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Material Emissions Testing: VOCs from Wood, Paint, and Insulation Materials

Doyun Won, Gang Nong, Wenping Yang, and Peter Collins

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Material Emissions Testing:
VOCs from Wood, Paint, and Insulation Materials

Summary

A total of 30 building materials were tested for 121 volatile organic compounds (VOCs) in small-scale (50 L) chambers in accordance with ASTM D5116-2010. The focus was on wood, paint and insulation materials, which were identified as major sources of VOCs indoors or for lack of information on VOC emissions in the previous study (Won et al., 2013). The emission factors of 121 NRC target compounds are presented along with the empirical emission models to describe the decay of emission factors. The data sets generated for these three groups of materials in the previous study were also included in determining the mean emission factors for each group of materials and the indoor air concentration based on a product usage scenario. In total, the emissions data in this report represent 18 wood, 14 paint, and 17 insulation materials tested between 2012/13 and 2013/14.

Terpenes and oxygenated compounds (e.g., alcohols, aldehydes, and acids) were detected more frequently with high emission factors in wood products. Paint products also emitted oxygenated compounds (1-butanol, acetone, formaldehyde, and acrolein) frequently. However, the compounds with the highest emission factors and detection frequencies in paint products were glycols and esters (e.g., Texanol and 1,2-propanediol), which are known to be major ingredients of latex paints. While there were also various compounds detected in insulation products (e.g., 1-butanol, 2-propanol, Texanol, acetaldehyde, and formaldehyde), the emission factors of these compounds were relatively low.

Among Health Canada's "priority VOCs" [1], the following compounds were detected with a detection frequency (DF) > 10%:

- One alcohol: **2-propanol** (DF above zero: 39%, DF above method detection limit: 33%)
- Six aromatics: **benzene** (53%, 14%), **xylenes** (*o*-xylene: 45%, 6%, *m&p*-xylene: 71%, 14%), **ethylbenzene** (71%, 12%), **naphthalene** (39%, 2%), **toluene** (76%, 24%)
- one chlorinated compound: **chloroform** (10%, 6%)
- Four aldehydes: **acetaldehyde** (88%, 86%), **formaldehyde** (96%, 94%), **propanal** (76%, 61%), and **acrolein** (55%, 45%)

Two chlorinated compounds were detected in one or two materials included:

- Two chlorinated compounds: **1,2-dichloroethane** (4%, 4%) and **1,4-dichlorobenzene** (8%, 2%)

The compounds that were never detected or excluded were:

[1] "Priority VOCs" were identified by Health Canada's Indoor Air Contaminant Assessment Program as substances warranting further investigation, with respect to sources and risk assessment. The term "priority" does not imply that the VOC poses greater health risks than VOCs not identified as such.

- Chlorinated compounds: carbon tetrachloride, dichloromethane, tetrachloroethylene and 1,1,2,2-tetrachloroethane
- 1,3-Butadiene, propylene oxide and ethylene oxide (not analyzed due to analytical issues and lack of detection in the previous study)

Due to the high background levels and reduced collection efficiencies of the sampling method, the presence of acrolein needs to be interpreted with caution.

On average, a dark-colored paint product had ~60% higher emission factors than those of a white paint product. No significant difference was found between a light-colored and a white paint product. The application mode significantly affected the emissions of two abundant VOCs in specimens made of a two-component spray foam sealant. The emission factor of triethyl phosphate increased by a factor of 2 - 7 when the foam sealant was applied with an off-ratio of component A and B (0.25:1 from 1:1) or low temperatures (16 and 5 °C). This demonstrates that the VOC emissions can be high when the spray foam sealant or insulation is not applied properly.

The material usage scenario analysis coupled with the power-law decay models for emission factor led to estimations of indoor air concentrations. The 1-year average indoor concentrations were in good agreement with IAQ levels measured in Canadian homes for acetaldehyde, formaldehyde, acrolein, and naphthalene. Wood products (I-beam joist, subfloor, and interior door) were identified as the major sources of these aldehydes. Paint was also the main contributor for acrolein and formaldehyde. Carpet and oil-based varnish were identified as a main source for naphthalene.

Contrary to aldehydes, the 1-year means of other aromatic compounds (benzene, toluene, ethylbenzene, and xylenes) were lower than the measured concentrations in the literature by one order of magnitude. Considering the low detection frequency of aromatic compounds in the current emissions tests, this may imply that building materials included in this study are not the dominant sources of aromatic compounds indoors.

As pointed out in the previous report, the lack of information on the product usage patterns in Canadian homes, offices and schools was identified as a major source of uncertainties associated with predicting indoor air concentrations modeling from measured emission factors. The wide ranges of measured emission factors within the product classes emphasize the need for the variability of emissions to be taken into account in material selections and IAQ modeling.

Material Emissions Data:
VOCs from Wood, Paint, and Insulation Materials

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1 Introduction

Data from emissions testing conducted by NRC in 2012/2013 of 52 building materials was used to model resulting indoor concentrations in a typical Canadian house (Won et al., 2013). These results helped to provide updated identification of major indoor VOC sources, and led to the selection of paints and wood-based products as priority materials for further evaluation. The significant usage of insulation materials in residential construction, coupled with a lack of emissions data for this product group, led to the selection of insulation as a 3rd class of materials to be studied in greater detail.

A total of 30 additional materials were therefore tested for VOC emissions in 2013/14 (10 paints, 8 wood-based materials and 12 insulation products). In accordance with ASTM D5116-2010, the test method employed small-scale chambers operated for 4 – 8 days under standard conditions (23 °C, 50% RH and 1 air change per hour). As with the previous report (Won et al., 2013), the target compounds included 121 VOCs with the emphasis on formaldehyde, acetaldehyde, benzene, and acrolein, concentrations of which in Canadian homes were measured to be higher than indoor air reference levels (IARL) by Health Canada.[2]

Additionally, different factors that could potentially impact VOC emissions were tested for paint and spray polyurethane foam (SPF). The impact of tinting on emissions from paint was examined to test the hypothesis that dark colored paints tend to have higher emissions than light colored ones. SPF insulation has been reported to emit odorous compounds if it is not applied correctly (Holiday, 2011). The impacts of the SPF application methodology on VOC emissions were tested with a “do-it-yourself” two-component spray foam insulation product. Test specimens were applied either with strict adherence to manufacturer’s instructions or with modifications to application temperature and ratio of two components.

This report summarizes the test results with test conditions and material information. To compare emission strength of different materials and compounds, the emission factors measured at 24 hour were used since data sets at later hours (e.g., 96 hour) tend to be subject to bigger analytical uncertainties due to their low concentrations. Indoor air concentrations in Canadian homes were estimated using empirical emission models based on all emission factors measured for the 4 – 8 day test periods.

[2] Personal communication with Health Canada staff

2 Methods

2.1 Test procedures

2.1.1 List of test specimens

The test materials were purchased at several retail outlets in Ottawa between October and December 2013 and tested between October 2013 and February 2014. Two exceptions were two spray foam insulation specimens donated by a manufacturer. The specimens (SPF2 and 3) were applied at the manufacturer's location and sent to the NRC lab within 1 day after application. Table 1 summarizes 30 test specimens grouped into three categories, including wood, insulation and paint. More detailed information on each specimen can be found in Table A. 1.

Table 1: Summary of test materials

Category	Subcategory	Detailed subcategory	Test ID
Wood (8)	Kitchen furniture & Door (3)	Interior door (1)	DI1 (hollow core, primed, high-density fiberboard, HDF)
		Kitchen cabinet door (1)	KC1 (primed, HDF)
		Kitchen countertop (1)	CT3 (laminate, plastic coated-paper on particle board)
	Structural (5)	I-beam joist (4)	IB3 (pine block, OSB web, 9.5" H, light-colored resin)
			IB4 (pine block, OSB web, 9.5" H, open joist, light-c resin)
			IB5 (pine block, OSB web, 9.5" H, dark-colored resin)
			IB6 (pine block, OSB web, 9.5" H, dark-colored resin)
		Subfloor (1)	OSB10 (OSB with foam – extruded polystyrene)
Insulation (12)	Loose (4)	Organic (2)	INS3 (recycled denim)
			INS4 (cellulose)
		Inorganic (2)	INS5 (stone wool)
			INS9 (fiberglass)
	Foam board (3)	Polystyrene board (2)	INS7 (extruded polystyrene, XPS)
			INS8 (expanded polystyrene, EPS)
		Polyisocyanurate (1)	INS10 (polyisocyanurate)
	Other (1)		INS6 (high performance, reflective)
	Spray foam (4)	One-component (1)	SPF4 (fills larger gaps, triple expanding foam)
		Two-component (4)	SPF1 (low pressure, do-it-yourself product, 4 variations)
			SPF2 (closed cell, rigid, soya)
			SPF3 (open cell, semi-rigid, low pressure)
Paint (10)	Latex (white) [1] (10)	VOC content ~0 g/L [2]	PT15 (paint & primer in one)
		VOC content < 5 g/L	PT16 (base for dark color)
			PT16c1 (PT16 + dark colorant)
		VOC content < 50 g/L	PT18 (recycled)
		VOC content < 150 g/L	PT13 (base for light color)
			PT13c1 (=PT13 + dark colorant) [3]
			PT13c2 (=PT13 + light colorant) [3]
			PT13p (=PT13 on primed substrate)
			PT17 ("low VOC", eggshell, same as PT12 tested previously)
		VOC content < 250 g/L	PT14 (chalkboard paint)

[1] Paints are latex-based and white unless specified otherwise; [2] VOC contents are from manufacturers; [3] A variant of PT13, that is, PT13 with a dark or light colorant.

2.1.2 50-L chamber tests

The material emissions test with 50-L chambers was conducted in accordance with ASTM D 5116-10, which is the standard guide for small-scale environmental chamber determinations of organic emissions from indoor materials/products (ASTM, 2010). Four electro-polished stainless steel 50 L chambers were operated simultaneously. The test conditions were set at 50% RH, 23 ^{o}C and 1 air change per hour. Three chambers were enclosed in an environmental chamber and the fourth chamber was placed in a room, both of which were maintained at a constant temperature of 23 ± 0.5 ^{o}C.

Clean air for the chambers was supplied using an Aadco Model 737 Pure Air Generator. The humidity of the supply air was maintained at a constant level of 50 ± 0.25% RH through the use of mass flow controllers to blend separate streams of Aadco air (one dry and one saturated by bubbling air through HPLC-grade water).

A test lasted for 4 days with air sampling at 0 h, 3 h, 6 h, 1 day, 2 days, 3 days and 4 days for wood and insulation materials. For paint, the test duration was 7 or 8 days with an additional 7-day or 8-day sample to cover the longer decay period of paint samples. One background air sample collected for each test was to verify chamber cleanliness. Detailed information on test parameters is summarized in Table A. 2 in the appendix.

2.1.3 Preparation of wood materials

For three of the wood materials (DI1, KC1, and OSB10), the test specimen was enclosed in an electro-polished stainless steel sample holder (~0.2 m x 0.1 m). The specimen edges were sealed with the specimen holder to ensure a tight fit such that only the upper surface was exposed to the chamber air (Figure 1). The upper surface area was considered as the area for emissions. Due to their irregular shape, the I-beam joist materials were tested without a specimen holder (Figure 2). The kitchen countertop specimen was also tested without a specimen holder since one edge and the bottom of the countertop (both uncoated) are typically exposed to air (Figure 3). In both cases without a specimen holder, all the surface areas exposed to air were measured.

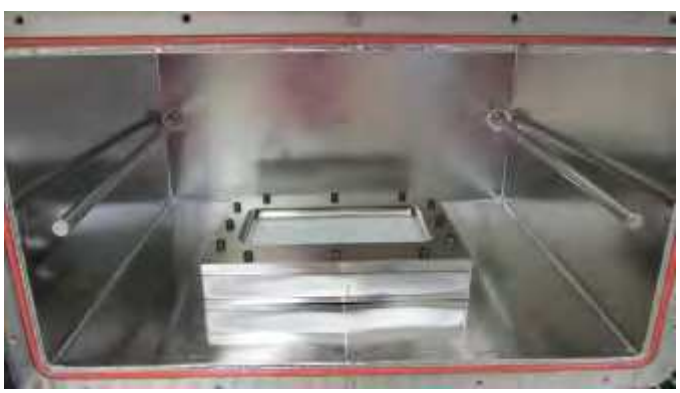


Figure 1: Wood material specimen in a specimen holder (door, kitchen cabinet, & subfloor)

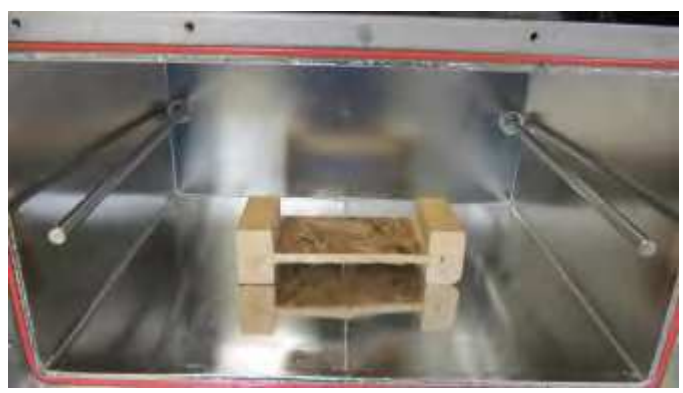


Figure 2: I-beam joist specimen without a holder

Figure 3: Kitchen countertop without a holder

Figure 4: Paint specimen applied on a gypsum board

2.1.4 Preparation of paint specimens

Paints were applied on a 1/2" thick standard gypsum board (~0.2 m x 0.1 m; Figure 4) for which background emissions had been determined to be negligible compared to strong emissions from liquid-based materials such as paint. Since the edges of the gypsum board substrate can act as a sink of emitted compounds, sealing of substrate edges was required. The regular specimen holder used for dry materials could not be used since it was designed to be in contact with the wet surface, which could lead to contamination and replacement of seals for every test. Therefore, a metal holder that can fit the substrate tightly without any contact with the wet surface was used. However, it should be noted that the edge sealing with the new metal holder was likely to be less tight than the regular specimen holder.

2.1.5 Preparation of insulation materials

For loose fit insulations such as recycled denim, cellulose and stone wool, the specimen covered the entire bottom surface of the chamber (Figure 5). For insulation boards and cured spray foam insulation specimens prepared professionally, the specimens were cut to fit the electro-polished stainless steel sample holder with edges sealed (~0.2 m x 0.1 m) (Figure 6). Two "do-it-yourself" (DIY) spray foam insulation and sealant products (SPF1 and SPF4) were applied in galvanized steel specimen holders and tested within 1 hour with the intention of capturing early emissions of blowing agents and amine catalysts. The two-component DIY spray foam insulation (SPF1) was applied in a galvanized metal specimen holder (~0.2 m width x 0.254 m length x 0.05 m height) covered with aluminum foil (Figure 7). The one-component DIY spray foam intended for large gaps around doors and windows (SPF4) was applied in multiple smaller galvanized holders (0.0254 m width x 0.254 m length x 0.0254 m height) to simulate large holes (Figure 8). While effort was made to measure the area of the irregular surfaces, the area measurement is likely to be less accurate than that of flat surface.

Figure 5: Insulation covered the entire bottom of the chamber

Figure 6: Insulation board inside a specimen holder

Figure 7: Two-component DIY spray foam insulation

Figure 8: One-component DIY spray foam sealant

2.2 Chemical analysis

The target VOC list is similar to that in the previous study (Won et al., 2013) with three exclusions; very volatile organic compounds such as 1,3-butadiene, ethylene oxide and propylene oxide were excluded since VVOCs require a low cryo-focusing temperature (-120 °C), leading to instability and difficulty in the chemical analysis. Also, no or very low detection frequency of the three compounds in the previous study played a role in exclusion.

Consequently, a total of 121 VOCs were analyzed using three different sampling media, including two-layer sorbent tube (Tenax TA and Carbograph 5D) for VOCs, Tenax TA tube coated with pentafluorophenylhydrazine (PFPH) for acrolein and a cartridge coated with 2,4-dintrophenylhydrazine (DNPH) for formaldehyde, acetaldehyde and propanal (Table 2).

PFPH coating was achieved by passing a nitrogen stream (40 mL min^{-1}) through a bubbler containing PFPH maintained at 50 °C for 20 min. Since acrolein was seen to break-through the PFPH-coated sampling tubes at a volume greater than 0.5 L, two tubes were connected if the sampling volume was greater than 0.5 L.

The sampled tubes (Tenax/Carbograph and Tenax coated with PFPH) were thermally desorbed and analyzed with gas chromatography-mass spectrometry (TD/GC/MS). DNPH cartridges were extracted with acetonitrile and analyzed with high performance liquid chromatography with a UV detector (HPLC/UV).

The chemical properties, structures and CAS reference numbers for the 121 compounds are listed in Table 3.

Table 2: Sampling media and chemical analysis methods

	Group 1	Group 2	Group 3
Target compounds	• VOCs: compounds between hexane and hexadecane	• Acrolein	Low molecular aldehydes • Formaldehyde • Acetaldehyde • Propanal
Sampling media	2-Layer sorbent tube (Tenax TA & Carbograph 5TD)	Tenax TA tube coated with PFPH (40 mL min^{-1} for 20 min at 50 °C)	Commercial cartridge coated with DNPH
Sampling volume	• 2 to 6 L (20 to 25 min at 80 to 250 mL min^{-1} for dry materials) • 1.5 to 6 L (10 to 25 min at 150 to 250 mL min^{-1} for liquid products)	• 0.5 L (single tube) at 20 mL min^{-1} • 2 L (two tubes in series) at 20 mL min^{-1}	18 to 36 L (60 to 120 min at 300 mL min^{-1})
Extraction	Thermal	Thermal	Liquid
Analysis	GC/MS	GC/MS	HPLC/UV

Table 3: Properties and method detection limits of 121 NRC ME target compounds

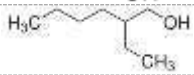
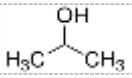
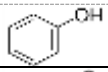
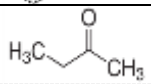
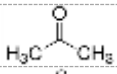
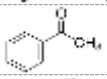
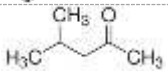
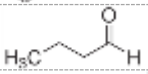
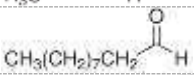
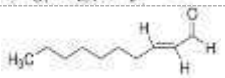
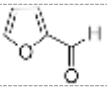
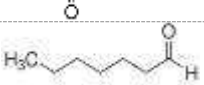
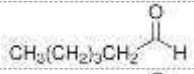
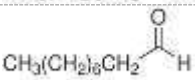
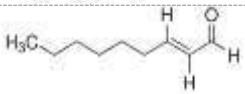
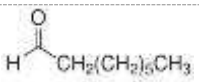
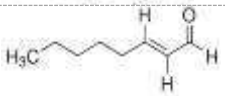
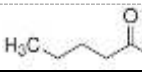
#		CAS # [a]	Compound	MW[b]	BP[c]	Qion[d]	MDL (ng)[e]	Mixture[j]	Structure
1	Alcohols[f]	71-36-3	1-Butanol	74	114	56	1.5	JMix	
2		71-23-8	1-Propanol	60	90	59	2.5	JMix	
3		104-76-7	Hexanol, 2-ethyl-1-	130	189	57	3.1	B	
4		67-63-0 [i]	2-Propanol	60	67	45	1.4	JMix	
5		64-17-5	Ethanol	46	65	45	2.4	JMix	CH_3CH_2OH
6		108-95-2	Phenol	94	170	94	1.7	B	
7	Aldehydes & ketones[f]	78-93-3	Methylethyl ketone	72	70	43	1.7	JMix	
8		67-64-1	Acetone	58	45	43	1.5	JMix	
9		98-86-2	Acetophenone	120	190	105	10.4	A	
10		108-94-1	Cyclohexanone	98	155	55	11.3	A	
11		108-10-1	Methylisobutyl ketone	100	105	43	2.0	JMix	
12		100-52-7	Benzaldehyde	106	181	106	12.6	A	
13		123-72-8	Butanal	72	85	44	13.3	A	
14		112-31-2	Decanal	156	216	82	1.4	JMix	
15		3913-81-3	2-Decenal	154	222	55	14.1	A	
16		98-01-1	Furfural	96	144	96	10.1	A	
17		111-71-7	Heptanal	114	155	70	3.4	A	
18		66-25-1	Hexanal	100	132	56	14.6	A	
19		124-19-6	Nonanal	142	196	57	1.7	JMix	
20		18829-56-6	2-Nonenal	140	203	55	6.6	A	
21		124-13-0	Octanal	128	176	84	7.8	A	
22		2548-87-0	2-Octenal	126	182	55	10.2	A	
23		110-62-3	Pentanal	86	109	44	7.2	A	

Table 3 (continued)

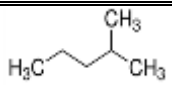
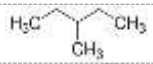
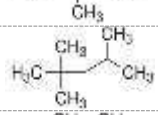
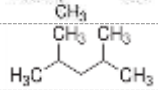
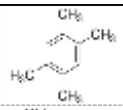
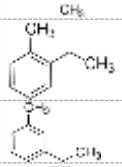
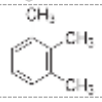
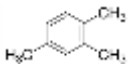
#		CAS # [a]	Compound	MW[b]	BP[c]	Qion[d]	MDL (ng)[e]	Mixture[j]	Structure
24	Aliphatic Hydrocarbons[f]	107-83-5	Pentane, 2-methyl-	86	56	71	0.7	B	
25		96-14-0	Pentane, 3-methyl-	86	56	57	0.5	B	
26		540-84-1	2,2,4-Trimethylpentane	114	81	57	0.9	JMix	
27		108-08-7	2,4-Dimethylpentane	100	66	57	0.4	JMix	
28		124-18-5	Decane	142	165	57	1.7	JMix	$CH_3(CH_2)_8CH_3$
29		112-40-3	Dodecane	170	206	57	1.4	JMix	$CH_3(CH_2)_{10}CH_3$
30		142-82-5	Heptane	100	96	71	0.8	JMix	$CH_3(CH_2)_5CH_3$
31		544-76-3	Hexadecane	226	277	57	0.5	JMix	$CH_3(CH_2)_{14}CH_3$
32		110-54-3	Hexane	86	72	57	1.3	JMix	$CH_3(CH_2)_4CH_3$
33		111-84-2	Nonane	128	143	57	1.8	JMix	$CH_3(CH_2)_7CH_3$
34		111-65-9	Octane	114	120	43	1.7	JMix	$CH_3(CH_2)_6CH_3$
35		629-62-9	Pentadecane	212	261	57	0.8	JMix	$CH_3(CH_2)_{13}CH_3$
36		629-59-4	Tetradecane	198	243	57	0.9	JMix	$CH_3(CH_2)_{12}CH_3$
37		629-50-5	Tridecane	184	225	57	1.1	JMix	$CH_3(CH_2)_{11}CH_3$
38		1120-21-4	Undecane	156	186	57	1.9	JMix	$CH_3(CH_2)_9CH_3$
39	Aromatic hydrocarbons[f]	95-93-2	Benzene, 1,2,4,5-tetramethyl-	134	191	119	1.2	JMix	
40		611-14-3	Toluene, 2-ethyl-	120	170	105	1.4	JMix	
41		620-14-4	Toluene, 3-ethyl-	120	170	105	1.4	JMix	
42		622-96-8	Toluene, 4-ethyl-	120	170	105	2.3	JMix	
43		4994-16-5	Cyclohexene, 4-phenyl	158	240	104	2.2	B	
44		71-43-2 [e]	Benzene	78	102	78	1.6	JMix	
45		526-73-8	Benzene, 1,2,3-trimethyl-	120	170	105	1.3	JMix	
46		95-63-6	Benzene, 1,2,4-trimethyl-	120	170	120	1.6	JMix	
47		95-47-6 [e]	Benzene, 1,2-dimethyl-	106	148	91	1.5	JMix	

Table 3 (continued)

#		CAS # [a]	Compound	MW[b]	BP[c]	Qion[d]	MDL (ng) [e]	Mixture[j]	Structure
48	Aromatic Hydrocarbons (continued)[f]	108-67-8	Benzene, 1,3,5-trimethyl-	120	170	105	2.0	JMix	
49		108-38-3 [e]	Benzene, 1,3&(4)-dimethyl-	106	148	91	4.5	JMix	
50		98-82-8	Benzene, isopropyl	120	157	105	3.1	B	
51		103-65-1	Benzene, propyl-	120	170	91	2.5	B	
52		100-41-4 [e]	Ethylbenzene	106	148	91	1.8	JMix	
53		91-20-3	Naphthalene	128	232	128	3.8	B	
54		99-87-6	p-Cymene	134	178	119	3.5	B	
55		100-42-5	Styrene	104	147	104	2.2	JMix	
56		108-88-3	Toluene	92	126	91	1.4	JMix	
57		98-83-9	2-Phenylpropene	118	163	118	3.9	B	
58		95-13-6	Indene	116	182	115	3.3	B	
59	Esters[f]	108-21-4	Acetic acid, 1-methylethyl ester	102	88	43	1.7	B	
60		111-15-9	Acetic acid, 2-ethoxyethyl ester	132	149	59	2.6	B	
61		123-86-4	Acetic acid, butyl ester	116	126	43	2.4	JMix	
62		141-78-6	Acetic acid, ethyl ester	88	78	43	1.6	JMix	
63		80-62-6	Methyl methacrylate	100	94	69	2.1	B	
64		103-09-3	2-Ethylhexyl acetate	172	199	70	3.3	B	
65		96-48-0	Butyrolactone	86	177	42	2.5	B	
66		25265-77-4	Texanol	216	258	71	3.6	B	
67		6846-50-0	TXIB *	286	272	71	2.2	B	

Table 3 (continued)

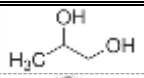
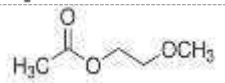
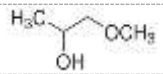
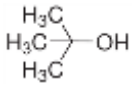
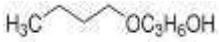
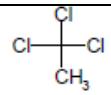
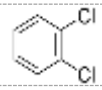
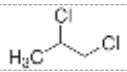
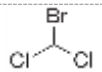
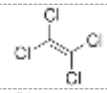
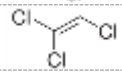
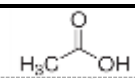
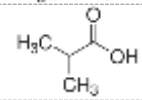
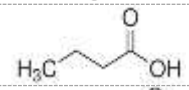
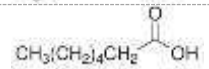
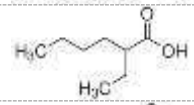
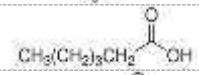
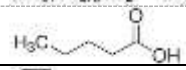
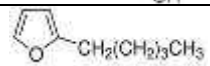
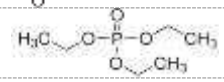
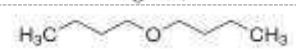
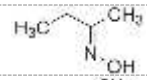
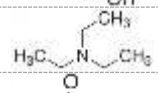
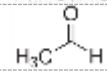
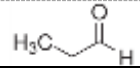
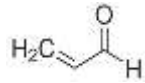
#		CAS # [a]	Compound	MW[b]	BP[c]	Qion[d]	MDL (ng)[e]	Mixture[j]	Structure
68	Glycols, GlycoEthers[f]	57-55-6	1,2-Propanediol	76	155	45	6.2	A	
69		110-49-6	2-Methoxyethylacetate	118	127	43	10.7	A	
70		111-90-0	Diethylene glycol monoethyl ether	134	202	45	3.0	A	
71		107-98-2	Propanol, 1-methoxy-2-	90	117	45	6.0	A	
72		111-76-2	Ethanol, 2-butoxy-	118	181	87	4.9	A	$CH_3CH_2CH_2CH_2OCH_2CH_2OH$
73		112-34-5	Ethanol, 2-butoxyethoxy-	162	240	45	4.0	A	$CH_3CH_2CH_2CH_2OCH_2CH_2OCH_2CH_2OH$
74		110-80-5	Ethanol, 2-ethoxy-	90	138	59	8.7	A	$CH_3CH_2OCH_2CH_2OH$
75		109-86-4	Ethanol, 2-methoxy-	76	115	45	6.0	A	$CH_3OCH_2CH_2OH$
76		75-65-0	Propanol, 2-methyl-2-	74	70	59	11.0	A	
77		5131-66-8	Propylene glycol monobutyl ether	132	183	57	7.9	A	
78	Halo Carbons[f]	71-55-6	1,1,1-Trichloroethane	133	66	97	0.4	JMix	
79		95-50-1	1,2-Dichlorobenzene	147	182	146	3.7	B	
80		107-06-2 [i]	1,2-Dichloroethane	99	105	62	1.0	JMix	$ClCH_2CH_2Cl$
81		78-87-5	1,2-Dichloropropane	113	101	63	1.4	JMix	
82		106-46-7 [i]	1,4-Dichlorobenzene	147	175	146	1.6	JMix	
83		75-27-4	Bromodichloromethane	164	118	83	2.5	JMix	
84		56-23-5 [i]	Carbon tetrachloride	154	80	117	0.9	JMix	CCl_4
85		67-66-3 [i]	Chloroform	119	91	83	0.7	JMix	$CHCl_3$
86		124-48-1	Dibromochloromethane	208	143	129	3.1	JMix	$ClCHBr_2$
87		75-09-2 [i]	Dichloromethane	85	80	84	1.0	JMix	CH_2Cl_2
88		127-18-4 [i]	Tetrachloroethylene	166	114	166	1.0	JMix	
89		79-01-6	Trichloroethylene	131	85	130	1.0	JMix	
90		79-34-5 [i]	1,1,2,2-Tetrachloroethane	168	150	83	4.0	B	[illegible]

Table 3 (continued)

#		CAS # [a]	Compound	MW[b]	BP[c]	Qion[d]	MDL (ng)[e]	Mixture[j]	Structure
91	Cyclo Alkanes[f]	108-87-2	Methylcyclohexane	98	107	83	2.7	B	
92		110-82-7	Cyclohexane	84	90	84	1.2	B	
93		1678-93-9	Cyclohexane, butyl-	140	174	83	2.5	B	
94		1678-91-7	Cyclohexane, ethyl-	112	130	83	2.4	B	
95		1678-92-8	Cyclohexane, propyl-	126	153	83	1.8	B	
96		493-02-7 (trans) 91-17-8 (cis)	Decahydronaphthalene	138	180	138	3.3	B	
97	Terpenes[f]	80-56-8	alpha-Pinene	136	157	93	1.6	JMix	
98		99-86-5	alpha-Terpinene	136	169	121	5.6	B	
99		127-91-3	beta-Pinene	136	151	93	1.3	JMix	
100		99-85-4	gamma-Terpinene	136	169	93	2.8	B	
101		13466-78-9	3-Carene	136	157	93	2.5	B	
102		79-92-5	Camphene	136	151	93	1.6	B	
103		5989-27-5	Limonene	136	168	68	1.9	JMix	

Table 3 (continued)

#		CAS # [a]	Compound	MW[b]	BP[c]	Qion[d]	MDL (ng)[e]	Mixture[j]	Structure
104	Acids[f]	64-19-7	Acetic acid	60	122	60	11.1	A	
105		79-31-2	Isobutyric acid	88	154	73	4.2	A	
106		107-92-6	Butyric acid	88	167	60	5.1	A	
107		111-14-8	Heptanoic acid	130	227	60	7.1	A	
108		149-57-5	2-Ethylhexanoic acid	144	234	88	6.4	A	
109		142-62-1	Hexanoic acid	116	208	60	3.7	A	
110		109-52-4	Pentanoic acid	102	188	60	6.8	A	
111	Other[f]	3777-69-3	Furan, 2-pentyl	138	176	81	7.0	B	
112		872-50-4	2-Pyrrolidinone, 1-methyl-	99	202	99	1.0	B	
113		123-91-1	1,4-Dioxane	88	103	88	1.9	B	
114		78-40-0	Triethyl phosphate	182	233	99	3.0	B	
115		142-96-1	n-Butyl ether	86	56	57	2.0	B	
116		96-29-7	2-Butanone oxime	87	157	42	12.7	A	
117		121-44-8	Triethylamine	101	95	86	7.6	A	
118	DNPH[g]	75-07-0 [i]	Acetaldehyde	44	34		6.6	TO11	
119		50-00-0	Formaldehyde	30	10		10.0	TO11	
120		123-38-6 [i]	Propanal	58	60		13.3	TO11	
121	PFPH[h]	107-02-8 [i]	Acrolein	56	58		0.9	Acr	

[a] CAS #: Chemical Abstracts Service number, [b] MW: molecular weight, [c] BP: boiling point from EPI Suite (US EPA, 2011); [d] Qion: quantifying ions used for quantification; [e] MDL: method detection limit; [f] Tenax/Carbograph 5TD sampling; [g] DNPH sampling; [h] PFPH sampling; [i] Health Canada targets; [j] Five separate calibration mixtures were used: custom-made mixture A (A), custom-made mixture B (B), commercial Japanese indoor air standards mixture (JMix), TO-11 aldehyde/ketone-DNPH mixture (TO11), and PFPH-acrolein mixture (Acr)

*TXIB: 2,2,4-Trimethyl-1,3-pentanediol diisobutyrate

2.2.1 Two-layer sorbent tube sampling and analysis

Two-layer sorbent tubes (178 x 6 x 4 mm) packed with Carbograph 5TD (180 mg) and Tenax TA (106 mg) were purchased from CAMSCO. Sampling was conducted using a mass flow controlled pump at 100 to 150 mL m^{-1} for 10 to 25 min, leading to a sampling volume of 1.5 to 2 L when the concentrations were expected to be relatively high. The sampling volume was increased to ~6 L at 250 mL min^{-1} for samples with relatively low concentrations (Table 2).

Air samples collected on sorbent tubes were thermally desorbed and analyzed with a GC/MS system, including a Gerstel thermal desorption unit (TDS) connected with an autosampler (TDS-A), an Agilent 6890 Gas Chromatograph equipped with a DB-624 capillary column (30 m × 0.25 mm I.D. × 1.4 µm thickness), and a 5973N Mass Selective Detector. The desorbed analytes were injected using a Gerstel programmable temperature vaporizer called a Cooled Injection System (CIS), which concentrated the sample prior to injection onto the Agilent 6890 column. The Gerstel system was operated in the TDS splitless /CIS split mode (split ratio of 20:1) and the MS was operated in the full scan mode (*m/z* 35 to 300).

Temperature profiles for the thermal desorption and GC/MS analyses are as follows:

• Thermal desorption conditions: initial temperature of 30 °C to a final temperature of 300 °C with a rate of 60 °C min^{-1} with a holding time of 5 min at the end.

• CIS conditions: initial temperature of -90 °C to a final temperature of 300 °C with a rate of 12°C s^{-1} with a holding time of 3 min at the end.

• GC conditions: an initial temperature of -10 °C holding 4 min, then increasing to a temperature of 230 ^{o}C with a rate of 6°C min^{-1}, then increasing at 15°C min^{-1} to a final temperature of 250 ^{o}C and holding for 2 min.

Calibration of 121 compounds was performed using three sets of liquid mixtures. For the calibration of regular VOCs, a commercial calibration mixture (Japanese Indoor Air Standards mixture; 100 µg mL^{-1} each in methanol: water = 19: 1) and two custom-made standard mixtures (A and B, 500 µg mL^{-1} for each chemical in methanol) were purchased from Supelco (Table 3). Each of these standard mixtures was diluted to accommodate the GC/MS analysis conditions and target analytes in samples.

The calibration liquid mixture was injected onto the glass frit of the two-layer sorbent tube while air was drawn into the tube at 50 - 100 mL min^{-1} for 2 minute. A 5-point calibration was achieved by introducing five different volumes of calibration mixture onto the tubes, resulting in five concentration levels (Table 4). Linear calibration curves were obtained with an R^2 value between 0.90 and 0.99, with lower R^2 values for acids, esters and glycol ethers.

Compounds were identified by comparing their mass spectrum with the NIST Mass Spectral Library (NIST98, version 1.7a) and retention time with those from the standard mixtures. They were identified by target ions and quantified by peak areas from the quantification ion. The quantifying ions are summarized in Table 3.

Table 4: Ranges and correlation coefficients (R^2) of calibration curves

Type of mixture	Custom Mix A Liquid Mixture [1]	Custom Mix B Liquid Mixture [1]	Japanese IAQ Mix Liquid Mixture [1]
Range & R^2 value	25-250 ng (R^2 : 0.90 – 0.99)	10-100 ng (R^2 : 0.93 – 0.99)	5-50 ng (R^2 : 0.93 -0.99)

[1] See Table 3 for the list of different calibration mixtures

2.2.2 PFPH tube sampling and analysis

A Gerstel Tenax TA tube (178 x 6 x 4 mm) was coated with 1.4 µmol of PFPH using an in-house coating system (Won and Yang, 2012). The sampling volume was either 0.5 L (single tube) or 2 L (two tubes in series) at 20 mL min^{-1}. The reduced sampling volume and rate were to prevent break-through as discussed in Section 2.2.4.3.

After sampling, all samples were stored at room temperature at least for three days to ensure complete reaction of collected compounds and PFPH before being analyzed. Samples collected on PFPH-coated tubes were thermally desorbed and analyzed using a TD-GC/MS system: Gerstel thermal desorption unit (TDS-3) connected with an autosampler (TDS-A), an Agilent 6890 Gas Chromatograph equipped with a DB-5MS capillary column (30 m × 0.25 mm I.D. × 0.25 µm thickness), and a 5973N Mass Selective Detector. The Gerstel system was operated in the TDS splitless /CIS split mode (split ratio of 20:1) and MS was operated in Selected Ion Mode by monitoring three ions for acrolein-PFPH derivative derivatives (155, 182 and 236).

Temperature profiles for the thermal desorption and GC-MS analyses are as follows:

• Thermal desorption condition: an initial temperature of 30°C to a final temperature 300 °C with a rate of 60°C min^{-1} with a holding time of 5 min at the end.

• CIS condition: an initial temperature of -50 °C to a final temperature of 300 °C with a rate of 12°C s^{-1} with a holding time of 15 min at the end.

• GC condition: an initial temperature of 30 °C holding 4 min to a temperature 100 °C with a rate of 7 °C min^{-1}, then to a final temperature of 300 ^{o}C with a rate of 8°C min^{-1}. The holding time at the final temperature was 5 min.

Calibration for acrolein was performed by analyzing Tenax tubes spiked with acrolein-PFPH derivative prepared in hexane. The liquid calibration standard was prepared by mixing acrolein (96.4% purity, provided by Supelco Inc.) with PFPH, of which the amount was at least 10 times more than the mole of acrolein in hexane. Calibration samples were prepared by injecting 1, 2.5, 5, 7.5 and 10 µL of the prepared liquid calibration solution onto Tenax tubes, resulting in five concentration levels from 5 ng to 50 ng of acrolein-PFPH derivative per sample. The calibration curves were then established by plotting the peak area of the quantification ion (*m/z* = 236 as quantification ion, and *m/z* = 155, 182, 236 as target ion) versus the injected mass from the calibration standard. For the acrolein-PFPH derivatives, correlation coefficient (R^2) of

calibration curves ranged from 0.95 to 0.99. Acrolein-PFPH peak in the test samples was identified by comparing its mass spectrum with the target ions, and quantified by the quantification ion.

2.2.3 DNPH cartridge sampling and analysis

Waters Sep-Pak XPoSure Aldehyde samplers, which contained acidified DNPH-coated silica, were used for sampling of low molecular carbonyl compounds. Sampling was conducted at 300 mL min^{-1} for 60 to 120 min to give sampling volumes of 18 to 36 L.

Analysis of carbonyl compounds was performed in accordance with ASTM D5197 and EPA TO-11. Exposed cartridges were washed with acetonitrile, and the eluate then analyzed by reverse phase HPLC with UV detection at 360 nm (Varian Model 9012 Solvent Delivery System/ 9050 Variable Wavelength UV-VIS Detector / Prostar 410 Autosampler; two Supelcosil LC-18 columns (25 cm x 4.6 mm, 5 μm) in series at 30 ^{o}C). A gradient of acetonitrile in water from 60% to 100% was used for separation of the carbonyl compounds. System calibration was performed using a six-point calibration from a commercial DNPH derivative mixture (TO-11/IP-6A Aldehyde/Ketone reference standard from Supelco, Inc). Linear calibration curves were produced with R^2 between 0.9997 and 0.9999.

2.2.4 Quality assurance and control analysis (QA/QC)

2.2.4.1 Method detection limit

The method detection limit (MDL) was determined in accordance with the Code of Federal Regulations established by US EPA (40CFR136 Appendix B) (US EPA, 1986). The MDL was determined by analyzing seven replicates of a calibration tube spiked with the lowest level of the calibration range. The MDL was calculated by multiplying the standard deviation of the seven measurements with Student's *t* value of 3.14. The resulting method detection limits are summarized in Table 3.

2.2.4.2 Background and blank samples

The quality control procedure involved the analysis of blank and background samples. Blank samples were analyzed for each run of GC/MS and HPLC/UV. Special care was given to PFPH tubes made in-house as they were reported to have high blank levels partly due to the impurities in coating materials and contamination during the coating process (Won et al., 2013). After a batch of tubes were coated with PFPH, a tube was set aside as a blank tube and later analyzed with sampled tubes to check the cleanliness of PFPH tubes.

The acrolein level in blank PFPH tubes ranged between 0.1 and 0.9 ng with an average of 0.6 ng. It is not clear why the blank level was reduced by a factor of ten, compared to the acrolein blank level of 7.1 ng in the previous report (Won et al., 2013). Possible reasons include reduced impurities in the PFPH source, reduced contamination by more frequent replacement of PFPH powder used for coating, reduced adsorption of PFPH by Tenax, and reduced reaction between PFPH and acrolein. The reduced sensitivity due to the last two factors is unlikely to be

compensated with the calibration since the acrolein calibration was done by injecting the acrolein-PFPH derivative formed in liquid onto a Tenax tube without PFPH coating. The reduced sensitivity appears to be in line with the observation that acrolein was detected less frequently and in relatively low levels in actual chamber tests compared to those in the previous tests (Won et al., 2013) for similar specimens (e.g., I-beam joists). On the other hand, this does not explain the observation that chamber background levels remained consistent over two years (i.e., averaging 1.2 $\mu g\ m^{-3}$ in 2013/14 and 1.1 $\mu g\ m^{-3}$ in 2012/13).

The DNPH cartridges showed the blank level of 20 ng for formaldehyde, 41 ng for acetaldehyde and 6 ng for propanal on average. In general, the DNPH blank levels were higher than MDL. To be consistent with the previous study, the blank correction was done for DNPH and PFPH samples. Tenax-Carbograph tubes did not show high levels of blank values above MDL except for benzene. The benzene blank level was 1.8 ng, which was slightly higher than MDL of 1.6 ng. Therefore, the blank correction was made for benzene only.

Background samples were collected in empty chambers prior to each test at the highest sampling volume employed for three sampling methods. In general, the background levels were higher than MDL for all three sampling methods. Background levels were subtracted from the chamber concentrations when the emission factor was estimated as shown in Section 2.3.1.

2.2.4.3 QA/QC for acrolein

In contrast to published results that the PFPH coating method is an accurate method for acrolein sampling with high sensitivity and high collection efficiency (Ho and Yu, 2004, Li et al., 2009, Pang et al., 2011), the collection efficiency was found to be much lower. In comparison to reported collection efficiencies of 99% at 54 mL min^{-1} (Ho and Yu, 2004) and 97% at 80 mL min^{-1} (Li et al., 2009), a much reduced collection efficiency was observed in this study when single tubes were used to collect sample volumes greater than 0.5 L.

The low collection efficiency was observed when air sampling with PFPH-coated Tenax TA tubes was performed at different sampling rates in a chamber, where the gas containing acrolein and acetone (1 ppm each) was mixed with air with a resulting concentration of 56 µg m^{-3}. The measured acrolein concentration was observed to decrease with increasing sampling rate between 2 and 100 mL min^{-1} for a sampling volume of 3 L (Figure 9). This indicates that the adsorption of acrolein vapor by PFPH on the Tenax TA is kinetically limited and breakthrough of acrolein is suspected even at a sampling rate of 5 mL min^{-1} when the sampling volume is 3 L.

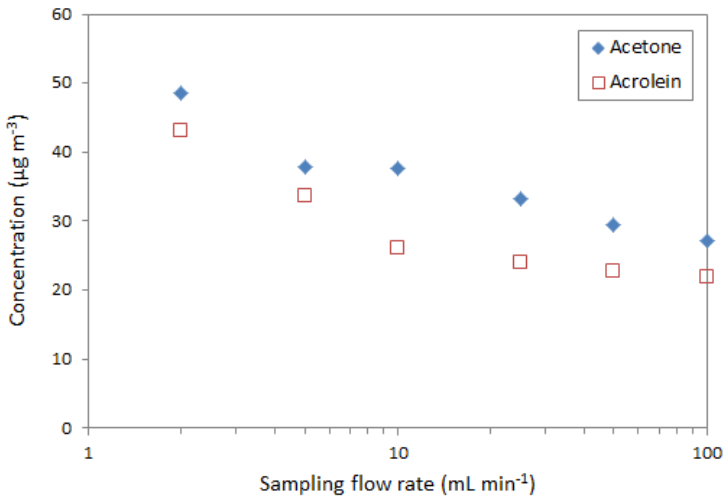


Figure 9: Acrolein concentrations at different sampling rates (sampling volume of 3 L)

Additional tests were conducted to determine the sampling rate and volume with minimal breakthrough. Air samples were taken with PFPH-coated Tenax TA tubes from a Tedlar bag, where 10 µL of acrolein solution (50 ng μL^{-1}) and 10 µL of water were injected and vaporized into 25 L of nitrogen. Three tubes in series were used for sampling for the combination of four flow rates (5 to 100 or 10 to 150 mL min^{-1}) and three sampling volumes (0.5, 1, and 2 L). The collection efficiency was calculated for a single tube and double tubes using Eq. (1) and Eq. (2), respectively.

$$CE = 100\% \left(1 - A_2/A_1\right) \quad (1)$$

$$CE = 100\% \left[1 - A_3/\left(A_1 + A_2\right)\right] \quad (2)$$

where *CE* is the collection efficiency (%), A_1, A_2, and A_3 are the acrolein amount (ng) in the front, middle, and back tube, respectively.

The collection efficiency for a single tube is presented in Figure 10. There was no breakthrough of acrolein between 5 to 150 mL min^{-1} for a sampling volume of 0.5 L. The break-through increased with increasing sampling volume. That is, the collection efficiency was ~80% and ~60% with a sampling volume of 1 and 2 L, respectively. Therefore, a sampling volume of 0.5 L was chosen for acrolein sampling with a single PFPH-coated tube.

When the acrolein concentration is low, it may be necessary to increase the sampling volume above 0.5 L to collect enough mass above the method detection limit. In this case, two tubes in series need to be used. Figure 11 shows the collection efficiency for double tubes (two tubes in series) at different sampling rates and volumes. For sampling volumes of 0.5 L and 1 L, there was no break-through for double tubes at a sampling rate between 2 and 150 mL min^{-1}. For a sampling volume of 2 L, break-through was observed for a sampling rate of 50 – 150 mL min^{-1}. Therefore, a sampling rate of 20 mL min^{-1} and a sampling volume of 2 L were chosen if the acrolein concentration was expected to be low and double tubes were used for sampling. The amounts of acrolein collected in two tubes were combined to calculate the concentration.

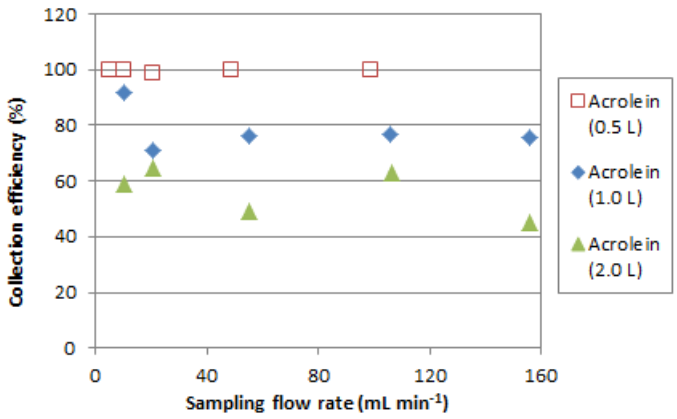


Figure 10: Collection efficiency of a single tube at different sampling rates

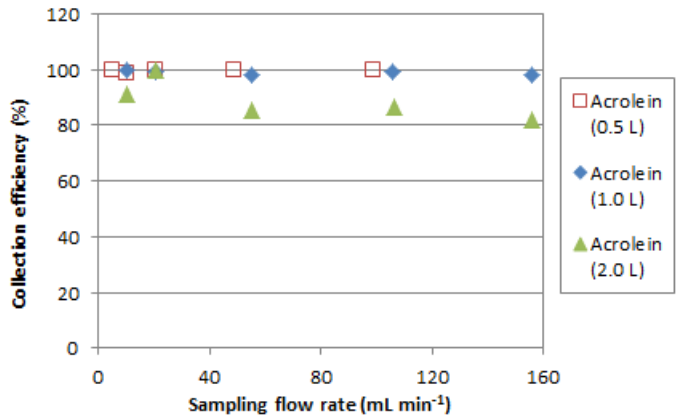


Figure 11: Collection efficiency of double tubes at different sampling rates

The collection efficiency is likely to suffer if there is not enough PFPH coating on a Tenax TA tube. The amount of PFPH coating was determined using the same analytical method as that for the PFPH-acrolein derivative. Typically, there was a 10-min delay in the mass spectrometry operation to protect the detector from a large peak of PFPH. For the PFPH analysis, the solvent delay was removed. The PFPH calibration was performed by spiking Tenax TA tubes with 1 to 10 µL of PFPH solution (50 µg μL^{-1} in methanol).

The effects of three coating parameters, including coating flow rate, temperature, and time, on the PFPH coating were examined. The amount of PFPH coating was observed to be proportional to the coating flow rate (Figure 12), temperature (Figure 13), and coating time (Figure 13). Based on the results, the coating parameters were selected to be 50 °C, 40 mL min^{-1} and 20 min, which led to the PFPH coating > 1,400 nmol. This is bigger than the literature values, i.e., 1,000 nmol of PFPH obtained with vapor coating at 20 mL min^{-1} and 20 min (Pang et al., 2011) and 510 nmol obtained in liquid coating (Ho and Yu, 2004).

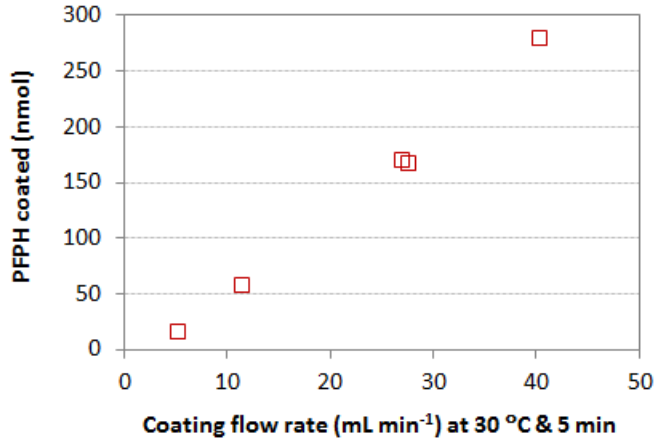


Figure 12: Amount of PFPH coating for different coating flow rates

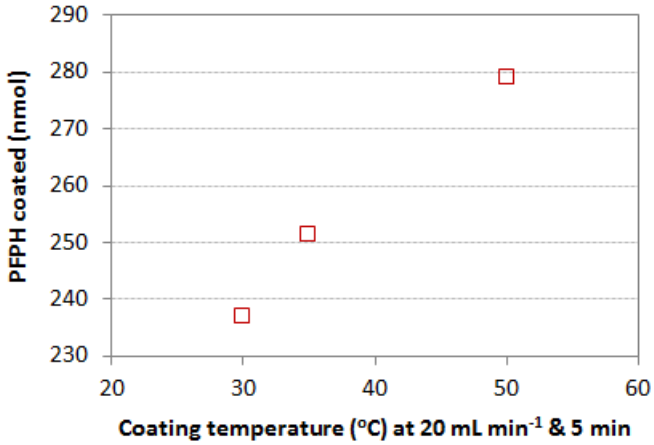


Figure 13: Amount of PFPH coating for different coating temperatures

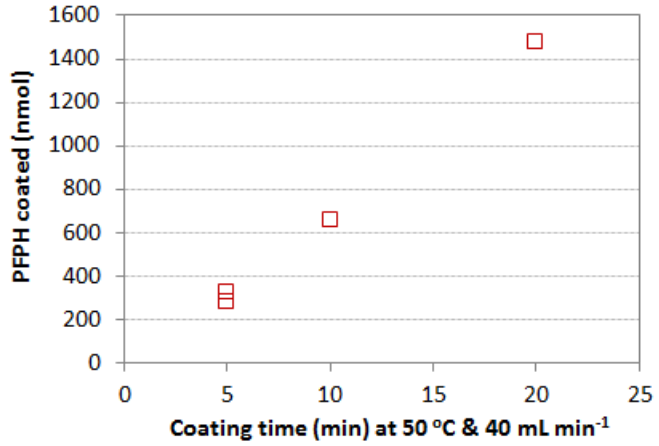


Figure 14: Amount of PFPH coating for different coating times

Tenax TA tubes can deteriorate over time and, therefore, the age of tubes may affect the PFPH coating. Figure 15 presents the amount of PFPH per tube coated at 50 °C and 40 mL min^{-1} for 20 min for brand-new and used Tenax TA tubes. It was shown that the PFPH coating amount was ~20% higher with brand-new Tenax tubes. However, both brand-new and used tubes had more than 1,400 nmol of PFPH, which corresponds to 78,400 ng of acrolein and are expected to be enough for acrolein sampling even if other carbonyl compounds in a chamber air react with the PFPH coating. This is partially proved by ~100% collection efficiency of acrolein for different amounts of PFPH coating (700 – 3,000 nmol) in Figure 16. The sampling was performed at 20 mL min^{-1} for 25 min with a Tedlar bag containing acrolein vapor as mentioned previously.

The repeatability of PFPH coating was determined by analyzing 20 coated tubes. The mean PFPH amount per tube was 1,477 nmol with a relative standard deviation of 14%. To check the stability of the PFPH coating, seven tubes were coated and analyzed over 6 days. While the amount of PFPH fluctuated with a relative standard deviation of 12% (Figure 17), there was no decreasing trend in the PFPH coating amount. This indicates that the PFPH coated tubes are stable over at least 6 days.

Overall, the QA/QC measures show that the PFPH coating was adequate. Therefore, it is unclear why the collection efficiency decreased with a sampling rate > 20 mL min^{-1} or a sampling volume > 0.5 L. The factors that can cause slow adsorption of acrolein by PFPH and/or incomplete reaction between acrolein and PFPH need to be examined further.

