APPENDIX A

SMALL-SCALE SCREENING MEASUREMENT TO CHARACTERIZE EMISSIONS OF VOCS FROM INDOOR MATERIALS/PRODUCTS

OBJECTIVES

This test procedure is applicable to solid materials that can be represented by relatively small-sized specimens and to paints and other liquid finishes that can be uniformly applied to small-sized substrates. The test is used to screen a material or product for emissions of volatile organic compounds (VOCs), total VOCs (TVOC), and low-molecular weight aldehydes at standardized environmental conditions in a small-volume chamber over a relatively short time period (typically one to four days). The chambers are constructed and operated generally following American Society for Testing and Materials Standard Guide D-5116-90 (ASTM, 1990).

TEST SPECIMENS

The complete identification and history of the material, including the manufacturer, material description, product and lot numbers, manufacturing date, subsequent shipping, storage conditions, and storage duration should be documented. The material specimen is packaged so as to preserve its chemical integrity and to prevent its contamination from other sources. Acceptable packaging materials are sealed Tedlar bags and heavy-duty aluminum foil. If aluminum foil is used, the specimen is packaged in at least two layers with the edges carefully sealed by folding. It is generally good practice to collect and store larger or more pieces of a material than are needed for testing as this will help to preserve the chemical integrity of the material. As examples, sheet-flooring materials such as carpets can be stored as tight rolls, and floor tiles can be stored in stacks. For testing, a specimen is cut from near the center of the larger piece or taken from near the center of the stack.

SPECIMEN HANDLING AND HEADSPACE SCREENING

In the laboratory, packaged materials are stored at room conditions in a clean environment without strong or obvious chemical sources. All handling and preparation of tests specimens are conducted in a clean environment using gloves, if necessary, and clean utensils.

Packaged materials can be pre-screened for VOCs by headspace sampling. A material, or a representative sample of the material, should be transferred to a Tedlar bag if required. The package should contain a relatively small amount of headspace air (*e.g.*, no more than ~1 L for a small-sized package). The package is stored at room conditions for at least one day. A sample of headspace air (~100 mL) is withdrawn from the Tedlar bag for qualitative analysis of VOCs.

PREPARATION OF SPECIMENS OF SOLID MATERIALS

A test specimen of a solid material is cut from the larger piece of stored material. For sheet materials, such as sheet flooring and fabrics, the surface dimensions of the specimens are typically 15 by 15 cm. A relatively thick material that has only one exposed surface when it is installed in a building (e.g., a carpet) is placed in a specially fabricated holder so that only this surface is exposed in the test chamber. The holder is constructed of stainless-steel sheet metal. It has the same interior dimensions as the specimen and adequate depth so that the specimen fits tightly in the holder and the freshly cut edges are covered. A relative thin material with one exposed surface (*e.g.*, sheet vinyl flooring) is attached to a stainless-steel sheet metal plate so that only the finish surface is exposed in the chamber. Thin strips of aluminized tape can be used to attach the material to the plate. This tape has been found to have low emissions of VOCs. The exposed surface area of a specimen is accurately measured and used to calculate area-specific emission rates. Blank specimens are similarly prepared for testing. These specimens consist of either an empty holder or a plate with attached strips of aluminized tape.

PREPARATION OF PAINT SPECIMENS

Paint specimens are prepared by applying the paints to representative substrates. For latex wall paints, the most typical substrate is gypsum wallboard. Another typical substrate is a wood surface, such as plywood or particleboard. The surface dimensions of the substrates are typically 15 by 15 cm. The substrate is accurately weighed prior to painting. Then, the borders of the substrate are masked off with tape leaving a 14 by 14-cm area in the center of the substrate for painting.

Paints are applied to the substrates using standardized procedures that simulate the application of the paints in buildings. Typically wall paints are applied with a roller. Small-dimension rollers and covers can be purchased. A 10-cm wide roller with a cover intended for smooth surfaces is recommended. Paints can also be applied with a brush. A 5-cm wide brush is an appropriate size for small-scale substrates.

The paint is first thoroughly mixed in its container by shaking or stirring. For roller application, approximately 100 mL of the paint are transferred to a small tray. A disposable tray with approximate dimensions of 15 x 15 cm can be simply fabricated from heavy-duty aluminum foil. The roller cover is saturated with paint by running the roller back and forth in the tray. The paint is applied to the substrate using four strokes, two in the vertical direction and two in the horizontal direction, so that the entire area is uniformly covered. For brush application, the paint is applied as uniformly as possible using back-and-forth strokes running in only one dimension.

The tape is then removed from the borders of the substrate, and the substrate is re weighed. The difference in the weights before and after painting is used to determine the coverage in grams of wet paint applied per square meter of substrate surface. A painted substrate is placed into a stainless-steel holder that covers the back and edges of the substrate as described above. The substrate is sealed into the holder with thin strips of aluminized tape so that only the painted surface is exposed. Blank substrates without paint are similarly prepared.

If multiple coats of paint are to be tested, the paints should applied following the manufacturer's instructions with respect to drying times between coats. The drying is best performed in a chamber under controlled conditions. Alternatively, the paint may be dried in another clean, controlled environment.

CHAMBER SPECIFICATIONS AND OPERATING CONDITIONS

The specifications and operating conditions for the small-scale chambers are summarized in Table 1. The chambers consist of polished 316 stainless steel, cylindrical vessels. The chambers are equipped with stainless-steel lined lids that are sealed with Teflon-coated silicone gaskets. The internal volume of the chambers is 10.5 L.

The inlet gas is high-purity nitrogen supplied by gas cylinders. The flow rate of nitrogen is regulated at 1.0 ± 0.05 L min^{-1} (average ± one standard deviation) and monitored with an electronic flow controller or sensor. The inlet gas stream is split into two streams. One of these passes through a bubbler containing distilled water held at the same temperature as the chamber. This stream is mixed with the dry gas stream to generate a humidified inlet gas stream. The humidified gas stream is introduced into the chamber through a fitting on the lid with a tubing extension that terminates near the bottom of the chamber. Gas exits the chamber through another fitting on the lid. A sampling manifold constructed of stainless-steel tube fittings is attached to the outlet of this fitting. A combined temperature and humidity probe is inserted into the chamber through a third fitting. Chamber temperature, relative humidity and inlet gas flow rate are monitored and recorded throughout a test using a computer-based data acquisition system.

Table 1. Specifications and operating conditions for screening measurements conducted in small-scale chambers.

Parameter	Value
Chamber material	316 Stainless steel
Chamber volume, m^3	10.5×10^{-3}
Gas	Humidified N_2
Inlet gas flow rate, $m^3\ h^{-1}$	$6.0 \pm 0.3 \times 10^{-2}$*
Ventilation rate, h^{-1}	5.7 ± 0.3*
Temperature, °C	23 ± 1*
Relative humidity, %	50 ± 5*
Air velocity**, $m\ s^{-1}$	~0.25
Sample surface area, m^2	$\sim 2 \times 10^{-2}$

*Average ± one standard deviation.
**For experiments with paints only; other experiments are conducted without the use of a fan for air mixing.

Screening measurements are typically conducted at room conditions of temperature and relative humidity. These conditions are standardized at 23 ± 1° C and 50 ± 5 percent relative humidity (averages ± one standard deviation). Chambers are placed on their sides in a constant temperature enclosure, such as an incubator with heating and refrigeration controls, to achieve and maintain the desired temperature. The flow rates of the wet and dry inlet gas streams are adjusted to achieve the desired relative humidity. For a specimen of a product emitting water, (*e.g.*, latex paint), the inlet gas is periodically adjusted throughout a test to maintain the relative humidity within the specified range.

For tests of paints and other liquid finishes, a small 3.8-cm diameter axial fan (12 VDC) is mounted under the wire screen and operated to increase the air velocity near the painted surface. The output of the fan is controlled by attaching layers of a fine mesh screen to the outlet of the fan to achieve an air velocity near the painted surface of approximately 0.25 m sec^{-1}. For solid materials, no additional mixing of the air in the chamber is provided.

GENERAL OPERATING PROCEDURES

Prior to each use, a chamber a washed with laboratory detergent, thoroughly rinsed with water and dried. The chamber is completely assembled without the test specimen and placed in the temperature-controlled enclosure. The inlet gas and the instrumentation are attached. The empty chamber is then operated at the temperature, humidity and ventilation conditions of the test for at least one hour (*i.e.*, approximately six air changes). It is desirable to collect gas samples at the exhaust manifold near the end of this period to determine the concentrations of any background chamber contamination.

The chamber is opened, and the prepared specimen is placed on a metal rack that holds the specimen near the approximate center of the chamber. The chamber lid is quickly re attached and data system is initiated. This establishes the initial time point for the test.

Samples for VOCs and aldehydes are simultaneously collected from the sampling manifold at predetermined intervals throughout a test. Samples for VOCs are collected on thermally desorbed sorbent samplers. Samples for aldehydes are collected on cartridges coated with acidified 2,4-dinitrophenylhydrazine (DNPH) as a derivatizing agent. Typically, duplicate VOC samples and single aldehyde samples are collected at each sampling interval. The sample flow rates are regulated with electronic mass-flow controllers. The flow rate for the VOC samples is typically 0.1 L min^{-1}; however, this rate is varied according the magnitude of the source to achieve optimum mass loading of the sampler. The flow rate for the aldehyde samples is typically 0.5 L min^{-1}. The total sample flow rate should always substantially less than the inlet flow rate of gas to the chamber. Solenoid values operated by the data acquisition system can be used to automate the collection of samples.

Typically, screening measurements are conducted over a period of one to four days with samples collected at least daily.

SAMPLE ANALYSES

Chamber and headspace samples for VOCs are analyzed by thermal desoption gas chromatography/mass spectrometry. The compounds comprising the majority of the mass in a sample are identified. If possible, the identifications are confirmed by the analysis of pure standards. The major compounds of interest in a sample are quantified using calibrations prepared from these standards. Target compounds are primarily selected based on their abundance and toxicological significance. A sample is analyzed for TVOC by the total-ion-current method using an average response factor for common hydrocarbons to calculate the mass. The DNPH cartridges are analyzed for formaldehyde and other aldehydes by high-performance liquid chromatography.

DATA ANALYSIS

The VOCs identified in the chamber and headspace samples are listed. The concentrations of the selected individual VOCs, TVOC and aldehydes in the chamber samples are determined. Then, the quasi steady-state, area-specific emission rates (ER) of these components (μg h^{-1}) are calculated using the following equation:

$$ER = \frac{Q(C - C_o)}{A} \tag{1}$$

Where Q is the volumetric flow rate (m^3 h^{-1}) through the chamber, C is the average chamber concentration at the sampling period (μg m^{-3}), C_0 is the chamber blank concentration (μg m^{-3}), and A is the exposed area (m^2). A mass-specific emission rate can be calculated by dividing by the mass of the specimen rather than the area. The use of the steady-state assumption introduces unknown amounts of error into the estimates of specific emission rates when the chamber concentrations are changing rapidly with time.

REFERENCE

ASTM. 1990. *Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.* American Society for Testing and Materials, Philadelphia, PA.

APPENDIX B

SUMMARY OF ENVIRONMENTAL DATA FOR THE SCREENING MEASUREMENTS

Appendix B summarizes the environmental data for the screening measurements of the latex paints, the carpet assembly materials and the vinyl flooring assembly materials. The average values for the inlet nitrogen flow rates and the chamber temperatures and relative humidities are presented along with the coefficients of variation for these values.

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Table B-01. Summary of environmental data for the screening measurements of latex paints in 10-L chambers.

Materials	N_2 Flow Rate ($L\ min^{-1}$) Avg.	CV*,%	Temperature (°C) Avg.	CV,%	Relative Humidity (%) Avg.	CV,%
Primer sealers						
LPS1	0.93**	25	23	0.2	53	2.7
LPS2	0.98	0.6	24	0.3	47	5.6
Flats						
FLP1-a	0.99	1.0	23	0.2	54	4.3
FLP1-b	0.99	1.2	22	0.4	51	4.6
FLP2	0.98	1.4	23	0.4	54	5.0
FLP3	0.98	1.7	22	0.6	51	6.5
FLP4	0.99	0.6	23	0.3	54	2.6
Semi-Glosses						
SGLP1	0.98	1.0	23	0.4	53	6.3
SGLP2	0.98	1.2	22	0.4	50	7.0
SGLP3-a	0.93**	25	22	0.4	50	7.0
SGLP3-b	0.99	0.6	22	0.5	48	7.3
SGLP4	0.98	0.7	23	0.6	51	7.0
Combinations						
LPS2 & FLP3 @ 50% RH	0.99	0.5	23	1.6	50	3.9
LPS2 & FLP3 @ 30% RH	0.98	0.6	24	0.2	31	11.8
LPS2 & FLP3 @ 70% RH	0.98	0.4	23	0.3	69	2.2
LPS2 & SGLP3	0.98	0.5	23	2.4	50	3.5
Substrates						
GB (Gypsum Board)	0.99	0.5	23	0.5	48	3.6
PW (Plywood)	0.98	0.4	22	0.6	48	3.2

*CV = Coefficient of variation in percent calculated as the std. deviation / average value x 100.
**Inlet N_2 flow interrupted from 64 - 69-h elapsed time.

Table B-02. Summary of environmental parameters for the screening measurements of carpet materials in 10-L chambers.

Materials	Flow Rate ($L\ min^{-1}$) Avg.	CV*,%	Temperature (°C) Avg.	CV,%	Relative Humidity (%) Avg.	CV,%
Carpets						
CP1-a	1.00	0.4	23	0.3	49	5.5
CP1-b	1.00	0.5	23	0.5	48	4.7
CP3	0.99	0.7	25	0.8	48	2.9
CP2	1.00	0.6	23	0.2	51	5.0
CP4	0.99	0.5	22	0.5	48	5.5
CP Blank Run	0.99	0.6	22	0.6	49	4.5
Seaming Tape & Carpet						
ST & CP3	0.99	0.9	25	1.1	48	4.8
Cushions						
CC1	0.99	0.6	23	0.3	48	4.7
CC2-a	1.00	0.5	23	0.2	50	2.6
CC2-b	1.00	0.8	23	0.2	48	5.8
CC4	0.99	0.4	23	0.5	49	4.4
CC3	1.00	0.5	23	0.2	47	3.3
CC Blank Run	0.99	0.8	22	0.2	53	5.0

*CV = Coefficient of variation in percent calculated as the std. deviation / average value x 100.

Table B-03. Summary of environmental parameters for the screening measurements of vinyl flooring materials in 10-L chambers.

Materials	Flow Rate ($L\ min^{-1}$) Avg.	CV*,%	Temperature (°C) Avg.	CV,%	Relative Humidity (%) Avg.	CV,%
Sheet Vinyls						
SV1	0.99	0.8	23	0.4	48	4.0
SV2	0.99	0.8	23	0.5	49	5.9
SV3-a	0.99	0.5	23	0.5	48	4.2
SV3-b	0.99	1.1	23	0.6	46	2.8
SV5	0.99	0.9	23	0.3	46	2.8
SV4	0.99	0.6	22	0.5	51	5.3
SV Blank Run	0.99	1.0	23	0.5	46	2.3
Cove Base						
CB	0.99	0.7	23	0.3	44	1.7
Substrates						
UL (Underlayment)	0.99	0.9	23	0.4	44	1.2
GB (Gypsum Bd.)	0.99	0.9	23	0.2	46	1.7
Adhesives on Substrates						
SFA & UL	0.99	1.1	23	0.6	48	11.0
CBA & GB	0.99	0.9	24	0.6	50	11.2
Composite Assemblies						
SV5, SFA & UL	0.99	5.5	23	0.6	48	3.4
CB, CBA & GB	0.99	5.3	23	0.5	51	5.7

*CV = Coefficient of variation in percent calculated as the std. deviation / average value x 100.

APPENDIX C

SCREENING MEASUREMENTS OF LATEX PAINTS

Appendix C presents the analytical data for the screening measurements of ten latex paints including two primer sealers, four flat paints and four semi-gloss paints. The experiments were conducted in 10-L chambers over a period of 96 hours. Individual VOCs emitted by the paints were identified. The concentrations of selected compounds and SigmaVOC were measured at five time intervals. Specific emission rates of these components were calculated for the 48- and 96-h time intervals.

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Table C-01. Latex paints selected for study.

Material ID	Manufacturer Code	Primary Market	Type	Color
Primer Sealer				
LPS1	A	National	Conventional	White
LPS2*	D	National	Conventional	White
Flat				
FLP1	B	National	Conventional	Pure white
FLP2	A	National	Conventional	Pure white
FLP3*	C	California	Conventional	Off white
FLP4	A	National	Non-VOC	Pure white
Semi-Gloss				
SGLP1	B	National	Conventional	Pure white
SGLP2	A	National	Conventional	Pure white
SGLP3*	C	California	Conventional	Off white
SGLP4	A	National	Non-VOC	Pure white

*Selected for use in large-scale chamber experiments.

Table C-02. Summary of screening measurements of latex paints and substrates in 10-L chambers.

Materials	Duration (h)	Substrate*	Area (m^2)	Mass (g)	Coverage ($g\ m^{-2}$)
Primer sealer					
LPS1	96	GB	0.0195	1.54	79
LPS2	96	GB	0.0195	2.14	110
Flat					
FLP1-a	96	GB	0.0195	1.93	99
FLP1-b	96	GB	0.0195	2.02	104
FLP2	96	GB	0.0195	2.17	111
FLP3	96	GB	0.0195	3.17	163
FLP4	96	GB	0.0195	2.02	104
Semi-Gloss					
SGLP1	96	PW	0.0195	3.20	164
SGLP2	96	PW	0.0195	2.51	129
SGLP3-a	96	PW	0.0195	3.29	169
SGLP3-b	96	PW	0.0195	3.12	160
SGLP4	96	PW	0.0195	2.88	148
Combination					
LPS2 & FLP3 @ 50% RH	96	GB	0.0195	3.05	156
LPS2 & FLP3 @ 30% RH	96	GB	0.0195	3.56	183
LPS2 & FLP3 @ 70% RH	96	GB	0.0195	3.17	163
LPS2 & SGLP3	96	PW	0.0195	3.43	176
Substrate					
GB (Gypsum Board)	96	---	0.0195	---	---
PW (Plywood)	96	---	0.0195	---	---

*GB = Gypsum board; PW = Plywood.

Table C-03. VOCs emitted by Paint LPS1 in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
Ethylene glycol	+	+	Confirmed
n-Butyl ether	+	+	Confirmed
2-(2-Butoxyethoxy)ethanol	+	+	Confirmed
2-(2-Butoxyethoxy)ethyl acetate	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed

Table C-04. VOCs emitted by Paint LPS2 in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
Ethylene glycol	+	+	Confirmed
n-Butyl ether		+	Confirmed
Propylene glycol	+		Confirmed
Butyl propionate	+		Confirmed
2-Ethyl-1-hexanol	+		Confirmed
Acetic acid, 2-ethylhexyl ester	+		Probable
2-(2-Butoxyethoxy)ethanol		+	Confirmed
1-Decanol	+		Confirmed
2-(2-Butoxyethoxy)ethyl acetate		+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed
Unidentified compound	+	+	Unident.

Table C-05. VOCs emitted by Paint FLP1 in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
Ethylene glycol	+	+	Confirmed
n-Butyl ether	+	+	Confirmed
2-(2-Butoxyethoxy)ethanol	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed

Table C-06. VOCs emitted by Paint FLP2 in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
n-Butyl ether	+		Confirmed
Propylene glycol	+	+	Confirmed
2-(2-Butoxyethoxy)ethanol	+	+	Confirmed
1-Decanol		+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed

Table C-07. VOCs emitted by Paint FLP3 in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
Ethylene glycol	+	+	Confirmed
n-Butyl ether	+	+	Confirmed
Ethylene glycol monoacetate	+		Probable
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed

Table C-08. VOCs emitted by Paint FLP4 in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
Carbonyl Compounds			
Hexanal	+		Confirmed
Benzaldehyde	+		Confirmed
Nonanal	+	+	Confirmed
Decanal	+	+	Confirmed
Other Oxidized Compounds			
1-Butanol	+		Confirmed
Acetic acid	+		Confirmed
n-Butyl ether	+		Confirmed
Butyl propionate	+		Confirmed
Benzyl alcohol	+		Confirmed
2-Phenoxyethanol	+		Probable
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed

Table C-09. VOCs emitted by Paint SGLP1 in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
Ethylene glycol	+	+	Confirmed
n-Butyl ether	+	+	Confirmed
2-Butoxyethanol	+	+	Confirmed
2-Ethyl-1-hexanol	+	+	Confirmed
2-(2-Butoxyethoxy)ethanol	+	+	Confirmed
2-(2-Butoxyethoxy)ethyl acetate	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed

Table C-10. VOCs emitted by Paint SGLP2 in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
Ethylene glycol	+	+	Confirmed
n-Butyl ether	+	+	Confirmed
2-Butoxyethanol	+		Confirmed
Ethylene glycol monoacetate	+	+	Probable
2-(2-Butoxyethoxy)ethanol	+	+	Confirmed
2-(2-Butoxyethoxy)ethyl acetate	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed

Table C-11. VOCs emitted by Paint SGLP3 in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
n-Butyl ether		+	Confirmed
Propylene glycol	+	+	Confirmed
Hexylene glycol	+	+	Confirmed
2-(2-Butoxyethoxy)ethanol	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed

Table C-12. VOCs emitted by Paint SGLP4 in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
Carbonyl Compounds			
Pentanal	+	+	Confirmed
3-Hydroxy-2-butanone	+	+	Probable
Hexanal	+	+	Confirmed
Benzaldehyde	+	+	Confirmed
2-Octenal	+		Confirmed
Nonanal	+	+	Confirmed
Decanal	+	+	Confirmed
Other Oxidizied Compounds			
1-Butanol	+		Confirmed
Acetic acid	+	+	Confirmed
1-Pentanol	+	+	Confirmed
n-Butyl ether	+	+	Confirmed
Butyl propionate	+		Confirmed
2-Pentylfuran	+		Probable
2-Ethyl-1-hexanol	+	+	Confirmed
Benzyl alcohol	+		Confirmed
Phenol	+		Confirmed
2-(2-Butoxyethoxy)ethanol	+		Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed

Table C-13. VOCs emitted by Paints LPS2 and FLP3 in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
Ethylene glycol	+	+	Confirmed
Propylene glycol	+		Confirmed
Ethylene glcycol monoacetate	+		Probable
2-Ethyl-1-hexanol	+		Confirmed
Acetic acid, 2-ethylhexyl ester	+	+	Probable
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed
Unidentified compound		+	Unident.

Table C-14. VOCs emitted by Paints LPS2 and SGLP3 in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
Ethylene glycol	+	+	Confirmed
n-Butyl ether	+		Confirmed
Propylene glycol	+	+	Confirmed
Hexylene glycol	+	+	Confirmed
2-(2-Butoxyethoxy)ethanol	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed
Unidentified compound		+	Unident.

Table C-15. VOCs emitted by Gypsum Board GB in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
Hydrocarbons			
p-Cymene	+		Confirmed
Carbonyl Compounds			
Hexanal	+		Confirmed
Cyclohexanone	+		Confirmed
Octanal	+		
Nonanal	+	+	Confirmed
Decanal	+	+	Confirmed
Other Oxidizied Compounds			
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed

Table C-16. VOCs emitted by Plywood PW in 10-L chamber at 6- and 96-hours elapsed times.

COMPOUND	6-h ET	96-h ET	Match Quality
Hydrocarbons			
alpha-Pinene	+	+	Confirmed
beta-Pinene	+	+	Confirmed
d-Limonene		+	Confirmed
p-Cymene	+		Confirmed
Carbonyl Compounds			
Pentanal	+	+	Confirmed
3-Hydroxy-2-butanone	+		Probable
Hexanal	+	+	Confirmed
Octanal		+	Confirmed
Nonanal	+	+	Confirmed
Decanal	+	+	Confirmed
Other Oxidizied Compounds			
Acetic acid	+		Confirmed
2-Ethyl-1-hexanol	+		Confirmed
Hexanoic acid	+	+	Confirmed
2-(2-Butoxyethoxy)ethanol	+	+	Confirmed
2-(2-Butoxyethoxy)ethyl acetate	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate isomers (Texanol)	+	+	Confirmed

Table C-17. Summary of VOCs emitted by conventional latex paints in 10-L chambers.

