

TEST REPORT

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EVALUATION CENTER

Intertek
Verification Center
8431 Murphy Dr
Middleton, WI 53562

RENDERED TO

Mark Lund
3M
3M Center, Building 230-BE-16
St. Paul, MN 55144
Phone: 651-773-0973
Email: mwllud@mmm.com

PRODUCT EVALUATED: 3M™ Fire Barrier Composite Sheet CS-195+

EVALUATION PROPERTY: CDPH Specification 01350 v1.1: Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers v1.1

Report of for compliance with the applicable requirements of the following criteria: CDPH Specification 01350 v1.1: Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers v1.1 and LEED v4.

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2 Introduction

Intertek has conducted testing for 3M on 3M™ Fire Barrier Composite Sheet CS-195+ Testing was conducted following the standard methods of CDPH Specification 01350 v1.1: Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers v 1.1.

3 Test Samples

3.1.1. SAMPLE SELECTION

Two samples of 3M™ Fire Barrier Composite Sheet CS-195+ sample ID 98-0400-2947 manufactured on 11/15/2016. The material was sampled by Michael Anderson 3406 Pleasant Street, Knoxville, IA 50138. The samples were wrapped in aluminum foil and sealed with tape, paced in a plastic bag. The sample was shipped on 11/15/2016, and arrived at the lab on 11/16/2016. The Middleton Lab ID Tracking number: MID1611161235-001

3.1.2. SAMPLE AND ASSEMBLY DESCRIPTION

The 19 inch by 19 inch sample was cut to 13.5 x 13.5 inch samples with a clean band saw by Intertek. The sample was place directly on the bottom of the square VOC chamber so that the metal surface is at the bottom of the VOC chamber. See the photo in the chamber in section 5 of this report.

The sample was immediately transferred to the environmental chamber and the date and time recorded. The sample was elevated in the chamber so that the sample surface was in the middle of the chamber.

4 Testing and Evaluation Methods

Testing was in accordance with CDPH Specification 01350 v1.1: Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers v1.1.

Testing for the private office, and classroom scenario, using 12 m² in classroom and 4 m² in the private office. The chamber volume is 224 L with an inlet flow of 224 L/hour. The load factor was 0.5246 m²/m³. The average temperature range was 23 °C +/- 2 and 50 +/- 5 %RH. The conditioning was from 10 days 11/18/16 to 11/28/16. The sampling started on 11/29/16 and completed 12/2/16. All GC and LC testing was completed by 12/5/2016.

The VOC for the LC sampling was collected on Sep-Pak DNPH-Silica Cartridges. Collection was performed at 50 ml/min for 20 minutes using a vacuum pump with a mass flow meter. The Sep-Pak DNPH-Silica Cartridges were stored in the refrigerator until eluted according to the manufactures instructions into 5 ml of ACN. The samples were collected at 96 hours within the time limitations specified in the standard. The Sep-Pak DNPH-Silica Cartridges samples were run on Shimadzu HPLC system using a Waters Symetry C18 5um 3.9 x 150 column. A gradient profile was used to run the standard Aldehyde/Ketone –DNPH Mix.

For the HPLC testing, no target VOCs were found at the 96 hr time point. No quantification was

required using the standard with minimum of a 5 point curve. A check standard was run during the samples to verify system suitability.

The VOC for the GC/MS was collected on Thermo Desorption (TD) tubes Atas GL (A100054) fritted linters filled with Tenax GR packing material. Collection was performed at 50 ml/min for 20 minutes using a vacuum pump with a mass flow meter. The TD tubes were verified to be clean before testing. The samples were collected at 24, 48, and 96 hours within the time limitations specified in the standard, and tested the same day. The samples were run on Shimadzu GC/MS with an ATAS GL High Performance injector for the TD tubes. A Restek Rtx-VMS 40 meter, 0.18 mm ID, 1um df was used.

For determining TVOC direct injection of toluene was used with at least 5 different concentrations.

Standard Curves diluted with toluene were performed in triplicate for each standard. The standard was run with the same GC temperature profile as the TD tubes.

The LOQ for toluene was determined to be 0.008044 ug/m³.

4.1.1. Deviation from Standard Method

There were no deviations from the test standard.

4.2. RESULTS AND OBSERVATIONS

	Private Office	Standard Classroom
Product Quantities:	Composite Sheet	Composite Sheet
Inlet flow rate Q (m ³ h ⁻¹)	0.22414	0.22414
Exposed projected surface area of the test specimen in the chamber A _c (m ²)	0.11758	0.11758
Flow rate of the outside ventilation are Q _B (m ³ h ⁻¹)	20.7	191
Exposed surface area of the installed material in the building A _B (m ²)	4	12
Area Specific flow rate q _A (m ³ h ⁻¹)= Q _B /A _B	5.1750	15.9167

Compound name	CAS Number	Retention Time (minutes)	Area Count Sample (No units)	Area Count Background (No units)	Chamber Concentration C _t (ug m ⁻³)	Chamber background concentration (ug m ⁻³)	Sampling Time (hrs):		
							*Area Specific Emissions Factor at the sampling time (EF _s) (ug m ⁻² h ⁻¹)	Area Specific Estimated Building Concentration C _B for Target VOC using EF _s (ug m ⁻³)	Area Specific Estimated Building Concentration C _B for Target VOC using EF _s (ug m ⁻³)
Unknown at 11.805	na	na	166.716	0	8.968	0.000	17.0958	3.3035	0.2076
Unknown at 13.756	na	na	137.043	0	8.541	0.000	16.2808	3.1460	0.1977
							33.3766	6.4496	0.4052