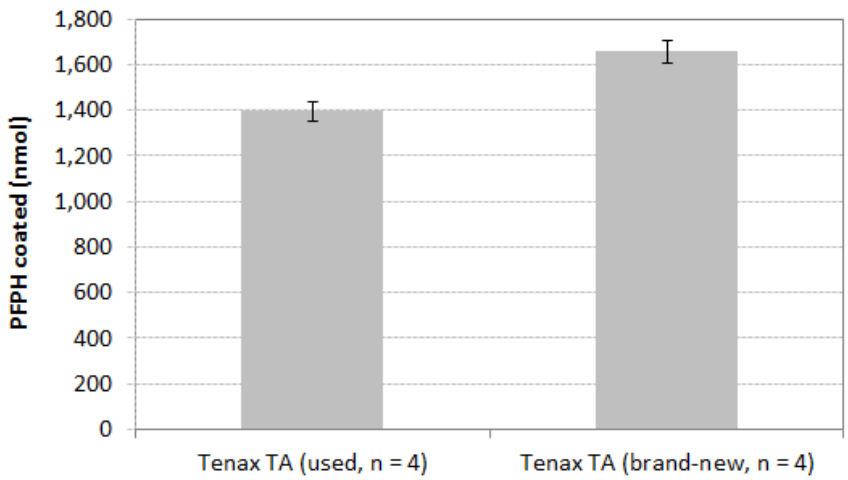


Figure 15: Amount of PFPH coating on brand-new and used Tenax TA tubes

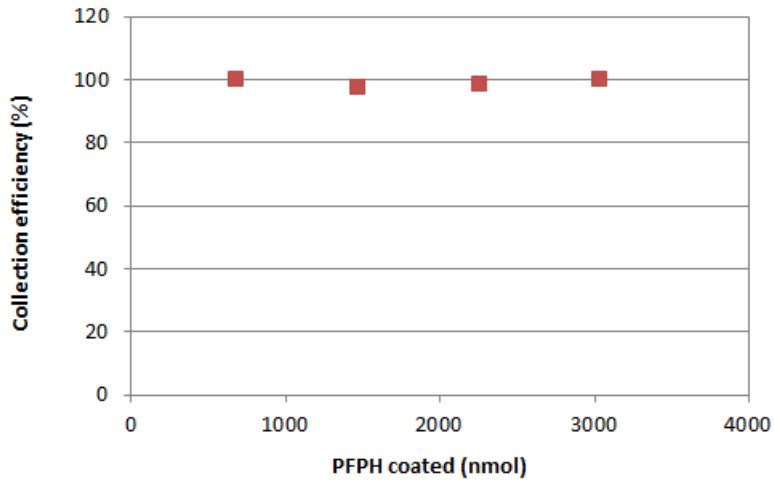


Figure 16: Collection efficiency of acrolein for different amounts of PFPH coating

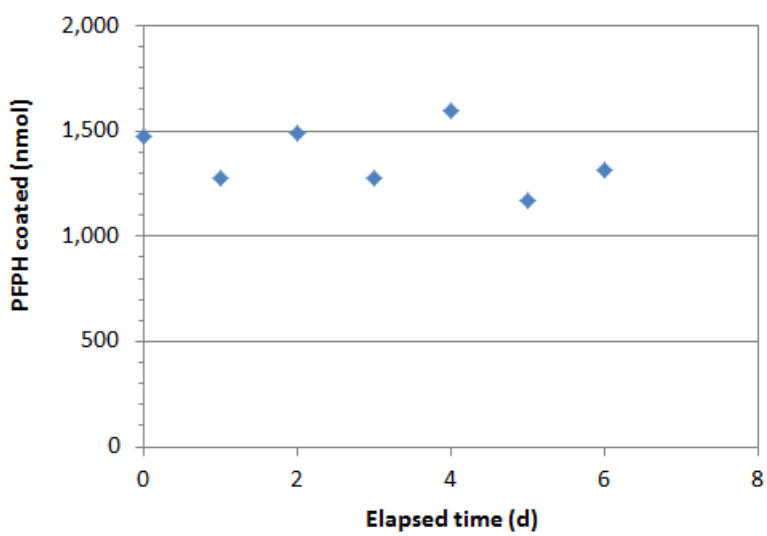


Figure 17: Stability of the PFPH coating

2.3 Estimation of indoor air concentrations

2.3.1 Emission factors

This section describes the method of calculating emission factors based on chamber air concentration data. The mass balance of a chemical compound for the chamber can be expressed by Eq. (3):

$$V\frac{dC}{dt} = QC_{in} - QC + EA \tag{3}$$

where:

E is the emission factor (μg m^{-2})
C is the chamber air concentration (μg m^{-3})
C_{in} is the concentration of the supplied air (μg m^{-3}), which is assumed to be the background chamber concentration
Q is the chamber flow rate (m^3 h^{-1})
A is the specimen surface area or weight (m^2 or g)

If the chamber is at quasi-steady state, Eq. (3) can be simplified as:

$$E = \frac{Q\,(C - C_{in})}{A} \tag{4}$$

The time-varying emission factor was assumed to follow the power-law decay model, which was typically used to express the emissions from dry building materials.

$$E = at^{-b} \tag{5}$$

Where:

a and b are empirical coefficients
t is the time (h)

The emission factors calculated from the chamber concentrations were used to estimate best-fit coefficients of Eq. (5) through curve fitting. Since it takes about 2.3 hours for a small-scale chamber concentration to reach 90% of the equilibrium concentration at an air change rate of 1 h^{-1}, the data after 2.3 hours were used for curve-fitting. This means the curve-fitting was done for the data between 3 hours and 4 days. If the calculated emission factor was seen to have an increasing trend, no curve-fitting results were reported to prevent over-estimation of long-term emissions. About 6% of the compounds emitted had an increasing trend between 3 hours and 4 days. The increasing trend was typically observed with compounds with low emission factors, which tend to have higher uncertainties.

When it was necessary to compare emission factors for different products, the emission factors measured at 24 hour were used. This is to reflect the assumption that the chamber reached its stable conditions at 24 h and the chamber concentrations at 24 h were high enough that they were less influenced by the uncertainties associated with low concentrations at later times (e.g., 96 h).

2.3.2 Indoor air concentrations

The indoor air concentration was calculated by plugging Eq. (5) into Eq. (3). Eq. (3) was solved using the explicit Euler method using the data measured after 3 hours. If no data was available in curve-fitting of Eq. (5) in the early stage of emissions (e.g., before 3 h), the emission factor between 0 and the time with the 1st measured data point (t_1) was considered to be constant as shown:

$$E = a\,t_1^{-b} \qquad \text{when } t < t_1 \tag{6a}$$

$$E = a\,t^{-b} \qquad \text{when } t > t_1 \tag{6b}$$

where t is the time (h) and t_1 is the time when the 1st measurement was made, which was 3 hours.

This is an arbitrary measure to prevent the indoor air concentration from being predicted unrealistically high during the early period, which can typically stem from the limitation associated with empirical modeling of fast-decaying sources with limited data points. However, introducing the constant emission for the early emission period won't affect the indoor air concentration predictions for the longer-term emission periods as mentioned in the previous report (Won et al., 2013).

The indoor air concentration was estimated based on material usage scenarios. The required information for the scenario analysis, including the house volume (*V*), air exchange rate (*N*), and amount of building materials/consumer products (*A*), is given in Table 5. With a few exceptions, most of the information in Table 5 was measured values in the Reference House owned by the Canadian Centre for Housing Technology (CCHT), located at the NRC campus (CCHT, 2013). The area of furniture was based on a single pedestal desk, single pedestal credenza, and a hutch storage unit with doors (BIFMA, 2006). Since no information was available on the emissions from furniture, it was assumed that water-based wood stain was applied on the furniture surfaces. The countertop area was calculated for the unit typically used in home (Empire Countertops, 2013). The area of doors (interior and closet) was the value given by the California Department of Health Services (2010). The area of thermal insulation was assumed to be 30% of the ceiling and wall area based on the observation that the infiltration through the envelope wall was ~30% at a pressure difference of -1 Pa (Hayashi and Osawa, 2008). This means that only 30% of the emissions from the wall and ceiling insulation affect the indoor air quality.

For more representative simulation, the area designated for one material group was assumed to be equally divided and applied with multiple materials within the same material group. For example, nine different paints were assumed to be applied onto the wall and ceiling area (566.37 m^2) with an equal area of 62.93 m^2 for each paint. This is a way to reduce the frequency of simulations when the mean value is of interest from multiple simulations. That is, this will give the same results as those obtained from conducting multiple simulations and getting the average of multiple results.

Table 5: House volume and materials used in a single family resident for a scenario analysis

		Test ID [d]	Amount	Unit	Reference
House volume			794.3	m^3	Won et al. (2006)
Ventilation rate			0.23	h^{-1}	"
Materials	Painted drywall	PT9, PT10, PT11, PT12, PT13p, PT15, PT16, PT17, PT18	566.37 [a] (62.93) [b]	m^2	"
	Carpet	CRP11	127.0	m^2	"
	Subfloor	OSB8, OSB10, SPR1	69.6 [a] (23.2) [b]	m^2	"
	Particleboard	PB7	1.50	m^2	"
	Varnish (oil)	WF1	5.00	m^2	"
	I-beam joist	IB1 - 6	57.4 [a] (9.57) [b]	m^2	"
	Sealant around windows [c]	CAK32 - 35, SPF4	0.1 [a] (0.02) [b]	m^2	"
	Plywood	PLY4	5.56	m^2	"
	Wood stain (oil)	WS8	5.00	m^2	"
	Shelving	SHV1 - 3	5 [a] (1.67) [b]	m^2	"
	Thermal insulation (30% of wall & ceiling area)	INS2 - 10, SPF2 - 3	61.8 [a] (5.62) [b]	m^2	Infiltration ratio of 30% from Hayashi and Osawa (2008)
	Wood stain for furniture (water-based)	WF2	8.30	m^2	BIFMA (2006)
	Doors (interior & closet)	DI1	81.8	m^2	CDHS (2010)
	Kitchen countertop	CT3	5.00 [e] (both sides)	m^2	Empire Countertops (2013)
	Kitchen cabinet	KC1	8.25	m^2	measured

[a] Total area (m^2) ; [b] Area for each material (m^2); [c] Spray foam sealants were assumed to be used instead of regular caulking; [d] Test ID from the tests done in 2012/13 and 2013/14; [e] It was assumed that both the top and bottom were exposed to air.

3 Results and discussion

Chamber concentrations and calculated emission factors between 3 h and 96 h are provided in Table A. 1 to Table A. 37. The curve-fitting results for a power-law decay model, which can be used to predict emission rates as a function of time, are also included in the tables. The information generated in the previous report for selected materials (i.e., wood, insulation and paint specimens) was added when the summary statistics on emission factors were determined. This was to produce more representative data that can cover a broader range of wood, insulation and paint materials. Table A. 3 and Table A. 4 contain the test code and specimen descriptions that can help identify the test materials reported in the previous report (Won et al., 2013). The detection frequency was calculated in two ways, by counting when the concentration was above zero or above the method detection limit (MDL) (see Table 7, Table 9 and Table 11). The concentrations below MDL were greyed out in Table A. 1 to Table A. 37.

3.1 Emission factors for different classes of compounds

To provide a big picture, the emission factors can be shown for different groups of VOCs and products. The emission factors within each group of VOCs (see Table 3 for VOC classes) were added for an individual material and, then, statistical values were calculated for different material classes (wood, insulation and paint). Figure 18 shows the values of percentiles (25%, 50% and 75%) and ranges of the emission factors measured at 24 hour for 8 groups of VOCs and 3 groups of materials. The medians (50% percentile) show that wood products were the major source of aldehydes/ketones, acids, alcohols, and terpenes, while paint products as a class were the major emitter of esters/glycol ethers. Among three groups of materials, insulation showed relatively low emission factors for most of VOC classes.

While the median shows general trends as grouped behavior for the three product classes at this particular time point (24 h), it is important to note that the emission factors for specific compounds (as classes or as individual VOCs) by individual products can vary enormously. This is partly indicated by the observed ranges of emission factors for different groups of materials and VOCs. Emissions factors for compound classes spanning 5 to 7 orders of magnitude within product groups were not uncommon. The groups of compounds with the widest range for each product group were aldehydes/ketones (wood), alcohols (insulation), and esters/glycol ethers (paint), showing the importance of making careful material selection choices. In addition to alcohols, the insulation group showed the range bigger than 4 orders magnitude for esters/glycol ethers and aromatics. This may reflect that the insulation materials were more diverse than paint and wood materials.

Figure 19 shows the median and ranges based on emission factors at 96 h. The overall trends were similar to those at 24 h. The major difference was acids from insulation, which showed higher median value than that at 24 h. This was influenced by the concentration of acetic acid from CAK35 that had an increasing trend. The range of alcohols at 96 h was reduced 5 orders of magnitude from 7 orders of magnitude at 24 h.

More detailed discussion of the emission behaviours of the three product classes follows in separate sections.

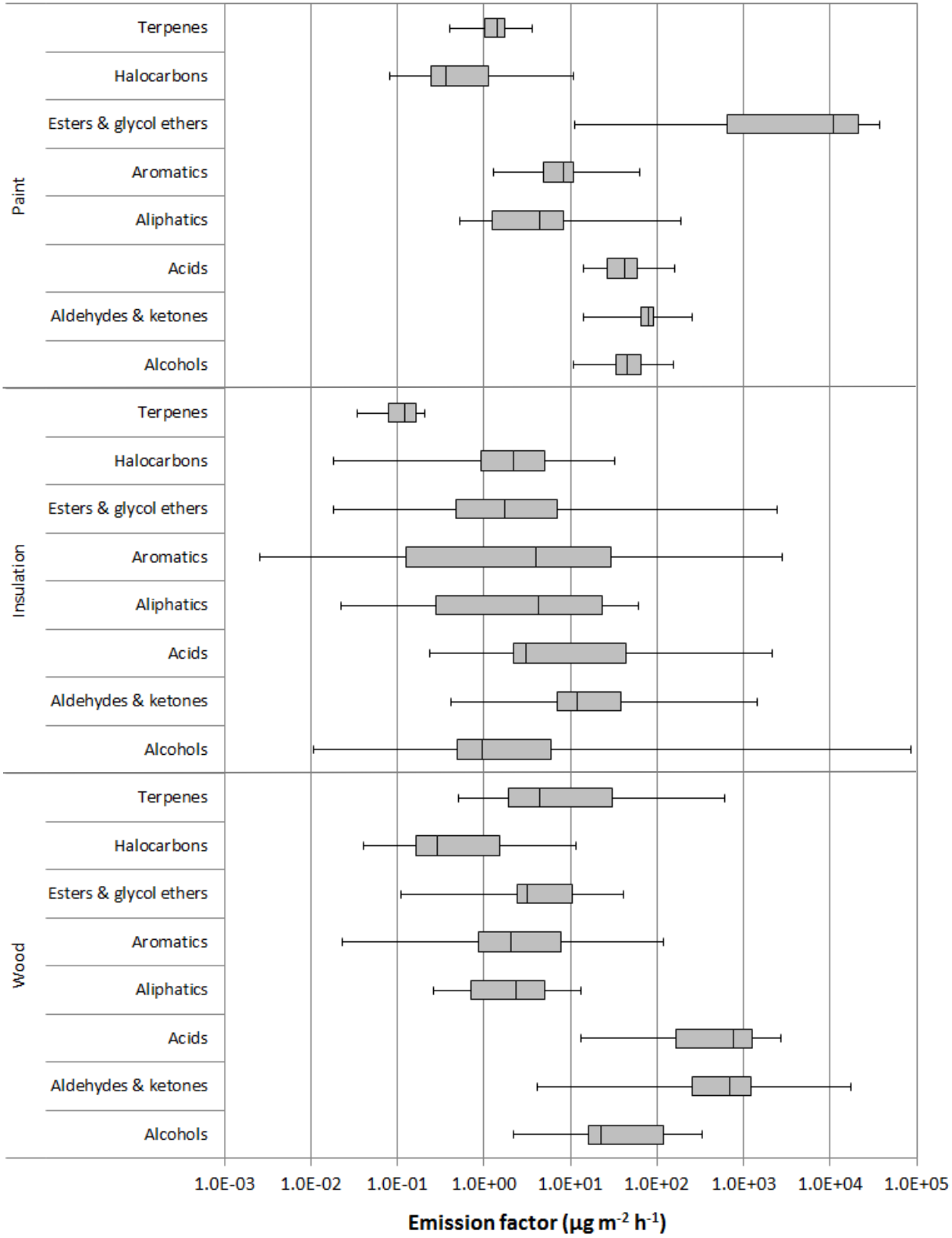


Figure 18: Range of emission factors @ 24h for wood, insulation, and paint

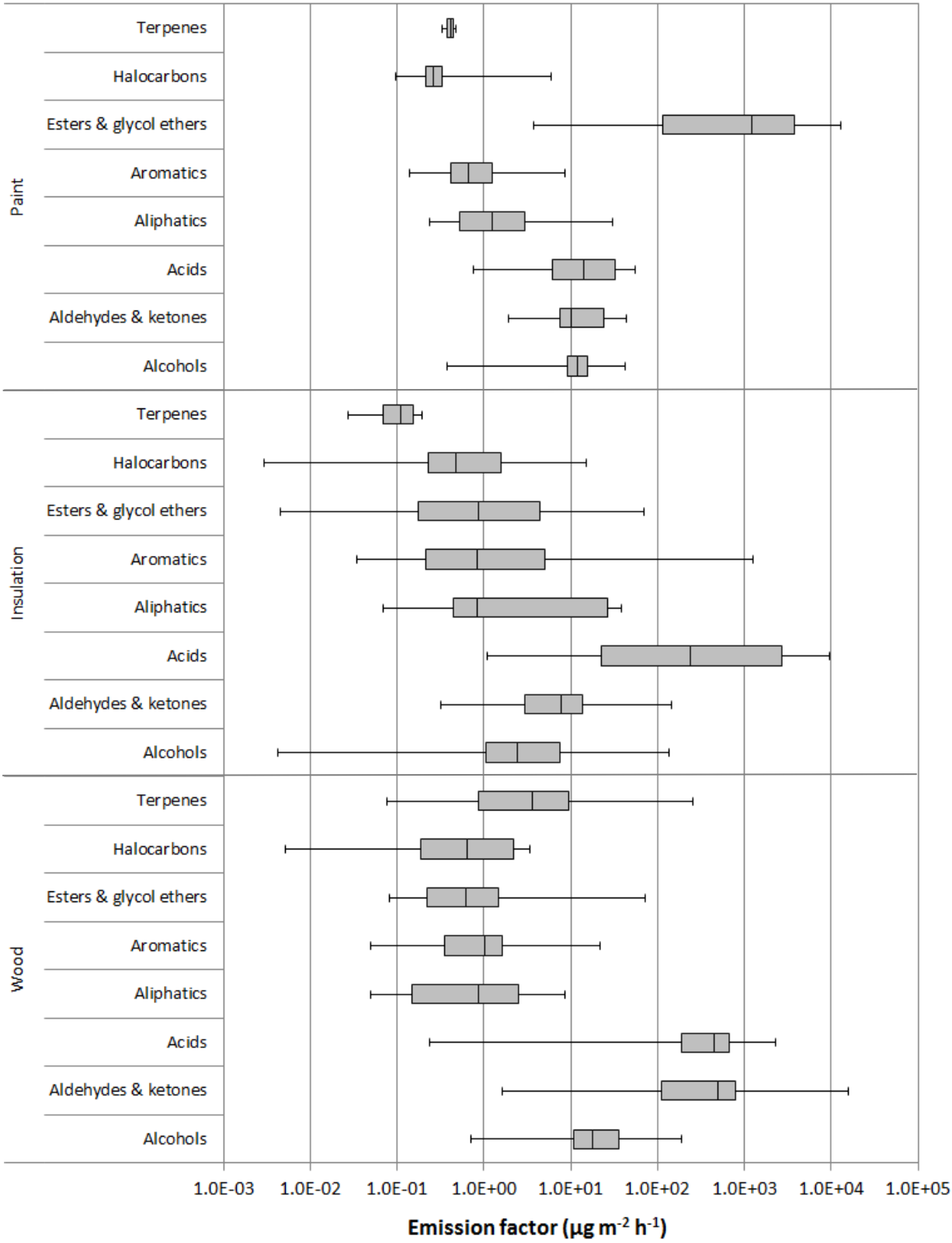


Figure 19: Range of emission factors @ 96h for wood, insulation, and paint

3.2 Detection frequency and emission factor for different material categories

3.2.1 Wood

The detection frequency and emission factor at 24 hour are given in Table 6 for each compound emitted from wood-based materials. In addition to 8 wood materials tested in this report, 10 wood materials tested in the previous year were added to generate the summary statistics on emission factors.

Terpenes and oxygenated compounds (e.g., alcohols, aldehydes, and acids) were detected more frequently than hydrocarbons (aliphatic and aromatic), glycol ethers, esters, and halogenated compounds. The compounds with a detection frequency (above MDL) > 90% included:

- 100%: acetone (compound #8)
- >90%: 1-butanol (#1), hexanal (#18), and formaldehyde (#119)

Among these frequently detected compounds, hexanal had the highest emission factor (median value of 586 $\mu g\ m^{-2}\ h^{-1}$). Compounds with relatively high emission factors (EF) based on median values included:

- EF > 100 $\mu g\ m^{-2}\ h^{-1}$: hexanal (compound #18) and acetic acid (#104)
- 10 < EF < 100 $\mu g\ m^{-2}\ h^{-1}$: acetone (#8), 2-octenal (#22), pentanal (#23), alpha-terpinene (#98), isobutyric acid (#105), acetaldehyde (#118), and formaldehyde (#119).

Comparison of the detection frequency above zero and that above MDL shows that hydrocarbons (aliphatic and aromatic) are detected frequently, but the levels tend to be low (below MDL).

The emission factors (EF) of selected VOCs with EF at 24 h > 10 $\mu g\ m^{2}\ h^{-1}$ [3] are summarized in Table 7 for individual wood materials. The same data sets for all VOCs are presented in the appendix (Table A. 38). The main sources were mostly medium density board, I-beam joist, and oriented strand board (Table 7). For aldehydes and acids, the biggest emitter was a medium density fiber board (MDF3). In particular, the emission factor of hexanal from MDF3 was above 10,000 $\mu g\ m^{2}\ h^{-1}$. I-beam joists (IB1 - 6) and an oriented strand board (OSB10) emitted high levels of hexanal and/or acetic acid. Two I–beam joists (IB1 & 3) emitted terpenes (α- and β-pinene) more than other wood products. IB1 also emitted acetaldehyde with EF > 100 $\mu g\ m^{2}\ h^{-1}$. Formaldehyde were emitted from a medium density board (MDF3) and a plywood board (PB7) with EF > 100 $\mu g\ m^{2}\ h^{-1}$. Overall, boards with a factory-cured coating layer (KC1, SHV1, and SHV2) were identified as low emitters of VOCs.

[3] Note that this is an arbitrary measure to reduce the data sets for presentation. The emission factor below 10 $\mu g\ m^{2}\ h^{-1}$ can be important depending on chemical compound and its health effects.

Table 6: Detection frequency and emission factor at 24 h for wood materials

#	G	CAS#	Compound	Detection frequency [1]		Detection frequency [2]		Emission factor at 24 h ($\mu g\ m^{-2}\ h^{-1}$)			
				#	%	#	%	Min	Max	Mean	Median
1	Alcohols	71-36-3	1-Butanol	17	94	17	94	1.33	32.95	9.18	5.17
2		71-23-8	1-Propanol	3	17	3	17	0.76	5.73	2.95	2.36
3		104-76-7	Hexanol, 2-ethyl-1-	15	83	15	83	0.19	9.05	2.33	1.48
4		67-63-0	2-Propanol	10	56	9	50	0.38	84.89	17.41	3.05
5		64-17-5	Ethanol	14	78	11	61	0.49	218.82	23.44	4.77
6		108-95-2	Phenol	15	83	13	72	0.39	172.70	38.03	8.45
7	Aldehydes & Ketones *	78-93-3	Methylethyl ketone	14	78	12	67	0.34	4.10	1.07	0.75
8		67-64-1	Acetone	18	100	18	100	0.46	502.27	84.20	10.21
9		98-86-2	Acetophenone	13	72	4	22	0.07	6.75	0.76	0.18
10		108-94-1	Cyclohexanone	5	28	0	0	0.17	0.70	0.37	0.23
11		108-10-1	Methylisobutyl ketone	8	44	6	33	0.22	2.64	1.01	0.62
12		100-52-7	Benzaldehyde	16	89	7	39	0.01	52.92	4.45	1.19
13		123-72-8	Butanal	15	83	11	61	1.03	51.01	7.85	4.14
14		112-31-2	Decanal	0	0	0	0				
15		3913-81-3	2-Decenal	7	39	6	33	0.35	5.83	2.62	2.71
16		98-01-1	Furfural	10	56	10	56	1.48	22.26	7.56	3.99
17		111-71-7	Heptanal	14	78	14	78	1.32	51.88	8.44	4.26
18		66-25-1	Hexanal	17	94	17	94	15.17	15674.56	1501.07	585.68
19		124-19-6	Nonanal	13	72	13	72	0.83	38.14	9.32	3.55
20		18829-56-6	2-Nonenal	10	56	9	50	0.39	5.75	2.53	2.29
21		124-13-0	Octanal	9	50	5	28	0.51	26.58	5.62	2.51
22		2548-87-0	2-Octenal	13	72	13	72	3.00	106.76	29.74	15.53
23		110-62-3	Pentanal	16	89	14	78	0.82	527.64	62.06	26.50
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-	0	0	0	0				
25		96-14-0	Pentane, 3-methyl-	0	0	0	0				
26		540-84-1	2,2,4-Trimethylpentane	3	17	1	6	0.07	1.20	0.50	0.22
27		108-08-7	2,4-Dimethylpentane	0	0	0	0				
28		124-18-5	Decane	7	39	4	22	0.08	0.99	0.36	0.18
29		112-40-3	Dodecane	9	50	5	28	0.08	1.99	0.59	0.45
30		142-82-5	Heptane	4	22	4	22	0.81	2.68	1.80	1.85
31		544-76-3	Hexadecane	7	39	3	17	0.06	0.86	0.32	0.17
32		110-54-3	Hexane	4	22	3	17	0.07	0.66	0.38	0.40
33		111-84-2	Nonane	6	33	2	11	0.09	0.44	0.20	0.16
34		111-65-9	Octane	7	39	7	39	0.24	2.26	0.85	0.71
35		629-62-9	Pentadecane	8	44	5	28	0.02	1.27	0.37	0.20
36		629-59-4	Tetradecane	10	56	3	17	0.02	2.26	0.58	0.31
37		629-50-5	Tridecane	9	50	4	22	0.14	1.34	0.56	0.33
38		1120-21-4	Undecane	6	33	4	22	0.09	1.66	0.51	0.33

*Aldehydes (formaldehyde, acetaldehyde and propanal) that were analyzed with the DNPH sampling can be found at the bottom of the table (Chemical # 118 – 120).

[1] Detection frequency above zero

[2] Detection frequency above the method detection limit (MDL)

Table 6 (continued)

#	G	CAS#	Compound	Detection frequency [1] #	Detection frequency [1] %	Detection frequency [2] #	Detection frequency [2] %	Emission factor at 24 h ($\mu g\ m^{-2}\ h^{-1}$) Min	Max	Mean	Median
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramethyl-	1	6	0	0	0.06	0.06	0.06	0.06
40		611-14-3	Toluene, 2-ethyl-	3	17	0	0	0.02	0.11	0.06	0.05
41		620-14-4	Toluene, 3-ethyl-	3	17	0	0	0.04	0.12	0.08	0.07
42		622-96-8	Toluene, 4-ethyl-	2	11	0	0	0.06	0.07	0.07	0.07
43		31017-40-0	Cyclohexene, 4-phenyl	1	6	0	0	0.11	0.11	0.11	0.11
44		71-43-2	Benzene	11	61	4	22	0.01	0.97	0.28	0.19
45		526-73-8	Benzene, 1,2,3-trimethyl-	3	17	0	0	0.08	0.29	0.18	0.17
46		95-63-6	Benzene, 1,2,4-trimethyl-	5	28	0	0	0.02	0.52	0.25	0.20
47		95-47-6	Benzene, 1,2-dimethyl-	7	39	1	6	0.01	2.28	0.40	0.10
48		108-67-8	Benzene, 1,3,5-trimethyl-	3	17	0	0	0.02	0.14	0.08	0.07
49		108-38-3	Benzene, 1,3-dimethyl-	10	56	1	6	0.01	5.97	0.72	0.14
50		98-82-8	Benzene, isopropyl	4	22	0	0	0.18	0.46	0.28	0.25
51		103-65-1	Benzene, propyl-	4	22	0	0	0.01	0.29	0.11	0.07
52		100-41-4	Ethylbenzene	10	56	2	11	0.01	6.35	0.86	0.06
53		91-20-3	Naphthalene	6	33	0	0	0.01	0.29	0.09	0.06
54		99-87-6	p-Cymene	16	89	6	33	0.04	51.89	4.34	0.32
55		100-42-5	Styrene	14	78	4	22	0.03	5.92	0.69	0.11
56		108-88-3	Toluene	11	61	5	28	0.19	64.86	7.06	0.45
57		98-83-9	2-Phenylpropene	0	0	0	0				
58		95-13-6	Indene	0	0	0	0				
59	Esters	108-21-4	Acetic acid, 1-methylethyl ester	0	0	0	0				
60		111-15-9	Acetic acid, 2-ethoxyethyl ester	0	0	0	0				
61		123-86-4	Acetic acid, butyl ester	1	6	1	6	2.70	2.70	2.70	2.70
62		141-78-6	Acetic acid, ethyl ester	7	39	6	33	0.22	6.47	1.86	1.38
63		80-62-6	Methyl methacrylate	0	0	0	0				
64		103-09-3	2-Ethylhexyl acetate	0	0	0	0				
65		96-48-0	Butyrolactone	5	28	5	28	1.15	6.74	2.48	1.52
66		25265-77-4	Texanol	11	61	11	61	0.65	16.79	3.08	1.54
67		6846-50-0	TXIB	12	67	7	39	0.11	6.08	1.50	0.70
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol	4	22	3	17	0.93	15.61	5.33	2.39
69		110-49-6	2-Methoxyethylacetate	0	0	0	0				
70		111-90-0	Diethylene glycol monoethyl et	0	0	0	0				
71		107-98-2	Propanol, 1-methoxy-2-	0	0	0	0				
72		111-76-2	Ethanol, 2-butoxy-	2	11	2	11	3.69	36.61	20.15	20.15
73		112-34-5	Ethanol, 2-butoxyethoxy-	1	6	1	6	0.60	0.60	0.60	0.60
74		110-80-5	Ethanol, 2-ethoxy-	0	0	0	0				
75		109-86-4	Ethanol, 2-methoxy-	0	0	0	0				
76		75-65-0	Propanol, 2-methyl-2-	1	6	0	0	1.72	1.72	1.72	1.72
77		5131-66-8	Proylene glycol monobutyl ethe	0	0	0	0				
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane	0	0	0	0				
79		95-50-1	1,2-Dichlorobenzene	0	0	0	0				
80		107-06-2	1,2-Dichloroethane	0	0	0	0				
81		78-87-5	1,2-Dichloropropane	0	0	0	0				
82		106-46-7	1,4-Dichlorobenzene	2	11	0	0	0.01	0.04	0.03	0.03
83		75-27-4	Bromodichloromethane	0	0	0	0				

Table 6 (continued)

#	G	CAS#	Compound	Detection frequency [1] #	Detection frequency [1] %	Detection frequency [2] #	Detection frequency [2] %	Emission factor at 24 h ($\mu g\ m^{-2}\ h^{-1}$) Min	Max	Mean	Median
84	Halo Carbons	56-23-5	Carbon tetrachloride	0	0	0	0				
85		67-66-3	Chloroform	2	11	1	6	0.23	1.10	0.66	0.66
86		124-48-1	Dibromochloromethane	0	0	0	0				
87		75-09-2	Dichloromethane	0	0	0	0				
88		127-18-4	Tetrachloroethylene	0	0	0	0				
89		79-01-6	Trichloroethylene	9	50	4	22	0.11	11.45	2.17	0.33
90		79-34-5	1,1,2,2-Tetrachloroethane	0	0	0	0				
91	Cyclo Alkanes	108-87-2	Methylcyclohexane	2	11	2	11	3.42	12.27	7.84	7.84
92		110-82-7	Cyclohexane	3	17	1	6	0.18	0.65	0.42	0.43
93		1678-93-9	Cyclohexane, butyl-	0	0	0	0				
94		1678-91-7	Cyclohexane, ethyl-	1	6	0	0	0.40	0.40	0.40	0.40
95		1678-92-8	Cyclohexane, propyl-	0	0	0	0				
96		91-17-8	Decahydronaphthalene	0	0	0	0				
97	Terpenes	80-56-8	alpha-Pinene	17	94	16	89	0.15	232.51	29.36	3.34
98		99-86-5	alpha-Terpinene	2	11	2	11	4.55	29.56	17.05	17.05
99		127-91-3	beta-Pinene	16	89	9	50	0.14	172.12	19.04	0.73
100		99-85-4	gamma-Terpinene	2	11	2	11	1.46	9.22	5.34	5.34
101		13466-78-9	3-Carene	11	61	8	44	0.09	71.67	11.23	1.28
102		79-92-5	Camphene	9	50	7	39	0.07	64.61	9.33	0.88
103		5989-27-5	Limonene	16	89	14	78	0.27	64.39	8.26	0.84
104	Acids	64-19-7	Acetic acid	15	83	15	83	13.25	2656.25	790.37	750.09
105		79-31-2	Isobutyric acid	2	11	2	11	1.52	34.77	18.15	18.15
106		107-92-6	Butyric acid	9	50	5	28	0.59	11.11	3.01	1.59
107		111-14-8	Heptanoic acid	4	22	2	11	0.38	3.18	2.07	2.35
108		149-57-5	2-Ethylhexanoic acid	1	6	0	0	1.15	1.15	1.15	1.15
109		142-62-1	Hexanoic acid	13	72	13	72	3.23	922.09	95.42	9.63
110		109-52-4	Pentanoic Acid	11	61	7	39	0.79	178.33	20.89	2.26
111	Other	3777-69-3	Furan, 2-pentyl	13	72	8	44	0.22	80.37	10.32	3.11
112		872-50-4	2-Pyrrolidinone, 1-methyl-	1	6	1	6	0.56	0.56	0.56	0.56
113		123-91-1	1,4-Dioxane	0	0	0	0				
114		78-40-0	Triethyl phosphate	0	0	0	0				
115		142-96-1	n-Butyl ether	0	0	0	0				
116		96-29-7	2-Butanone oxime	0	0	0	0				
117		121-44-8	Triethylamine	0	0	0	0				
118	DNPH	75-07-0	Acetaldehyde	16	89	16	89	1.03	123.24	39.14	28.10
119		50-00-0	Formaldehyde	17	94	17	94	1.85	114.91	31.19	10.15
120		123-38-6	Propanal	15	83	14	78	0.38	32.05	8.88	6.85
121	PFPH	107-02-8	Acrolein	12	67	10	56	0.10	5.62	2.08	1.44

Note: 8 wood materials tested in 2013/14 and 10 wood materials tested in 2012/13

[1] Detection frequency above zero

[2] Detection frequency above the method detection limit (MDL)

Table 7: Emission factors (µg m^2 h^{-1}) at 24 h for major VOCs emitted from wood materials

#	Class	CAS #		Kitchen furniture & door			I-beam						Other structural				Shelving		Panel		
				DI1	KC1	CT3	IB1	IB2	IB3	IB4	IB5	IB6	PLY4	OSB8	OSB10	SPR1	SHV1	SHV2	MDF3	PB7	PIN2
1	Alcohols	71-36-3	1-Butanol	2.7	1.3	2.5	11.9	32.9	6.4	3.9	5.2	4.0	2.2	12.0	12.3	14.3	3.3		30.9	6.7	3.5
4		67-63-0	2-Propanol				2.4	66.0	4.9	3.0	1.5	3.1	0.4			0.8			84.9	7.2	
5		64-17-5	Ethanol	9.4		6.1	6.8	17.4	3.5	31.8	218.8	28.0		0.7	2.6	0.5	1.0		1.2	0.5	
6		108-95-2	Phenol	0.6	0.4	12.8	97.8	172.7	0.9	44.6	104.7	100.5		19.9	4.4	1.5			8.4	0.8	0.5
8	Aldehydes & Ketones	67-64-1	Acetone	10.5	0.5	3.5	30.3	212.8	3.7	5.6	2.0	9.9	4.2	121.9	8.0	105.7	10.8	4.2	467.2	502.3	12.5
13		123-72-8	Butanal	3.2		3.5	4.4	7.6	4.6	4.1	2.8	1.8		13.4	8.9	6.3	1.2		51.0	3.9	1.0
16		98-01-1	Furfural				3.5	2.8	8.6	14.8	13.9	22.3	2.0	1.5		4.5			1.9		
17		111-71-7	Heptanal	2.9		2.8	7.9	12.3	7.2	4.0	2.5	1.3		4.5	9.7	2.6			51.9	6.5	2.1
18		66-25-1	Hexanal	630.2		340.2	1618.9	757.5	2068.0	492.9	429.1	209.1	23.7	908.2	824.8	709.0	38.7	15.2	15674.6	585.7	192.5
19		124-19-6	Nonanal	3.1		1.9	29.7	20.5	4.2	5.8		2.7		1.9	3.6	1.6			38.1	7.0	0.8
21		124-13-0	Octanal			1.9	2.5	9.4			0.5			1.0	2.7	0.9			26.6	5.1	
22		2548-87-0	2-Octenal	27.5		19.6	6.3	5.3	106.8	25.6	15.5	13.4		9.8	79.0	4.7			70.1	3.0	
23		110-62-3	Pentanal	18.6		14.5	55.0	45.3	93.6	33.5	26.5	13.5	0.8	67.1	39.1	26.5	1.1		527.6	22.1	8.1
54	Aro	99-87-6	p-Cymene	0.3		0.1	10.6	0.8	51.9	1.9	0.5	1.3	0.3	0.1	0.0	0.1	0.2		0.1	1.0	0.3
56		108-88-3	Toluene				1.0		64.9	0.5	0.2	0.4		0.6	0.2	8.1	1.2		0.2		0.4
66	Esters	25265-77-4	Texanol	2.2	0.9	2.3		1.5	1.3		0.6	2.5		0.8	16.8	1.0	3.9				
68	Gly	57-55-6	1,2-Propanediol	2.8	0.9							1.9			15.6						
72		111-76-2	Ethanol, 2-butoxy-	3.7													36.6				
89	Halo	79-01-6	Trichloroethylene	0.1		0.2	0.2	0.3						11.4	0.2		1.4	1.6	4.2		
91	Cyclo	108-87-2	Methylcyclohexane													12.3				3.4	
97	Terpenes	80-56-8	alpha-Pinene	7.8		0.8	171.6	15.9	232.5	18.7	1.5	17.9	3.3	0.7	0.1	1.0	2.9	4.6	0.7	16.6	2.5
98		99-86-5	alpha-Terpinene				4.5		29.6												
99		127-91-3	beta-Pinene	1.4		0.3	108.9	7.7	172.1	5.6	0.8	3.1	0.3	0.2		0.2	0.7	0.7	0.3	2.3	0.1
101		13466-78-9	3-Carene	1.1		0.1	71.7	1.3	38.2	2.8	0.9	5.8	0.1			0.1				1.3	
102		79-92-5	Camphene	0.7			14.9	1.1	64.6	0.7	0.1	0.9				0.1				0.9	
103		5989-27-5	Limonene	2.2		0.5	37.6	3.8	64.4	5.7	0.5	12.2	0.6	0.3	0.4	0.4	0.8		0.9	1.4	0.5
104	Acids	64-19-7	Acetic acid	197.5	13.3	750.1	719.3	1015.6	834.5	1277.4	2656.2	1220.9		118.2	1696.0	326.6			984.3	21.1	24.4
109		142-62-1	Hexanoic acid	10.0		10.1	9.6	7.9	45.3	10.6	5.1	3.2		6.4	200.0	5.9			922.1	4.3	
110		109-52-4	Pentanoic Acid			3.1	1.4	2.3	5.8	3.6	1.6	0.8		1.8	29.8	1.3			178.3		
111	Other	3777-69-3	Furan, 2-pentyl	1.0		0.2	13.9	5.9	6.0	3.1	3.1	0.2		11.8	7.0	1.0			80.4	0.5	
118	DN	75-07-0	Acetaldehyde	16.4	1.0	11.5	123.2	27.9	83.5	4.0	30.0	28.3	21.8	90.4	48.0	22.1			49.2	61.3	7.6
119	PH	50-00-0	Formaldehyde	69.4	1.9	90.4	20.6	9.1	4.7	1.9	37.3	7.7	16.7	10.2	7.8	9.7		15.7	103.5	114.9	9.1
120		123-38-6	Propanal	3.3		4.1	9.3	6.9	11.9	0.7	2.6	0.4		32.0	17.2	14.3	1.0	1.2	18.1	10.4	

Note: Pink (EF > 10,000 µg m^2 h^{-1}); Yellow (1,000 < EF < 10,000 µg m^2 h^{-1}); Green (100 < EF < 1,000 µg m^2 h^{-1}); Grey (10 < EF < 100 µg m^2 h^{-1});

3.2.2 Insulation

3.2.2.1 Detection frequency and emission factor for 17 insulation materials

Table 8 presents the detection frequency and emission factor at 24 hour for compounds emitted from insulation specimens, including 12 specimens tested in 2013/14 and 5 specimens tested in 2012/13. The most frequently detected compounds were 1-butanol, 2-ethyl-1-hexanol, Texanol, acetaldehyde, and formaldehyde. However, the median emission factors of these frequently detected compounds were relatively low. Some of compounds were detected only once, but they have high emission factors. They included:

- EF > 100 μg m^{-2} h^{-1}: 1,2,3-trimethyl benzene (#45), 1,2,4-trimethyl benzene (#46), 1-methylethyl ester acetic acid (#59), ethyl ester acetic acid (#62), 2-methyl-2-propanol (#76)
- 10 < EF < 100 μg m^{-2} h^{-1}: 1-propanol (#2), 2-methyl pentane (#24), hexane (#32), 2-ethyl toluene (#40), isopropyl benzene (#51), and triethyl phosphate (#114)

The emission factors (EF) of selected VOCs with EF at 24 h > 10 μg m^2 h^{-1} are summarized in Table 9 for individual insulation materials. The same information for all VOCs is presented in the appendix (Table A. 39). The major source of the compounds with high emission factors was a spray foam sealant CAK35 (tested previously, see Table A.3). The emission factors of CAK35 were greater than those of similar spray foam sealants (CAK32, CAK33, CAK34, and SPF4) by a factor of at least two (up to four). The difference in the emission factors can be attributed to the fact that CAK35 was latex-based and others were based on methylene diphenyl diisocyanate (MDI).

One-component spray foam sealants (MDI-based or Latex-based) emitted more VOCs with higher emission factors than other insulation materials. Major compounds emitted from two-component spray foam insulation specimens were 1,4-dioxane and triethyl phosphate. The latter is likely to be added as a flame retardant. This does not mean that other spray foam insulation specimens did not contain any flame retardants. The flame retardants typically used in foam board and spray foam are hexabromocyclododecane (HBCD) and tris(2-chloroisopropyl)phosphate (TCPP), respectively. Since they are semi-volatile organic compounds, the current emissions testing method, involving 4-day test at room temperature in a 50-L chamber, is not a suitable method to determine these compounds.

Major compounds emitted from two organic insulation products (recycled denim and cellulose) were acetic acid and hexanal. A fiberglass insulation emitted formaldehyde in a rate > 10 μg m^{-2} h^{-1}, while all compounds from stone wool were below 10 μg m^{-2} h^{-1}. Styrene was the major compound from one extruded polystyrene board (XPS). INS2, which was an expanded polystyrene board (EPS), emitted more diverse VOCs, including 2-ethyl-1-hexanol, 1-butanol, styrene, and formaldehyde, at a rate > 10 μg m^{-2} h^{-1}. Acetaldehyde was the major VOC from the polyisocyanurate board. Materials with relatively low emission factors (EF < 10 μg m^{-2} h^{-1}) were a 2-componenet open-cell spray foam (SPF3), a stone wool insulation (INS5), and a reflective insulation product (INS6).

Table 8: Detection frequency and emission factor at 24 h for insulation

#	G	CAS#	Compound	Detection frequency[1]		Detection frequency[2]		Emission factor at 24 h ($\mu g\ m^{-2}\ h^{-1}$)			
				#	%	#	%	Min	Max	Mean	Median
1	Alcohols	71-36-3	1-Butanol	11	65	11	65	0.01	214.27	21.74	0.27
2		71-23-8	1-Propanol	1	6	1	6	49.91	49.91	49.91	49.91
3		104-76-7	Hexanol, 2-ethyl-1-	13	76	9	53	0.03	22.53	3.29	0.30
4		67-63-0	2-Propanol	3	18	2	12	2.28	85759.1	28588.0	2.57
5		64-17-5	Ethanol	2	12	1	6	0.23	0.65	0.44	0.44
6		108-95-2	Phenol	11	65	7	41	0.01	15.75	3.34	0.34
7	Aldehydes & Ketones *	78-93-3	Methylethyl ketone	3	18	2	12	0.02	15.50	5.21	0.12
8		67-64-1	Acetone	15	88	8	47	0.03	1048.38	71.48	0.46
9		98-86-2	Acetophenone	14	82	1	6	0.00	17.33	1.96	0.23
10		108-94-1	Cyclohexanone	1	6	1	6	0.50	0.50	0.50	0.50
11		108-10-1	Methylisobutyl ketone	1	6	0	0	0.85	0.85	0.85	0.85
12		100-52-7	Benzaldehyde	13	76	2	12	0.02	27.42	3.84	0.50
13		123-72-8	Butanal	2	12	1	6	0.37	15.94	8.16	8.16
14		112-31-2	Decanal	1	6	1	6	0.10	0.10	0.10	0.10
15		3913-81-3	2-Decenal	1	6	0	0	0.14	0.14	0.14	0.14
16		98-01-1	Furfural	3	18	1	6	0.25	1.05	0.52	0.26
17		111-71-7	Heptanal	1	6	1	6	0.31	0.31	0.31	0.31
18		66-25-1	Hexanal	4	24	2	12	0.50	60.13	16.45	2.59
19		124-19-6	Nonanal	7	41	6	35	0.09	1.95	0.72	0.33
20		18829-56-6	2-Nonenal	1	6	1	6	0.57	0.57	0.57	0.57
21		124-13-0	Octanal	2	12	0	0	0.05	0.13	0.09	0.09
22		2548-87-0	2-Octenal	1	6	1	6	2.64	2.64	2.64	2.64
23		110-62-3	Pentanal	3	18	1	6	0.06	1.75	0.69	0.27
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-	4	24	4	24	1.73	16.15	9.76	10.57
25		96-14-0	Pentane, 3-methyl-	5	29	3	18	0.28	6.97	3.36	2.07
26		540-84-1	2,2,4-Trimethylpentane	3	18	0	0	0.17	2.00	1.11	1.17
27		108-08-7	2,4-Dimethylpentane	2	12	2	12	0.57	6.56	3.57	3.57
28		124-18-5	Decane	5	29	1	6	0.05	5.50	1.29	0.18
29		112-40-3	Dodecane	6	35	1	6	0.05	1.29	0.43	0.38
30		142-82-5	Heptane	4	24	4	24	2.35	8.18	5.53	5.79
31		544-76-3	Hexadecane	4	24	3	18	0.02	2.60	0.70	0.09
32		110-54-3	Hexane	5	29	4	24	0.51	20.11	11.41	16.41
33		111-84-2	Nonane	2	12	1	6	0.42	3.10	1.76	1.76
34		111-65-9	Octane	3	18	3	18	2.03	2.30	2.18	2.20
35		629-62-9	Pentadecane	8	47	3	18	0.08	4.89	1.23	0.55
36		629-59-4	Tetradecane	8	47	6	35	0.06	9.39	3.02	1.59
37		629-50-5	Tridecane	3	18	1	6	0.04	0.28	0.20	0.27
38		1120-21-4	Undecane	3	18	0	0	0.18	1.47	0.73	0.52

*Aldehydes (formaldehyde, acetaldehyde and propanal) that were analyzed with the DNPH sampling can be found at the bottom of the table (Chemical # 118 – 120).

[1] Detection frequency above zero

[2] Detection frequency above the method detection limit (MDL)

Table 8 (continued)

#	G	CAS#	Compound	Detection frequency[1] #	Detection frequency[1] %	Detection frequency[2] #	Detection frequency[2] %	Emission factor at 24 h ($\mu g\ m^{-2}\ h^{-1}$) Min	Max	Mean	Median
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramethyl-	2	12	0	0	0.00	0.67	0.34	0.34
40		611-14-3	Toluene, 2-ethyl-	2	12	1	6	0.04	153.80	76.92	76.92
41		620-14-4	Toluene, 3-ethyl-	3	18	1	6	0.01	469.47	156.51	0.05
42		622-96-8	Toluene, 4-ethyl-	3	18	1	6	0.01	433.32	144.46	0.06
43		31017-40-0	Cyclohexene, 4-phenyl	0	0	0	0				
44		71-43-2	Benzene	9	53	3	18	0.01	4.19	1.70	0.42
45		526-73-8	Benzene, 1,2,3-trimethyl-	1	6	1	6	209.78	209.78	209.78	209.78
46		95-63-6	Benzene, 1,2,4-trimethyl-	2	12	1	6	0.11	430.94	215.52	215.52
47		95-47-6	Benzene, 1,2-dimethyl-	7	41	1	6	0.07	93.46	13.57	0.29
48		108-67-8	Benzene, 1,3,5-trimethyl-	3	18	1	6	0.00	178.51	59.52	0.04
49		108-38-3	Benzene, 1,3-dimethyl-	11	65	1	6	0.01	127.19	12.09	0.19
50		98-82-8	Benzene, isopropyl	2	12	1	6	0.18	122.66	61.42	61.42
51		103-65-1	Benzene, propyl-	3	18	1	6	0.04	285.20	95.12	0.13
52		100-41-4	Ethylbenzene	11	65	2	12	0.00	33.71	3.75	0.31
53		91-20-3	Naphthalene	6	35	1	6	0.00	0.89	0.17	0.03
54		99-87-6	p-Cymene	2	12	1	6	0.01	6.28	3.14	3.14
55		100-42-5	Styrene	10	59	3	18	0.00	265.49	32.21	1.10
56		108-88-3	Toluene	13	76	6	35	0.00	114.09	15.19	0.32
57		98-83-9	2-Phenylpropene	2	12	1	6	0.64	4.00	2.32	2.32
58		95-13-6	Indene	1	6	0	0	0.21	0.21	0.21	0.21
59	Esters	108-21-4	Acetic acid, 1-methylethyl ester	1	6	1	6	497.11	497.11	497.11	497.11
60		111-15-9	Acetic acid, 2-ethoxyethyl ester	0	0	0	0				
61		123-86-4	Acetic acid, butyl ester	0	0	0	0				
62		141-78-6	Acetic acid, ethyl ester	1	6	1	6	252.00	252.00	252.00	252.00
63		80-62-6	Methyl methacrylate	0	0	0	0				
64		103-09-3	2-Ethylhexyl acetate	0	0	0	0				
65		96-48-0	Butyrolactone	1	6	1	6	0.12	0.12	0.12	0.12
66		25265-77-4	Texanol	10	59	9	53	0.15	15.27	3.86	2.19
67		6846-50-0	TXIB	11	65	3	18	0.01	6.84	1.81	0.35
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol	3	18	3	18	0.46	61.43	21.68	3.16
69		110-49-6	2-Methoxyethylacetate	0	0	0	0				
70		111-90-0	Diethylene glycol monoethyl ether	0	0	0	0				
71		107-98-2	Propanol, 1-methoxy-2-	0	0	0	0				
72		111-76-2	Ethanol, 2-butoxy-	2	12	1	6	0.19	1.95	1.07	1.07
73		112-34-5	Ethanol, 2-butoxyethoxy-	2	12	0	0	0.40	3.10	1.75	1.75
74		110-80-5	Ethanol, 2-ethoxy-	0	0	0	0				
75		109-86-4	Ethanol, 2-methoxy-	0	0	0	0				
76		75-65-0	Propanol, 2-methyl-2-	2	12	1	6	0.03	1612.62	806.32	806.32
77		5131-66-8	Proylene glycol monobutyl ether	0	0	0	0				
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane	0	0	0	0				
79		95-50-1	1,2-Dichlorobenzene	0	0	0	0				
80		107-06-2	1,2-Dichloroethane	2	12	2	12	0.51	1.02	0.77	0.77
81		78-87-5	1,2-Dichloropropane	8	47	8	47	0.58	31.98	8.78	3.66
82		106-46-7	1,4-Dichlorobenzene	2	12	1	6	0.11	0.61	0.36	0.36
83		75-27-4	Bromodichloromethane	0	0	0	0				

Table 8 (continued)

#	G	CAS#	Compound	Detection frequency[1] #	Detection frequency[1] %	Detection frequency[2] #	Detection frequency[2] %	Emission factor at 24 h ($\mu g\ m^{-2}\ h^{-1}$) Min	Max	Mean	Median
84	Halo Carbons	56-23-5	Carbon tetrachloride	0	0	0	0				
85		67-66-3	Chloroform	3	18	2	12	0.23	0.54	0.42	0.48
86		124-48-1	Dibromochloromethane	0	0	0	0				
87		75-09-2	Dichloromethane	0	0	0	0				
88		127-18-4	Tetrachloroethylene	0	0	0	0				
89		79-01-6	Trichloroethylene	5	29	0	0	0.02	8.53	2.09	0.29
90		79-34-5	1,1,2,2-Tetrachloroethane	0	0	0	0				
91	Cyclo Alkanes	108-87-2	Methylcyclohexane	4	24	3	18	1.50	4.92	3.69	4.18
92		110-82-7	Cyclohexane	3	18	3	18	2.21	3.78	3.24	3.73
93		1678-93-9	Cyclohexane, butyl-	0	0	0	0				
94		1678-91-7	Cyclohexane, ethyl-	0	0	0	0				
95		1678-92-8	Cyclohexane, propyl-	0	0	0	0				
96		91-17-8	Decahydronaphthalene	0	0	0	0				
97	Terpenes	80-56-8	alpha-Pinene	2	12	1	6	0.03	0.13	0.08	0.08
98		99-86-5	alpha-Terpinene	0	0	0	0				
99		127-91-3	beta-Pinene	1	6	0	0	0.02	0.02	0.02	0.02
100		99-85-4	gamma-Terpinene	0	0	0	0				
101		13466-78-9	3-Carene	1	6	0	0	0.02	0.02	0.02	0.02
102		79-92-5	Camphene	0	0	0	0				
103		5989-27-5	Limonene	1	6	0	0	0.03	0.03	0.03	0.03
104	Acids	64-19-7	Acetic acid	9	53	3	18	0.24	2143.14	267.43	3.05
105		79-31-2	Isobutyric acid	0	0	0	0				
106		107-92-6	Butyric acid	2	12	2	12	0.25	0.90	0.58	0.58
107		111-14-8	Heptanoic acid	0	0	0	0				
108		149-57-5	2-Ethylhexanoic acid	1	6	0	0	0.05	0.05	0.05	0.05
109		142-62-1	Hexanoic acid	2	12	2	12	0.34	0.76	0.55	0.55
110		109-52-4	Pentanoic Acid	0	0	0	0				
111	Other	3777-69-3	Furan, 2-pentyl	1	6	0	0	0.04	0.04	0.04	0.04
112		872-50-4	2-Pyrrolidinone, 1-methyl-	1	6	1	6	0.07	0.07	0.07	0.07
113		123-91-1	1,4-Dioxane	4	24	3	18	2.29	46.36	15.72	7.10
114		78-40-0	Triethyl phosphate	1	6	1	6	53.57	53.57	53.57	53.57
115		142-96-1	n-Butyl ether	0	0	0	0				
116		96-29-7	2-Butanone oxime	0	0	0	0				
117		121-44-8	Triethylamine	0	0	0	0				
118	DNPH	75-07-0	Acetaldehyde	15	88	14	82	0.13	194.52	16.22	1.13
119		50-00-0	Formaldehyde	16	94	15	88	0.06	80.30	9.51	4.19
120		123-38-6	Propanal	12	71	7	41	0.12	69.77	8.66	1.23
121	PFPH	107-02-8	Acrolein	6	35	6	35	0.06	25.40	8.91	5.39

Note: 12 insulation specimens tested in 2013/14 and 5 insulation specimens tested in 2012/13

[1] Detection frequency above zero

[2] Detection frequency above the method detection limit (MDL)

Table 9: Emission factors (µg m^{-2} h^{-1}) at 24 h for major VOCs from insulation

				Spray foam (1-component)					Spray foam (2-component)			Loose (organic)		Loose (inorganic)		Foam board				Other
				MDI-based				Latex	DIY	Professional		Recycled denim	Cellulose	Stone wool	Fiber glass	XPS	EPS	EPS	Polyisocyanurate	Reflec-tive
#		CAS #		CAK32	CAK33	CAK34	SPF4	CAK35	SPF1c	SPF2	SPF3	INS3	INS4	INS5	INS9	INS7	INS8	INS2	INS10	INS6
1	Alcohols	71-36-3	1-Butanol				1.0	214.3		0.3		0.0	1.6	0.1	0.0	0.3		16.8	4.7	0.1
2		71-23-8	1-Propanol					49.9												
3		104-76-7	Hexanol, 2-ethyl-1-				0.8	22.5	0.6	0.3	0.3	0.1	0.1	0.0		0.3	0.2	16.1	1.1	0.1
4		67-63-0	2-Propanol	2.3				85759.1					2.6							
6		108-95-2	Phenol	5.1	11.1	1.9	0.3	15.8				0.3		0.1		0.0		2.2	0.0	0.1
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone					15.5					0.1		0.0					
8		67-64-1	Acetone	10.3	3.6	2.2	0.4	1048.4	0.5	0.3	0.6	0.0	0.7		0.0	0.5	0.2	4.2	0.2	
9		98-86-2	Acetophenone	1.3	3.1	1.8		17.3		0.1	0.4	0.0	0.0	0.0	0.0	2.7	0.2	0.3	0.1	
12		100-52-7	Benzaldehyde	2.3	3.7	2.4		27.4	0.3		0.0	0.0	0.3		0.0	1.3	0.5	11.7		0.0
13		123-72-8	Butanal					15.9					0.4							
18		66-25-1	Hexanal				4.4						60.1	0.5	0.7					
24	Aliphatic	107-83-5	Pentane, 2-methyl-	16.1		15.9	5.3											1.7		
32		110-54-3	Hexane	17.9	2.1	16.4	20.1											0.5		
40	Aromatic Hydrocarbons	611-14-3	Toluene, 2-ethyl-			0.0		153.8												
41		620-14-4	Toluene, 3-ethyl-					469.5					0.0					0.0		
42		622-96-8	Toluene, 4-ethyl-					433.3					0.0					0.1		
45		526-73-8	Benzene, 1,2,3-trimethyl-					209.8												
46		95-63-6	Benzene, 1,2,4-trimethyl-					430.9										0.1		
47		95-47-6	Benzene, 1,2-dimethyl-	0.3		0.5		93.5			0.1					0.1	0.5	0.1		
48		108-67-8	Benzene, 1,3,5-trimethyl-					178.5					0.0					0.0		
49		108-38-3	Benzene, 1,3-dimethyl-	1.5	0.2	2.6	0.4	127.2		0.1	0.2					0.1	0.6	0.1		0.0
50		98-82-8	Benzene, isopropyl					122.7									0.2			
51		103-65-1	Benzene, propyl-					285.2									0.1	0.0		
52		100-41-4	Ethylbenzene	0.3	0.1	0.3	0.1	33.7		0.1	0.1					0.4	0.7	5.6		0.0
55		100-42-5	Styrene	0.4		0.8		265.5		1.4			0.0		0.0	22.9	3.1	27.9	0.2	
56		108-88-3	Toluene	63.3	114.1	6.9	3.7			0.2	1.0	0.1	0.0			0.3	0.3	7.5	0.0	0.0
59	Esters	108-21-4	Acetic acid, 1-methylethyl ester					497.1												
62		141-78-6	Acetic acid, ethyl ester					252.0												
66		25265-77-4	Texanol					15.3	1.5	2.9	6.5	0.3				1.0	0.1	3.7	7.1	0.2
68	Gly	57-55-6	1,2-Propanediol					61.4				3.2	0.5							
76		75-65-0	Propanol, 2-methyl-2-					1612.6					0.0							
81	Halo	78-87-5	1,2-Dichloropropane	22.1	2.8	32.0	1.6		0.6	4.5	5.9								0.7	
104	Acid	64-19-7	Acetic acid				3.0	2143.1		3.1		42.2	209.8		0.2	0.8	2.2		2.4	
113	Other	123-91-1	1,4-Dioxane					4.5		46.4	2.3								9.7	
114		78-40-0	Triethyl phosphate						53.6											
118	DNPH	75-07-0	Acetaldehyde	1.9		0.9	2.7	194.5	1.4	6.0	29.7	0.3	1.1	1.1	0.2	0.3	0.5	2.6		0.1
119		50-00-0	Formaldehyde	7.8	5.8	2.7	1.5	80.3	0.6	6.9	2.9	3.8	4.6	7.1	10.1	0.7	2.4	14.8		0.1
120		123-38-6	Propanal	69.8		19.7	1.7		5.6	0.2	3.0		1.5		0.1	0.8	0.4		1.0	0.1
121	PFPH	107-02-8	Acrolein	16.7		9.4		25.4	0.1			1.4		0.6						

Note: Pink (EF > 10,000 µg m^2 h^{-1}); Yellow (1,000 < EF < 10,000 µg m^2 h^{-1}); Green (100 < EF < 1,000 µg m^2 h^{-1}); Grey (10 < EF < 100 µg m^2 h^{-1}); MDI (methylene diphenyl diisocyanate); DIY (do-it-yourself); XPS (extruded polystyrene); EPS (expanded polystyrene)

3.2.2.2 Emission factors from optimal and sub-optimal application of a spray foam sealant

SPF1, which was a two-component spray foam insulation based on methylene diphenyl diisocyanate (MDI) and available for a do-it-yourself project in a local retail outlet, was applied in four different ways to simulate the normal and abnormal application. SPF1c represents a normal application, involving an identical amount of component A and B (1:1), 2-inch thickness foam, and 2 passes applied at room temperature (22 – 23 ^{o}C). The ratio of component A and B was changed to 0.25:1 from 1:1 to simulate the non-optimal ratio of two components to make SPF1d. SPF1e and SPF1f were applied at 16 ^{o}C and 5 ^{o}C, respectively, which are sub-optimal compared to the recommended application temperature of 21 to 32 ^{o}C. Two tanks of component A and B were stored at the relevant temperature for 3 days before each test.

