.ca.gov/air/Allrels.html>.
8. California Environmental Protection Agency. Safe Drinking Water & Toxic Enforcement Act of 1986 (Proposition 65): No Significant Risk Levels for Carcinogens; Acceptable Intake Levels for Reproductive Toxicants (Status Report). Sacramento: California Environmental Protection Agency; <http://www.oehha.ca.gov/prop65/getNSRLs.html>.
9. California Environmental Protection Agency. Air Resources Board. Toxic Air Contaminants (TAC) Identification List; <http://www.arb.ca.gov/toxics/catable.htm>


APPENDIX 1

PREPARED FOR: EVERKEM DIVERSIFIED PRODUCTS INC
PRODUCT 18729-030AA; TRUSIL 100



APPENDIX 2

CHAIN OF CUSTODY



UL Environment Chain of Custody
 100024690

FOR INTERNAL USE ONLY		Test Information	
<small>LABORATORY CONTROL AND RECORDS DEPARTMENT</small> CURKKB345	Proposal # <input type="checkbox"/> RUSH (Confirm with Account Manager prior to submitting product)	<input type="checkbox"/> Specialized Test for Odors <input checked="" type="checkbox"/> CA 01350 CDPH/EHLB/Standard Method V1.1	<input type="checkbox"/> Formaldehyde Only <input type="checkbox"/> 4 Hr <input type="checkbox"/> 24 Hr <input type="checkbox"/> Office <input type="checkbox"/> Classroom <input type="checkbox"/> Residential
Project - Product # 18729-030AA Category Home/School Subcategory School Safety IA	<input type="checkbox"/> 24 Hr TVOC <input type="checkbox"/> with Formaldehyde <input type="checkbox"/> 24 Hr TVOC & IVOCs <input type="checkbox"/> with Formaldehyde <input type="checkbox"/> GREENGUARD Screening Test (24 Hr TVOC, IVOCs, and Aldehydes w/modeling)	<input type="checkbox"/> ANSI/BIFMA M7.1 / X7.1 <input type="checkbox"/> Small Chamber <input type="checkbox"/> Intermediate Chamber <input type="checkbox"/> Large Chamber <input type="checkbox"/> Other (Specify test method, non-standard sample preparation, modeling parameters, application rate for wet products, etc.):	
Manufacturer and Contact Details			
Company Name	Everkem	Contact Name	David Gorrell
Street Address	5180 Indiana Ave.	Title	Quality Assurance Director
City, State/Province, Zip/Postal Code	Winston-Salem, NC, 27106	Phone Number	800-698-3160
Country	USA	E-Mail Address	dgorrell@everkemproductions.com
Product Details			
Sample ID (Used in Report)	Transit 100	Product Collection Location	Post Production Storage
Product Commercial Name	Transit 100 Clean	Product Collection Date/Time (mm/dd/yyyy/hh:mm)	11/27/2017 10:33
Manufacturer's Identification Number	TS100C	Product Collected By	David Gorrell
Manufactured Date (mm/dd/yyyy)	11/17/2017	Number of Product Pieces	2
Post Testing Instructions			
<input type="checkbox"/> Return Product (Return Shipper and Manufacturer's Shipping Account # must be provided for product return)			<input checked="" type="checkbox"/> Discard product after testing
Return Shipper		Manufacturer's Shipping Acct #	
Packed By		Carrier	Fed. Ex
Ship Date (mm/dd/yyyy)	11/27/17	Air Bill #	4135 2005 2090
Signature Tracking Details			
Relinquished By (Manufacturer)		Date & Time (mm/dd/yyyy/hh:mm)	
Signature			
Laboratory Receiving Details - FOR INTERNAL USE ONLY			
Received by (Laboratory)	[Signature]	Date & Time (mm/dd/yyyy/hh:mm)	11/28/17 10:00 AM
Signature			
Types of Containers	each	Shipping Package Notes	
Condition of Shipping Package	<input checked="" type="checkbox"/> Undamaged <input type="checkbox"/> Damaged	Product Condition Notes	
Condition of Product	<input checked="" type="checkbox"/> Acceptable <input type="checkbox"/> Unacceptable		

