

TEST REPORT

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PRODUCT EVALUATED: 3M™ Fire and Water Barrier Tape FWBT

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 and Water Barrier Tape FWBT. 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 and Water Barrier Tape FWBT Lot 634001 was manufactured on 12/05/2016. The material was sampled by Paul Fannin at 3M Company, 3M Center, 230-BE-16, St. Paul, MN 55144. The samples were wrapped in aluminum foil and sealed with tape. The samples were placed in a plastic bag. The sample was shipped on 12/12/2016, and arrived at the lab on 12/16/2016. The Middleton Lab ID Tracking number: MID11612160633-001.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The sample was cut to 9.5 x 12.5 inch samples with a clean scissors and the adhesive backing removed. The sample was adhered to a stainless steel plate. The sample was immediately transferred to the environmental chamber and the date and time recorded. The sample was placed directly on the bottom of the square 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, using 219 ft² for standard classroom and 113 ft² for standard office. The chamber volume is 224L with an inlet flow of 224 L/hour. The load factor was 0.342 m²/m³. The average temperature range was 23 °C +/- 2 and 50 +/- 5 %RH. The conditioning was from 10 days 12/23/16 to 1/2/17. The sampling started on 1/3/17 and completed 1/6/17. All GC and LC testing was completed by 1/12/2017.

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
Sampling Time (hrs):	96 hr	96 hr
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)	0.0766	0.0766
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)	10.498	20.346
Area Specific flow rate q _A (m ³ h ⁻¹)= Q _B /A _B	1.9718	9.3877

							Testing Scenario		
							Private Office	Standard Classroom	
							Walls	Walls	
							Walls	Walls	
							24 hr	24 hr	
							24 hr	24 hr	
Compound	CAS Number	Retention Time	Area Count Sample	Area Count Background	Chamber Concentration C ₁	Chamber background concentration	Area Specific Emission Factor at the sampling time (EF _s)	Area Specific Estimated Building Concentration C _b for Target VOC using EF _s	Area Specific Estimated Building Concentration C _b for Target VOC using EF _s
name	number	minutes	No units	No units	(ug m ⁻³)	(ug m ⁻³)	(ug m ⁻³ h ⁻¹)	(ug m ⁻³)	(ug m ⁻³)
Unknown #1: 11.529	na	11.529	259547	0	10.74249	0	31.4255	1.59290	1.5929
Unknown #1: 12.224	na	12.224	152257	0	6.19215	0	20.5925	1.02957	1.4325
Unknown #1: 12.262	na	12.262	148544	0	5.67595	0	20.2974	1.02773	1.3717
Unknown #1: 12.125	na	12.125	252552	0	12.09424	0	38.2825	1.79445	1.9115
Unknown #1: 12.25	na	12.25	2920155	0	45.84450	0	142.2155	72.1757	7.8552
Unknown #1: 12.214	na	12.214	256070	0	10.22575	0	30.0045	1.52155	1.6209
Unknown #1: 12.4	na	12.4	252921	0	12.08265	0	38.2522	1.79229	1.9295
Total							257.7412	126.6425	20.9459

							Testing Scenario:	Private Office	Standard Classroom
							Product Quantities:	Walls	Walls
							Sampling Time (hrs):	48 hr	48 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)	*Area Specific Emissions Factor at the sampling time (EF _s) (ug m ⁻² h ⁻¹)	Area Specific Estimated Building Concentration C _{bi} for Target VOC using EF _s (ug m ⁻³)	Area Specific Estimated Building Concentration C _{bi} for Target VOC using EF _s (ug m ⁻³)
Unknown at 11.825	na	11.825	685385	0	16.442078	0	48.1033	24.3957	2.5987
Unknown at 12.111	na	12.111	210477	0	9.598796	0	28.0825	14.2421	1.5171
Unknown at 12.17	na	12.17	171403	0	9.035752	0	26.4352	13.4067	1.4281
Unknown at 12.269	na	12.269	727456	0	17.048309	0	49.8769	25.2952	2.6945
Unknown at 12.333	na	12.333	586993	0	15.024279	0	43.9554	22.2920	2.3746
Unknown at 12.682	na	12.682	132056	0	8.468773	0	24.7764	12.5654	1.3385
Unknown at 13.014	na	13.014	138464	0	8.561110	0	25.0466	12.7024	1.3531
Unknown at 13.126	na	13.126	475716	0	13.420811	0	39.2642	19.9129	2.1212
Unknown at 13.249	na	13.249	2875742	0	48.004465	0	140.4430	71.2259	7.5871
Unknown at 13.312	na	13.312	374270	0	11.959004	0	34.9875	17.7440	1.8901
Unknown at 13.4	na	13.4	448805	0	13.033031	0	38.1297	19.3376	2.0599
Total							499.1007	253.1198	26.9629

							Testing Scenario:	Private Office	Standard Classroom
							Product Quantities:	Walls	Walls
							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)	*Area Specific Emissions Factor at the sampling time (EF _s) (ug m ⁻² h ⁻¹)	Area Specific Estimated Building Concentration C _{bi} for Target VOC using EF _s (ug m ⁻³)	Area Specific Estimated Building Concentration C _{bi} for Target VOC using EF _s (ug m ⁻³)
Unknown at 11.821	na	11.821	448038	0	13.02198	0	38.0974	19.3212	2.0581
Unknown at 12.266	na	12.266	248670	0	10.14915	0	29.6926	15.0586	1.6041
Unknown at 12.341	na	12.341	291169	0	10.76154	0	31.4842	15.9673	1.7009
Unknown at 13.125	na	13.125	191399	0	9.32389	0	27.2782	13.8342	1.4736
Unknown at 13.248	na	13.248	1710089	0	31.20776	0	91.3021	46.3040	4.9324
Unknown at 13.31	na	13.31	120386	0	8.30061	0	24.2845	12.3159	1.3119
Unknown at 13.332	na	13.332	122777	0	8.33507	0	24.3853	12.3670	1.3174
Unknown at 13.401	na	13.401	352758	0	11.64902	0	34.0806	17.2841	1.8411
Total							300.6048	152.4522	16.2396

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 and Water Barrier Tape FWBT, 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 and Water Barrier Tape FWBT 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 according to CDPH Standard Method v1.1 and Target Chemical listed in CDPH Standard Method.


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
January 12, 2017	Original date of report
