

TEST REPORT

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PRODUCT EVALUATED: 3M™ Fire Barrier Duct Wrap 615+

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 Duct Wrap 615+. 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. SAMPLE SELECTION

Two samples of 3M™ Fire Barrier Duct Wrap 615+ sample ID 98-0400-5612-3 manufactured on 9/22/2016 at 11:00 am. The material was sampled by Abel Ochoa Cordova 3M Company, 3M Center, 230-BE-16, St. Paul, MN 55144. The samples were wrapped in plastic and sealed with tape. The sample was shipped on 9/22/2016, and arrived at the lab on 9/22/2016. The Middleton Lab ID Tracking number: MID1609221214-001.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The 19 inch by 19 inch sample was cut to 10 x 10 inch samples with a clean scissors allowing for the overlap of the foil cover and sealed with low VOC aluminum tape. The sample was place snugly into a 10 x 10 inch stainless steel pan the thickness of the sample.

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. See appendix 1 for the photo of the sample.

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 with Floors, Ceiling and walls, using 640 ft² in classroom and 192 ft² in the private office. The chamber volume is 100.35 L with an inlet flow of 100.35 L/hour. The load factor was 0.643 m²/m³. The average temperature range was 23 °C +/- 2 and 50 +/- 5 %RH. The conditioning was from 10 days 9/23/16 to 10/3/16. The sampling started on 10/4/16 and completed 10/7/16. All GC and LC testing was completed by 10/13/2016.

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 VOC for the GC/MS was collected on Thermo Desorption (TD) tubes Atas GL (A100054) fritted lintars 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:	Duct work insulation	Duct work insulation
Inlet flow rate Q (m ³ h ⁻¹)	0.10035	0.10035
Exposed projected surface area of the test specimen in the chamber A _c (m ²)	0.064516	0.064516
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)	17.84	59.46
Area Specific flow rate q _A (m ³ h ⁻¹)= Q _B /A _B	1.1605	3.2124

							Testing Scenario:	Private Office	Standard Classroom
							Product Quantities:	Duct work insulation	Duct work insulation
							Sampling Time (hrs):	24 hr	24 hr
Compound name	CAS Number	Retention Time	Area Count Sample	Area Count Background	Chamber Concentration C _t	Chamber background concentration	*Area Specific Emissions Factor at the sampling time (EF _A)	Area Specific Estimated Building Concentration C _B for Target VOC using EF _A	Area Specific Estimated Building Concentration C _B for Target VOC using EF _A
	number	minutes	No units	No units	(ug m ⁻³)	(ug m ⁻³)	(ug m ⁻² h ⁻¹)	(ug m ⁻³)	(ug m ⁻³)
Total VOCs	na	na	1,105,951.00	597256	22.50230791	15.17216557	11.4015	9.8248	3.0584

							Testing Scenario:	Private Office	Standard Classroom
							Product Quantities:	Duct work insulation	Duct work insulation
							Sampling Time (hrs):	48 hr	48 hr
Compound name	CAS Number	Retention Time	Area Count Sample	Area Count Background	Chamber Concentration C _t	Chamber background concentration	*Area Specific Emissions Factor at the sampling time (EF _A)	Area Specific Estimated Building Concentration C _B for Target VOC using EF _A	Area Specific Estimated Building Concentration C _B for Target VOC using EF _A
	number	minutes	No units	No units	(ug m ⁻³)	(ug m ⁻³)	(ug m ⁻² h ⁻¹)	(ug m ⁻³)	(ug m ⁻³)
Total VOCs	na	na	916,240.00	597256	19.76862932	15.17216557	7.1495	6.1608	1.9178

							Testing Scenario:	Private Office	Standard Classroom
							Product Quantities:	Duct work insulation	Duct work insulation
							Sampling Time (hrs):	96 hr	96 hr
Compound name	CAS Number number	Retention Time minutes	Area Count Sample No units	Area Count Background No units	Chamber Concentration C _{it} (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 _{ib} for Target VOC using EF _s (ug m ⁻³)	Area Specific Estimated Building Concentration C _{ib} for Target VOC using EF _{ib} (ug m ⁻³)
Total VOCs	na	na	1221243	597256	24.16363105	15.17216557	13.9856	33.7816	8.8433

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 Duct Wrap 615+, 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 Duct Wrap 615+ 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

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7 Revision Summary

DATE	SUMMARY
Nov 1, 2016	Original date of report
Dec 13, 2016	Corrected typo in conclusion
