March 11, 2020

Mr. Mike Tullis
Safti-Seal™, Inc.
5806 119th Avenue SE
Suite A #385
Bellevue, WA 98006

Subject: **Dynamic Small-Scale Chamber Emissions Testing**
Compliance Report per California Department of Public Health Standard Method Version 1.2
Safti-Seal™ Smoke-n-Sound "Peel and Stick" Gasket
MAS Project No.: 2000169

Dear Mr. Tullis:

MAS, LLC is pleased to submit this report with results of VOC emissions testing from an application of Safti-Seal™ Smoke-n-Sound "Peel and Stick" Gasket.

MAS conducted this test 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*.

Based on the test results, the Safti-Seal™ Smoke-n-Sound "Peel and Stick" Gasket is compliant with the performance standards established for low-emitting materials under the CDPH and Leadership in Energy and Environmental Design (LEED) v4 programs. Qualified project uses of this product may be eligible for credit points under the LEED program.

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

Robert D. Schmitter
2020.03.11 17:02:01 -04'00'

Manager, Emissions Group

William R. Stapleton
Digitally signed by William R. Stapleton
DN: cn=William R. Stapleton, c=US, o=MAS LLC, ou=Emissions Dept., email=rstapleton@mastest.com
Reason: I have reviewed this document
Date: 2020.03.11 16:49:54 -04'00'

Senior Analytical Chemist

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

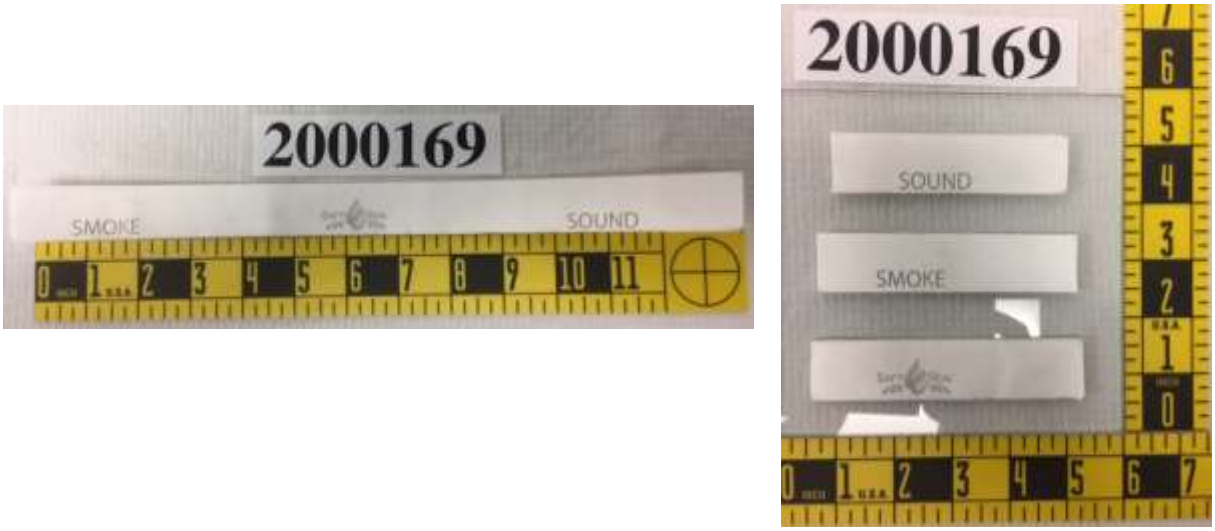
EMISSIONS COMPLIANCE TEST

California Dept. of Public Health Standard Method Version 1.2
Gasket Evaluation

SAMPLE DESCRIPTION & TESTING PARAMETERS

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

Product Name: Safti-Seal™ Smoke-n-Sound "Peel and Stick" Gasket	**MAS Assigned ID:** 2000169
Manufacturer: Safti-Seal™, Inc. Bellevue, WA	**Product Description:** one-sided peel-away adhesive gasket Approx. 12.5" 1" as tested
Manufacture Date: February 6, 2020	**Testing Period:** Feb. 20 – March 5, 2020
Collection Date: February 6, 2020	**In-Chamber Sampling Dates:** Mar. 2 @ 24 hrs.; Mar. 3 @ 48 hrs.; Mar. 5 @ 96 hrs.
Shipping Date: February 6, 2020	**Date of Sample Analysis:** March 9 – 11, 2020
Laboratory Arrival Date: February 10, 2020	**Age of Sample at Testing:** 14 days



Safti-Seal™ Smoke-n-Sound "Peel and Stick" Gasket as submitted (left) and tested (right)

The sample was cut into three approximately 4-inch strips, adhered to a glass plate, and placed inside one of MAS's small-scale emissions chambers.

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 CDPH and Leadership in Energy and Environmental Design (LEED) standard criteria for low emitting materials. Appendix A presents general testing parameters and data.