SHIP TO:
 UL Environment
 2211 Newmarket Parkway, #100, Marietta, Georgia 30067

APPENDIX 3

QUALITY CONTROL PROCEDURES FOR ENVIRONMENTAL CHAMBER EVALUATIONS

UL Environment's IAQ testing laboratories are ISO/IEC 17025 accredited with defined and executed internal and third party verification programs encompassing emission test methods and low level pollutant measurements. UL Environment's quality control/assurance plan is designed to ensure the integrity of the measured and reported data obtained during its product evaluation studies. This QC program encompasses all facets of the measurement program from sample receipt to final review and issuance of reports. As a firm with ISO/IEC 17025 accredited IAQ testing laboratories, UL Environment's product control, testing, data handling, and reporting protocols and procedures are standardized and controlled. UL Environment participates in proficiency and accreditation measurement programs for VOC and emission testing as required by the State of California, Germany Ministry of Health's Blue Angel Program, LGC Standards Air Proficiency Testing Scheme, and GREENGUARD Certification programs. Quality Assurance is maintained through UL Environment's computerized data management system. An electronic "paper trail" for each analysis is also maintained and utilized to track the status of each sample, and to store the results. A complete quality report can be provided upon request and all test data and analysis procedures are available on site for customer review.

Chamber Evaluations

One of the most critical parameters in UL Environment's product evaluations is the measurement of ultratrace levels of gaseous chemicals, typically in the ppb air concentration range. This necessitates a very rigidly maintained effort to control background contributions and contamination. These contributions must be significantly less than those levels being measured for statistically significant data to be obtained. UL Environment addresses this control in many directions including chamber construction materials, air purification and humidification, sampling materials and chemicals, sample introduction, and analysis.

Supply air purity is monitored on a weekly basis, using identical methodology to the chamber testing. The supply air is assured to contain less than 10 $\mu\text{g}/\text{m}^3$ TVOC, < 10 $\mu\text{g}/\text{m}^3$ total particles, < 2 $\mu\text{g}/\text{m}^3$ formaldehyde, and < 2 $\mu\text{g}/\text{m}^3$ for any individual VOC. Preventative maintenance ensures supply air purity, and corrective action is taken when any potential problems are noted in weekly samples. Supply air filter maintenance is critical for ensuring the purity of the chamber supply air. Chamber background samples are obtained prior to product exposure to ensure contaminant backgrounds meet the required specifications prior to product exposure. Results of this monitoring are maintained at UL Environment and available for on-site inspection.

All environmental chamber procedures are in accordance with ASTM D 5116 and meet the data quality objectives required.

Various measures are routinely implemented in a product's evaluation program. These include but are not limited to:

- appropriate record keeping of sample identifications and tracking throughout the study;

- calibration of all instrumentation and equipment used in the collection and analysis of samples;
- validation and tracking of all chamber parameters including air purification, environmental controls, air change rate, chamber mixing, air velocities, and sample recovery;
- analysis of spiked samples for accuracy determinations;
- duplicate analyses of 10% of all samples evaluated and analyzed;
- multi-point calibration and linear regression of all standardization;
- analysis of controls including chamber backgrounds, sampling media, and instrumental systems.

VOC and Aldehyde Measurements

Precision of TVOC and aldehyde analyses is assessed by the Relative Standard Deviation (%RSD) from duplicate samples, defined as the standard deviation of each data set divided by the mean multiplied by 100. All QC data measurements are calculated based on the 12 month period indicated below. The VOC accuracy is based on recovery of toluene mass spiked onto sorbent material. The aldehyde accuracy is based on LGC Standard formaldehyde proficiency test results, measured by the mean Relative Percent Difference (%RPD). Third party proficiency and round robin testing for low level VOCs for national and international programs are continuously conducted and reported in UL Environment’s quarterly Quality Assurance Report, and are available to all customers.

12 Month Period	December 1, 2016 through November 30, 2017	
Precision Mean RSD %	TVOC	6.2
	Total Aldehydes (Including Formaldehyde)	3.9
Accuracy %	VOC – Toluene Recovery	100.9
	Formaldehyde Mean RPD	2.4