COMPOUND	CAS No.	LPS 1	LPS 2	FLP 1	FLP 2	FLP 3	SGLP 1	SGLP 2	SGLP 3
Ethylene glycol*	107-21-1	A**	A	A		A	A	A	
n-Butyl ether*	142-96-1	+	+	+	+	+	+	+	+
Propylene glycol*	57-55-6		+		A				A
Butyl propionate*	590-01-2		+						
2-Butoxyethanol*	111-76-2						+	+	
Ethylene glycol monoacetate	542-59-6					+		+	
Hexylene glycol*	107-41-5								A
2-Ethyl-1-hexanol*	104-76-7		+				+		
Acetic acid, 2-ethylhexyl ester	103-09-3		+						
2-(2-Butoxyethoxy)ethanol*	112-34-5	+	+	A	A		A	A	A
1-Decanol	112-30-1		+		+				
2-(2-Butoxyethoxy)ethyl acetate*	124-17-4	A	+				+	A	
2,2,4-Trimethyl-1,3-pentanediol* monoisobutyrate isomers (Texanol)	25265-77-4	A	A	A	A	A	A	A	A

*Target compound selected for quantitative analysis.
**A = Relatively abundant compound.

Table C-18. Chamber concentrations of target VOCs for 96-h screening measurement of Paint LPS1.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
Ethylene glycol	0.95	0.46	0.23	0.19	0.09
n-Butyl ether	0.03	0.01	0.01	<0.01	<0.01
2-(2-Butoxyethoxy)ethanol	0.66	0.16	0.03	0.02	0.01
2-(2-Butoxyethoxy)ethyl acetate	2.80	1.32	0.31	0.10	0.04
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	8.30	2.10	0.67	0.31	0.18

Table C-19. Chamber concentrations of target VOCs for 96-h screening measurement of Paint LPS2.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
Ethylene glycol	10.4	2.56	md*	0.17	0.12
n-Butyl ether	0.19	0.04	md	<0.01	<0.01
Propylene glycol	0.47	0.12	md	<0.04	<0.04
2-Ethyl-1-hexanol	0.12	0.04	md	<0.01	<0.01
2-(2-Butoxyethoxy)ethanol	0.01	<0.01	md	<0.01	<0.01
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	9.15	4.28	1.75	1.03	0.69

*md = Missing data.

Table C-20. Chamber concentrations of target VOCs for 96-h screening measurement of Paint FLP1-a.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
Ethylene glycol	3.09	1.45	0.90	0.53	0.33
n-Butyl ether	0.08	0.02	0.01	<0.01	<0.01
2-(2-Butoxyethoxy)ethanol	md*	1.28	0.24	0.11	0.04
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	md	9.50	2.55	0.67	0.08

*md = Missing data.

Table C-21. Chamber concentrations of target VOCs for 96-h screening measurement of Paint FLP1-b.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
Ethylene glycol	3.01	1.18	0.72	0.54	0.41
n-Butyl ether	0.10	0.03	0.01	<0.01	<0.01
2-(2-Butoxyethoxy)ethanol	3.60	1.30	0.27	0.12	0.04
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	14.0	9.14	2.50	0.75	0.10

Table C-22. Chamber concentrations of target VOCs for 96-h screening measurement of Paint FLP2.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
n-Butyl ether	0.04	0.01	<0.01	<0.01	<0.01
Propylene glycol	1.69	0.61	0.27	0.18	0.12
2-(2-Butoxyethoxy)ethanol	1.95	0.47	0.12	0.10	0.04
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	27.4	12.9	2.02	0.46	0.09

Table C-23. Chamber concentrations of target VOCs for 96-h screening measurement of Paint FLP3.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
Ethylene glycol	4.77	0.89	0.31	0.27	0.13
n-Butyl ether	0.17	0.02	0.01	0.01	<0.01
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	11.8	4.97	2.94	1.26	0.46

Table C-24. Chamber concentrations of selected VOCs for 96-h screening measurement of Paint FLP4.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
Carbonyl Compounds					
Hexanal	0.006	0.005	0.001	0.001	<0.001
Nonanal	0.008	0.007	0.002	0.001	0.001
Other Oxidized Compounds					
1-Butanol	0.019	0.007	0.003	0.001	<0.001
Benzyl alcohol	0.017	0.004	0.001	0.001	<0.001
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	0.052	0.024	0.013	0.010	0.007

Table C-25. Chamber concentrations of target VOCs for 96-h screening measurement of Paint SGLP1.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
Ethylene glycol	6.15	1.93	1.65	0.87	0.50
n-Butyl ether	0.36	0.10	0.02	0.01	<0.01
2-Butoxyethanol	0.42	0.03	0.01	0.01	<0.01
2-Ethyl-1-hexanol	0.27	0.04	0.01	0.01	0.01
2-(2-Butoxyethoxy)ethanol	8.50	6.73	1.88	0.85	0.52
2-(2-Butoxyethoxy)ethyl acetate	0.04	0.02	0.02	0.01	0.01
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	0.90	0.51	0.24	0.12	0.08

Table C-26. Chamber concentrations of target VOCs for 96-h screening measurement of Paint SGLP2.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
Ethylene glycol	11.5	2.14	1.09	0.71	0.56
n-Butyl ether	0.16	0.04	0.01	<0.01	<0.01
2-Butoxyethanol	0.32	md*	<0.01	<0.01	<0.01
2-(2-Butoxyethoxy)ethanol	2.00	0.74	0.31	0.12	0.07
2-(2-Butoxyethoxy)ethyl acetate	0.85	0.52	0.23	0.16	0.09
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	5.10	1.15	0.47	0.30	0.26

*md = Missing data.

Table C-27. Chamber concentrations of target VOCs for 96-h screening measurement of Paint SGLP3-a.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
n-Butyl ether	0.35	0.04	0.02	0.01	<0.01
Propylene glycol	15.4	3.81	1.02	0.60	0.25
Hexylene glycol	18.0	3.21	1.16	0.54	0.17
2-(2-Butoxyethoxy)ethanol	3.20	1.23	0.42	0.24	0.15
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	6.90	1.20	0.42	0.31	0.29

Table C-28. Chamber concentrations of target VOCs for 96-h screening measurement of Paint SGLP3-b.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
n-Butyl ether	0.20	0.04	0.01	<0.01	<0.01
Propylene glycol	9.85	3.56	1.14	0.59	0.36
Hexylene glycol	18.3	2.36	0.96	0.59	0.28
2-(2-Butoxyethoxy)ethanol	2.90	0.88	0.39	0.18	0.09
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	5.00	1.00	0.42	0.24	0.18

Table C-29. Chamber concentrations of selected VOCs for 96-h screening measurement of Paint SGLP4.

COMPOUND	Chamber Concentration (mg m^{-3}) 1-h	6-h	24-h	48-h	96-h
Carbonyl Compounds					
Pentanal*	0.050	0.017	0.005	0.005	0.003
Hexanal*	0.252	0.079	0.029	0.023	0.011
Benzaldehyde	0.142	0.022	0.006	0.004	0.001
Nonanal*	0.004	0.001	0.001	0.001	<0.001
Other Oxidized Compounds					
1-Butanol	0.124	0.032	0.005	0.005	0.003
1-Pentanol	0.041	0.014	0.009	0.008	0.005
n-Butyl ether	0.683	0.182	0.023	0.008	0.001
2-Ethyl-1-hexanol*	0.023	0.005	0.002	0.002	0.001
Benzyl alcohol	0.020	0.007	0.003	0.002	0.001
2-(2-Butoxyethoxy)ethanol*	0.032	0.010	0.006	0.003	0.002
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)*	0.064	0.014	0.010	0.011	0.009

*Detected in emissions from Plywood PW; see Table C-16.

Table C-30. Chamber concentrations of target VOCs for 96-h screening measurement of Paints LPS2 and FLP3 at standard humidity (50% RH).

COMPOUND	Chamber Concentration (mg m^{-3}) 1-h	6-h	24-h	48-h	96-h
Ethylene glycol	26.7	10.3	0.80	0.43	0.19
n-Butyl ether	0.20	0.03	<0.01	<0.01	<0.01
Propylene glycol	<4.00	0.62	<0.20	<0.08	<0.03
2-Ethyl-1-hexanol	0.15	0.03	<0.01	0.01	<0.01
2-(2-Butoxyethoxy)ethanol	md*	0.01	0.01	<0.01	<0.01
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	13.4	8.13	3.17	2.03	1.04

*md = Missing data.

Table C-31. Chamber concentrations of target VOCs for 96-h screening measurement of Paints LPS2 and FLP3 at reduced humidity (30% RH).

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
Ethylene glycol	56.5	7.53	1.08	0.49	0.07
n-Butyl ether	0.15	0.30	<0.01	<0.01	<0.01
Propylene glycol	<4.00	<0.50	<0.16	<0.05	<0.02
2-Ethyl-1-hexanol	0.10	<0.03	0.01	<0.01	<0.01
2-(2-Butoxyethoxy)ethanol	0.05	<0.03	<0.01	<0.01	<0.01
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	17.1	md*	2.67	1.82	1.24

*md = Missing data.

Table C-32. Chamber concentrations of target VOCs for 96-h screening measurement of Paints LPS2 and FLP3 at elevated humidity (70% RH).

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
Ethylene glycol	12.3	8.51	0.81	0.46	0.10
n-Butyl ether	0.12	0.03	0.01	<0.01	<0.01
Propylene glycol	<2.00	<0.25	<0.16	<0.05	<0.02
2-Ethyl-1-hexanol	0.12	0.04	<0.01	<0.01	<0.01
2-(2-Butoxyethoxy)ethanol	0.02	0.01	<0.01	<0.01	<0.01
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	12.3	7.87	3.33	1.73	0.87

Table C-33. Chamber concentrations of target VOCs for 96-h screening measurement of Paints LPS2 and SGLP3.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
Ethylene glycol	8.75	4.63	0.60	0.75	0.39
n-Butyl ether	0.25	0.03	0.01	<0.01	<0.01
Propylene glycol	57.5	13.4	0.81	0.34	0.09
Hexylene glycol	22.1	3.05	0.76	0.20	0.10
2-Ethyl-1-hexanol	0.15	0.02	<0.01	0.01	<0.01
2-(2-Butoxyethoxy)ethanol	3.75	1.78	0.34	0.19	0.06
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	7.35	1.85	0.38	0.48	0.25

Table C-34. Chamber concentrations of latex paint target VOCs for 96-h screening measurement of Gypsum Board GB.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	<0.01	<0.01	<0.01	<0.01	<0.01

Table C-35. Chamber concentrations of latex paint target VOCs for 96-h screening measurement of Plywood PW.

	Chamber Concentration (mg m^{-3})				
COMPOUND	**1-h**	**6-h**	**24-h**	**48-h**	**96-h**
2-Ethyl-1-hexanol	<0.01	<0.01	<0.01	<0.01	<0.01
2-(2-Butoxyethoxy)ethanol	0.01	<0.01	0.01	<0.01	<0.01
2-(2-Butoxyethoxy)ethyl acetate	<0.01	<0.01	<0.01	<0.01	<0.01
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	0.02	0.02	0.01	0.01	<0.01

Table C-36. Chamber concentrations of SigmaVOC (*i.e.*, sum of target VOCs) for 96-h screening measurements of paints and substrates.

Material ID	Chamber Concentration (mg m^{-3}) 1-h	6-h	24-h	48-h	96-h
Primer Sealer					
LPS1	12.7	4.05	1.25	0.62	0.32
LPS2	20.3	7.04	md*	1.23	0.84
Flat					
FLP1-a	md	12.2	3.70	1.31	0.45
FLP1-b	20.7	11.6	3.50	1.41	0.55
FLP2	31.1	14.1	2.41	0.74	0.25
FLP3	16.7	5.88	3.26	1.54	0.59
FLP4	0.10	0.05	0.02	0.01	0.01
Semi-Gloss					
SGLP1	16.6	9.36	3.83	1.88	1.13
SGLP2	19.9	4.59	2.11	1.30	0.99
SGLP3-a	43.8	9.49	3.04	1.70	0.86
SGLP3-b	36.2	7.84	2.92	1.60	0.91
SGLP4	1.43	0.38	0.10	0.07	0.04
Combination					
LPS2 & FLP3 @ 50% RH	40.4	18.5	3.99	2.48	1.25
LPS2 & FLP3 @ 30% RH	73.9	md	3.77	2.33	1.33
LPS2 & FLP3 @ 70% RH	24.9	16.5	4.16	2.20	0.98
LPS2 & SGLP3	99.8	24.8	2.90	1.97	0.90
Substrate					
GB	<0.01	<0.01	<0.01	<0.01	<0.01
PW	0.04	0.03	0.03	0.02	0.01

*md = Missing data.

Table C-37. Chamber concentrations (µg m^{-3}) of formaldehyde for 96-h screening measurements of paints and substrates.

Material ID	Chamber Concentration (µg m^{-3}) 1-h	6-h	24-h	48-h	96-h
Primer Sealer					
LPS1	82	26	13	11	9
LPS2	9	7	3	2	1
Flat					
FLP1-a	4	1	<1	<1	<1
FLP1-b	5	1	<1	<1	<1
FLP2	17	40	23	17	13
FLP3	105	4	4	5	2
FLP4	318	83	27	15	8
Semi-Gloss					
SGLP1	70	7	8	9	6
SGLP2	17	13	9	8	8
SGLP3-a	32	md*	6	9	6
SGLP3-b	21	4	3	3	2
SGLP4	27	14	10	7	5
Combination					
LPS2 & FLP3 @ 50% RH	20	5	2	3	<1
LPS2 & FLP3 @ 30% RH	16	2	1	2	<1
LPS2 & FLP3 @ 70% RH	29	9	7	3	2
LPS2 & SGLP3	23	5	2	4	2
Substrate					
GB	3	2	1	1	1
PW	9	md	3	3	2

*md = Missing data.

Table C-38. Chamber concentrations (μg m^{-3}) of acetaldehyde for 96-h screening measurements of paints and substrates.

Material ID	Chamber Concentration (μg m^{-3}) 1-h	6-h	24-h	48-h	96-h
Primer Sealer					
LPS1	73	4	1	1	<1
LPS2	15	8	4	3	2
Flat					
FLP1-a	83	4	2	1	1
FLP1-b	104	4	2	1	1
FLP2	657	6	4	2	<1
FLP3	39	34	3	2	1
FLP4	86	9	6	6	3
Semi-Gloss					
SGLP1	97	21	14	12	10
SGLP2	61	19	10	7	8
SGLP3-a	32	md*	12	8	5
SGLP3-b	14	7	6	6	5
SGLP4	40	10	6	8	6
Combination					
LPS2 & FLP3 @ 50% RH	29	9	5	5	6
LPS2 & FLP3 @ 30% RH	24	6	2	2	1
LPS2 & FLP3 @ 70% RH	34	11	5	4	4
LPS2 & SGLP3	12	8	4	5	4
Substrate					
GB	3	3	2	2	3
PW	9	md	7	6	6

*md = Missing data.

Table C-39. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paint LPS1. The coverage of wet paint was 79 g m^{-2}.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Ethylene glycol	0.60	0.27	7.58	3.48
n-Butyl ether	<0.03	<0.03	<0.39	<0.39
2-(2-Butoxyethoxy)ethanol	0.06	0.03	0.81	0.34
2-(2-Butoxyethoxy)ethyl acetate	0.30	0.13	3.73	1.60
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	0.94	0.55	11.9	6.94

Table C-40. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paint LPS2. The coverage of wet paint was 110 g m^{-2}.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Ethylene glycol	0.52	0.36	4.75	3.24
n-Butyl ether	<0.03	<0.03	<0.28	<0.28
Propylene glycol	<0.12	<0.12	<1.12	<1.12
2-Ethyl-1-hexanol	<0.03	<0.03	<0.28	<0.28
2-(2-Butoxyethoxy)ethanol	<0.03	<0.03	<0.28	<0.28
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	2.64	1.97	24.0	18.0

Table C-41. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paint FLP1-a. The coverage of wet paint was 99 g m^{-2}.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Ethylene glycol	1.64	1.02	16.6	10.3
n-Butyl ether	<0.03	<0.03	<0.31	<0.31
2-(2-Butoxyethoxy)ethanol	0.35	0.14	3.49	1.40
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	2.06	0.26	20.8	2.59

Table C-42. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paint FLP1-b. The coverage of wet paint was 104 g m^{-2}.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Ethylene glycol	1.67	1.28	16.1	12.3
n-Butyl ether	<0.03	<0.03	<0.30	<0.30
2-(2-Butoxyethoxy)ethanol	0.37	0.12	3.56	1.14
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	2.32	0.30	22.4	2.93

Table C-43. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paint FLP2. The coverage of wet paint was 111g m^{-2}.

	Specific Emission Rate			
	($mg\ m^{-2}\ h^{-1}$)		($mg\ kg^{-1}\ h^{-1}$)	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
n-Butyl ether	<0.03	<0.03	<0.28	<0.28
Propylene glycol	0.57	0.38	5.08	3.38
2-(2-Butoxyethoxy)ethanol	0.30	0.13	2.70	1.13
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	1.43	0.28	12.9	2.48

Table C-44. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paint FLP3. The coverage of wet paint was 163 g m^{-2}.

	Specific Emission Rate			
	($mg\ m^{-2}\ h^{-1}$)		($mg\ kg^{-1}\ h^{-1}$)	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Ethylene glycol	0.83	0.41	5.09	2.53
n-Butyl ether	0.03	<0.3	0.19	<0.19
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	3.86	1.42	23.8	8.73

Table C-45. Quasi steady-state emission rates of selected VOCs at 48- and 96-h elapsed time for screening measurement of Paint FLP4. The coverage of wet paint was 104 g m^{-2}.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Carbonyl Compounds				
Hexanal	0.003	<0.003	0.030	<0.030
Nonanal	0.003	0.003	0.030	<0.030
Other Oxidized Compounds				
1-Butanol	0.003	<0.003	0.030	<0.030
Benzyl alcohol	0.003	<0.003	0.030	<0.030
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	0.031	0.022	0.296	0.209

Table C-46. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paint SGLP1. The coverage of wet paint was 164 g m^{-2}.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Ethylene glycol	2.68	1.54	16.3	9.36
n-Butyl ether	0.03	<0.03	0.19	<0.19
2 Butoxyethanol	0.03	<0.03	0.19	<0.19
2-Ethyl-1-hexanol	0.03	0.03	0.19	0.19
2-(2-Butoxyethoxy)ethanol	2.61	1.61	15.9	9.83
2-(2-Butoxyethoxy)ethyl acetate	0.03	0.03	0.19	0.19
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	0.34	0.26	2.07	1.56

Table C-47. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paint SGLP2. The coverage of wet paint was 129 g m^{-2}.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Ethylene glycol	2.17	1.74	21.6	13.5
n-Butyl ether	<0.03	<0.03	<0.24	<0.24
2 Butoxyethanol	<0.03	<0.03	<0.24	<0.24
2-(2-Butoxyethoxy)ethanol	0.35	0.20	2.77	1.59
2-(2-Butoxyethoxy)ethyl acetate	0.48	0.27	3.78	2.13
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	0.88	0.82	6.88	6.33

Table C-48. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paint SGLP3-a. The coverage of wet paint was 169 g m^{-2}.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
n-Butyl ether	0.03	<0.03	0.18	<0.18
Propylene glycol	1.86	0.78	11.0	4.66
Hexylene glycol	1.65	0.54	9.82	3.18
2-(2-Butoxyethoxy)ethanol	0.74	0.47	4.42	2.81
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	0.93	0.89	5.55	5.30

Table C-49. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paint SGLP3-b. The coverage of wet paint was 160 g m^{-2}.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
n-Butyl ether	<0.03	<0.03	<0.19	<0.19
Propylene glycol	1.83	1.11	11.2	6.82
Hexylene glycol	1.81	0.87	11.1	5.31
2-(2-Butoxyethoxy)ethanol	0.56	0.28	3.44	1.70
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	0.72	0.54	4.39	3.33

Table C-50. Quasi steady-state emission rates of selected VOCs at 48- and 96-h elapsed time for screening measurement of Paint SGLP4. The coverage of wet paint was 148 g m^{-2}.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Carbonyl Compounds				
Pentanal*	0.015	0.009	0.105	0.058
Hexanal*	0.072	0.035	0.485	0.241
Benzaldehyde	0.012	0.003	0.083	0.021
Nonanal*	0.003	<0.003	0.021	<0.021
Other Oxidized Compounds				
1-Butanol	0.015	0.009	0.104	0.063
1-Pentanol	0.024	0.014	0.164	0.098
n-Butyl ether	0.024	0.003	0.160	0.021
2-Ethyl-1-hexanol*	0.006	0.003	0.042	0.021
Benzyl alcohol	0.006	0.003	0.042	0.021
2-(2-Butoxyethoxy)ethanol*	0.009	0.006	0.063	0.042
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)*	<0.050	<0.040	<0.330	<0.250

*Detected in emissions from Plywood PW; see Table C-16.

Table C-51. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paints LPS2 and FLP3 at standard humidity (50% RH). The coverage of wet paint was 156 g m^{-2}.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Ethylene glycol	1.34	0.57	8.54	3.67
n-Butyl ether	<0.03	<0.03	<0.20	<0.20
Propylene glycol	<0.25	<0.09	<1.57	<0.59
2-Ethyl-1-hexanol	0.03	<0.03	0.20	<0.20
2-(2-Butoxyethoxy)ethanol	<0.03	<0.03	<0.20	<0.20
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	6.26	3.20	40.0	20.5

Table C-52. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paints LPS2 and FLP3 at reduced humidity (30% RH). The coverage of wet paint was 187 g m^{-2}.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Ethylene glycol	1.52	0.20	8.30	1.11
n-Butyl ether	<0.03	<0.03	<0.17	<0.17
Propylene glycol	<0.15	<0.06	<0.84	<0.34
2-Ethyl-1-hexanol	<0.03	<0.03	<0.17	<0.17
2-(2-Butoxyethoxy)ethanol	<0.03	<0.03	<0.17	<0.17
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	5.61	3.83	30.7	20.9

Table C-53. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paints LPS2 and FLP3 at elevated humidity (70% RH). The coverage of wet paint was 163 g m^{-2}.

	Specific Emission Rate			
	($mg\ m^{-2}\ h^{-1}$)		($mg\ kg^{-1}\ h^{-1}$)	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Ethylene glycol	1.42	0.32	8.71	1.96
n-Butyl ether	<0.03	<0.03	<0.19	<0.19
Propylene glycol	<0.15	<0.06	<0.95	<0.38
2-Ethyl-1-hexanol	<0.03	<0.03	<0.19	<0.19
2-(2-Butoxyethoxy)ethanol	<0.03	<0.03	<0.19	<0.19
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	5.32	2.68	32.7	16.5

Table C-54. Quasi steady-state emission rates of target VOCs at 48- and 96-h elapsed time for screening measurement of Paints LPS2 and SGLP3. The coverage of wet paint was 176 g m^{-2}.

	Specific Emission Rate			
	($mg\ m^{-2}\ h^{-1}$)		($mg\ kg^{-1}\ h^{-1}$)	
COMPOUND	**48-h**	**96-h**	**48-h**	**96-h**
Ethylene glycol	2.30	1.20	13.1	6.81
n-Butyl ether	<0.03	<0.03	<0.17	<0.17
Propylene glycol	1.05	0.27	5.95	1.52
Hexylene glycol	0.62	0.32	3.53	1.82
2-Ethyl-1-hexanol	0.03	<0.03	0.17	<0.17
2-(2-Butoxyethoxy)ethanol	0.60	0.19	3.44	1.08
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)	1.32	0.76	7.49	4.33

Table C-55. Quasi steady-state emission rates of SigmaVOC (*i.e.*, sum of target VOCs) at 48- and 96-h elapsed times for screening measurements of paints.