TEST RESULTS

To compare the chamber-derived data to the standards established under CDPH Standard Method 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 dimensions of 24 feet by 40 feet and a total gasket application area of 3840 square inches (2.47 square meters), and a typical private office with dimensions of 10 feet by 12 feet and a total application area of 1320 square inches (0.85 square meters). Table I presents the results of the modeled data.

Table I
Comparison of Emission Factors and Predicted 96-Hour Airborne Concentrations from the Safti-Seal™ Smoke-n-Sound "Peel and Stick" Gasket to CDPH Concentration Limits in Typical Building Environments

VOC Name	Calculated Emission Factor ($\mu g/m^2hr$)	Predicted Airborne Concentration ($\mu g/m^3$)*		Maximum Concentration Limits ($\mu g/m^3$)	Testing Comment
		Classroom	Private Office		
Total VOCs (TVOC)	79	1.0	3.2	NA†	NA
Formaldehyde[1,2]	<7.5	<0.098	<0.31	9	Compliant
Acetaldehyde[1,2]	<10	<0.13	<0.42	70	Compliant
Isopropanol	<6.8	<0.090	<0.28	3500	Compliant
1,1-dichloroethylene	<6.8	<0.090	<0.28	35	Compliant
Methylene chloride[2]	<6.8	<0.090	<0.28	200	Compliant
Carbon disulfide[1,2]	<6.8	<0.090	<0.28	400	Compliant
MTBE[2]	<6.8	<0.090	<0.28	4000	Compliant
Vinyl acetate[2]	<6.8	<0.090	<0.28	100	Compliant
Hexane[2]	<6.8	<0.090	<0.28	3500	Compliant
Chloroform[1,2]	<6.8	<0.090	<0.28	150	Compliant
2-methoxyethanol[1]	<6.8	<0.090	<0.28	30	Compliant
1,1,1-trichloroethane[2]	<6.8	<0.090	<0.28	500	Compliant
Benzene[1,2]	<6.8	<0.090	<0.28	1.5	Compliant
1-methoxy-2-propanol	<6.8	<0.090	<0.28	3500	Compliant
Carbon tetrachloride[1,2]	<6.8	<0.090	<0.28	20	Compliant
Ethylene glycol[2]	<6.8	<0.090	<0.28	200	Compliant
1,4-dioxane[1,2]	<6.8	<0.090	<0.28	1500	Compliant
Trichloroethylene[1,2]	<6.8	<0.090	<0.28	300	Compliant
Epichlorohydrin[1,2]	<3.4	<0.045	<0.14	1.5	Compliant
2-ethoxyethanol[1]	<6.8	<0.090	<0.28	35	Compliant
n,n-dimethylformamide[2]	<6.8	<0.090	<0.28	40	Compliant
Toluene[1,2]	<6.8	<0.090	<0.28	150	Compliant
2-methoxyethanol acetate[1]	<6.8	<0.090	<0.28	45	Compliant
Tetrachloroethylene[1,2]	<6.8	<0.090	<0.28	17.5	Compliant
Chlorobenzene[2]	<6.8	<0.090	<0.28	500	Compliant
Ethylbenzene[1,2]	<6.8	<0.090	<0.28	1000	Compliant
m & p-xylene[2]	<6.8	<0.090	<0.28	350	Compliant
Styrene[1,2]	<6.8	<0.090	<0.28	450	Compliant
2-ethoxyethyl acetate[1]	<6.8	<0.090	<0.28	150	Compliant
o-xylene[2]	<6.8	<0.090	<0.28	350	Compliant
Phenol[2]	<6.8	<0.090	<0.28	100	Compliant

1,4-dichlorobenzene[1,2]	<6.8	<0.090	<0.28	400	Compliant
Isophorone[2]	<6.8	<0.090	<0.28	1000	Compliant
Naphthalene[1,2]	<3.4	<0.045	<0.14	4.5	Compliant

* Assumes a 24' x 40' x 8.5' classroom with a ventilation rate of 0.82 h^{-1} and a 10' x 12' x 9' private office with a ventilation rate of 0.68 h^{-1} as defined by CDPH/EHLB/Standard Method V.1.2
† TVOC is not included as a target compound in the CDPH Standard, but is reported as part of the requirements of the Standard.
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 at the 14-day test point in both a classroom and private office setting are compliant with the CDPH Standard Method v1.2 maximum concentration limits.
- By virtue of compliance with CDPH Standard Method v1.2 the Safti-Seal™ Smoke-n-Sound "Peel and Stick" Gasket is compliant with LEED v4.1 EQ: Low-Emitting Materials general emissions evaluation criteria. In accordance with LEED v4.1 reporting requirements, the estimated TVOC concentrations are 0.5 mg/m^3 or less. This test did not evaluate the VOC content of the material.

Qualified project uses of the Safti-Seal™ Smoke-n-Sound "Peel and Stick" Gasket may be eligible for credit points under the LEED program.