The emission factors were compared for two abundant VOCs, including triethyl phosphate (Figure 20) and *trans*-1,2-dichloroethene (Figure 21). Since the latter was not on the NRC target list, it was quantified against toluene. The emission factors were higher if the foam was applied abnormally. For example, the emission factor of triethyl phosphate increased by a factor of 2, 4, and 7 when the foam was applied with an off-ratio of two components and at low temperatures. The emission factor was highest when the foam was applied at 5 ^{o}C.

While the difference in the emission factor of *trans*-1,2-dichloroethene was not as big as that of triethyl phosphate (Figure 21), the emission factor was still highest with the specimen applied at 5 ^{o}C. The trend was similar for other chemicals with lower emission factors, including Texanol, 1,2-dichloroethane, and 1,2-dichloropropane. The same observation was made when the emission factor was standardized with specimen weight rather than surface area (no data presented). This demonstrates that the VOC emissions can be high when the spray foam is not applied properly. It is likely the result of improper reactions of foam ingredients, leading to improper curing and abnormal release of additives. Amine catalysts were not detected, which might be due to the sampling and analytical method that was not optimized for amine compounds.

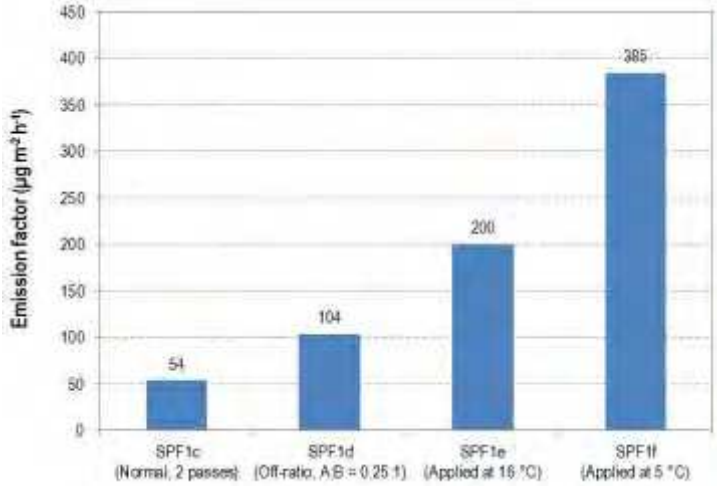


Figure 20: Emission factors of triethyl phosphate from SPF1c – SPF1f

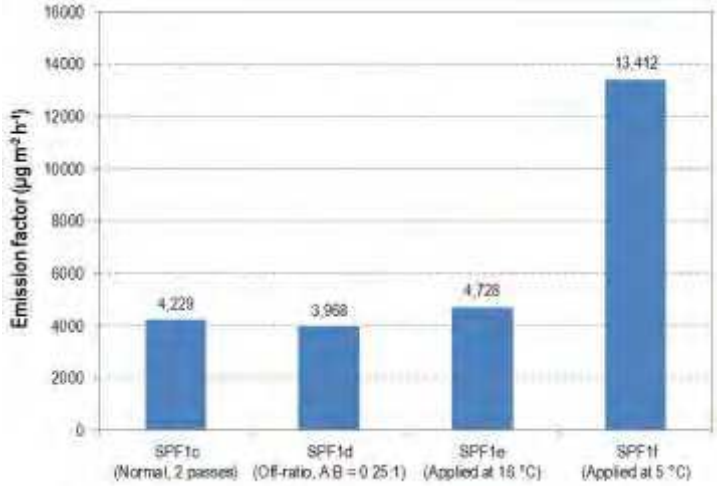


Figure 21: Emission factors of *trans*-1,2-dichloroethene from SPF1c – SPF1f

3.2.3 Paint

3.2.3.1 Detection frequency and emission factor for 14 paints

Table 10 summarizes the detection frequency and emission factor at 24 hour for latex paints, including 10 paints tested in 2013/14 and 4 paints tested in 2012/13. Compounds with a detection frequency (above MDL) > 90% included:

- 100%: 1-butanol (#1), TXIB (#67), and formaldehyde (#119)
- > 90%: acetone (#8), Texanol (#66), and *n*-butyl ether (#115)

Among the frequently detected compounds, Texanol had the highest emission (median value of 5,079 $\mu g\ m^{-2}\ h^{-1}$).

Compounds with relatively high emission factors (EF) based on median values were:

- EF > 1,000 $\mu g\ m^{-2}\ h^{-1}$: Texanol (#66) and 1,2-propanediol (#68)
- 100 < EF < 1,000 $\mu g\ m^{-2}\ h^{-1}$: 2-decenal (#15)

3.2.3.2 Relationship between VOC content and emissions

The emission factors (EF) of selected VOCs with relatively high emission factors are summarized in Table 11 for individual paint products, grouped for the VOC content provided by manufacturers. The same information for all VOCs is presented in the appendix (Table A. 40). The emission factors of glycol ethers and esters tend to increase with increasing VOC content (Table 11). The chalkboard paint with VOC > 250 g/L had the highest emission factor of Texanol. This can be seen more clearly in Figure 22, which presents the emission factors of Texanol and TXIB averaged for each category of the VOC content. However, this is not the case for other VOCs. The emission factors of formaldehyde tend to decrease with increasing VOC content in Figure 23. On the other hand, no trend was found for acetaldehyde in Figure 23. It appears that the VOC content is mostly correlated with the emission factors of major ingredients such as glycol ethers and esters, but not the minor ingredients such as aldehydes. This shows that the low VOC content cannot be directly interpreted to low emission factors for individual VOCs.

3.2.3.3 Effects of colorants on VOC emissions

Paint products tested were typically latex-based, eggshell and white with a few exceptions. Colorants were added to PT16c1, PT13c1, and PT13c2 to determine the effects of colorants on VOC emissions. Comparing PT16c1 to PT16 or PT13c2 to PT13 shows that colored paint products tend to have slightly higher emission factors that those with no colorants for most of VOCs. This is particularly pertinent to the major VOCs, including Texanol and 1,2-dipropanediol. On average, the paint with dark blue color (PT16c1) had ~60% higher emission factors than those of the base paint (PT16) according the ratio of emission factors of two paint products in Table 12. The emission factors for the paint with light beige color (PT13c2) were similar to those of the base paint (PT13). No comparison was made for the dark colored paint (PT13c1), since it was later revealed that the base paint used to make PT13c1 was not the same as PT13. This was realized through the observation that Texanol was a major VOC for PT13 and PT13c2, while it was a minor VOC in PT13c1. The difference between PT13 and PT13p was whether the primer was used or not. While some individual VOCs had higher emission factors with PT13p than with PT13, the difference was not significant on average.

Table 10: Detection frequency and emission factor at 24 h for paint

#	G	CAS#	Compound	Detection frequency[1]		Detection frequency[2]		Emission factor at 24 h ($\mu g\ m^{-2}\ h^{-1}$)			
				#	%	#	%	Min	Max	Mean	Median
1	Alcohols	71-36-3	1-Butanol	14	100	14	100	3.86	84.97	28.82	27.21
2		71-23-8	1-Propanol	1	7	1	7	17.49	17.49	17.49	17.49
3		104-76-7	Hexanol, 2-ethyl-1-	10	71	10	71	1.59	53.38	12.59	5.73
4		67-63-0	2-Propanol	6	43	5	36	0.23	12.32	7.20	7.43
5		64-17-5	Ethanol	8	57	7	50	0.77	25.45	6.08	3.29
6		108-95-2	Phenol	12	86	12	86	1.29	23.14	8.13	5.23
7	Aldehydes & Ketones *	78-93-3	Methylethyl ketone	9	64	0	0	0.15	2.10	0.61	0.47
8		67-64-1	Acetone	13	93	13	93	1.27	19.96	8.76	6.91
9		98-86-2	Acetophenone	12	86	1	7	0.29	4.53	1.48	0.94
10		108-94-1	Cyclohexanone	0	0	0	0				
11		108-10-1	Methylisobutyl ketone	0	0	0	0				
12		100-52-7	Benzaldehyde	14	100	10	71	1.03	12.47	6.66	7.03
13		123-72-8	Butanal	8	57	0	0	2.22	4.87	3.69	3.80
14		112-31-2	Decanal	4	29	4	29	1.84	2.75	2.30	2.30
15		3913-81-3	2-Decenal	1	7	1	7	180.35	180.35	180.35	180.35
16		98-01-1	Furfural	7	50	0	0	0.62	1.69	1.19	1.17
17		111-71-7	Heptanal	10	71	9	64	1.86	3.69	2.72	2.41
18		66-25-1	Hexanal	13	93	12	86	2.63	43.99	19.33	18.11
19		124-19-6	Nonanal	9	64	9	64	1.28	4.27	2.89	2.97
20		18829-56-6	2-Nonenal	0	0	0	0				
21		124-13-0	Octanal	5	36	0	0	0.41	1.34	1.02	1.19
22		2548-87-0	2-Octenal	0	0	0	0				
23		110-62-3	Pentanal	9	64	0	0	1.12	3.22	2.31	2.46
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-	0	0	0	0				
25		96-14-0	Pentane, 3-methyl-	3	21	3	21	0.90	5.67	2.57	1.12
26		540-84-1	2,2,4-Trimethylpentane	0	0	0	0				
27		108-08-7	2,4-Dimethylpentane	0	0	0	0				
28		124-18-5	Decane	9	64	3	21	0.18	69.44	8.35	0.38
29		112-40-3	Dodecane	5	36	4	29	0.89	8.78	2.99	1.71
30		142-82-5	Heptane	0	0	0	0				
31		544-76-3	Hexadecane	11	79	9	64	0.26	33.95	3.77	0.67
32		110-54-3	Hexane	0	0	0	0				
33		111-84-2	Nonane	2	14	1	7	0.76	31.25	16.00	16.00
34		111-65-9	Octane	1	7	1	7	4.93	4.93	4.93	4.93
35		629-62-9	Pentadecane	9	64	8	57	0.37	53.46	6.60	0.74
36		629-59-4	Tetradecane	11	79	8	57	0.33	22.53	3.24	1.34
37		629-50-5	Tridecane	5	36	3	21	0.38	3.21	1.52	1.39
38		1120-21-4	Undecane	7	50	1	7	0.08	66.81	10.03	0.75

*Aldehydes (formaldehyde, acetaldehyde and propanal) that were analyzed with the DNPH sampling can be found at the bottom of the table (Chemical # 118 – 120).

[1] Detection frequency above zero

[2] Detection frequency above the method detection limit (MDL)

Table 10 (continued)

#	G	CAS#	Compound	Detection frequency[1] #	Detection frequency[1] %	Detection frequency[2] #	Detection frequency[2] %	Emission factor at 24 h ($\mu g\ m^{-2}\ h^{-1}$) Min	Max	Mean	Median
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramethyl-	4	29	1	7	0.11	1.88	0.60	0.20
40		611-14-3	Toluene, 2-ethyl-	9	64	2	14	0.04	2.68	0.46	0.24
41		620-14-4	Toluene, 3-ethyl-	9	64	4	29	0.12	4.60	1.44	0.56
42		622-96-8	Toluene, 4-ethyl-	9	64	4	29	0.11	5.03	1.27	0.55
43		31017-40-0	Cyclohexene, 4-phenyl	0	0	0	0				
44		71-43-2	Benzene	6	43	0	0	0.01	0.66	0.36	0.43
45		526-73-8	Benzene, 1,2,3-trimethyl-	2	14	1	7	0.06	5.72	2.89	2.89
46		95-63-6	Benzene, 1,2,4-trimethyl-	7	50	3	21	0.29	11.48	2.55	0.75
47		95-47-6	Benzene, 1,2-dimethyl-	8	57	1	7	0.13	5.25	0.93	0.27
48		108-67-8	Benzene, 1,3,5-trimethyl-	8	57	1	7	0.03	3.97	0.59	0.11
49		108-38-3	Benzene, 1,3-dimethyl-	14	100	5	36	0.22	13.85	2.43	1.43
50		98-82-8	Benzene, isopropyl	6	43	4	29	0.65	4.17	2.05	1.99
51		103-65-1	Benzene, propyl-	7	50	5	36	0.32	2.75	1.59	1.74
52		100-41-4	Ethylbenzene	14	100	2	14	0.05	3.23	0.62	0.39
53		91-20-3	Naphthalene	7	50	0	0	0.15	0.46	0.27	0.28
54		99-87-6	p-Cymene	5	36	2	14	0.20	7.21	2.20	0.79
55		100-42-5	Styrene	12	86	4	29	0.13	1.70	0.70	0.53
56		108-88-3	Toluene	13	93	1	7	0.06	2.34	0.50	0.23
57		98-83-9	2-Phenylpropene	0	0	0	0				
58		95-13-6	Indene	1	7	0	0	0.19	0.19	0.19	0.19
59	Esters	108-21-4	Acetic acid, 1-methylethyl ester	0	0	0	0				
60		111-15-9	Acetic acid, 2-ethoxyethyl ester	0	0	0	0				
61		123-86-4	Acetic acid, butyl ester	5	36	5	36	2.66	8.17	4.80	3.52
62		141-78-6	Acetic acid, ethyl ester	0	0	0	0				
63		80-62-6	Methyl methacrylate	2	14	0	0	0.97	1.28	1.13	1.13
64		103-09-3	2-Ethylhexyl acetate	2	14	1	7	0.68	22.01	11.34	11.34
65		96-48-0	Butyrolactone	0	0	0	0				
66		25265-77-4	Texanol	13	93	13	93	6.21	31716.32	8603.33	5079.22
67		6846-50-0	TXIB	14	100	14	100	0.42	245.25	34.88	7.01
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol	9	64	9	64	558.56	12365.41	6490.40	5689.83
69		110-49-6	2-Methoxyethylacetate	0	0	0	0				
70		111-90-0	Diethylene glycol monoethyl ethe	7	50	2	14	0.99	10.43	2.93	1.63
71		107-98-2	Propanol, 1-methoxy-2-	1	7	0	0	1.39	1.39	1.39	1.39
72		111-76-2	Ethanol, 2-butoxy-	5	36	2	14	1.84	29.51	8.54	2.29
73		112-34-5	Ethanol, 2-butoxyethoxy-	7	50	6	43	2.27	3398.17	1094.51	21.41
74		110-80-5	Ethanol, 2-ethoxy-	0	0	0	0				
75		109-86-4	Ethanol, 2-methoxy-	0	0	0	0				
76		75-65-0	Propanol, 2-methyl-2-	6	43	4	29	0.96	17.55	6.27	3.10
77		5131-66-8	Proylene glycol monobutyl ether	0	0	0	0				
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane	0	0	0	0				
79		95-50-1	1,2-Dichlorobenzene	0	0	0	0				
80		107-06-2	1,2-Dichloroethane	0	0	0	0				
81		78-87-5	1,2-Dichloropropane	0	0	0	0				
82		106-46-7	1,4-Dichlorobenzene	0	0	0	0				
83		75-27-4	Bromodichloromethane	0	0	0	0				

Table 10 (continued)

#	G	CAS#	Compound	Detection frequency[1]		Detection frequency[2]		Emission factor at 24 h ($\mu g\ m^{-2}\ h^{-1}$)			
				#	%	#	%	Min	Max	Mean	Median
84	Halo Carbons	56-23-5	Carbon tetrachloride	0	0	0	0				
85		67-66-3	Chloroform	0	0	0	0				
86		124-48-1	Dibromochloromethane	0	0	0	0				
87		75-09-2	Dichloromethane	0	0	0	0				
88		127-18-4	Tetrachloroethylene	0	0	0	0				
89		79-01-6	Trichloroethylene	13	93	5	36	0.08	10.67	1.63	0.36
90		79-34-5	1,1,2,2-Tetrachloroethane	0	0	0	0				
91	Cyclo Alkanes	108-87-2	Methylcyclohexane	1	7	0	0	0.39	0.39	0.39	0.39
92		110-82-7	Cyclohexane	0	0	0	0				
93		1678-93-9	Cyclohexane, butyl-	1	7	1	7	13.78	13.78	13.78	13.78
94		1678-91-7	Cyclohexane, ethyl-	1	7	1	7	4.57	4.57	4.57	4.57
95		1678-92-8	Cyclohexane, propyl-	1	7	1	7	10.16	10.16	10.16	10.16
96		91-17-8	Decahydronaphthalene	1	7	1	7	8.72	8.72	8.72	8.72
97	Terpenes	80-56-8	alpha-Pinene	0	0	0	0				
98		99-86-5	alpha-Terpinene	0	0	0	0				
99		127-91-3	beta-Pinene	0	0	0	0				
100		99-85-4	gamma-Terpinene	0	0	0	0				
101		13466-78-9	3-Carene	0	0	0	0				
102		79-92-5	Camphene	0	0	0	0				
103		5989-27-5	Limonene	7	50	5	36	0.40	3.58	1.56	1.43
104	Acids	64-19-7	Acetic acid	10	71	10	71	13.96	90.64	40.64	39.17
105		79-31-2	Isobutyric acid	3	21	3	21	18.51	114.22	58.33	42.26
106		107-92-6	Butyric acid	0	0	0	0				
107		111-14-8	Heptanoic acid	0	0	0	0				
108		149-57-5	2-Ethylhexanoic acid	0	0	0	0				
109		142-62-1	Hexanoic acid	0	0	0	0				
110		109-52-4	Pentanoic Acid	0	0	0	0				
111	Other	3777-69-3	Furan, 2-pentyl	0	0	0	0				
112		872-50-4	2-Pyrrolidinone, 1-methyl-	2	14	2	14	3.01	30.07	16.54	16.54
113		123-91-1	1,4-Dioxane	3	21	2	14	1.02	3.81	1.97	1.09
114		78-40-0	Triethyl phosphate	0	0	0	0				
115		142-96-1	n-Butyl ether	13	93	13	93	7.61	185.17	74.49	62.35
116		96-29-7	2-Butanone oxime	0	0	0	0				
117		121-44-8	Triethylamine	0	0	0	0				
118	DNPH	75-07-0	Acetaldehyde	12	86	12	86	3.01	15.76	11.14	12.31
119		50-00-0	Formaldehyde	14	100	14	100	0.03	73.53	14.27	6.33
120		123-38-6	Propanal	10	71	9	64	0.25	4.61	2.68	2.57
121	PFPH	107-02-8	Acrolein	9	64	6	43	0.15	45.46	6.03	1.20

Note: 10 paint specimens tested in 2013/14 and 4 paint specimens tested in 2012/13

[1] Detection frequency above zero

[2] Detection frequency above the method detection limit (MDL)

Table 11: Emission factors (µg m^2 h^{-1}) at 24 h for major VOCs emitted from paint

				VOC ~ 0 g/L		VOC < 5 g/L			VOC < 50 g/L		VOC < 150 g/L						VOC < 250 g/L
				White	Paint & Primer in One	White	Base for dark color	Base + Dark color (blue)	White	Recycled content, white	White	White	White	Light color (beige)	Dark color (blue)	Primed substrate, white	Chalk board, dark
#	Class	CAS #		PT9	PT15	PT11	PT16	PT16c1	PT10	PT18	PT12	PT17	PT13	PT13c2	PT13c1	PT13p	PT14
1	Alcohols	71-36-3	1-Butanol	7.4	28.6	29.8	85.0	46.3	15.0	25.0	21.7	3.9	25.8	30.2	32.1	47.6	5.1
2		71-23-8	1-Propanol							17.5							
3		104-76-7	Hexanol, 2-ethyl-1-			1.6			5.2	53.4	16.5	2.9	4.2	7.0	3.6	6.3	25.3
4		67-63-0	2-Propanol							8.0	5.8		6.8	12.3	0.2	10.1	
5		64-17-5	Ethanol		2.8		2.4	3.0	0.8	25.5	5.9	3.5					4.7
6		108-95-2	Phenol	3.3	1.3	4.5			4.3	23.1	21.2	7.6	3.7	6.0	7.1	4.2	11.3
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.5	0.2	0.4	0.6		2.1	0.2	0.6		0.5			0.4
8		67-64-1	Acetone		7.1	6.2	4.3	6.6	1.3	11.5	6.9	5.4	13.4	10.2	4.5	16.6	20.0
12		100-52-7	Benzaldehyde	1.7	8.8	1.5	9.9	11.1	2.7	4.1	4.9	1.0	9.7	12.5	8.6	11.3	5.4
15		3913-81-3	2-Decenal					180.3									
18		66-25-1	Hexanal	18.1	16.7	24.5	17.8	24.0	23.3		44.0	2.6	17.2	18.8	15.9	18.4	10.1
28	Aliphatic Hydrocarbons	124-18-5	Decane	0.2	0.2	0.3		1.7	0.2	69.4	2.3	0.4					0.4
31		544-76-3	Hexadecane		0.6	0.8	0.9	0.7	0.3	1.7	0.7		0.5		0.8	0.6	33.9
33		111-84-2	Nonane					0.8		31.2							
35		629-62-9	Pentadecane	0.4	0.4		0.7	0.9	0.4	1.7	0.7				0.7		53.5
36		629-59-4	Tetradecane	0.3	1.7	2.3	0.8	1.5	0.5	1.3	3.4		0.6	0.5			22.5
38		1120-21-4	Undecane	0.1				0.8	0.4	66.8	1.1	0.4					0.8
46	Aro	95-63-6	Benzene, 1,2,4-trimethyl-	0.5	0.3		3.3	1.2		11.5						0.8	0.3
49		108-38-3	Benzene, 1,3-dimethyl-	0.8	5.4	1.6	0.5	1.4	0.9	13.8	1.3	0.2	2.0	2.2	0.2	2.1	1.5
64	Esters	103-09-3	2-Ethylhexyl acetate						0.7								22.0
66		25265-77-4	Texanol	6.2	30.5		769.8	1112.8	54.9	12152.0	23080.1	5079.2	11069.4	15445.3	11.4	11315.4	31716.3
67		6846-50-0	TXIB	0.4	1.8	4.7	1.7	4.3	0.9	245.2	57.3	6.6	24.0	34.2	7.4	35.7	63.9
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		558.6					3385.4	11913.6	3163.5	5689.8	6793.2	12199.1	12365.4	2345.0
70		111-90-0	Diethylene glycol monoethyl ether				1.0	1.5		10.4			1.0	1.7	1.6	3.2	
72		111-76-2	Ethanol, 2-butoxy-							29.5	2.3			1.8	6.8		2.3
73		112-34-5	Ethanol, 2-butoxyethoxy-							3398.2	2830.4	1389.8	7.8	2.3		11.7	21.4
76		75-65-0	Propanol, 2-methyl-2-	3.3		2.9			17.6	1.8	11.2	1.0					
89	Halo	79-01-6	Trichloroethylene		0.3	4.0	0.2	0.4	1.1	0.8	10.7	0.2	2.4	0.4	0.1	0.4	0.1
93	Cyclo	1678-93-9	Cyclohexane, butyl-							13.8							
95		1678-92-8	Cyclohexane, propyl-							10.2							
104	Acids	64-19-7	Acetic acid	28.0	14.0				47.9	43.5	54.6	34.9	45.7	24.3	90.6	23.0	
105		79-31-2	Isobutyric acid							114.2			18.5				42.3
112	Other	872-50-4	2-Pyrrolidinone, 1-methyl-							30.1	3.0						
115		142-96-1	n-Butyl ether	43.0	185.2	67.8	174.5	96.7	55.5	13.7	42.4	7.6	62.3	65.9	45.5	108.4	
118	DN	75-07-0	Acetaldehyde	11.1	12.7	5.3	11.0	12.3	15.8			3.0	13.2	11.0	12.7	12.3	13.2
119	PH	50-00-0	Formaldehyde	73.5	6.3	36.5	6.4	7.2	35.8	0.7	0.0	1.0	6.3	6.4	6.3	7.2	6.3
121	PFPH	107-02-8	Acrolein	0.1		0.7	1.2		1.2	0.6	45.5		1.7	1.0			2.3

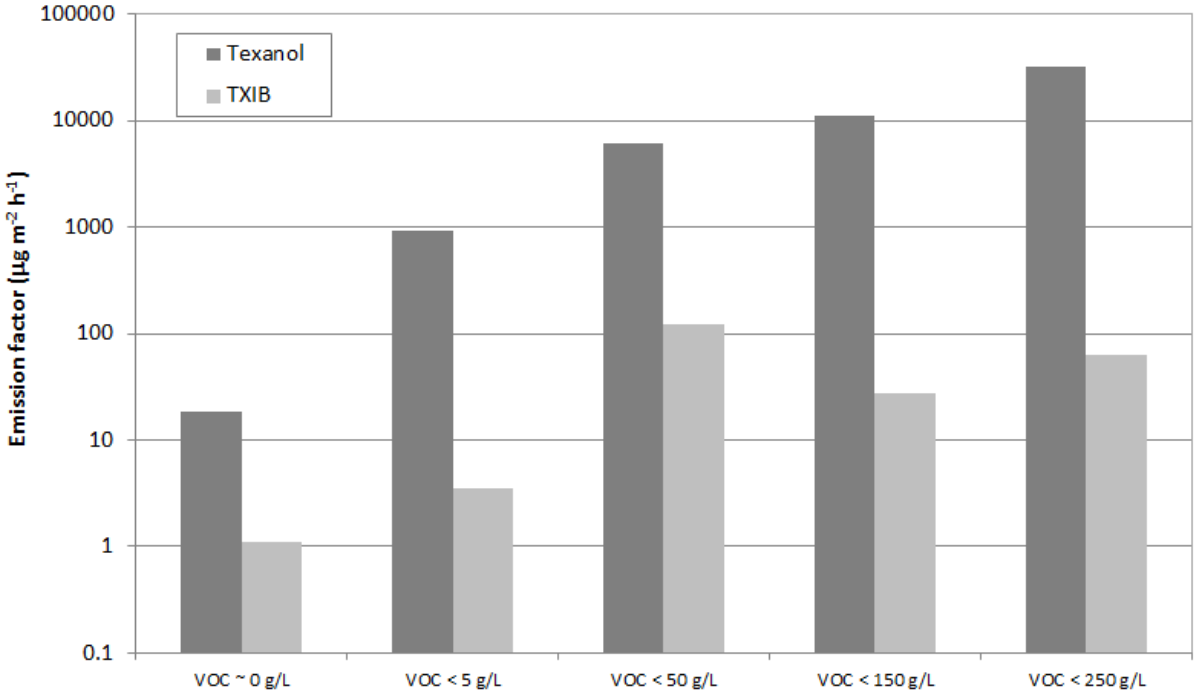


Figure 22: Mean emission factors at 24 h of Texanol and TXIB for different VOC contents

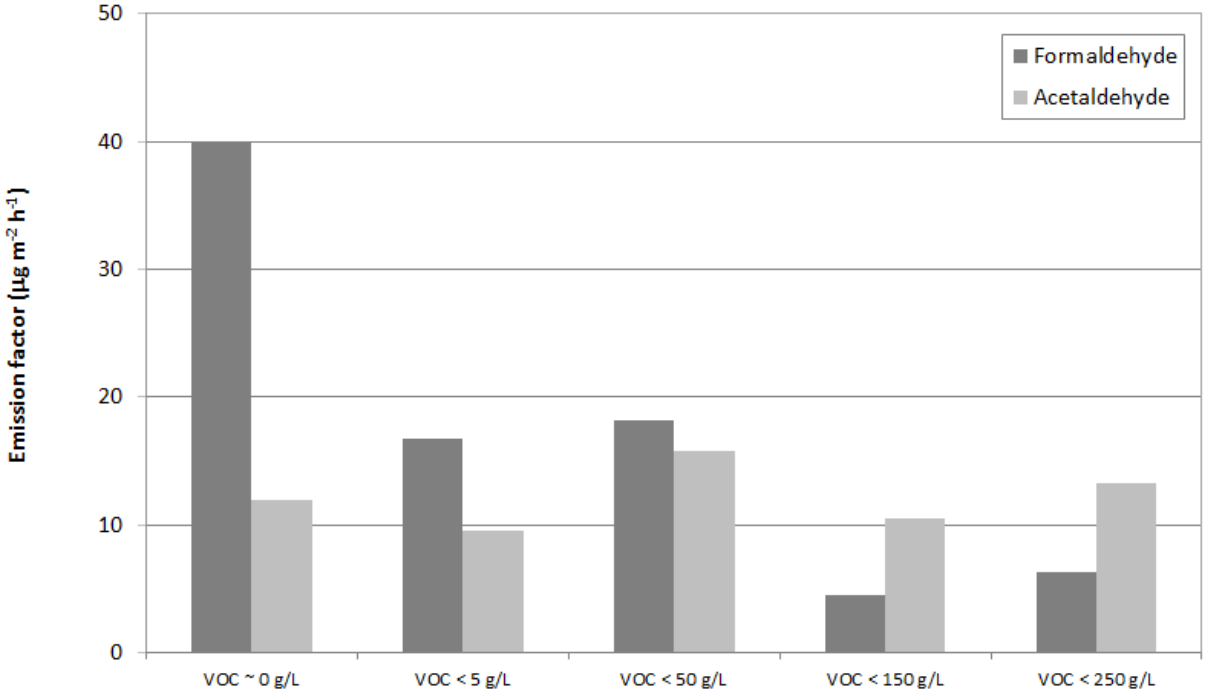


Figure 23: Mean emission factors at 24 h of acetaldehyde and formaldehyde for different VOC contents

3.2.3.4 Effects of specimen variability

PT12 (from previous study) and PT17 were identical paints with different purchasing dates and lot numbers (July 26, 2012 vs. Nov 18, 2013). There were substantial decreases in the emission factors for all VOCs except methylethyl ketone and formaldehyde (Table 11) over 1 year. The median value of the emission factor ratios was 0.2 for two products (Table 12). This is likely the result of the paint reformulation. This shows how the emission factors can change from year to year or from batch to batch.

Table 12: Ratio of emission factor at 24 h for colored vs. base paint and specimen variability

				Colored paint vs. Base paint			Specimen variability
#	Class	CAS #		PT16c1 vs. PT16	PT13c2 vs. PT13	PT13p vs. PT13	PT17 vs. PT12
1	Alcohols	71-36-3	1-Butanol	0.7	1.2	1.6	0.2
2		71-23-8	1-Propanol				
3		104-76-7	Hexanol, 2-ethyl-1-		1.6	1.3	0.2
4		67-63-0	2-Propanol		1.8	1.3	
5		64-17-5	Ethanol	1.6			0.7
6		108-95-2	Phenol		1.6	1.0	0.4
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone	1.8			3.8
8		67-64-1	Acetone	1.9	0.8	1.1	0.9
12		100-52-7	Benzaldehyde	1.4	1.3	1.0	0.2
15		3913-81-3	2-Decenal				
18		66-25-1	Hexanal	1.7	1.1	0.9	0.1
28	Aliphatic Hydrocarbons	124-18-5	Decane				0.2
31		544-76-3	Hexadecane	1.0		0.9	
33		111-84-2	Nonane				
35		629-62-9	Pentadecane	1.6			
36		629-59-4	Tetradecane	2.5	0.8		
38		1120-21-4	Undecane				0.4
46	Aro	95-63-6	Benzene, 1,2,4-trimethyl-	0.4			
49		108-38-3	Benzene, 1,3-dimethyl-	3.1	1.1	0.9	0.2
64	Esters	103-09-3	2-Ethylhexyl acetate				
66		25265-77-4	Texanol	1.8	1.4	0.9	0.3
67		6846-50-0	TXIB	3.2	1.4	1.3	0.1
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		1.2	1.8	0.3
70		111-90-0	Diethylene glycol monoethyl ether	1.9	1.7	2.7	
72		111-76-2	Ethanol, 2-butoxy-				
73		112-34-5	Ethanol, 2-butoxyethoxy-		0.3	1.3	0.6
76		75-65-0	Propanol, 2-methyl-2-				0.1
89	Halo	79-01-6	Trichloroethylene	2.3	0.2	0.1	0.0
93	Cyclo	1678-93-9	Cyclohexane, butyl-				
95		1678-92-8	Cyclohexane, propyl-				
104	Acids	64-19-7	Acetic acid		0.5	0.4	0.7
105		79-31-2	Isobutyric acid				
112	Other	872-50-4	2-Pyrrolidinone, 1-methyl-				
115		142-96-1	n-Butyl ether	0.7	1.0	1.5	0.2
118	DNPH	75-07-0	Acetaldehyde	1.4	0.8	0.8	
119		50-00-0	Formaldehyde	1.4	1.0	1.0	47.7
121	PFPH	107-02-8	Acrolein		0.6		
			Median	**1.6**	**1.1**	**1.0**	**0.2**
			Mean	**1.6**	**1.1**	**1.1**	**4.9**

Note: The ratio was calculated after the emission factors in Table 11 were normalized with the amount of paint (g) applied.

3.3 "Priority" chemicals

Sixteen compounds identified by Health Canada in 2011/12 as "priority" compounds for development of indoor air quality guidelines for VOCs were analyzed in more detail in this section. "Xylenes" were separately reported as the ortho isomer (1,2-dimethyl benzene) and the combination of the meta and para isomers (1,3- and 1,4- dimethyl benzene) which are poorly separated with the GC methodology used in this study. Additionally, four compounds (benzene, toluene, formaldehyde and naphthalene) that were previously identified as priorities were included in the analysis. The resulting list of 21 compounds identified as "priorities" are summarized in Table 13.

Due to a low detection frequency, nine compounds were not discussed in this section. They are:

- Two oxides and 1,3-butadiene, which were not included in the analysis due to the analytical issues mentioned previously and to the low detection frequency in the previous study.
- Carbon tetrachloride, dichloromethane, 1,1,2,2-tetrachloroethane, and Tetrachloroethylene, which were not detected above MDL in any of materials
- 1,4-Dichlorobenzene and 1,2-dichloroethane, which were detected above MDL in one or two materials

The remaining eleven "priority" chemicals, detected in a relatively high percentage of the 30 tested materials, are discussed below.

Table 13: List of "priority" compounds by Health Canada

#	Class	Compound	Detection frequency (above zero)	Detection frequency (above MDL)
1	Alcohol (1)	2-propanol	39%	33%
2	Aromatics (5)	benzene	53%	14%
3		*o*-xylene	45%	6%
4		*m&p*-xylene	71%	14%
5		ethylbenzene	71%	12%
6		naphthalene	39%	2%
7		toluene	76%	24%
8	Chlorinated Compounds (7)	1,2-dichloroethane	4%	4%
9		1,4-dichlorobenzene	8%	2%
10		carbon tetrachloride	Not detected	Not detected
11		chloroform	10%	6%
12		dichloromethane	Not detected	Not detected
13		tetrachloroethylene	Not detected	Not detected
14		1,1,2,2-tetrachloroethane	Not detected	Not detected
15	Aldehydes (4)	acetaldehyde	88%	86%
16		formaldehyde	96%	94%
17		propanal	76%	61%
18		acrolein	55%	45%
19	Oxides (2)	ethylene oxide	Excluded	Excluded
20		propylene oxide	Excluded	Excluded
21	Diene (1)	1,3-butadiene	Excluded	Excluded

3.3.1 2-Propanol

2-Propanol was detected in 17%, 6%, and 7% of wood, insulation, and paint materials, respectively, above MDL (Table 6, Table 8, and Table 10). The emission factors measured in the small-chamber test at 24 hour are presented in Figure 24 and Figure 25. The emission factor (EF) was highest with a latex-based spray foam sealant (CAK35) (EF = 85,759 μg m^{-2} h^{-1}). An I-beam joist (IB2) and a medium density board (MDF3) emitted 2-propanal with an emission factor > 50 μg m^{-2} h^{-1}.

3.3.2 Benzene

Benzene was detected in 22%, 18%, and 0% of wood, insulation, and paint materials, respectively, above MDL. While benzene was detected in some paints, but the levels were below MDL. The emission factors at 24 hour are presented in Figure 26 and Figure 27. Benzene was emitted from various products, but the emission factors were relatively low between 0.01 and 4.2 μg m^{-2} h^{-1}.

3.3.3 1,2-Dimethyl benzene and 1,3(4)-dimethyl benzene

The detection frequencies of 1,2-dimethyl benzene and 1,3(4)-dimethyl benzene were relatively low (~6%) in all three material groups. One exception was 36% detection frequency of 1,3(4)-dimethyl benzene in paint materials. The emission factors at 24 h are shown in Figure 28 and Figure 29. The emission factors were also relatively low, ranging between 0.01 and ~100 μg m^{-2} h^{-1}. The highest emission factor was found with a latex-based foam sealant (CAK35) (EF ~ 100 μg m^{-2} h^{-1}). A paint with recycled content (PT18) had an emission factor > 5 μg m^{-2} h^{-1} for both compounds. In the previous study, two compounds showed almost identical trends. However, 1,3(4)-dimethyl benzene was detected more frequently in the materials tested in 2013/14.

3.3.4 Ethylbenzene

Ethylbenzene was detected in a similar level in three material groups (11 – 14%). All paint products emitted ethylbenzene, but the levels were below MDL in most cases. CAK35 was also the highest emitter of ethylbenzene (EF = 34 μg m^{-2} h^{-1}) as shown in Figure 30 and Figure 31. Two materials with EF > 5 μg m^{-2} h^{-1} were an insulated subfloor underlay board (OSB10) and an expanded polystyrene board (INS2).

3.3.5 Naphthalene

No naphthalene was detected in wood and paint materials above MDL, while it was detected in 6% in insulation products. The emission factors at 24 h were relatively low with a maximum emission factor of 0.89 μg m^{-2} h^{-1} (Figure 32 and Figure 33).

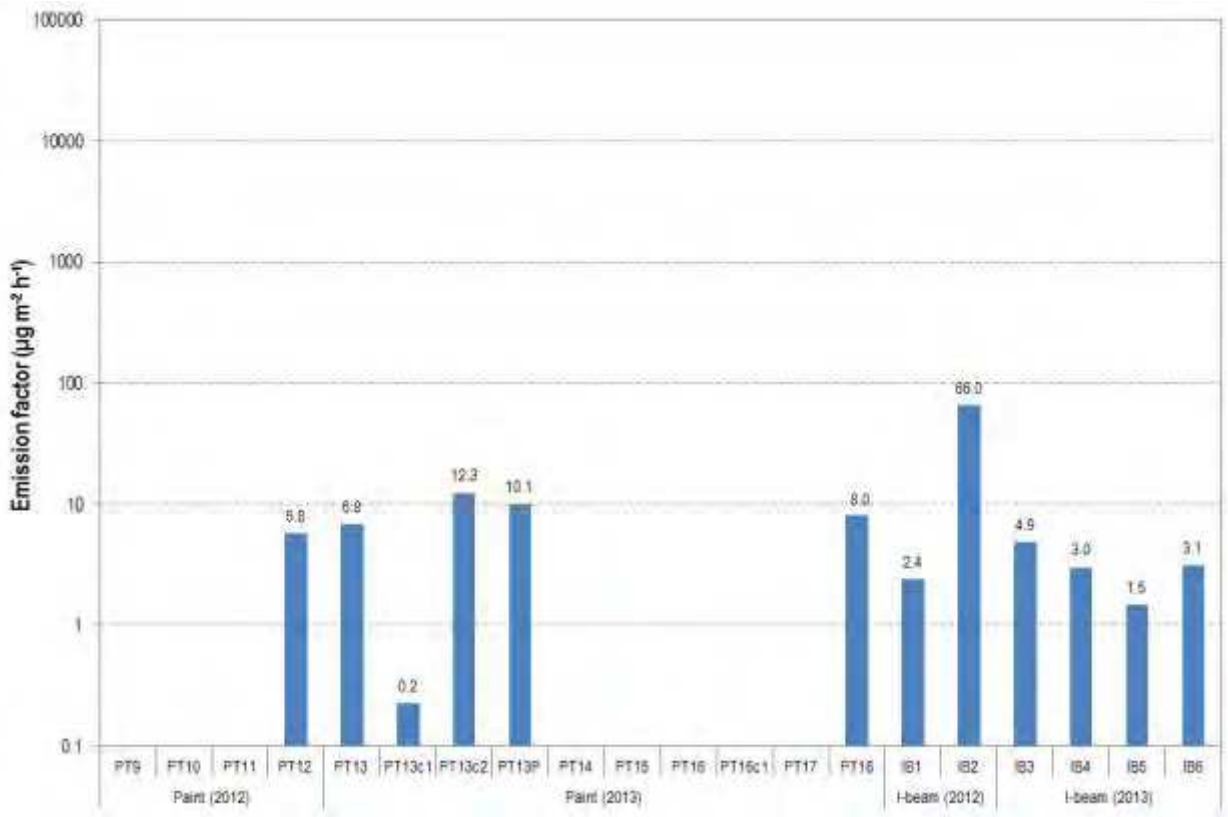


Figure 24: Emission factors for paint and I-beam joist (2-propanol)

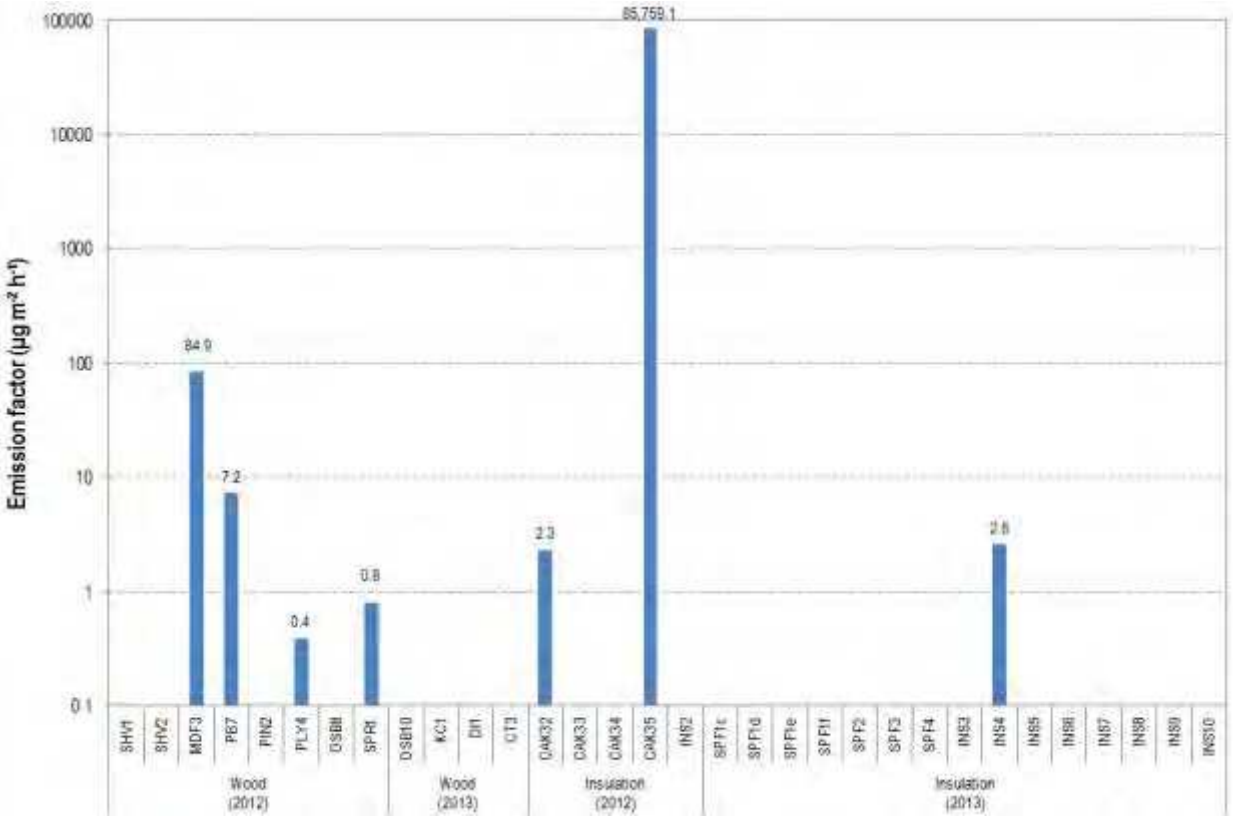


Figure 25: Emission factors for wood and insulation (2-propanol)

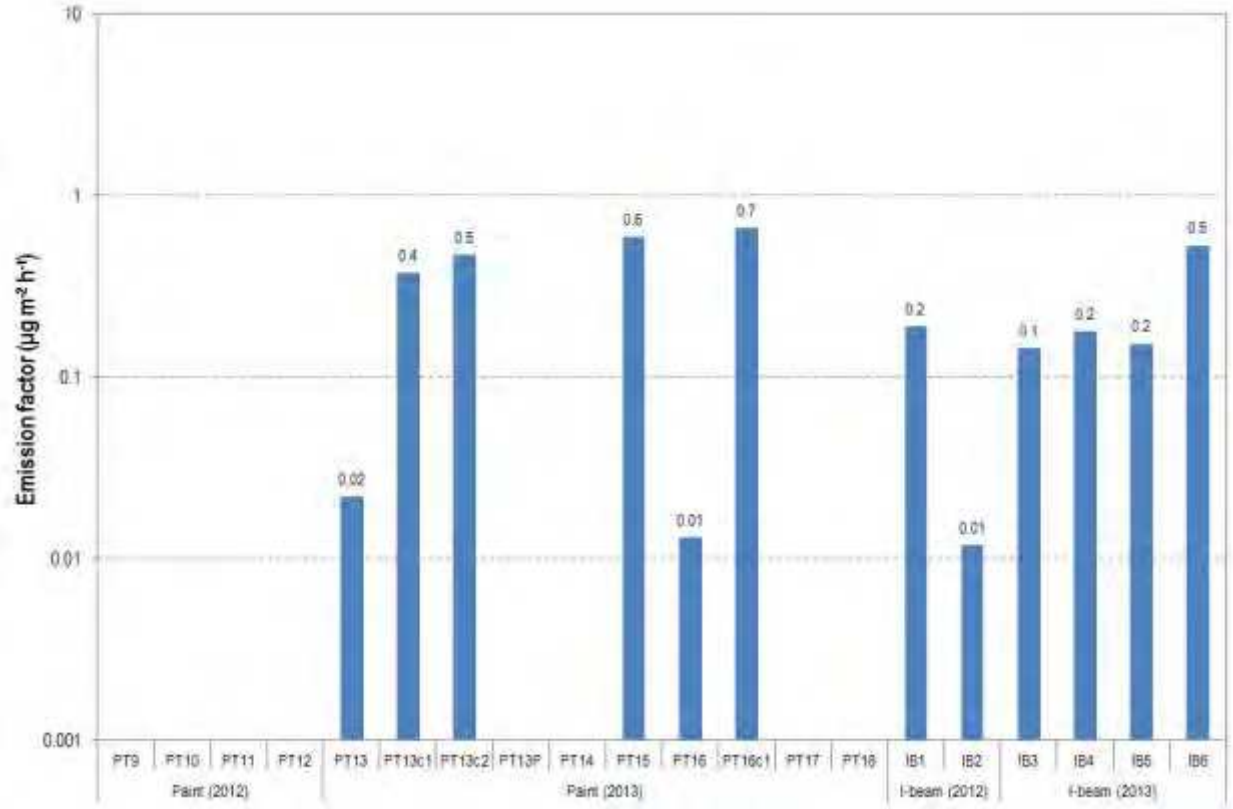


Figure 26: Emission factors for paint and I-beam joist (benzene)

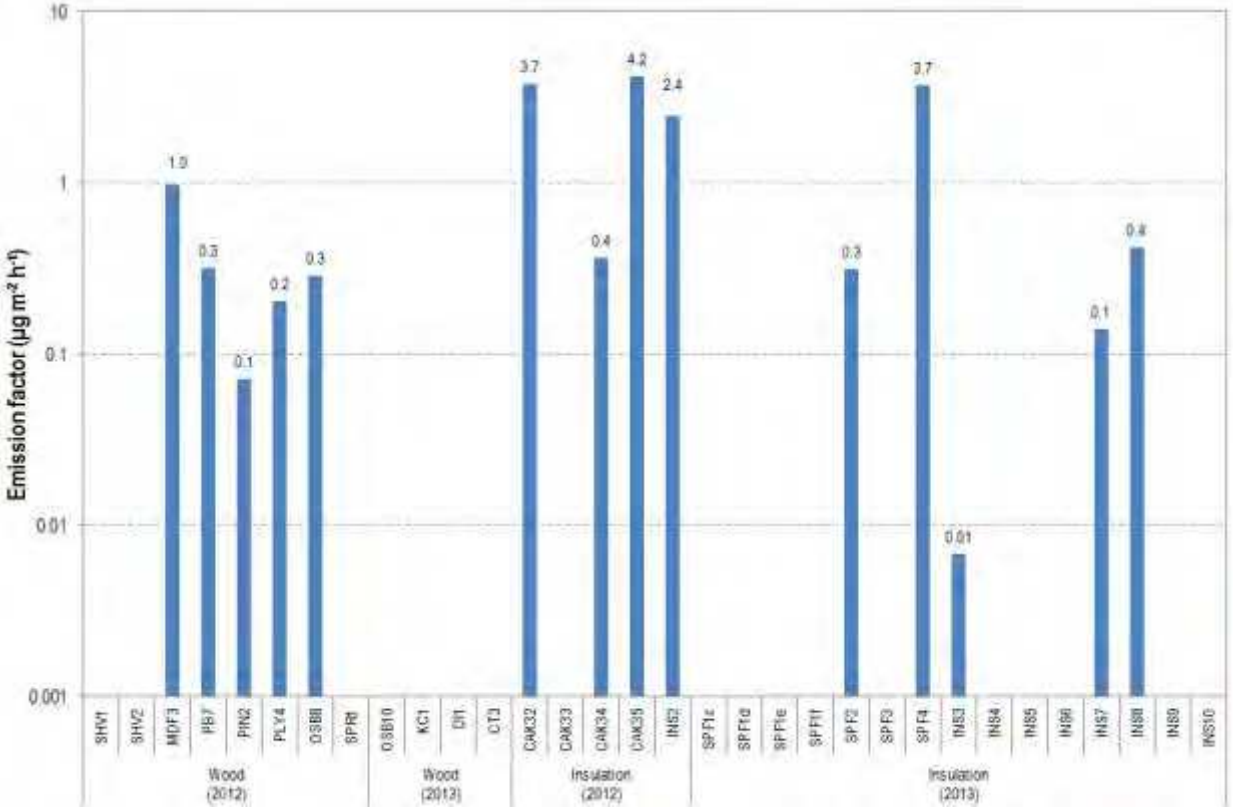


Figure 27: Emission factors for wood and insulation (benzene)

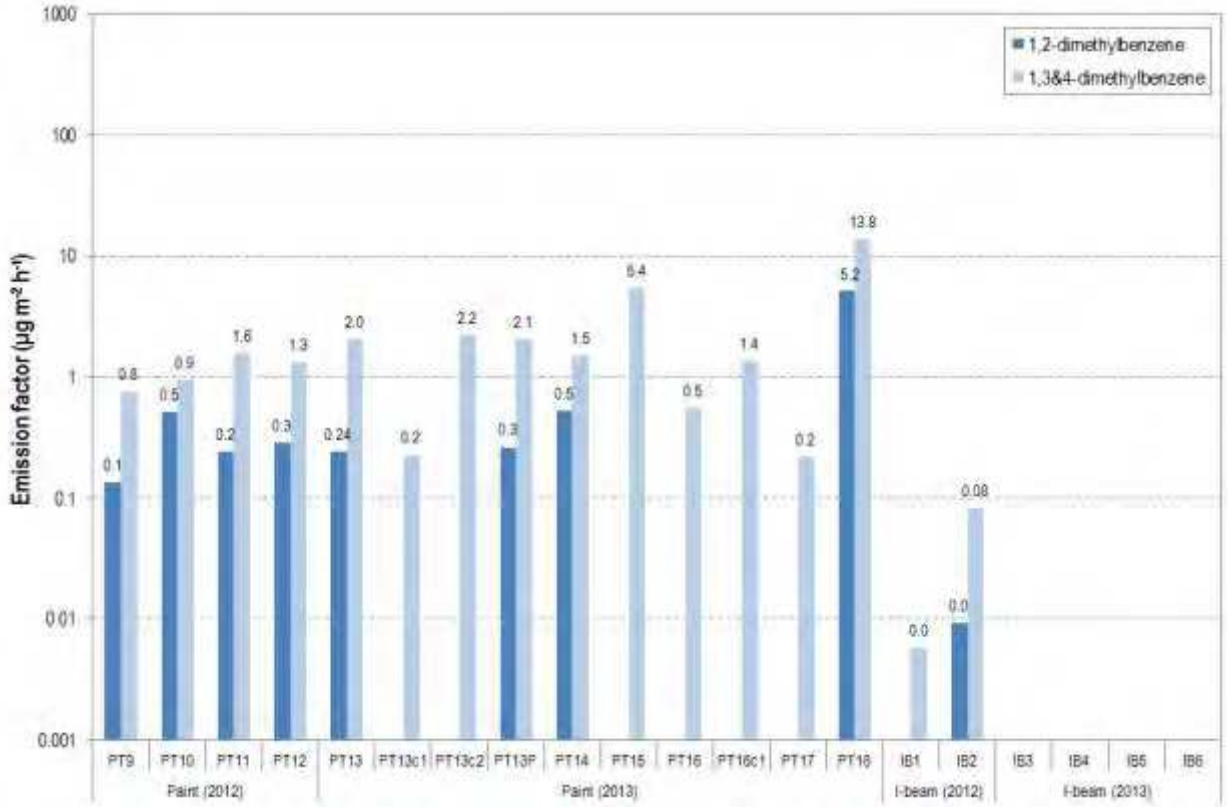


Figure 28: Emission factors for paint and I-beam joist (xylenes)