	Specific Emission Rate			
	(mg m^{-2} h^{-1})		(mg kg^{-1} h^{-1})	
Material ID	**48-h**	**96-h**	**48-h**	**96-h**
Primer Sealer				
LPS1	1.91	0.98	24.2	12.5
LPS2	3.78	2.58	34.5	23.6
Flat				
FLP1-a	4.03	1.38	40.7	14.0
FLP1-b	4.34	1.69	41.9	16.3
FLP2	2.28	0.77	20.5	6.91
FLP3	4.74	1.82	29.1	11.2
FLP4	0.03	0.03	0.30	0.30
Semi-Gloss				
SGLP1	5.72	3.45	34.9	21.0
SGLP2	3.94	3.02	30.6	23.4
SGLP3-a	5.17	2.62	30.6	15.5
SGLP3-b	4.86	2.77	30.4	17.3
SGLP4	0.15	0.09	1.04	0.63
Combination				
LPS2 & FLP3 @ 50% RH	7.63	3.85	48.8	24.6
LPS2 & FLP3 @ 30% RH	7.17	4.09	39.3	22.4
LPS2 & FLP3 @ 70% RH	6.77	3.02	41.6	18.6
LPS2 & SGLP3	6.00	2.74	34.1	15.6

Table C-56. Quasi steady-state emission rates of formaldehyde at 48- and 96-h elapsed times for screening measurements of paints.

	Specific Emission Rate			
	($\mu g\ m^{-2}\ h^{-1}$)		($\mu g\ kg^{-1}\ h^{-1}$)	
Material ID	**48-h**	**96-h**	**48-h**	**96-h**
Primer Sealer				
LPS1	31	25	390	310
LPS2	3	<3	28	<28
Flat				
FLP1-a	<3	<3	<31	<31
FLP1-b	<3	<3	<30	<30
FLP2	49	37	440	330
FLP3	12	3	76	19
FLP4	43	22	420	210
Semi-Gloss				
SGLP1	18	12	110	75
SGLP2	15	18	120	140
SGLP3-a	18	12	110	73
SGLP3-b	<9	<6	<58	<38
SGLP4	12	9	83	62
Combination				
LPS2 & FLP3 @ 50% RH	6	<3	39	<20
LPS2 & FLP3 @ 30% RH	3	<3	17	<17
LPS2 & FLP3 @ 70% RH	6	3	38	19
LPS2 & SGLP3	<9	<6	<52	<35

Table C-57. Quasi steady-state emission rates of acetaldehyde at 48- and 96-h elapsed times for screening measurements of paints.

Material ID	Specific Emission Rate ($\mu g\ m^{-2}\ h^{-1}$) 48-h	96-h	($\mu g\ kg^{-1}\ h^{-1}$) 48-h	96-h
Primer Sealer				
LPS1	<6	<9	<78	<120
LPS2	<6	<9	<56	<84
Flat				
FLP1-a	<6	<9	<62	<93
FLP1-b	<6	<9	<59	<89
FLP2	<6	<9	<55	<83
FLP3	<6	<9	<38	<57
FLP4	12	<9	120	<89
Semi-Gloss				
SGLP1	18	<18	110	<110
SGLP2	<18	<18	<140	<140
SGLP3-a	<18	<18	<110	<110
SGLP3-b	<18	<18	<110	<110
SGLP4	<18	<18	<120	<120
Combination				
LPS2 & FLP3 @ 50% RH	9	9	59	59
LPS2 & FLP3 @ 30% RH	<6	<9	<34	<51
LPS2 & FLP3 @ 70% RH	6	<9	38	<57
LPS2 & SGLP3	<18	<18	<100	<100

Table C-58. Percent weight compositions of ethylene glycol, propylene glycol and Texanol in Paints LPS2, FLP3 and SGLP3 selected for use in the large-scale experiments.

	Percent Weight Composition		
COMPOUND	**LPS2**	**FLP3**	**SGLP3**
Ethylene glycol	3.6	2.0	<0.7
Proplyene glycol	<0.8	<0.8	3.1
Texanol	1.5	0.9	0.7

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APPENDIX D

SCREENING MEASUREMENTS OF CARPET MATERIALS

Appendix D presents the analytical data for the screening measurements of the carpet materials including four carpets and four carpet cushions. The experiments were conducted in 10-L chambers over a period of 48 hours. Individual VOCs emitted by the carpet materials were identified. The concentrations of selected compounds and TVOC were measured at four time intervals. Specific emission rates of these components were calculated for the 24- and 48-h time intervals.

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Table D-01. Carpet materials selected for study.

Material ID	Manufacturer Code	Purchase Point	Material Description
Carpets			
CP1	A	Dealer	Residential; intermediate grade; action back with SBR latex; 100% nylon pile face fiber; CRI "Green Tag" line
CP3	B	Dealer	Residential; intermediate grade; action back with SBR latex; 100% nylon pile face fiber; CRI "Green Tag" line
CP2*	C	Dealer	Commercial; action back with SBR latex; 28 oz. olefin textured loop face fiber
CP4*†	C	Dealer	Commercial; action back with SBR latex; 28 oz. olefin textured loop face fiber; CRI "Green Tag" line
Seaming Tape			
ST†	D	Retail	Professional grade thermal adhesive seaming tape; 3-inch wide
Cushions			
CC1	E	Dealer	Rebonded urethane; 1/2-inch thick; 8 pounds per cubic foot
CC2**	F	Retail	Rebonded urethane; 1/2-inch thick; 4.5 pounds per cubic foot
CC4**†	F	Retail	Rebonded urethane; 7/16-inch thick; 4 pounds per cubic foot
CC3	E	Dealer	Synthetic fiber; 1/2-inch thick

*CP2 and CP4 are equivalent products from the same manufacturer.
**CC2 and CC4 are nearly equivalent products from the same manufacturer.
†Selected for use in large-scale experiments.

Table D-02. Summary of screening measurements with carpet materials in 10-L chambers.

Materials	Duration (h)	Material Amount	Experimental Procedures
Carpets			
CP1-a	48	0.0232 m^2	Placed into stainless-steel holder; fiber side exposed
CP1-b	48	0.0232 m^2	Placed into stainless-steel holder; fiber side exposed
CP3	48	0.0232 m^2	Placed into stainless-steel holder; fiber side exposed
CP2	48	0.0232 m^2	Placed into stainless-steel holder; fiber side exposed
CP4	48	0.0232 m^2	Placed into stainless-steel holder; fiber side exposed
CP Blank Run	48	---	Empty stainless-steel holder
Seaming Tape			
ST & CP3	48	0.152 m & 0.0232 m^2	Two pieces of carpet bonded & placed into stainless-steel holder; fiber side exposed
Cushions			
CC1	48	0.0232 m^2	Placed into stainless-steel holder; film side exposed
CC2-a	48	0.0232 m^2	Placed into stainless-steel holder; film side exposed
CC2-b	48	0.0232 m^2	Placed into stainless-steel holder; film side exposed
CC4	48	0.0232 m^2	Placed into stainless-steel holder; film side exposed
CC3	48	0.0232 m^2	Placed into stainless-steel holder; film side exposed
CC Blank Run	48	---	Empty stainless-steel holder

Table D-03. VOCs emitted by Carpet CP1 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
Branched alkane HC		26.7	+	+	Probable
Branched alkane HC		28.9	+	+	Probable
Branched alkane HC		29.2	+		Probable
Branched alkane HC		29.5	+	+	Probable
Branched alkane HC		30.2	+		Probable
n-Dodecane	Q	34.6	+	+	Confirmed
Branched alkane HC		36.9	+	+	Probable
Branched alkane HC		37.6	+		Probable
Branched alkane HC		38.3	+	+	Probable
Branched alkane HC		40.3	+		Probable
Branched alkane HC		42.8	+		Probable
Aromatic Hydrocarbons					
Toluene	T,Q	21.1	+		Confirmed
4-Phenylcyclohexene	A,Q	41.1	+	+	Confirmed
Other Hydrocarbons					
Alkene HC		30.0	+		Probable
d-Limonene	Q	30.2	+		Confirmed
Alkene HC		30.3	+		Probable
Alkene HCs	A	30.5-33.5	+		Probable
Carbonyl Compounds					
Benzaldehyde	B	31.0	+	+	Confirmed
Nonanal	B,Q	34.4	+	+	Confirmed
1-Phenylethanone	T,Q	34.8	+		Confirmed
Decanal	B,Q	37.4	+	+	Confirmed
Other Oxidized Compounds					
Acetic acid	B	20.0	+	+	Probable
1-Dodecanol	A	45.1	+	+	Probable
Nitrogen-Containing Cmpds					
2-Methyleneglutaronitrile, CAS 1572-52-7		39.0	+		Probable

Table D-03, Continued. VOCs emitted by Carpet CP1 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane	B	21.3	+	+	Confirmed
Octamethylcyclotetrasiloxane	B	27.4	+	+	Confirmed
Decamethylcyclopentasiloxane	B	32.5		+	Probable
Siloxane compound		37.6	+		Tentative
Unidentified Compounds					
Unidentified compound		43.0	+		Unident.

*T = Toxic air contaminant; A = Abundant compound; B = Component of system or chamber background; Q = Quantified target compound.

Table D-04. VOCs emitted by Carpet CP3 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
Branched alkane HC		26.8	+		Probable
Branched alkane HC		28.9	+		Probable
Branched alkane HC		29.2	+		Probable
Branched alkane HC		29.6	+		Probable
Branched alkane HC		34.6	+		Probable
Branched alkane HC		37.0	+	+	Probable
Branched alkane HC		38.3	+	+	Probable
Branched alkane HC		42.8	+	+	Probable
Branched alkane HC		43.9	+	+	Probable
Aromatic Hydrocarbons					
Styrene	T,Q	26.6	+		Confirmed
Propylbenzene		28.4	+		Confirmed
4-Phenylcyclohexene	A,Q	41.1	+	+	Confirmed
Other Hydrocarbons					
C12 Alkene HC		30.0	+		Probable
C12 Alkene HC		30.2	+		Probable
C12 Alkene HC		30.9	+		Probable
C12 Alkene HC		31.1	+		Probable
C12 Alkene HC		31.2	+		Probable
C12 Alkene HC		31.4	+		Probable
C12 Alkene HC		31.6	+		Probable
C12 Alkene HC		31.8	+		Probable
C12 Alkene HC		31.9	+		Probable
C12 Alkene HC		32.0	+		Probable
C12 Alkene HC		32.2	+		Probable
C12 Alkene HC		32.3	+		Probable
Alkene HC		40.6	+		Tentative
Carbonyl Compounds					
Benzaldehyde	B	31.1	+		Confirmed
Nonanal	B,Q	34.4	+	+	Confirmed
Decanal	B,Q	37.5	+		Confirmed
Other Oxidized Compounds					
Acetic acid	B	20.4	+	+	Probable
2-(2-Butoxyethoxy)ethanol	T	38.1	+		Confirmed

Table D-04, Continued. VOCs emitted by Carpet CP3 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane	B	21.3	+	+	Confirmed
Octamethylcyclotetrasiloxane	B	27.4	+	+	Confirmed
Decamethylcyclopentasiloxane	B	32.5	+	+	Probable
Siloxane compound		37.6	+		Tentative
Siloxane compound		42.2	+	+	Tentative

*T = Toxic air contaminant; A = Abundant compound; B = Component of system or chamber background; Q = Quantified target compound.

Table D-05. VOCs emitted by Carpet CP2 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
Branched alkane HC		23.0	+		Probable
Branched alkane HC		24.4	+		Probable
Branched alkane HC		26.7	+	+	Probable
Branched alkane HCs		27.0-27.5	+	+	Probable
Branched alkane HC		27.9	+	+	Probable
Branched alkane HC		28.2	+	+	Probable
Branched alkane HC		28.6	+	+	Probable
Branched alkane HC		28.8	+	+	Probable
Branched alkane HC		29.2	+	+	Probable
Branched alkane HC	A	29.5	+	+	Probable
Branched alkane HC		29.7	+	+	Probable
Branched alkane HC		29.9	+	+	Probable
Branched alkane HC		30.0	+	+	Probable
Branched alkane HC	A	30.2	+	+	Probable
Branched alkane HC		30.5	+	+	Probable
Branched alkane HC		30.8	+	+	Probable
Branched alkane HC		31.1	+	+	Probable
Branched alkane HC		31.3	+	+	Probable
Branched alkane HC	A	31.5	+	+	Probable
Branched alkane HC		31.7	+	+	Probable
Branched alkane HC		31.9	+	+	Probable
Branched alkane HC		32.1		+	Probable
Branched alkane HC		34.5		+	Probable
Branched alkane HC	A	36.9	+	+	Probable
Branched alkane HC		37.2	+	+	Probable
Branched alkane HC		37.3	+	+	Probable
Branched alkane HC		37.4	+	+	Probable
Branched alkane HC		37.6	+	+	Probable
Branched alkane HC	A	38.2	+	+	Probable
Branched alkane HC		38.4	+	+	Probable
Branched alkane HC		38.5	+	+	Probable
Branched alkane HC		38.6		+	Probable
Branched alkane HC		38.7		+	Probable
Branched alkane HC		38.8	+	+	Probable
Branched alkane HC		39.0		+	Probable
Branched alkane HC		42.8	+	+	Probable

Table D-05, Continued. VOCs emitted by Carpet CP2 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons, Cont.					
Branched alkane HC		43.0	+	+	Probable
Branched alkane HC		43.1		+	Probable
Branched alkane HC		43.9	+	+	Probable
Branched alkane HC		44.1	+	+	Probable
Aromatic Hydrocarbons					
Toluene	T,Q	21.0	+		Confirmed
Ethylbenzene	T,Q	24.9	+		Confirmed
m-,p-Xylene	T,Q	25.2	+		Confirmed
o-Xylene	T,Q	26.3	+		Confirmed
Stryene	T,Q	26.6	+		Confirmed
Propylbenzene	Q	28.3	+		Confirmed
4-Phenylcyclohexene	Q	41.1	+	+	Confirmed
Other Hydrocarbons					
Alkene HC		28.5	+	+	Probable
Alkene HC		29.7	+		Probable
Alkyl substituted cyclohexane		30.8	+	+	Tentative
Alkene HC		31.1	+	+	Probable
Alkene HC		32.6	+		Probable
Alkene HC		38.0	+	+	Probable
Alkene HC		39.8	+		Probable
Alkene HC		43.8	+	+	Probable
Halogenated Compounds					
Tetrachloroethene	T,A,Q	22.0	+	+	Confirmed
Carbonyl Compounds					
Nonanal	B,Q	34.3	+	+	Confirmed
1-Phenylethanone	T,Q	34.8	+	+	Confirmed
Decanal	B,Q	37.4	+	+	Confirmed
Other Oxidized Compounds					
Acetic acid	B	20.1	+	+	Probable
Di(propylene glycol)methyl ether, isomer 3		32.2	+		Probable
Triethylene glycol monomethyl ether, CAS 112-35-6		34.7	+	+	Tentative

Table D-05, Continued. VOCs emitted by Carpet CP2 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Other Oxidized Cmpds, Cont.					
Benzoic acid		40.3		+	Probable
Decanoic acid		43.6		+	Probable
1-Dodecanol		45.0	+	+	Tentative
Nitrogen-Containing Cmpds					
2-Methyleneglutaronitrile, CAS 1572-52-7		39.0	+		Probable
N,N-bis(2-Hydroxyethyl)-dodecanamide, CAS 120-40-1		48.3		+	Tentative
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane	B	21.3	+	+	Probable
Octamethylcyclotetrasiloxane	B	27.4	+	+	Probable
Decamethylcyclopentasiloxane	B	32.5	+	+	Probable
Siloxane compound		42.1	+		Tentative
Unidentified Compounds					
Unidentified glycol ether		34.6	+	+	Unident.
Unidentified glycol ether, C8H18O3		35.7	+	+	Unident.
Unidentified compound		39.8		+	Unident.
Unidentified compound		42.1		+	Unident.

*T = Toxic air contaminant; A = Abundant compound; B = Component of system or chamber background; Q = Quantified target compound.

Table D-06. VOCs emitted by Carpet CP4 in 10-L chamber at 6- and 48-hours elapsed times. Samples were analyzed using thermal desorption system two.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
Branched alkane HC		14.3	+	+	Probable
Branched alkane HC		21.8	+	+	Probable
Branched alkane HC		22.0	+	+	Probable
n-Undecane	Q	23.4	+	+	Confirmed
Branched alkane HCs		23.6	+	+	Probable
Branched alkane HC	A	29.1	+	+	Probable
Branched alkane HC		29.4	+	+	Probable
Branched alkane HC		29.6	+	+	Probable
Branched alkane HC		29.8	+	+	Probable
Branched alkane HC	A	30.6	+	+	Probable
Branched alkane HC		30.8	+	+	Probable
Branched alkane HC		31.1	+	+	Probable
Branched alkane HC		35.3	+	+	Probable
Aromatic Hydrocarbons					
m-,p-Xylene	T	16.6	+		Confirmed
Stryene	T,Q	18.1	+	+	Confirmed
4-Phenylcyclohexene	A,Q	33.5	+	+	Confirmed
Other Hydrocarbons					
4-Ethenylcyclohexene	Q	14.1	+	+	Confirmed
Alkene HC		23.2	+	+	Probable
Alkene HC		23.8	+	+	Probable
Alkene HC		23.9	+	+	Probable
Alkene HC		32.2	+	+	Probable
Alkene HC		37.7	+	+	Probable
Carbonyl Compounds					
Benzaldehyde	B	22.9	+	+	Confirmed
Octanal		22.9	+	+	Confirmed
Nonanal	B,Q	26.5	+	+	Confirmed
Decanal	B,Q	29.8	+	+	Confirmed
Other Oxidized Compounds					
Acetic acid	B	10.3	+	+	Probable
Methylheptanol isomer		22.9	+		Tentative

Table D-06, Continued. VOCs emitted by Carpet CP4 in 10-L chamber at 6- and 48-hours elapsed times. Samples were analyzed using thermal desorption system two.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Other Oxidized Cmpds, Cont.					
Di(propylene glycol)methyl ether, isomer 1	Q	23.4	+	+	Confirmed
Di(propylene glycol)methyl ether, isomer 2	Q	23.6	+		Confirmed
Di(propylene glycol)methyl ether, isomer 3	Q	24.1	+	+	Confirmed
Triethylene glycol monomethyl ether, CAS 112-35-6	A	26.8	+	+	Tentative
Phenol	T,Q	26.9	+	+	Confirmed
Phenethyl alcohol	Q	29.3	+	+	Confirmed
1-Decanol	Q	32.2	+	+	Confirmed
1-Dodecanol	A	37.7	+	+	Confirmed
Nitrogen-Containing Cmpds					
N,N-Dimethylacetamide	Q	20.8	+	+	Confirmed
4-Methyl-1H-imidazole		30.3	+		Tentative
2-Methyleneglutaronitrile, CAS 1572-52-7	Q	31.6	+	+	Confirmed
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane	B	12.3	+	+	Probable
Octamethylcyclotetrasiloxane	B	18.9	+	+	Probable
Decamethylcyclopentasiloxane	B	30.5	+	+	Probable
Unidentified Compounds					
Unidentified glycol ether, C8H18O3		27.7	+	+	Unident.
Unidentified glycol ether, C8H18O3	A	27.9	+	+	Unident.
Unidentified glycol ether, C8H18O3		28.0	+	+	Unident.
Unidentified glycol ether		29.3	+	+	Unident.
Unidentified compound		37.4		+	Unident.
Unidentified compound		38.7	+		Unident.

*T = Toxic air contaminant; A = Abundant compound; B = Component of system or chamber background; Q = Quantified target compound.

Table D-07. VOCs emitted by Seaming Tape ST and Carpet CP3 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
Branched alkane HC		24.4	+		Probable
Branched alkane HC		26.8	+	+	Probable
Branched alkane HC		27.3	+	+	Probable
n-Decane	Q	28.0	+		Confirmed
Branched alkane HC		28.7	+	+	Probable
Branched alkane HC	A	28.9	+	+	Probable
Branched alkane HC		29.2	+	+	Probable
Branched alkane HC	A	29.6	+	+	Probable
Branched alkane HC		29.9	+	+	Probable
Branched alkane HC		30.1	+	+	Probable
Branched alkane HC	A	30.3	+	+	Probable
Branched alkane HC	A	30.4	+	+	Probable
Branched alkane HC		30.6	+		Probable
Branched alkane HC	A	30.9	+	+	Probable
Branched alkane HC		31.1	+	+	Probable
Branched alkane HC		31.2	+	+	Probable
Branched alkane HC		31.4	+	+	Probable
Branched alkane HC		31.6	+	+	Probable
Branched alkane HC		31.8	+		Probable
Branched alkane HC		32.1	+	+	Probable
Branched alkane HC		32.2	+	+	Probable
Branched alkane HC		33.6	+		Probable
Branched alkane HC		37.0	+	+	Probable
Branched alkane HC		38.3	+	+	Probable
Branched alkane HC		42.8	+	+	Probable
Branched alkane HC		43.9	+		Probable
Aromatic Hydrocarbons					
Styrene	T,Q	26.6	+		Confirmed
Propylbenzene		28.4	+		Confirmed
4-Phenylcyclohexene	A,Q	41.1	+	+	Confirmed
Other Hydrocarbons					
Alkene HC		27.8	+		Probable
Alkene HC		30.3	+	+	Probable
Alkene HC		30.4	+	+	Probable

Table D-07, Continued. VOCs emitted by Seaming Tape ST and Carpet CP3 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Other Hydrocarbons, Cont.					
Alkene HC		30.6	+		Probable
Alkene HC		30.8	+	+	Probable
Alkene HC		31.4	+	+	Probable
Alkene HC		32.0	+	+	Tentative
Alkene HC		32.7	+		Probable
Carbonyl Compounds					
Nonanal	B,Q	34.4	+	+	Confirmed
Decanal	B,Q	37.5	+	+	Confirmed
Other Oxidized Compounds					
Acetic acid	B	20.4	+	+	Probable
Di(propylene glycol)methyl ether, isomer 3		32.3	+		Probable
2-(2-Butoxyethoxy)ethanol		38.1	+	+	Confirmed
2,6-Di-*tert*-butyl-4-methylphenol (butylated hydroxytoluene)	Q	45.6	+	+	Confirmed
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane	B	21.3	+	+	Confirmed
Octamethylcyclotetrasiloxane	B	27.4	+	+	Confirmed
Decamethylcyclopentasiloxane	B	32.5	+	+	Probable
Siloxane compound		42.2	+	+	Tentative

*T = Toxic air contaminant; A = Abundant compound; B = Component of system or chamber background; Q = Quantified target compound.

Table D-08. VOCs emitted by CP Blank in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Carbonyl Compounds					
Benzaldehyde		31.1	+	+	Confirmed
Nonanal	Q	34.4	+	+	Confirmed
1-Phenylethanone	T	34.8	+		Confirmed
Decanal	Q	37.5	+	+	Confirmed
Other Oxidized Compounds					
Acetic acid		20.2	+	+	Probable
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane		21.4	+	+	Confirmed
Octamethylcyclotetrasiloxane		27.4	+	+	Confirmed
Decamethylcyclopentasiloxane		32.5	+	+	Probable

*T = Toxic air contaminant; Q = Quantified target compound.

