

TEST REPORT

REPORT NUMBER: 102677921MID-001b
ORIGINAL ISSUE DATE: Oct 18, 2016
REVISED DATE: na

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PRODUCT EVALUATED: 3M Fire Barrier Sealant FD 150+ Red 10 oz tube

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 Sealant FD 150+ Red 10 oz tube. 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 98-0400-5600-8 3M Fire Barrier Sealant FD 150+ Red 10 oz tube lot RN072716-5L was bulk manufactured on 7/27/2016. The bulk material was packaged on 7/29/2016 in standard packaging for 10 oz finish cartridge. The samples were shipped by Andrew J. Mais on 8/18/2016. The sample arrived on 8/24/2016 in the Middleton Lab ID Tracking number: MID160824021-001.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The sample was placed in a ½ inch wide by ½ inch deep channel into two aluminum tray cut to about 10 inches long. The empty metal channels were weighed. The tube was inserted into the applicator gun. The applicator tip was cut to produce about a ½ inch bead of material. About 100g of material was dispensed and discarded. The sample was placed in the tray holders using a single smooth stroke of the gun. Any excess caulk was wiped from the exterior of the channel holder. The metal channels were reweighed after applying the caulk to determine the number of grams of wet caulk per linear meter of ½ inch bead. The sample was immediately transferred to the environmental chamber and the date and time recorded. 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, and around windows and doors. The chamber volume is 100.35 with an inlet flow of 100.35 L/hour. The load factor is based on the total surface area of the system in the standard environment, where the product is applied as stated in section 4.3.6 of the standard. 20 inches of sample was used for the 100.35 L chamber so that there was a proportional increase in the sample size to that of the smallest chamber of 50L with a sample length of 10 inches. 10 inches is the maximum required length stated in section 3.4.1 of the standard for caulk preparation. The conditioning started on 9/9/2016 and was completed on 9/19/2016. The average temperature range was 23 °C +/- 2 and 50 +/- 5 %RH. The sampling started on 9/20/2016 and completed 9/23/2016. 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 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	m ²		Classroom	m ²
net wall	33.4		net wall	94.6
ceiling	11.1		Walls and Ceiling	183.8
Floors	11.1			
Total surface	55.6		Total surface	278.4

Testing Scenario:	Private Office	Standard Classroom
Product Quantities:	Floors, Ceiling and walls, and around windows	Floors, Ceiling and walls, and around windows and doors
Inlet flow rate Q (m ³ h ⁻¹)	0.10035	0.10035
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)	55.6	278.4
Area Specific flow rate q _B (m ² h ⁻¹)= Q _B /A _B	0.3723	0.6861
The emission factor can be based on Volume (EV), length (EFL), mass (EFM) or unit specific mission rate (ug m-3h-1, ug kg-1 or ug h-1 per unit) by substituting the appropriate parameter used to quantify the material specimen (See section3,10.1.3 of the standard)	73.362	73.362

Specified Units for the specified emission factor: g/linear foot of 1/2 caulk

								Testing Scenario:	Private Office	Standard Classroom
								Product Quantities:	Floors, Ceiling and walls, and around windows and doors	Floors, Ceiling and walls, and around windows and doors
								Sampling Time (hrs):	24 hr	24 hr
Compound name	CAS Number number	Retention Time minutes	Area Count Sample No units	Area Count Background No units	Chamber Concentration Ct (ug m ⁻³)	Chamber background concentration (ug m ⁻³)	Specific Emissions Factor at the sampling time (EF _s)	Specific Estimated Building Concentration C _b for Target VOC using EF _s (ug m ⁻³)	Specific Estimated Building Concentration C _b for Target VOC using EF _s (ug m ⁻³)	
Total VOC	na	na	287,810,089.00	0	4,153.82	0	5.6819	15.2615	40.9924	

								Testing Scenario:	Private Office	Standard Classroom
								Product Quantities:	Floors, Ceiling and walls, and around windows and doors	Floors, Ceiling and walls, and around windows and doors
								Sampling Time (hrs):	24 hr	24 hr
Compound name	CAS Number number	Retention Time minutes	Area Count Sample No units	Area Count Background No units	Chamber Concentration Ct (ug m ⁻³)	Chamber background concentration (ug m ⁻³)	Specific Emissions Factor at the sampling time (EF _s)	Specific Estimated Building Concentration C _b for Target VOC using EF _s (ug m ⁻³)	Specific Estimated Building Concentration C _b for Target VOC using EF _s (ug m ⁻³)	
Total VOC	na	na	285,496,360.00	0	4,120.48	0	5.6363	15.1391	40.6634	

								Testing Scenario:	Private Office	Standard Classroom
								Product Quantities:	Floors, Ceiling and walls, and around windows and doors	Floors, Ceiling and walls, and around windows and doors
								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 Ct (ug m ⁻³)	Chamber background concentration (ug m ⁻³)	Specific Emissions Factor at the sampling time (EF _s)	Specific Estimated Building Concentration C _b for Target VOC using EF _s (ug m ⁻³)	Specific Estimated Building Concentration C _b for Target VOC using EF _s (ug m ⁻³)	
Total VOC	na	na	493,466,173	0	7,117.26	0	9.7355	26.1495	70.2374	

4.3. EXAMINATION OF RESULTS

The results are based on the use of 73.4 g/linear foot of 1/2 caulk in a private office or standard classroom placing caulk on the parameters of using floors, ceilings walls and floors and around doors and windows. The amount of the VOC present in the room are based on the total surface area of the system in the standard environment, where the product is applied, using 20 inches of sample in a 1/2 inch deep by 1/2 inch wide channel of aluminum with a 100.35 liter VOC chamber.

No compounds were identified at the 96 hour collection time point. A grouping of unknown compounds were found in the sample. n-Hexane CAS #110-54-3 was evaluated to determine if it was present in the unknowns. n-Hexane standard peak was not present in the same retention times as the grouping of unknowns, and therefore not present in the sample. No Formaldehyde or Acetaldehyde were found by HPLC analysis. No CRELs compounds were found. The summary for each testing scenario is listed in the result above in section 4.2.

5 Appendix A

Photo of tested sample:



6 Conclusion

Intertek has conducted testing Applegate Insulation, on 3M Fire Barrier Sealant FD 150+ Red 10 oz tube , 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 Sealant FD 150+ Red 10 oz tube complies with limits specified in CDPH Specification 01350 v1.1 February 2010 for private office and classroom. The sample passed the LEED v4 for total VOC and Target Chemical listed in CDPH Standard Method v 1.1 Table 4-1.


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
Oct 18, 2016	Original date of report
