



September 6, 2018

Mr. Andrew Sorenson  
President/CEO  
Prihoda North America  
4420 Dawes Lane E.  
Mobile, AL 36695

**Subject:       Dynamic Small-Scale Chamber Emissions Testing  
                  Compliance Report per California Department of Public Health Standard Method  
                  Version 1.2  
                  PMS RE Air Duct System Fabric  
                  MAS Project No.: 1801218**

Dear Mr. Sorenson:

Materials Analytical Services, LLC (MAS) is pleased to submit this report with results of VOC emissions testing from an application of PMS RE air duct system fabric.

This project was conducted in general accordance with the emission testing guidelines specified under ASTM D 5116 and the California Department of Public Health (CDPH) *Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.2*.

Based on the test results, the PMS RE fabric is compliant with the performance standards established for low-emitting materials under the California Department of Public Health (CDPH) standard.

MAS is pleased to have been of service to you. If you have any questions or comments, or if we can be of further assistance, please contact us.

Sincerely,

**MAS, LLC**

Manager, Emissions Group

Senior Analytical Chemist

Appendices:     Appendix A – Chain-of-Custody  
                      Appendix B – General Testing Parameters and Data

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Testing Cert. #2925.01

## EMISSIONS COMPLIANCE TEST

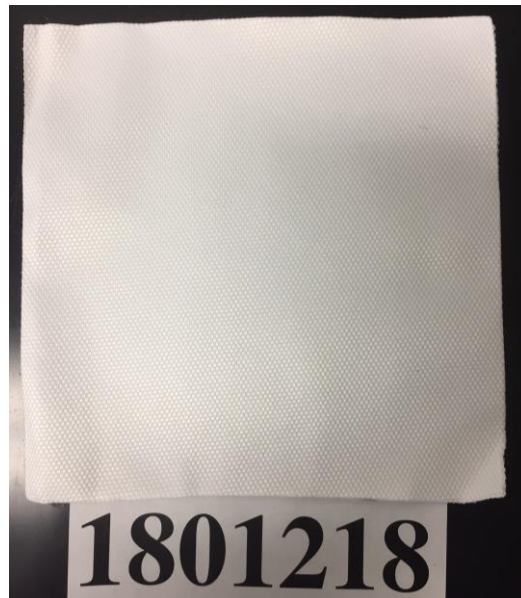
California Dept. of Public Health Standard Method Version 1.2

Air Duct System Fabric Evaluation

### SAMPLE DESCRIPTION & TESTING PARAMETERS

Sample specifics as described in the chain-of-custody (see Appendix A) and a timeline of milestones dates relative to sampling and analysis are summarized below.

<b>Product Name:</b> PMS RE	<b>MAS Assigned ID:</b> 1801818
<b>Manufacturer:</b> Prihoda SRO Hinkso Czech Republic	<b>Product Description:</b> RPET recycled polyester fabric Approx. 6" x 6"
<b>Manufacture Date:</b> August 2, 2018	<b>Testing Period:</b> August 9 – 23, 2018
<b>Collection Date:</b> August 2, 2018	<b>In-Chamber Sampling Dates:</b> Aug. 20 @ 24 hrs.; Aug. 21 @ 48 hrs.; Aug. 23 @ 96 hrs.
<b>Shipping Date:</b> August 3, 2018	<b>Date of Sample Analysis:</b> August 27 – Sept. 5, 2018
<b>Laboratory Arrival Date:</b> August 9, 2018	<b>Age of Sample at Testing:</b> 7 days



**Prihoda North America Prihoda SRO fabric as submitted and tested**

Testing was initiated by placing the sample inside one of MAS's small-scale emissions chambers beneath a ceiling-mounted fan to facilitate even air circulation around the sample.

Sample conditioning, collection of samples, and analysis of compounds of interest were conducted in accordance with the California Department of Public Health (CDPH) *Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.2*, for comparison to the Leadership in Energy and Environmental Design (LEED) standard, and the Collaborative for High Performance Schools (CHPS) criteria for low emitting materials. Appendix B presents general testing parameters and data.



## TEST RESULTS

To compare the chamber-derived data to the standards established under CDPH Standard Method and the CHPS criteria an emission factor for the tested sample is calculated based on the 96 hour test point data following ten days of in-chamber conditioning. This emission factor is used to predict airborne concentrations of target compounds in a CDPH-defined classroom with a total ductwork surface area of 14.0 square meters, and a typical private office with a total ductwork surface area of 3.9 square meters. These areas are based on an estimated 36 linear feet of 16-inch diameter ductwork in a classroom, and 10 linear feet of 16-inch diameter ductwork in a private office. Table I presents the results of the modeled data.