Table D-09. VOCs emitted by Carpet Cushion CC1 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
n-Undecane	Q	31.5	+		Confirmed
Branched alkane HC		34.6	+	+	Probable
n-Tridecane	Q	37.5		+	Confirmed
n-Tetradecane	Q	40.3	+		Confirmed
Aromatic Hydrocarbons					
Toluene	T,Q	21.2	+		Confirmed
m-,p-Xylene	T,Q	25.2	+		Confirmed
Propylbenzene	Q	28.4	+		Confirmed
C3 Alkylbenzene		28.6	+	+	Probable
1,3,5-Trimethylbenzene	Q	28.9	+		Confirmed
2-Ethyltoluene	Q	29.5	+		Confirmed
1,2,4-Trimethylbenzene	T,Q	29.9	+	+	Confirmed
1,2,3-Trimethylbenzene	Q	31.2	+		Confirmed
1,3-Diethylbenzene	Q	31.6	+		Confirmed
C4 Alkylbenzene		31.9	+		Probable
C4 Alkylbenzene		32.4	+		Probable
C4 Alkylbenzene		32.7	+	+	Probable
C4 Alkylbenzene		32.8	+		Probable
C4 Alkylbenzene		33.0	+	+	Probable
C4 Alkylbenzene		33.9	+	+	Probable
C4 Alkylbenzene		34.1	+	+	Probable
C4 Alkylbenzene		34.3	+	+	Probable
C5 Alkylbenzene		34.6	+		Probable
C4 Alkylbenzene		35.5	+	+	Probable
C5 Alkylbenzene		35.7	+		Probable
C5 Alkylbenzene		36.5	+	+	Probable
Naphthalene	T,A,Q	37.8	+	+	Confirmed
2-Methylnaphthalene	A,Q	41.0	+	+	Confirmed
1-Methylnaphthalene	Q	41.5	+	+	Confirmed
Dimethylnaphthalene isomer		43.9	+		Probable
Other Hydrocarbons					
Dihydromethylindene isomer		35.0	+	+	Probable
Dihydromethylindene isomer		35.6	+	+	Probable
Unsaturated hydrocarbons, unresolved isomers	A	35-51	+	+	Probable

Table D-09, Continued. VOCs emitted by Carpet Cushion CC1 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Carbonyl Compounds					
Benzaldehyde	B	31.1	+	+	Confirmed
1-Phenylethanone	T,Q	34.8	+		Confirmed
Other Oxidized Compounds					
1-Acetoxy-2-propanol		29.3	+	+	Probable
1,3-Dichloro-2-propanol		30.9	+		Confirmed
Phenol	T	34.7	+	+	Confirmed
Pentanedioic acid, dimethylester, CAS 1119-40-0	Q	36.5	+		Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (Texanol 1 isomer)	Q	43.3	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (Texanol 3 isomer)	Q	43.6	+	+	Confirmed
2,6-Di-*tert*-butyl-4-methylphenol (butylated hydroxytoluene)	A,Q	45.6	+	+	Confirmed
Nitrogen-Containing Cmpds					
4-Methylmorpholine, CAS 109-02-4		22.9	+	+	Probable
N,N-Dimethylbenzylamine, CAS 103-83-3	A,Q	31.7	+	+	Confirmed
2,2'-Azobisisobutyronitrile, CAS 78-67-1		35.4	+	+	Probable
Miscellaneous Compounds					
Decamethylcyclopentasiloxane	B	32.5	+		Probable
Triethylphosphate	A,Q	37.1	+	+	Confirmed
Unidentified Compounds					
Unidentified compound		30.2	+		Unident.
Unidentified compound		30.7	+		Unident.
Unidentifed compound		48.1	+	+	Unident.

*T = Toxic air contaminant; A = Abundant compound; B = Component of system or chamber background; Q = Quantified target compound.

Table D-10. VOCs emitted by Carpet Cushion CC2 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
Branched alkane HC		28.8	+		Probable
Branched alkane HC		29.5	+		Probable
Branched alkane HC		30.2	+		Probable
Branched alkane HC		30.3	+		Probable
Branched alkane HC		30.8	+		Probable
n-Dodecane	Q	34.6	+		Confirmed
Other Hydrocarbons					
d-Limonene	Q	30.1	+	+	Confirmed
Unsaturated hydrocarbons, unresolved isomers	A	35-51	+	+	Probable
Unsaturated hydrocarbon, C16H26		44.9	+		Probable
Halogenated Compounds					
1,2-Dichlorobenzene	Q	32.3	+		Probable
Carbonyl Compounds					
Cyclohexanone	Q	28.5	+		Confirmed
Benzaldehyde	B	31.0	+	+	Confirmed
Nonanal	B,Q	34.4	+	+	Confirmed
Other Oxidized Compounds					
Benzyl acetate, CAS 140-11-4		37.1		+	Probable
2,6-Di-*tert*-butyl-4-methylphenol (butylated hydroxytoluene)	A,Q	45.6	+	+	Confirmed
Nitrogen-Containing Cmpds					
2,2'-Azobisisobutyronitrile, CAS 78-67-1		35.4	+	+	Probable
Miscellaneous Compounds					
Decamethylcyclopentasiloxane	B	32.5	+		Probable
Unidentified Compounds					
Unidentified compound	A	42.3	+	+	Unident.
Unidentified compound		44.9		+	Unident.
Unidentified compound		48.0	+	+	Unident.

*T = Toxic air contaminant; A = Abundant compound; B = Component of system or chamber background; Q = Quantified target compound.

Table D-11. VOCs emitted by Carpet Cushion CC4 in 10-L chamber at 6- and 48-hours elapsed times. Samples were analyzed using thermal desorption system two.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Aromatic Hydrocarbons					
Aromatic HC, MW 262		40.8	+	+	Tentative
Other Hydrocarbons					
Unsaturated hydrocarbons, unresolved isomers	A	28-43+	+	+	Probable
Halogenated Compounds					
1,2-Dichlorobenzene	Q	24.2	+		Confirmed
Carbonyl Compounds					
Benzaldehyde	B	22.9	+	+	Confirmed
Octanal		22.9	+	+	Confirmed
Nonanal	B,Q	26.5	+	+	Confirmed
Decanal	B,Q	29.7	+	+	Confirmed
Other Oxidized Compounds					
Phenol	T,Q	26.9	+	+	Confirmed
2-Ethylhexanoic acid		28.7		+	Probable
2,6-Di-*tert*-butyl-4-methylphenol (butylated hydroxytoluene)	A,Q	38.2	+	+	Confirmed
Nitrogen-Containing Cmpds					
N,N-Dimethylbenzylamine, CAS 103-83-3	Q	23.4	+	+	Confirmed
N,N-Dimethylacrylamide, CAS 2680-03-7	Q	23.6	+	+	Confirmed
2,2'-Azobisisobutryonitrile CAS 78-67-1	Q	27.6	+	+	Confirmed
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane	B	12.4	+	+	Confirmed
Octamethylcyclotetrasiloxane	B	18.8	+	+	Confirmed

*T = Toxic air contaminant; A = Abundant compound; B = Component of system or chamber background; Q = Quantified target compound.

Table D-12. VOCs emitted by Carpet Cushion CC3 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
Branched alkane HC		23.0	+		Probable
Branched alkane HC		26.7	+		Probable
Branched alkane HC		28.8	+		Probable
Branched alkane HC		29.5	+		Probable
Branched alkane HC		30.0	+	+	Probable
Branched alkane HC	A	30.2	+	+	Probable
Branched alkane HC		31.4	+		Probable
Branched alkane HC	A	31.5	+	+	Probable
Branched alkane HC		31.7	+	+	Probable
Branched alkane HC		31.9	+		Probable
Branched alkane HC		34.6	+		Probable
Branched alkane HC	A	36.9	+	+	Probable
Branched alkane HC		37.1	+	+	Probable
Branched alkane HC		37.3	+	+	Probable
Branched alkane HC		37.6	+	+	Probable
Branched alkane HC	A	38.2	+	+	Probable
Branched alkane HC		38.3	+		Probable
Branched alkane HC		38.5	+	+	Probable
Branched alkane HC		38.7	+	+	Probable
Branched alkane HC		39.0	+	+	Probable
Branched alkane HC		40.3	+	+	Probable
Branched alkane HC		42.7	+	+	Probable
Branched alkane HC		42.9	+		Probable
Branched alkane HC		43.9	+	+	Probable
Aromatic Hydrocarbons					
C3 Alkylbenzene		28.6	+		Probable
C3 Alkylbenzene		28.8	+		Probable
1,2,4-Trimethylbenzene	Q	29.9	+		Confirmed
1,2,3-Trimethylbenzene	Q	31.1	+		Confirmed
C4 Alkylbenzene		32.9	+		Probable
C4 Alkylbenzene		34.0	+		Probable
C4 Alkylbenzene		34.2	+		Probable
Naphthalene	T,Q	37.7	+		Confirmed
2-Methylnaphthalene	Q	40.9	+		Confirmed
4-Phenylcyclohexene	Q	41.1	+	+	Confirmed
Biphenyl	T	43.1	+		Confirmed

Table D-12, Continued. VOCs emitted by Carpet Cushion CC3 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Other Hydrocarbons					
Alkene HC		31.1	+		Probable
Alkene HC		31.2	+		Probable
C5 Alkyl substituted cyclohexane		38.0	+	+	Tentative
Alkene HC		45.0	+	+	Tentative
Halogenated Compounds					
1,1,1-Trichloroethane	T,Q	15.2	+		Confirmed
Carbonyl Compounds					
Benzaldehyde	B	31.0	+		Confirmed
Nonanal	B,Q	34.3	+	+	Confirmed
Decanal	B,Q	37.4	+	+	Confirmed
Other Oxidized Compounds					
2-Ethyl-1-hexanol	Q	32.4	+	+	Confirmed
Nitrogen-Containing Cmpds					
Caprolactam	T,Q	43.4	+		Probable
Miscellaneous Compounds					
Decamethylcyclopentasiloxane	B	32.5		+	Probable
Unidentified Compounds					
Unidentified compound		31.1		+	Unident.

*T = Toxic air contaminant; A = Abundant compound; B = Component of system or chamber background; Q = Quantified target compound.

Table D-13. VOCs emitted by CC Blank in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Carbonyl Compounds					
Benzaldehyde		31.1	+		Confirmed
Nonanal	Q	34.4	+	+	Confirmed
Decanal	Q	37.5	+	+	Confirmed
Other Oxidized Compounds					
Acetic acid		20.3	+	+	Probable
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane		21.4	+	+	Confirmed
Octamethylcyclotetrasiloxane		27.4	+	+	Confirmed
Decamethylcyclopentasiloxane		32.5		+	Probable

*Q = Quantified target compound.

Table D-14. Summary of target VOCs for screening measurements with carpet materials. See Table D-02 for material codes.

COMPOUND	CP1	CP3	CP2	CP4	ST & CP3	CC1	CC2	CC4	CC3
Alkane Hydrocarbons									
n-Decane					+				
n-Undecane				+		+			
n-Dodecane	+						+		
n-Tridecane						+			
n-Tetradecane						+			
Aromatic Hydrocarbons									
Toluene	+		+			+			
Ethylbenzene			+						
m-,p-Xylene			+			+			
o-Xylene			+						
Styrene		+	+	+	+				
Propylbenzene			+			+			
1,3,5-Trimethylbenzene						+			+
2-Ethyltoluene						+			
1,2,4-Trimethylbenzene						+			
1,2,3-Trimethylbenzene						+			+
1,3-Diethylbenzene						+			+
Naphthalene						+			+
2-Methylnaphthalene						+			+
1-Methylnaphthalene						+			
4-Phenylcyclohexene	+	+	+	+	+				+
Other Hydrocarbons									
4-Ethenylcyclohexene				+					
d-Limonene	+						+		

Table D-14, Continued. Summary of target VOCs for screening measurements with carpet materials.

COMPOUND	CP1	CP3	CP2	CP4	ST & CP3	CC1	CC2	CC4	CC3
Halogenated Compounds									
1,1,1-Trichloroethane									+
Tetrachloroethene			+						
1,2-Dichlorobenzene							+	+	
Carbonyl Compounds									
Cyclohexanone							+		
Nonanal	+	+	+	+	+		+	+	+
1-Phenylethanone	+		+			+			
Decanal	+	+	+	+	+			+	+
Other Oxidized Compounds									
Di(propylene glycol) methyl ethers				+					
2-Ethyl-1-hexanol									+
Phenol				+				+	
Pentanedioic acid, dimethyl ester						+			
Phenethyl alcohol				+					
1-Decanol				+					
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates (Texanol)						+			
2,6-Di-*tert*-butyl-4-methylphenol (BHT)					+	+	+	+	
Nitrogen-Containing Compounds									
N,N-Dimethylacetamide				+					
N,N-Dimethylbenzylamine						+		+	
N,N-Dimethylacrylamide								+	

Table D-14, Continued. Summary of target VOCs for screening measurements with carpet materials.

COMPOUND	CP1	CP3	CP2	CP4	ST & CP3	CC1	CC2	CC4	CC3
Nitrogen-Containing Compounds									
2-Methylene glutaronitrile				+					
2,2'-Azobisisobutyronitrile								+	
Caprolacatam									+
Miscellaneous Compounds									
Triethylphosphate						+			

Table D-15. Chamber concentrations of target VOCs for 48-h screening measurement of Carpet CP1-a.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Dodecane	2	1	<1	<1
Aromatic Hydrocarbons				
Toluene	11	3	1	<1
4-Phenylcyclohexene	9	6	5	4
Other Hydrocarbons				
d-Limonene	2	<1	<1	<1
Carbonyl Compounds				
Nonanal	5	2	<2	<2
1-Phenylethanone	<1	1	<1	<1
Decanal	5	2	2	2

Table D-16. Chamber concentrations of target VOCs for 48-h screening measurement of Carpet CP1-b.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Dodecane	2	1	<1	<1
Aromatic Hydrocarbons				
Toluene	9	3	1	<1
4-Phenylcyclohexene	8	5	4	4
Other Hydrocarbons				
d-Limonene	2	<1	<1	<1
Carbonyl Compounds				
Nonanal	4	2	<2	<2
1-Phenylethanone	1	1	<1	<1
Decanal	<2	<2	2	<2

Table D-17. Chamber concentrations of target VOCs for 48-h screening measurement of Carpet CP3.

Compound	Chamber Concentration, µg m^{-3} 1-h*	6-h	24-h	48-h
Aromatic Hydrocarbons				
Styrene	---	2	<1	<1
4-Phenylcyclohexene	---	7	18	6
Carbonyl Compounds				
Nonanal	---	<3	<3	<3
Decanal	---	<3	<3	<3

*Missing data; sample lost during analysis.

Table D-18. Chamber concentrations of target VOCs for 48-h screening measurement of Carpet CP2.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Aromatic Hydrocarbons				
Toluene	78	18	2	<1
Ethylbenzene	34	11	2	<1
m-,p-Xylene	99	39	7	1
o-Xylene	32	11	3	<1
Stryene	66	25	4	<1
Propylbenzene	10	4	2	<1
4-Phenylcyclohexene	27	20	17	14
Halogenated Compounds				
Tetrachloroethene	62	114	22	5
Carbonyl Compounds				
Nonanal	4	<5	<3	<3
1-Phenylethanone	<1	2	1	1
Decanal	5	<5	3	6

Table D-19. Chamber concentrations of target VOCs for 48-h screening measurement of Carpet CP4.

Compound	Chamber Concentration, μg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Undecane	39	23	24	9
Aromatic Hydrocarbons				
Stryene	93	18	5	1
4-Phenylcyclohexene	19	17	26	13
Other Hydrocarbons				
4-Ethenylcyclohexene	73	12	5	3
Carbonyl Compounds				
Nonanal	8	6	3	4
Decanal	<3	15	6	7
Other Oxidized Cmpds.				
Di(propylene glycol)methyl ether isomers	90	59	27	15
Phenol	6	5	4	2
Phenethyl alcohol	5	4	3	2
1-Decanol	5	3	4	1
Nitrogen-Containing Cmpds				
N,N-Dimethylacetamide	43	24	11	10
2-Methyleneglutaronitrile	44	37	24	15

Table D-20. Chamber concentrations of target VOCs for 48-h screening measurement of Seaming Tape ST and Carpet CP3.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Decane	4	2	2	<1
Aromatic Hydrocarbons				
Styrene	5	2	<1	<1
4-Phenylcyclohexene	12	8	6	7
Carbonyl Compounds				
Nonanal	3	<3	<3	<3
Decanal	<3	<3	<3	<3
Other Oxidized Cmpds				
2,6-Di-*tert*-butyl-4-methyl-phenol (BHT)	3	<1	2	5

Table D-21. Chamber concentrations of target VOCs for 48-h screening measurement of CP Blank.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Carbonyl Compounds				
Nonanal	<3	<3	<3	<3
Decanal	<3	<3	<3	<3

Table D-22. Chamber concentrations of target VOCs for 48-h screening measurement of Carpet Cushion CC1.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Undecane	2	2	1	1
n-Tridecane	3	2	2	2
n-Tetradecane	2	2	1	1
Aromatic Hydrocarbons				
Toluene	5	1	<1	<1
m-,p-Xylene	3	2	<1	<1
Propylbenzene	4	3	1	<1
1,3,5-Trimethylbenzene	5	4	1	<1
2-Ethyltoluene	4	3	1	<1
1,2,4-Trimethylbenzene	8	6	3	1
1,2,3-Trimethylbenzene	5	3	2	2
1,3-Diethylbenzene	4	3	2	1
Naphthalene	15	10	8	9
2-Methylnaphthalene	16	23	10	10
1-Methylnaphthalene	8	8	6	6
Carbonyl Compounds				
1-Phenylethanone	2	2	1	<1
Other Oxidized Cmpds				
Pendanedioic acid, dimethyl ester	4	3	2	3
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates	11	11	11	11
2,6-Di-*tert*-butyl-4-methyl-phenol (BHT)	37	62	31	35
Nitrogen-Containing Cmpds				
N,N-Dimethylbenzylamine	7	60	40	33
Miscellaneous Cmpds				
Triethylphosphate	33	69	48	45

Table D-23. Chamber concentrations of target VOCs for 48-h screening measurement of Carpet Cushion CC2-a.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Dodecane	2	1	<1	<1
Other Hydrocarbons				
d-Limonene	2	1	1	<1
Halogenated Compounds				
1,2-Dichlorobenzene	3	2	1	<1
Carbonyl Compounds				
Cyclohexanone	2	2	<1	<1
Nonanal	3	<3	<3	<3
Other Oxidized Cmpds				
2,6-Di-*tert*-butyl-4-methyl-phenol (BHT)	26	62	56	64

Table D-24. Chamber concentrations of target VOCs for 48-h screening measurement of Carpet Cushion CC2-b.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Dodecane	2	1	1	<1
Other Hydrocarbons				
d-Limonene	2	1	<1	<1
Halogenated Compounds				
1,2-Dichlorobenzene	3	2	1	1
Carbonyl Compounds				
Cyclohexanone	4	2	<1	<1
Nonanal	3	4	<3	<3
Other Oxidized Cmpds				
2,6-Di-*tert*-butyl-4-methyl-phenol (BHT)	36	74	74	76

Table D-25. Chamber concentrations of target VOCs for 48-h screening measurement of Carpet Cushion CC4.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Halogenated Compounds				
1,2-Dichlorobenzene	5	4	2	1
Carbonyl Compounds				
Nonanal	<6	<6	<6	<6
Decanal	<6	<6	8	<6
Other Oxidized Cmpds				
Phenol	7	6	7	6
2,6-Di-*tert*-butyl-4-methyl-phenol (BHT)	73	43	46	80
Nitrogen-Containing Cmpds				
N,N-Dimethylbenzylamine	29	39	31	17
N,N-Dimethylacrylamide	2	2	2	2
2,2'-Azobisisobutyronitrile	95	79	61	36

Table D-26. Chamber concentrations of target VOCs for 48-h screening measurement of Carpet Cushion CC3.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Aromatic Hydrocarbons				
1,3,5-Trimethylbenzene	3	1	<1	<1
1,2,4-Trimethylbenzene	6	2	<1	<1
1,2,3-Trimethylbenzene	3	1	<1	<1
Naphthalene	2	<1	<1	<1
2-Methylnaphthalene	2	2	1	<1
4-Phenylcyclohexene	3	3	2	2
Halogenated Compounds				
1,1,1-Trichloroethane	16	4	1	<1
Carbonyl Compounds				
Nonanal	<3	<3	<3	3
Decanal	<3	4	<3	8
Other Oxidized Cmpds				
2-Ethyl-1-hexanol	9	4	2	2
Nitrogen-Containing Cmpds				
Caprolactam	<1	2	1	2

Table D-27. Chamber concentrations of target VOCs for 48-h screening measurement of CC Blank.

Compound	Chamber Concentration (µg m^{-3}) 1 h	6 h	24 h	48 h
Carbonyl Compounds				
Nonanal	<3	<3	<3	3
Decanal	4	<3	<3	7

Table D-28. Chamber concentrations of TVOC for 48-h screening measurements of carpet materials.

	Chamber Concentration (μg m^{-3})			
Material ID	**1 h**	**6 h**	**24 h**	**48 h**
Carpets				
CP1-a	440	230	115	103
CP1-b	390	210	103	92
CP3	md*	260	101	74
CP2	5,000	2,700	1,330	830
CP4	1,140	967	439	351
CP Blank Run	<20	<20	<20	<20
Seaming Tape				
ST & CP3	1,830	700	470	230
Cushions				
CC1	1,150	1,150	680	650
CC2-a	1,690	1,370	1,050	940
CC2-b	1,920	1,750	1,620	1,430
CC4	1,920	1,910	1,580	1,160
CC3	610	280	135	138
CC Blank Run	27	29	37	<20

*md = Missing data.

Table D-29. Chamber concentrations of SigmaVOC (*i.e.*, sum of target VOCs) for 48-h screening measurements of carpet materials.

	Chamber Concentration (μg m^{-3})			
Material ID	**1 h**	**6 h**	**24 h**	**48 h**
Carpets				
CP1-a	34	16	10	9
CP1-b	26	13	9	8
CP3	md*	12	21	9
CP2	416	249	63	30
CP4	426	224	141	82
CP Blank Run	3	3	3	3
Seaming Tape				
ST & CP3	27	15	13	16
Cushions				
CC1	174	275	168	160
CC2-a	36	69	60	68
CC2-b	50	84	79	79
CC4	217	179	160	147
CC3	46	22	12	19
CC Blank Run	6	3	3	10

*md = Missing data.

Table D-30. Chamber concentrations of formaldehyde for 48-h screening measurements of carpet materials.

	Chamber Concentration (µg m^{-3})			
Material ID	**1 h**	**6 h**	**24 h**	**48 h**
Carpets				
CP1-a	1	2	2	<1
CP1-b	2	3	1	1
CP3	3	2	1	1
CP2	6	3	1	1
CP4	3	<1	<1	<1
CP Blank Run	<1	<1	<1	<1
Seaming Tape				
ST & CP3	9	7	2	2
Cushions				
CC1	1	2	1	1
CC2-a	2	2	<1	1
CC2-b	2	3	<1	1
CC4	3	3	3	2
CC3	1	1	1	<1
CC Blank Run	<1	<1	<1	<1

Table D-31. Chamber concentrations of acetaldehyde for 48-h screening measurements of carpet materials.