							Testing Scenario:			
							Private Office	Standard Classroom		
							Product Quantities:	Composite Sheet	Composite Sheet	
							Sampling Time (hrs):	48 hr	48 hr	
Compound name	CAS Number	Retention Time (minutes)	Area Count Sample (No units)	Area Count Background (No units)	Chamber Concentration C _t (ug m ⁻³)	Chamber background concentration (ug m ⁻³)	*Area Specific Emissions Factor at the sampling time (EF _s) (ug m ⁻² h ⁻¹)	Area Specific Estimated Building Concentration C _B for Target VOC using EF _s (ug m ⁻³)	Area Specific Estimated Building Concentration C _B for Target VOC using EF _s (ug m ⁻³)	
Unknown at 11.798	na	11.798	264.680	0	10.380	0	19.7868	3.8235	0.2402	
Total							19.7868	3.8235	0.2402	

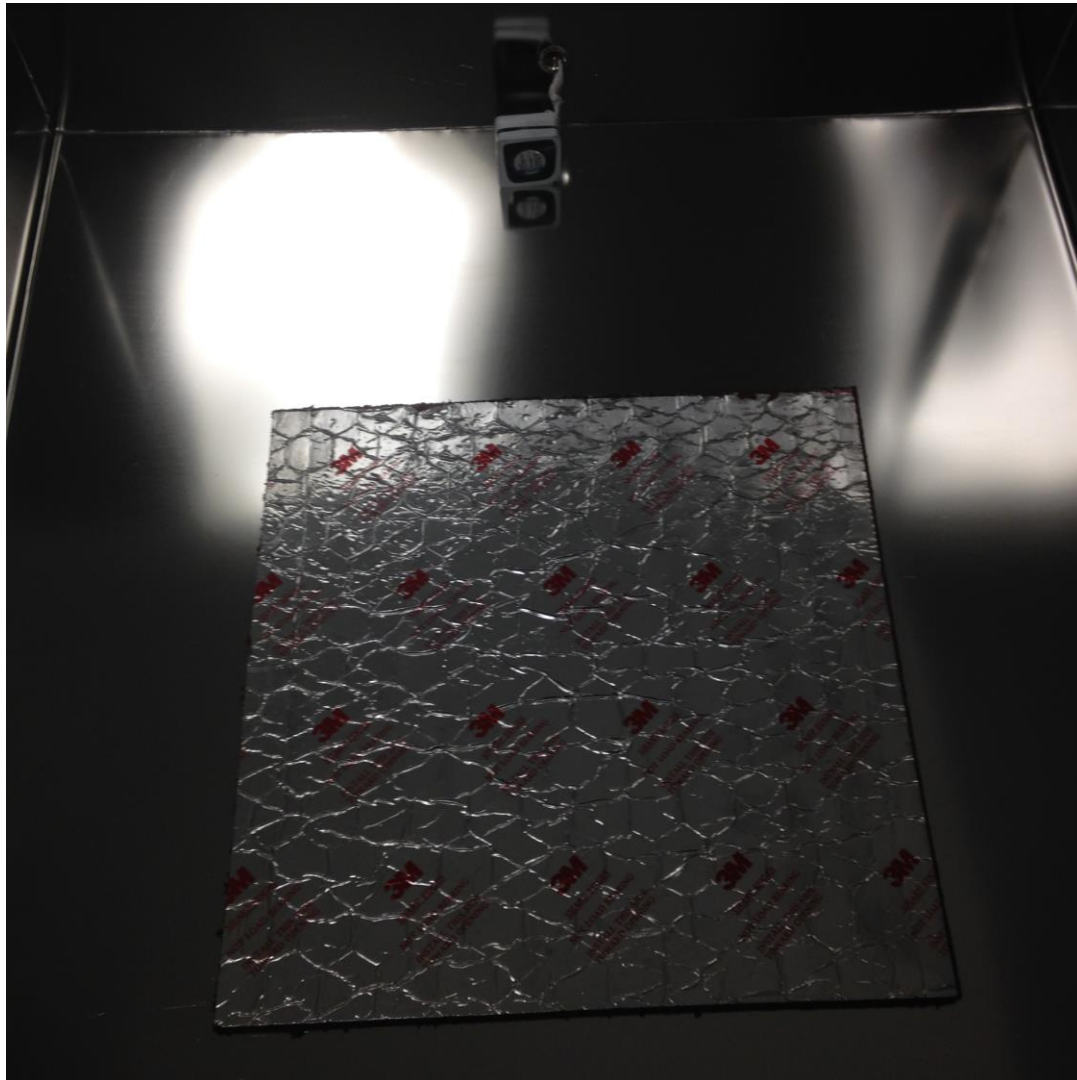
At 96 hour sampling an unknown at 11.816 was found in the sample but was below the LOQ. No VOC will be reported found at the 96 hour time point.

4.3. EXAMINATION OF RESULTS

No known VOC compounds were found. No Formaldehyde or Acetaldehyde were found using HPLC analysis.

5 Appendix A

Photo of tested sample:




6 Conclusion

Intertek has conducted testing on 3M™ Fire Barrier Composite Sheet CS-195+, to evaluate CDPH Specification 01350 v1.1; Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers v1.1.


3M™ Fire Barrier Composite Sheet CS-195+ complies with limits specified in CDPH Specification 01350 v1.1 February 2010 for private office and classroom.

The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK
Reported by:


Bryan Bowman
Chemist

Reviewed by:


Mark Crawford
Chemist Team Lead

7 Revision Summary

DATE	SUMMARY
December 14, 2016	Original date of report