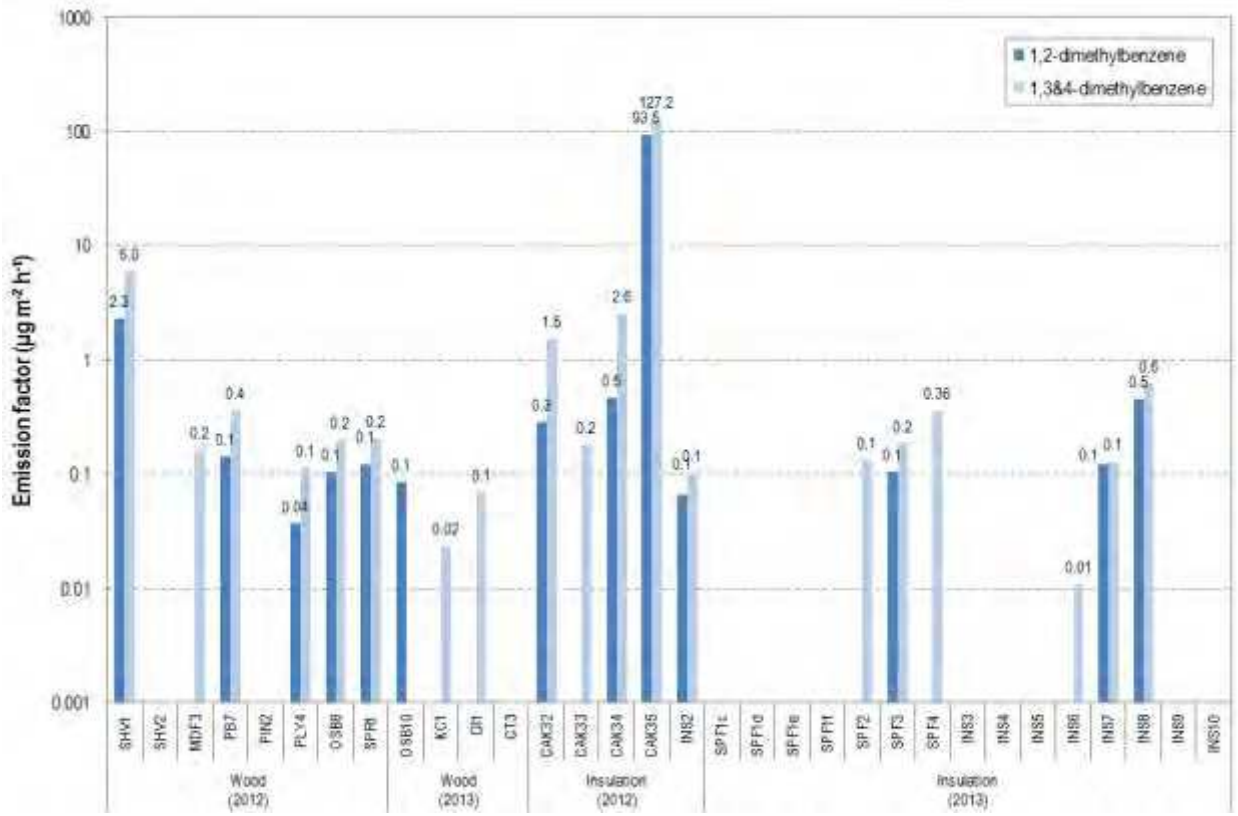


Figure 29: Emission factors for wood and insulation (xylenes)

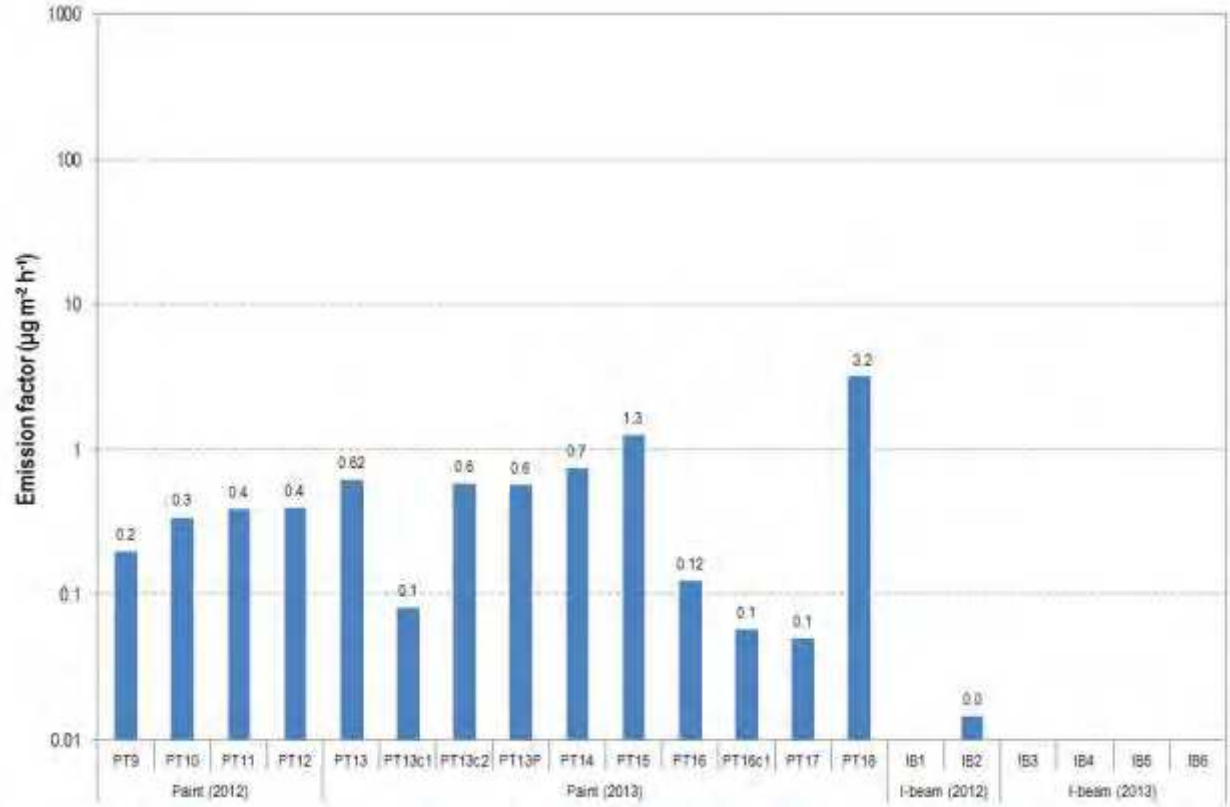


Figure 30: Emission factors for paint and I-beam joist (ethylbenzene)

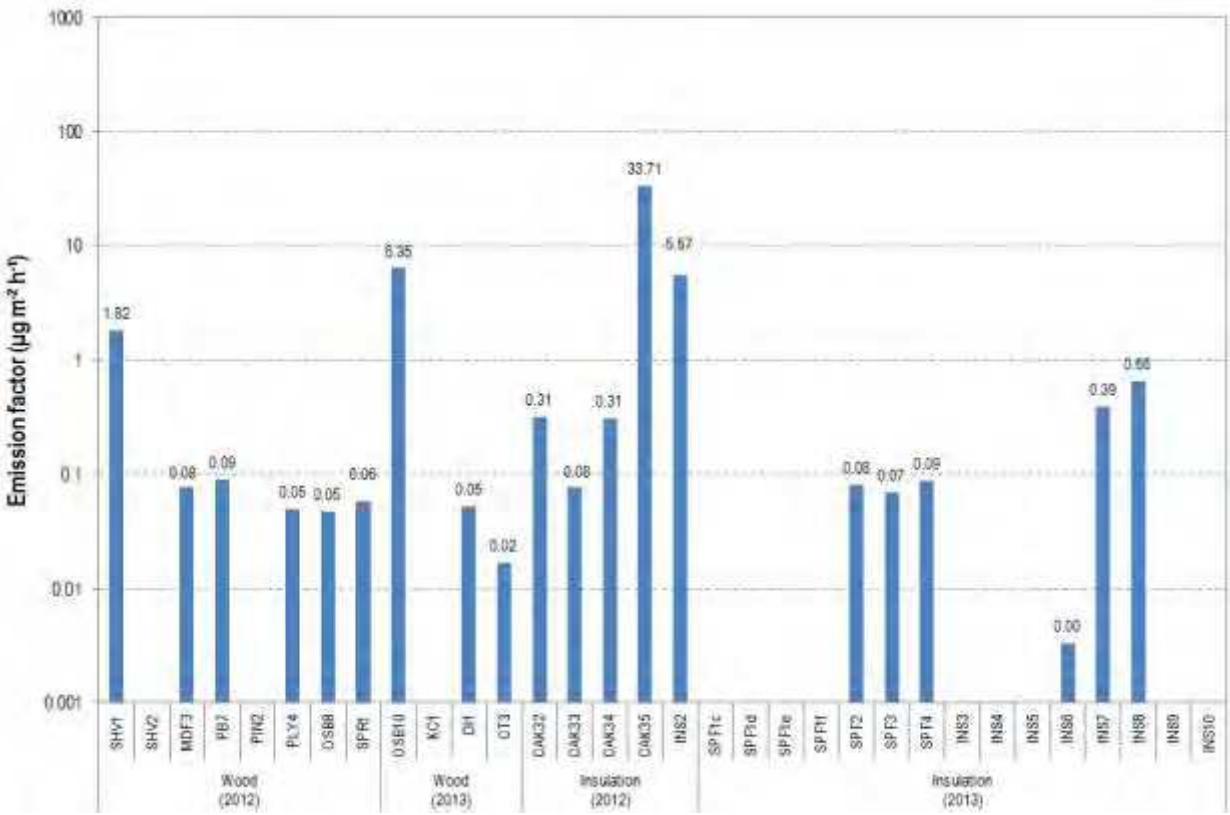


Figure 31: Emission factors for wood and insulation (ethylbenzene)

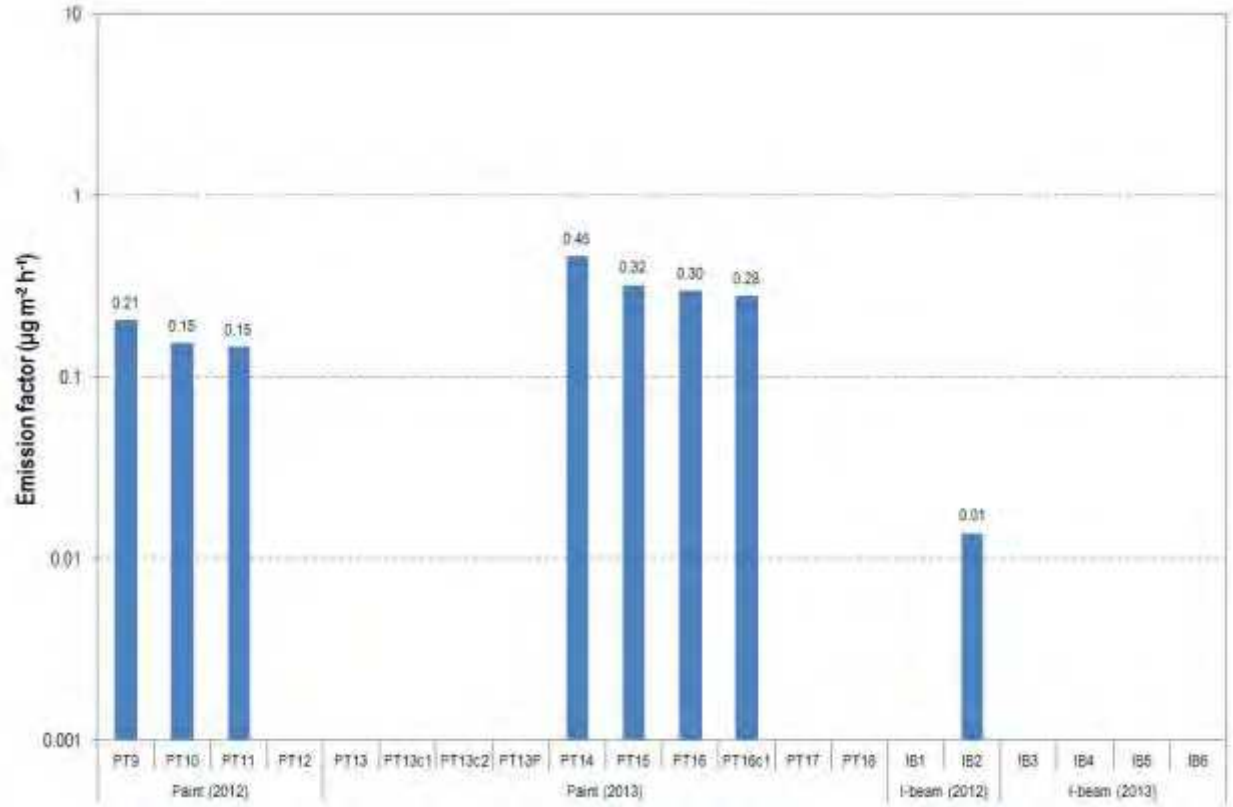


Figure 32: Emission factors for paint and I-beam joist (naphthalene)

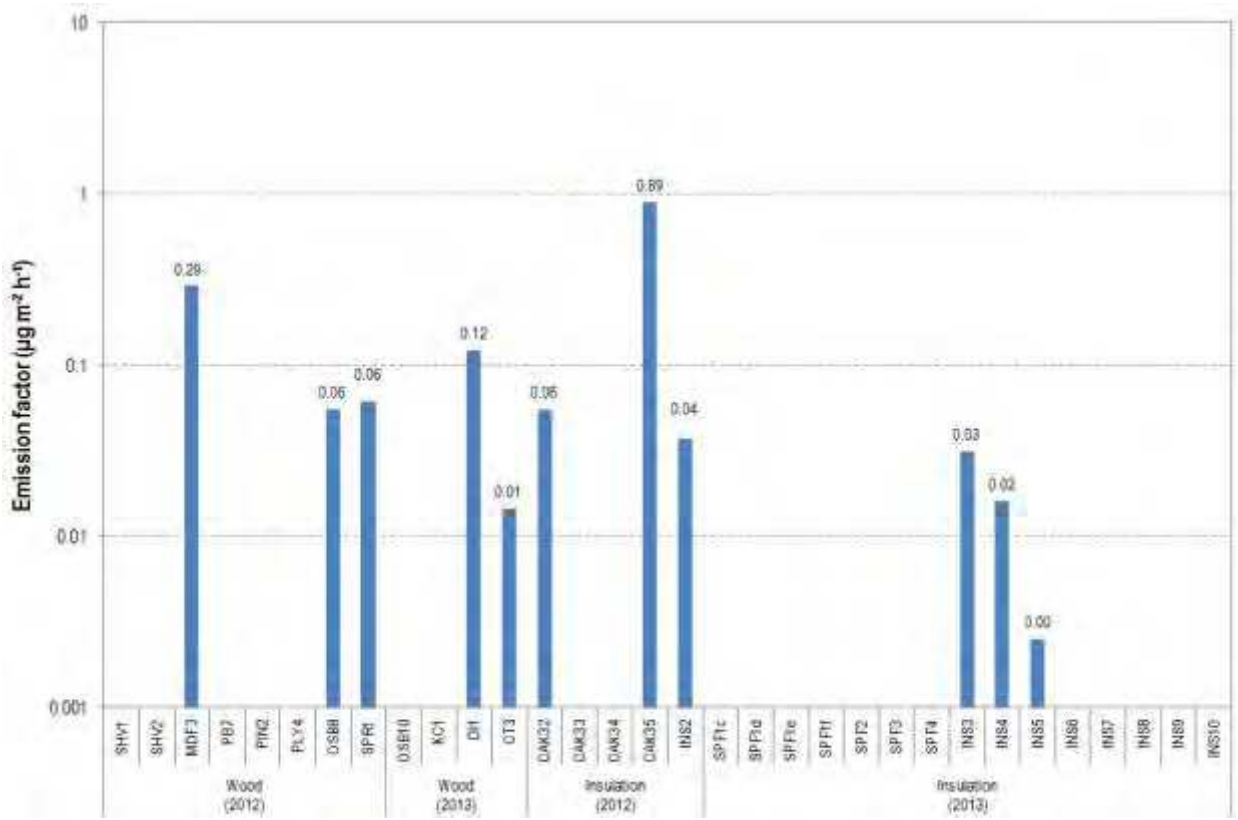


Figure 33: Emission factors for wood and insulation (naphthalene)

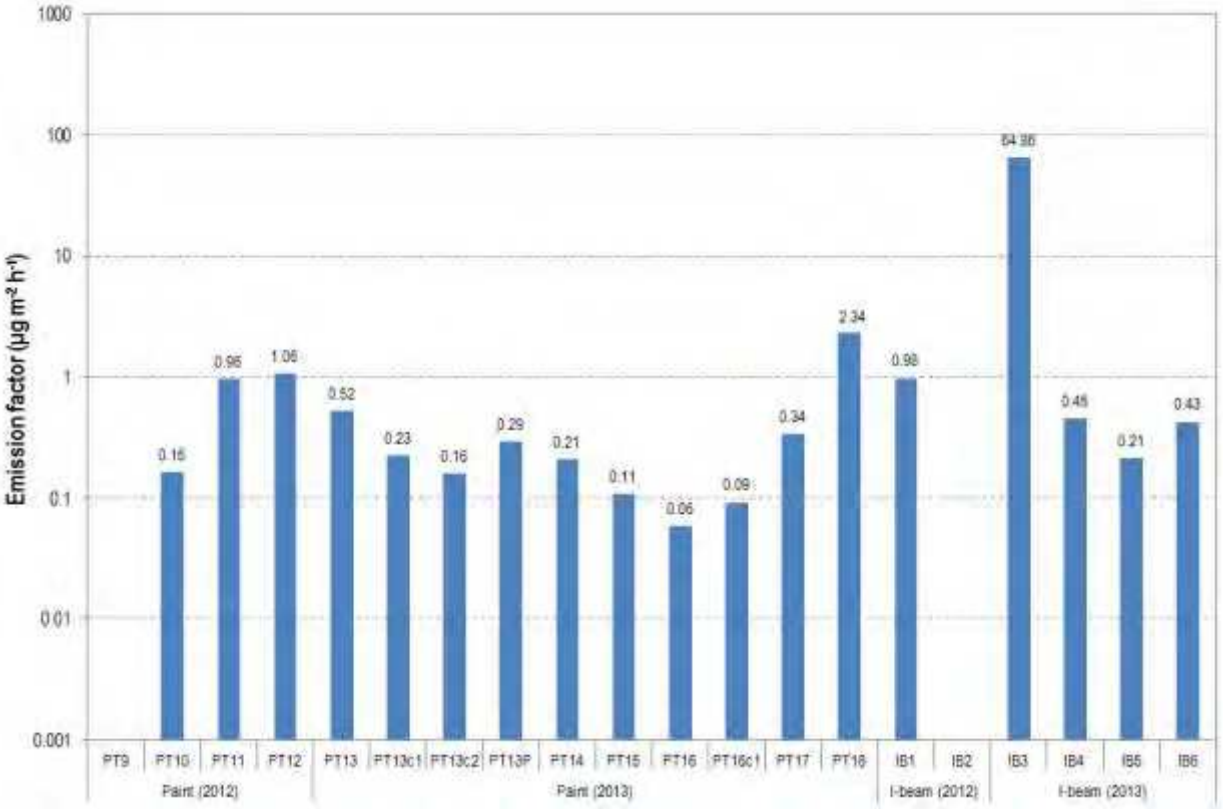


Figure 34: Emission factors for paint and I-beam joist (toluene)

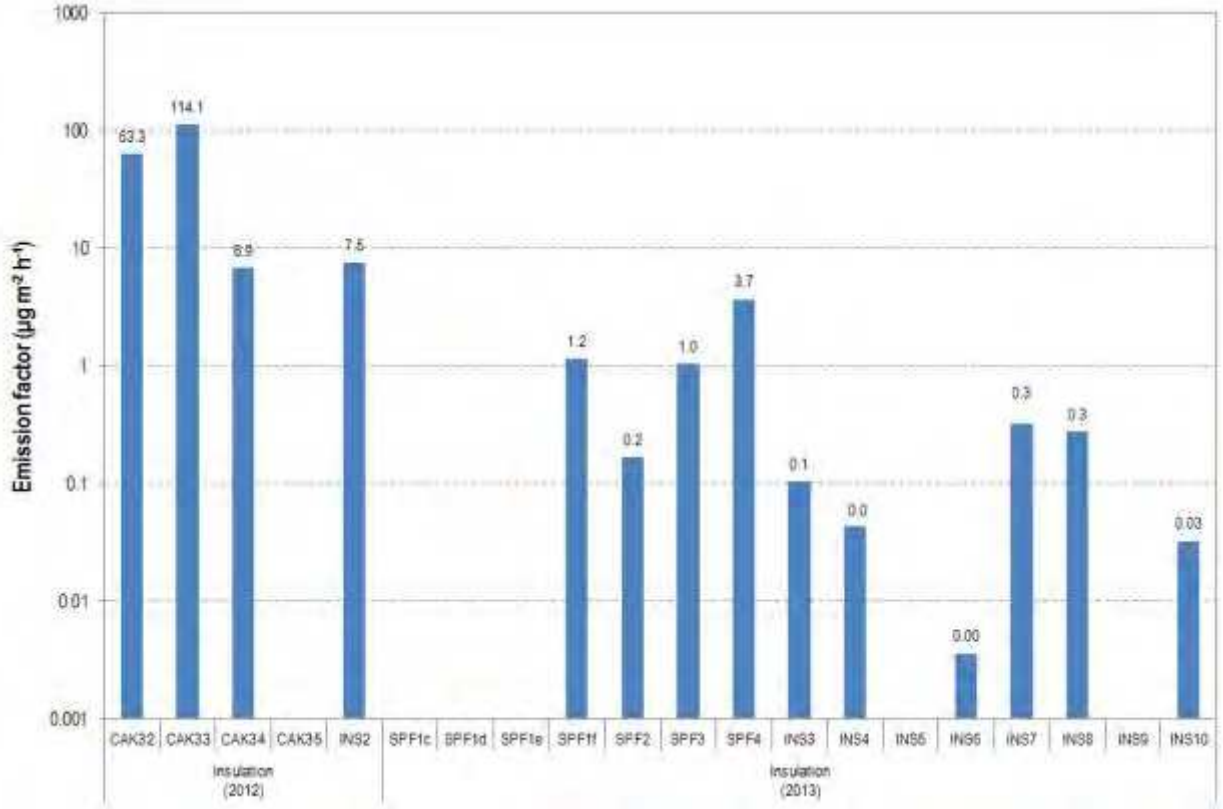


Figure 35: Emission factors for wood and insulation (toluene)

Figure 36: Emission factors for paint and I-beam joist (chloroform)

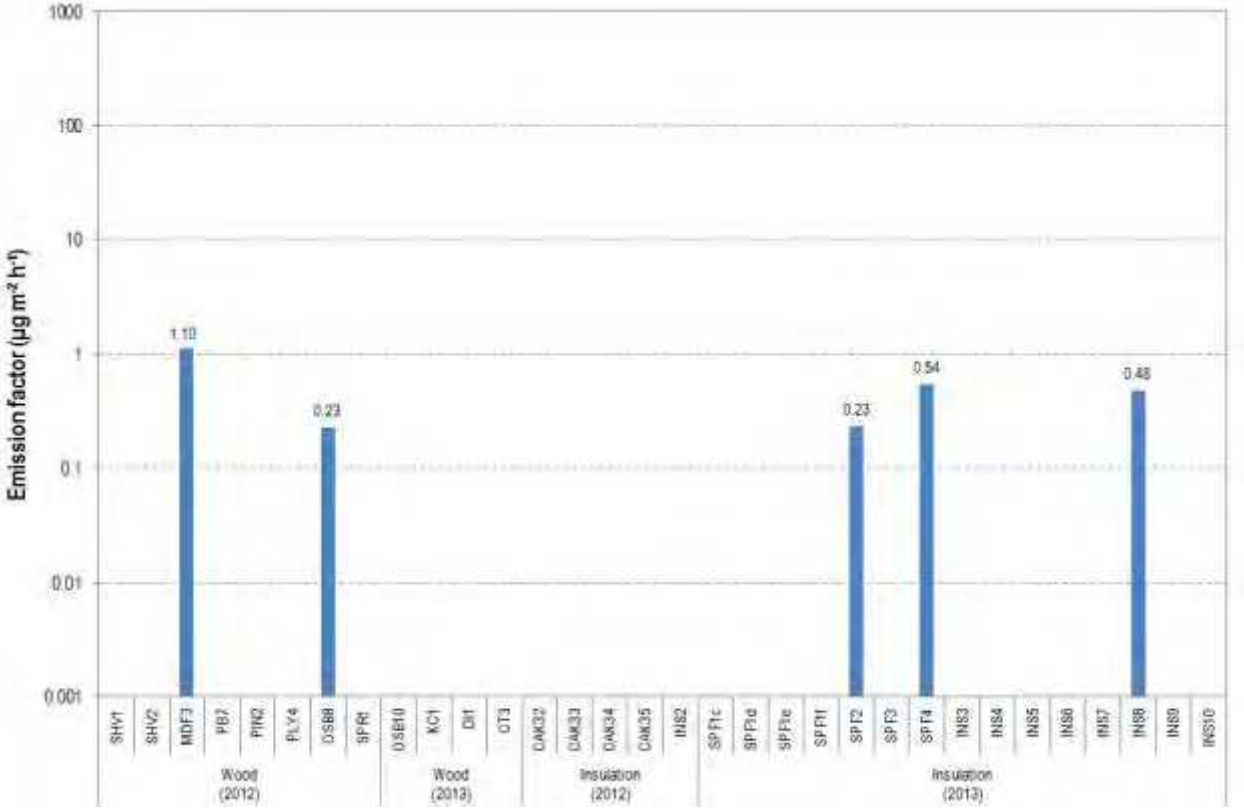


Figure 37: Emission factors for wood and insulation (chloroform)

3.3.6 Toluene

Toluene was detected in 28%, 35%, and 7% of wood, insulation, and paint products, respectively. The highest emission factor at 24 h was found with one component spray foam sealant (CAK33) with an emission factor of ~ 100 $\mu g\ m^{-2}\ h^{-1}$ (Figure 34 and Figure 35). IB3 and CAK32 emitted toluene with an emission factor of ~60 $\mu g\ m^{-2}\ h^{-1}$.

3.3.7 Chloroform

The detection frequency of chloroform was low, including 6%, 12%, and 0% in wood, insulation, and paint products, respectively. The emission factors of chloroform were also low with an emission factor between 0.23 and 1.1 $\mu g\ m^{-2}\ h^{-1}$ (Figure 36 and Figure 37). No paints and I-beam joists emitted chloroform.

3.3.8 Acetaldehyde

The detection frequency of acetaldehyde was >82% in all three material groups. The emission factors at 24 h were slightly above 10 $\mu g\ m^{-2}\ h^{-1}$ in most paint products (Figure 38). The relatively high emission factors (10 – 100 $\mu g\ m^{-2}\ h^{-1}$) were found in wood products, including I-beam joists and oriented strand board (Figure 38 and Figure 39). The highest emitter (~200 $\mu g\ m^{-2}\ h^{-1}$) was a latex-based spray foam sealant (CAK35).

3.3.9 Formaldehyde

Formaldehyde had the highest detection frequency, including 94% (wood), 88% (insulation), and 100% (paint). Wood materials with an emission factor ~100 $\mu g\ m^{-2}\ h^{-1}$ included a medium density board (MDF3), a particle board (PB7), an interior door (DI1), and a kitchen countertop (CT3) (Figure 41). PT9, which is zero VOC paint, also emitted formaldehyde at a level close to 100 $\mu g\ m^{-2}\ h^{-1}$ (Figure 40).

3.3.10 Propanal

Propanal was detected in 78%, 41%, and 64% of wood, insulation, and paint products. Compared to acetaldehyde and formaldehyde, the emission factors of propanal tend to be low with a maximum emission factor of 70 $\mu g\ m^{-2}\ h^{-1}$ (Figure 42 and Figure 43). In addition to CAK32, the materials that emitted propanal with EF > 10 $g\ m^{-2}\ h^{-1}$ included IB8, MDF3, PB7, OSB8, SPR1, and OSB10.

3.3.11 Acrolein

Acrolein was detected in 56%, 35%, and 43% of wood, insulation, and paint products. High emitters (> 20 $\mu g\ m^{-2}\ h^{-1}$) were two materials (PT12 and CAK35) tested in 2012/13. Materials tested in 2013/14 tend to have low emission factors (< 5 $\mu g\ m^{-2}\ h^{-1}$). It is not clear whether this reflects the reality or the reduced collection efficiency of the PFPH sampling method. Overall, caution is required when the acrolein results are interpreted due to high background levels and uncertainties associated with the sampling method.

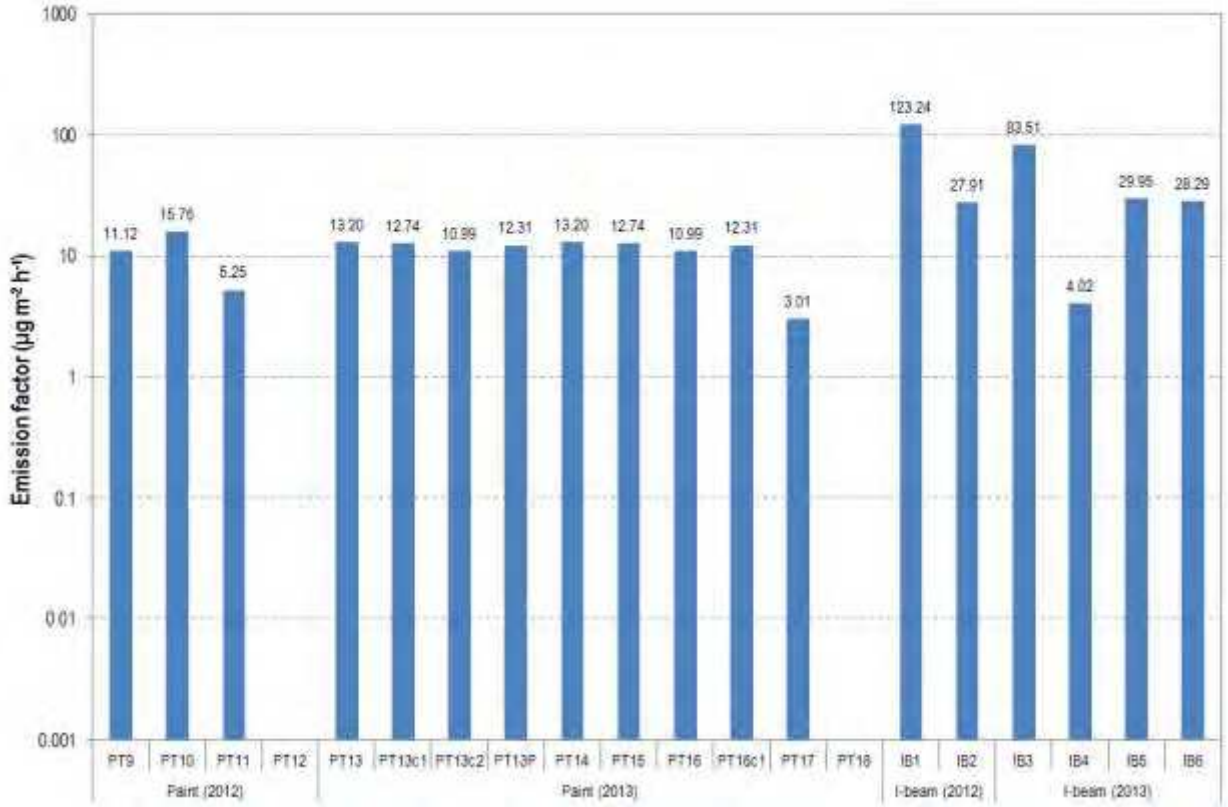


Figure 38: Emission factors for paint and I-beam joist (acetaldehyde)

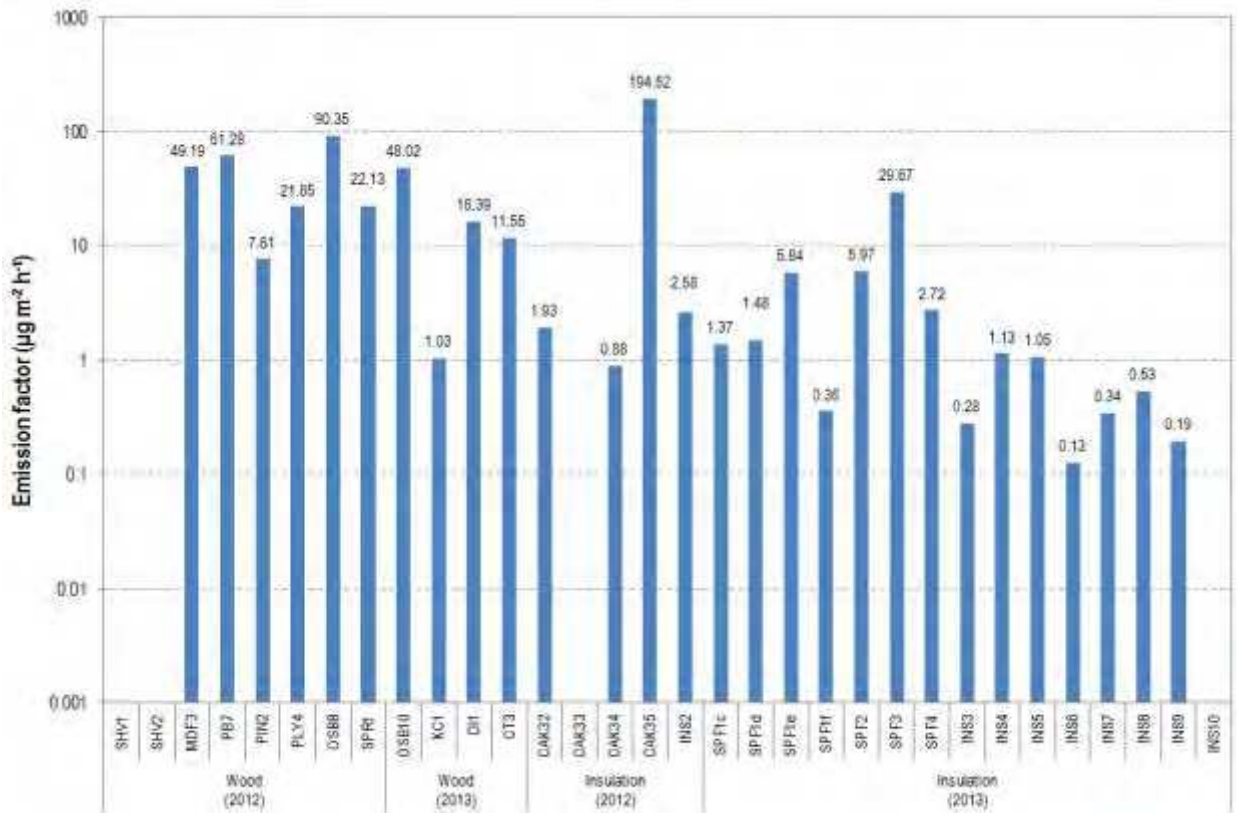


Figure 39: Emission factors for wood and insulation (acetaldehyde)

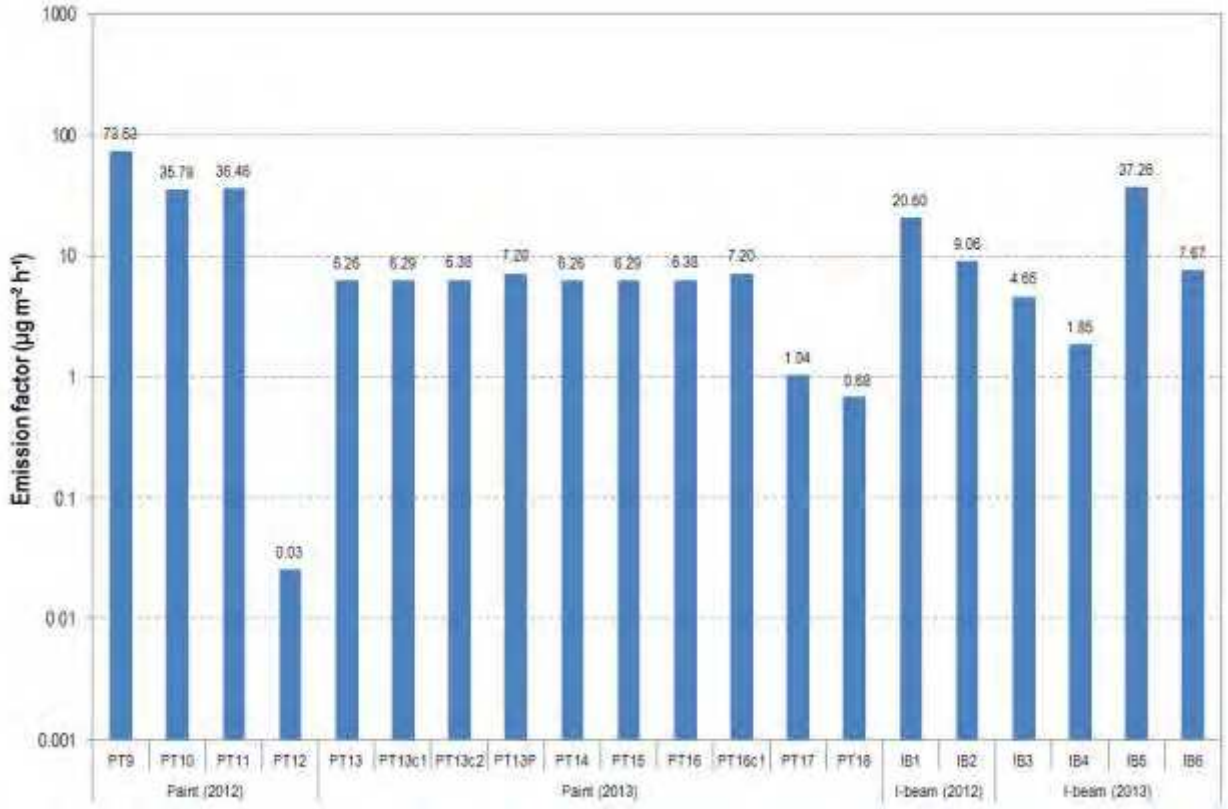


Figure 40: Emission factors for paint and I-beam joist (formaldehyde)

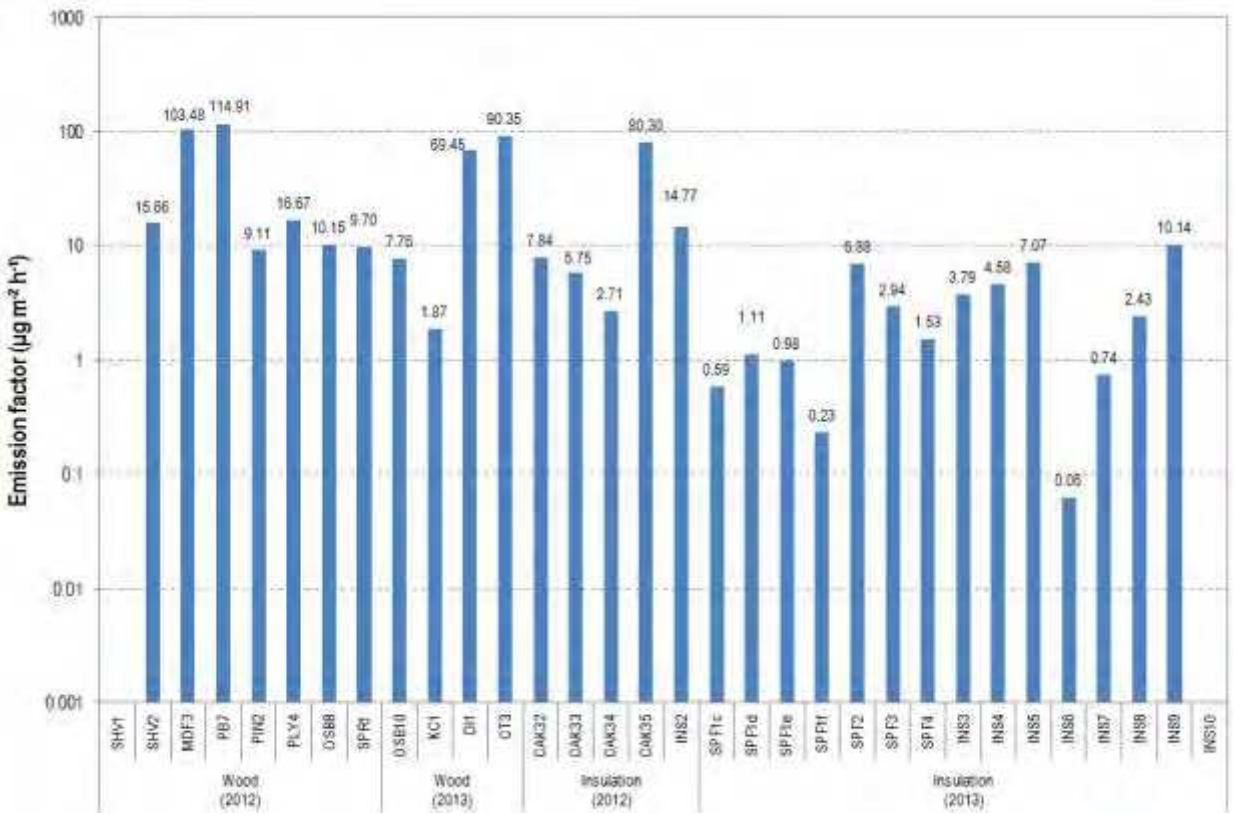


Figure 41: Emission factors for wood and insulation (formaldehyde)

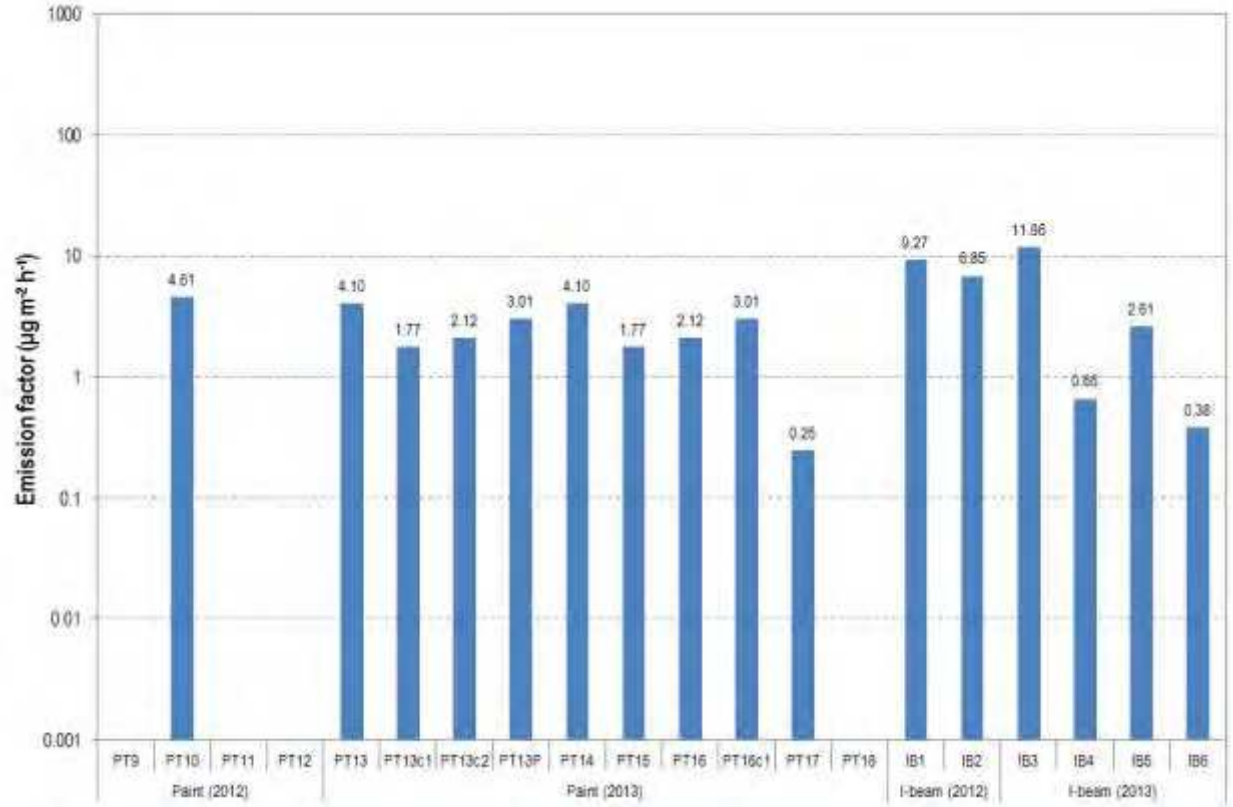


Figure 42: Emission factors for paint and I-beam joist (propanal)

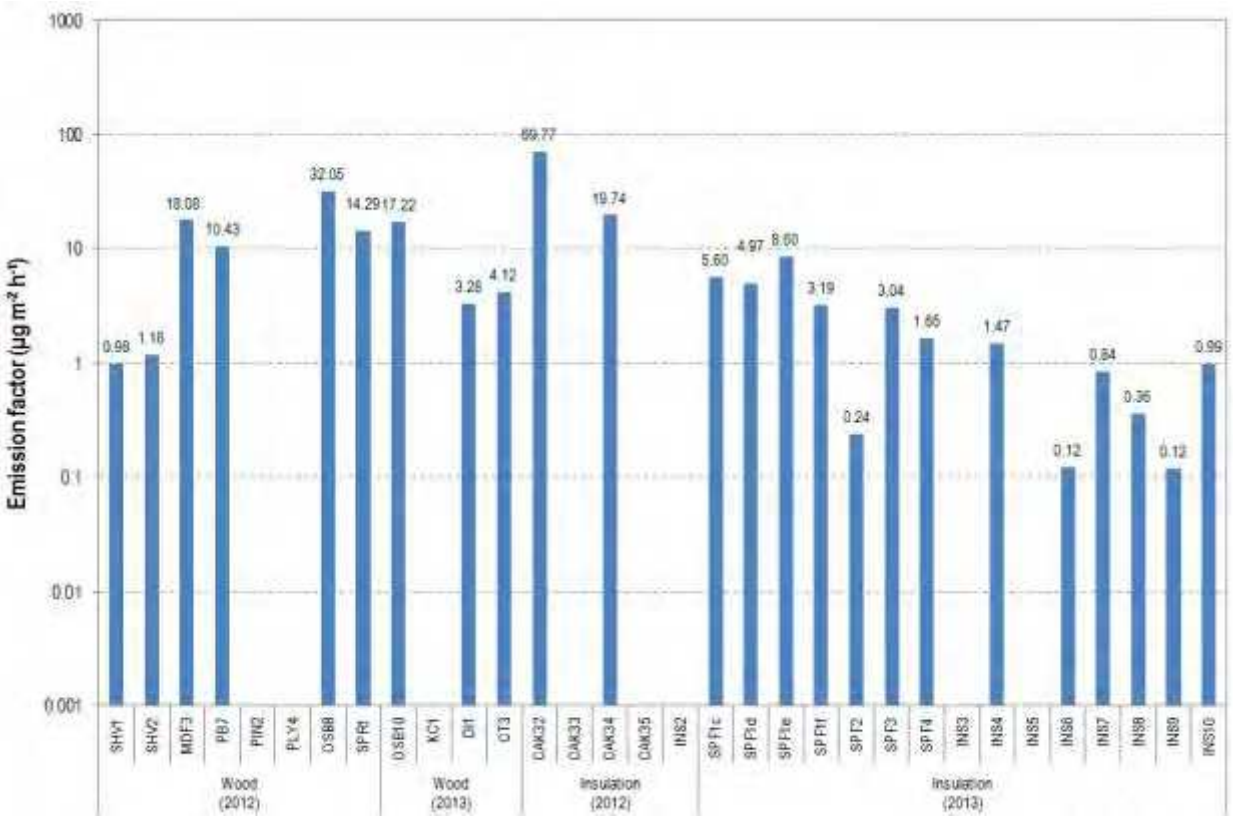


Figure 43: Emission factors for wood and insulation (propanal)

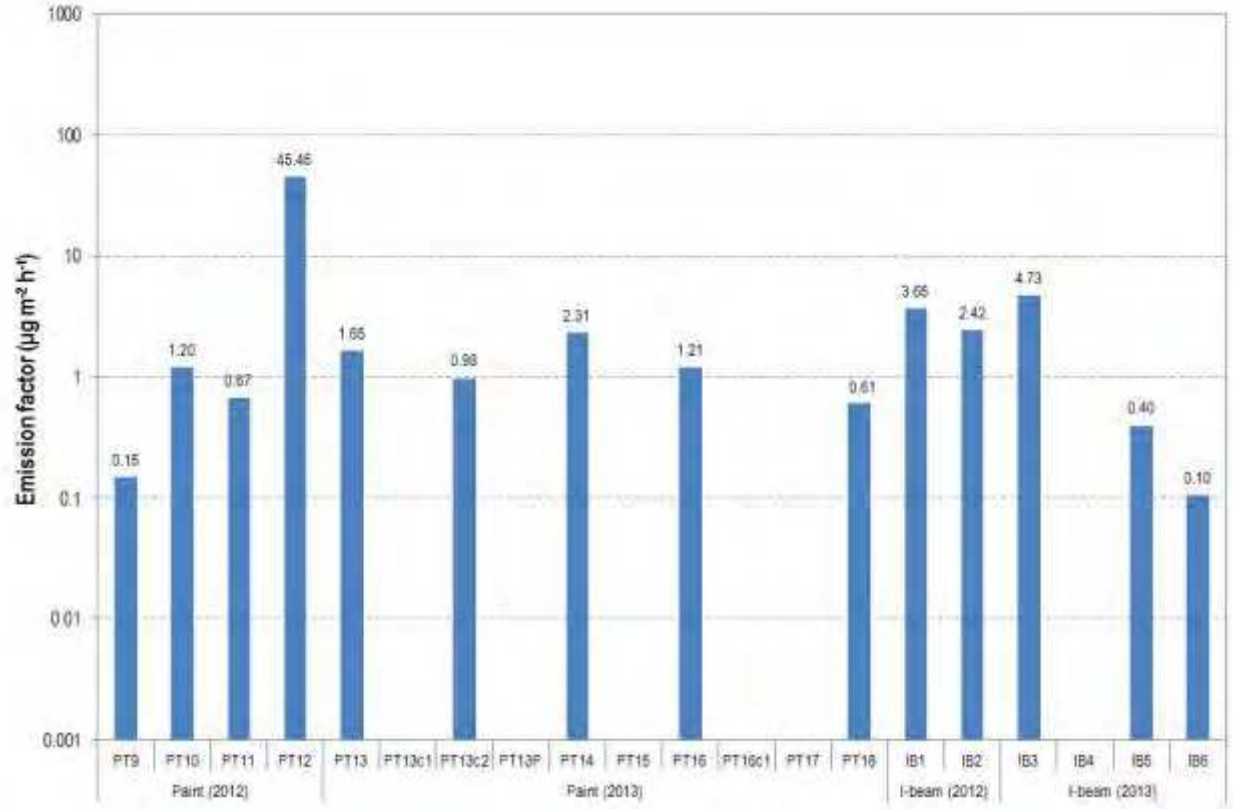


Figure 44: Emission factors for paint and I-beam joist (acrolein)

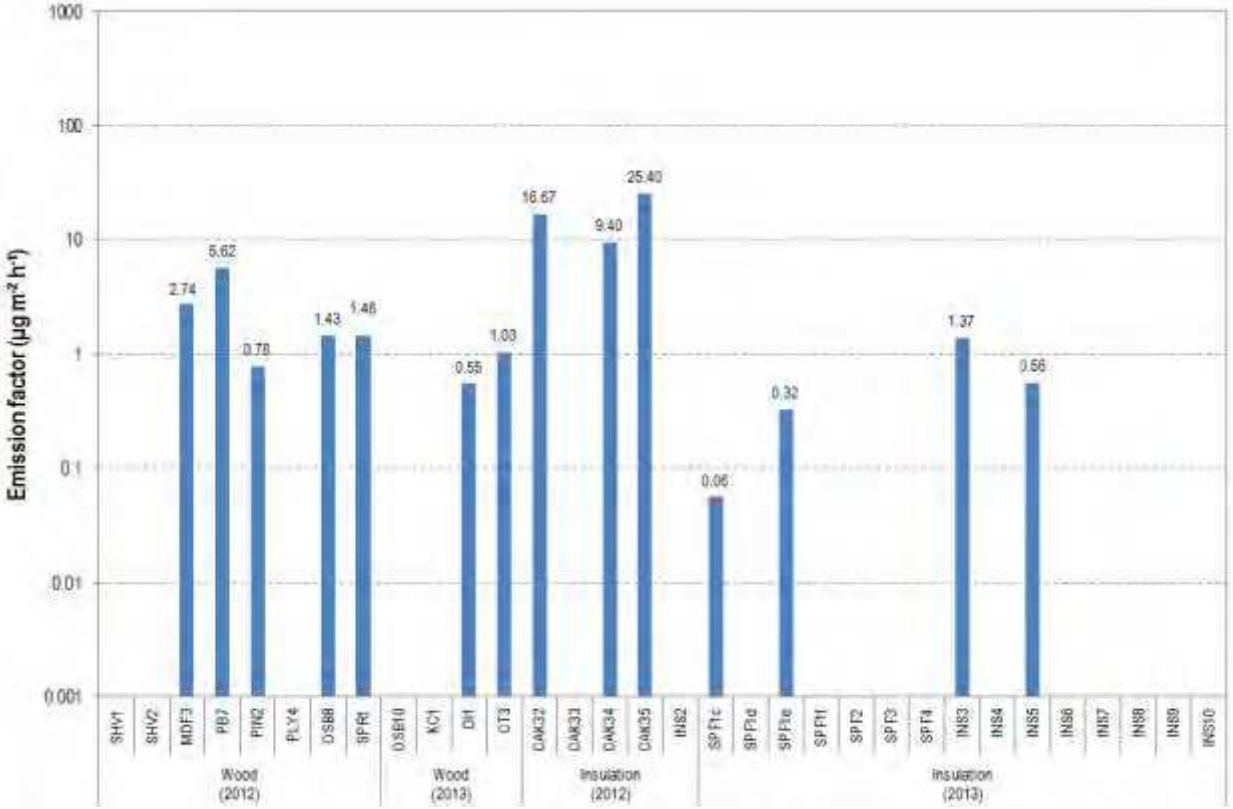


Figure 45: Emission factors for wood and insulation (acrolein)

3.4 Indoor air concentrations

The indoor air concentrations were estimated based on the material usage scenario in Table 5. Note that these are averaged values (mean emission values for each group of material). The simulation was performed for a period of one year. The coefficients of the power-law decay models in the appendix were used. The resulting indoor air concentrations of selected "priority" chemicals are presented in Figure 46 to Figure 56. The light blue line is the overall indoor air concentration and other lines are to show the contributions from individual sources. For chemicals such as 1,2-dimethylbenzene, 1,3(4)-dimethylbenzene and ethylbenzene, the dominant source (e.g., oil-based wood stain) at the beginning decays faster and other sources (e.g., doors and subfloor) become dominant at 1 year. For the other chemicals, one source is dominant over the most part of 1 year.

3.4.1 Major sources

Paint was shown to be the biggest source of benzene in indoor air (Figure 46), although insulation materials had bigger emission factors than paint products in the material emissions tests (Figure 26 and Figure 27). This is likely due to the large surface area of paint applied on wall/ceiling. Oil-based varnish or wood stain was determined to be major sources of 1,2-dimethylbenzene, 1,3(4)-dimethylbenzene, ethylbenzene, and naphthalene (Figure 47 to Figure 50) . The major sources of the first three compounds were switched to thermal insulation and wood-based materials, which typically have slow decay rates, at the end of 1 year. For naphthalene, the major source was oil-based varnish before 25 days and carpet afterwards. The major source of toluene was I-beam joist. This agrees with the observation that IB3 had the highest emission factor of toluene among wood and paint products (Figure 34).