	Chamber Concentration (µg m^{-3})			
Material ID	**1 h**	**6 h**	**24 h**	**48 h**
Carpets				
CP1-a	2	1	1	1
CP1-b	1	1	<1	<1
CP3	2	1	1	1
CP2	6	3	2	2
CP4	5	3	2	1
CP Blank Run	<1	<1	<1	<1
Seaming Tape				
ST & CP3	3	3	2	2
Cushions				
CC1	4	1	1	1
CC2-a	33	10	9	1
CC2-b	19	4	1	2
CC4	18	6	5	4
CC3	2	<1	1	<1
CC Blank Run	<1	<1	<1	<1

Table D-32. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Carpet CP1-a.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Dodecane	<3	<3
Aromatic Hydrocarbons		
Toluene	3	<3
4-Phenylcyclohexene	12	11
Other Hydrocarbons		
d-Limonene	<3	<3
Carbonyl Compounds		
1-Phenylethanone	<3	<3

Table D-33. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Carpet CP1-b.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Dodecane	<3	<3
Aromatic Hydrocarbons		
Toluene	3	<3
4-Phenylcyclohexene	10	10
Other Hydrocarbons		
d-Limonene	<3	<3
Carbonyl Compounds		
1-Phenylethanone	<3	<3

Table D-34. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Carpet CP3.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Aromatic Hydrocarbons		
Styrene	<3	<3
4-Phenylcyclohexene	45	14

Table D-35. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Carpet CP2.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Aromatic Hydrocarbons		
Toluene	4	<3
Ethylbenzene	5	<3
m-,p-Xylene	18	3
o-Xylene	6	<3
Styrene	10	<3
Propylbenzene	4	<3
4-Phenylcyclohexene	44	36
Halogenated Compounds		
Tetrachloroethene	56	12
Carbonyl Compounds		
1-Phenylethanone	3	3

Table D-36. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Carpet CP4.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Undecane	61	23
Aromatic Hydrocarbons		
Styrene	12	4
4-Phenylcyclohexene	68	33
Other Hydrocarbons		
4-Ethenylcyclohexene	13	7
Other Oxidized Compounds		
Di(propylene glycol)methyl ethers	70	39
Phenol	9	6
Phenethyl alcohol	8	6
1-Decanol	11	2
Nitrogen-Containing Compounds		
N,N-Dimethylacetamide	29	26
2-Methyleneglutaronitrile	61	40

Table D-37. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Seaming Tape ST and Carpet CP3.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Decane	4	<3
Aromatic Hydrocarbons		
Styrene	<3	<3
4-Phenylcyclohexene	16	18
Other Oxidized Compounds		
2,6-Di-*tert*-butyl-4-methylphenol	5	13

Table D-38. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Carpet Cushion CC1.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Undecane	3	3
n-Tridecane	4	4
n-Tetradecane	3	3
Aromatic Hydrocarbons		
Toluene	<3	<3
m-,p-Xylene	<3	<3
Propylbenzene	3	<3
1,3,5-Trimethylbenzene	3	<3
2-Ethyltoluene	3	<3
1,2,4-Trimethylbenzene	7	3
1,2,3-Trimethylbenzene	4	5
1,3-Diethylbenzene	4	3
Naphthalene	21	22
2-Methylnaphthalene	26	26
1-Methylnaphthalene	14	14
Carbonyl Compounds		
1-Phenylethanone	3	<3
Other Oxidized Compounds		
Pendanedioic acid, dimethyl ester	4	7
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrates	27	28
2,6-Di-*tert*-butyl-4-methyl-phenol	79	89
Nitrogen-Containing Compounds		
N,N-Dimethylbenzylamine	103	84
Miscellaneous Compounds		
Triethylphosphate	123	115

Table D-39. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Carpet Cushion CC2-a.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Dodecane	<3	<3
Other Hydrocarbons		
d-Limonene	3	<3
Halogenated Compounds		
1,2-Dichlorobenzene	3	<3
Carbonyl Compounds		
Cyclohexanone	<3	<3
Other Oxidized Compounds		
2,6-Di-*tert*-butyl-4-methylphenol	144	166

Table D-40. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Carpet Cushion CC2-b.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Dodecane	3	<3
Other Hydrocarbons		
d-Limonene	<3	<3
Halogenated Compounds		
1,2-Dichlorobenzene	<3	<3
Carbonyl Compounds		
Cyclohexanone	<3	<3
Other Oxidized Compounds		
2,6-Di-*tert*-butyl-4-methylphenol	191	195

Table D-41. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Carpet Cushion CC4.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Halogenated Compounds		
1,2-Dichlorobenzene	5	3
Other Oxidized Compounds		
Phenol	17	15
2,6-Di-*tert*-butyl-4-methylphenol	120	206
Nitrogen-Containing Compounds		
N,N-Dimethylbenzylamine	79	43
N,N-Dimethylacrylamide	5	4
2,2'-Azobisisobutyronitrile	158	94

Table D-42. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Carpet Cushion CC3.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Aromatic Hydrocarbons		
1,3,5-Trimethylbenzene	<3	<3
1,2,4-Trimethylbenzene	<3	<3
1,2,3-Trimethylbenzene	<3	<3
Naphthalene	<3	<3
2-Methylnaphthalene	3	<3
4-Phenylcyclohexene	5	4
Halogenated Compounds		
1,1,1-Trichloroethane	3	<3
Other Oxidized Compounds		
2-Ethyl-1-hexanol	4	4
Nitrogen-Containing Compounds		
Caprolactam	3	4

Table D-43. Quasi steady-state emission rates of TVOC at 24- and 48-hours elapsed times for screening measurements of carpet materials.

Material ID	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Carpets		
CP1-a	269	238
CP1-b	238	210
CP3	233	164
CP2	3,380	2,100
CP4	1,100	873
Seaming Tape		
ST & CP3	1,180	563
Cushions		
CC1	1,650	1,640
CC2-a	2,590	2,380
CC2-b	4,050	3,640
CC4	3,950	2,940
CC3	251	328

Table D-44. Quasi steady-state emission rates of formaldehyde at 24- and 48-hours elapsed times for screening measurements of carpet materials.

Material ID	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Carpets		
CP1-a	5	<3
CP1-b	3	3
CP3	3	3
CP2	<3	<3
CP4	3	3
Seaming Tape		
ST & CP3	5	5
Cushions		
CC1	3	3
CC2-a	<3	3
CC2-b	<3	3
CC4	8	5
CC3	3	<3

Table D-45. Quasi steady-state emission rates of acetaldehyde at 24- and 48-hours elapsed times for screening measurements of carpet materials.

Material ID	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Carpets		
CP1-a	3	3
CP1-b	<3	<3
CP3	3	3
CP2	5	5
CP4	5	3
Seaming Tape		
ST & CP3	5	5
Cushions		
CC1	3	3
CC2-a	23	3
CC2-b	3	5
CC4	13	10
CC3	3	<3

APPENDIX E

SCREENING MEASUREMENTS OF SHEET VINYL FLOORING MATERIALS

Appendix E presents the analytical data for the screening measurements of the sheet vinyl flooring materials including four sheet vinyls, cove base and adhesives. The experiments were conducted in 10-L chambers over a period of 48 hours. Individual VOCs emitted by the sheet vinyl flooring materials were identified. The concentrations of selected compounds and TVOC were measured at four time intervals. Specific emission rates of these components were calculated for the 24- and 48-h time intervals.

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Table E-01. Sheet vinyl flooring materials selected for study.

Material ID	Manufacturer Code	Purchase Point	Material Description
Sheet Vinyls			
SV1	A	Dealer	Commercial; intermediate grade; full-spread adhesive application
SV2	A	Dealer	Residential no wax; intermediate grade; perimeter adhesive application
SV3	B	Dealer	Residential no wax; intermediate grade; full-spread adhesive application
SV5*†	B	Dealer	Residential no wax; intermediate grade; full-spread adhesive application
SV4	A	Retail	Residential no wax; base grade; full-spread adhesive application
Cove Base			
CB†	C	Dealer	Rubber; 4-inch wide, 44-inch long strips
Adhesives			
SFA†	D	Dealer	Multi-purpose sheet flooring adhesive; "solvent free"
CBA†	D	Dealer	White acrylic cove base adhesive; "low VOC" content
Seam sealer			
SS†	B	Dealer	High-gloss seam sealer; 2 parts
Underlayment			
UL†	E	Retail	Particle board underlayment; 3/8-inch thick; aired out

*SV3 and SV5 vary with respect to color, pattern and production date, but otherwise are the same material.
†Selected for use in large-scale experiments.

Table E-02. Summary of screening measurements with sheet vinyl flooring materials in 10-L chambers.

Materials	Duration (h)	Material Amount	Experimental Procedures
Sheet Vinyls			
SV1	48	0.0195 m^2	Taped onto metal plate; top surface exposed
SV2	48	0.0195 m^2	Taped onto metal plate; top surface exposed
SV3-a	48	0.0195 m^2	Taped onto metal plate; top surface exposed
SV3-b	48	0.0195 m^2	Duplicate run; taped onto metal plate; top surface exposed
SV5	48	0.0195 m^2	Taped onto metal plate; top surface exposed
SV4	48	0.0195 m^2	Taped onto metal plate; top surface exposed
SV Blank Run	48	---	Metal plate with aluminum tape
Cove Base			
CB	48	0.229 m	Both sides exposed
Substrates			
UL	48	0.0195 m^2	Taped into metal holder; one surface exposed
GB (Gypsum Board)	48	0.0195 m^2	Taped into metal holder; top surface exposed
Adhesives on Substrates			
SFA & UL	48	0.0070 kg	SFA applied with 1/16"-notched spreader, 0.020 m^2 surface area
CBA & GB	48	0.0083 kg	CBA applied with trowel; ~0.012 m^2 surface area
Composite Assemblies			
SV5, SFA & UL	48	0.0195 m^2	Taped into metal holder; SV5 top surface exposed; 5.7 g adhesive
CB, CBA & GB	48	0.114 m	GB taped into metal holder; CB applied with 2.2 g adhesive

Table E-03. VOCs emitted by Sheet Vinyl SV1 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
n-Tridecane	A,Q	29.3	+	+	Confirmed
n-Tetradecane		32.2	+	+	Confirmed
n-Pentadecane		35.0	+	+	Confirmed
n-Hexadecane		37.6	+	+	Confirmed
Carbonyl Compounds					
6-Methyl-5-hepten-2-one		22.3	+		Confirmed
Benzaldehyde		22.5	+	+	Confirmed
Octanal		22.6	+	+	Confirmed
Nonanal		26.1	+	+	Confirmed
1-Phenylethanone	T,Q	26.4	+	+	Confirmed
Decanal		29.3	+	+	Confirmed
Other Oxidized Compounds					
Acetic acid		11.1	+		Confirmed
Isooctanol		22.7	+	+	Probable
Di(propylene glycol) methyl ether 1	Q	23.1	+	+	Confirmed
Di(propylene glycol) methyl ether 2	Q	23.2	+	+	Confirmed
Di(propylene glycol) methyl ether 3	Q	23.8	+	+	Confirmed
2-Ethyl-1-hexanol	A,Q	23.9	+	+	Confirmed
4-Methyl-1-heptanol	A	24.2	+	+	Probable
6-Methyl-1-heptanol		24.3	+	+	Probable
5-Methyl-1-heptanol		24.5	+	+	Probable
Phenol	T,A,Q	26.6	+	+	Confirmed
2-Phenyl-2-propanol		27.2	+	+	Confirmed
2-(2-Butoxyethoxy)ethanol	T,Q	29.9	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (Texanol 1)		35.2	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (Texanol 3)		35.7	+	+	Confirmed
Decanoic acid		35.9	+	+	Probable
2,6-Di-*tert*-butyl-4-methylphenol (BHT)	Q	37.7	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate (TXIB)	A,Q	40.3	+	+	Confirmed
Diethylphthalate	A,Q	42.3	+	+	Confirmed
Nitrogen-Containing Compounds					
1-Methyl-2-pyrrolidinone	Q	27.5	+	+	Confirmed
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane		11.8	+	+	Confirmed
Octamethylcyclotrisiloxane		18.2	+	+	Confirmed

Table E-03, Continued. VOCs emitted by Sheet Vinyl SV1 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Unidentified Compounds					
Unidentified alcohol		29.2	+		Unident.
Unidentified glycol ether 1		30.5	+	+	Unident.
Unidentified glycol ether 2		30.7	+	+	Unident.
Unidentified oxidized compound		35.4	+	+	Unident.

*T = Toxic air contaminant; A = Abundant compound; Q = Quantified target compound.

Table E-04. VOCs emitted by Sheet Vinyl SV2 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
C10 Branched alkane HC		15.9	+	+	Probable
C10 Branched alkane HC		16.3	+	+	Probable
C10 Branched alkane HC	A	17.7	+	+	Probable
C10 Branched alkane HC		18.1	+	+	Probable
C10 Branched alkane HC		18.2	+	+	Probable
C10 Branched alkane HC		18.3	+	+	Probable
C10 Branched alkane HC		18.4	+	+	Probable
C10 Branched alkane HC		18.5	+	+	Probable
C10 Branched alkane HC		19.0	+	+	Probable
C10 Branched alkane HC		19.1	+	+	Probable
n-Decane		19.2	+	+	Confirmed
C11 Branched alkane HC		19.7	+	+	Probable
C11 Branched alkane HC	A	20.0	+	+	Probable
C11 Branched alkane HC		20.3	+	+	Probable
C11 Branched alkane HC	A	20.6	+	+	Probable
C11 Branched alkane HC		20.8	+	+	Probable
C11 Branched alkane HC		21.0	+	+	Probable
C11 Branched alkane HC		21.2	+	+	Probable
C11 Branched alkane HC	A	21.4	+	+	Probable
C11 Branched alkane HC		21.5	+	+	Probable
C11 Branched alkane HC	A	21.6	+	+	Probable
C11 Branched alkane HC		21.7	+	+	Probable
C11 Branched alkane HC		22.1	+	+	Probable
C11 Branched alkane HC		22.4	+	+	Probable
C11 Branched alkane HC		22.5	+	+	Probable
C11 Branched alkane HC		22.6	+	+	Probable
C11 Branched alkane HC		22.8	+	+	Probable
C12 Branched alkane HC		23.6		+	Probable
n-Dodecane	Q	26.2	+	+	Confirmed
n-Tridecane	Q	29.3	+	+	Confirmed
n-Tetradecane		32.2	+	+	Confirmed
Aromatic Hydrocarbons					
Ethyltoluene isomer		19.7	+	+	Probable
4-Ethyltoluene		19.8	+	+	Confirmed
1,2,4-Trimethylbenzene	T,Q	21.1	+	+	Confirmed
C4 Alkylbenzene		23.0	+	+	Probable
C4 Alkylbenzene		23.1	+	+	Probable
C4 Alkylbenzene		23.2	+	+	Probable
C4 Alkylbenzene		24.1		+	Probable
C4 Alkylbenzene		24.2	+	+	Probable
C4 Alkylbenzene		24.4	+	+	Probable
C4 Alkylbenzene		25.6		+	Probable

Table E-04, Continued. VOCs emitted by Sheet Vinyl SV2 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Aromatic Hydrocarbons, Cont.					
1,2,3,5-Tetramethylbenzene		25.8	+	+	Confirmed
C4 Alkylbenzene		27.1		+	Probable
Naphthalene	T,Q	29.5	+	+	Confirmed
Other Hydrocarbons					
C9 Alkene HC		15.2	+	+	Probable
Pentamethylcyclohexane isomer		19.6	+	+	Probable
Carbonyl Compounds					
Nonanal		26.1	+	+	Confirmed
1-Phenylethanone	T	26.5	+	+	Confirmed
Other Oxidized Compounds					
n-Propyl acetate		10.1	+	+	Confirmed
Acetic acid		10.8	+	+	Confirmed
2-Propoxyethanol	Q	15.5	+	+	Confirmed
1-Octanol		25.4	+	+	Confirmed
Phenol	T,A,Q	26.6	+	+	Confirmed
2-(2-Butoxyethoxy)ethanol	T,Q	29.9	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (Texanol 1)		35.2	+		Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (Texanol 3)		35.7	+	+	Confirmed
Decanoic acid		35.9	+	+	Probable
1-Dodecanol		37.1	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate (TXIB)	Q	40.3	+	+	Confirmed
Diethylphthalate	Q	42.3	+	+	Confirmed
Nitrogen-Containing Compounds					
1-Methyl-2-pyrrolidinone	Q	27.5	+	+	Confirmed
Miscellaneous Compounds					
Hexamethycyclotrisiloxane		11.9	+	+	Confirmed
Unidentified Compounds					
Unidentified compound		17.2	+		Unident.
Unidentified compound		17.3	+	+	Unident.
Unidentified compound		22.0	+	+	Unident.
Unidentified compound		22.9	+	+	Unident.

*T = Toxic air contaminant; A = Abundant compound; Q = Quantified target compound.

Table E-05. VOCs emitted by Sheet Vinyl SV3 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
C9 Branched alkane HC		13.7	+	+	Probable
C9 Branched alkane HC		14.1	+	+	Probable
n-Nonane		15.3	+	+	Confirmed
C10 Branched alkane HC		15.9	+	+	Probable
C10 Branched alkane HC		16.2	+	+	Probable
C10 Branched alkane HC		16.4	+	+	Probable
C10 Branched alkane HC		16.6	+	+	Probable
C10 Branched alkane HC		16.8	+	+	Probable
C10 Branched alkane HC		17.5	+	+	Probable
C10 Branched alkane HC		17.6		+	Probable
C10 Branched alkane HC		17.7	+	+	Probable
C10 Branched alkane HC		17.8	+	+	Probable
C10 Branched alkane HC		18.1	+	+	Probable
n-Decane	A,Q	19.2	+	+	Confirmed
C11 Branched alkane HC		19.7	+	+	Probable
C11 Branched alkane HC		20.0	+	+	Probable
C11 Branched alkane HC		20.2	+	+	Probable
C11 Branched alkane HC		20.5	+	+	Probable
C11 Branched alkane HC		20.7	+	+	Probable
C11 Branched alkane HC		21.3	+	+	Probable
C11 Branched alkane HC		21.4	+	+	Probable
C11 Branched alkane HC		21.5	+	+	Probable
C11 Branched alkane HC		21.8	+	+	Probable
n-Undecane		22.8	+	+	Confirmed
C12 Branched alkane HC		23.4		+	Probable
n-Dodecane		26.2	+	+	Confirmed
n-Tridecane	A,Q	29.3	+	+	Confirmed
n-Tetradecane	A,Q	32.2	+	+	Confirmed
n-Pentadecane		35.0	+	+	Confirmed
Aromatic Hydrocarbons					
Toluene	T,Q	11.8	+	+	Confirmed
m-,p-Xylene	T,Q	16.2	+	+	Confirmed
o-Xylene	T,Q	17.3	+	+	Confirmed
Propylbenzene		19.5	+	+	Confirmed
Ethyltoluene isomer		19.8	+	+	Probable
4-Ethyltoluene		19.9	+	+	Confirmed
C3 Alkylbenzene		20.1	+	+	Probable
2-Ethyltoluene		20.7	+	+	Confirmed
1,2,4-Trimethylbenzene	T,Q	21.2	+	+	Confirmed
C4 Alkylbenzene		21.9	+	+	Probable
C4 Alkylbenzene		22.0	+	+	Probable
1,2,3-Trimethylbenzene		22.5	+	+	Confirmed
1,3-Diethylbenzene		22.9	+	+	Confirmed
C4 Alkylbenzene		23.0	+	+	Probable

Table E-05, Continued. VOCs emitted by Sheet Vinyl SV3 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Aromatic Hydrocarbons, Cont.					
C4 Alkylbenzene		23.3	+	+	Probable
C4 Alkylbenzene		23.8	+	+	Probable
C4 Alkylbenzene		24.2	+	+	Probable
C4 Alkylbenzene		24.4	+	+	Probable
C5 Alkylbenzene		24.7	+	+	Probable
C4 Alkylbenzene		27.1		+	Probable
Naphthalene	T,Q	29.6	+	+	Confirmed
(1-Butylhexyl)benzene		37.2	+	+	Probable
(1-Propylheptyl)benzene		37.5	+	+	Probable
(1-Ethyloctyl)benzene		38.0	+	+	Probable
(1-Methylnonyl)benzene		39.1	+	+	Probable
(1-Penylhexyl)benzene		39.6	+	+	Probable
(1-Butylheptyl)benzene		39.7	+	+	Probable
(1-Propyloctyl)benzene		39.9	+	+	Probable
(1-Ethylnonyl)benzene		40.6	+	+	Probable
(1,1-Dimethylnonyl)benzene		40.7	+	+	Probable
(1-Methyldecyl)benzene		41.5	+	+	Probable
(1-Penylheptyl)benzene		41.8	+	+	Probable
(1-Butyloctyl)benzene		42.0	+	+	Probable
(1-Propylnonyl)benzene		42.3	+	+	Probable
(1-Ethyldecyl)benzene		42.9	+	+	Probable
Other Hydrocarbons					
Ethylcyclohexane		12.9	+	+	Confirmed
Trimethylcyclohexane isomer		13.0	+	+	Probable
Trimethylcyclohexane isomer		13.6	+	+	Probable
Trimethylcyclohexane isomer		14.7	+	+	Probable
C9 Alkene or cyclic HC		14.9	+	+	Tentative
C9 Alkene or cyclic HC		15.0	+	+	Probable
C3 Alkyl substituted cyclohexane		15.1	+	+	Probable
C10 Alkene HC		15.4		+	Probable
C3 Alkyl substituted cyclohexane		16.1	+	+	Probable
C9H16 HC		16.7	+	+	Tentative
Propylcyclohexane		17.0	+	+	Confirmed
Alkene or cyclic HC		17.0	+	+	Tentative
C10 Alkene HC		17.1	+	+	Probable
C10 Alkene HC		17.2	+	+	Probable
C4 Alkyl substituted cyclohexane		17.4		+	Probable
C10 Alkene HC		17.6	+	+	Probable
C4 Alkyl substituted cyclohexane		18.2	+	+	Probable
C10 Alkene HC		18.6	+	+	Probable
C10 Alkene HC		18.8	+	+	Probable
C10 Alkene or cyclic HC		18.8		+	Probable
C4 Alkyl substituted cyclohexane		19.0	+	+	Probable
C4 Alkyl substituted cyclohexane		19.6	+	+	Probable

Table E-05, Continued. VOCs emitted by Sheet Vinyl SV3 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Other Hydrocarbons, Cont.					
C11 Alkene HC		20.3	+	+	Tentative
C10H18 Hydrocarbon		20.3		+	Tentative
C11 Alkene HC		20.6	+	+	Probable
Butylcyclohexane		20.9	+	+	Confirmed
C11 Alkene HC		21.0	+	+	Probable
Decahydronaphthalene isomer		22.3	+	+	Tentative
C11 Alkene HC		22.7	+	+	Probable
Alkene HC		29.9		+	Tentative
Alkene HC		30.4		+	Tentative
Alkene HC		37.1	+	+	Tentative
Carbonyl Compounds					
Heptanal		18.0	+	+	Confirmed
Benzaldehyde		22.5	+	+	Confirmed
Nonanal		26.1	+		Confirmed
1-Phenylethanone	T	26.5	+	+	Confirmed
Other Oxidized Compounds					
1-Butanol		10.0	+	+	Confirmed
Acetic acid		11.2	+		Confirmed
Benzyl alcohol	A,Q	26.5	+	+	Confirmed
Phenol	T,A,Q	26.6	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (Texanol 1)		35.2	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (Texanol 3)		35.7	+	+	Confirmed
Decanoic acid		35.9	+	+	Probable
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate (TXIB)	A,Q	40.3	+	+	Confirmed
Diethylphthalate	Q	42.3	+	+	Confirmed
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane		11.9	+	+	Confirmed
Octamethylcyclotetrasiloxane		18.3	+	+	Confirmed
Unidentified Compounds					
Unidentified compound		17.4	+		Unident.
Unidentified compound		29.1	+	+	Unident.
Unidentified compound		29.5	+	+	Unident.
Unidentified compound		29.6	+		Unident.
Unidentified compound		29.9	+		Unident.
Unidentified oxidized compound		30.1	+	+	Unident.
Unidentified compound		30.4	+	+	Unident.

*T = Toxic air contaminant; A = Abundant compound; Q = Quantified target compound.