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 Safti-Seal™, Inc. 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 MAS, 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

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 ± 2°C and a relative humidity of 50% ± 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® 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 operating parameters for the small-scale emissions chamber used for this project included:

Parameter	Value	Parameter	Value
Chamber Volume	0.053 m^3	Area Specific Flow Rate	5.5 m/h
Loading Factor	0.18 m^2/m^3	Temperature	23 $\pm$ 1 ºC
Air Exchange Rate	1.0 $\pm$ 0.05 h^{-1}	Relative Humidity	50 $\pm$ 5%

Total volatile organic compounds (TVOC) are defined as the compounds eluting between hexane (*n*-C_5) and hexadecane (*n*-C_{17}) and in this protocol quantified as toluene. Table A-I presents the measured concentration and emission factor of TVOC at each of the three sampling intervals.

Table A-I
Total Volatile Organic Compounds (TVOC) between n-C_5 and n-C_{17} Measured by GC/MS*

Sample Interval (hours)	TVOC Concentration (µg/m^3)	TVOC Emission Factor (µg/m^2 h)
24	82	450
48	19	110
96	14	79

*TVOC values are background corrected

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

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

Sample Interval hours	Target Compound	Concentration (µg/m^3)	Emission Factor (µg/m^2 h)
24	Formaldehyde	<1.4	<7.5
48	Formaldehyde	<1.4	<7.5
96	Formaldehyde	<1.4	<7.5
24	Acetaldehyde	<1.8	<10
48	Acetaldehyde	<1.8	<10
96	Acetaldehyde	<1.8	<10

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

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

CAS Number	Tentatively Identified Compounds	Concentration (µg/m^3)	Emission Factor (µg/m^2 h)
104-76-7	2-ethyl-1-hexanol	2.6	14
65-85-0	benzoic acid	1.8	9.7
103-29-7	benzene, 1,1'-(1,2-ethanediyl)bis-	1.9	11
149-57-5	2-ethylhexanoic acid	1.4	7.9
No other IVOCs were identified above 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.

APPENDIX B

Chain-of-Custody

2000169

MAS

Materials Analytical Services LLC
3545 Lakefield Court
Suwanee, Georgia 30024
Phone: 770-866-3200
Fax: 770-866-3259

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

Client Information	
Company:	SAFTI-SEAL INC
Street Address:	5806 119th Ave S. Suite A #285
City/State:	Bellevue WA ~~98006~~
Zip/Postal Code:	98006
Country:	USA
Contact Name:	Jim Klein
Title:	Owner
Phone Number:	425 638-3091
Fax Number:	425 369-3800
Email Address:	jim@saftiseal.com

Testing Specifications (per MAS) check appropriate test below
□ R&D (custom): Specify Details
□ 24-hour Comparative R&D Test
□ 72-hour Comparative R&D Test
✓ 14-day CDPH Compliance Test
□ CARB Formaldehyde Test

Manufacturer Information (if different than client)	
Company:	SAME AS ABOVE
City/State/Country:	
Contact Name/Title:	
Phone Number:	

Construction Details (as applicable)
Covering Type: Fabric □ (Primary Fiber type: _____), Vinyl □, Leather □
Plastic Type(s): Nylon □, PVC □, PE □, PP □, PU □, PS □, PC □, ABS □, Acrylic □, Lexan □
Substrate Type(s): MDF □, Particle Board □, Plywood □, Solid Wood □, Other □
Outer Finish Type(s): Oil Base □, Water Base □, Catalyzed/Conversion Var □, Polyurethane □, Plastic Laminate □, Melamine □, UV □, Other □
Foam Type: Polyurethane □, Memory □, Latex □, Evlon □, High Resilience □, High Density □
Paint Type: Latex □, Oil □, Low VOC □, No VOCs □, PowderCoat □, Chrome □

Sample Details	
Unique Sample ID (if applicable):	
Product Name & Catalog #:	Smoke & Sound
Product Type: Ceiling/Wall Panels □, Flooring □, Trim □, Wall Paint □, Wall Coverings □, Thermal Insulation □, Adhesives □, Ceiling Tiles □, Other ✓	
Date of Product Manufacturing Completion:	2/6/20
Sample Location: Factory ✓, Warehouse □, Production Stack/Roll □, Container □	
Sample Submitted by:	Jim Klein
Date of Sample Shipment:	2/6/20
Number of Boxes or Pallets:	1 - 12" sample

Special Notes or Comments from Manufacturer:

Shipping Details	
Packed By:	Jim Klein
Shipping Date:	2/7/20
Carrier/Airbill Number:	

Laboratory Receipt (to be completed by Laboratory Representative)	
Received By:	S. Lyde
Received Date:	02-10-20
Condition of Shipping Package:	Good
Condition of Sample:	
Remarks:	

Sample Handling

Relinquished By	Company	Received By	Company	Date/Time
Jim Klein	SAFTI-SEAL INC	S. Lyde	MAS	2-10-20

Shipping Package Inspected By:
1. SL Date 2-10-20
2. PB Date 02-10-20

SCANNED