Wood-based materials (I-beam joist, subfloor, and interior door) were the major sources of aldehydes. For example, I-beam joist and interior doors were identified as major sources for acetaldehyde (Figure 52). Interior doors and paint contributed the most to the formaldehyde concentration (Figure 53). Figure 54 shows the biggest source of propanal was subfloor. I-beam joist and paint were the two major sources for acrolein (Figure 55) and 2-propanol (Figure 56) at the beginning. While the dominant sources continued to be I-beam joist and paint for acrolein, it was switched to oil-based wood stain for 2-propanol at the end of 1 year. The contributions of each material can be seen in more detail in Table 14 for "priority" compounds at 1 day, 10 days, 1 month and 1 year.

Similar information can be found in Table 15 (1 day), Table 16 (10 days), Table 17 (1 month) and Table 18 (1 year) for other compounds that showed the detection frequency > 20% in the material emissions test. Paint and I-beam joist were two materials that were identified as major sources most frequently. Compounds with paint as a major source included 2-ethyl-1-hexanol, hexadecane, tetradecane, Texanol, TXIB, 1,2-propanediol, and n-butyl ether. I-beam joist was the major source for phenol, furfural, *p*-cymene, α-pinene, β-pinene, and limonene. Subfloor was the main contributor for acetone, 2-nonenal, and hexanoic acid. Interior door was the major source for hexanal and 2-octenal. The dominant source did not change from 1 month to 1 year for most VOCs. Two exceptions were 1-butanol and benzaldehyde, whose dominant

source changed from paint at 1 month to various sources, including paint, wood-based material, and/or insulation at 1 year.

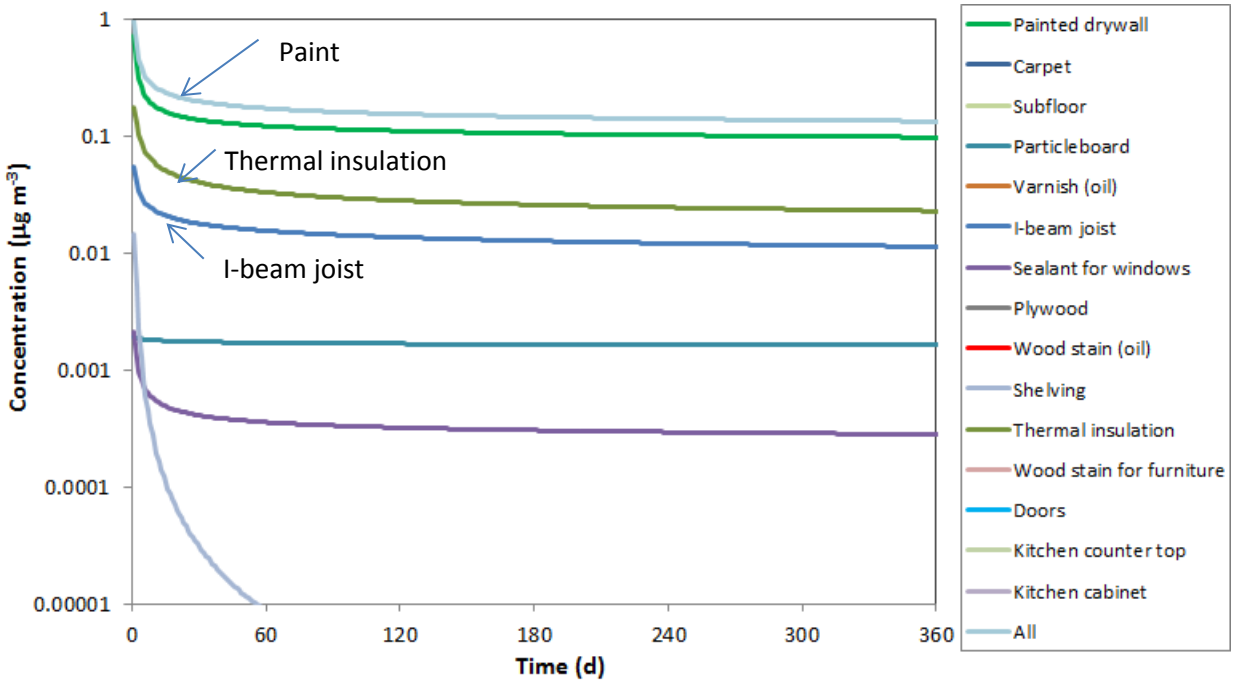


Figure 46: Predicted concentration of benzene

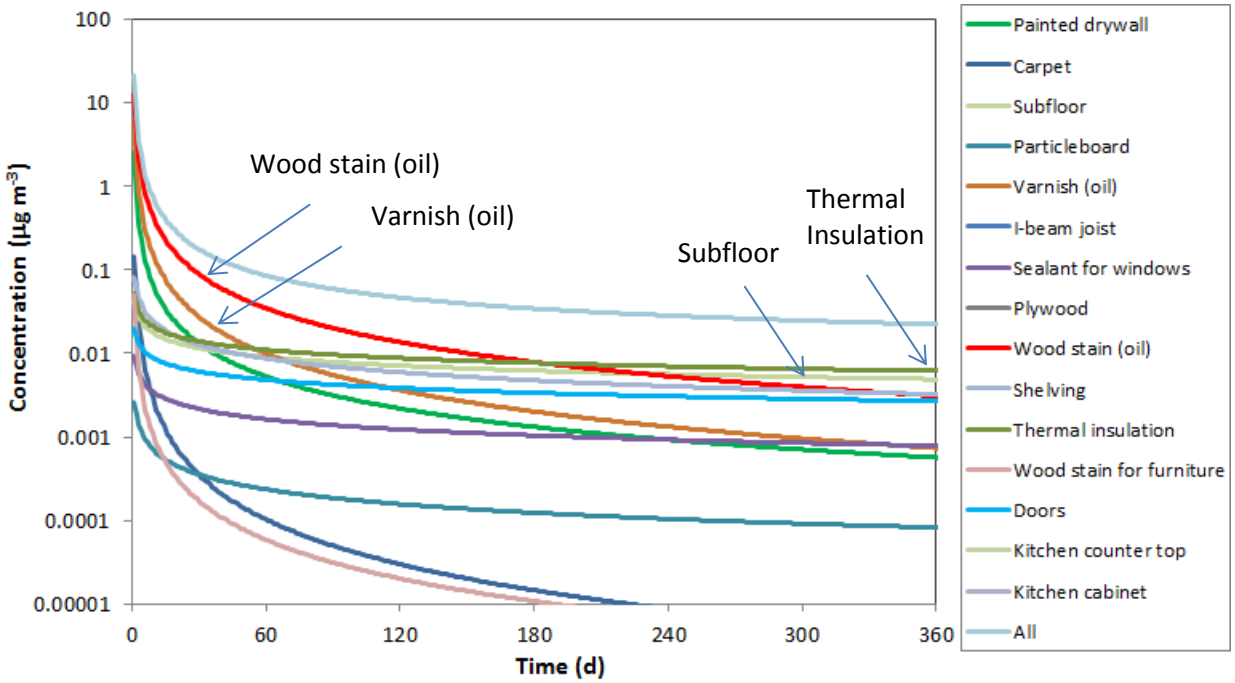


Figure 47: Predicted concentration of 1,2-dimethylbenzene

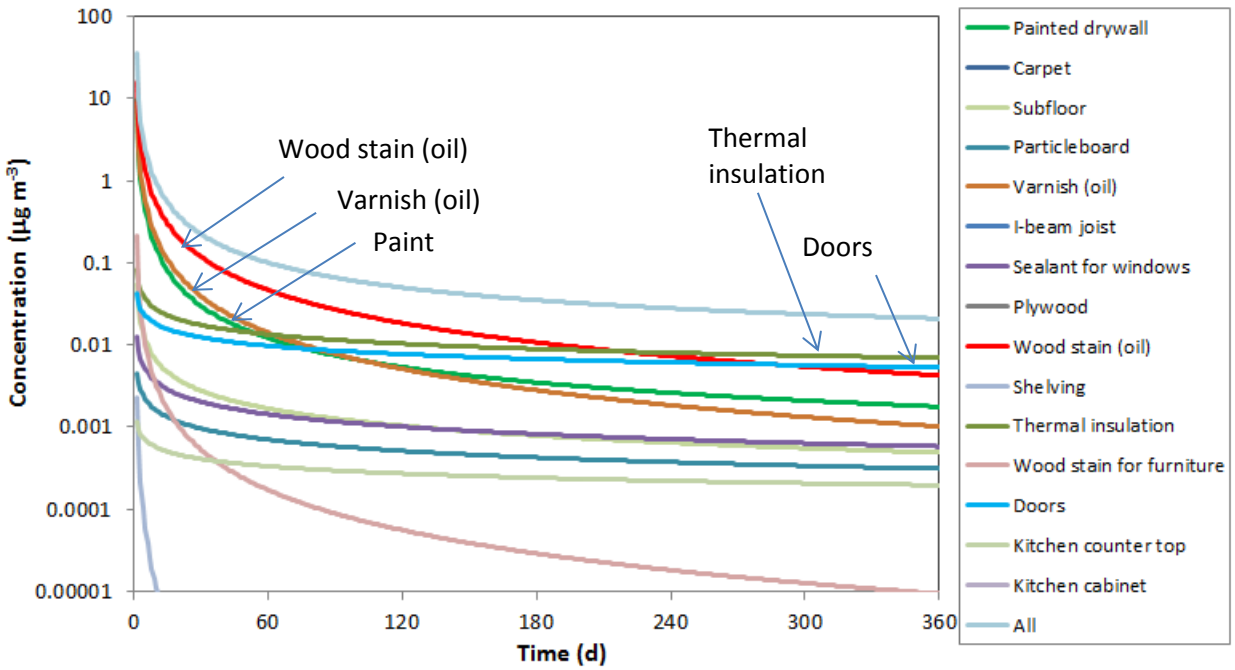


Figure 48: Predicted concentration of 1,3(4)-dimethylbenzene

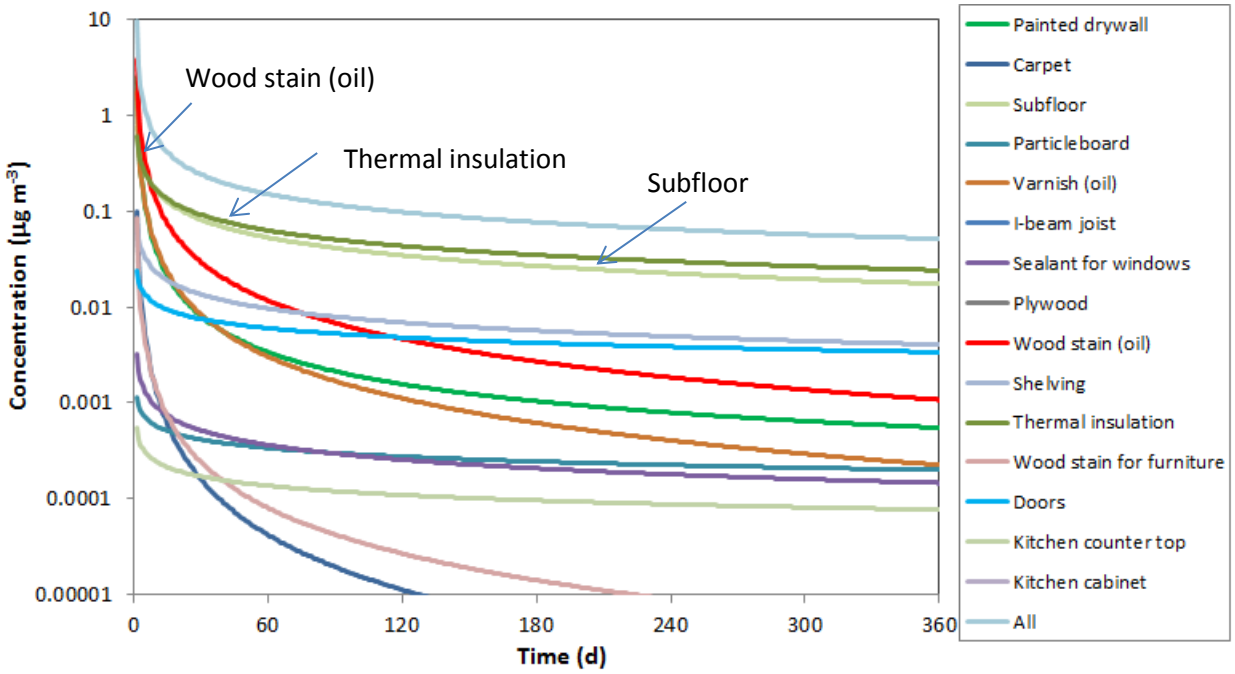


Figure 49: Predicted concentration of ethylbenzene

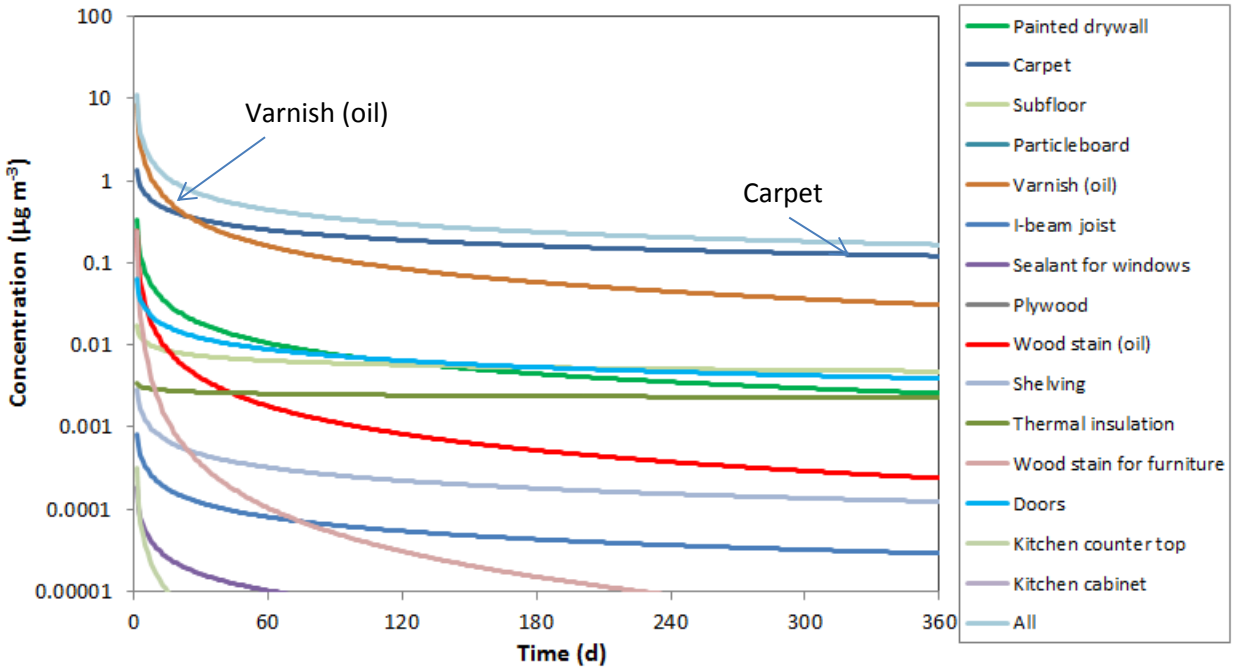


Figure 50: Predicted concentration of naphthalene

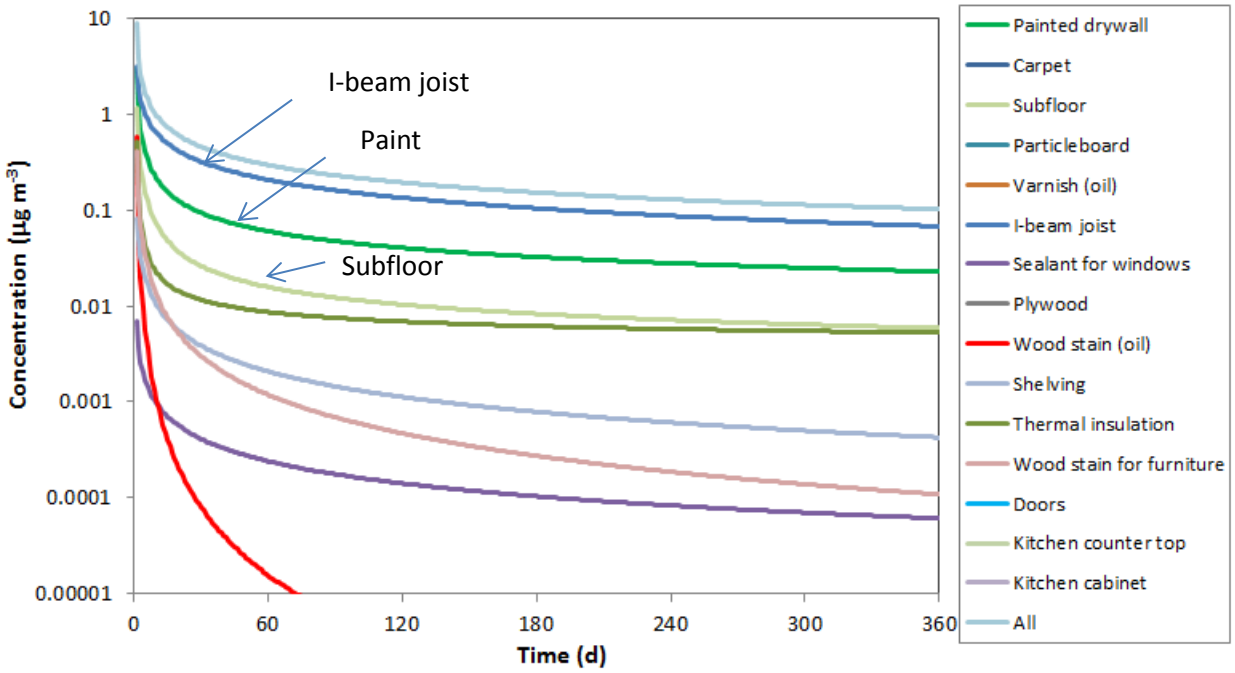


Figure 51: Predicted concentration of toluene

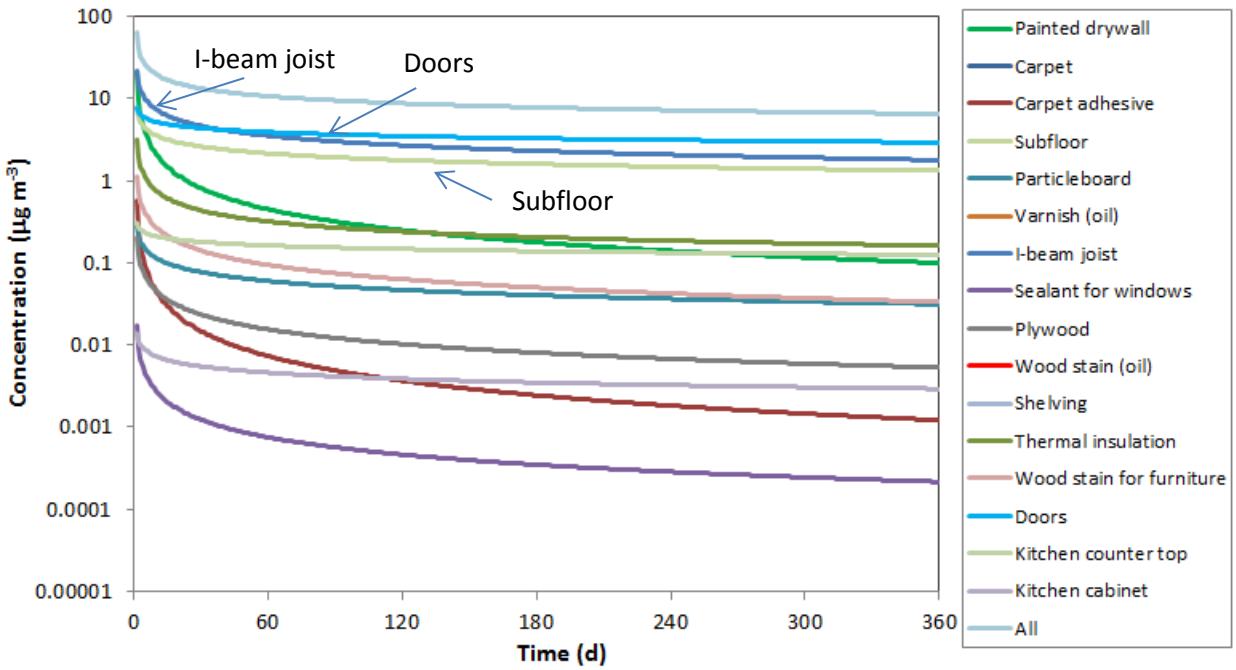


Figure 52: Predicted concentration of acetaldehyde

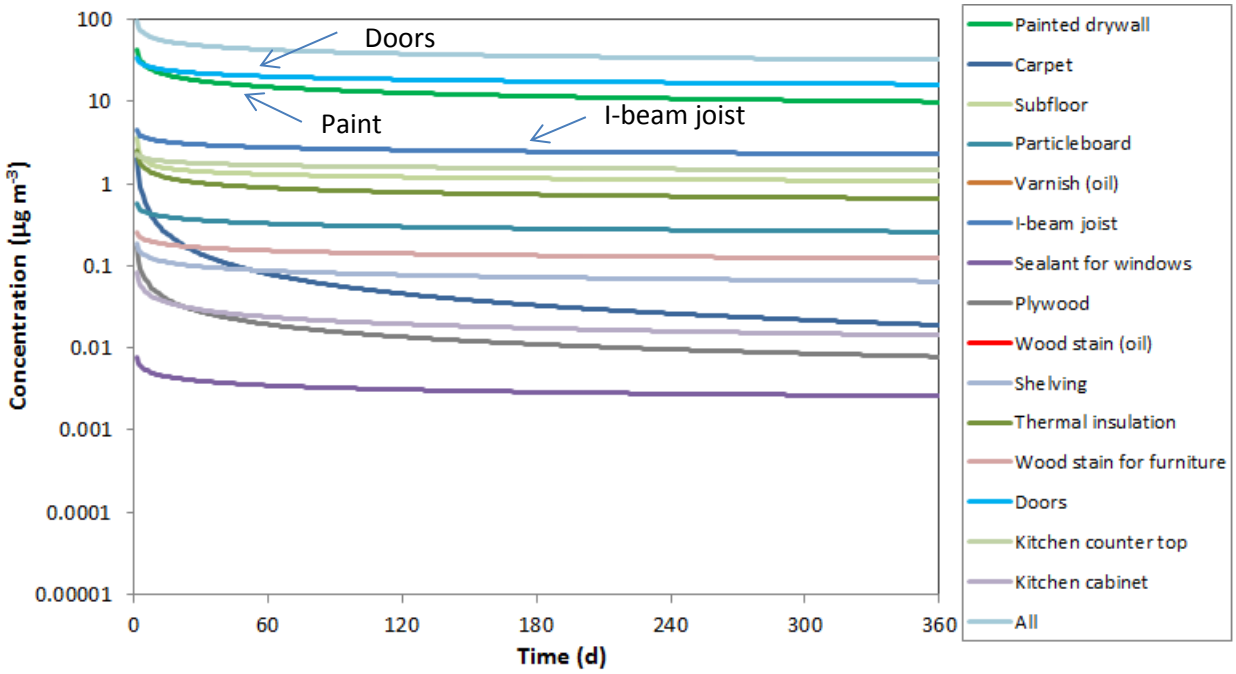


Figure 53: Predicted concentration of formaldehyde

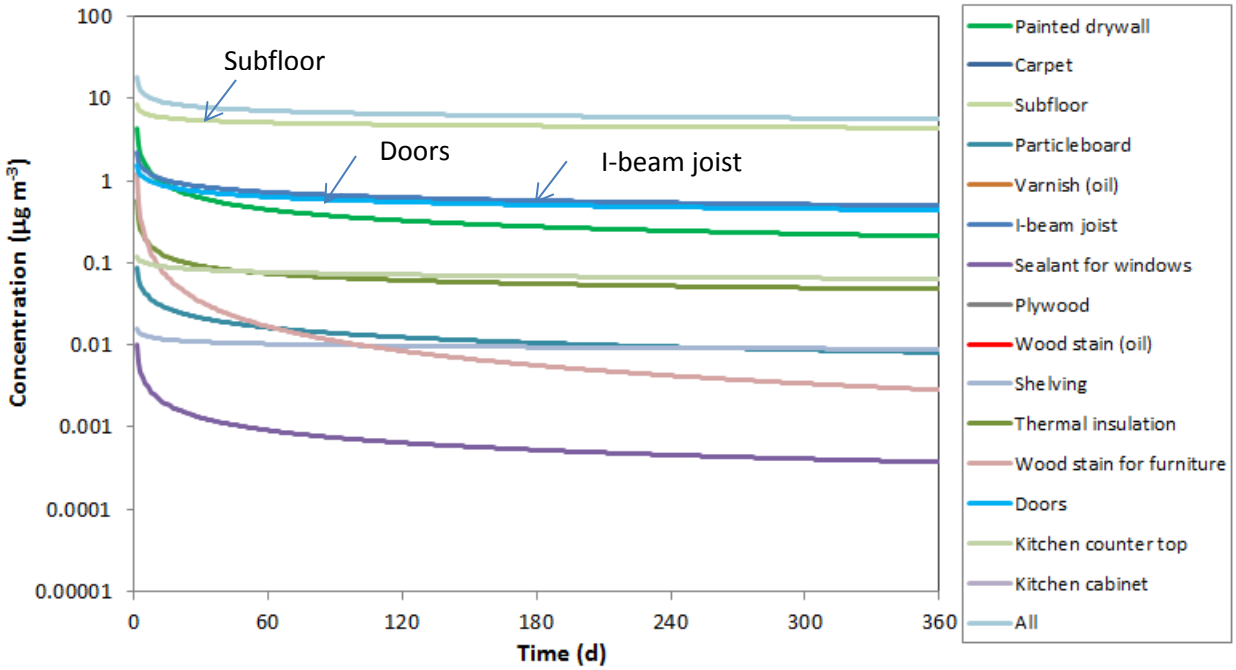


Figure 54: Predicted concentration of propanal

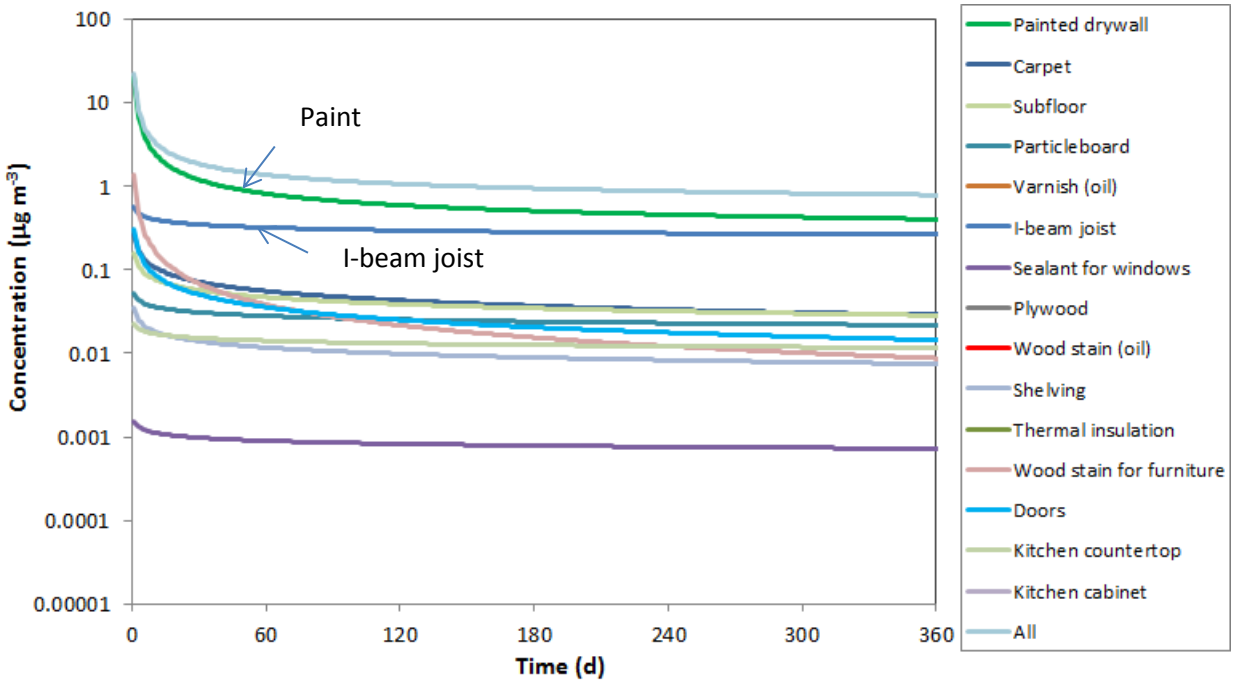


Figure 55: Predicted concentration of acrolein

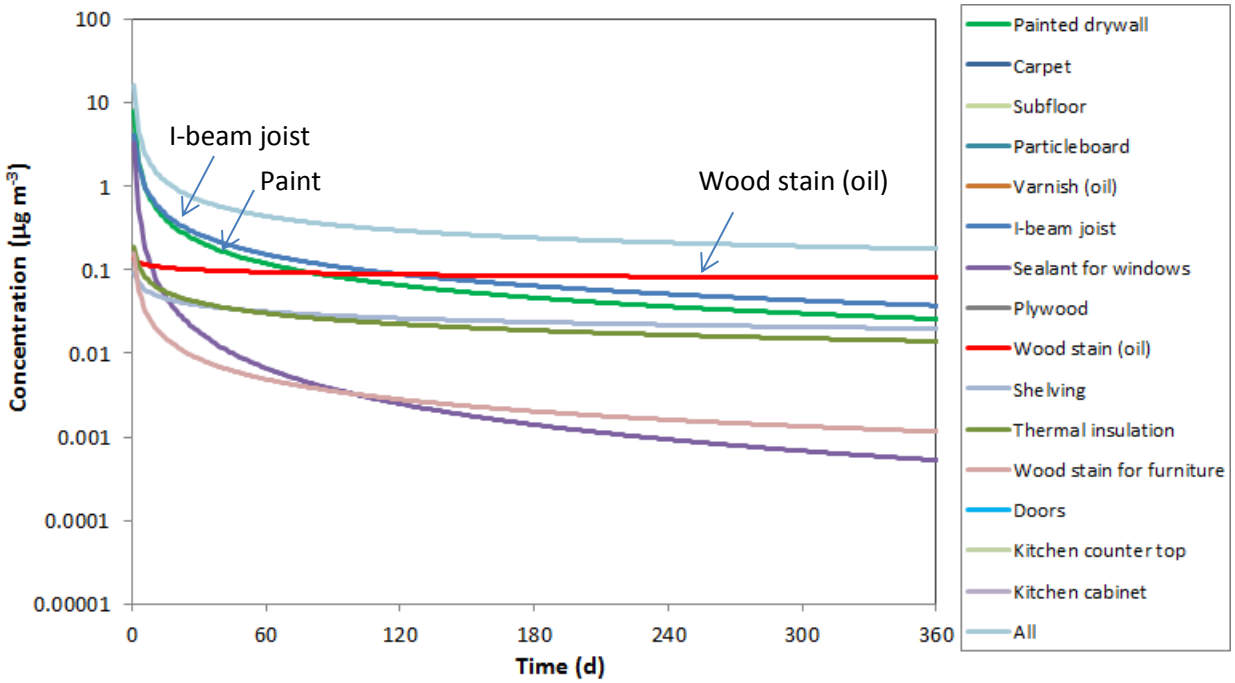


Figure 56: Predicted concentration of 2-propanol

Table 14: Contribution (%) of different materials to air concentrations of "priority chemicals" at 1 d, 10 days, 1 month and 1 year

			Contribution (%)														
#	Compound	Concen-tration	Painted drywall	Carpet	Varnish (oil)	Wood stain (oil)	Wood stain (water-based)	Sealant for windows	Insulation	I-beam joist	Subfloor	Doors	Shelving	Particle-board	Plywood	Kitchen countertop	Kitchen cabinet
		(µg m^{-3})	**Contribution (%) at 1 d**														
44	Benzene	1.0	74	0	0	0	0	0	18	6	0	0	1	0	0	0	0
47	1,2-Dimethylbenzene	21.5	12	1	27	59	0	0	0	0	0	0	0	0	0	0	0
49	1,3-Dimethylbenzene	34.7	28	0	25	46	1	0	0	0	0	0	0	0	0	0	0
52	Ethylbenzene	9.7	26	1	18	40	1	0	6	0	8	0	1	0	0	0	0
53	Naphthalene	10.8	3	12	80	2	2	0	0	0	0	1	0	0	0	0	0
56	Toluene	8.9	34	0	0	7	5	0	6	35	13	0	1	0	0	0	0
118	Acetaldehyde	62.9	32	0	0	0	2	0	5	35	12	12	0	0	0	0	0
119	Formaldehyde	93.1	46	2	0	0	0	0	3	5	4	37	0	1	0	2	0
120	Propanal	18.4	24	0	0	0	7	0	3	12	45	8	0	0	0	1	0
121	Acrolein	22.8	88	1	0	0	6	0	0	2	1	1	0	0	0	0	0
4	2-Propanol	16.1	50	0	0	1	1	21	1	25	0	0	1	0	0	0	0
		(µg m^{-3})	**Contribution (%) at 10 days**														
44	Benzene	0.3	68	0	0	0	0	0	22	9	0	0	0	1	0	0	0
47	1,2-Dimethylbenzene	0.7	9	0	20	59	0	1	3	0	3	1	4	0	0	0	0
49	1,3-Dimethylbenzene	0.9	16	0	22	56	0	0	3	0	1	2	0	0	0	0	0
52	Ethylbenzene	0.6	7	0	7	22	0	0	29	0	28	2	4	0	0	0	0
53	Naphthalene	1.5	3	36	58	1	0	0	0	0	1	1	0	0	0	0	0
56	Toluene	1.0	22	0	0	0	1	0	2	66	7	0	1	0	0	0	0
118	Acetaldehyde	19.5	11	0	0	0	1	0	4	37	18	27	0	1	0	1	0
119	Formaldehyde	57.5	40	1	0	0	0	0	2	6	3	44	0	1	0	3	0
120	Propanal	9.5	11	0	0	0	1	0	1	12	63	10	0	0	0	1	0
121	Acrolein	3.4	73	3	0	0	5	0	0	12	2	3	1	1	0	1	0
4	2-Propanol	1.6	37	0	0	7	1	6	4	41	0	0	3	0	0	0	0
		(µg m^{-3})	**Contribution (%) at 1 month**														
44	Benzene	0.2	70	0	0	0	0	0	20	9	0	0	0	1	0	0	0
47	1,2-Dimethylbenzene	0.2	7	0	15	50	0	1	8	0	7	3	7	0	0	0	0
49	1,3-Dimethylbenzene	0.2	13	0	18	53	0	1	8	0	1	6	0	0	0	0	0
52	Ethylbenzene	0.2	3	0	3	12	0	0	38	0	34	3	6	0	0	0	0
53	Naphthalene	0.7	3	49	44	1	0	0	0	0	1	2	0	0	0	0	0
56	Toluene	0.5	20	0	0	0	1	0	3	70	6	0	1	0	0	0	0
118	Acetaldehyde	13.2	6	0	0	0	1	0	3	35	20	33	0	1	0	1	0
119	Formaldehyde	47.5	37	0	0	0	0	0	2	6	3	46	0	1	0	4	0
120	Propanal	7.8	8	0	0	0	0	0	1	11	69	9	0	0	0	1	0
121	Acrolein	1.9	65	4	0	0	4	0	0	19	3	3	1	2	0	1	0
4	2-Propanol	0.7	32	0	0	15	1	3	6	39	0	0	5	0	0	0	0
		(µg m^{-3})	**Contribution (%) at 1 year**														
44	Benzene	0.1	73	0	0	0	0	0	17	8	0	0	0	1	0	0	0
47	1,2-Dimethylbenzene	0.02	3	0	3	14	0	4	28	0	22	12	15	0	0	0	0
49	1,3-Dimethylbenzene	0.02	8	0	5	20	0	3	33	0	2	26	0	1	0	1	0
52	Ethylbenzene	0.05	1	0	0	2	0	0	47	0	34	7	8	0	0	0	0
53	Naphthalene	0.2	2	73	18	0	0	0	1	0	3	2	0	0	0	0	0
56	Toluene	0.1	22	0	0	0	0	0	5	66	6	0	0	0	0	0	0
118	Acetaldehyde	6.4	2	0	0	0	1	0	2	27	20	45	0	0	0	2	0
119	Formaldehyde	31.8	31	0	0	0	0	0	2	7	3	50	0	1	0	5	0
120	Propanal	5.6	4	0	0	0	0	0	1	9	77	8	0	0	0	1	0
121	Acrolein	0.8	51	4	0	0	1	0	0	33	4	2	1	3	0	1	0
4	2-Propanol	0.2	14	0	0	45	1	0	8	21	0	0	11	0	0	0	0

Note: High contributions are highlighted (green for >50% and yellow for 10 – 50%)

Table 15: Contribution (%) of different material groups to air concentrations of selected VOCs [1] at 1 day

#	Compound	Concen-tration (µg m^{-3})	Contribution (%)														
			Painted drywall	Carpet	Varnish (oil)	Wood stain (oil)	Wood stain (water-based)	Sealant for windows	Insulation	I-beam joist	Subfloor	Doors	Shelving	Particle-board	Plywood	Kitchen countertop	Kitchen cabinet
1	1-Butanol	168.6	92	0	0	0	3	0	1	2	1	1	0	0	0	0	0
3	Hexanol, 2-ethyl-1-	53.2	74	19	0	0	0	0	2	1	1	3	0	0	0	0	0
5	Ethanol	37.2	43	0	4	2	1	0	0	47	2	0	0	0	0	0	0
6	Phenol	54.2	49	0	0	0	0	0	0	44	6	1	0	0	0	1	0
7	Methylethyl ketone	4.3	29	0	6	38	1	0	0	5	16	4	0	0	0	0	0
8	Acetone	69.7	32	1	6	3	3	0	1	20	20	6	6	0	0	0	0
12	Benzaldehyde	21.7	86	4	0	0	1	0	4	2	2	2	0	0	0	0	0
13	Butanal	12.8	30	0	17	16	3	0	0	10	10	9	3	0	0	1	0
16	Furfural	4.8	41	0	0	0	0	0	2	55	0	0	0	0	1	0	0
17	Heptanal	12.0	55	0	0	0	0	0	0	15	15	11	4	0	0	1	0
18	Hexanal	4138.1	1	0	18	61	0	0	0	7	3	6	3	0	0	0	0
19	Nonanal	15.4	44	24	0	0	0	0	1	14	6	9	2	0	0	0	0
20	2-Nonenal	2.0	0	0	0	0	0	0	0	27	72	0	2	0	0	0	0
22	2-Octenal	34.9	0	0	0	0	0	0	1	24	34	40	0	0	0	1	0
23	Pentanal	84.6	5	0	12	45	1	0	0	15	7	9	6	0	0	0	0
29	Dodecane	70.2	7	2	48	44	0	0	0	0	0	0	0	0	0	0	0
31	Hexadecane	4.4	27	58	5	0	7	0	0	0	3	0	0	0	0	0	0
34	Octane	8.5	22	0	39	35	0	0	0	1	2	0	0	0	0	0	0
35	Pentadecane	5.4	20	50	24	2	1	0	1	0	2	0	0	0	0	0	0
36	Tetradecane	8.2	44	3	35	9	3	0	1	0	4	1	0	0	0	0	0
54	p-Cymene	8.8	53	2	0	16	0	0	0	27	0	2	0	0	0	0	0
55	Styrene	8.0	34	3	0	0	1	0	50	1	9	2	0	0	0	0	0
66	Texanol	17038.4	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
67	TXIB	96.1	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0
68	1,2-Propanediol	13985.7	99	0	0	0	1	0	0	0	0	0	0	0	0	0	0
97	alpha-Pinene	29.9	0	1	0	0	0	0	0	85	1	12	1	0	0	0	0
102	Camphene	3.7	0	0	0	0	0	0	0	89	0	10	0	0	0	0	0
103	Limonene	14.6	25	25	0	0	0	0	0	43	1	6	0	0	0	0	0
104	Acetic acid	800.0	10	10	0	0	0	0	0	41	23	13	0	0	0	2	0
109	Hexanoic acid	23.5	0	0	0	0	0	0	0	15	68	16	0	0	0	1	0
115	n-Butyl ether	331.4	99	0	0	0	1	0	0	0	0	0	0	0	0	0	0

[1] VOCs with the detection frequency (above MDL) > 20% in the tests of 18 wood, 14 paint and 17 insulation products; High contributions are highlighted (green for >50% and yellow for 10 – 50%)

Table 16: Contribution (%) of different material groups to air concentrations of selected VOCs [1] at 10 days

#	Compound	Concen-tration (µg m^{-3})	Contribution (%)														
			Painted drywall	Carpet	Varnish (oil)	Wood stain (oil)	Wood stain (water-based)	Sealant for windows	Insulation	I-beam joist	Subfloor	Doors	Shelving	Particle-board	Plywood	Kitchen countertop	Kitchen cabinet
1	1-Butanol	17.9	77	0	0	0	0	0	8	4	6	4	1	0	0	0	0
3	Hexanol, 2-ethyl-1-	9.1	82	1	0	0	0	0	6	3	2	6	0	0	0	0	0
5	Ethanol	4.3	9	0	33	14	2	0	1	31	7	0	0	0	0	3	0
6	Phenol	17.5	27	0	0	0	0	0	0	58	13	1	0	0	0	1	0
7	Methylethyl ketone	1.1	25	0	6	31	1	0	0	4	21	10	1	0	0	1	0
8	Acetone	24.1	9	0	7	3	0	0	0	9	47	13	11	0	0	0	0
12	Benzaldehyde	1.9	64	1	0	0	3	0	10	7	5	9	0	0	0	0	0
13	Butanal	3.3	19	0	3	7	2	0	0	10	23	22	9	0	0	3	0
16	Furfural	1.3	21	0	0	0	0	0	5	69	0	0	1	0	4	0	0
17	Heptanal	4.6	44	0	0	0	0	0	0	13	17	16	9	0	0	1	0
18	Hexanal	506.6	2	0	2	8	1	0	1	16	6	39	24	0	0	2	0
19	Nonanal	5.5	39	17	0	0	0	0	2	22	7	9	4	0	0	0	0
20	2-Nonenal	0.7	0	0	0	0	0	0	0	25	72	0	4	0	0	0	0
22	2-Octenal	17.2	0	0	0	0	0	0	1	15	24	58	0	0	0	2	0
23	Pentanal	17.4	4	0	3	8	3	0	0	18	15	30	19	0	0	0	0
29	Dodecane	9.8	3	4	56	35	0	0	0	0	0	0	0	0	0	0	0
31	Hexadecane	0.7	60	3	19	0	11	0	0	1	6	0	0	0	0	0	0
34	Octane	0.3	7	0	25	26	0	0	0	13	20	0	6	1	0	1	0
35	Pentadecane	2.6	11	81	4	0	1	0	1	0	1	0	0	0	0	0	0
36	Tetradecane	1.7	74	6	4	0	1	0	0	0	12	2	0	0	0	0	0
54	p-Cymene	1.2	25	3	0	4	0	0	0	64	2	1	0	1	0	0	0
55	Styrene	1.3	8	3	0	0	1	0	65	2	17	3	1	0	0	0	0
66	Texanol	2769.8	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
67	TXIB	28.7	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0
68	1,2-Propanediol	841.5	99	0	0	0	1	0	0	0	0	0	0	0	0	0	0
97	alpha-Pinene	8.8	0	1	0	0	0	0	0	90	2	5	1	1	0	0	0
102	Camphene	1.2	0	0	0	0	0	0	0	96	0	3	0	0	0	0	0
103	Limonene	3.2	13	21	0	0	0	0	0	61	1	4	0	0	0	0	0
104	Acetic acid	478.4	6	3	0	0	0	0	0	41	32	16	0	0	0	2	0
109	Hexanoic acid	15.7	0	0	0	0	0	0	0	12	70	18	0	0	0	1	0
115	n-Butyl ether	15.1	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[1] VOCs with the detection frequency (above MDL) > 20% in the tests of 18 wood, 14 paint and 17 insulation products; High contributions are highlighted (green for >50% and yellow for 10 – 50%)

Table 17: Contribution (%) of different material groups to air concentrations of selected VOCs [1] at 1 month

#	Compound	Concen-tration (µg m^{-3})	Contribution (%)														
			Painted drywall	Carpet	Varnish (oil)	Wood stain (oil)	Wood stain (water-based)	Sealant for windows	Insulation	I-beam joist	Subfloor	Doors	Shelving	Particle-board	Plywood	Kitchen countertop	Kitchen cabinet
1	1-Butanol	8.2	60	0	0	0	0	0	16	4	11	7	1	0	0	0	0
3	Hexanol, 2-ethyl-1-	6.1	83	0	0	0	0	0	5	4	1	6	0	0	0	0	0
5	Ethanol	2.9	3	0	48	18	1	0	0	17	8	0	0	0	0	4	0
6	Phenol	11.5	19	0	0	0	0	0	0	60	18	2	0	0	0	1	0
7	Methylethyl ketone	0.7	22	0	5	27	1	0	0	3	24	14	1	0	0	2	0
8	Acetone	18.4	6	0	5	2	0	0	0	5	55	14	11	0	0	0	0
12	Benzaldehyde	0.8	50	0	0	0	5	0	11	10	7	15	0	0	0	0	0
13	Butanal	2.1	13	0	1	4	1	0	1	9	28	27	12	0	0	4	0
16	Furfural	0.8	15	0	0	0	0	0	7	71	0	0	1	0	6	0	0
17	Heptanal	3.2	38	0	0	0	0	0	0	12	19	18	12	0	0	1	0
18	Hexanal	379.8	2	0	0	2	1	0	1	12	4	47	30	0	0	2	0
19	Nonanal	3.7	37	13	0	0	0	0	2	26	8	8	6	0	0	0	0
20	2-Nonenal	0.5	0	0	0	0	0	0	0	23	72	0	5	0	0	0	0
22	2-Octenal	13.1	0	0	0	0	0	0	1	11	20	65	0	0	0	2	0
23	Pentanal	11.9	2	0	1	3	3	0	1	14	16	38	23	0	0	0	0
29	Dodecane	4.3	2	7	59	31	0	0	0	0	0	0	0	0	0	0	0
31	Hexadecane	0.5	60	1	22	0	9	0	0	1	7	0	1	0	0	0	0
34	Octane	0.1	2	0	12	13	0	0	0	22	33	0	13	2	0	3	0
35	Pentadecane	2.1	8	88	2	0	0	0	1	0	1	0	0	0	0	0	0
36	Tetradecane	1.1	74	5	1	0	1	0	0	0	16	1	0	0	0	0	0
54	p-Cymene	0.6	15	3	0	1	0	0	0	76	3	1	0	1	0	0	0
55	Styrene	0.7	5	2	0	0	2	0	64	2	20	3	1	0	0	0	0
66	Texanol	1304.8	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
67	TXIB	17.0	99	0	0	0	0	0	0	0	1	0	0	0	0	0	0
68	1,2-Propanediol	270.2	99	0	0	0	1	0	0	0	0	0	0	0	0	0	0
97	alpha-Pinene	5.6	0	1	0	0	0	0	0	91	2	3	0	2	0	0	0
102	Camphene	0.8	0	0	0	0	0	0	0	97	0	1	0	0	1	0	0
103	Limonene	1.7	10	17	0	0	0	0	0	69	1	3	0	0	0	0	0
104	Acetic acid	399.4	5	1	0	0	0	0	0	39	36	17	0	0	0	2	0
109	Hexanoic acid	13.2	0	0	0	0	0	0	0	11	70	18	0	0	0	1	0
115	n-Butyl ether	4.1	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[1] VOCs with the detection frequency (above MDL) > 20% in the tests of 18 wood, 14 paint and 17 insulation products; High contributions are highlighted (green for >50% and yellow for 10 – 50%)

Table 18: Contribution (%) of different material groups to air concentrations of selected VOCs [1] at 1 year

#	Compound	Concen-tration (µg m^{-3})	Contribution (%)														
			Painted drywall	Carpet	Varnish (oil)	Wood stain (oil)	Wood stain (water-based)	Sealant for windows	Insulation	I-beam joist	Subfloor	Doors	Shelving	Particle-board	Plywood	Kitchen countertop	Kitchen cabinet
1	1-Butanol	2.8	18	0	0	0	0	0	41	3	19	16	2	0	0	1	0
3	Hexanol, 2-ethyl-1-	3.2	85	0	0	0	0	0	4	5	1	5	0	1	0	0	0
5	Ethanol	2.0	0	0	64	20	0	0	0	4	6	0	0	0	0	5	0
6	Phenol	5.3	8	0	0	0	0	0	0	58	31	2	0	0	0	1	0
7	Methylethyl ketone	0.3	15	0	4	16	1	0	0	2	31	26	2	0	0	4	0
8	Acetone	11.9	2	0	3	1	0	0	0	2	67	15	10	0	0	0	0
12	Benzaldehyde	0.2	19	0	0	0	8	1	11	14	10	35	0	0	0	1	0
13	Butanal	1.1	5	0	0	1	0	0	1	5	32	33	16	0	0	7	0
16	Furfural	0.3	7	0	0	0	0	0	12	65	0	0	1	0	15	0	0
17	Heptanal	1.6	24	0	0	0	0	0	0	8	25	20	21	0	0	1	0
18	Hexanal	260.2	1	0	0	0	1	0	0	5	1	52	37	0	0	2	0
19	Nonanal	1.6	30	7	0	0	0	0	3	35	10	7	9	0	0	0	0
20	2-Nonenal	0.2	0	0	0	0	0	0	0	18	75	0	7	0	0	0	0
22	2-Octenal	7.8	0	0	0	0	0	0	2	6	12	78	0	0	0	2	0
23	Pentanal	6.5	1	0	0	0	4	0	1	6	13	47	28	0	0	0	0
29	Dodecane	0.7	2	15	58	22	0	0	2	0	1	0	0	0	0	0	0
31	Hexadecane	0.2	56	0	29	0	5	0	0	0	9	0	0	0	0	1	0
34	Octane	0.1	0	0	1	1	0	0	0	23	41	0	25	4	0	6	0
35	Pentadecane	1.5	3	95	0	0	0	0	1	0	0	0	0	0	0	0	0
36	Tetradecane	0.6	69	3	0	0	0	0	0	0	26	1	0	0	0	0	0
54	p-Cymene	0.2	3	2	0	0	0	0	0	85	6	0	1	3	0	0	0
55	Styrene	0.2	3	1	0	0	3	0	60	3	26	2	2	0	0	0	0
66	Texanol	253.0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
67	TXIB	5.3	98	0	0	0	0	0	0	1	1	0	0	0	0	0	0
68	1,2-Propanediol	23.8	98	0	0	0	0	0	0	0	2	0	0	0	0	0	0
97	alpha-Pinene	2.4	0	1	0	0	0	0	0	89	4	1	0	5	0	0	0
102	Camphene	0.3	0	0	0	0	0	0	0	98	0	0	0	1	1	0	0
103	Limonene	0.5	5	8	0	0	0	0	0	83	1	1	0	1	0	0	0
104	Acetic acid	281.0	4	0	0	0	0	0	0	35	43	17	0	0	0	1	0
109	Hexanoic acid	9.0	0	0	0	0	0	0	0	10	69	20	0	0	0	0	0
115	n-Butyl ether	0.2	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[1] VOCs with the detection frequency (above MDL) > 20% in the tests of 18 wood, 14 paint and 17 insulation products; High contributions are highlighted (green for >50% and yellow for 10 – 50%)

3.4.2 Comparison to literature values

Table 19 compares the predicted indoor air concentration levels at 1 day, 10 days, 1 month and 1 year with IAQ measurements reported in literature. The daily concentrations were averaged over 1 year to estimate the 1-year mean. The 1-year mean values of acetaldehyde, formaldehyde, acrolein, and naphthalene agree with the mean values of the indoor measurements. Although more rigorous proofs are required, it presents the possibility that the building materials tested in this study are likely to be the main sources of these compounds indoors.

On the other hand, the 1-year means of aromatic compounds were lower than the literature mean values by one order of magnitude except for naphthalene. Considering the low detection frequency of aromatic compounds in the current emissions tests, this may imply that building materials tested in this study are not the dominant sources of aromatic compounds indoors.

Table 19: Comparison of predicted IAQ concentrations with literature data

	Predicted concentration ($\mu g\ m^{-3}$)					Concentration in literature ($\mu g\ m^{-3}$)
	@ 1 day	@ 10 days	@ 1 month	@ 1 year	Mean (1-year)	
Benzene	1.0	0.3	0.2	0.1	0.2	0.025 - 20.99 (2.15) [a] 0.23 – 7.38 (1.04) [c]
1,2-Dimethylbenzene	21.5	0.7	0.2	0.02	0.2	0.01 - 205.11 (1.22) [a] 0.26 – 16.52 (1.41) [c]
1,3(4)-Dimethylbenzene	34.7	0.9	0.2	0.02	0.2	0.02 - 138.97 (3.59) [a] 0.91 – 56.32 (4.88) [c]
Ethylbenzene	9.7	0.6	0.2	0.05	0.2	0.005 - 201.41 (1.05) [a] 0.25 – 13.63 (1.35) [c]
Naphthalene	10.8	1.5	0.7	0.2	0.4	0.01 - 144.44 (0.39) [a] 0.18 – 7.74 (0.85) [c]
Toluene	8.9	1.0	0.5	0.1	0.3	0.015 - 112.9 (5.53) [a] 1.69 – 73.42 (7.94) [c]
Acetaldehyde	62.9	19.5	13.2	6.4	9.0	0.49 – 48.8 (12.69) [b]
Formaldehyde	93.1	57.5	47.5	31.8	37.8	5.09 – 93.88 (35.46) [b]
Propanal	18.4	9.5	7.8	5.6	6.5	-
Acrolein	22.8	3.4	1.9	0.8	1.3	0.44 – 6.81 (1.35) [b] 5 [d]
2-Propanol	16.1	1.6	0.7	0.2	0.4	-

[a] Min – Max (Median) measured in winter in 75 homes (Zhu et al., 2005)
[b] Min – Max (Mean) measured in summer in 69 homes (Héroux et al., 2010)
[c] 5th – 95th percentile (Geometric mean) measured in 3218 houses, 546 apartments, and 93 other dwelling types in Canada (Zhu et al., 2013)
[d] Mean value of the measurement in four model homes in California (Seaman et al., 2007)

4 Conclusions

Emissions of 121 VOCs were investigated using 4 - 8 day tests in small-scale (50 L) chambers for 30 building materials with the focus on wood, paint and insulation products. Combined with the emission data generated in 2012/13, the analysis was done for a total of 49 materials, including 18 wood, 14 paint, and 17 insulation materials. There were several unique features in VOC emissions in different groups of materials.

For wood products, the most frequently detected compounds with high emission factors were terpenes (e.g., α-pinene) and oxygenated compounds such as alcohols (1-butanol, 2-ethyl-1-hexanol, and phenol), aldehydes/ketones (e.g., hexanal, acetone and formaldehyde), and acids (e.g., acetic acid). Interestingly, Texanol was also frequently detected in wood products, although the emission factor was relatively low.

Latex paint products also emitted oxygenated compounds (1-butanol, acetone, formaldehyde, and acrolein) frequently. However, the compounds with the highest emission factors and high detection frequencies in paint products were glycol ethers and esters (e.g., Texanol and 1,2-propanediol). On average, a paint product with a dark colorant had ~60% higher emission factors than those of a white-colored paint product. However, the difference between a light-colored paint and a white base paint product was not significant (~10% on average). Paint products with high VOC contents had higher emission factors for major VOCs (e.g., Texanol and 1,2-propanediol), but this was not case for minor VOCs (e.g., formaldehyde).

Insulation products also emitted various VOCs (e.g., 1-butanol, 2-propanol, Texanol, acetaldehyde, and formaldehyde) with high frequencies. However, the emission factors of these compounds were relatively low compared to those of paint and wood products. One-component spray foam sealants emitted more VOCs with higher emission factors than other insulation materials (e.g., polystyrene board, fiber glass, and cellulose insulation). Compared to spray foam sealants based on methylene diphenyl diisocyanate (MDI), a latex-based spray foam sealant emitted more diverse VOCs with higher emission factors. While two-component spray foam insulations were low emitters for most VOCs, they were recognized as main sources of 1,4-dioxane and triethyl phosphate.