Table E-06. VOCs emitted by sheet vinyl SV5 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
C9 Branched alkane HC		13.7	+	+	Probable
C9 Branched alkane HC		14.0	+	+	Probable
C9 Branched alkane HC		14.1	+	+	Probable
n-Nonane	Q	15.2	+	+	Confirmed
C10 Branched alkane HC		15.9	+	+	Probable
C10 Branched alkane HC		16.2	+	+	Probable
C10 Branched alkane HC		16.6	+	+	Probable
C10 Branched alkane HC		17.5	+	+	Probable
C10 Branched alkane HC		17.6	+	+	Probable
C10 Branched alkane HC		17.7	+	+	Probable
C10 Branched alkane HC		17.8	+	+	Probable
C10 Branched alkane HC		18.1	+	+	Probable
n-Decane	A,Q	19.2	+	+	Confirmed
C11 Branched alkane HC		20.0	+	+	Probable
C11 Branched alkane HC		21.3	+	+	Probable
C11 Branched alkane HC		21.4	+	+	Probable
C11 Branched alkane HC		21.5	+	+	Probable
C11 Branched alkane HC		21.8	+	+	Probable
n-Undecane		22.8	+	+	Confirmed
n-Dodecane		26.2	+	+	Confirmed
n-Tridecane	A,Q	29.3	+	+	Confirmed
n-Tetradecane	A,Q	32.2	+	+	Confirmed
n-Pentadecane		35.0	+	+	Confirmed
Aromatic Hydrocarbons					
Toluene	T,Q	11.7	+	+	Confirmed
m-,p-Xylene	T,Q	16.1	+	+	Confirmed
o-Xylene	T,Q	17.3	+	+	Confirmed
Propylbenzene		19.5	+	+	Confirmed
Ethyltoluene isomer		19.7	+	+	Probable
4-Ethyltoluene		19.8	+	+	Confirmed
C3 Alkylbenzene		20.0	+	+	Probable
2-Ethyltoluene		20.6	+	+	Confirmed
1,2,4-Trimethylbenzene	T,Q	21.2	+	+	Confirmed
C4 Alkylbenzene		21.8	+	+	Probable
C4 Alkylbenzene		22.0	+	+	Probable
1,2,3-Trimethylbenzene		22.4	+	+	Confirmed
1,3-Diethylbenzene		22.9	+	+	Confirmed
C4 Alkylbenzene		23.0	+	+	Probable
C4 Alkylbenzene		23.2	+	+	Probable
C4 Alkylbenzene		23.2	+	+	Probable
C4 Alkylbenzene		23.8	+	+	Probable
C4 Alkylbenzene		24.1	+	+	Probable
C4 Alkylbenzene		24.2	+	+	Probable

Table E-06, Continued. VOCs emitted by sheet vinyl SV5 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Aromatic Hydrocarbons, Cont.					
C4 Alkylbenzene		24.4	+	+	Probable
C5 Alkylbenzene		24.6	+	+	Probable
Butenylbenzene isomer		24.7	+		Probable
1,2,3,5-Tetramethylbenzene		25.8	+	+	Confirmed
C4 Alkylbenzene		27.1	+	+	Probable
(1-Butoxyhexyl)benzene		37.2	+	+	Probable
(1-Propylheptyl)benzene		37.4	+	+	Probable
(1-Ethyloctyl)benzene		38.0	+	+	Probable
(1-Methylnonyl)benzene		39.1	+	+	Probable
(1-Phenylhexyl)benzene		39.5	+	+	Probable
(1-Butylheptyl)benzene		39.6	+	+	Probable
(1-Propyloctyl)benzene		39.9	+	+	Probable
(1-Ethylnonyl)benzene		40.5	+	+	Probable
(1,1-Dimethylnonyl)benzene		40.7	+	+	Probable
(1-Methyldecyl)benzene		41.5	+	+	Probable
(1-Penylheptyl)benzene		41.8	+	+	Probable
(1-Butyloctyl)benzene		42.0	+	+	Probable
(1-Propylnonyl)benzene		42.3	+	+	Probable
(1-Ethyldecyl)benzene		42.9	+	+	Probable
Other Hydrocarbons					
C3 Alkyl substituted cyclohexane		13.0	+	+	Probable
Trimethylcyclohexane isomer		13.6	+	+	Probable
C3 Alkyl substituted cyclohexane		15.1	+	+	Probable
C3 Alkyl substituted cyclohexane		16.0	+	+	Probable
C9H16 HC		16.7	+	+	Tentative
Propylcyclohexane		16.9	+	+	Confirmed
C10 Alkene or cyclic HC		17.0	+	+	Probable
C10 Alkene HC		17.2	+	+	Probable
C4 Alkyl substituted cyclohexane		17.4	+	+	Probable
C4 Alkyl substituted cyclohexane		18.2	+	+	Probable
C10 Alkene HC		18.6	+	+	Probable
C10 Alkene or cyclic HC		18.8	+	+	Probable
C4 Alkyl substituted cyclohexane		19.0	+	+	Probable
Butylcyclohexane		20.9	+	+	Confirmed
C11 Alkene HC		21.0	+	+	Probable
Decahydronaphthalene isomer		22.3	+	+	Probable
C11 Alkene HC		22.6	+	+	Probable
C11 Alkene HC		22.7	+	+	Probable
Alkene HC		29.2	+	+	Tentative
Alkene HC		29.5	+	+	Tentative
Alkene HC		29.9	+	+	Tentative
Alkene HC		30.4	+	+	Tentative
Alkene HC		37.1	+	+	Tentative

Table E-06, Continued. VOCs emitted by sheet vinyl SV5 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Carbonyl Compounds					
Benzaldehyde		22.5	+	+	Confirmed
Nonanal		26.0	+	+	Confirmed
1-Phenylethanone	T	26.5	+	+	Confirmed
Other Oxidized Compounds					
1-Butanol		9.9	+		Confirmed
1-Octanol	Q	25.4	+	+	Confirmed
Benzyl alcohol	A,Q	26.5	+	+	Confirmed
Phenol	T,A,Q	26.6	+	+	Confirmed
2-Ethylhexanoic acid		28.4	+	+	Probable
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate (TXIB)	A,Q	40.3	+	+	Confirmed
Nitrogen-Containing Compounds					
N-Propylbenzamide		40.7	+	+	Tentative
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane		11.9	+	+	Confirmed
Octamethylcyclotetrasiloxane		18.2	+	+	Confirmed
Siloxane compound		33.7	+	+	Probable
Unidentified Compounds					
Unidentified compound		17.2	+		Unident.
Unidentified compound		28.9	+	+	Unident.
Unidentified compound		29.0	+	+	Unident.
Unidentified oxidized compound		30.1	+	+	Unident.

*T = Toxic air contaminant; A = Abundant compound; Q = Quantified target compound.

Table E-07. VOCs emitted by Sheet Vinyl SV4 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
C10 Branched alkane HC		17.7	+	+	Probable
C10 Branched alkane HC		18.1	+	+	Probable
C10 Branched alkane HC		18.3	+	+	Probable
C10 Branched alkane HC		18.4	+	+	Probable
C10 Branched alkane HC		18.5	+	+	Probable
C10 Branched alkane HC		19.0	+	+	Probable
C10 Branched alkane HC		19.1	+	+	Probable
C11 Branched alkane HC		19.3	+		Probable
C11 Branched alkane HC		19.7	+	+	Probable
C11 Branched alkane HC	A	20.0	+	+	Probable
C11 Branched alkane HC		20.3	+	+	Probable
C11 Branched alkane HC	A	20.6	+	+	Probable
C11 Branched alkane HC		20.8	+	+	Probable
C11 Branched alkane HC		21.1	+	+	Probable
C11 Branched alkane HC		21.2	+	+	Probable
C11 Branched alkane HC	A	21.4	+	+	Probable
C11 Branched alkane HC		21.5	+	+	Probable
C11 Branched alkane HC	A	21.6	+	+	Probable
C11 Branched alkane HC		21.7	+	+	Probable
C11 Branched alkane HC		22.1	+	+	Probable
C11 Branched alkane HC		22.3	+	+	Probable
C11 Branched alkane HC		22.6	+	+	Probable
C12 Branched alkane HC		22.9	+	+	Probable
n-Dodecane		26.2	+	+	Confirmed
n-Tridecane	A,Q	29.3	+	+	Confirmed
n-Tetradecane		32.2	+	+	Confirmed
Aromatic Hydrocarbons					
Ethyltoluene isomer		19.8	+	+	Probable
4-Ethyltoluene		19.9	+	+	Confirmed
1,2,4-Trimethylbenzene	T,Q	21.2	+	+	Confirmed
1,2,3-Trimethylbenzene		22.5	+	+	Confirmed
1,3-Diethylbenzene		22.9	+	+	Confirmed
C4 Alkylbenzene		23.0	+	+	Probable
C4 Alkylbenzene		23.2	+	+	Probable
C4 Alkylbenzene		23.3	+	+	Probable
C4 Alkylbenzene		23.8	+	+	Probable
C4 Alkylbenzene		24.1	+	+	Probable
C4 Alkylbenzene		24.2	+	+	Probable
C4 Alkylbenzene		24.4	+	+	Probable
C5 Alkylbenzene		24.7		+	Probable
C4 Alkylbenzene		25.3	+	+	Probable
C4 Alkylbenzene		25.6	+	+	Probable
1,2,3,5-Tetramethylbenzene		25.8	+	+	Confirmed
C5 Alkylbenzene		26.1		+	Probable

Table E-07, Continued. VOCs emitted by Sheet Vinyl SV4 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Aromatic Hydrocarbons, Cont.					
C4 Alkylbenzene		27.1	+	+	Probable
C5 Alkylbenzene		27.3		+	Probable
C5 Alkylbenzene		28.1		+	Probable
Naphthalene	T,Q	29.6	+	+	Confirmed
Other Hydrocarbons					
C5 Alkyl substituted cyclohexane		22.0	+	+	Tentative
Alkene HC		37.1	+	+	Tentative
Carbonyl Compounds					
Nonanal		26.1	+	+	Confirmed
1-Phenylethanone	T,Q	26.5	+	+	Confirmed
Decanal		29.4	+		Confirmed
Other Oxidized Compounds					
Isopropyl acetate		7.7	+	+	Confirmed
n-Propyl acetate	Q	10.1	+	+	Confirmed
Acetic acid		11.1	+	+	Probable
2-Propoxyethanol	Q	15.5	+	+	Confirmed
Phenol	T,A,Q	26.6	+	+	Confirmed
2-(2-Butoxyethoxy)ethanol	T,Q	29.9	+	+	Confirmed
Nonanoic acid		33.3	+		Probable
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (Texanol 1)		35.2	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (Texanol 3)		35.7	+	+	Confirmed
Decanoic acid		35.9	+	+	Probable
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate (TXIB)	Q	40.3	+	+	Confirmed
Diethylphthalate	Q	42.3	+	+	Confirmed
Nitrogen-Containing Compounds					
1-Methyl-2-pyrrolidinone	Q	27.5	+	+	Confirmed
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane		11.8	+	+	Confirmed
Octamethylcyclotetrasiloxane		18.3	+	+	Confirmed
Unidentified Compounds					
Unidentified compound		17.3	+		Unident.
Unidentified compound		17.4	+	+	Unident.
Unidentified compound		21.8	+	+	Unident.
Unidentified compound		22.9		+	Unident.

Table E-07, Continued. VOCs emitted by Sheet Vinyl SV4 in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Unidentified Compounds, Cont.					
Undientified compound		25.4	+	+	Unident.
Unidentified compound		27.8		+	Unident.

*T = Toxic air contaminant; A = Abundant compound; Q = Quantified target compound.

Table E-08. VOCs detected in sheet vinyl blank chamber run at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Aromatic Hydrocarbons					
m-,p-Xylene	T,Q	16.1	+		Confirmed
o-Xylene	T,Q	17.3	+		Confirmed
1,2,4-Trimethylbenzene	T,Q	21.1	+		Confirmed
Carbonyl Compounds					
Benzaldehyde		22.5	+		Confirmed
Octanal		22.6	+		Confirmed
Nonanal	Q	26.1	+	+	Confirmed
Decanal	Q	29.3	+	+	Confirmed
Other Oxidized Compounds					
2-(2-Butoxyethoxy)ethanol	T,Q	29.9	+		Confirmed
Decanoic acid		35.9	+	+	Probable
Diethylphthalate	Q	42.3	+	+	Confirmed
Miscellaneous Compounds					
Hexamethylcyclotrisiloxane		11.8		+	Confirmed
Octamethylcyclotrisiloxane		18.2		+	Confirmed

*T = Toxic air contaminant; Q = Quantified target compound.

Table E-09. Composite listing of VOCs emitted by Sheet Vinyls SV1 through SV5 in 10-L chambers.

COMPOUND	RT (min)	SV1	SV2	SV3	SV5	SV4	Blank Run
Alkane Hydrocarbons							
C9 Branched alkane HC	13.7			+	+		
C9 Branched alkane HC	14.0				+		
C9 Branched alkane HC	14.1			+	+		
n-Nonane	15.2			+	+		
C10 Branched alkane HC	15.9		+	+	+		
C10 Branched alkane HC	16.2		+	+	+		
C10 Branched alkane HC	16.4			+			
C10 Branched alkane HC	16.6			+	+		
C10 Branched alkane HC	16.8			+			
C10 Branched alkane HC	17.5			+	+		
C10 Branched alkane HC	17.6		A	+	+		
C10 Branched alkane HC	17.7			+	+	+	
C10 Branched alkane HC	17.8			+	+		
C10 Branched alkane HC	18.1		+	+	+	+	
C10 Branched alkane HC	18.2		+				
C10 Branched alkane HC	18.3		+			+	
C10 Branched alkane HC	18.4		+			+	
C10 Branched alkane HC	18.5		+			+	
C10 Branched alkane HC	19.0		+			+	
C10 Branched alkane HC	19.1		+			+	
n-Decane	19.2		+	A	A		
C11 Branched alkane HC	19.3					+	
C11 Branched alkane HC	19.7		+	+		+	
C11 Branched alkane HC	20.0		A	+	+	A	
C11 Branched alkane HC	20.2		+	+		+	
C11 Branched alkane HC	20.5		A	+	+	A	
C11 Branched alkane HC	20.7		+	+		+	
C11 Branched alkane HC	21.0		+			+	
C11 Branched alkane HC	21.2		+	+	+	+	
C11 Branched alkane HC	21.4		A	+	+	A	
C11 Branched alkane HC	21.5		+	+	+	+	
C11 Branched alkane HC	21.6		A			A	
C11 Branched alkane HC	21.7		+	+	+	+	
C11 Branched alkane HC	22.1		+			+	
C11 Branched alkane HC	22.3		+			+	
C11 Branched alkane HC	22.5		+				
C11 Branched alkane HC	22.6		+			+	
C11 Branched alkane HC	22.8		+				
n-Undecane	22.8			+	+		
C12 Branched alkane HC	22.9					+	
C12 Branched alkane HC	23.4			+			

Table E-09, Continued. Composite listing of VOCs emitted by Sheet Vinyls SV1 through SV5 in 10-L chambers.

COMPOUND	RT (min)	SV1	SV2	SV3	SV5	SV4	Blank Run
Alkane Hydrocarbons, Cont.							
C12 Branched alkane HC	23.6		+				
n-Dodecane	26.2		+	+	+	+	
n-Tridecane	29.3	A	+	A	A	A	
n-Tetradecane	32.2	+	+	A	A	+	
n-Pentadecane	35.0	+		+	+		
n-Hexadecane	37.6	+					
Aromatic Hydrocarbons							
Toluene	11.7			+	+		
m-,p-Xylene	16.1			+	+		+
o-Xylene	17.3			+	+		+
Propylbenzene	19.5			+	+		
Ethyltoluene isomer	19.7		+	+	+	+	
4-Ethyltoluene	19.8		+	+	+	+	
C3 Alkylbenzene	20.0			+	+		
2-Ethyltoluene	20.6			+	+		
1,2,4-Trimethylbenzene	21.1		+	+	+	+	+
C4 Alkylbenzene	21.8			+	+		
C4 Alkylbenzene	22.0		+		+		
1,2,3-Trimethylbenzene	22.4			+	+	+	
1,3-Diethylbenzene	22.9			+	+	+	
C4 Alkylbenzene	23.0		+	+	+	+	
C4 Alkylbenzene	23.1		+				
C4 Alkylbenzene	23.2		+		+	+	
C4 Alkylbenzene	23.2			+	+	+	
C4 Alkylbenzene	23.8			+	+	+	
C4 Alkylbenzene	24.1		+		+	+	
C4 Alkylbenzene	24.2		+	+	+	+	
C4 Alkylbenzene	24.4		+	+	+	+	
C5 Alkylbenzene	24.6			+	+	+	
Butenylbenzene isomer	24.7				+		
C4 Alkylbenzene	25.3					+	
C4 Alkylbenzene	25.6		+			+	
1,2,3,5-Tetramethylbenzene	25.8		+		+	+	
C5 Alkylbenzene	26.1					+	
C4 Alkylbenzene	27.1		+	+	+	+	
C5 Alkylbenzene	27.3					+	
C5 Alkylbenzene	28.1					+	
Naphthalene	29.5		+	+		+	
(1-Butylhexyl)benzene	37.2			+	+		
(1-Propylheptyl)benzene	37.4			+	+		

Table E-09, Continued. Composite listing of VOCs emitted by Sheet Vinyls SV1 through SV5 in 10-L chambers.

COMPOUND	RT (min)	SV1	SV2	SV3	SV5	SV4	Blank Run
Aromatic Hydrocarbons, Cont.							
(1-Ethyloctyl)benzene	38.0			+	+		
(1-Methylnonyl)benzene	39.1			+	+		
(1-Penylhexyl)benzene	39.5			+	+		
(1-Butylheptyl)benzene	39.6			+	+		
(1-Propyloctyl)benzene	39.9			+	+		
(1-Ethylnonyl)benzene	40.5			+	+		
(1,1-Dimethylnonyl)benzene	40.7			+	+		
(1-Methyldecyl)benzene	41.5			+	+		
(1-Pentylheptyl)benzene	41.8			+	+		
(1-Butyloctyl)benzene	42.0			+	+		
(1-Propylnonyl)benzene	42.3			+	+		
(1-Ethyldecyl)benzene	42.9			+	+		
Other Hydrocarbons							
Ethylcyclohexane	12.9			+			
Trimethylcyclohexane isomer	13.0			+	+		
Trimethylcyclohexane isomer	13.6			+	+		
Trimethylcyclohexane isomer	14.7			+			
C9 Alkene HC or cyclic HC	14.9			+			
C9 Alkene HC or cyclic HC	15.0			+			
C3 Alkyl substituted cyclohexane	15.1			+	+		
C9 Alkene HC	15.2		+				
C10 Alkene HC	15.4			+			
C3 Alkyl substituted cyclohexane	16.0			+	+		
C9H16 HC	16.7			+	+		
Propylcyclohexane	16.9			+	+		
C10 Alkene or cyclic HC	17.0			+	+		
C10 Alkene HC	17.1			+			
C10 Alkene HC	17.2			+	+		
C4 Alkyl substituted cyclohexane	17.4			+	+		
C10 Alkene HC	17.6			+			
C4 Alkyl substituted cyclohexane	18.2			+	+		
C10 Alkene HC	18.6			+	+		
C10 Alkene HC	18.8			+			
C10 alkene HC or cyclic HC	18.8			+	+		
C4 Alkyl substituted cyclohexane	19.0			+	+		
Pentamethylcyclohexane isomer	19.6		+				
C4 Alkyl substituted cyclohexane	19.6			+			
C11 Alkene HC	20.3			+			
C10H18 Hydrocarbon	20.3			+			
C11 Alkene HC	20.6			+			

Table E-09, Continued. Composite listing of VOCs emitted by Sheet Vinyls SV1 through SV5 in 10-L chambers.

COMPOUND	RT (min)	SV1	SV2	SV3	SV5	SV4	Blank Run
Other Hydrocarbons, Cont.							
Butylcyclohexane	20.9			+	+		
C11 Alkene HC	21.0			+	+		
C5 Alkyl substituted cyclohexane	22.0					+	
Decahydronaphthalene isomer	22.3			+	+		
C11 Alkene HC	22.6				+		
C11 Alkene HC	22.7			+	+		
Alkene HC	29.2				+		
Alkene HC	29.5				+		
Alkene HC	29.9			+	+		
C14 Alkene HC	30.4			+	+		
Alkene HC	37.1			+	+	+	
Carbonyl Compounds							
Heptanal	18.0			+			
6-Methyl-5-hepten-2-one	22.3	+					
Benzaldehyde	22.5	+		+	+		+
Octanal	22.6	+					+
Nonanal	26.0	+	+	+	+	+	+
1-Phenylethanone	26.4	+	+	+	+	+	
Decanal	29.3	+				+	+
Other Oxidizded Compounds							
Isopropyl acetate	7.7					+	
1-Butanol	9.9			+	+		
n-Propyl acetate	10.1		+			+	
Acetic acid	10.8	+	+	+		+	
2-Propoxyethanol	15.5		+			+	
Isooctanol	22.7	+					
Di(propylene glycol) methyl ether 1	23.1	+					
Di(propylene glycol) methyl ether 2	23.2	+					
Di(propylene glycol) methyl ether 3	23.8	+					
2-Ethyl-1-hexanol	23.9	A					
4-Methyl-1-heptanol	24.2	A					
6-Methyl-1-heptanol	24.3	+					
5-Methyl-1-heptanol	24.5	+					
1-Octanol	25.4		+		+		
Benzyl alcohol	26.5			A	A		
Phenol	26.6	A	A	A	A	A	
2-Phenyl-2-propanol	27.2	+					
2-Ethylhexanoic acid	28.4				+		
2-(2-Butoxyethoxy)ethanol	29.9	+	+			+	+

Table E-09, Continued. Composite listing of VOCs emitted by Sheet Vinyls SV1 through SV5 in 10-L chambers.

COMPOUND	RT (min)	SV1	SV2	SV3	SV5	SV4	Blank Run
Other Oxidized Compounds, Cont.							
Nonanoic acid	33.3					+	
2,2,4-Trimethyl-1,3-pentanediol monisobutyrate (Texanol 1)	35.2	+	+	+		+	+
2,2,4-Trimethyl-1,3-pentanediol monisobutyrate (Texanol 3)	35.7	+	+	+		+	+
Decanoic acid	35.9	+	+	+		+	+
1-Dodecanol	37.1		+				
2,6-Di-*tert*-butyl-4-methylphenol (BHT)	37.7	+					
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate (TXIB)	40.3	A	+	A	A	+	
Diethylphthalate	42.3	A	+	+		+	+
Nitrogen-Containing Compounds							
1-Methyl-2-pyrrolidinone	27.5	+	+			+	
N-Propylbenzamide	40.7				+		
Miscellaneous Compounds							
Hexamethylcyclotrisiloxane	11.8	+	+	+	+	+	+
Octamethylcyclotrisiloxane	18.2	+		+	+	+	+
Siloxane compound	33.7				+		
Unidentified Compounds							
Unidentified compound	17.2		+		+		
Unidentified compound	17.3		+			+	
Unidentified compound	17.4			+		+	
Unidentified compound	21.8					+	
Unidentified compound	22.0		+				
Unidentified compound	22.9		+			+	
Undientified compound	25.4					+	
Unidentified compound	27.8					+	
Unidentified compound	28.9				+		
Unidentified compound	29.0			+	+		
Unidentified alcohol	29.2	+					
Unidentified compound	29.5			+			
Unidentified compound	29.6			+			
Unidentified compound	29.9			+			
Unidentified oxidized compound	30.1			+	+		
Unidentified compound	30.4			+			
Unidentified glycol ether 1	30.5	+					
Unidentified glycol ether 2	30.7	+					
Unidentified oxidized compound	35.4	+					

A = Abundant compound.

Table E-10. Composition of VOCs in Seam Sealer SS, Parts A and B, as determined by analysis of the bulk products.