**Table I**  
**Comparison of Emission Factors and Predicted 96-Hour Airborne Concentrations**  
**from the PMS RE Air Duct System Fabric in Typical Building Environments**

VOC Name	Calculated Emission Factor ( $\mu\text{g}/\text{m}^2\text{hr}$ )	Predicted Airborne Concentration ( $\mu\text{g}/\text{m}^3$ )*		Maximum Concentration Limits ( $\mu\text{g}/\text{m}^3$ )	Testing Comment
		Classroom	Private Office		
Total VOCs (TVOC)	39	2.9	7.4	NA	NA
Formaldehyde <sup>1,2</sup>	<3.2	<0.24	<0.60	9	Compliant
Acetaldehyde <sup>1,2</sup>	<4.3	<0.32	<0.81	70	Compliant
Isopropanol	<2.9	<0.22	<0.55	3500	Compliant
1,1-dichloroethylene	<2.9	<0.22	<0.55	35	Compliant
Methylene chloride <sup>1,2</sup>	<2.9	<0.22	<0.55	200	Compliant
Carbon disulfide <sup>1,2</sup>	<2.9	<0.22	<0.55	400	Compliant
MTBE <sup>2</sup>	<2.9	<0.22	<0.55	4000	Compliant
Vinyl acetate <sup>2</sup>	<2.9	<0.22	<0.55	100	Compliant
Hexane <sup>2</sup>	<2.9	<0.22	<0.55	3500	Compliant
Chloroform <sup>1,2</sup>	<2.9	<0.22	<0.55	150	Compliant
2-methoxyethanol <sup>1</sup>	<2.9	<0.22	<0.55	30	Compliant
1,1,1-trichloroethane <sup>2</sup>	<2.9	<0.22	<0.55	500	Compliant
Benzene <sup>1,2</sup>	<2.9	<0.22	<0.55	1.5	Compliant
1-methoxy-2-propanol	<2.9	<0.22	<0.55	3500	Compliant
Carbon tetrachloride <sup>1,2</sup>	<2.9	<0.22	<0.55	20	Compliant
Ethylene glycol <sup>2</sup>	<2.9	<0.22	<0.55	200	Compliant
1,4-dioxane <sup>1,2</sup>	<2.9	<0.22	<0.55	1500	Compliant
Trichloroethylene <sup>1,2</sup>	<2.9	<0.22	<0.55	300	Compliant
Epichlorohydrin <sup>1,2</sup>	<1.5	<0.11	<0.28	1.5	Compliant
2-ethoxyethanol <sup>1</sup>	<2.9	<0.22	<0.55	35	Compliant
n,n-dimethylformamide <sup>2</sup>	<2.9	<0.22	<0.55	40	Compliant
Toluene <sup>1,2</sup>	<2.9	<0.22	<0.55	150	Compliant
2-methoxyethanol acetate <sup>1</sup>	<2.9	<0.22	<0.55	45	Compliant
Tetrachloroethylene <sup>1,2</sup>	<2.9	<0.22	<0.55	17.5	Compliant
Chlorobenzene <sup>2</sup>	<2.9	<0.22	<0.55	500	Compliant
Ethylbenzene <sup>1,2</sup>	<2.9	<0.22	<0.55	1000	Compliant
m & p-xylene <sup>2</sup>	<2.9	<0.22	<0.55	350	Compliant
Styrene <sup>1,2</sup>	<2.9	<0.22	<0.55	450	Compliant
2-ethoxyethyl acetate <sup>1</sup>	<2.9	<0.22	<0.55	150	Compliant
o-xylene <sup>2</sup>	<2.9	<0.22	<0.55	350	Compliant
Phenol <sup>2</sup>	<2.9	<0.22	<0.55	100	Compliant



1,4-dichlorobenzene <sup>1,2</sup>	<2.9	<0.22	<0.55	400	Compliant
Isophorone <sup>2</sup>	<2.9	<0.22	<0.55	1000	Compliant
Naphthalene <sup>1,2</sup>	<1.5	<0.11	<0.28	4.5	Compliant

\* Assumes a 24' x 40' x 8.5' classroom with a ventilation rate of 0.82 h<sup>-1</sup> and a 10' x 12' x 9' private office with a ventilation rate of 0.68 h<sup>-1</sup> as defined by CDPH/EHLB/Standard Method V.1.2

1 Compound included on Cal/EPA OEHHA Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) list

2 Compound included on Cal/EPA ARB list of Toxic Air Contaminants (TAC)

## CONCLUSIONS

Based on the emissions test data, MAS offers the following findings and conclusions:

- Predicted airborne concentrations of the CDPH target compounds from the PMS RE air duct system fabric at the 14-day test point in both a classroom and private office setting are compliant with the CDPH maximum concentration limits.