The importance of proper application of spray foam insulation was emphasized through the emission test involving spay foam sealant specimens applied under different conditions. The emission factors were 2 - 7 times higher when the specimens were prepared sub-optimally, i.e., with off-ratio of Component A and B (0.25:1) or low temperatures (16 and 5 °C), compared to that applied under normal conditions (1:1 ratio and 22 – 23 °C). This demonstrates the importance of following manufacturer's instruction to avoid any excess VOC emissions from spray foam insulations. Note that these tests were not designed to fully investigate all organic emissions from SPF. In particular, the methodology employed was not suitable to detect amines (believed to be the key compounds for complaints of odours from improperly applied SPF), semi-volatile flame retardants or isocyanates.

The scenario analysis combined with the power-law decay emission models was shown to be an important tool to identify major sources on VOCs indoors through detailed analysis of contribution of each material. This is particularly encouraging for several VOCs (i.e., acetaldehyde, formaldehyde, acrolein, and naphthalene) that showed good agreement

between the predicted and measured concentrations. More effort should be directed to develop more detailed, diverse and representative scenarios for product usage in Canadian offices, schools, and homes. As reported in the previous and current report, the lack of information on the material surface area is still one of the important sources for uncertainties associated with IAQ simulations.

In spite of various attempts to improve the sampling/analysis method for acrolein, it was shown that the PFPH method was not ideal mainly due to its low capturing efficiency. Other sampling methods (e.g., Summa canister sampling or pentafluorobenzylhydroxylamine (PFBHA) method) are recommended in future studies.

The wide ranges of emission factors within the product classes imply that it is difficult to select one material to represent a product category and the variability of emissions needs to be considered in material selections and indoor air quality (IAQ) modeling. For IAQ modeling, the emissions may need to be addressed with stochastic modeling through probability distributions rather than deterministic modeling.

5 References

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Appendix

A.1 Test materials and products

Table A. 1: Detailed information of test materials and products (2013/14)

#	Test ID	Product description	Date Purchased	Date Tested
1	DI1	Door (Interior, High-density fiberboard, Melamine resins, Hollow core, Primed,)	19-Nov-13	25-Nov-13
2	KC1	Kitchen cabinet (Cabinet door, High-density fiberboard, Primed)	7-Nov-13	25-Nov-13
3	CT3	Kitchen countertop (Laminate, Plastic-coated paper bonded to particle board)	19-Nov-13	25-Nov-13
4	OSB10	Subfloor underlay board (moisture barrier, with extruded polyurethane foam))	23-Oct-13	25-Nov-13
5	IB3	I-beam joist (Pine block – 2.5” x 1.5” H, OSB web - 9.5" H, Light-colored resin)	17-Oct-13	21-Oct-13
6	IB4	I-beam joist (Pine block – 2.5” x 1.5” H, OSB web - 9.5" H, Light-c resin, Open joist)	17-Oct-13	21-Oct-13
7	IB5	I-beam joist (Pine block – 2.5” x 1.5” H, OSB web - 9.5" H, Dark-colored resin)	17-Oct-13	21-Oct-13
8	IB6	I-beam joist (Pine block – 1.5” x 2.5” H, OSB web - 9.5" H, Dark-colored resin)	17-Oct-13	21-Oct-13
9	INS3	Insulation (Recycled denim, R-8)	23-Oct-13	28-Oct-13
10	INS4	Insulation (Cellulose, R-3.8)	23-Oct-13	28-Oct-13
11	INS5	Insulation (Stone wool)	23-Oct-13	28-Oct-13
12	INS6	Insulation (High performance reflective, walls, ceilings, water pipes, & air ducts)	23-Oct-13	28-Oct-13
13	INS7	Insulation (Extruded polystyrene board, XPS, R-5)	19-Nov-13	9-Dec-13
14	INS8	Insulation (Expanded polystyrene board, EPS, Closed cell)	19-Nov-13	9-Dec-13
15	INS9	Insulation (Fiberglass)	19-Nov-13	9-Dec-13
16	INS10	Insulation (Polyisocyanurate foam)	19-Nov-13	16-Dec-13
17c	SPF1c	Spray foam sealant (Two-component, low pressure, 2 passes)	13-Dec-13	6-Jan-14
17d	SPF1d	Spray foam sealant (= SPF1c but off-ratio: Component A:B=0.25:1)	13-Dec-13	6-Jan-14
17e	SPF1e	Spray foam sealant (= SPF1c but applied at 16 ^{o}C)	13-Dec-13	13-Jan-14
17f	SPF1f	Spray foam sealant (= SPF1c but applied at 5 ^{o}C)	13-Dec-13	20-Jan-14
18	SPF2	Spray foam insulation (Two-component; Rigid; Closed Cell; Soya)	5-Dec-13	9-Dec-13
19	SPF3	Spray foam insulation (Two-component; Semi-rigid; Open Cell; Low-density)	12-Dec-13	16-Dec-13
20	SPF4	Spray foam sealant (One-component; Intended for Larger Gaps; Triple expanding)	19-Nov-13	13-Jan-14
21	PT13	Paint (Interior, Acrylic Latex, Pearl, White, VOC < 150 g/L)	6-Oct-13	7-Oct-13
22	PT13c1	Paint (Interior, Acrylic Latex, Pearl, Dark color, Blue, VOC < 150 g/L)	6-Oct-13	7-Oct-13
23	PT13c2	Paint (Interior, Acrylic Latex, Pearl, Light color, Light beige, VOC < 150 g/L)	6-Oct-13	7-Oct-13
24	PT13p	Paint (Interior, Acrylic Latex, VOC < 150 g/) + Primer (Acrylic Latex, VOC < 200 g/L)	6-Oct-13	7-Oct-13
25	PT14	Paint (Interior, Chalk board, Latex, VOC < 250 g/L)	23-Oct-13	4-Nov-13
26	PT15	Paint (Interior, Primer combined, Latex, VOC ~0 g/L)	23-Oct-13	4-Nov-13
27	PT16	Paint (Interior, Latex, Eggshell, Base for dark color, VOC < 5 g/L)	3-Nov-13	4-Nov-13
28	PT16c1	Paint (Interior, Latex, Eggshell, Dark color, Blue, VOC < 5 g/L)	29-Oct-13	4-Nov-13
29	PT17	Paint (Interior; Low VOC; Acrylic Latex, VOC < 150 g/L)	14-Nov-13	18-Nov-13
30	PT18	Paint (Recycled Latex, VOC < 50 g/L)	23-Oct-13	20-Jan-14

Table A. 2: Test conditions for materials tested in 2013/14

#	Test ID	Sample area (m^2)	Sample Thickness (m)	Sample Initial Mass (g)	Loading Ratio (m^2 m^{-3})	Air change rate (h^{-1})	Sample Substrate
1	DI1	0.0200	0.0064	183.2	0.417	1	Stainless steel specimen (ss) holder
2	KC1	0.0200	0.0160	260.1	0.417	1	Stainless steel specimen (ss) holder
3	CT3	0.0482	0.0160	221.2	1.004	1	-
4	OSB10	0.0200	0.0280	199.8	0.417	1	Stainless steel specimen (ss) holder
5	IB3	0.0781	-	355.8	1.626	1	-
6	IB4	0.0781	-	396.4	1.626	1	-
7	IB5	0.0781	-	318.2	1.626	1	-
8	IB6	0.0615	-	315.2	1.282	1	-
9	INS3	0.2000	0.0318	215.1	4.167	1	-
10	INS4	0.2000	0.0445	320.8	4.167	1	-
11	INS5	0.2000	0.0889	581.7	4.167	1	-
12	INS6	0.2000	0.0064	51.3	4.167	1	-
13	INS7	0.0200	0.0253	13.5	0.417	1	Stainless steel specimen (ss) holder
14	INS8	0.0200	0.0238	8.6	0.417	1	Stainless steel specimen (ss) holder
15	INS9	0.2000	0.0508	92.7	4.167	1	-
16	INS10	0.0200	0.0253	16.1	0.417	1	Stainless steel specimen holder
17c	SPF1c	0.0452	0.0508	106.5	0.941	1	Galvanized steel holder (10 x 7 x 2 ")
17d	SPF1d	0.0452	0.0508	102.3	0.941	1	Galvanized steel holder (10 x 7 x 2 ")
17e	SPF1e	0.0452	0.0508	98.6	0.941	1	Galvanized steel holder (10 x 7 x 2 ")
17f	SPF1f	0.0452	0.0768	109.2	0.941	1	Galvanized steel holder (10 x 7 x 2 ")
18	SPF2	0.0200	0.0256	25.6	0.417	1	Stainless steel
19	SPF3	0.0200	0.0250	9.6	0.417	1	Stainless steel
20	SPF4	0.0200	0.0250	30.3	0.417	1	Galvanized steel holder (10 x 1 x 1")
21	PT13	0.0200	0.0127	2.3	0.417	1	Gypsum board (0.5", no ss holder)
22	PT13c1	0.0200	0.0127	1.9	0.417	1	Gypsum board (0.5", no ss holder)
23	PT13c2	0.0200	0.0127	2.3	0.417	1	Gypsum board (0.5", no ss holder)
24	PT13p	0.0200	0.0127	2.7	0.417	1	Gypsum board (0.5", no ss holder)
25	PT14	0.0200	0.0127	2.4	0.417	1	Gypsum board (0.5", unpolished ss tray)
26	PT15	0.0200	0.0127	4.2	0.417	1	Gypsum board (0.5", unpolished ss tray)
27	PT16	0.0200	0.0127	3.8	0.417	1	Gypsum board (0.5", unpolished ss tray)
28	PT16c1	0.0200	0.0127	3.0	0.417	1	Gypsum board (0.5", unpolished ss tray)
29	PT17	0.0200	0.0127	2.5	0.417	1	Gypsum board (0.5", unpolished ss tray)
30	PT18	0.0200	0.0127	3.3	0.417	1	Gypsum board (0.5", no ss holder)

Table A. 3: Detailed information of test materials and products (wood, insulation, and paint) tested in 2012/13

#	Group	Test ID	Product description	Date (purchased)	Date (tested)
1	Wood	SHV1	Shelving (MDF; Pre-painted)	7-Jul-12	9-Jul-12
2		SHV2	Shelving (Plywood; Pre-painted; Low Formaldehyde)	7-Jul-12	9-Jul-12
3		MDF3	Panel (MDF; 1/2" x 24" x 48")	14-Jul-12	16-Jul-12
4		PB7	Panel (Particleboard; 1/2" x 24" x 48")	6-Dec-12	10-Dec-12
5		PIN2	Wood Panelling & Wainscoting (Pine; 5/16 x 3 & 9/16" x 32")	6-Dec-12	10-Dec-12
6		PLY4	Panel (Plywood; 1/2" x 24" x 48")	6-Dec-12	10-Dec-12
7		OSB8	Panel (OSB; 1/2" x 24" x 48")	14-Jul-12	16-Jul-12
8		SPR1	Subfloor (Basement; Spruce; 7/8" x 23.5" x 23.5")	6-Dec-12	10-Dec-12
9		IB1	I-beam (Pine block; 11 & 7/8" high)	29-Nov-12	3-Dec-12
10		IB2	I-beam (Laminate block; 9 & 1/2" high)	29-Nov-12	3-Dec-12
11	Insulation	INS2	Insulation (Expanded polystyrene board; EcoLogo)	26-Nov-12	26-Nov-12
12		CAK32	Spray foam sealant (1 component; Gaps & Cracks)	26-Jul-12	10-Sep-12
13		CAK33	Spray foam sealant (1 component; Window & Door; Minimal Expansion)	16-Aug-12	10-Sep-12
14		CAK34	Spray foam sealant (1 component; Air leaks/Openings; Triple Expansion)	6-Sep-12	10-Sep-12
15		CAK35	Spray foam sealant (1 component; Multi-purpose; Latex-based)	16-Aug-12	10-Sep-12
16	Paint	PT9	Paint (Interior; zero VOC; Acrylic; VOC ~ 0 g/L)	19-Jul-12	23-Jul-12
17		PT10	Paint (Interior; Latex; VOC < 50 g/L)	19-Jul-12	23-Jul-12
18		PT11	Paint (Interior; Low odour; Acrylic; VOC < 5 g/L)	19-Jul-12	23-Jul-12
19		PT12	Paint (Interior; Low VOC; Acrylic Latex; VOC < 150 g/L)	26-Jul-12	27-Aug-12

Table A. 4: Test conditions for materials tested in 2012/13

#	Test ID	Sample area (m^2)	Sample Thickness (m)	Sample Initial Mass (g)	Sample Loading Ratio (m^2 m^{-3})	Air change rate (h^{-1})	Sample substrate
1	SHV1	0.02	0.0159	250.5	0.417	1	Stainless steel (ss) holder
2	SHV2	0.02	0.0159	252.3	0.417	1	Stainless steel (ss) holder
3	MDF3	0.02	0.0127	230.0	0.417	1	Stainless steel (ss) holder
4	PB7	0.02	0.0127	181.4	0.417	1	Stainless steel (ss) holder
5	PIN2	0.02	0.0079	69.7	0.417	1	Stainless steel (ss) holder
6	PLY4	0.02	0.0127	136.7	0.417	1	Stainless steel (ss) holder
7	OSB8	0.02	0.0111	157.0	0.417	1	Stainless steel (ss) holder
8	SPR1	0.02	0.0222	229.2	0.417	1	Stainless steel (ss) holder
9	IB1	0.092	0.0159	412.3	1.914	1	No
10	IB2	0.069	0.0159	338.2	1.441	1	No
11	INS2	0.02	0.0191	7.1	0.417	1	Stainless steel (ss) holder
12	CAK32	0.0065	0.0254	4.9	0.134	1	Galvanized steel holder for spray foam (1 x 1 x 10")
13	CAK33	0.0065	0.0254	9.0	0.134	1	Galvanized steel holder for spray foam (1 x 1 x 10")
14	CAK34	0.0065	0.0254	6.5	0.134	1	Galvanized steel holder for spray foam (1 x 1 x 10")
15	CAK35	0.0065	0.0254	8.8	0.134	1	Galvanized steel holder for spray foam (1 x 1 x 10")
16	PT9	0.02	0.0127	3.3	0.417	1	Gypsum board (unpolished ss holder)
17	PT10	0.02	0.0127	4.0	0.417	1	Gypsum board (unpolished ss holder)
18	PT11	0.02	0.0127	5.5	0.417	1	Gypsum board (unpolished ss holder)
19	PT12	0.02	0.0127	2.9	0.417	1	Gypsum board (unpolished ss holder)

A.2 Chamber concentrations & emission factors for 30 materials tested in small-scale (50 L) chambers

Table A. 5: Small-scale chamber concentration & emission factor for DI1 (interior door)

				Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
#	Class	CAS #	Compound	0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.65	1.46	1.75	1.75	1.50	1.39	1.14		2.02	2.74	2.73	2.12	1.84	1.21	2.99	0.12	0.32
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	1.90	3.60	4.41	3.37	2.63	2.45	2.70		4.25	6.30	3.68	1.83	1.39	2.01	8.61	0.36	0.74
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol		1.80	2.61	3.74	2.61	2.76	3.10		4.50	6.54	9.36	6.53	6.89	7.75			
6		108-95-2	Phenol	0.60	0.77	1.02	0.82	0.91	0.51	0.53		0.42	1.05	0.56	0.78			1.33	0.18	0.39
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone			0.16	0.15	0.14	0.12	0.10			0.40	0.39	0.34	0.29	0.26	0.55	0.15	0.77
8		67-64-1	Acetone	0.12	4.56	6.61	4.34	2.06	3.79	4.10		11.10	16.24	10.55	4.85	9.19	9.95	15.65	0.15	0.29
9		98-86-2	Acetophenone	0.28	0.56	0.60	0.38	0.38	0.16	0.23		0.70	0.79	0.26	0.25			1.36	0.46	0.86
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone		0.20	0.24	0.19	0.18	0.12	0.12		0.50	0.60	0.47	0.46	0.30	0.29	0.72	0.17	0.67
12		100-52-7	Benzaldehyde	0.71	1.04	1.34	1.01	1.30	0.61	0.79		0.81	1.56	0.75	1.48		0.21	1.84	0.30	0.27
13		123-72-8	Butanal		1.37	1.40	1.30	1.23	0.60	0.70		3.41	3.50	3.24	3.06	1.50	1.76	4.93	0.20	0.59
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal		4.29	3.14	2.33	1.54	0.59	0.98		10.72	7.86	5.83	3.84	1.48	2.44	19.81	0.48	0.84
16		98-01-1	Furfural					0.28		0.92					0.70		2.30			
17		111-71-7	Heptanal		1.46	1.76	1.16	1.28	0.66	0.75		3.66	4.40	2.91	3.19	1.64	1.86	5.66	0.23	0.69
18		66-25-1	Hexanal		237.68	312.21	252.08	232.45	168.99	195.63		594.21	780.53	630.21	581.12	422.47	489.07	798.68	0.11	0.50
19		124-19-6	Nonanal		2.32	2.21	1.25	1.05	0.55	0.63		5.80	5.51	3.13	2.63	1.38	1.57	10.50	0.41	0.92
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal					0.71	0.45	0.39					1.78	1.13	0.99	50.85	0.87	0.96
22		2548-87-0	2-Octenal		15.77	16.46	11.00	10.88	8.75	12.54		39.42	41.14	27.51	27.19	21.86	31.36	47.16	0.14	0.64
23		110-62-3	Pentanal		8.92	8.00	7.42	6.50	5.16	5.24		22.31	20.00	18.56	16.25	12.90	13.10	27.03	0.15	0.89
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane		0.06	0.08						0.15	0.20							
29		112-40-3	Dodecane		0.13	0.13	0.07		0.02			0.32	0.32	0.17		0.04		0.83	0.62	0.88
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane				0.06	0.05						0.16	0.14					
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane							0.06							0.16			
35		629-62-9	Pentadecane		0.14	0.17						0.34	0.43							
36		629-59-4	Tetradecane		0.14		0.08	0.04				0.36		0.19	0.10			0.61	0.44	0.91
37		629-50-5	Tridecane		0.07		0.06					0.18		0.14						
38		1120-21-4	Undecane		0.18	0.14						0.45	0.36							
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet		0.02							0.04								
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene	0.29	0.04	0.03	0.02	0.09		0.01										
45		526-73-8	Benzene, 1,2,3-trimethyl-		0.02	0.03						0.05	0.07							
46		95-63-6	Benzene, 1,2,4-trimethyl-		0.03							0.08								
47		95-47-6	Benzene, 1,2-dimethyl-		0.03	0.03			0.01			0.07	0.08			0.03		0.12	0.33	0.84
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-		0.07	0.06	0.03	0.03	0.02	0.02		0.17	0.15	0.07	0.08	0.06	0.06	0.25	0.34	0.93
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-		0.02	0.02						0.05	0.05							
52		100-41-4	Ethylbenzene		0.04	0.03	0.02	0.01	0.01	0.02		0.09	0.08	0.05	0.04	0.03	0.04	0.14	0.32	0.87
53		91-20-3	Naphthalene		0.11	0.12	0.05	0.04	0.03	0.03		0.28	0.29	0.12	0.10	0.07	0.07	0.54	0.45	0.95
54		99-87-6	p-Cymene		0.64	0.44	0.12	0.07	0.03	0.02		1.60	1.11	0.31	0.17	0.07	0.06	5.54	0.96	0.98
55		100-42-5	Styrene	0.04	0.41	0.49	0.16	0.23	0.08	0.10		0.93	1.14	0.30	0.47	0.10	0.16	2.41	0.60	0.77
56		108-88-3	Toluene	0.19	0.26	0.35	0.16	0.36	0.11	0.16		0.17	0.41		0.42					
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester		0.76	0.96	1.08	1.32	1.04	1.52		1.89	2.39	2.70	3.30	2.61	3.81			
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol	0.91	1.6	2.4	1.8	1.1	0.7	0.7		1.8	3.6	2.2	0.5			4.85	0.43	0.45
67		6846-50-0	TXIB		0.65	0.79	0.31	0.12	0.08			1.64	1.97	0.77	0.31	0.20		5.09	0.71	0.90

Table A. 5 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol				1.1							2.8						
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoet																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-		0.72	0.97	1.48	1.88	1.34	1.60		1.79	2.43	3.69	4.70	3.34	3.99	4.03	0.01	0.00
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene	0.12	0.73	0.21	0.17	0.14	0.11	0.12		1.52	0.21	0.11	0.03		0.01	5.51	1.41	0.92
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane	0.11		0.12	0.08	0.07					0.03							
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene		11.18	12.00	3.12	1.60	0.84	0.76		27.94	30.00	7.79	3.99	2.10	1.91	99.61	0.85	0.96
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene		1.73	1.96	0.57	0.32	0.17	0.16		4.33	4.90	1.42	0.81	0.42	0.40	13.95	0.77	0.95
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene		1.47	1.50	0.46	0.20	0.10	0.08		3.69	3.76	1.14	0.50	0.25	0.21	14.03	0.89	0.95
102		79-92-5	Camphene		2.04	1.02	0.28	0.13				5.09	2.55	0.70	0.33			14.87	0.98	1.00
103		5989-27-5	Limonene		2.86	2.62	0.87	0.47	0.21	0.20		7.16	6.56	2.17	1.17	0.51	0.50	23.35	0.82	0.96
104	Acids	64-19-7	Acetic acid	1.92	25.01	41.76	80.93	115.38	96.53	61.75		57.73	99.61	197.53	283.66	236.53	149.58	360.92	0.14	0.09
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid			0.30							0.75							
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid		3.28	4.50	3.98	3.35	2.24	2.63		8.19	11.25	9.96	8.38	5.60	6.58	11.67	0.12	0.40
110		109-52-4	Pentanoic Acid					0.62	0.37	0.42					1.55	0.93	1.05	14.70	0.60	0.63
111	Other	3777-69-3	Furan, 2-pentyl		0.33	0.55	0.40	0.21	0.53	0.52		0.83	1.36	0.99	0.54	1.32	1.31			
112		872-50-4	2-Pyrrolidinone, 1-methyl				0.22							0.56						
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	0.1	9.0	8.1	6.6	6.4	5.4	5.4		22.2	20.0	16.4	15.7	13.4	13.3	27.75	0.16	0.98
119		50-00-0	Formaldehyde	0.4	37.4	36.2	28.1	28.4	25.6	26.4		92.7	89.7	69.4	70.0	63.1	65.2	110.79	0.12	0.94
120		123-38-6	Propanal		1.9	1.7	1.3	1.5	0.9	1.0		4.7	4.2	3.3	3.6	2.2	2.4	6.41	0.21	0.80
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	4.1 h	7.1 h	25.3 h	49.1 h	73.1 h	97.1 h	0 h	4.1 h	7.1 h	25.3 h	49.1 h	73.1 h	97.1 h	a	b	R^2
121	PFPH	107-02-8	Acrolein	0.2	0.6	1.0	0.4	0.1	0.3	0.4		1.1	1.9	0.6		0.2	0.5	3.09	0.50	0.67

Note: Levels below the method detection limit are highlighted.

Table A. 6: Small-scale chamber concentration & emission factor for KC1 (kitchen cabinet)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.33	0.67	0.91	0.86	0.63	0.30	0.61		0.84	1.45	1.33	0.76		0.71	2.61	0.28	0.81
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	1.30	1.69	1.71	1.47	1.21	0.94	0.98		0.98	1.02	0.43				1.78	0.42	0.86
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol	0.53	0.72	0.84	0.69	0.52	0.16	0.28		0.47	0.77	0.39				0.70	0.15	0.20
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone																	
8		67-64-1	Acetone	0.16	0.63	0.46	0.34	0.29	0.20	0.18		1.19	0.75	0.46	0.34	0.12	0.05	3.33	0.76	0.83
9		98-86-2	Acetophenone	0.14	0.36	0.24	0.22	0.15	0.06	0.06		0.55	0.25	0.18	0.00			3.64	1.44	0.72
10		108-94-1	Cyclohexanone		0.26							0.64								
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.53	0.99	0.81	0.76	0.61	0.24	0.28		1.15	0.70	0.58	0.19			2.15	0.55	0.83
13		123-72-8	Butanal																	
14		112-31-2	Decanal			0.27							0.67							
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural																	
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal			0.96							2.40							
19		124-19-6	Nonanal		0.60	0.43		0.12				1.51	1.06		0.31			2.92	0.58	1.00
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal																	
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane	0.16			0.11													
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane	0.26	0.25	0.27	0.22	0.17	0.07	0.08			0.02							
36		629-59-4	Tetradecane	0.16	0.15	0.18	0.15	0.11	0.06				0.05							
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene	0.29	0.09	0.20	0.03	0.12	0.00	0.01										
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-		0.05		0.01					0.12		0.02						
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene		0.02							0.05								
53		91-20-3	Naphthalene						0.01							0.02				
54		99-87-6	p-Cymene																	
55		100-42-5	Styrene	0.06	0.06	0.04	0.04	0.03	0.02	0.08							0.05			
56		108-88-3	Toluene	0.13	0.41	0.16	0.11	0.29	0.06	0.11		0.71	0.08		0.42					
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol	35.02	33.74	44.21	35.39	22.41	6.94	7.74			22.98	0.93						
67		6846-50-0	TXIB		0.58	0.66	0.43	0.28	0.13	0.15		1.44	1.64	1.07	0.70	0.32	0.38	3.10	0.44	0.82

Table A. 6 (continued)

#	Class	CAS #	Compound	Chamber concentration (μg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	Emission factor (μg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol			1.2	0.4						3.0	0.9						
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene	0.21	0.73	0.15	0.08	0.13	0.07	0.09		1.29								
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane			0.12	0.17	0.09					0.30	0.43	0.23			0.37	0.06	0.04
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene		0.09	0.09				0.03		0.22	0.23				0.08	0.36	0.33	0.95
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	
104	Acids	64-19-7	Acetic acid	2.07	3.55	9.47	7.38		0.79	2.17		3.69	18.48	13.25			0.23	36.14	0.85	0.43
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid						0.13							0.34				
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	

#	Class	CAS #	Compound	Chamber concentration (μg m^{-3}) 0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	Emission factor (μg m^{-2} h^{-1}) 0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	0.0	0.1	0.5	0.4	0.2	0.0	0.1		0.1	1.3	1.0	0.6	0.1	0.1	0.64	0.25	0.06
119		50-00-0	Formaldehyde	0.3	1.0	1.8	1.0	0.9	0.7	0.7		1.9	3.8	1.9	1.5	1.0	1.1	4.27	0.29	0.62
120		123-38-6	Propanal	0.2	0.7	0.1		0.2	0.2			1.2				0.0				

#	Class	CAS #	Compound	Chamber concentration (μg m^{-3}) 0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	Emission factor (μg m^{-2} h^{-1}) 0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPH	107-02-8	Acrolein						0.2	0.1						0.5	0.3			

Note: Levels below the method detection limit are highlighted.

Table A. 7: Small-scale chamber concentration & emission factor for CT3 (kitchen countertop)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	2.18	2.89	3.63	4.56	4.07	3.72	4.07		0.74	1.51	2.47	1.96	1.61	1.96	4.85	0.23	0.59
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	3.83	5.80	5.67	5.08	4.47	3.94	4.19		2.04	1.91	1.29	0.66	0.11	0.37	5.77	0.66	0.69
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol		2.47	3.99	5.87	6.15	4.88	5.50		2.56	4.14	6.09	6.38	5.07	5.70	8.36	0.09	0.31
6		108-95-2	Phenol	4.99	21.81	25.44	17.37	13.63	9.91	10.29		17.45	21.22	12.84	8.97	5.10	5.50	34.94	0.39	0.85
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.41	0.48	0.55	0.60	0.51	0.49		0.43	0.50	0.57	0.62	0.53	0.50	0.83	0.10	0.41
8		67-64-1	Acetone	0.22	6.38	5.84	3.62	3.75	3.81	3.02		6.39	5.84	3.53	3.67	3.73	2.91	8.05	0.21	0.90
9		98-86-2	Acetophenone	0.68	0.41	0.39	0.35	0.26	0.16	0.18										
10		108-94-1	Cyclohexanone		0.53	0.43	0.22	0.22				0.55	0.44	0.23	0.23			0.79	0.35	0.95
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	1.04	1.17	1.24	1.42	1.10	0.74	0.85		0.14	0.20	0.39	0.06			0.22	0.13	0.05
13		123-72-8	Butanal		2.71	3.67	3.39	3.28	2.78	2.82		2.81	3.81	3.51	3.40	2.89	2.93	3.38	0.02	0.04
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal		5.11	4.98	3.26	2.61	1.43	1.30		5.30	5.16	3.39	2.70	1.48	1.35	9.79	0.40	0.88
16		98-01-1	Furfural																	
17		111-71-7	Heptanal	0.30	4.42	3.76	2.95	2.47	1.53	2.04		4.28	3.60	2.75	2.25	1.28	1.81	6.15	0.29	0.85
18		66-25-1	Hexanal	3.15	387.95	367.53	331.15	316.72	285.68	299.64		399.16	377.98	340.25	325.27	293.08	307.55	438.79	0.08	0.95
19		124-19-6	Nonanal	0.77	4.15	4.22	2.64	2.24	1.39	1.48		3.50	3.58	1.94	1.53	0.64	0.74	7.56	0.49	0.88
20		18829-56-6	2-Nonenal				2.04			1.56				2.12			1.62			
21		124-13-0	Octanal		2.50	3.00	1.81	1.53	1.07	1.20		2.60	3.11	1.88	1.59	1.11	1.24	4.17	0.27	0.87
22		2548-87-0	2-Octenal	1.31	26.41	24.00	20.23	17.74	12.76	15.03		26.04	23.54	19.63	17.05	11.88	14.24	33.69	0.20	0.87
23		110-62-3	Pentanal		12.30	12.10	14.03	16.22	14.75	15.95		12.76	12.56	14.55	16.83	15.30	16.54			
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane		2.09	1.80	1.15	0.80	0.56	0.53		2.17	1.87	1.20	0.83	0.58	0.55	3.75	0.41	0.97
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane		0.18	0.12	0.09	0.08				0.19	0.12	0.09	0.09			0.22	0.27	0.90
29		112-40-3	Dodecane		0.15	0.14	0.08	0.05				0.16	0.14	0.08	0.05			0.28	0.43	0.95
30		142-82-5	Heptane		0.17	0.15						0.17	0.15							
31		544-76-3	Hexadecane		0.09	0.09	0.07					0.09	0.09	0.08				0.10	0.09	0.81
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane		0.18	0.15		0.16	0.14			0.19	0.15		0.16	0.15		0.19	0.05	0.42
35		629-62-9	Pentadecane		0.12	0.12		0.09				0.12	0.12		0.09			0.14	0.11	0.94
36		629-59-4	Tetradecane		0.15	0.14	0.08					0.15	0.14	0.08				0.24	0.34	0.94
37		629-50-5	Tridecane		0.09							0.10								
38		1120-21-4	Undecane		0.17							0.18								
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet			0.02							0.02							
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene	0.14	0.06	0.13	0.03	0.27	0.23	0.02					0.13	0.09				
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-		0.06							0.06								
47		95-47-6	Benzene, 1,2-dimethyl-			0.02							0.02							
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-		0.09	0.05		0.03	0.03			0.09	0.05		0.03	0.03		0.11	0.30	0.89
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene		0.04	0.02	0.02	0.01	0.01			0.04	0.03	0.02	0.01	0.01		0.05	0.32	0.93
53		91-20-3	Naphthalene	0.02	0.08	0.07	0.03	0.03	0.02	0.02		0.06	0.06	0.01	0.01	0.00		0.35	1.17	0.79
54		99-87-6	p-Cymene	0.05	0.32	0.29	0.17	0.13	0.09	0.10		0.28	0.26	0.13	0.09	0.04	0.05	0.60	0.54	0.92
55		100-42-5	Styrene	0.03	0.11	0.08	0.06	0.06	0.04	0.04		0.08	0.05	0.03	0.03	0.01	0.01	0.16	0.58	0.89
56		108-88-3	Toluene	0.56	0.38	0.17	0.20	0.29	0.15	0.32										
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethy																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester		0.16	0.20	0.21	0.24	0.22	0.17		0.17	0.21	0.22	0.25	0.23	0.18	0.36	0.13	0.26
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol	1.97	3.98	5.67	4.18	3.11	2.21	2.41		2.09	3.84	2.29	1.18	0.25	0.47	7.45	0.59	0.63
67		6846-50-0	TXIB	0.76	1.15	1.77	1.34	0.91	0.59	0.62		0.40	1.04	0.60	0.15			1.08	0.36	0.31

Table A. 7 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol																	
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		0.99	0.24	0.16	0.15	0.11	0.14		1.03	0.25	0.16	0.15	0.11	0.14	1.05	0.51	0.77
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane			0.08							0.09							
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene	0.16	2.37	1.71	0.95	0.69	0.48	0.48		2.29	1.61	0.82	0.55	0.33	0.33	4.53	0.57	0.98
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene	0.22	0.81	0.72	0.48	0.32	0.23	0.19		0.61	0.52	0.27	0.11	0.01		3.09	1.05	0.73
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene		0.33	0.27	0.14	0.10		0.06		0.34	0.28	0.15	0.10		0.06	0.64	0.49	0.98
102		79-92-5	Camphene		0.28	0.17						0.29	0.18							
103		5989-27-5	Limonene	0.39	1.48	1.50	0.92	0.76	0.46	0.46		1.13	1.15	0.55	0.38	0.08	0.07	4.16	0.80	0.81
104	Acids	64-19-7	Acetic acid		136.05	299.89	723.08	576.31	348.60	560.02		141.13	311.09	750.09	597.83	361.62	580.94	1998.31	0.32	0.40
105		79-31-2	Isobutyric acid				1.47	1.22	1.32	1.39				1.52	1.26	1.37	1.44	1.65	0.04	0.10
106		107-92-6	Butyric acid		0.64	1.51	3.77	3.66	2.83	3.38		0.66	1.56	3.91	3.79	2.93	3.50	6.07	0.14	0.41
107		111-14-8	Heptanoic acid				0.37							0.38						
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid		6.28	8.85	9.78	7.37	5.26	6.42		6.52	9.18	10.15	7.64	5.46	6.66	32.62	0.38	0.76
110		109-52-4	Pentanoic Acid		1.95	2.44	2.97	2.25	1.39	1.79		2.03	2.53	3.08	2.33	1.44	1.86	13.16	0.46	0.74
111	Other	3777-69-3	Furan, 2-pentyl		0.63	0.71	0.23	0.25	0.41	0.42		0.66	0.74	0.24	0.26	0.42	0.44	0.79	0.20	0.38
112		872-50-4	2-Pyrrolidinone, 1-methyl																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	0.1	12.7	12.7	11.2	9.9	8.0	8.5		13.0	13.0	11.5	10.1	8.2	8.7	16.91	0.14	0.88
119		50-00-0	Formaldehyde	0.4	87.6	91.2	87.5	78.2	70.8	71.2		90.4	94.2	90.4	80.6	73.0	73.4	106.66	0.08	0.78
120		123-38-6	Propanal	0.0	3.2	2.9	4.0	4.2	3.4	3.6		3.3	3.0	4.1	4.3	3.5	3.7	5.90	0.10	0.46
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.1 h	25.2 h	49.1 h	73.1 h	97.1 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.1 h	25.2 h	49.1 h	73.1 h	97.1 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPH	107-02-8	Acrolein	0.0	1.4	0.5	1.1	0.8	0.8	0.6		1.4	0.5	1.0	0.7	0.8	0.6	1.13	0.11	0.15

Note: Levels below the method detection limit are highlighted.

Table A. 8: Small-scale chamber concentration & emission factor for OSB10 (subfloor underlay board)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.95	8.00	8.78	5.88	5.31	4.83	5.42		17.63	19.57	12.33	10.90	9.69	11.17	23.60	0.19	0.87
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	2.30	4.05	4.30	3.51	2.67	2.72	2.60		4.39	5.02	3.04	0.95	1.07	0.77	10.96	0.55	0.86
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol		2.07	1.46	1.06	1.13	0.78	0.94		5.17	3.65	2.65	2.83	1.94	2.35	6.04	0.23	0.87
6		108-95-2	Phenol	0.59	3.52	2.85	2.34	1.98	1.44	2.03		7.32	5.66	4.38	3.47	2.13	3.59	9.61	0.27	0.79
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.92	0.85	0.53	0.60	0.44	0.53		2.29	2.12	1.34	1.51	1.10	1.34	2.80	0.19	0.84
8		67-64-1	Acetone	0.12	3.58	3.73	3.31	3.60	2.55	3.11		8.66	9.04	8.00	8.72	6.09	7.49	9.81	0.07	0.42
9		98-86-2	Acetophenone	0.24	0.63	0.43	0.36	0.31	0.14	0.21		0.98	0.49	0.32	0.18			1.62	0.56	0.95
10		108-94-1	Cyclohexanone		0.95	0.59	0.28					2.37	1.47	0.70				4.34	0.58	1.00
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.61	2.16	1.53	1.26	1.17	0.71	0.85		3.86	2.28	1.63	1.40	0.25	0.59	7.86	0.60	0.74
13		123-72-8	Butanal		6.37	5.57	3.57	4.40	2.07	3.72		15.92	13.92	8.94	11.00	5.17	9.30	20.18	0.22	0.61
14		112-31-2	Decanal		1.10			0.59		0.33		2.76			1.46		0.82	4.07	0.32	0.91
15		3913-81-3	2-Decenal			2.26							5.66							
16		98-01-1	Furfural																	
17		111-71-7	Heptanal		10.08	7.46	3.88	2.96	1.54	1.56		25.21	18.66	9.69	7.40	3.86	3.89	49.46	0.55	0.96
18		66-25-1	Hexanal		1055.59	712.20	329.91	239.52	163.19	153.11		2638.98	1780.51	824.77	598.80	407.99	382.78	4914.63	0.56	1.00
19		124-19-6	Nonanal		3.30	2.61	1.42	1.10	0.70	0.71		8.25	6.53	3.55	2.75	1.75	1.77	14.46	0.46	0.98
20		18829-56-6	2-Nonenal		9.51	8.29	2.30	3.48				23.77	20.73	5.75	8.70			40.79	0.48	0.77
21		124-13-0	Octanal		3.03	2.32	1.09	1.03	0.56	0.56		7.58	5.79	2.72	2.58	1.40	1.39	13.61	0.49	0.96
22		2548-87-0	2-Octenal		77.82	63.01	31.59	30.51	19.38	18.81		194.54	157.51	78.97	76.28	48.46	47.02	317.37	0.42	0.97
23		110-62-3	Pentanal		36.01	28.65	15.63	14.86	11.51	12.64		90.03	71.63	39.06	37.14	28.77	31.61	125.01	0.33	0.96
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane		0.46	0.41	0.20	0.17	0.13	0.11		1.14	1.01	0.50	0.44	0.32	0.26	1.97	0.42	0.98
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane		0.07							0.18								
32		110-54-3	Hexane																	
33		111-84-2	Nonane		0.17	0.11	0.05					0.43	0.28	0.13				0.77	0.55	1.00
34		111-65-9	Octane		0.25	0.16						0.62	0.41							
35		629-62-9	Pentadecane		0.13	0.10	0.05					0.31	0.25	0.14				0.49	0.40	1.00
36		629-59-4	Tetradecane		0.37	0.24	0.13	0.12	0.08			0.93	0.61	0.33	0.29	0.19		1.46	0.45	0.98
37		629-50-5	Tridecane		0.37	0.28	0.13	0.10		0.05		0.92	0.71	0.33	0.26		0.13	1.80	0.54	0.98
38		1120-21-4	Undecane		1.42	1.22	0.66	0.47	0.36	0.28		3.55	3.04	1.66	1.17	0.90	0.70	6.55	0.46	0.98
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-		0.04							0.10								
42		622-96-8	Toluene, 4-ethyl-		0.03							0.08								
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene	0.31	0.19	0.24	0.11	0.05												
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-			0.05							0.12							
47		95-47-6	Benzene, 1,2-dimethyl-		0.10	0.07	0.03	0.03		0.02		0.26	0.18	0.08	0.07		0.04	0.47	0.53	0.99
48		108-67-8	Benzene, 1,3,5-trimethyl-		0.03							0.07								
49		108-38-3	Benzene, 1,3-dimethyl-																	
50		98-82-8	Benzene, isopropyl		0.15	0.12	0.09	0.05		0.02		0.39	0.31	0.22	0.13		0.06	0.76	0.49	0.91
51		103-65-1	Benzene, propyl-		0.22	0.19	0.11	0.08	0.05	0.04		0.55	0.48	0.29	0.21	0.13	0.11	1.04	0.46	0.94
52		100-41-4	Ethylbenzene		6.51	4.95	2.54	1.56	0.87	0.79		16.27	12.38	6.35	3.90	2.16	1.98	36.34	0.62	0.97
53		91-20-3	Naphthalene					0.02	0.02	0.01					0.04	0.05	0.03	0.28	0.45	0.38
54		99-87-6	p-Cymene		0.03	0.03	0.02		0.01			0.09	0.08	0.04		0.03		0.13	0.31	0.99
55		100-42-5	Styrene	0.03	4.80	3.86	2.40	1.75	1.08	0.98		11.91	9.56	5.92	4.29	2.61	2.36	21.77	0.46	0.96
56		108-88-3	Toluene	0.09	0.74	0.34	0.19	0.35	0.09	0.20		1.63	0.61	0.25	0.63		0.26	1.72	0.41	0.58
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester		0.12			0.07		0.06		0.29			0.16		0.16	0.35	0.18	0.97
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol	23.42	61	63	30	22	9	10		94	99	17				327.35	0.89	0.88
67		6846-50-0	TXIB		0.66	0.70	0.25	0.12	0.14	0.17		1.65	1.75	0.63	0.30	0.35	0.42	3.37	0.52	0.88

Table A. 8 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		3	13	6	2				8	31	16	6			20.99	0.22	0.13
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-	0.90	2.58	1.97	1.14	0.88	0.45	0.38		4.19	2.67	0.60				13.03	0.96	0.99
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene	0.08	0.61	0.26	0.15	0.13	0.10	0.34		1.33	0.45	0.17	0.12	0.04	0.64	1.50	0.56	0.38
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane	0.13			0.13	0.09												
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene		0.25	0.14	0.06	0.03				0.62	0.35	0.15	0.08			1.36	0.73	0.99
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene		0.05	0.03						0.13	0.09							
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene		0.39	0.28	0.14		0.08			0.98	0.71	0.36		0.21		1.68	0.49	1.00
104	Acids	64-19-7	Acetic acid	2.39	578.76	708.92	680.80	622.31	404.68	546.35		1440.91	1766.33	1696.02	1549.79	1005.71	1359.90	1810.31	0.07	0.25
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid		2.82	2.58	1.99	1.65	0.73	0.93		7.05	6.46	4.98	4.13	1.83	2.32	11.86	0.35	0.80
107		111-14-8	Heptanoic acid		0.89	0.86	1.00	1.00	0.49			2.24	2.15	2.51	2.49	1.24		2.65	0.09	0.17
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid		46.30	71.86	80.01	66.16	28.82	28.71		115.74	179.64	200.02	165.41	72.04	71.78	200.76	0.16	0.23
110		109-52-4	Pentanoic Acid		12.61	18.22	11.91	9.03	4.56	3.86		31.53	45.56	29.78	22.59	11.39	9.66	68.55	0.37	0.71
111	Other	3777-69-3	Furan, 2-pentyl		2.98	5.38	2.78	1.62	2.29	1.29		7.45	13.46	6.96	4.06	5.73	3.22	14.66	0.28	0.61
112		872-50-4	2-Pyrrolidinone, 1-methyl-																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
				Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
#	Class	CAS #	Compound	0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	0.1	31.6	27.4	19.3	16.8	14.1	14.1		78.7	68.2	48.0	41.6	34.9	35.1	114.41	0.27	0.99
119		50-00-0	Formaldehyde	0.4	4.4	3.5	3.5	3.1	2.9	2.8		10.0	8.0	7.8	6.9	6.4	6.1	11.36	0.13	0.90
120		123-38-6	Propanal	0.1	10.3	8.9	7.0	7.2	6.8	8.1		25.6	22.1	17.2	17.9	16.8	20.1	27.21	0.10	0.61
				Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
#	Class	CAS #	Compound	0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	a	b	R^2
121	PFPH	107-02-8	Acrolein						0.9	0.2						2.2	0.6			

Note: Levels below the method detection limit are highlighted.

Table A. 9: Small-scale chamber concentration & emission factor for IB3 (I-beam joist)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48.1 h	72 h	96 h	0 h	3 h	6 h	24 h	48.1 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.69	16.89	16.42	10.73	9.95	8.50	2.08		10.37	10.07	6.43	5.93	5.00	0.89	23.25	0.48	0.56
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.97	2.77	2.23	2.89	3.15	3.10	1.10		1.15	0.81	1.23	1.40	1.36	0.08	1.95	0.31	0.15
4		67-63-0	2-Propanol		15.34	13.97	7.58	5.21	4.98	1.02		9.82	8.95	4.86	3.34	3.19	0.66	24.70	0.60	0.73
5		64-17-5	Ethanol		27.96	23.53	5.39	3.91	2.18			17.91	15.07	3.45	2.50	1.39		52.16	0.82	0.98
6		108-95-2	Phenol	0.06	2.25	3.29	1.43	1.52	1.10	0.35		1.40	2.07	0.88	0.93	0.67	0.18	3.53	0.47	0.63
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		2.31	1.77	1.21	0.97	0.94	0.24		1.48	1.13	0.77	0.62	0.60	0.15	2.81	0.47	0.69
8		67-64-1	Acetone		12.38	11.74	5.81	7.51	5.01	1.55		7.93	7.52	3.72	4.81	3.21	0.99	15.51	0.44	0.67
9		98-86-2	Acetophenone	0.06	0.56	0.78	0.29	0.35	0.27	0.09		0.32	0.46	0.14	0.19	0.13	0.02	1.03	0.63	0.58
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone			0.56	0.34	0.36	0.23				0.36	0.22	0.23	0.14		0.64	0.32	0.85
12		100-52-7	Benzaldehyde	0.27	5.56	5.19	3.10	2.80	2.38	0.74		3.39	3.15	1.81	1.62	1.35	0.30	7.53	0.51	0.66
13		123-72-8	Butanal		14.66	13.18	7.14	7.11	5.96	1.56		9.39	8.44	4.57	4.55	3.82	1.00	19.03	0.48	0.69
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal		7.67	6.49	4.23	3.06	3.51	0.78		4.91	4.16	2.71	1.96	2.25	0.50	9.83	0.47	0.67
16		98-01-1	Furfural		17.02	16.30	13.37	11.47	9.62	2.96		10.90	10.44	8.57	7.34	6.16	1.89	19.59	0.35	0.56
17		111-71-7	Heptanal		22.45	18.17	11.26	9.50	8.00	2.04		14.38	11.64	7.21	6.09	5.12	1.31	29.84	0.51	0.71
18		66-25-1	Hexanal		6807.07	5360.54	3228.78	2752.81	2298.33	612.96		4359.91	3433.41	2068.03	1763.17	1472.08	392.60	8974.48	0.52	0.73
19		124-19-6	Nonanal		12.88	12.28	6.58	5.25	4.05	1.17		8.25	7.86	4.22	3.36	2.60	0.75	19.44	0.55	0.76
20		18829-56-6	2-Nonenal		10.06	9.06	5.17	4.42	3.67	0.97		6.44	5.80	3.31	2.83	2.35	0.62	13.97	0.51	0.72
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal		328.23	266.66	166.68	130.87	119.67	41.99		210.23	170.79	106.76	83.82	76.65	26.90	396.56	0.46	0.79
23		110-62-3	Pentanal		291.29	228.45	146.07	114.30	100.54	20.64		186.57	146.32	93.56	73.21	64.39	13.22	413.23	0.55	0.68
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane		0.46	0.52	0.29	0.27				0.29	0.33	0.18	0.17			0.42	0.24	0.84
29		112-40-3	Dodecane																	
30		142-82-5	Heptane					0.27							0.17					
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane		0.41	0.34	0.22		0.13			0.26	0.22	0.14		0.09		0.40	0.35	0.98
34		111-65-9	Octane		0.82	1.10	0.61	0.48	0.45			0.52	0.71	0.39	0.31	0.29		0.83	0.24	0.71
35		629-62-9	Pentadecane																	
36		629-59-4	Tetradecane																	
37		629-50-5	Tridecane			0.34							0.22							
38		1120-21-4	Undecane		1.16							0.74								
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl		0.31	0.28	0.17	0.15	0.13	0.05		0.20	0.18	0.11	0.09	0.08	0.03	0.37	0.42	0.78
44		71-43-2	Benzene	0.06	0.44	0.71	0.29	0.54	0.16			0.24	0.41	0.14	0.31	0.07		0.32	0.08	0.06
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-																	
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene		0.08							0.05								
53		91-20-3	Naphthalene		0.12							0.08								
54		99-87-6	p-Cymene		140.79	45.79	81.02	49.36	15.53	16.97		90.18	29.33	51.89	31.61	9.94	10.87	131.09	0.49	0.64
55		100-42-5	Styrene		3.98	3.22	1.92	1.65	1.15	0.31		2.55	2.06	1.23	1.06	0.74	0.20	5.72	0.56	0.74
56		108-88-3	Toluene		230.17	181.85	101.27	73.30	59.66	14.15		147.43	116.47	64.86	46.95	38.21	9.06	359.84	0.62	0.77
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester		1.01	1.05	0.46	0.45	0.32			0.65	0.67	0.30	0.29	0.20		1.06	0.35	0.90
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone				2.37	2.31	1.84	0.80				1.52	1.48	1.18	0.51	14.96	0.66	0.61
66		25265-77-4	Texanol	1.26	9	5	3	4	4	2		5	2	1	2	2	0	7.75	0.51	0.62
67		6846-50-0	TXIB		0.78							0.50								

Table A. 9 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48.1 h	72 h	96 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48.1 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol																	
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		0.63	0.01						0.41	0.01							
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene		1105.42	993.07	363.02	307.73	307.13	66.30		708.02	636.06	232.51	197.10	196.72	42.47	1788.72	0.65	0.79
98		99-86-5	alpha-Terpinene		74.90	1.78	46.15	14.31	2.61	6.59		47.97	1.14	29.56	9.17	1.67	4.22	21.41	0.36	0.11
99		127-91-3	beta-Pinene		885.56	698.26	268.73	220.74	221.55	48.86		567.20	447.23	172.12	141.38	141.90	31.29	1381.42	0.66	0.81
100		99-85-4	gamma-Terpinene		24.52	2.22	14.39	4.80	1.42	1.92		15.71	1.42	9.22	3.07	0.91	1.23	14.38	0.50	0.37
101		13466-78-9	3-Carene		170.69	115.43	59.68	46.78	39.41	11.68		109.32	73.93	38.23	29.96	25.24	7.48	235.52	0.61	0.84
102		79-92-5	Camphene		194.41	90.68	100.87	71.46	27.80	23.64		124.52	58.08	64.61	45.77	17.81	15.14	208.37	0.51	0.78
103		5989-27-5	Limonene		250.18	185.89	100.53	88.89	59.56	20.16		160.24	119.06	64.39	56.93	38.15	12.92	347.03	0.58	0.82
104	Acids	64-19-7	Acetic acid		1300.69	1951.32	1302.84	1500.53	1386.59	468.62		833.09	1249.81	834.46	961.09	888.11	300.15	1393.36	0.19	0.28
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid		2.89	2.20	1.25	1.12	1.11	0.27		1.85	1.41	0.80	0.72	0.71	0.17	3.57	0.50	0.72
107		111-14-8	Heptanoic acid						1.14	0.41						0.73	0.26			
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid		45.67	94.64	70.80	68.70	55.36	22.28		29.25	60.62	45.35	44.00	35.46	14.27	55.49	0.15	0.17
110		109-52-4	Pentanoic Acid				9.12	7.40	5.11	2.30				5.84	4.74	3.27	1.47	118.57	0.89	0.79
111	Other	3777-69-3	Furan, 2-pentyl		16.02	8.54	9.30	4.89	6.71	1.40		10.26	5.47	5.96	3.13	4.30	0.90	17.03	0.46	0.61
112		872-50-4	2-Pyrrolidinone, 1-methyl-																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3.6 h	6.6 h	24.8 h	49.1 h	73.3 h	97.2 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3.6 h	6.6 h	24.8 h	49.1 h	73.3 h	97.2 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde		429.3	285.0	130.4	79.5	147.5	116.0		275.0	182.5	83.5	50.9	94.4	74.3	393.09	0.41	0.77
119		50-00-0	Formaldehyde		10.0	8.7	7.3	6.6	17.1	16.5		6.4	5.5	4.7	4.3	11.0	10.6	7.56	0.15	0.04
120		123-38-6	Propanal		43.9	31.9	18.5	13.9	30.1	28.8		28.1	20.4	11.9	8.9	19.3	18.5	27.47	0.16	0.26

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.1 h	25.2 h	49.1 h	73.1 h	97.2 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.1 h	25.2 h	49.1 h	73.1 h	97.2 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPH	107-02-8	Acrolein	0.8	2.5	2.2	2.7	2.3	2.1	2.1		4.2	3.4	4.7	3.6	3.1	3.3	4.49	0.06	0.24

Note: Levels below the method detection limit are highlighted.