COMPOUND	Fraction of Product by Volume	Mass per Vol. of Product (mg mL^{-1})
Part A		
Tetrahydrofuran	0.66	590
Cyclohexanone	0.10	91
Part B		
Tetrahydrofuran	0.61	540
Cyclohexanone	0.06	57

Table E-11. VOCs emitted by Cove Base CB in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
n-Tridecane	Q	29.3	+	+	Confirmed
Aromatic Hydrocarbons					
Toluene	T,A,Q	11.7	+	+	Confirmed
Styrene	T,Q	17.6	+	+	Confirmed
4-*tert*-Butyltoluene	Q	24.3	+	+	Confirmed
bis(1-Methylethyl)benzene		26.9	+	+	Probable
1-(1-Ethylpropyl)-4-methylbenzene		27.2	+	+	Tentative
C6 Alkylbenzene		27.4	+	+	Probable
1,4-Dimethyl-2-(2-methylpropyl)-benzene		27.5	+	+	Tentative
(1,1-Dimethylbutyl)benzene		27.8	+	+	Probable
C6 Alkylbenzene		28.2	+	+	Probable
C2 Tetrahydronaphthalene		30.1	+	+	Probable
C2 Tetrahydronaphthalene		30.2	+	+	Probable
C2 Tetrahydronaphthalene	A	32.4	+	+	Probable
C2 Tetrahydronaphthalene	A	32.6	+	+	Probable
C2 Tetrahydronaphthalene	A	33.0	+	+	Probable
Other Hydrocarbons					
C3 Alkyl substituted cyclohexane		15.1	+	+	Probable
2,6,6-Trimethylbicyclo[3.1.1]-heptane		18.7	+	+	Probable
C4 Alkyl substituted cyclohexane		20.1	+	+	Probable
Carbonyl Compounds					
Cyclohexanone		19.8	+	+	Confirmed
Benzaldehyde		22.5	+	+	Confirmed
1-Phenylethanone	T	26.5		+	Confirmed
Other Oxidized Compounds					
alpha-Terpineol	Q	29.5	+	+	Confirmed
2-*tert*-Butylphenol	Q	34.0	+	+	Confirmed
Nitrogen-Containing Compounds					
4-Methylmorpholine		13.2	+	+	Confirmed
Morpholine		15.2		+	Confirmed
Miscellaneous compounds					
tert-Butyl isothiocyanate	A,Q	16.6	+	+	Confirmed
Benzothiazole	A,Q	31.7	+	+	Confirmed
Unidentified Compounds					
Unidentified oxidized compound		26.6	+	+	Unident.

*T = Toxic air contaminant; A = Abundant compound; Q = Quantified target compound.

Table E-12. VOCs emitted by Underlayment UL in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Aromatic Hydrocarbons					
p-Cymene		22.0	+		Confirmed
Other Hydrocarbons					
alpha-Pinene		17.3	+	+	Confirmed
beta-Pinene		19.4	+		Confirmed
3-Carene		20.4	+	+	Confirmed
d-Limonene		21.4	+		Confirmed
Terpene HC		21.7	+		Probable
Carbonyl Compounds					
Pentanal		10.0	+		Confirmed
Hexanal	A,Q	14.5	+	+	Confirmed
2-Furancarboxaldehyde		18.0	+	+	Confirmed
Heptanal		18.7	+		Confirmed
6-Methyl-5-hepten-2-one		22.2	+		Confirmed
Benzaldehyde		22.4	+	+	Confirmed
Octanal		22.5	+	+	Confirmed
Nonanal	Q	26.0	+	+	Confirmed
Decanal	Q	29.3	+	+	Confirmed
Other Oxidized Compounds					
Acetic acid	A	10.8	+	+	Confirmed
Isooctanol		22.6	+		Tentative
Hexanoic acid		24.4	+		Confirmed
alpha-Terpineol	Q	29.5	+	+	Confirmed
Miscellaneous compounds					
Hexamethylcyclotrisiloxane		11.8	+	+	Confirmed
Octamethylcyclotetrasiloxane		18.2	+	+	Confirmed
Siloxane compound		27.8	+	+	Probable
Siloxane compound		28.9	+	+	Probable
Siloxane compound		33.7	+	+	Probable
Unidentified Compounds					
Unidentified compound		21.8	+		Unident.
Unidentified compound		22.9	+	+	Unident.

*A = Abundant compound; Q = Quantified target compound.

Table E-13. VOCs emitted by Gypsum Board GB in 10-L chamber at 6- and 48-hours elapsed times.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Aromatic Hydrocarbons					
Toluene	T	11.7		+	Confirmed
Carbonyl Compounds					
Benzaldehyde		22.4	+	+	Confirmed
Octanal		22.5	+	+	Confirmed
Nonanal		26.1	+	+	Confirmed
Decanal		29.3	+	+	Confirmed
Other Oxidized Compounds					
Acetic acid		10.8	+	+	Confirmed
Miscellaneous compounds					
Hexamethylcyclotrisiloxane		11.8		+	Confirmed
Siloxane compound		23.6	+	+	Probable
Siloxane compound		33.7	+	+	Probable

*T = Toxic air contaminant.

Table E-14. VOCs emitted in 10-L chamber at 6- and 48-hours elapsed times by Sheet Flooring Adhesive SFA applied to particle board Underlayment UL.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Aromatic Hydrocarbons					
Toluene	T,A,Q	11.7	+	+	Confirmed
Indene		24.0	+	+	Confirmed
4-Phenylcyclohexene		33.0	+	+	Confirmed
Other Hydrocarbons					
C4 Alkyl substituted cyclohexane		18.8	+	+	Probable
C4 Alkyl substituted cyclohexane		19.4	+	+	Probable
5-Vinyl-2-norbornene		19.6	+		Tentative
C10H22 Compound		21.3	+	+	Probable
Dicyclopentadiene		21.7	+	+	Probable
C10H14 Compound		22.3	+	+	Probable
C15H24 Compound		32.2		+	Probable
C15H24 Compound		33.0		+	Probable
C15H24 Compound		33.3		+	Probable
Longifolene	A,Q	34.2	+	+	Confirmed
Caryophyllene	A	34.7	+	+	Probable
Carbonyl Compounds					
Hexanal		14.5		+	Confirmed
Benzaldehyde		22.5		+	Confirmed
Decanal		29.3	+		Confirmed
Other Oxidized Compounds					
Acetic acid		11.0	+	+	Confirmed
Trimethylcyclohexanemethanol isomer		27.8	+	+	Tentative
alpha-Terpineol	Q	29.5	+	+	Confirmed
2,6-Di-*tert*-butyl-4-methylphenol (BHT)	A,Q	37.7		+	Confirmed
Miscellaneous compounds					
Hexamethylcyclotrisiloxane		11.8	+		Confirmed
Octamethylcyclotetrasiloxane		18.2	+	+	Confirmed
Siloxane compound		23.7		+	Probable
Siloxane compound		29.0	+	+	Probable
Siloxane compound		33.7	+	+	Probable
Unidentified Compounds					
Unidentified mixture		22.9	+		Unident.
Unidentified compound		32.2		+	Unident.
Unidentified compound	A	36.7		+	Unident.
Unidentified compound	A	41.5		+	Unident.

*T = Toxic air contaminant; A = Abundant compound; Q = Quantified target compound.

Table E-15. VOCs emitted in 10-L chamber at 6- and 48-hours elapsed times by Cove Base Adhesive CBA applied to Gypsum Board GB.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
C8 Branched alkane HC		7.9	+	+	Probable
C8 Branched alkane HC		8.0	+	+	Probable
C8 Branched alkane HC		9.3	+	+	Probable
C8 Branched alkane HC	A	9.4	+	+	Probable
C8 Branched alkane HC		9.5	+	+	Probable
C8 Branched alkane HC		9.8	+	+	Probable
C8 Branched alkane HC		9.9	+	+	Probable
n-Octane	A,Q	11.0	+	+	Confirmed
C9 Branched alkane HC		11.9	+	+	Probable
C9 Branched alkane HC		12.2	+	+	Probable
C9 Branched alkane HC		12.5	+	+	Probable
C9 Branched alkane HC		13.4	+	+	Probable
C9 Branched alkane HC		13.7	+	+	Probable
C9 Branched alkane HC		14.0	+	+	Probable
n-Nonane	Q	15.2	+	+	Confirmed
C10 Branched alkane HC		16.6	+	+	Probable
C10 Branched alkane HC		17.5	+	+	Probable
C10 Branched alkane HC		17.7	+	+	Probable
C10 Branched alkane HC		17.8	+	+	Probable
C10 Branched alkane HC		18.1	+	+	Probable
n-Decane	A,Q	19.2	+	+	Confirmed
C11 Branched alkane HC		20.0	+	+	Probable
C11 Branched alkane HC		20.6		+	Probable
C11 Branched alkane HC		21.3	+	+	Probable
C11 Branched alkane HC		21.4	+	+	Probable
C11 Branched alkane HC		21.5	+	+	Probable
C11 Branched alkane HC		21.8	+	+	Probable
n-Undecane	Q	22.8	+	+	Confirmed
C12 Branched alkane HC		23.8		+	Probable
n-Dodecane		26.1	+	+	Confirmed
Aromatic Hydrocarbons					
Toluene	T,Q	11.7	+	+	Confirmed
m-,p-Xylene	T,Q	16.1	+	+	Confirmed
Styrene	T,Q	17.6	+	+	Confirmed
4-Phenylcyclohexene	Q	33.0	+	+	Confirmed
Other Hydrocarbons					
Methylcyclohexane		8.1	+	+	Confirmed
C3 Cyclopentane		8.6	+	+	Probable
C8 Alkene HC		8.9	+	+	Probable
Dimethylcyclohexane isomer	A	10.4	+	+	Probable
Dimethylcyclohexane isomer		10.5	+	+	Probable
Dimethylcyclohexane isomer		10.7	+	+	Probable
Dimethylcyclohexane isomer		10.9	+	+	Probable

Table E-15, Continued. VOCs emitted in 10-L chamber at 6- and 48-hours elapsed times by Cove Base Adhesive CBA applied to Gypsum Board GB.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Other Hydrocarbons, Cont.					
Dimethylcyclohexane isomer		11.3	+	+	Probable
Dimethylcyclohexane isomer		11.6	+	+	Probable
Trimethylcyclohexane isomer		12.6	+	+	Probable
Propylcyclopentane		12.7	+	+	Probable
Ethylcyclohexane	A,Q	12.9	+	+	Confirmed
Trimethylcyclohexane isomer		13.0	+	+	Probable
Trimethylcyclohexane isomer	A	13.6	+	+	Probable
C9 Alkene HC		13.7	+	+	Probable
C3 Alkyl substituted cyclohexane		14.6	+	+	Probable
C3 Alkyl substituted cyclohexane		14.7	+	+	Probable
C3 Alkyl substituted cyclohexane		14.9	+	+	Probable
C3 Alkyl substituted cyclohexane		15.0	+	+	Probable
C3 Alkyl substituted cyclohexane		15.1	+	+	Probable
C3 Alkyl substituted cyclohexane		16.0	+	+	Probable
C3 Alkyl substituted cyclohexane		16.1	+	+	Probable
C9H16 Compound		16.7	+	+	Tentative
Propylcyclohexane		17.0	+	+	Confirmed
C4 Alkyl substituted cyclohexane		17.2	+	+	Probable
C10 Alkene HC		18.1	+	+	Probable
C4 Alkyl substituted cyclohexane		18.2	+	+	Probable
C4 Alkyl substituted cyclohexane		18.6	+	+	Probable
C4 Alkyl substituted cyclohexane		18.8	+	+	Probable
C4 Alkyl substituted cyclohexane		19.0	+	+	Probable
C10 Alkene HC		19.1	+	+	Probable
C4 Alkyl substituted cyclohexane		19.4	+	+	Tentative
C11 Alkene HC		20.2	+	+	Probable
Butylcyclohexane		20.9	+	+	Confirmed
C11 Alkene HC		20.9	+	+	Probable
Decahydronaphthalene isomer		22.3	+	+	Probable
C5 Alkyl substituted cyclohexane		22.7	+	+	Probable
C12 Alkene HC		23.4	+	+	Probable
Carbonyl Compounds					
Decanal		29.3	+	+	Confirmed
Other Oxidized Compounds					
n-Butyl ether		15.4	+	+	Confirmed
2,6-Di-*tert*-butyl-4-methylphenol (BHT)	Q	37.7		+	Confirmed
Miscellaneous compounds					
Octamethylcyclotetrasiloxane		18.2	+		Confirmed
Siloxane compound		33.7	+	+	Probable

*T = Toxic air contaminant; A = Abundant compound; Q = Quantified target compound.

Table E-16. VOCs emitted in 10-L chamber at 6- and 48-hours elapsed times by Sheet Vinyl SV5 and Sheet Flooring Adhesive SFA applied to particle board Underlayment UL.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
n-Nonane	Q	15.2	+	+	Confirmed
C10 Branched alkane HC		16.6	+	+	Probable
C10 Branched alkane HC		17.7		+	Probable
C10 Branched alkane HC		17.8		+	Probable
C10 Branched alkane HC		18.0		+	Probable
n-Decane	A,Q	19.1	+	+	Confirmed
C11 Branched alkane HC		20.0	+	+	Probable
n-Undecane		22.8	+	+	Confirmed
n-Dodecane		26.2	+	+	Confirmed
n-Tridecane	A,Q	29.4	+	+	Confirmed
n-Tetradecane	A,Q	32.2	+	+	Confirmed
n-Pentadecane		34.9		+	Confirmed
Aromatic Hydrocarbons					
Toluene	T,A,Q	11.7	+	+	Confirmed
Propylbenzene		19.4		+	Confirmed
Ethyltoluene isomer		19.7	+	+	Probable
4-Ethyltoluene		19.8	+	+	Confirmed
C3 Alkylbenzene		20.1	+		Probable
2-Ethyltoluene		20.6		+	Confirmed
1,2,4-Trimethylbenzene	T,Q	21.1	+	+	Confirmed
1,2,3-Trimethylbenzene		22.4	+	+	Confirmed
C4 Alkylbenzene		23.0	+	+	Probable
(1-Butoxyhexyl)benzene		37.1	+	+	Probable
(1-Propylheptyl)benzene		37.4	+	+	Probable
(1-Ethyloctyl)benzene		38.0	+	+	Probable
(1-Methylnonyl)benzene		39.0	+	+	Probable
(1-Phenylhexyl)benzene		39.5	+	+	Probable
(1-Butylheptyl)benzene		39.6	+	+	Probable
(1-Propyloctyl)benzene		39.9	+	+	Probable
(1-Ethylnonyl)benzene		40.5	+	+	Probable
(1-Methyldecyl)benzene		41.5	+	+	Probable
(1-Penylheptyl)benzene		41.8	+	+	Probable
(1-Butyloctyl)benzene		41.9	+	+	Probable
(1-Propylnonyl)benzene		42.3	+	+	Probable
(1-Ethyldecyl)benzene		42.9			Probable
Other Hydrocarbons					
Propylcyclohexane		16.9	+	+	Confirmed
C4 Alkyl substituted cyclohexane		18.9		+	Probable
Butylcyclohexane		20.9		+	Confirmed
Carbonyl Compounds					
Benzaldehyde		22.5		+	Confirmed
Nonanal		26.0	+	+	Confirmed

Table E-16, Continued. VOCs emitted in 10-L chamber at 6- and 48-hours elapsed times by Sheet Vinyl SV5 and Sheet Flooring Adhesive SFA applied to particle board Underlayment UL.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Other Oxidized Compounds					
1-Octanol	Q	25.4	+	+	Confirmed
Benzyl alcohol	Q	26.4	+	+	Confirmed
Phenol	T,A,Q	26.6	+	+	Confirmed
2-Ethylhexanoic acid		28.4		+	Probable
2-Ethyl-1-hexanol		30.4	+	+	Confirmed
1-Dodecanol		37.0	+	+	Confirmed
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate (TXIB)	A,Q	40.3	+	+	Confirmed
Nitrogen-Containing Compounds					
N-Propylbenzamide		40.7		+	Tentative
Unidentified Compounds					
Unidentified compound		29.0	+	+	Unident.
Unidentified compound		29.2	+	+	Unident.
Unidentified oxidized compound		29.5	+	+	Unident.
Unidentified oxidized compound		30.0	+	+	Unident.

*T = Toxic air contaminant; A = Abundant compound; Q = Quantified target compound.

Table E-17. VOCs emitted in 10-L chamber at 6- and 48-hours elapsed times by Cove Base CB and Cove Base Adhesive CBA applied to Gypsum Board GB.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Alkane Hydrocarbons					
C8 Branched alkane HC		9.3	+	+	Probable
C8 Branched alkane HC	A	9.5	+	+	Probable
C8 Branched alkane HC		9.6	+	+	Probable
C8 Branched alkane HC	A	9.8	+	+	Probable
C8 Branched alkane HC		9.9	+	+	Probable
n-Octane	A,Q	11.0	+	+	Confirmed
C9 Branched alkane HC		11.9	+	+	Probable
C9 Branched alkane HC		12.2	+	+	Probable
C9 Branched alkane HC		12.5	+	+	Probable
C9 Branched alkane HC		13.4	+	+	Probable
C9 Branched alkane HC		13.7	+	+	Probable
C9 Branched alkane HC		14.0	+	+	Probable
n-Nonane	Q	15.2	+	+	Confirmed
C10 Branched alkane HC		16.6	+	+	Probable
C10 Branched alkane HC		17.7	+	+	Probable
C10 Branched alkane HC		17.8		+	Probable
C10 Branched alkane HC		18.0	+	+	Probable
n-Decane	A,Q	19.2	+	+	Confirmed
C11 Branched alkane HC		20.0	+	+	Probable
C11 Branched alkane HC		20.6		+	Probable
C11 Branched alkane HC		21.2		+	Probable
C11 Branched alkane HC		21.4		+	Probable
C11 Branched alkane HC		21.5		+	Probable
C11 Branched alkane HC		21.8		+	Probable
n-Undecane	Q	22.8	+	+	Confirmed
n-Dodecane		26.1		+	Confirmed
Aromatic Hydrocarbons					
Toluene	T,Q	11.7	+	+	Confirmed
Ethylbenzene	T	15.8	+		Confirmed
m-,p-Xylene	T,Q	16.1	+		Confirmed
Styrene	T,Q	17.6	+	+	Confirmed
4-*tert*-Butyltoluene	Q	24.3	+	+	Confirmed
bis(1-Methylethyl)benzene		26.9		+	Probable
(1,1-Dimethylbutyl)benzene		27.8	+	+	Probable
C6 Alkylbenzene		28.1	+	+	Probable
4-Phenylcyclohexene	Q	33.0		+	Confirmed
C2 Tetrahydronaphthalene		32.3	+	+	Probable
C2 Tetrahydronaphthalene		32.5	+	+	Probable
C2 Tetrahydronaphthalene		32.9	+	+	Probable
Other Hydrocarbons					
Methylcyclohexane		8.1	+	+	Confirmed
Dimethylcyclohexane isomer		10.4	+	+	Probable
Dimethylcyclohexane isomer		10.5	+	+	Probable

Table E-17, Continued. VOCs emitted in 10-L chamber at 6- and 48-hours elapsed times by Cove Base CB and Cove Base Adhesive CBA applied to Gypsum Board GB.

COMPOUND	Code*	RT (min)	6-h ET	48-h ET	Match Quality
Other Hydrocarbons, Cont.					
Dimethylcyclohexane isomer		10.7	+		Probable
Dimethylcyclohexane isomer		10.9	+		Probable
Dimethylcyclohexane isomer		11.3	+	+	Probable
Dimethylcyclohexane isomer		11.6	+	+	Probable
Trimethylcyclohexane isomer		12.6	+	+	Probable
Propylcyclopentane		12.7	+	+	Tentative
Dimethylcyclohexane isomer		12.8	+	+	Probable
Ethylcyclohexane	Q	12.9	+	+	Confirmed
Trimethylcyclohexane isomer		13.0	+	+	Probable
C9 Alkene HC		13.1		+	Probable
Trimethylcyclohexane isomer	A	13.6	+	+	Probable
C3 Alkyl substituted cyclohexane		14.6	+	+	Probable
C3 Alkyl substituted cyclohexane		14.7	+	+	Probable
C3 Alkyl substituted cyclohexane		14.9	+	+	Probable
C3 Alkyl substituted cyclohexane		15.0	+	+	Probable
C3 Alkyl substituted cyclohexane		15.1	+	+	Probable
C3 Alkyl substituted cyclohexane		16.0	+	+	Probable
C3 Alkyl substituted cyclohexane		16.2		+	Probable
Propylcyclohexane		16.9	+	+	Confirmed
C4 Alkyl substituted cyclohexane		18.1		+	Tentative
C4 Alkyl substituted cyclohexane		18.8	+	+	Probable
C4 Alkyl substituted cyclohexane		18.9	+	+	Probable
C4 Alkyl substituted cyclohexane		19.4	+	+	Probable
Butylcyclohexane		20.9	+	+	Confirmed
C11 Alkene HC		21.0		+	Probable
Decahydronaphthalene isomer		22.3		+	Tentative
C5 Alkyl substituted cyclohexane		22.7		+	Probable
C11 Alkene HC		23.3		+	Probable
Carbonyl Compounds					
Nonanal		26.0	+	+	Confirmed
Decanal		29.3	+	+	Confirmed
Other Oxidized Compounds					
2-Methyl-2-propanol		4.3	+		Confirmed
n-Butyl ether		15.3		+	Confirmed
Cyclohexanol		19.1	+	+	Tentative
alpha-Terpineol	Q	29.5		+	Confirmed
2-*tert*-Butylphenol	Q	34.0		+	Confirmed
Miscellaneous Compounds					
tert-Butyl isothiocyanate	Q	16.6	+	+	Confirmed
Benzothiazole	A,Q	31.7	+	+	Confirmed

*T = Toxic air contaminant; A = Abundant compound; Q = Quantified target compound.

Table E-18. Summary of target VOCs for screening measurements with sheet vinyl flooring materials.

COMPOUND	SV1	SV2	SV3	SV5	SV4	CB	UL	SFA	CBA	SV5 & SFA	CB & CBA
Alkane Hydrocarbons											
n-Octane									+		+
n-Nonane			+	+					+	+	+
n-Decane			+	+					+	+	+
n-Undecane									+		+
n-Dodecane		+									
n-Tridecane	+	+	+	+	+	+				+	+
n-Tetradecane			+	+						+	
Aromatic Hydrocarbons											
Toluene			+	+		+		+	+	+	+
m-,p-Xylene			+	+					+	+	+
o-Xylene			+	+						+	
Styrene						+			+		+
1,2,4-Trimethylbenzene		+	+	+	+					+	
4-*tert*-Butyltoluene						+					+
Naphthalene		+	+	+	+					+	
4-Phenylcyclohexene									+		+
Other Hydrocarbons											
Ethylcyclohexane									+		+
Longifolene								+		+	
Carbonyl Compounds											
Hexanal							+				
Nonanal							+				
1-Phenylethanone	+				+						
Decanal							+				

Table E-18, Continued. Summary of target VOCs for screening measurements with sheet vinyl flooring materials.

COMPOUND	SV1	SV2	SV3	SV5	SV4	CB	UL	SFA	CBA	SV5 & SFA	CB & CBA
Other Oxidized Compounds											
n-Propyl acetate					+						
2-Propoxyethanol		+			+						
Di(propylene glycol) methyl ethers	+										
2-Ethyl-1-hexanol	+										
1-Octanol				+						+	
Benzyl alcohol			+	+						+	
Phenol	+	+	+	+	+					+	
alpha-Terpineol						+	+				+
2-(2-Butoxyethoxy)ethanol	+	+			+						
2-*tert*-Butylphenol						+					+
2,6-Di-*tert*-butyl-4-methylphenol	+							+	+	+	+
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	+	+	+	+	+					+	
Diethylphthalate	+		+	+	+					+	
Nitrogen Containing Compounds											
1-Methyl-2-pyrrolidinone	+	+			+						
Miscellaneous Compounds											
tert-Butyl isothiocyanate						+					+
Benzothiazole						+					+

Table E-19. Chamber concentrations of target VOCs for 48-h screening measurement of Sheet Vinyl SV1.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Tridecane	5	3	2	2
Carbonyl Compounds				
1-Phenylethanone	2	1	1	1
Other Oxidized Cmpds.				
Di(propylene glycol) methyl ethers	7	4	3	3
2-Ethyl-1-hexanol	8	5	3	4
Phenol	41	26	16	14
2-(2-Butoxyethoxy)ethanol	2	2	1	<1
2,6-Di-*tert*-butyl-4-methylphenol	1	1	<1	<1
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	3	3	2	2
Diethylphthalate	3	3	2	2

Table E-20. Chamber concentrations of target VOCs for 48-h screening measurement of Sheet Vinyl SV2.