*Note: all data, including but not limited to raw instrument files, calibration fits, and quality control checks used to generate the test results are available to the client upon request.*

## LIMITATIONS

This report is intended for the use of Prihoda North America only. If other parties wish to rely on this report, please contact MAS so an agreement on the terms and conditions for our services can be established prior to the use of this information. This report shall not be reproduced, except in full, without the written approval of Materials Analytical Services, LLC.

Emissions generally decay over time, and the representativeness of the analytical data reported is directly dependent upon the age and conditions under which the tested sample was received.



## APPENDIX A Chain-of-Custody



**Materials Analytical Services LLC**  
 3945 Lakefield Court  
 Suwanee, Georgia 30024  
 Phone: 770-866-3200  
 Fax: 770-866-3259

Georgia Department of Public Health  
 Standard Method (section 01350)  
 Emission Testing  
 Chain-of-Custody

Client Information	Testing Specifications (per MAS) check appropriate test below
Company: Prihoda North America	<input type="checkbox"/> R&D (custom): Specify Details
Street Address: 4420 Dawes Lane E	<input type="checkbox"/> 24-hour Comparative R&D Test
City/State: Mobile, AL	<input type="checkbox"/> 72-hour Comparative R&D Test
Zip/Postal Code: 36695	<input checked="" type="checkbox"/> 14-day CDPH Compliance Test
Country: USA	<input type="checkbox"/> CARB Formaldehyde Test
Contact Name: Andrew Sorenson	
Title: President / CEO	
Phone Number: 251-404-6767	
Fax Number: NA	
Email Address: andrew@prihoda-na.com	
Construction Details (as applicable)	
Covering Type: Fabric <input checked="" type="checkbox"/> (Primary Fiber type: RPET (Recycled Polyester), Vinyl <input type="checkbox"/> , Leather <input type="checkbox"/> Plastic Type(s): Nylon <input type="checkbox"/> , PVC <input type="checkbox"/> , PE <input type="checkbox"/> , PP <input type="checkbox"/> , PU <input type="checkbox"/> , PS <input type="checkbox"/> , PC <input type="checkbox"/> , ABS <input type="checkbox"/> , Acrylic <input type="checkbox"/> , Lexan <input type="checkbox"/> Substrate Type(s): MDF <input type="checkbox"/> , Particle Board <input type="checkbox"/> , Plywood <input type="checkbox"/> , Solid Wood <input type="checkbox"/> , Other <input type="checkbox"/> Outer Finish Type(s): Oil Base <input type="checkbox"/> , Water Base <input type="checkbox"/> , Catalyzed/Conversion Var <input type="checkbox"/> , Polyurethane <input type="checkbox"/> , Plastic Laminates, Melamine <input type="checkbox"/> , UV <input type="checkbox"/> , Other <input type="checkbox"/> Foam Type: Polyurethane <input type="checkbox"/> , Memory <input type="checkbox"/> , Latex <input type="checkbox"/> , Evlon <input type="checkbox"/> , High Resilience <input type="checkbox"/> , High Density <input type="checkbox"/> Paint Type: Latex <input type="checkbox"/> , Oil <input type="checkbox"/> , Low VOC <input type="checkbox"/> , No VOCs <input type="checkbox"/> , PowderCoat <input type="checkbox"/> , Chrome <input type="checkbox"/>	
Manufacturer Information (if different than client)	Special Notes or Comments from Manufacturer:
Company: Prihoda SRO	
City/State/Country: Hirkso Czech Republic	
Contact Name/Title: Lukas Kadmas - Technical Sales	
Phone Number: 420 489 311 856	
Sample Details	Laboratory Receipt (to be completed by Laboratory Representative)
Unique Sample ID (if applicable): PMS RE	Received By: <i>S. Amalio</i>
Product Name & Catalog #: Prihoda Recycled	Received Date: <i>08-09-2018</i>
Product Type: Ceiling/Wall Panels <input type="checkbox"/> , Flooring <input type="checkbox"/> , Trim <input type="checkbox"/> , Wall Paint <input type="checkbox"/> , Wall Coverings <input type="checkbox"/> , Thermal Insulation <input type="checkbox"/> , Adhesives <input type="checkbox"/> , Ceiling Tiles <input type="checkbox"/> , Other <input checked="" type="checkbox"/>	Condition of Shipping Package: <i>Good</i>
Date of Product Manufacturing Completion: 8/2/2018	Condition of Sample: <i>Good</i>
Sample Location: Factory <input checked="" type="checkbox"/> , Warehouse <input type="checkbox"/> , Production Stack/Roll <input type="checkbox"/> , Container <input type="checkbox"/>	Remarks:
Sample Submitted by: Lukas Kadmas	
Date of Sample Shipment: 8/3/2018	
Number of Boxes or Pallets: 1	
Shipping Details	Sample Handling
Packed By: Andrew Sorenson	Relinquished By
Shipping Date: 8/7/18	Company
Carrier/Airbill Number: UPS 1Z3Y92Y90300116361	Received By
	Company
	Date/Time
	Lukas Kadmas
	Prihoda SRO
	Andrew Sorenson
	Prihoda North America
	10:35AM 8/6/18
	<i>S. Amalio</i>
	MAS
	8/9/18 12:30