Table A. 10: Small-scale chamber concentration & emission factor for IB4 (I-beam joist)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: $E = a\,t^{-b}$ with t > 3 h		
				0 h	3 h	6 h	24 h	96 h	72 h	96 h	0 h	3 h	6 h	24 h	96 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.46	19.11	13.56	6.48	4.45	3.91	1.06		11.94	8.39	3.86	2.55	2.21	0.38	28.35	0.69	0.72
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.58	1.00	0.76	0.87	1.07	1.12	0.40		0.27	0.12	0.19	0.31	0.34				
4		67-63-0	2-Propanol		17.91	13.18	4.69	2.85	1.82	0.34		11.47	8.44	3.00	1.83	1.17	0.22	34.59	0.84	0.76
5		64-17-5	Ethanol		334.50	258.43	49.58	34.97	11.31	3.11		214.24	165.53	31.75	22.40	7.24	1.99	879.66	1.08	0.81
6		108-95-2	Phenol	0.17	99.22	87.02	69.76	55.43	49.45	15.78		63.44	55.63	44.57	35.40	31.56	10.00	101.11	0.33	0.55
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		2.64	2.44	0.93	0.69	0.46	0.16		1.69	1.57	0.60	0.44	0.29	0.10	4.05	0.63	0.79
8		67-64-1	Acetone	0.44	21.07	19.69	9.13	11.37	6.90	3.57		13.22	12.33	5.57	7.01	4.14	2.01	21.49	0.39	0.67
9		98-86-2	Acetophenone	0.07	0.62	0.52	0.24	0.32	0.21	0.07		0.35	0.29	0.11	0.16	0.09	0.00	1.88	1.10	0.31
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone		1.64	1.27	0.61		0.47	0.11		1.05	0.81	0.39		0.30	0.07	2.44	0.63	0.80
12		100-52-7	Benzaldehyde	0.36	4.12	3.84	1.87	1.93	1.34	0.44		2.41	2.23	0.97	1.01	0.63	0.05	6.37	0.66	0.49
13		123-72-8	Butanal		11.44	11.94	6.47	4.87	3.39	1.17		7.33	7.65	4.14	3.12	2.17	0.75	15.43	0.48	0.69
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal		3.30		1.84	0.60	0.82			2.12		1.18	0.39	0.53		3.99	0.47	0.93
16		98-01-1	Furfural		42.10	37.32	23.17	16.80	13.30	3.98		26.96	23.91	14.84	10.76	8.52	2.55	52.51	0.47	0.67
17		111-71-7	Heptanal		16.77	12.80	6.25	4.22	3.05	0.86		10.74	8.20	4.01	2.70	1.95	0.55	24.07	0.62	0.76
18		66-25-1	Hexanal		2352.3	1716.0	769.5	494.3	366.3	79.8		1506.7	1099.1	492.9	316.6	234.6	51.1	3715.5	0.70	0.75
19		124-19-6	Nonanal		19.75	14.60	9.08	6.67	5.95	2.00		12.65	9.35	5.82	4.27	3.81	1.28	22.01	0.46	0.74
20		18829-56-6	2-Nonenal		6.27	5.00	3.84	2.31	1.41			4.01	3.20	2.46	1.48	0.90		6.25	0.36	0.83
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal		101.41	83.44	39.96	22.92	18.93	6.33		64.95	53.44	25.60	14.68	12.13	4.06	150.26	0.62	0.82
23		110-62-3	Pentanal		161.88	125.61	52.35	34.05	24.99	6.00		103.68	80.45	33.53	21.81	16.01	3.84	259.83	0.70	0.77
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane						0.25							0.16				
35		629-62-9	Pentadecane																	
36		629-59-4	Tetradecane																	
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene		0.99	0.39	0.28	0.27	0.38			0.63	0.25	0.18	0.18	0.24		0.57	0.26	0.58
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-																	
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene																	
53		91-20-3	Naphthalene																	
54		99-87-6	p-Cymene		9.11	6.71	2.90	1.66	1.23	0.46		5.83	4.30	1.86	1.06	0.79	0.29	13.92	0.69	0.86
55		100-42-5	Styrene		0.20	0.44	0.10	0.13	0.07			0.13	0.28	0.07	0.08	0.04		0.28	0.35	0.55
56		108-88-3	Toluene	0.03	1.93	1.51	0.74	0.50	0.33	0.10		1.21	0.95	0.45	0.30	0.19	0.04	3.06	0.69	0.72
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester		6.62	5.75	2.58	1.71	1.13	0.34		4.24	3.68	1.65	1.09	0.72	0.22	10.36	0.64	0.77
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone		3.20	2.52	1.79	1.24	1.29	0.54		2.05	1.62	1.15	0.79	0.82	0.34	3.23	0.37	0.77
66		25265-77-4	Texanol																	
67		6846-50-0	TXIB																	

Table A. 10 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	96 h	72 h	96 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	96 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol	1.68																
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoetl																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene		0.09							0.06								
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene		0.15		0.06		0.03			0.10		0.04		0.02		0.18	0.52	0.97
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		0.54	0.36						0.35	0.23							
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene		82.13	57.49	29.16	19.80	15.66	4.31		52.60	36.82	18.67	12.68	10.03	2.76	110.82	0.61	0.77
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene		21.13	15.51	8.67	6.21	4.39	1.23		13.53	9.94	5.55	3.98	2.81	0.79	27.93	0.57	0.72
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene		10.79	8.21	4.43	2.88	2.00	0.68		6.91	5.26	2.84	1.85	1.28	0.44	14.81	0.59	0.78
102		79-92-5	Camphene		2.92	2.61	1.12	0.70	0.66	0.28		1.87	1.67	0.72	0.45	0.42	0.18	3.96	0.56	0.88
103		5989-27-5	Limonene		25.58	18.98	8.84	5.36	3.74	1.16		16.39	12.16	5.66	3.43	2.40	0.75	39.07	0.68	0.80
104	Acids	64-19-7	Acetic acid		2630.82	2297.23	1994.44	1651.88	2537.01	700.48		1685.03	1471.37	1277.44	1058.02	1624.95	448.66	2174.06	0.19	0.34
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid		5.38	3.50	3.06	2.05	2.43	0.68		3.45	2.24	1.96	1.31	1.56	0.44	5.10	0.37	0.62
107		111-14-8	Heptanoic acid				3.44							2.20						
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid		26.72	15.47	16.51	9.03	8.11	3.25		17.11	9.91	10.57	5.78	5.20	2.08	26.20	0.41	0.70
110		109-52-4	Pentanoic Acid		13.26	7.53	5.55	3.25	2.52	0.97		8.49	4.82	3.55	2.08	1.61	0.62	15.17	0.54	0.79
111	Other	3777-69-3	Furan, 2-pentyl		2.49	8.96	4.86	3.35	1.80	0.68		1.59	5.74	3.11	2.15	1.15	0.44	4.93	0.32	0.29
112		872-50-4	2-Pyrrolidinone, 1-methyl																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3.6 h	6.7 h	24.8 h	49 h	73.3 h	97.1 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3.6 h	6.7 h	24.8 h	49 h	73.3 h	97.1 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde		454.2	335.7	6.3	82.7	128.5	97.7		290.9	215.0	4.0	53.0	82.3	62.6	305.95	0.49	0.19
119		50-00-0	Formaldehyde		11.2	11.5	2.9	8.4	17.8	15.9		7.1	7.3	1.9	5.4	11.4	10.2	10.13	0.29	0.29
120		123-38-6	Propanal		8.9	6.6	1.0	2.0	2.6	2.2		5.7	4.2	0.7	1.3	1.7	1.4	7.88	0.45	0.55
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.1 h	25.3 h	49.1 h	73.3 h	97.4 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.1 h	25.3 h	49.1 h	73.3 h	97.4 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFP	107-02-8	Acrolein	0.5	1.5	0.6	0.3	0.8	1.0	0.8		0.8	0.1		0.2	0.4	0.2	1.20	0.33	0.81

Note: Levels below the method detection limit are highlighted.

Table A. 11: Small-scale chamber concentration & emission factor for IB5 (I-beam joist)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6.1 h	24 h	48 h	72 h	96 h	0 h	3 h	6.1 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.41	14.65	11.39	8.48	7.42	6.36	1.62		9.12	7.04	5.17	4.49	3.82	0.78	18.30	0.48	0.61
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.85	1.64	1.58	2.08	1.91	1.82	0.73		0.51	0.46	0.78	0.68	0.62		1.55	0.21	1.00
4		67-63-0	2-Propanol		7.02	4.30	2.27	1.50	1.24	0.27		4.50	2.75	1.45	0.96	0.79	0.18	11.43	0.73	0.82
5		64-17-5	Ethanol		2165.47	1416.25	341.64	234.81	91.91	30.35		1386.98	907.11	218.82	150.40	58.87	19.44	6145.25	1.11	0.93
6		108-95-2	Phenol	0.11	210.24	181.16	163.58	143.78	141.50	50.92		134.59	115.97	104.70	92.02	90.56	32.54	198.98	0.26	0.53
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		3.15	2.34	1.13	0.93	0.63	0.22		2.02	1.50	0.72	0.60	0.40	0.14	4.72	0.64	0.86
8		67-64-1	Acetone		6.03	4.88	3.18	2.99	1.82	1.02		3.86	3.12	2.04	1.92	1.17	0.65	6.89	0.43	0.84
9		98-86-2	Acetophenone	0.06	0.54	0.65	0.34	0.40	0.30	0.12		0.31	0.38	0.18	0.22	0.15	0.04	0.68	0.43	0.59
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone		11.01	8.30	4.12	2.79	2.25	0.62		7.05	5.32	2.64	1.79	1.44	0.40	17.86	0.67	0.84
12		100-52-7	Benzaldehyde	0.26	4.31	4.32	2.74	2.68	2.21	0.77		2.60	2.60	1.59	1.55	1.25	0.33	5.27	0.43	0.62
13		123-72-8	Butanal		10.63	7.06	4.34	4.04	3.28	1.61		6.81	4.52	2.78	2.59	2.10	1.03	10.91	0.43	0.88
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural		31.02	27.87	21.66	17.43	15.84	5.44		19.87	17.85	13.87	11.16	10.14	3.49	34.81	0.36	0.66
17		111-71-7	Heptanal		7.32	5.63	3.83	2.64	2.37	0.69		4.69	3.60	2.45	1.69	1.52	0.44	9.70	0.52	0.76
18		66-25-1	Hexanal		1463.86	1131.11	669.99	492.55	437.96	124.87		937.60	724.48	429.13	315.48	280.51	79.98	2001.83	0.55	0.79
19		124-19-6	Nonanal																	
20		18829-56-6	2-Nonenal		6.66	4.82	4.76	2.87	2.27	1.12		4.26	3.09	3.05	1.84	1.45	0.72	7.38	0.41	0.78
21		124-13-0	Octanal		2.12	1.45	0.79	0.65	0.59	0.17		1.36	0.93	0.51	0.42	0.38	0.11	2.72	0.56	0.81
22		2548-87-0	2-Octenal		37.90	38.34	24.25	18.84	18.39	7.20		24.27	24.56	15.53	12.07	11.78	4.61	44.81	0.38	0.75
23		110-62-3	Pentanal		99.59	75.72	41.35	31.31	27.13	7.45		63.79	48.50	26.48	20.05	17.38	4.77	141.36	0.58	0.80
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane		0.22							0.14								
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane			0.30	0.20						0.19	0.13						
36		629-59-4	Tetradecane		0.46		0.22		0.13			0.29		0.14		0.08		0.45	0.39	1.00
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane		0.43							0.28								
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene	0.11	0.51	0.85	0.35	0.32	0.24			0.26	0.47	0.15	0.13	0.09		0.60	0.41	0.73
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-																	
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene																	
53		91-20-3	Naphthalene																	
54		99-87-6	p-Cymene		2.13	1.45	0.70	0.44	0.36	0.12		1.36	0.93	0.45	0.28	0.23	0.08	3.32	0.69	0.90
55		100-42-5	Styrene		0.36	0.68	0.16	0.12	0.12	0.04		0.23	0.44	0.10	0.08	0.08	0.02	0.77	0.62	0.78
56		108-88-3	Toluene	0.02	1.55	0.91	0.35	0.23	0.18	0.06		0.98	0.57	0.21	0.13	0.10	0.03	2.92	0.88	0.90
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester		27.69	21.10	10.11	6.79	4.91	1.48		17.73	13.51	6.47	4.35	3.14	0.95	47.13	0.70	0.86
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone		2.79	2.87	2.51	2.06	1.51	0.68		1.79	1.84	1.61	1.32	0.97	0.44	3.11	0.30	0.60
66		25265-77-4	Texanol	1.48	5.4	4.5	2.5	2.5	2.2	0.9		2.5	1.9	0.6	0.7	0.5				
67		6846-50-0	TXIB																	

Table A. 11 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6.1 h	24 h	48 h	72 h	96 h	0 h	3 h	6.1 h	24 h	48 h	72 h	96 h	a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol																	
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoet																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-		7.04	4.66	2.69	1.70	1.43	0.36		4.51	2.99	1.72	1.09	0.92	0.23	10.93	0.67	0.82
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		0.34							0.22								
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene		14.07	8.64	2.33	1.31	1.18	0.41		9.01	5.54	1.49	0.84	0.76	0.26	27.71	0.93	0.96
98		99-86-5	alpha-Terpinene		0.19	0.16						0.12	0.11							
99		127-91-3	beta-Pinene		7.07	4.16	1.18	0.47	0.33	0.09		4.53	2.66	0.76	0.30	0.21	0.06	19.60	1.13	0.95
100		99-85-4	gamma-Terpinene		0.21							0.13								
101		13466-78-9	3-Carene		4.67	3.15	1.37	0.75	0.61	0.22		2.99	2.02	0.87	0.48	0.39	0.14	8.08	0.77	0.93
102		79-92-5	Camphene		0.46	0.26	0.11					0.29	0.17	0.07				0.60	0.68	1.00
103		5989-27-5	Limonene		2.09	1.35	0.76	0.46	0.43	0.12		1.34	0.87	0.49	0.30	0.28	0.08	3.05	0.65	0.86
104	Acids	64-19-7	Acetic acid		3790.2	3358.7	4147.2	4143.0	4384.8	1137.7		2427.6	2151.2	2656.2	2653.6	2808.5	728.7	3137.6	0.14	0.13
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid		3.31	2.72	2.48	2.21	2.18	0.83		2.12	1.74	1.59	1.41	1.40	0.53	3.02	0.26	0.55
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid		9.22	9.03	7.95	6.91	6.05	3.16		5.91	5.78	5.09	4.43	3.87	2.02	8.64	0.23	0.62
110		109-52-4	Pentanoic Acid		4.15	4.11	2.48	1.46	1.41	0.59		2.66	2.63	1.59	0.94	0.91	0.38	5.73	0.49	0.84
111	Other	3777-69-3	Furan, 2-pentyl		6.34	5.27	4.77	2.57	1.80	0.89		4.06	3.37	3.05	1.64	1.16	0.57	8.40	0.48	0.79
112		872-50-4	2-Pyrrolidinone, 1-methyl							0.12							0.07			
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
				Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
#	Class	CAS #	Compound	0 h	3.6 h	6.7 h	24.8 h	49 h	73.3 h	97.1 h	0 h	3.6 h	6.7 h	24.8 h	49 h	73.3 h	97.1 h	a	b	R^2
118	DNPH	75-07-0	Acetaldehyde		145.0	98.2	46.8	54.8	48.2	36.1		92.9	62.9	30.0	35.1	30.8	23.1	132.63	0.37	0.90
119		50-00-0	Formaldehyde		68.9	62.3	58.2	108.9	121.3	114.3		44.2	39.9	37.3	69.8	77.7	73.2	48.06	0.08	0.91
120		123-38-6	Propanal		12.3	8.9	4.1	6.3	5.9	4.6		7.9	5.7	2.6	4.0	3.8	3.0	9.27	0.25	0.66
				Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
#	Class	CAS #	Compound	0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.1 h	a	b	R^2
121	PFPH	107-02-8	Acrolein	0.8	1.5	1.6	1.5	1.3	1.4	1.4		0.4	0.5	0.4	0.3	0.3	0.3	0.53	0.11	0.70

Note: Levels below the method detection limit are highlighted.

Table A. 12: Small-scale chamber concentration & emission factor for IB6 (I-beam joist)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	1.18	9.32	8.16	6.16	0.59	4.84	1.72		6.61	5.67	4.05		2.97	0.44	15.77	0.57	0.62
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	1.36	2.36	2.44	3.19	0.38	3.92	1.35		0.81	0.88	1.49		2.08				
4		67-63-0	2-Propanol		13.44	8.82	3.82		1.90	0.46		10.92	7.17	3.10		1.54	0.37	31.85	0.83	0.89
5		64-17-5	Ethanol		204.10	163.76	34.47	7.30	10.25	3.26		165.80	133.03	28.00	5.93	8.33	2.65	836.25	1.18	0.95
6		108-95-2	Phenol	0.13	161.14	151.53	123.87	10.32	102.89	41.56		130.80	123.00	100.53	8.28	83.48	33.66	237.23	0.45	0.35
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		1.79	1.20	0.65	0.12	0.31	0.12		1.46	0.98	0.53	0.10	0.25	0.09	3.70	0.75	0.85
8		67-64-1	Acetone		17.56	19.46	12.14	5.64	9.09	4.33		14.27	15.81	9.86	4.58	7.38	3.52	26.47	0.38	0.78
9		98-86-2	Acetophenone	0.12	0.46	0.50	0.51	0.21	0.16	0.07		0.28	0.31	0.32	0.08	0.04		0.80	0.59	0.65
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone		1.53	1.25	0.74		0.38	0.16		1.24	1.02	0.60		0.31	0.13	2.77	0.58	0.89
12		100-52-7	Benzaldehyde	0.31	4.57	3.86	3.01	1.00	1.68	0.66		3.45	2.88	2.19	0.56	1.11	0.28	8.47	0.61	0.75
13		123-72-8	Butanal		5.04	3.80	2.18		1.28	0.50		4.10	3.08	1.77		1.04	0.41	8.63	0.57	0.89
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural		40.14	36.85	27.40	2.51	16.79	6.10		32.61	29.93	22.26	2.04	13.64	4.95	72.58	0.57	0.53
17		111-71-7	Heptanal		3.02	2.26	1.63		0.96	0.39		2.45	1.84	1.32		0.78	0.31	4.67	0.49	0.85
18		66-25-1	Hexanal		617.03	447.04	257.38	23.26	148.44	49.13		501.25	363.16	209.09	18.90	120.59	39.91	1253.48	0.74	0.66
19		124-19-6	Nonanal		7.91	5.39	3.38		2.09	0.85		6.42	4.38	2.75		1.70	0.69	12.34	0.54	0.89
20		18829-56-6	2-Nonenal		4.90	3.14	2.13		1.09	0.51		3.98	2.55	1.73		0.88	0.42	7.76	0.56	0.91
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal		33.13	19.79	16.47		8.18	2.98		26.92	16.08	13.38		6.65	2.42	52.40	0.56	0.83
23		110-62-3	Pentanal		40.98	30.34	16.65	1.61	9.65	2.96		33.29	24.65	13.52	1.31	7.84	2.41	86.49	0.76	0.68
24	Aliphatic Hyddrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane																	
36		629-59-4	Tetradecane																	
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene		0.53	1.13	0.66	0.30	0.18	0.00		0.43	0.92	0.53	0.24	0.14	0.00	3.91	1.01	0.45
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-																	
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene																	
53		91-20-3	Naphthalene																	
54		99-87-6	p-Cymene		5.01	3.62	1.63	0.10	0.67	0.30		4.07	2.94	1.33	0.09	0.55	0.24	12.43	0.90	0.71
55		100-42-5	Styrene		0.25	0.16	0.20		0.05			0.21	0.13	0.16		0.04		0.33	0.41	0.68
56		108-88-3	Toluene	0.03	1.53	1.12	0.56	0.15	0.31	0.13		1.21	0.88	0.43	0.09	0.23	0.08	3.20	0.76	0.85
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethy																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester		4.95	3.87	1.70	0.15	0.82	0.27		4.02	3.14	1.38	0.12	0.67	0.22	12.46	0.87	0.74
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone		2.12		1.71		1.43	0.59		1.72		1.39		1.16	0.48	2.62	0.27	0.58
66		25265-77-4	Texanol	2.22	5.98	6.03	5.34		4.55	2.23		3.05	3.10	2.53		1.89	0.01	23.93	1.16	0.41
67		6846-50-0	TXIB	0.24	0.70	0.61	0.55		0.58	0.30		0.37	0.30	0.26		0.27	0.05	0.64	0.39	0.47

Table A. 12 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
68	Glycols, Glycoethers	57-55-6	1,2-Propanediol	2.42	5.65	8.33	4.81		3.60	1.13		2.63	4.81	1.94		0.96		6.04	0.39	0.68
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		0.45	0.07			0.04			0.37	0.06			0.03		0.40	0.62	0.69
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene		105.51	62.75	22.00	1.62	9.20	3.53		85.72	50.97	17.87	1.32	7.48	2.87	286.87	1.03	0.79
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene		16.05	9.53	3.77	0.26	1.56	0.56		13.04	7.74	3.07	0.21	1.27	0.46	42.74	1.01	0.77
100		99-85-4	gamma-Terpinene		0.19	0.15						0.15	0.12							
101		13466-78-9	3-Carene		26.23	16.95	7.17	0.51	2.77	1.07		21.31	13.77	5.82	0.41	2.25	0.87	69.81	0.97	0.77
102		79-92-5	Camphene		4.80	3.12	1.11		0.41	0.35		3.90	2.53	0.90		0.34	0.28			
103		5989-27-5	Limonene		48.75	33.01	15.03	1.02	6.06	1.83		39.60	26.81	12.21	0.83	4.92	1.49	134.10	0.97	0.75
104	Acids	64-19-7	Acetic acid		677.04	1169.7	1502.90	75.15	1198.02	352.09		550.01	950.21	1220.91	61.05	973.24	286.03	1076.8	0.26	0.11
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid				0.73		0.44					0.59		0.36				
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid		3.28	3.67	3.98		2.55	1.29		2.67	2.98	3.23		2.07	1.04	4.14	0.21	0.47
110		109-52-4	Pentanoic Acid		1.86		0.98		0.74	0.25		1.51		0.79		0.60	0.20	2.82	0.46	0.75
111	Other	3777-69-3	Furan, 2-pentyl		2.90	2.81	0.27	0.13	0.94	0.31		2.35	2.29	0.22	0.11	0.76	0.25	4.77	0.70	0.57
112		872-50-4	2-Pyrrolidinone, 1-methyl																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
				Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
#	Class	CAS #	Compound	0 h	3.6 h	6.6 h	24.8 h	49 h	73.3 h	97.1 h	0 h	3.6 h	6.6 h	24.8 h	49 h	73.3 h	97.1 h	a	b	R^2
118	DNPH	75-07-0	Acetaldehyde		101.5	69.7	34.8	61.4	45.4	36.8		82.5	56.6	28.3	49.9	36.9	29.9	95.61	0.24	0.62
119		50-00-0	Formaldehyde		11.7	10.9	9.4	22.9	20.1	18.3		9.5	8.8	7.7	18.6	16.4	14.9	10.90	0.11	1.00
120		123-38-6	Propanal		1.5	1.9	0.5	1.5	0.7	0.8		1.2	1.5	0.4	1.2	0.6	0.7	1.68	0.22	0.31
				Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
#	Class	CAS #	Compound	0 h	4.1 h	7.1 h	25.3 h	49.1 h	73.3 h	97.3 h	0 h	4.1 h	7.1 h	25.3 h	49.1 h	73.3 h	97.3 h	a	b	R^2
121	PFPH	107-02-8	Acrolein	0.6	0.6	0.4	0.8	0.7	0.7	0.7		0.0		0.1	0.1	0.1	0.0	0.79	0.62	0.72

Note: Levels below the method detection limit are highlighted.

Table A. 13: Small-scale chamber concentration & emission factor for INS3 (insulation, recycled denim)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3.1 h	6 h	24 h	48 h	72 h	96 h	0 h	3.1 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.60	0.69		0.67	0.67	1.23	1.45		0.02		0.02	0.02	0.16	0.21			
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.74	0.95	1.27	1.24	1.20	1.78	2.25		0.05	0.13	0.12	0.11	0.26	0.38			
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol	0.16	1.15	1.44	1.54	1.49	2.51	2.59		0.25	0.32	0.34	0.33	0.59	0.61			
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone							0.09							0.02			
8		67-64-1	Acetone	0.08	0.80	0.53	0.26	0.28	0.33	0.54		0.18	0.11	0.04	0.05	0.06	0.11	0.17	0.23	0.34
9		98-86-2	Acetophenone	0.12	0.24	0.19	0.22	0.15	0.22	0.20		0.03	0.02	0.03	0.01	0.03	0.02	0.03	0.11	0.13
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.34	0.68	0.69	0.44	0.46	0.78	0.60		0.08	0.09	0.02	0.03	0.11	0.06	0.08	0.09	0.04
13		123-72-8	Butanal																	
14		112-31-2	Decanal			1.00	0.41		0.39	0.42			0.25	0.10		0.10	0.10	0.38	0.32	0.78
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural		6.17	7.18	4.21	3.07	4.44	4.70		1.54	1.80	1.05	0.77	1.11	1.18	1.94	0.15	0.52
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal			1.72		0.88		1.40			0.43		0.22		0.35	0.50	0.13	0.30
19		124-19-6	Nonanal		2.17	2.35	0.80	0.52	0.54	0.42		0.54	0.59	0.20	0.13	0.13	0.10	1.17	0.53	0.95
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal	0.02																
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal																	
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane						0.08	0.06						0.02	0.01			
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane			0.26	0.27	0.22	0.43	0.50			0.07	0.07	0.05	0.11	0.12			
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane		0.31	0.35	0.34	0.34	0.57	0.62		0.08	0.09	0.08	0.08	0.14	0.15			
36		629-59-4	Tetradecane		0.40	0.43	0.45	0.34	0.55	0.49		0.10	0.11	0.11	0.08	0.14	0.12			
37		629-50-5	Tridecane		0.15		0.17		0.11			0.04		0.04		0.03		0.04	0.08	0.32
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene				0.03		0.04	0.04				0.01		0.01	0.01			
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-			0.04			0.05	0.06			0.01			0.01	0.01			
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene		0.02	0.01			0.01	0.02		0.01	0.00			0.00	0.00	0.00	0.05	0.11
53		91-20-3	Naphthalene		0.14	0.14	0.12	0.10	0.13	0.12		0.03	0.04	0.03	0.03	0.03	0.03	0.04	0.06	0.41
54		99-87-6	p-Cymene			0.03							0.01							
55		100-42-5	Styrene	0.03		0.03		0.04	0.05	0.05			0.00		0.00	0.01	0.00			
56		108-88-3	Toluene	0.02	0.44	0.47	0.43	0.42	0.64	1.00		0.11	0.11	0.10	0.10	0.15	0.25			
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone			0.52	0.47	0.45	0.66	0.58			0.13	0.12	0.11	0.16	0.14			
66		25265-77-4	Texanol	0.82	1.28	2.12	2.15	1.97	3.14	3.54		0.11	0.32	0.33	0.29	0.58	0.68			
67		6846-50-0	TXIB			0.70	1.15	1.04	1.64	2.04			0.17	0.29	0.26	0.41	0.51			

Table A. 13 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3.1 h	6 h	24 h	48 h	72 h	96 h	0 h	3.1 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		6.46	11.18	12.63	6.69	7.09	11.54		1.61	2.79	3.16	1.67	1.77	2.88	3.46	0.11	0.16
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-				0.77							0.19						
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene							0.04							0.01			
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene						0.07	0.09						0.02	0.02			
89		79-01-6	Trichloroethylene		0.16			0.01				0.04			0.00					
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene		0.27	0.18	0.14	0.10	0.12	0.11		0.07	0.05	0.03	0.02	0.03	0.03	0.08	0.26	0.87
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene	0.27		0.20	0.19	0.12	0.16	0.15										
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene	0.10			0.05		0.06											
102		79-92-5	Camphene																	
103		5989-27-5	Limonene						0.08							0.02				
104	Acids	64-19-7	Acetic acid	2.02	102.51	174.64	170.73	137.03	145.16	116.36		25.12	43.16	42.18	33.75	35.78	28.59	57.48	0.13	0.72
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid		2.72	3.30	3.61	2.00	2.62	2.40		0.68	0.82	0.90	0.50	0.65	0.60	0.85	0.07	0.22
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid				0.20		0.25	0.38				0.05		0.06	0.09			
109		142-62-1	Hexanoic acid		0.46		1.37	0.71	1.62	2.01		0.12		0.34	0.18	0.41	0.50			
110		109-52-4	Pentanoic Acid							0.41							0.10			
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl-				0.26	0.33	0.57	0.70				0.07	0.08	0.14	0.18			
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
				Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
#	Class	CAS #	Compound	0 h	3.9 h	6.8 h	24.8 h	48.8 h	73.4 h	97.4 h	0 h	3.9 h	6.8 h	24.8 h	48.8 h	73.4 h	97.4 h	a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	0.07			1.17	0.82	0.71	0.53				0.28	0.19	0.16	0.11	1.97	0.61	0.97
119		50-00-0	Formaldehyde	0.22	6.82	6.24	15.37	15.37	15.64	16.24		1.65	1.50	3.79	3.79	3.85	4.01			
120		123-38-6	Propanal																	
				Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
#	Class	CAS #	Compound	0 h	3.1 h	6 h	24 h	48 h	72 h	96 h	0 h	3.1 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
121	PFPH	107-02-8	Acrolein	1.30	1.45	1.26	6.80	0.39	0.50	0.37		0.04		1.37						

Note: Levels below the method detection limit are highlighted.

Table A. 14: Small-scale chamber concentration & emission factor for INS4 (cellulose insulation)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.31	7.29	8.32	6.67	5.12	7.10	7.31		1.74	2.00	1.59	1.20	1.70	1.75	1.92	0.05	0.17
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.24		0.63	0.53	0.48	0.91	0.78			0.10	0.07	0.06	0.17	0.14			
4		67-63-0	2-Propanol		26.31	24.98	10.28	5.41	8.89	7.39		6.58	6.24	2.57	1.35	2.22	1.85	11.07	0.43	0.85
5		64-17-5	Ethanol		6.36	2.99	0.93					1.59	0.75	0.23				4.16	0.92	1.00
6		108-95-2	Phenol	0.24	0.36	0.49	0.21	0.29	0.40	0.42		0.03	0.06		0.01	0.04	0.04	0.04	0.07	0.04
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		1.33	0.96	0.48	0.23	0.36	0.36		0.33	0.24	0.12	0.06	0.09	0.09	0.50	0.43	0.84
8		67-64-1	Acetone		9.66	5.06	2.91	2.26	2.51	2.41		2.42	1.27	0.73	0.56	0.63	0.60	2.97	0.39	0.90
9		98-86-2	Acetophenone	0.09	0.35	0.29	0.16	0.18	0.28	0.42		0.07	0.05	0.02	0.02	0.05	0.08	0.05	0.06	0.02
10		108-94-1	Cyclohexanone		1.85	2.27	2.00	1.77	3.13	3.63		0.46	0.57	0.50	0.44	0.78	0.91			
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.22	1.83	1.98	1.53	1.58	2.35	2.58		0.40	0.44	0.33	0.34	0.53	0.59			
13		123-72-8	Butanal		3.02	2.29	1.49	1.29	1.54	1.22		0.75	0.57	0.37	0.32	0.39	0.30	0.91	0.24	0.90
14		112-31-2	Decanal			0.32							0.08							
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural		0.86	0.96	0.99	0.94	1.55	1.65		0.21	0.24	0.25	0.23	0.39	0.41			
17		111-71-7	Heptanal		4.37	3.68	1.23	1.06	1.45	1.78		1.09	0.92	0.31	0.26	0.36	0.44	1.45	0.35	0.69
18		66-25-1	Hexanal		553.52	495.91	240.52	179.55	285.59	304.06		138.38	123.98	60.13	44.89	71.40	76.02	167.63	0.24	0.61
19		124-19-6	Nonanal		2.17	2.21	1.55	0.89	1.13	0.91		0.54	0.55	0.39	0.22	0.28	0.23	0.81	0.27	0.87
20		18829-56-6	2-Nonenal			3.48	2.27		3.79	4.18			0.87	0.57		0.95	1.05			
21		124-13-0	Octanal		1.13	1.00	0.53		0.38	0.42		0.28	0.25	0.13		0.09	0.10	0.41	0.33	0.96
22		2548-87-0	2-Octenal		14.20	13.79	10.56	9.13	15.25	15.92		3.55	3.45	2.64	2.28	3.81	3.98	3.28	0.01	0.00
23		110-62-3	Pentanal		15.31	13.74	6.98	5.63	8.04	8.35		3.83	3.44	1.75	1.41	2.01	2.09	4.63	0.23	0.67
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane			0.26	0.20	0.13	0.14				0.07	0.05	0.03	0.03		0.12	0.30	0.90
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane		10.58	10.46	10.38	9.72	16.81	18.74		2.64	2.61	2.60	2.43	4.20	4.68			
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane		21.13	21.03	19.57	17.87	30.70	33.10		5.28	5.26	4.89	4.47	7.67	8.28			
36		629-59-4	Tetradecane		15.67	16.14	14.92	12.62	22.06	23.60		3.92	4.03	3.73	3.16	5.51	5.90			
37		629-50-5	Tridecane		1.34	1.31	1.10	0.84	1.23	1.15		0.34	0.33	0.28	0.21	0.31	0.29	0.35	0.07	0.30
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet		0.04		0.02		0.02	0.02		0.01		0.00		0.01	0.01	0.01	0.13	0.43
40		611-14-3	Toluene, 2-ethyl-		0.05	0.04		0.01	0.02	0.02		0.01	0.01		0.00	0.00	0.01	0.02	0.29	0.63
41		620-14-4	Toluene, 3-ethyl-		0.10	0.07	0.02	0.02	0.04	0.05		0.02	0.02	0.01	0.01	0.01	0.01	0.03	0.28	0.44
42		622-96-8	Toluene, 4-ethyl-		0.12	0.06	0.02	0.03	0.04	0.04		0.03	0.01	0.01	0.01	0.01	0.01	0.03	0.30	0.48
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene						0.03	0.01						0.01	0.00			
45		526-73-8	Benzene, 1,2,3-trimethyl-		0.06	0.05			0.02			0.01	0.01			0.00		0.02	0.42	0.99
46		95-63-6	Benzene, 1,2,4-trimethyl-			0.20			0.08	0.09			0.05			0.02	0.02	0.09	0.32	0.97
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-			0.04	0.00	0.01	0.01	0.02			0.01	0.00	0.00	0.00	0.00	0.01	0.28	0.15
49		108-38-3	Benzene, 1,3-dimethyl-							0.02							0.01			
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-						0.03							0.01				
52		100-41-4	Ethylbenzene						0.01	0.01						0.00	0.00			
53		91-20-3	Naphthalene		0.09	0.09	0.06	0.05	0.07	0.07		0.02	0.02	0.02	0.01	0.02	0.02	0.03	0.12	0.57
54		99-87-6	p-Cymene			0.04							0.01							
55		100-42-5	Styrene				0.02	0.03	0.05	0.05				0.00	0.01	0.01	0.01			
56		108-88-3	Toluene		0.34	0.22	0.17	0.16	0.27	0.35		0.09	0.06	0.04	0.04	0.07	0.09	0.07	0.03	0.01
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone						0.46	0.52						0.11	0.13			
66		25265-77-4	Texanol																	
67		6846-50-0	TXIB		15.98	20.51	21.52	20.38	35.27	39.29		4.00	5.13	5.38	5.09	8.82	9.82			

Table A. 14 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol			3.6	1.9		1.6	1.3			0.9	0.5		0.4	0.3	1.55	0.33	0.93
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-		5.22	7.31	7.79	7.95	12.93	15.87		1.30	1.83	1.95	1.99	3.23	3.97			
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-			0.15	0.10	0.05	0.07	0.07			0.04	0.03	0.01	0.02	0.02	0.06	0.33	0.64
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		0.18							0.05								
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene		0.62	0.29						0.15	0.07							
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene			0.10							0.02							
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	
104	Acids	64-19-7	Acetic acid		371.21	696.11	839.24	904.02	1646.73	1744.43		92.80	174.03	209.81	226.01	411.68	436.11			
105		79-31-2	Isobutyric acid							0.78							0.20			
106		107-92-6	Butyric acid			0.94	0.99	0.82	1.90	2.70			0.23	0.25	0.21	0.48	0.67			
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid							0.13							0.03			
109		142-62-1	Hexanoic acid		2.76	3.87	3.04	2.22	6.57	6.91		0.69	0.97	0.76	0.55	1.64	1.73			
110		109-52-4	Pentanoic Acid			0.92		0.39	1.17	1.58			0.23		0.10	0.29	0.40			
111	Other	3777-69-3	Furan, 2-pentyl		0.35	0.25	0.14		0.40	0.52		0.09	0.06	0.04		0.10	0.13			
112		872-50-4	2-Pyrrolidinone, 1-methyl-																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3.8 h	6.7 h	24.8 h	48.8 h	73.3 h	97.4 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3.8 h	6.7 h	24.8 h	48.8 h	73.3 h	97.4 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde		5.22	15.52	4.52	3.00	2.73	2.23		1.31	3.88	1.13	0.75	0.68	0.56	4.17	0.42	0.63
119		50-00-0	Formaldehyde		4.71	20.36	18.33	17.70	17.30	17.74		1.18	5.09	4.58	4.43	4.33	4.44	5.60	0.06	0.90
120		123-38-6	Propanal		7.48	29.28	5.88	3.01	2.10	1.87		1.87	7.32	1.47	0.75	0.53	0.47	10.01	0.65	0.70
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPH	107-02-8	Acrolein	1.62	0.94	0.82	0.78	1.78	0.40	2.63					0.04		0.25			

Note: Levels below the method detection limit are highlighted.

Table A. 15: Small-scale chamber concentration & emission factor for INS5 (stone wool insulation)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.35	0.61	0.52	0.59	0.46	0.64	0.78		0.06	0.04	0.06	0.03	0.07	0.11			
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.50	0.45	0.50	0.62	0.69	1.23	1.24			0.00	0.03	0.05	0.18	0.18			
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol	0.19	0.59	0.64	0.45	0.40	0.77	0.58		0.10	0.11	0.06	0.05	0.14	0.10	0.10	0.03	0.01
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone																	
8		67-64-1	Acetone	0.32	1.00	0.68	0.30	0.15	0.20	0.23		0.17	0.09							
9		98-86-2	Acetophenone	0.09	0.26	0.24	0.10	0.08	0.13	0.10		0.04	0.04	0.00		0.01	0.00	0.08	0.81	0.47
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.35	0.95	0.74	0.29	0.34	0.48	0.41		0.15	0.10			0.03	0.02	0.28	0.56	0.96
13		123-72-8	Butanal																	
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural		1.39	1.91	1.05	0.71	1.03	0.87		0.35	0.48	0.26	0.18	0.26	0.22	0.51	0.20	0.63
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal		12.60	9.60	2.01		1.48	1.25		3.15	2.40	0.50		0.37	0.31	6.92	0.71	0.96
19		124-19-6	Nonanal						0.20	0.23						0.05	0.06			
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal							0.12							0.03			
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal			0.49							0.12							
24	Aliphatic Hyddrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane			0.14							0.04							
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane																	
36		629-59-4	Tetradecane			0.29	0.23	0.18	0.23	0.28			0.07	0.06	0.04	0.06	0.07	0.07	0.05	0.09
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene						0.06	0.12						0.02	0.03			
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-																	
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene																	
53		91-20-3	Naphthalene			0.03	0.01						0.01	0.00						
54		99-87-6	p-Cymene																	
55		100-42-5	Styrene						0.05	0.02						0.01	0.01			
56		108-88-3	Toluene	0.11	0.13	0.07			0.16			0.01				0.01				
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol	0.39																
67		6846-50-0	TXIB						0.07	0.08						0.02	0.02			

Table A. 15 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol																	
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoet																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene	0.65	0.17															
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene																	
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	
104	Acids	64-19-7	Acetic acid					3.08	4.93	4.41					0.77	1.23	1.10			
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid																	
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3.8 h	6.7 h	24.8 h	48.8 h	73.3 h	97.4 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3.8 h	6.7 h	24.8 h	48.8 h	73.3 h	97.4 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde		1.85	7.10	4.22	3.43	2.63	2.44		0.46	1.78	1.05	0.86	0.66	0.61	1.00	0.06	0.03
119		50-00-0	Formaldehyde		11.71	33.94	28.29	25.34	25.02	26.67		2.93	8.49	7.07	6.33	6.25	6.67	10.15	0.11	0.85
120		123-38-6	Propanal			0.20			0.07				0.05			0.02				

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPH	107-02-8	Acrolein	1.13	0.70	1.14	3.39	1.90	0.14	0.77			0.00	0.56	0.19					

Note: Levels below the method detection limit are highlighted.

Table A. 16: Small-scale chamber concentration & emission factor for INS6 (reflective insulation)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.87	1.09	1.27	1.25	1.11	2.08	2.34		0.05	0.10	0.09	0.06	0.30	0.37			
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.90	1.16	1.15	1.48	1.25	2.85	3.00		0.06	0.06	0.14	0.09	0.49	0.52			
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol	0.35	0.78	0.60	0.58	0.47	0.98	0.99		0.11	0.06	0.06	0.03	0.16	0.16			
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone																	
8		67-64-1	Acetone	0.18	1.12	0.22	0.13	0.17	0.31	0.38		0.24	0.01			0.03	0.05	0.08	0.18	0.06
9		98-86-2	Acetophenone	0.27	0.50	0.14	0.13	0.16	0.20	0.12		0.06								
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.27	1.15	0.54	0.36	0.39	0.48	0.45		0.22	0.07	0.02	0.03	0.05	0.04	0.18	0.40	0.47
13		123-72-8	Butanal																	
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural						0.08							0.02				
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal						1.27							0.32				
19		124-19-6	Nonanal			0.61	0.36	0.35	0.40	0.43			0.15	0.09	0.09	0.10	0.11	0.17	0.14	0.47
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal						0.30							0.07				
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane			0.26	0.19	0.14	0.32	0.28			0.06	0.05	0.03	0.08	0.07			
29		112-40-3	Dodecane		0.39	0.48	0.33	0.31	0.66	0.65		0.10	0.12	0.08	0.08	0.17	0.16			
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane																	
36		629-59-4	Tetradecane							0.15							0.04			
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane						0.05							0.01				
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene						0.18	0.07						0.05	0.02			
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-		0.12	0.08	0.04		0.06	0.04		0.03	0.02	0.01		0.01	0.01	0.03	0.26	0.76
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene		0.03	0.01	0.01			0.01		0.01	0.00	0.00			0.00	0.01	0.21	0.41
53		91-20-3	Naphthalene		0.02			0.02	0.03	0.03		0.01			0.00	0.01	0.01	0.01	0.00	0.00
54		99-87-6	p-Cymene		0.05	0.05	0.03		0.04			0.01	0.01	0.01		0.01		0.01	0.06	0.20
55		100-42-5	Styrene					0.02		0.04					0.01		0.01			
56		108-88-3	Toluene	0.02	0.26	0.11	0.04		0.61	0.06		0.06	0.02	0.00		0.15	0.01	0.03	0.12	0.02
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethy																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol	0.88		1.28	1.49	1.42	2.15	2.27			0.10	0.15	0.13	0.32	0.35			
67		6846-50-0	TXIB	0.16		0.22	0.22	0.20	0.44	0.44			0.01	0.01	0.01	0.07	0.07			

Table A. 16 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol	0.60																
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoet																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		0.27				0.03	0.01		0.07				0.01	0.00	0.17	0.80	0.93
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene		0.98	0.78	0.53	0.35	0.47	0.44		0.25	0.19	0.13	0.09	0.12	0.11	0.31	0.25	0.84
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene		0.18	0.12	0.09	0.05	0.11	0.09		0.04	0.03	0.02	0.01	0.03	0.02	0.05	0.20	0.51
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene			0.14	0.08	0.05	0.13	0.11			0.04	0.02	0.01	0.03	0.03	0.03	0.10	0.07
102		79-92-5	Camphene																	
103		5989-27-5	Limonene			0.16	0.12		0.18	0.13			0.04	0.03		0.04	0.03	0.04	0.01	0.00
104	Acids	64-19-7	Acetic acid																	
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid																	
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3.8 h	6.8 h	24.8 h	48.8 h	73.4 h	97.4 h	0 h	3.8 h	6.8 h	24.8 h	48.8 h	73.4 h	97.4 h	a	b	R^2
118	DNPH	75-07-0	Acetaldehyde			0.42	0.51	0.65	0.23	0.13			0.11	0.13	0.16	0.06	0.03	0.28	0.34	0.31
119		50-00-0	Formaldehyde			1.15	0.25	0.17	0.63	0.19			0.29	0.06	0.04	0.16	0.05	0.53	0.50	0.41
120		123-38-6	Propanal			0.42	0.48			0.14			0.10	0.12			0.03	0.29	0.42	0.66
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
121	PFPH	107-02-8	Acrolein	1.18	0.73	0.74	0.74		0.31	0.04										

Note: Levels below the method detection limit are highlighted.

Table A. 17: Small-scale chamber concentration & emission factor for INS7 (insulation, XPS)

				Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
#	Class	CAS #	Compound	0 h	3 h	5.9 h	24 h	48 h	72 h	96.1 h	0 h	3 h	5.9 h	24 h	48 h	72 h	96.1 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.49	2.43	2.15	0.59	0.65	0.92	0.77		4.86	4.17	0.27	0.41	1.09	0.71	7.95	0.63	0.56
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.22	0.54	0.47	0.33	0.29	0.29	0.23		0.79	0.63	0.27	0.18	0.17	0.03	2.19	0.72	0.81
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol	0.26	0.81	0.66	0.26	0.24	0.30	0.21		1.39	0.99	0.01		0.10		3.95	1.16	0.53
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone																	
8		67-64-1	Acetone	0.06	0.66	0.43	0.24	0.35	0.15	0.14		1.50	0.93	0.46	0.72	0.21	0.19	2.66	0.53	0.80
9		98-86-2	Acetophenone	0.06	6.60	4.28	1.12	0.82	0.62	0.41		16.35	10.55	2.67	1.92	1.40	0.89	41.73	0.82	0.99
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.19	4.90	2.78	0.70	0.48	0.48	0.37		11.76	6.47	1.27	0.73	0.71	0.44	32.13	0.95	0.99
13		123-72-8	Butanal		1.63	1.17						4.08	2.92							
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural																	
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal																	
19		124-19-6	Nonanal		0.84	0.59						2.11	1.47							
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal																	
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane			0.17	0.11						0.41	0.28						
36		629-59-4	Tetradecane																	
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-		0.04	0.03						0.10	0.07							
42		622-96-8	Toluene, 4-ethyl-		0.05	0.03						0.14	0.08							
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene		0.03	0.04	0.06			0.02		0.08	0.11	0.14			0.05	0.13	0.16	0.26
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-		0.32	0.14	0.05		0.03			0.81	0.34	0.12		0.09		1.39	0.69	0.95
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-		0.48	0.21	0.05	0.03				1.21	0.52	0.13	0.08			3.21	0.97	0.99
50		98-82-8	Benzene, isopropyl		0.18	0.14		0.03	0.03	0.03		0.46	0.35		0.08	0.08	0.08	0.86	0.56	0.98
51		103-65-1	Benzene, propyl-		0.23	0.14		0.03	0.03	0.02		0.57	0.34		0.08	0.07	0.05	1.15	0.67	1.00
52		100-41-4	Ethylbenzene		0.71	0.44	0.15	0.12	0.08	0.07		1.76	1.10	0.39	0.29	0.21	0.18	3.55	0.66	1.00
53		91-20-3	Naphthalene		0.02	0.01						0.05	0.03							
54		99-87-6	p-Cymene																	
55		100-42-5	Styrene		53.98	31.72	9.15	5.60	4.30	3.14		134.95	79.30	22.87	14.00	10.75	7.85	329.02	0.81	1.00
56		108-88-3	Toluene	0.03	1.09	0.46	0.16	0.18	0.13	0.11		2.65	1.05	0.32	0.35	0.24	0.20	4.37	0.69	0.94
57		98-83-9	2-Phenylpropene		1.37	0.93	0.25	0.19	0.14	0.12		3.44	2.33	0.64	0.48	0.36	0.29	7.72	0.73	0.99
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol	2.02	3.73	4.28	2.41	1.59	1.67	1.44		4.28	5.65	0.99				14.1	0.79	0.79
67		6846-50-0	TXIB		0.14	0.11	0.08			0.08		0.34	0.28	0.20			0.20	0.38	0.16	0.86

Table A. 17 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	5.9 h	24 h	48 h	72 h	96.1 h	0 h	3 h	5.9 h	24 h	48 h	72 h	96.1 h	a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		0.3	0.3						0.8	0.8							
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane		0.86	0.67	0.21	0.21	0.19	0.18		2.14	1.67	0.51	0.52	0.48	0.45	3.46	0.48	0.92
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		0.74	0.17	0.08	0.27	0.12			1.84	0.44	0.19	0.67	0.29		1.53	0.40	0.39
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene																	
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	
104	Acids	64-19-7	Acetic acid			1.65	0.33	0.92					4.14	0.82	2.31			6.57	0.41	0.28
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid																	
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl																	
113		123-91-1	1,4-Dioxane		0.32	0.19						0.81	0.48							
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	4.1 h	6.8 h	25.1 h	49.1 h	73.1 h	97.2 h	0 h	4.1 h	6.8 h	25.1 h	49.1 h	73.1 h	97.2 h	a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	0.2	1.0	1.2	0.4	0.2	0.2	0.1		1.8	2.5	0.3				10.77	1.03	0.82
119		50-00-0	Formaldehyde	0.2	1.0	0.8	0.5	0.8	0.4	0.2		1.8	1.3	0.7	1.3	0.4		3.01	0.38	0.56
120		123-38-6	Propanal		0.5	0.9	0.3	0.3	0.2	0.1		1.3	2.2	0.8	0.8	0.4	0.4	3.67	0.47	0.82
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	5.9 h	24 h	48 h	72 h	96.2 h	0 h	3 h	5.9 h	24 h	48 h	72 h	96.2 h	a	b	R^2
121	PFPH	107-02-8	Acrolein	0.8	0.4	0.4	0.6	0.5	0.2	0.1										

Note: Levels below the method detection limit are highlighted.

Table A. 18: Small-scale chamber concentration & emission factor for INS8 (insulation, EPS)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: $E = a\,t^{-b}$ with t > 3 h		
				0 h	3 h	5.8 h	24 h	48 h	72 h	96 h	0 h	3 h	5.8 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.42	0.91	0.74	0.41		0.57	0.46		1.22	0.80			0.36	0.08	2.39	0.60	0.80
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.40	0.70	0.66	0.48	0.42	0.49	0.36		0.75	0.64	0.21	0.06	0.23		1.53	0.61	0.70
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol	0.19	0.23	0.23	0.16	0.17	0.16	0.15		0.10	0.10							
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.09	0.07						0.21	0.17							
8		67-64-1	Acetone	0.05	0.40	0.36	0.14	0.15	0.18	0.08		0.87	0.77	0.23	0.26	0.32	0.08	1.69	0.53	0.77
9		98-86-2	Acetophenone	0.04	0.38	0.29	0.10	0.07	0.08	0.06		0.85	0.63	0.16	0.08	0.09	0.06	2.18	0.80	0.98
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.13	0.56	0.45	0.33	0.29	0.28	0.20		1.06	0.80	0.50	0.40	0.36	0.18	1.77	0.42	0.89
13		123-72-8	Butanal																	
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural																	
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal																	
19		124-19-6	Nonanal		0.88	0.49						2.20	1.22							
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal																	
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane																	
36		629-59-4	Tetradecane																	
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-		0.07							0.18								
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene		0.10	0.25	0.17	0.11	0.04	0.13		0.26	0.62	0.42	0.27	0.10	0.32	0.54	0.20	0.21
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-		0.39	0.33	0.18	0.17	0.17	0.13		0.99	0.83	0.45	0.42	0.42	0.34	1.35	0.30	0.96
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-		0.60	0.52	0.25	0.23	0.22	0.19		1.50	1.29	0.62	0.58	0.56	0.46	2.17	0.34	0.96
50		98-82-8	Benzene, isopropyl		0.18	0.14	0.07	0.07	0.07	0.05		0.45	0.36	0.18	0.17	0.17	0.13	0.64	0.34	0.95
51		103-65-1	Benzene, propyl-		0.14	0.10	0.05	0.04	0.04	0.03		0.34	0.26	0.13	0.10	0.09	0.08	0.54	0.43	0.99
52		100-41-4	Ethylbenzene		0.14	0.12	0.26	0.06	0.05	0.05		0.35	0.30	0.66	0.16	0.13	0.12	0.62	0.31	0.42
53		91-20-3	Naphthalene		0.02							0.04								
54		99-87-6	p-Cymene																	
55		100-42-5	Styrene		4.40	3.21	1.22	1.11	1.06	0.90		11.00	8.03	3.05	2.78	2.64	2.26	17.14	0.46	0.96
56		108-88-3	Toluene	0.06	0.62	0.36	0.17	0.14	0.16	0.05		1.41	0.75	0.28	0.21	0.24		2.27	0.58	0.94
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol	0.23	0.5	0.6	0.3	0.4	0.2	0.3		0.6	1.0	0.1	0.3	0.0	0.1	2.0	0.73	0.70
67		6846-50-0	TXIB		0.07							0.17								

Table A. 18 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	5.8 h	24 h	48 h	72 h	96 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	5.8 h	24 h	48 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol																	
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoet																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform		0.28	0.28	0.19		0.21	0.14		0.71	0.70	0.48		0.52	0.36	0.88	0.17	0.80
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene	0.12	0.68	0.16	0.07		0.17			1.41	0.09			0.12		0.86	0.52	0.34
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene																	
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene		0.25							0.62								
104	Acids	64-19-7	Acetic acid				0.88	0.67						2.21	1.66					
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid																	
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	6.8 h	25.1 h	49.1 h	73.1 h	97.2 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	6.8 h	25.1 h	49.1 h	73.1 h	97.2 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde		2.0	1.6	0.2	0.5	0.2	0.2		5.1	4.1	0.5	1.3	0.5	0.6	12.87	0.72	0.80
119		50-00-0	Formaldehyde	0.0	0.9	1.4	1.0	0.5	0.1	0.2		2.3	3.5	2.4	1.3	0.3	0.4	10.24	0.67	0.68
120		123-38-6	Propanal		0.8	0.4	0.1	0.2	0.2	0.1		2.1	1.0	0.4	0.4	0.4	0.3	3.04	0.51	0.82

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	5.8 h	24 h	48 h	72 h	96 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	5.8 h	24 h	48 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFP	107-02-8	Acrolein	0.6	1.1	0.3	0.4	0.4	0.3	0.2		1.3								

Note: Levels below the method detection limit are highlighted.

Table A. 19: Small-scale chamber concentration & emission factor for INS9 (fiberglass insulation)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	5.7 h	24 h	48 h	71.9 h	95.9 h	0 h	3 h	5.7 h	24 h	48 h	71.9 h	95.9 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	1.69	1.99	2.11	1.73	1.49	1.74	1.71		0.08	0.11	0.01		0.01	0.00	0.25	0.82	0.84
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	1.10	1.02	1.13	0.94	1.06	1.06	0.96			0.01							
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol	1.18	0.81	1.14	1.06	1.06	1.06	1.05										
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.21	0.19	0.06	0.11		0.07		0.05	0.05	0.02	0.03		0.02	0.07	0.31	0.71
8		67-64-1	Acetone	0.03	0.59	0.35	0.14	0.16	0.17	0.17		0.14	0.08	0.03	0.03	0.03	0.03	0.17	0.41	0.77
9		98-86-2	Acetophenone	0.06	0.27	0.23	0.14	0.11	0.09	0.14		0.05	0.04	0.02	0.01	0.01	0.02	0.08	0.42	0.80
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.17	0.37	0.37	0.30	0.27	0.27	0.31		0.05	0.05	0.03	0.03	0.02	0.03	0.06	0.19	0.73
13		123-72-8	Butanal		0.53	0.52						0.13	0.13							
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal			0.68	0.54						0.17	0.14						
16		98-01-1	Furfural																	
17		111-71-7	Heptanal		0.75	0.72		0.30				0.19	0.18		0.08			0.30	0.35	0.97
18		66-25-1	Hexanal		7.96	7.84	2.98	2.81	1.74	2.08		1.99	1.96	0.74	0.70	0.44	0.52	3.60	0.45	0.94
19		124-19-6	Nonanal		2.31	2.02	0.85	0.63	0.44	0.45		0.58	0.51	0.21	0.16	0.11	0.11	1.10	0.51	0.99
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal		0.52	0.42	0.19	0.17	0.11			0.13	0.10	0.05	0.04	0.03		0.22	0.46	0.98
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal		0.48	0.47	0.23	0.23				0.12	0.12	0.06	0.06			0.18	0.32	0.93
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane			0.15	0.09						0.04	0.02						
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane																	
36		629-59-4	Tetradecane																	
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetrame																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene																	
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-		0.08							0.02								
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene		0.04							0.01								
53		91-20-3	Naphthalene		0.03	0.02						0.01	0.01							
54		99-87-6	p-Cymene																	
55		100-42-5	Styrene	0.09	0.98	0.64	0.19	0.17	0.11	0.05		0.22	0.14	0.02	0.02	0.00		0.87	1.11	0.94
56		108-88-3	Toluene	0.05	0.81	0.17	0.05	0.03	0.05	0.05		0.19	0.03							
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethy																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol	1.09	0.71	0.99	0.63	1.03	0.89	0.91										
67		6846-50-0	TXIB	0.22	0.40	0.38	0.29	0.30	0.29	0.23		0.05	0.04	0.02	0.02	0.02	0.00	0.09	0.48	0.67

Table A. 19 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	5.7 h	24 h	48 h	71.9 h	95.9 h	0 h	3 h	5.7 h	24 h	48 h	71.9 h	95.9 h	a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		0.69	0.64						0.17	0.16							
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		1.25	0.23	0.07		0.11	0.17		0.31	0.06	0.02		0.03	0.04	0.25	0.52	0.54
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene																	
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	
104	Acids	64-19-7	Acetic acid		1.01	0.67	0.94	1.12	0.65			0.25	0.17	0.24	0.28	0.16		0.22	0.01	0.01
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid																	
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl																	
113		123-91-1	1,4-Dioxane		0.41	0.25						0.10	0.06							
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	4.1 h	6.7 h	25.1 h	49.1 h	73.1 h	97.1 h	0 h	4.1 h	6.7 h	25.1 h	49.1 h	73.1 h	97.1 h	a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	0.2	1.1	0.8	0.9	0.8	0.6	0.6		0.2	0.2	0.2	0.2	0.1	0.1	0.28	0.18	0.62
119		50-00-0	Formaldehyde	0.1	58.3	53.0	40.7	34.3	29.6	27.8		14.5	13.2	10.1	8.5	7.4	6.9	20.69	0.23	0.99
120		123-38-6	Propanal		0.5	0.6	0.5	0.2	0.4	0.3		0.1	0.1	0.1	0.0	0.1	0.1	0.18	0.20	0.43
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	5.7 h	24 h	48 h	71.9 h	95.9 h	0 h	3 h	5.7 h	24 h	48 h	71.9 h	95.9 h	a	b	R^2
121	PFPH	107-02-8	Acrolein	0.4	0.7	1.1	0.4	0.2	0.1	0.1		0.1	0.2							

Note: Levels below the method detection limit are highlighted.