Compound	Chamber Concentration, μg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Dodecane	2	2	6	9
n-Tridecane	5	3	8	15
Aromatic Hydrocarbons				
1,2,4-Trimethylbenzene	1	1	3	3
Naphthalene	1	1	1	1
Other Oxidized Cmpds.				
2-Propoxyethanol	3	2	4	4
Phenol	51	50	47	44
2-(2-Butoxyethoxy)ethanol	3	3	1	2
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	7	2	1	1
Nitrogen-Containing Cmpds.				
1-Methyl-2-pyrrolidinone	3	3	4	3

Table E-21. Chamber concentrations of target VOCs for 48-h screening measurement of Sheet Vinyl SV3-a.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Nonane	25	24	19	18
n-Decane	49	60	51	50
n-Tridecane	52	39	34	42
n-Tetradecane	23	17	13	16
Aromatic Hydrocarbons				
Toluene	3	2	1	2
m-,p-Xylene	3	3	2	2
o-Xylene	3	3	2	2
1,2,4-Trimethylbenzene	14	13	12	12
Naphthalene	<1	<1	<1	<1
Other Oxidized Cmpds.				
Benzyl alcohol	45	32	19	16
Phenol	137	103	68	60
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	30	21	12	11
Diethylphthalate	5	5	3	3

Table E-22. Chamber concentrations of target VOCs for 48-h screening measurement of Sheet Vinyl SV3-b.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Nonane	20	17	18	21
n-Decane	42	38	36	40
n-Tridecane	79	59	45	44
n-Tetradecane	43	30	23	21
Aromatic Hydrocarbons				
Toluene	3	2	1	1
m-,p-Xylene	10	5	3	2
o-Xylene	5	2	2	2
1,2,4-Trimethylbenzene	20	13	9	9
Naphthalene	1	<1	<1	<1
Other Oxidized Cmpds.				
Benzyl alcohol	59	40	27	21
Phenol	140	125	92	77
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	67	52	33	34
Diethylphthalate	1	1	1	1

Table E-23. Chamber concentrations of target VOCs for 48-h screening measurement of Sheet Vinyl SV5.

Compound	Chamber Concentration, μg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Nonane	19	21	19	21
n-Decane	49	44	36	45
n-Tridecane	110	73	48	44
n-Tetradecane	63	41	26	21
Aromatic Hydrocarbons				
Toluene	5	4	4	3
m-,p-Xylene	6	5	3	3
o-Xylene	5	3	2	2
1,2,4-Trimethylbenzene	28	19	12	12
Naphthalene	2	1	<1	<1
Other Oxidized Cmpds.				
1-Octanol	18	11	6	5
Benzyl alcohol	87	63	36	30
Phenol	217	162	125	98
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	93	66	44	40
Diethylphthalate	1	1	1	1

Table E-24. Chamber concentrations of target VOCs for 48-h screening measurement of Sheet Vinyl SV4.

Compound	Chamber Concentration, μg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Tridecane	8	6	9	15
Aromatic Hydrocarbons				
1,2,4-Trimethylbenzene	2	3	3	3
Naphthalene	4	3	4	5
Carbonyl Compounds				
1-Phenylethanone	2	2	1	2
Other Oxidized Cmpds.				
n-Propyl acetate	7	8	8	8
2-Propoxyethanol	3	10	9	9
Phenol	47	43	37	36
2-(2-Butoxyethoxy)ethanol	8	5	1	1
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	13	5	3	4
Diethylphthalate	3	2	2	2
Nitrogen-Containing Cmpds.				
1-Methyl-2-pyrrolidinone	6	6	5	6

Table E-25. Chamber concentrations of target VOCs for 48-h sheet vinyl blank run.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Aromatic Hydrocarbons				
m-,p-Xylene	2	5	1	<1
o-Xylene	1	2	<1	<1
1,2,4-Trimethylbenzene	<1	1	<1	<1
Carbonyl Compounds				
Nonanal	3	2	2	2
Decanal	5	4	4	3
Other Oxidized Cmpds.				
2-(2-Butoxyethoxy)ethanol	2	1	<1	<1
Diethylphthalate	1	2	1	1

Table E-26. Chamber concentrations of target VOCs for 48-h screening measurement of Cove Base CB.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Tridecane	2	1	1	1
Aromatic Hydrocarbons				
Toluene	95	65	42	34
Styrene	37	23	14	10
4-*tert*-Butyltoluene	11	8	5	4
Other Oxidized Cmpds.				
alpha-Terpineol	15	13	9	7
2-*tert*-Butylphenol	4	5	5	4
Miscellaneous Compounds				
tert-Butyl isothiocyanate	116	77	48	43
Benzothiazole	136	113	91	80

Table E-27. Chamber concentrations of target VOCs for 48-h screening measurement of Underlayment UL.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Carbonyl Compounds				
Hexanal	35	19	8	6
Nonanal	9	5	3	2
Decanal	5	3	2	1
Other Oxidized Cmpds.				
alpha-Terpineol	3	1	1	1

Table E-28. Chamber concentrations of target VOCs for 48-h screening measurement of Sheet Flooring Adhesive SFA applied to Underlayment UL.

Compound	Chamber Concentration, µg m^{-3} 3-h	6-h	24-h	48-h
Aromatic Hydrocarbons				
Toluene	4,000	4,020	62	57
Other Hydrocarbons				
Longifolene	190	200	13	10
Other Oxidized Cmpds.				
2,6-Di-*tert*-butyl-4-methylphenol	10	20	9	13

Table E-29. Chamber concentrations of target VOCs for 48-h screening measurement of Cove Base Adhesive CBA applied to Gypsum Board GB.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Octane	3,810	4,240	887	280
n-Nonane	490	380	100	34
n-Decane	570	460	153	62
n-Undecane	260	240	93	48
Aromatic Hydrocarbons				
Toluene	390	260	40	12
m-,p-Xylene	100	60	13	6
Styrene	360	260	53	18
4-Phenylcyclohexene	40	40	20	16
Other Hydrocarbons				
Ethylcyclohexane	920	820	253	110
Other Oxidized Cmpds.				
2,6-Di-*tert*-butyl-4-methylphenol	<1	<1	<1	4

Table E-30. Chamber concentrations of target VOCs for 48-h screening measurement of Sheet Vinyl SV5 and Sheet Flooring Adhesive SFA applied to Underlayment UL.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Nonane	16	14	10	10
n-Decane	42	30	23	23
n-Tridecane	106	72	48	42
n-Tetradecane	52	36	24	21
Aromatic Hydrocarbons				
Toluene	104	208	160	130
m-,p-Xylene	6	4	3	2
o-Xylene	4	2	2	1
1,2,4-Trimethylbenzene	26	14	11	9
Naphthalene	2	<1	<1	<1
Other Hydrocarbons				
Longifolene	<1	<1	<1	<1
Other Oxidized Cmpds.				
1-Octanol	16	8	6	5
Benzyl alcohol	88	54	37	30
Phenol	298	224	151	113
2,6-Di-*tert*-butyl-4-methylphenol	<1	<1	<1	<1
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	84	70	44	37
Diethylphthalate	2	<1	1	<1

Table E-31. Chamber concentrations of target VOCs for 48-h screening measurement of Cove Base CB and Cove Base Adhesive CBA applied to Gypsum Board GB.

Compound	Chamber Concentration, µg m^{-3} 1-h	6-h	24-h	48-h
Alkane Hydrocarbons				
n-Octane	712	770	418	193
n-Nonane	54	70	46	23
n-Decane	47	60	56	36
n-Undecane	7	13	20	18
n-Tridecane	6	7	2	1
Aromatic Hydrocarbons				
Toluene	258	127	30	16
m-,p-Xylene	32	23	8	4
Styrene	130	107	34	17
4-*tert*-Butyltoluene	11	7	2	2
4-Phenylcyclohexene	2	2	2	2
Other Hydrocarbons				
Ethylcyclohexane	233	187	98	54
Other Oxidized Cmpds.				
alpha-Terpineol	11	7	4	4
2-*tert*-Butylphenol	4	3	2	2
2,6-Di-*tert*-butyl-4-methylphenol	<1	<1	<1	<1
Miscellaneous Compounds				
tert-Butyl isothiocyanate	79	43	30	21
Benzothiazole	145	123	84	65

Table E-32. Chamber concentrations of TVOC for 48-h screening measurements of sheet vinyl flooring materials.

Material ID	Chamber Concentration (μg m^{-3}) 1-h	6-h	24-h	48-h
Sheet Vinyls				
SV1	344	265	175	154
SV2	425	701	633	729
SV3-a	1,320	1,010	821	904
SV3-b	1,450	1,340	1,110	983
SV5	2,220	1,730	1,190	1,180
SV4	508	450	496	600
SV Blank Run	144	160	190	160
Cove Base				
CB	1,390	1,210	980	860
Substrates				
UL	420	326	213	219
GB	136	208	193	181
Adhesives on Substrates				
SFA & UL	8,090*	6,660	1,150	674
CBA & GB	23,900	23,600	6,570	3,280
Composite Assemblies				
SV5, SFA & UL	2,000	1,620	1,180	973
CB, CBA & GB	5,320	4,870	2,860	1,720

*3-h Sample.

Table E-33. Chamber concentrations of SigmaVOC (*i.e.*, sum of target VOCs) for 48-h screening measurements of sheet vinyl flooring materials.

Material ID	Chamber Concentration (μg m^{-3}) 1-h	6-h	24-h	48-h
Sheet Vinyls				
SV1	75	51	30	28
SV2	76	66	73	82
SV3-a	389	321	236	234
SV3-b	492	385	292	273
SV5	704	513	363	329
SV4	103	95	85	92
SV Blank Run	15	18	10	6
Cove Base				
CB	416	306	216	185
Substrates				
UL	52	29	15	11
GB	---*	---	---	---
Adhesives on Substrates				
SFA & UL	4,200**	4,020	62	57
CBA & GB	6,940	6,760	1,610	590
Composite Assemblies				
SV5, SFA & UL	846	736	520	425
CB, CBA & GB	1,730	1,550	836	758

*No individual VOCs were quantified.
**3-h Sample.

Table E-34. Chamber concentrations of formaldehyde for 48-h screening measurements of sheet vinyl flooring materials.

Material ID	Chamber Concentration (μg m^{-3}) 1-h	6-h	24-h	48-h
Sheet Vinyls				
SV1	<1	<1	<1	<1
SV2	3	1	1	1
SV3-a	3	1	1	<1
SV3-b	<1	<1	<1	<1
SV5	<1	<1	<1	<1
SV4	3	2	1	1
SV Blank Run	<1	<1	<1	<1
Cove Base				
CB	<1	<1	<1	<1
Substrates				
UL	77	69	59	53
GB	<1	<1	<1	<1
Adhesives on Substrates				
SFA & UL	39	26	30	31
CBA & GB	63	15	10	9
Composite Assemblies				
SV5, SFA & UL	1	1	2	2
CB, CBA & GB	6	6	7	7

Table E-35. Chamber concentrations of acetaldehyde for 48-h screening measurements of sheet vinyl flooring materials.

Material ID	Chamber Concentration (µg m^{-3}) 1-h	6-h	24-h	48-h
Sheet Vinyls				
SV1	2	1	1	1
SV2	2	1	1	2
SV3-a	5	4	2	3
SV3-b	3	3	5	3
SV5	3	5	4	6
SV4	5	4	3	2
SV Blank Run	<1	<1	1	1
Cove Base				
CB	<1	<1	<1	<1
Substrates				
UL	12	8	4	2
GB	2	<1	1	<1
Adhesives on Substrates				
SFA & UL	19	7	5	4
CBA & GB	21	18	5	4
Composite Assemblies				
SV5, SFA & UL	3	3	2	2
CB, CBA & GB	18	8	4	2

Table E-36. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Sheet Vinyl SV1.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Tridecane	5	5
Carbonyl Compounds		
1-Phenylethanone	3	3
Other Oxidized Cmpds.		
Di(propylene glycol) methyl ethers	8	8
2-Ethyl-1-hexanol	10	11
Phenol	50	43
2-(2-Butoxyethoxy)ethanol	3	<3
2,6-Di-*tert*-butyl-4-methylphenol	<3	<3
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	6	6
Diethylphthalate	3	3

Table E-37. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Sheet Vinyl SV2.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Dodecane	18	29
n-Tridecane	23	45
Aromatic Hydrocarbons		
1,2,4-Trimethylbenzene	8	9
Naphthalene	4	4
Other Oxidized Cmpds.		
2-Propoxyethanol	11	11
Phenol	142	135
2-(2-Butoxyethoxy)ethanol	4	5
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	3	2
Nitrogen-Containing Cmpds.		
1-Methyl-2-pyrrolidinone	11	9

Table E-38. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Sheet Vinyl SV3-a.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Nonane	57	54
n-Decane	157	154
n-Tridecane	105	129
n-Tetradecane	39	49
Aromatic Hydrocarbons		
Toluene	4	5
m-,p-Xylene	3	3
o-Xylene	6	6
1,2,4-Trimethylbenzene	36	35
Naphthalene	<3	<3
Other Oxidized Cmpds.		
Benzyl alcohol	57	49
Phenol	208	183
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	36	34
Diethylphthalate	3	5

Table E-39. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Sheet Vinyl SV3-b.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Nonane	54	63
n-Decane	111	121
n-Tridecane	138	136
n-Tetradecane	69	63
Aromatic Hydrocarbons		
Toluene	4	4
m-,p-Xylene	6	5
o-Xylene	5	5
1,2,4-Trimethylbenzene	28	27
Naphthalene	<3	<3
Other Oxidized Cmpds.		
Benzyl alcohol	83	63
Phenol	281	234
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	100	104
Diethylphthalate	<3	<3

Table E-40. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Sheet Vinyl SV5.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Nonane	58	65
n-Decane	109	137
n-Tridecane	145	134
n-Tetradecane	80	65
Aromatic Hydrocarbons		
Toluene	11	11
m-,p-Xylene	5	8
o-Xylene	7	8
1,2,4-Trimethylbenzene	37	38
Naphthalene	<3	<3
Other Oxidized Cmpds.		
1-Octanol	18	17
Benzyl alcohol	110	91
Phenol	381	298
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	134	122
Diethylphthalate	<3	<3

Table E-41. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Sheet Vinyl SV4.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Tridecane	29	46
Aromatic Hydrocarbons		
1,2,4-Trimethylbenzene	11	11
Naphthalene	12	15
Carbonyl Compounds		
1-Phenylethanone	3	6
Other Oxidized Cmpds.		
n-Propyl acetate	24	24
2-Propoxyethanol	27	27
Phenol	114	111
2-(2-Butoxyethoxy)ethanol	5	5
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	11	12
Diethylphthalate	5	3
Nitrogen-Containing Cmpds.		
1-Methyl-2-pyrrolidinone	17	18

Table E-42. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Cove Base CB.

Compound	Specific Emission Rate, $\mu g\ m^{-1}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Tridecane	<1	<1
Aromatic Hydrocarbons		
Toluene	11	9
Styrene	4	3
4-*tert*-Butyltoluene	1	1
Other Oxidized Cmpds.		
alpha-Terpineol	2	2
2-*tert*-Butylphenol	1	1
Miscellaneous Compounds		
tert-Buyl isothiocyanate	12	11
Benzothiazole	24	21

Table E-43. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Underlayment UL.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Carbonyl Compounds		
Hexanal	26	20
Nonanal	5	<3
Decanal	<3	<3
Other Oxidized Cmpds.		
alpha-Terpineol	3	3

Table E-44. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Sheet Flooring Adhesive SFA applied to Underlayment UL.

Compound	Specific Emission Rate, $\mu g\ kg^{-1}\ h^{-1}$ 24-h	48-h
Aromatic Hydrocarbons		
Toluene	528	481
Other Hydrocarbons		
Longifolene	113	85
Other Oxidized Cmpds.		
2,6-Di-*tert*-butyl-4-methylphenol	75	113

Table E-45. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Cove Base Adhesive CBA applied to Gypsum Board GB.

Compound	Specific Emission Rate, $\mu g\ kg^{-1}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Octane	6,350	2,000
n-Nonane	716	243
n-Decane	1,100	444
n-Undecane	668	343
Aromatic Hydrocarbons		
Toluene	286	86
m-,p-Xylene	88	36
Styrene	382	129
4-Phenylcyclohexene	143	114
Other Hydrocarbons		
Ethylcyclohexane	1,810	787
Other Oxidized Cmpds.		
2,6-Di-*tert*-butyl-4-methylphenol	<7	29

Table E-46. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Sheet Vinyl SV5 and Sheet Flooring Adhesive SFA applied to Underlayment UL.

Compound	Specific Emission Rate, $\mu g\ m^{-2}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Nonane	30	30
n-Decane	70	69
n-Tridecane	146	128
n-Tetradecane	73	65
Aromatic Hydrocarbons		
Toluene	487	396
m-,p-Xylene	6	3
o-Xylene	6	4
1,2,4-Trimethylbenzene	33	28
Naphthalene	<3	<3
Other Hydrocarbons		
Longifolene	<3	<3
Other Oxidized Cmpds.		
1-Octanol	18	14
Benzyl alcohol	113	91
Phenol	460	345
2,6-Di-*tert*-butyl-4-methylphenol	<3	<3
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	134	112
Diethylphthalate	<3	<3

Table E-47. Quasi steady-state emission rates of target VOCs at 24- and 48-h elapsed time for screening measurement of Cove Base CB and Cove Base Adhesive CBA applied to Gypsum Board GB.

Compound	Specific Emission Rate, $\mu g\ m^{-1}\ h^{-1}$ 24-h	48-h
Alkane Hydrocarbons		
n-Octane	218	101
n-Nonane	24	12
n-Decane	29	19
n-Undecane	10	9
n-Tridecane	1	<1
Aromatic Hydrocarbons		
Toluene	16	8
m-,p-Xylene	4	1
Styrene	18	9
4-*tert*-Butyltoluene	1	1
4-Phenylcyclohexene	1	1
Other Hydrocarbons		
Ethylcyclohexane	51	28
Other Oxidized Cmpds.		
alpha-Terpineol	2	2
2-*tert*-Butylphenol	1	1
2,6-Di-*tert*-butyl-4-methylphenol	<1	<1
Miscellaneous Compounds		
tert-Butyl isothiocyanate	16	11
Benzothiazole	44	34

Table E-48. Quasi steady-state emission rates of TVOC at 24- and 48-hours elapsed times for screening measurements of sheet vinyl flooring materials.

Material ID	Material Amount	Specif. Emission Rate 24-h	48-h	Units
Sheet Vinyls				
SV1	0.0195 m^{-2}	<75	<75	$\mu g\ m^{-2}\ h^{-1}$
SV2	0.0195 m^{-2}	1,430	1,720	$\mu g\ m^{-2}\ h^{-1}$
SV3-a	0.0195 m^{-2}	2,000	2,250	$\mu g\ m^{-2}\ h^{-1}$
SV3-b	0.0195 m^{-2}	2,890	2,450	$\mu g\ m^{-2}\ h^{-1}$
SV5	0.0195 m^{-2}	3,120	3,110	$\mu g\ m^{-2}\ h^{-1}$
SV4	0.0195 m^{-2}	1,010	1,330	$\mu g\ m^{-2}\ h^{-1}$
Cove Base				
CB	0.229 m	212	181	$\mu g\ m^{-1}\ h^{-1}$
Substrates				
UL	0.0195 m^{-2}	151	168	$\mu g\ m^{-2}\ h^{-1}$
GB	0.0195 m^{-2}	<75	<75	$\mu g\ m^{-2}\ h^{-1}$
Adhesives on Substrates				
SFA & UL	0.0070 kg	8,340	4,330	$\mu g\ kg^{-1}\ h^{-1}$
CBA & GB	0.0083 kg	45,800	22,300	$\mu g\ kg^{-1}\ h^{-1}$
Composite Assemblies				
SV5, SFA & UL	0.0195 m^{-2}	3,100	2,470	$\mu g\ m^{-2}\ h^{-1}$
CB, CBA & GB	0.114 m	1,400	812	$\mu g\ m^{-1}\ h^{-1}$

Table E-49. Quasi steady-state emission rates of formaldehyde at 24- and 48-hours elapsed times for screening measurements of sheet vinyl flooring materials.

Material ID	Material Amount	Specif. Emission Rate 24-h	48-h	Units
Sheet Vinyls				
SV1	0.0195 m^{-2}	<3	<3	$\mu g\ m^{-2}\ h^{-1}$
SV2	0.0195 m^{-2}	4	3	$\mu g\ m^{-2}\ h^{-1}$
SV3-a	0.0195 m^{-2}	3	<3	$\mu g\ m^{-2}\ h^{-1}$
SV3-b	0.0195 m^{-2}	<3	<3	$\mu g\ m^{-2}\ h^{-1}$
SV5	0.0195 m^{-2}	<3	<3	$\mu g\ m^{-2}\ h^{-1}$
SV4	0.0195 m^{-2}	4	4	$\mu g\ m^{-2}\ h^{-1}$
Cove Base				
CB	0.229 m	<1	<1	$\mu g\ m^{-1}\ h^{-1}$
Substrates				
UL	0.0195 m^{-2}	180	160	$\mu g\ m^{-2}\ h^{-1}$
GB	0.0195 m^{-2}	<3	<3	$\mu g\ m^{-2}\ h^{-1}$
Adhesives on Substrates				
SFA & UL	0.0070 kg	258	263	$\mu g\ kg^{-1}\ h^{-1}$
SFA & UL	0.0195 m^{-2}	94	94	$\mu g\ m^{-2}\ h^{-1}$
CBA & GB	0.0083 kg	72	68	$\mu g\ kg^{-1}\ h^{-1}$
Composite Assemblies				
SV5, SFA & UL	0.0195 m^{-2}	5	7	$\mu g\ m^{-2}\ h^{-1}$
CB, CBA & GB	0.114 m	3	3	$\mu g\ m^{-1}\ h^{-1}$

Table E-50. Quasi steady-state emission rates of acetaldehyde at 24- and 48-hours elapsed times for screening measurements of sheet vinyl flooring materials.

Material ID	Material Amount	Specif. Emission Rate 24-h	48-h	Units
Sheet Vinyls				
SV1	0.0195 m^{-2}	<3	<3	μg m^{-2} h^{-1}
SV2	0.0195 m^{-2}	<3	3	μg m^{-2} h^{-1}
SV3-a	0.0195 m^{-2}	4	5	μg m^{-2} h^{-1}
SV3-b	0.0195 m^{-2}	13	7	μg m^{-2} h^{-1}
SV5	0.0195 m^{-2}	8	14	μg m^{-2} h^{-1}
SV4	0.0195 m^{-2}	6	3	μg m^{-2} h^{-1}
Cove Base				
CB	0.229 m	<1	<1	μg m^{-1} h^{-1}
Substrates				
UL	0.0195 m^{-2}	8	4	μg m^{-2} h^{-1}
GB	0.0195 m^{-2}	<3	<3	μg m^{-2} h^{-1}
Adhesives on Substrates				
SFA & UL	0.0070 kg	36	23	μg kg^{-1} h^{-1}
SFA & UL	0.0195 m^{-2}	13	8	μg m^{-2} h^{-1}
CBA & GB	0.0083 kg	28	19	μg kg^{-1} h^{-1}
Composite Assemblies				
SV5, SFA & UL	0.0195 m^{-2}	4	4	μg m^{-2} h^{-1}
CB, CBA & GB	0.114 m	1	<1	μg m^{-1} h^{-1}