Shipping Package Inspected By:  
 1. SA Date 8-9-18  
 2. MS Date 8/9/18



## APPENDIX B

### GENERAL TESTING PARAMETERS AND DATA

Under the provisions of the testing method referenced in this report, testing consisted of the following procedural steps:

- Storage of test specimens in original shipping containers prior to emissions testing for up to 10 days in a ventilated and conditioned room maintained at a temperature of  $23 \pm 2^\circ\text{C}$  and a relative humidity of  $50\% \pm 15\%$ .
- For quality assurance purposes the emission chamber was cleaned and air purged prior to testing. Air samples were collected and analyzed from the chamber exhaust prior to loading to establish background levels.
- Collection of air samples at method-specified intervals from the chamber exhaust port utilizing mass flow controllers calibrated at 180 cc/min for VOCs and 150 cc/min for aldehydes.
- Tenax TA<sup>®</sup> tubes are used for VOC analysis performed by thermal desorption gas chromatography/mass spectrometry (TD-GC/MS) using a modified EPA TO-17 method. Samples are also collected on DNPH tubes for aldehyde analysis performed using high performance liquid chromatography (HPLC) using a modified NIOSH 2016 method. All samples are drawn and analyzed in duplicate.
- Instrument calibration, analysis of quality control samples and quantitation of the CDPH target list of 35 chemicals of concern, and reporting and speciation of top 10 tentatively identified compounds.

The operational parameters for the small-scale emissions chamber used for this project included:

Parameter	Value	Parameter	Value
Chamber Volume	0.053 m <sup>3</sup>	Area Specific Flow Rate	2.4 m/h
Loading Factor	0.425 m <sup>2</sup> /m <sup>3</sup>	Temperature	23 ± 1 °C
Air Exchange Rate	1.0 ± 0.05 h <sup>-1</sup>	Relative Humidity	50 ± 5%

Total volatile organic compounds (TVOC) are defined as the compounds eluting between hexane (*n*-C<sub>5</sub>) and hexadecane (*n*-C<sub>17</sub>) and in this protocol quantified as toluene. Table B-I presents the measured concentration and emission factor of TVOC at each of the three sampling intervals.

**Table B-I**  
**Total Volatile Organic Compounds (TVOC) between n-C<sub>5</sub> and n-C<sub>17</sub> Measured by GC/MS\***

Sample Interval (hours)	TVOC Concentration (µg/m <sup>3</sup> )	TVOC Emission Factor (µg/m <sup>2</sup> h)
24	14	32
48	23	55
96	17	39

\*TVOC values are background corrected



Table B-II presents measured concentrations and emission factors of formaldehyde and acetaldehyde at each of the three sampling intervals.

**Table B-II**  
**Formaldehyde and Acetaldehyde Concentrations and Emission Factors as Measured by HPLC**

Sample Interval hours	Target Compound	Concentration ( $\mu\text{g}/\text{m}^3$ )	Emission Factor ( $\mu\text{g}/\text{m}^2 \text{h}$ )
24	Formaldehyde	<1.4	<3.2
48	Formaldehyde	<1.4	<3.2
96	Formaldehyde	<1.4	<3.2
24	Acetaldehyde	<1.8	<4.3
48	Acetaldehyde	<1.8	<4.3
96	Acetaldehyde	<1.8	<4.3

Table B-III presents the individual volatile organic compounds (IVOC) identified by GC/MS after 96 hours.

**Table B-III**  
**Speciation of Tentatively Identified IVOCs\* by GC/MS after 96 hours**

CAS Number	Tentatively Identified Compounds	Concentration ( $\mu\text{g}/\text{m}^3$ )	Emission Factor ( $\mu\text{g}/\text{m}^2 \text{h}$ )
100-51-6	benzyl alcohol	4.8	11
No other IVOCs were detected laboratory instrument detection limits			

\*All IVOCs detected were identified using the average response factor of toluene calibration standards. The sum concentration of IVOC's does not necessarily correlate with the TVOC concentration under the analytical conditions.