Table A. 20: Small-scale chamber concentration & emission factor for INS10 (insulation, polyisocyanurate foam board)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6.5 h	24 h	48 h	72 h	96 h	0 h	3 h	6.5 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol		0.87	1.67	1.90	1.41	1.72	1.73		2.18	4.16	4.75	3.52	4.30	4.32			
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.68	0.66	1.23	1.13	0.89	1.13	0.90			1.39	1.14	0.53	1.12	0.55	2.41	0.28	0.47
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol	0.33	0.25	0.58	0.34	0.23	0.18	0.16			0.64	0.04						
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone																	
8		67-64-1	Acetone		0.49	0.08	0.09	0.24	0.18	0.14		1.23	0.21	0.23	0.60	0.45	0.34	0.64	0.14	0.08
9		98-86-2	Acetophenone	0.06	0.09	0.16	0.12	0.08	0.06	0.09		0.08	0.23	0.13	0.04		0.06	0.74	0.63	0.76
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.50	0.21	0.47	0.38	0.21	0.21	0.14										
13		123-72-8	Butanal																	
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural																	
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal																	
19		124-19-6	Nonanal																	
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal																	
24	Aliphatic Hyddrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane																	
36		629-59-4	Tetradecane																	
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene		0.04				0.05	0.06										
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-																	
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene							0.01							0.04			
53		91-20-3	Naphthalene					0.02							0.05					
54		99-87-6	p-Cymene																	
55		100-42-5	Styrene			0.08	0.09	0.07	0.07	0.07			0.21	0.23	0.18	0.17	0.18	0.26	0.08	0.51
56		108-88-3	Toluene	0.08	0.17	0.14	0.10	0.11	0.10	0.08		0.21	0.14	0.03	0.07	0.03		0.36	0.55	0.76
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol	2.47	4.57	6.08	5.32	4.12	4.60	4.35		5.24	9.02	7.13	4.12	5.31	4.69	7.9	0.10	0.25
67		6846-50-0	TXIB					0.09							0.23					

Table A. 20 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6.5 h	24 h	48 h	72 h	96 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6.5 h	24 h	48 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol			0.19							0.48							
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-						0.14							0.35				
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane		0.37	0.43	0.29	0.19				0.91	1.08	0.72	0.48			1.41	0.25	0.76
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride		0.24							0.61								
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		0.72	0.31	0.12	0.07	0.10	0.12		1.80	0.78	0.29	0.19	0.25	0.29	2.51	0.57	0.84
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene																	
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	
104	Acids	64-19-7	Acetic acid		0.62	0.63	0.94					1.55	1.59	2.36						
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid																	
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl-																	
113		123-91-1	1,4-Dioxane		4.42	6.08	3.89	3.05	3.07	2.30		11.06	15.21	9.71	7.63	7.68	5.76	17.50	0.21	0.74
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.8 h	25.1 h	49.1 h	73.1 h	97.1 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.8 h	25.1 h	49.1 h	73.1 h	97.1 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	1.1	0.3	0.1	0.1	0.6	0.5	0.4										
119		50-00-0	Formaldehyde	0.9	1.2	0.8	0.7	0.6	0.8	0.4		0.7								
120		123-38-6	Propanal		0.3	0.5	0.4	0.3				0.7	1.4	1.0	0.6			1.11	0.09	0.08
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.8 h	25.1 h	49.2 h	73.1 h	97.1 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.8 h	25.1 h	49.2 h	73.1 h	97.1 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFP	107-02-8	Acrolein	0.5	0.1	0.0	0.1	1.7	0.3	0.1					2.9					

Note: Levels below the method detection limit are highlighted.

Table A. 21: Small-scale chamber concentration & emission factor for SPF1c (spray foam sealant, low pressure, 2 passes)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	23.9 h	48 h	72 h	96 h	0 h	3 h	6 h	23.9 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol			0.62		0.53	0.41	0.58			0.68		0.58	0.45	0.64	0.77	0.08	0.28
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-		0.60	0.67	0.58	0.43	0.54	0.50		0.66	0.74	0.65	0.48	0.60	0.56	0.77	0.08	0.50
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol		0.29			0.10	0.10	0.08		0.32			0.11	0.11	0.09	0.48	0.37	0.99
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone																	
8		67-64-1	Acetone		0.88	0.84	0.42	0.26	0.21	0.23		0.97	0.93	0.46	0.29	0.23	0.26	1.81	0.45	0.96
9		98-86-2	Acetophenone		0.10	0.08		0.04	0.06	0.07		0.11	0.09		0.04	0.06	0.07	0.12	0.17	0.54
10		108-94-1	Cyclohexanone		1.10							1.22								
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde		0.37	0.31	0.27	0.19	0.19	0.21		0.41	0.34	0.30	0.21	0.21	0.24	0.50	0.19	0.87
13		123-72-8	Butanal																	
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural																	
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal																	
19		124-19-6	Nonanal		0.41		0.30					0.45		0.33						
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal																	
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane																	
36		629-59-4	Tetradecane																	
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene		0.04	0.03			0.13	0.01		0.05	0.04			0.15	0.01	0.05	0.06	0.01
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-																	
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene																	
53		91-20-3	Naphthalene																	
54		99-87-6	p-Cymene																	
55		100-42-5	Styrene	0.08	0.07															
56		108-88-3	Toluene		0.16	0.10		0.05	0.05	0.04		0.18	0.11		0.06	0.05	0.05	0.24	0.36	0.97
57		98-83-9	2-Phenylpropene		0.13	0.12						0.14	0.13							
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol		1.2	1.8	1.4		0.7	0.8		1.4	2.0	1.5		0.8	0.9	2.3	0.21	0.61
67		6846-50-0	TXIB																	

Table A. 21 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	23.9 h	48 h	72 h	96 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	23.9 h	48 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol																	
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoet																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane		1.91	1.84	0.92	0.70	0.60	0.44		2.11	2.03	1.02	0.78	0.66	0.49	3.81	0.42	0.97
81		78-87-5	1,2-Dichloropropane		1.02	0.92	0.52	0.41	0.44			1.13	1.01	0.58	0.46	0.49		1.62	0.30	0.96
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene	0.20	0.32							0.13								
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene																	
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	
104	Acids	64-19-7	Acetic acid																	
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid																	
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl																	
113		123-91-1	1,4-Dioxane		0.16							0.18								
114		78-40-0	Triethyl phosphate		17.18	26.44	48.38	22.01	14.23	11.42		19.02	29.27	53.57	24.37	15.76	12.64	33.01	0.12	0.10
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
122		156-60-5	Ethene, 1,2-dichloro-, (E)-	0	6339	5388	3820	2877	2512	2282		7018	5965	4229	3185	2781	2527	10065.1	0.30	0.99

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.1 h	25 h	49.1 h	73.1 h	97.1 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.1 h	25 h	49.1 h	73.1 h	97.1 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	0.6	4.4	3.3	1.9	1.2	1.0	1.2		4.1	3.0	1.4	0.6	0.4	0.6	11.66	0.71	0.96
119		50-00-0	Formaldehyde		0.8	1.0	0.5	0.6	0.6	0.1		0.9	1.1	0.6	0.7	0.6	0.1	2.14	0.43	0.46
120		123-38-6	Propanal		14.0	10.1	5.1	3.0	2.1	1.5		15.5	11.2	5.6	3.3	2.4	1.7	42.86	0.68	0.99

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.1 h	25 h	49.1 h	73.1 h	97.1 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.1 h	25 h	49.1 h	73.1 h	97.1 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFP	107-02-8	Acrolein	0.4	0.4	0.4	0.5	0.2	0.2	0.0		0.0		0.1						

Note: Levels below the method detection limit are highlighted.

Table A. 22: Small-scale chamber concentration & emission factor for SPF1d (spray foam sealant, low pressure, 2 passes, off-ratio)

				Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
#	Class	CAS #	Compound	0 h	3 h	6 h	23.9 h	48 h	72 h	96 h	0 h	3 h	6 h	23.9 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol		1.44	1.47	1.13	1.35	1.51	1.22		1.60	1.63	1.25	1.49	1.68	1.36	1.62	0.03	0.11
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.90	1.28	1.75	1.61	1.27	1.08	1.16		0.42	0.94	0.78	0.41	0.20	0.28	0.97	0.25	0.36
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol	0.29	0.38	0.33	0.36	0.37	0.25	0.29		0.10	0.05	0.08	0.09					
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone																	
8		67-64-1	Acetone	0.07	0.72	0.64	0.52	0.37	0.25	0.22		0.72	0.63	0.50	0.33	0.20	0.17	1.30	0.40	0.88
9		98-86-2	Acetophenone	0.06	0.06	0.06	0.09	0.04		0.07				0.03			0.01			
10		108-94-1	Cyclohexanone			1.06							1.17							
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.25	0.27	0.29		0.27	0.14	0.18		0.03	0.04		0.02			0.04	0.15	0.38
13		123-72-8	Butanal																	
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural																	
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal																	
19		124-19-6	Nonanal			0.50							0.56							
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal																	
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane																	
36		629-59-4	Tetradecane																	
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene	0.07		0.08		0.10	0.14	0.02			0.02		0.03	0.08				
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-																	
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene																	
53		91-20-3	Naphthalene																	
54		99-87-6	p-Cymene																	
55		100-42-5	Styrene					0.03							0.04					
56		108-88-3	Toluene	0.13	0.09	0.07	0.07	0.08	0.05	0.04										
57		98-83-9	2-Phenylpropene		0.15	0.11	0.07					0.16	0.13	0.07				0.25	0.39	1.00
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethy																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol							0.69							0.76			
67		6846-50-0	TXIB	0.19	0.39	0.45	0.31	0.22	0.22	0.23		0.22	0.28	0.13	0.03	0.04	0.05	0.61	0.62	0.83

Table A. 22 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	23.9 h	48 h	72 h	96 h	0 h	3 h	6 h	23.9 h	48 h	72 h	96 h	a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol																	
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoet																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane		2.03	1.90	0.87	0.76	0.62	0.56		2.25	2.11	0.97	0.84	0.69	0.62	3.74	0.39	0.98
81		78-87-5	1,2-Dichloropropane		1.10	0.89	0.57	0.46	0.39	0.29		1.22	0.99	0.64	0.51	0.43	0.32	1.88	0.36	0.98
82		106-46-7	1,4-Dichlorobenzene		0.05	0.04						0.05	0.05							
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene	0.50	0.33															
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene																	
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	
104	Acids	64-19-7	Acetic acid																	
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid																	
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate		81.57	165.62	93.62	45.51	29.72	23.83		90.31	183.37	103.65	50.38	32.91	26.38	254.76	0.44	0.68
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
122		156-60-5	Ethene, 1,2-dichloro-, (E)-	0.0	6391.6	5331.8	3584.3	2716.6	2376.8	2242.1		7076.5	5903.1	3968.3	3007.7	2631.4	2482.3	10175	0.31	1.00

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	4.1 h	7.1 h	25 h	49.3 h	73.1 h	97.1 h	0 h	4.1 h	7.1 h	25 h	49.3 h	73.1 h	97.1 h	a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	0.7	5.5	3.5	2.0	2.6	1.3	1.5		5.3	3.2	1.5	2.1	0.7	0.9	10.21	0.54	0.84
119		50-00-0	Formaldehyde		1.4	1.0	1.0	0.1	0.6	0.9		1.6	1.1	1.1	0.1	0.6	1.0	2.13	0.33	0.25
120		123-38-6	Propanal		14.5	9.9	4.5	7.0	1.9	1.5		16.0	10.9	5.0	7.7	2.1	1.7	40.50	0.63	0.80

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	4.1 h	7.1 h	25 h	49.3 h	73.1 h	97.1 h	0 h	4.1 h	7.1 h	25 h	49.3 h	73.1 h	97.1 h	a	b	R^2
121	PFPH	107-02-8	Acrolein	0.6	0.6	0.4	0.4	0.4	0.4	0.6										

Note: Levels below the method detection limit are highlighted.

Table A. 23: Small-scale chamber concentration & emission factor for SPF1e (spray foam sealant, low pressure, applied at 16 °C)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24.1 h	48.1 h	72 h	96 h	0 h	3 h	6 h	24.1 h	48.1 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.90	0.86	1.13	0.99	1.09	1.74	1.32			0.25	0.10	0.21	0.93	0.47			
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.56	0.88	1.40	1.32	1.11	1.43	1.23		0.35	0.94	0.84	0.61	0.96	0.74			
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol	0.16		0.23	0.13	0.25	0.44	0.39			0.08		0.10	0.31	0.26			
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.07	0.09						0.08	0.10							
8		67-64-1	Acetone		0.54	0.63	0.50	0.65	0.75	0.50		0.60	0.70	0.55	0.73	0.83	0.56			
9		98-86-2	Acetophenone		0.06	0.06		0.08	0.16	0.13		0.07	0.06		0.09	0.17	0.14			
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.21	0.20	0.37	0.24	0.34	0.57	0.65			0.18	0.02	0.14	0.40	0.48			
13		123-72-8	Butanal																	
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural																	
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal																	
19		124-19-6	Nonanal																	
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal																	
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane																	
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane	0.30																
36		629-59-4	Tetradecane																	
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-		0.18	0.15						0.20	0.17							
42		622-96-8	Toluene, 4-ethyl-		0.09	0.14						0.10	0.16							
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene																	
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-																	
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-		0.06	0.06						0.07	0.07							
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene		0.03	0.02						0.03	0.02							
53		91-20-3	Naphthalene																	
54		99-87-6	p-Cymene																	
55		100-42-5	Styrene			0.08	0.05						0.09	0.06						
56		108-88-3	Toluene	0.06	0.10	0.11	0.05	0.06		0.05		0.05	0.06		0.00			0.43	1.47	0.93
57		98-83-9	2-Phenylpropene		0.31	0.36	0.13	0.11				0.35	0.39	0.15	0.12			0.68	0.45	0.90
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester		0.29	0.35	0.11					0.32	0.38	0.12				0.70	0.52	0.78
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol		2.78	5.39	4.24	3.61	4.07	3.43		3.08	5.97	4.70	4.00	4.50	3.80	7.6	0.15	0.86
67		6846-50-0	TXIB	2.90		0.16														

Table A. 23 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24.1 h	48.1 h	72 h	96 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24.1 h	48.1 h	72 h	96 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol																	
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane		4.35	4.37	1.59	1.27	1.13	0.92		4.82	4.84	1.75	1.41	1.26	1.02	9.25	0.48	0.96
81		78-87-5	1,2-Dichloropropane		3.22	3.39	1.03	0.68	0.72			3.56	3.75	1.14	0.76	0.80		7.80	0.57	0.94
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		0.19							0.21								
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene																	
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	
104	Acids	64-19-7	Acetic acid				1.29							1.43						
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid																	
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl-																	
113		123-91-1	1,4-Dioxane		0.40	0.42	0.16					0.44	0.46	0.18				0.86	0.48	0.87
114		78-40-0	Triethyl phosphate		62.14	147.84	180.80	158.24	133.90	74.67		68.80	163.68	200.18	175.19	148.24	82.67	268.17	0.17	0.30
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
122	A	156-60-5	Ethene, 1,2-dichloro-, (E)-		9690.42	8570.82	4270.59	3270.16	2940.09	2210.32		#######	9489.14	4728.16	3620.55	3255.11	2447.15	#######	0.42	0.98

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.3 h	25.3 h	49.2 h	73.1 h	97 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.3 h	25.3 h	49.2 h	73.1 h	97 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	0.5	21.7	14.8	5.8	6.0	4.5	3.6		23.5	15.9	5.8	6.0	4.4	3.4	49.71	0.58	0.96
119		50-00-0	Formaldehyde	0.1	1.2	1.3	1.0	1.0	0.7	0.8		1.1	1.3	1.0	1.0	0.7	0.8	1.62	0.17	0.72
120		123-38-6	Propanal		39.0	25.2	7.8	4.4	2.8	1.8		43.2	28.0	8.6	4.9	3.1	2.0	179.12	0.95	0.99

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.3 h	25.3 h	49.2 h	73.1 h	97 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.3 h	25.3 h	49.2 h	73.1 h	97 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPI	107-02-8	Acrolein	0.6	0.4	0.2	0.9	0.0		0.0				0.3						

Note: Levels below the method detection limit are highlighted.

Table A. 24: Small-scale chamber concentration & emission factor for SPF1f (spray foam sealant, low pressure, applied at 5 °C)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	168 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	168 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	1.31			1.45	1.86		1.77	1.32				0.15	0.60		0.51	0.01	20.36	1.18	0.28
2		71-23-8	1-Propanol																			
3		104-76-7	Hexanol, 2-ethyl-1-	0.96	1.03		2.69	2.84	1.87	2.08	1.84		0.07		1.91	2.08	1.01	1.24	0.97	7.3	0.40	0.67
4		67-63-0	2-Propanol																			
5		64-17-5	Ethanol																			
6		108-95-2	Phenol			1.01	1.31	2.86	0.91	1.14	0.71			1.12	1.45	3.17	1.00	1.27	0.79	1.73	0.07	0.03
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone																			
8		67-64-1	Acetone		9.80	9.37	6.72	4.69	3.39	2.98	3.12		10.85	10.38	7.44	5.20	3.75	3.30	3.45	17.70	0.33	0.93
9		98-86-2	Acetophenone		0.28	0.51	0.62	0.72	0.42	0.38	0.14		0.30	0.56	0.69	0.80	0.46	0.42	0.15	0.59	0.09	0.06
10		108-94-1	Cyclohexanone																			
11		108-10-1	Methylisobutyl ketone																			
12		100-52-7	Benzaldehyde	0.42	0.89	1.35	1.79	1.71	1.47	1.03	0.76		0.52	1.03	1.51	1.43	1.16	0.67	0.37	0.98	0.04	0.01
13		123-72-8	Butanal																			
14		112-31-2	Decanal																			
15		3913-81-3	2-Decenal																			
16		98-01-1	Furfural																			
17		111-71-7	Heptanal																			
18		66-25-1	Hexanal																			
19		124-19-6	Nonanal																			
20		18829-56-6	2-Nonenal																			
21		124-13-0	Octanal																			
22		2548-87-0	2-Octenal																			
23		110-62-3	Pentanal																			
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																			
25		96-14-0	Pentane, 3-methyl-																			
26		540-84-1	2,2,4-Trimethylpentane																			
27		108-08-7	2,4-Dimethylpentane																			
28		124-18-5	Decane																			
29		112-40-3	Dodecane																			
30		142-82-5	Heptane																			
31		544-76-3	Hexadecane																			
32		110-54-3	Hexane																			
33		111-84-2	Nonane																			
34		111-65-9	Octane																			
35		629-62-9	Pentadecane																			
36		629-59-4	Tetradecane																			
37		629-50-5	Tridecane																			
38		1120-21-4	Undecane																			
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																			
40		611-14-3	Toluene, 2-ethyl-																			
41		620-14-4	Toluene, 3-ethyl-																			
42		622-96-8	Toluene, 4-ethyl-																			
43		31017-40-0	Cyclohexene, 4-phenyl																			
44		71-43-2	Benzene							0.06	0.31							0.06	0.34			
45		526-73-8	Benzene, 1,2,3-trimethyl-																			
46		95-63-6	Benzene, 1,2,4-trimethyl-																			
47		95-47-6	Benzene, 1,2-dimethyl-																			
48		108-67-8	Benzene, 1,3,5-trimethyl-																			
49		108-38-3	Benzene, 1,3-dimethyl-																			
50		98-82-8	Benzene, isopropyl																			
51		103-65-1	Benzene, propyl-																			
52		100-41-4	Ethylbenzene																			
53		91-20-3	Naphthalene																			
54		99-87-6	p-Cymene																			
55		100-42-5	Styrene	0.05	0.19	0.22	0.24	0.28	0.18	0.33	0.13		0.15	0.19	0.20	0.25	0.14	0.30	0.09	0.20	0.03	0.01
56		108-88-3	Toluene	0.07	0.39	3.17	1.12	0.60	0.60	1.50	0.23		0.36	3.44	1.16	0.59	0.59	1.58	0.18	1.55	0.21	0.10
57		98-83-9	2-Phenylpropene		0.58	0.45	0.33	0.25		0.19			0.64	0.50	0.37	0.27		0.21		0.91	0.31	0.99
58		95-13-6	Indene																			
59	Esters	108-21-4	Acetic acid, 1-methylethyl																			
60		111-15-9	Acetic acid, 2-ethoxyethyl																			
61		123-86-4	Acetic acid, butyl ester																			
62		141-78-6	Acetic acid, ethyl ester		0.55			0.43	0.24				0.61			0.47	0.27					
63		80-62-6	Methyl methacrylate																			
64		103-09-3	2-Ethylhexyl acetate																			
65		96-48-0	Butyrolactone																			
66		25265-77-4	Texanol	0.83	3	7	6	5	4	5	3		2	7	6	5	4	4	3			
67		6846-50-0	TXIB																			

Table A. 24 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	168 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	168 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol																			
69		110-49-6	2-Methoxyethylacetate																			
70		111-90-0	Diethylene glycol monoeth																			
71		107-98-2	Propanol, 1-methoxy-2-																			
72		111-76-2	Ethanol, 2-butoxy-																			
73		112-34-5	Ethanol, 2-butoxyethoxy-																			
74		110-80-5	Ethanol, 2-ethoxy-																			
75		109-86-4	Ethanol, 2-methoxy-																			
76		75-65-0	Propanol, 2-methyl-2-																			
77		5131-66-8	Proylene glycol monobuty																			
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																			
79		95-50-1	1,2-Dichlorobenzene																			
80		107-06-2	1,2-Dichloroethane		4.93	4.36	3.22	2.41	1.78	1.63	1.22		5.46	4.83	3.56	2.67	1.97	1.81	1.35	8.95	0.34	0.95
81		78-87-5	1,2-Dichloropropane		2.81	2.87	2.31	2.09	1.02	0.94	0.69		3.11	3.18	2.56	2.31	1.13	1.05	0.76	5.86	0.35	0.80
82		106-46-7	1,4-Dichlorobenzene																			
83		75-27-4	Bromodichloromethane																			
84		56-23-5	Carbon tetrachloride																			
85		67-66-3	Chloroform																			
86		124-48-1	Dibromochloromethane																			
87		75-09-2	Dichloromethane																			
88		127-18-4	Tetrachloroethylene																			
89		79-01-6	Trichloroethylene			0.42		0.15	0.51		0.28			0.47		0.17	0.56		0.31	0.49	0.09	0.06
90		79-34-5	1,1,2,2-Tetrachloroethane																			
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																			
92		110-82-7	Cyclohexane																			
93		1678-93-9	Cyclohexane, butyl-																			
94		1678-91-7	Cyclohexane, ethyl-																			
95		1678-92-8	Cyclohexane, propyl-																			
96		91-17-8	Decahydronaphthalene																			
97	Terpenes	80-56-8	alpha-Pinene																			
98		99-86-5	alpha-Terpinene																			
99		127-91-3	beta-Pinene																			
100		99-85-4	gamma-Terpinene																			
101		13466-78-9	3-Carene																			
102		79-92-5	Camphene																			
103		5989-27-5	Limonene																			
104	Acids	64-19-7	Acetic acid					32.50								35.99						
105		79-31-2	Isobutyric acid																			
106		107-92-6	Butyric acid																			
107		111-14-8	Heptanoic acid																			
108		149-57-5	2-Ethylhexanoic acid																			
109		142-62-1	Hexanoic acid																			
110		109-52-4	Pentanoic Acid																			
111	Other	3777-69-3	Furan, 2-pentyl																			
112		872-50-4	2-Pyrrolidinone, 1-methyl-																			
113		123-91-1	1,4-Dioxane																			
114		78-40-0	Triethyl phosphate		116.47	257.19	347.40	278.77	152.70	151.08	63.00		128.95	284.75	384.62	308.64	169.06	167.27	69.75	290.57	0.13	0.10
115		142-96-1	n-Butyl ether																			
116		96-29-7	2-Butanone oxime																			
117		121-44-8	Triethylamine																			
122	A	156-60-5	Ethene, 1,2-dichloro-, (E)-		16147	15069	12114	8786	5462	4296	3292		17877	16683	13412	9727	6047	4756	3645	3.4E+04	0.40	0.88
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7 h	25 h	49.1 h	73 h	97 h	169 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7 h	25 h	49.1 h	73 h	97 h	169 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	1.7	8.7	4.0	2.1	5.9	4.2	4.4	3.9		6.4	2.1	0.4	3.8	2.3	2.4	2.0	3.36	0.13	0.04
119		50-00-0	Formaldehyde		0.1		0.3	0.6	0.8	0.2	0.5		0.1		0.2	0.6	0.7	0.1	0.4			
120		123-38-6	Propanal		17.3	8.3	3.5	4.0	3.2	2.0	1.5		15.6	7.5	3.2	3.6	2.9	1.8	1.3	28.70	0.59	0.93
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7 h	25 h	49.1 h	73 h	97 h		Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7 h	25 h	49.1 h	73 h	97 h		Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPH	107-02-8	Acrolein	1.4	0.7	0.9	0.9	0.9	1.0	0.7												

Note: Levels below the method detection limit are highlighted.

Table A. 25: Small-scale chamber concentration & emission factor for SPF2 (spray foam insulation, 2-component, closed cell)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72.1 h	96.2 h	0 h	3 h	6 h	24 h	48 h	72.1 h	96.2 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.88	1.47	1.78	0.98	1.06	0.84	1.16		1.49	2.25	0.27	0.46		0.72	2.48	0.40	0.44
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.63	0.99	1.04	0.75	0.84	0.73	0.76		0.90	1.01	0.30	0.52	0.23	0.32	1.50	0.37	0.72
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol	0.15	0.25	0.31	0.13	0.21	0.18	0.19		0.27	0.42		0.16	0.10	0.11	0.53	0.35	0.79
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.13	0.14						0.31	0.36							
8		67-64-1	Acetone	0.09	0.55	0.59	0.20	0.16	0.11	0.11		1.15	1.27	0.29	0.19	0.07	0.06	4.54	0.91	0.94
9		98-86-2	Acetophenone	0.03	0.31	0.21	0.09	0.09	0.08	0.08		0.71	0.46	0.14	0.16	0.14	0.12	1.10	0.51	0.92
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.18	0.42	0.31	0.17	0.17	0.17	0.19		0.61	0.32				0.03	1.58	0.88	1.00
13		123-72-8	Butanal		0.61	0.68						1.53	1.71							
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural																	
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal																	
19		124-19-6	Nonanal		0.78	0.48						1.95	1.19							
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal																	
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane		0.07							0.18								
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane																	
36		629-59-4	Tetradecane																	
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene			0.10	0.12		0.09				0.24	0.31		0.22		0.28	0.03	0.05
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-		0.11	0.08						0.27	0.19							
48		108-67-8	Benzene, 1,3,5-trimethyl-																	
49		108-38-3	Benzene, 1,3-dimethyl-		0.21	0.12	0.05			0.02		0.53	0.31	0.13			0.06	0.99	0.62	1.00
50		98-82-8	Benzene, isopropyl		0.04	0.03						0.09	0.06							
51		103-65-1	Benzene, propyl-		0.03							0.08								
52		100-41-4	Ethylbenzene		0.14	0.10	0.03	0.03	0.03			0.34	0.26	0.08	0.09	0.07		0.60	0.53	0.93
53		91-20-3	Naphthalene		0.02							0.04								
54		99-87-6	p-Cymene																	
55		100-42-5	Styrene		1.96	1.44	0.56	0.37	0.27	0.31		4.89	3.60	1.41	0.92	0.67	0.77	9.59	0.59	0.98
56		108-88-3	Toluene	0.07	1.15	0.40	0.14	0.13		0.09		2.71	0.82	0.17	0.14		0.04	8.12	1.16	0.97
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol	5.02	11	13	6	5	4	5		15	20	3			0	158.9	1.48	0.91
67		6846-50-0	TXIB			0.09							0.23							

Table A. 25 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72.1 h	96.2 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72.1 h	96.2 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		0	0						1	1							
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-		0.42	0.30	0.16	0.15	0.13			1.04	0.75	0.40	0.37	0.33		1.5	0.37	0.97
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane		5.51	4.85	1.81	1.14	0.73	0.78		13.78	12.11	4.53	2.84	1.82	1.94	31.73	0.63	0.98
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform		0.25	0.23	0.09					0.62	0.57	0.23				1.19	0.50	0.93
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene	0.15	0.76	0.20	0.07	0.12				1.52	0.11							
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene																	
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	
104	Acids	64-19-7	Acetic acid			1.09	1.23	1.40					2.72	3.08	3.50					
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid																	
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl-																	
113		123-91-1	1,4-Dioxane		61.21	44.68	18.55	13.61	9.36	8.86		153.04	111.69	46.36	34.02	23.39	22.14	298.74	0.58	1.00
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.1 h	25.2 h	49.1 h	73.3 h	97.3 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.1 h	25.2 h	49.1 h	73.3 h	97.3 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde		8.2	6.9	2.4	1.3	1.0	0.8		20.6	17.3	6.0	3.2	2.6	2.0	68.39	0.77	0.99
119		50-00-0	Formaldehyde	0.2	6.1	5.0	2.9	1.9	1.7	1.6		14.8	12.1	6.9	4.4	3.9	3.7	29.39	0.47	0.99
120		123-38-6	Propanal		0.9	0.8	0.1	0.2	0.3	0.4		2.2	1.9	0.2	0.6	0.8	1.1	2.68	0.34	0.29

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72.1 h	96.2 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72.1 h	96.2 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFP	107-02-8	Acrolein	0.9	1.0	0.6	0.5	0.4	0.2	0.2		0.2								

Note: Levels below the method detection limit are highlighted.

Table A. 26: Small-scale chamber concentration & emission factor for SPF3 (spray foam insulation, 2-component, open cell)

				Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
#	Class	CAS #	Compound	0 h	3 h	6.2 h	24 h	48 h	72 h	96 h	0 h	3 h	6.2 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.56				0.95	1.45	1.25					0.97	2.22	1.71			
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.31	0.32	0.65	0.44	0.44	0.37	0.42		0.03	0.86	0.32	0.33	0.16	0.27	1.91	0.50	0.79
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol		1.02	0.79	0.26	0.26	0.19	0.33		2.55	1.97	0.65	0.66	0.49	0.83	3.77	0.43	0.81
6		108-95-2	Phenol	0.37	0.57	0.40	0.36	0.25	0.37	0.20		0.50	0.06							
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.20							0.49								
8		67-64-1	Acetone		0.29	0.20	0.24	0.23	0.18	0.32		0.73	0.49	0.60	0.57	0.44	0.81	0.61	0.01	0.00
9		98-86-2	Acetophenone	0.03	0.17	0.18	0.19	0.15	0.19	0.12		0.35	0.37	0.38	0.29	0.40	0.22	0.41	0.07	0.20
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.39	0.41	0.36	0.40	0.19	0.32	0.19		0.05		0.03						
13		123-72-8	Butanal																	
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural																	
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal																	
19		124-19-6	Nonanal		1.00	1.09	0.78	0.64				2.49	2.74	1.95	1.60			3.33	0.18	0.84
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal																	
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane		0.11							0.27								
29		112-40-3	Dodecane		0.20	0.22	0.16	0.14				0.50	0.55	0.40	0.35			0.64	0.15	0.81
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane							0.07							0.17			
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane		0.12	0.13	0.12			0.11		0.31	0.31	0.30			0.29	0.32	0.03	0.89
36		629-59-4	Tetradecane				0.12		0.10					0.31		0.26				
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane																	
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-																	
41		620-14-4	Toluene, 3-ethyl-		0.04	0.03						0.10	0.09							
42		622-96-8	Toluene, 4-ethyl-		0.02	0.02						0.05	0.05							
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene					0.11							0.28					
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-			0.07	0.04			0.02			0.16	0.11			0.05	0.36	0.41	0.99
48		108-67-8	Benzene, 1,3,5-trimethyl-		0.02							0.05								
49		108-38-3	Benzene, 1,3-dimethyl-		0.18	0.18	0.07		0.03			0.46	0.44	0.19		0.07		1.08	0.60	0.95
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene		0.06	0.06	0.03	0.02	0.01	0.02		0.14	0.15	0.07	0.05	0.03	0.04	0.27	0.45	0.94
53		91-20-3	Naphthalene							0.01							0.03			
54		99-87-6	p-Cymene																	
55		100-42-5	Styrene	0.22	0.09	0.12	0.14	0.10	0.10	0.16										
56		108-88-3	Toluene		6.56	6.31	0.42	0.10	0.08	0.09		16.40	15.78	1.04	0.26	0.21	0.21	119.91	1.47	0.96
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester		0.13							0.31								
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol		5.01	5.79	2.59	2.29	2.36	1.84		12.53	14.48	6.48	5.71	5.89	4.60	20.3	0.32	0.90
67		6846-50-0	TXIB		0.25	0.25	0.14	0.13	0.08	0.11		0.64	0.62	0.35	0.33	0.21	0.27	0.96	0.30	0.90

Table A. 26 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6.2 h	24 h	48 h	72 h	96 h	0 h	3 h	6.2 h	24 h	48 h	72 h	96 h	a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol																	
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane		91.60	64.60	2.38	0.33				229.00	161.50	5.95	0.83			3905.24	2.10	0.96
82		106-46-7	1,4-Dichlorobenzene		0.08	0.08	0.04	0.02	0.02			0.20	0.20	0.11	0.06	0.05		0.38	0.46	0.94
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene	0.20	0.73	0.27	0.09	0.09				1.34	0.17							
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene																	
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	
104	Acids	64-19-7	Acetic acid																	
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid																	
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl-																	
113		123-91-1	1,4-Dioxane		5.16	5.29	0.92		0.23	0.18		12.90	13.21	2.29		0.57	0.44	60.26	1.07	0.97
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	4.1 h	7.4 h	25.1 h	49.1 h	73.1 h	97.1 h	0 h	4.1 h	7.4 h	25.1 h	49.1 h	73.1 h	97.1 h	a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	0.0	36.8	26.7	11.9	8.6	6.0	4.5		92.0	66.7	29.7	21.3	14.9	11.0	240.61	0.65	0.99
119		50-00-0	Formaldehyde	0.9	2.4	2.0	2.1	2.1	1.6	1.2		3.7	2.8	2.9	3.0	1.8	0.7	6.60	0.34	0.51
120		123-38-6	Propanal		8.0	5.3	1.2	0.5	0.5	0.3		20.1	13.3	3.0	1.3	1.2	0.8	92.37	1.04	0.99
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	4.1 h	7.5 h	25.1 h	49.1 h	73.1 h	97.1 h	0 h	4.1 h	7.5 h	25.1 h	49.1 h	73.1 h	97.1 h	a	b	R^2
121	PFPH	107-02-8	Acrolein	0.5	1.1	0.8	0.5	0.3	0.4	0.1		1.4	0.7							

Note: Levels below the method detection limit are highlighted.

Table A. 27: Small-scale chamber concentration & emission factor for SPF4 (spray foam sealant, 1-component)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol		1.05	0.95	0.39	0.43	0.44	0.48		2.62	2.38	0.96	1.07	1.11	1.19	3.38	0.27	0.77
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-			0.32	0.33	0.30	0.32	0.41			0.79	0.82	0.75	0.80	1.02			
4		67-63-0	2-Propanol																	
5		64-17-5	Ethanol																	
6		108-95-2	Phenol			0.12	0.11			0.08			0.31	0.26			0.21	0.40	0.14	0.99
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.16				0.05			0.41				0.12				
8		67-64-1	Acetone		0.69	0.31	0.17	0.12	0.12	0.10		1.72	0.78	0.43	0.30	0.29	0.26	2.42	0.51	0.95
9		98-86-2	Acetophenone		0.06					0.06		0.14					0.15			
10		108-94-1	Cyclohexanone																	
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde		0.28	0.28			0.20	0.26		0.71	0.69			0.51	0.65	0.76	0.06	0.49
13		123-72-8	Butanal		2.01							5.03								
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural		0.41							1.04								
17		111-71-7	Heptanal		1.41	0.44						3.53	1.10							
18		66-25-1	Hexanal		35.65	11.22	1.77					89.13	28.06	4.44				399.53	1.43	1.00
19		124-19-6	Nonanal																	
20		18829-56-6	2-Nonenal																	
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal		1.99							4.98								
23		110-62-3	Pentanal		2.61	0.80						6.52	2.01							
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-		158.39	108.30	2.11	4.82	4.20	5.06		395.97	270.74	5.29	12.06	10.50	12.64	1165.47	1.16	0.77
25		96-14-0	Pentane, 3-methyl-		87.03	60.68	0.83	1.55	1.25	1.45		217.58	151.70	2.07	3.87	3.13	3.62	870.66	1.37	0.82
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane		1.25	1.15	0.23					3.13	2.88	0.57				9.99	0.87	0.92
28		124-18-5	Decane		0.77	0.35	0.07					1.92	0.88	0.17				6.94	1.16	1.00
29		112-40-3	Dodecane		0.17							0.44								
30		142-82-5	Heptane		32.26	21.11	3.27	1.98	1.47	1.66		80.66	52.76	8.18	4.94	3.68	4.15	234.24	0.96	0.97
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane		68.08	46.91	8.04	6.44	4.91	5.09		170.20	117.28	20.11	16.11	12.27	12.74	414.70	0.82	0.96
33		111-84-2	Nonane		1.83	0.84	0.17	0.11		0.11		4.57	2.09	0.42	0.27		0.27	9.95	0.88	0.94
34		111-65-9	Octane		8.19	4.30	0.81	0.47	0.41	0.39		20.47	10.74	2.03	1.18	1.02	0.98	52.33	0.93	0.98
35		629-62-9	Pentadecane																	
36		629-59-4	Tetradecane		0.43	0.24						1.08	0.61							
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane		0.24	0.14						0.59	0.34							
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-		0.01							0.04								
41		620-14-4	Toluene, 3-ethyl-		0.04							0.11								
42		622-96-8	Toluene, 4-ethyl-		0.03							0.06								
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene		6.89	3.82	1.49	1.02	0.74	0.79		17.22	9.54	3.72	2.55	1.86	1.97	31.96	0.65	0.99
45		526-73-8	Benzene, 1,2,3-trimethyl-																	
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-		0.27	0.10						0.68	0.26							
48		108-67-8	Benzene, 1,3,5-trimethyl-		0.08	0.03						0.21	0.08							
49		108-38-3	Benzene, 1,3-dimethyl-		1.60	0.55	0.14	0.10	0.09	0.09		4.00	1.36	0.36	0.26	0.22	0.23	7.20	0.83	0.94
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-		0.04							0.09								
52		100-41-4	Ethylbenzene		0.34	0.13	0.04	0.02	0.02	0.03		0.84	0.32	0.09	0.06	0.06	0.07	1.43	0.76	0.92
53		91-20-3	Naphthalene																	
54		99-87-6	p-Cymene																	
55		100-42-5	Styrene		0.04					0.05		0.09					0.11			
56		108-88-3	Toluene		13.30	5.58	1.48	1.13	0.87	0.95		33.24	13.96	3.71	2.82	2.18	2.39	62.22	0.78	0.96
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol						0.48	0.59						1.19	1.47			
67		6846-50-0	TXIB				0.10		0.09					0.25		0.23				

Table A. 27 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol																	
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoetl																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-																	
73		112-34-5	Ethanol, 2-butoxyethoxy-																	
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-																	
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene		0.57	0.28		0.05	0.05			1.42	0.69		0.13	0.13		3.04	0.78	0.99
80		107-06-2	1,2-Dichloroethane		0.55	0.22						1.36	0.54							
81		78-87-5	1,2-Dichloropropane		5.08	2.48	0.64	0.44	0.38	0.39		12.69	6.21	1.61	1.09	0.96	0.97	25.28	0.77	0.97
82		106-46-7	1,4-Dichlorobenzene		1.60	0.86	0.24	0.19	0.13	0.14		3.99	2.14	0.61	0.47	0.34	0.35	7.97	0.73	0.98
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform		1.16	0.70	0.22	0.17	0.15			2.89	1.75	0.54	0.42	0.38		5.70	0.67	0.98
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		0.35							0.87								
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane		17.77	11.46	1.67	0.92	0.73	0.78		44.43	28.64	4.16	2.30	1.83	1.94	136.80	1.00	0.97
92		110-82-7	Cyclohexane		11.01	8.67	0.89	0.61	0.49	0.53		27.52	21.67	2.21	1.52	1.22	1.33	88.77	1.00	0.94
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-		0.61	0.32						1.52	0.81							
95		1678-92-8	Cyclohexane, propyl-		0.10	0.04						0.25	0.11							
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene																	
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	
104	Acids	64-19-7	Acetic acid				1.22							3.05						
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid																	
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl		0.23	0.14						0.57	0.34							
112		872-50-4	2-Pyrrolidinone, 1-methyl																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate			0.19							0.48							
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	

Note: Levels below the method detection limit are highlighted.

Table A. 28: Small-scale chamber concentration & emission factor for PT13 (Interior, acrylic latex, VOC < 150 g/L)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3.1 h	6.1 h	24 h	48.3 h	72.2 h	96.1 h	192.1 h	0 h	3.1 h	6.1 h	24 h	48.3 h	72.2 h	96.1 h	192.1 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	1.19	56.13	34.47	11.53	7.68	5.52	4.39	2.21		137.34	83.20	25.83	16.22	10.82	7.99	2.54	435.94	0.90	0.98
2		71-23-8	1-Propanol																			
3		104-76-7	Hexanol, 2-ethyl-1-	1.00	3.85	3.19	2.69	2.11	1.80	1.67	1.65		7.12	5.47	4.21	2.77	1.99	1.67	1.62	11.50	0.39	0.95
4		67-63-0	2-Propanol		24.86	12.09	2.73	0.97	0.38	0.16			62.16	30.22	6.81	2.43	0.94	0.41		372.13	1.39	0.97
5		64-17-5	Ethanol																			
6		108-95-2	Phenol	0.23	2.78	5.49	1.71	0.98	0.91	0.66	0.77		6.37	13.15	3.68	1.87	1.70	1.06	1.35	19.00	0.55	0.83
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.64	0.49							1.60	1.23								
8		67-64-1	Acetone		13.81	22.65	5.35	2.67	1.51	0.99	0.65		34.54	56.62	13.37	6.68	3.77	2.47	1.62	159.23	0.86	0.93
9		98-86-2	Acetophenone	0.13	0.87	2.24	0.56	0.41	0.44	0.54	0.49		1.83	5.26	1.07	0.68	0.76	1.00	0.89	4.16	0.35	0.55
10		108-94-1	Cyclohexanone																			
11		108-10-1	Methylisobutyl ketone																			
12		100-52-7	Benzaldehyde	0.42	14.16	15.13	4.31	2.19	1.77	1.60	1.30		34.35	36.77	9.73	4.44	3.39	2.94	2.21	102.47	0.76	0.97
13		123-72-8	Butanal		3.82	5.23	1.75						9.54	13.08	4.38					20.07	0.44	0.67
14		112-31-2	Decanal		2.03		0.74		0.46	0.31			5.08		1.84		1.15	0.77		9.27	0.52	0.98
15		3913-81-3	2-Decenal		5.92								14.80									
16		98-01-1	Furfural		0.57	0.74	0.45	0.24					1.42	1.85	1.14	0.59				2.62	0.33	0.71
17		111-71-7	Heptanal		1.72	2.58	1.19	0.58					4.30	6.45	2.96	1.46				9.65	0.43	0.73
18		66-25-1	Hexanal		16.89	17.69	6.86	3.30	1.55	0.72	0.23		42.22	44.22	17.15	8.24	3.89	1.80	0.57	248.68	1.03	0.90
19		124-19-6	Nonanal		3.53	3.41	1.52	0.73	0.56	0.41			8.83	8.53	3.81	1.84	1.40	1.01		23.40	0.65	0.96
20		18829-56-6	2-Nonenal																			
21		124-13-0	Octanal				0.38								0.95							
22		2548-87-0	2-Octenal																			
23		110-62-3	Pentanal		3.03	3.97		0.61					7.57	9.93		1.52				21.67	0.66	0.87
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																			
25		96-14-0	Pentane, 3-methyl-																			
26		540-84-1	2,2,4-Trimethylpentane																			
27		108-08-7	2,4-Dimethylpentane																			
28		124-18-5	Decane		0.41								1.02									
29		112-40-3	Dodecane																			
30		142-82-5	Heptane																			
31		544-76-3	Hexadecane		0.99		0.21						2.46		0.52							
32		110-54-3	Hexane																			
33		111-84-2	Nonane																			
34		111-65-9	Octane																			
35		629-62-9	Pentadecane		0.47								1.18									
36		629-59-4	Tetradecane		0.75		0.26		0.13				1.86		0.64		0.33			3.48	0.54	1.00
37		629-50-5	Tridecane																			
38		1120-21-4	Undecane																			
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet		0.05								0.13									
40		611-14-3	Toluene, 2-ethyl-																			
41		620-14-4	Toluene, 3-ethyl-		0.17	0.13							0.42	0.32								
42		622-96-8	Toluene, 4-ethyl-		0.22	0.15							0.54	0.37								
43		31017-40-0	Cyclohexene, 4-phenyl																			
44		71-43-2	Benzene	0.22		1.00	0.23	0.54	0.03					1.94	0.02	0.78				3.75	0.83	0.14
45		526-73-8	Benzene, 1,2,3-trimethyl-		0.08								0.20									
46		95-63-6	Benzene, 1,2,4-trimethyl-																			
47		95-47-6	Benzene, 1,2-dimethyl-		0.39	0.23	0.10						0.98	0.58	0.24					2.07	0.68	1.00
48		108-67-8	Benzene, 1,3,5-trimethyl-		0.31	0.25		0.03	0.02				0.76	0.63		0.08	0.05			2.51	0.90	0.98
49		108-38-3	Benzene, 1,3-dimethyl-		7.88	4.67	0.82	0.32	0.16	0.11	0.04		19.70	11.68	2.05	0.81	0.40	0.26	0.10	108.14	1.30	0.99
50		98-82-8	Benzene, isopropyl																			
51		103-65-1	Benzene, propyl-		0.42	0.30							1.06	0.75								
52		100-41-4	Ethylbenzene		2.73	1.49	0.25	0.10	0.06	0.03	0.01		6.82	3.73	0.62	0.24	0.14	0.08	0.03	37.09	1.33	1.00
53		91-20-3	Naphthalene																			
54		99-87-6	p-Cymene																			
55		100-42-5	Styrene		1.40	1.25	0.20	0.13	0.06				3.50	3.12	0.49	0.33	0.16			13.86	1.01	0.97
56		108-88-3	Toluene	0.04	0.33	0.30	0.25	0.10	0.07	0.10			0.73	0.64	0.52	0.13	0.08	0.14		1.85	0.62	0.80
57		98-83-9	2-Phenylpropene						0.18								0.45					
58		95-13-6	Indene																			
59	Esters	108-21-4	Acetic acid, 1-methylethyl		0.50								1.24									
60		111-15-9	Acetic acid, 2-ethoxyethyl																			
61		123-86-4	Acetic acid, butyl ester																			
62		141-78-6	Acetic acid, ethyl ester																			
63		80-62-6	Methyl methacrylate																			
64		103-09-3	2-Ethylhexyl acetate																			
65		96-48-0	Butyrolactone																			
66		25265-77-4	Texanol		16495	19047	4428	2436	1627	1128	562		41236	47616	11069	6090	4068	2819	1406	161168	0.87	0.97
67		6846-50-0	TXIB		43.07	35.87	9.61	5.99	4.61	3.93	2.43		107.69	89.68	24.02	14.98	11.52	9.83	6.07	273.64	0.73	0.99

Table A. 28 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3.1 h	6.1 h	24 h	48.3 h	72.2 h	96.1 h	192.1 h	0 h	3.1 h	6.1 h	24 h	48.3 h	72.2 h	96.1 h	192.1 h	a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		20585	11864	2276	946	470	419	203		51463	29659	5690	2365	1176	1047	508	2.1E+05	1.17	1.00
69		110-49-6	2-Methoxyethylacetate																			
70		111-90-0	Diethylene glycol monoeth		3.04	1.83	0.40		0.17	0.14			7.60	4.58	1.00		0.43	0.36		21.73	0.92	0.99
71		107-98-2	Propanol, 1-methoxy-2-																			
72		111-76-2	Ethanol, 2-butoxy-		0.93								2.31									
73		112-34-5	Ethanol, 2-butoxyethoxy-		22.43	15.44	3.13	1.28	0.62	0.36			56.07	38.60	7.83	3.19	1.56	0.90		284.40	1.20	0.98
74		110-80-5	Ethanol, 2-ethoxy-		1.13								2.83									
75		109-86-4	Ethanol, 2-methoxy-																			
76		75-65-0	Propanol, 2-methyl-2-																			
77		5131-66-8	Proylene glycol monobuty																			
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																			
79		95-50-1	1,2-Dichlorobenzene																			
80		107-06-2	1,2-Dichloroethane																			
81		78-87-5	1,2-Dichloropropane																			
82		106-46-7	1,4-Dichlorobenzene																			
83		75-27-4	Bromodichloromethane																			
84		56-23-5	Carbon tetrachloride	0.31																		
85		67-66-3	Chloroform																			
86		124-48-1	Dibromochloromethane																			
87		75-09-2	Dichloromethane																			
88		127-18-4	Tetrachloroethylene																			
89		79-01-6	Trichloroethylene		1.27	0.18	0.95	0.03	0.02	0.04			3.17	0.45	2.38	0.08	0.05	0.09		8.16	1.03	0.62
90		79-34-5	1,1,2,2-Tetrachloroethane																			
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																			
92		110-82-7	Cyclohexane																			
93		1678-93-9	Cyclohexane, butyl-																			
94		1678-91-7	Cyclohexane, ethyl-																			
95		1678-92-8	Cyclohexane, propyl-																			
96		91-17-8	Decahydronaphthalene																			
97	Terpenes	80-56-8	alpha-Pinene																			
98		99-86-5	alpha-Terpinene																			
99		127-91-3	beta-Pinene																			
100		99-85-4	gamma-Terpinene																			
101		13466-78-9	3-Carene																			
102		79-92-5	Camphene																			
103		5989-27-5	Limonene																			
104	Acids	64-19-7	Acetic acid		37.16	41.52	18.29	21.24	9.55	11.91	11.91		92.90	103.80	45.72	53.11	23.89	29.78	29.78	155.43	0.35	0.83
105		79-31-2	Isobutyric acid			17.17	7.40	3.11	1.86	1.17	0.77			42.92	18.51	7.77	4.66	2.92	1.93	283.92	0.95	0.97
106		107-92-6	Butyric acid																			
107		111-14-8	Heptanoic acid																			
108		149-57-5	2-Ethylhexanoic acid																			
109		142-62-1	Hexanoic acid																			
110		109-52-4	Pentanoic Acid																			
111	Other	3777-69-3	Furan, 2-pentyl		0.21								0.54									
112		872-50-4	2-Pyrrolidinone, 1-methyl-																			
113		123-91-1	1,4-Dioxane																			
114		78-40-0	Triethyl phosphate																			
115		142-96-1	n-Butyl ether		143.07	104.17	24.94	10.40	4.38	2.14	0.46		357.69	260.43	62.35	25.99	10.95	5.34	1.14	2.8E+03	1.35	0.95
116		96-29-7	2-Butanone oxime																			
117		121-44-8	Triethylamine																			
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3.9 h	6.7 h	24.9 h	49.3 h	73.5 h	97.3 h	193.5 h	0 h	3.9 h	6.7 h	24.9 h	49.3 h	73.5 h	97.3 h	193.5 h	a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	2.6	35.7	10.5	7.9	5.2	4.2	0.2	0.1		82.7	19.6	13.2	6.4	3.9			189.02	0.89	0.90
119		50-00-0	Formaldehyde	1.0	5.9	5.2	3.5	2.4	2.2	0.4	0.2		12.4	10.7	6.3	3.6	3.0			26.31	0.49	0.98
120		123-38-6	Propanal		2.8	1.7	1.6	1.3	0.7				6.9	4.1	4.1	3.3	1.6			10.45	0.36	0.75
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	2.7 h	5.8 h	24 h	48.3 h	72.2 h	96.1 h	192.1 h	0 h	2.7 h	5.8 h	24 h	48.3 h	72.2 h	96.1 h	192.1 h	a	b	R^2
121	PFPH	107-02-8	Acrolein	2.6	13.8	4.0	3.3	1.1	0.3		0.0		28.0	3.5	1.7					56.88	1.19	0.82

Note: Levels below the method detection limit are highlighted.

Table A. 29: Small-scale chamber concentration & emission factor for PT13c1 (interior, acrylic latex, dark color, VOC < 150 g/L)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48.2 h	72.1 h	96 h	192 h	0 h	3 h	6 h	24 h	48.2 h	72.1 h	96 h	192 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.54	86.42	50.85	13.38	7.34	4.33	3.42	1.78		214.70	125.78	32.10	17.00	9.48	7.21	3.10	745.55	1.02	1.00
2		71-23-8	1-Propanol																			
3		104-76-7	Hexanol, 2-ethyl-1-	0.72	4.12	3.32	2.17	1.73	1.46	1.16	0.78		8.50	6.50	3.63	2.53	1.85	1.09	0.14	31.55	0.80	0.77
4		67-63-0	2-Propanol		0.68	0.52	0.09		0.04				1.70	1.31	0.23		0.10			1.97	0.34	0.37
5		64-17-5	Ethanol																			
6		108-95-2	Phenol	0.21	6.40	7.95	3.05	3.21	1.28	1.46	0.66		15.48	19.35	7.11	7.49	2.67	3.13	1.14	46.62	0.62	0.86
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.63	0.48			0.07				1.56	1.21			0.17					
8		67-64-1	Acetone	0.34	21.00	17.71	2.15	1.73	1.04	0.82	0.56		51.64	43.42	4.51	3.46	1.75	1.18	0.55	229.83	1.14	0.98
9		98-86-2	Acetophenone	0.13	15.33	10.10	1.94	1.22	0.78	0.76	0.55		37.99	24.93	4.53	2.73	1.63	1.58	1.04	106.20	0.93	0.98
10		108-94-1	Cyclohexanone																			
11		108-10-1	Methylisobutyl ketone		0.38	0.40							0.96	1.00								
12		100-52-7	Benzaldehyde	0.46	21.45	15.94	3.92	2.40	1.44	1.50	0.98		52.49	38.70	8.65	4.86	2.45	2.60	1.32	168.35	0.93	0.99
13		123-72-8	Butanal		7.52	4.71	0.89						18.80	11.77	2.22					66.81	1.06	0.99
14		112-31-2	Decanal		6.86	4.47	1.06	0.64	0.52				17.15	11.18	2.66	1.60	1.31			45.86	0.85	0.99
15		3913-81-3	2-Decenal		20.41	12.40							51.03	31.00								
16		98-01-1	Furfural		1.26	1.41	0.39						3.14	3.53	0.96							
17		111-71-7	Heptanal			1.37	0.92	0.59						3.44	2.29	1.48				7.11	0.39	0.96
18		66-25-1	Hexanal		26.78	19.97	6.35	3.00	1.63	0.81	0.56		66.96	49.94	15.89	7.49	4.07	2.02	1.40	261.55	0.98	0.97
19		124-19-6	Nonanal		5.23	4.15	1.19	0.82	0.49	0.33	0.21		13.06	10.39	2.96	2.05	1.21	0.82	0.53	36.99	0.80	0.98
20		18829-56-6	2-Nonenal																			
21		124-13-0	Octanal		1.46								3.65									
22		2548-87-0	2-Octenal																			
23		110-62-3	Pentanal		3.98								9.94									
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																			
25		96-14-0	Pentane, 3-methyl-																			
26		540-84-1	2,2,4-Trimethylpentane																			
27		108-08-7	2,4-Dimethylpentane																			
28		124-18-5	Decane		0.71	0.48							1.78	1.21								
29		112-40-3	Dodecane			0.76								1.90								
30		142-82-5	Heptane		0.52								1.29									
31		544-76-3	Hexadecane		0.94	1.00	0.31	0.13					2.36	2.50	0.78	0.33				6.92	0.74	0.92
32		110-54-3	Hexane																			
33		111-84-2	Nonane																			
34		111-65-9	Octane																			
35		629-62-9	Pentadecane		1.08	1.17	0.30	0.17					2.69	2.94	0.74	0.42				7.76	0.73	0.93
36		629-59-4	Tetradecane		1.25	1.08							3.12	2.69						8.25	0.74	0.98
37		629-50-5	Tridecane		0.96	0.44							2.40	1.10								
38		1120-21-4	Undecane		1.75	0.97							4.37	2.44								
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet		0.86	0.39	0.07						2.15	0.97	0.18					8.19	1.20	1.00
40		611-14-3	Toluene, 2-ethyl-	0.12																		
41		620-14-4	Toluene, 3-ethyl-		0.21								0.54									
42		622-96-8	Toluene, 4-ethyl-		0.16								0.39									
43		31017-40-0	Cyclohexene, 4-phenyl																			
44		71-43-2	Benzene	0.00		0.52	0.15	0.11	0.03	0.07	0.09			1.29	0.38	0.28	0.07	0.18	0.21			
45		526-73-8	Benzene, 1,2,3-trimethyl-		0.53	0.22							1.32	0.55								
46		95-63-6	Benzene, 1,2,4-trimethyl-		0.27								0.68									
47		95-47-6	Benzene, 1,2-dimethyl-																			
48		108-67-8	Benzene, 1,3,5-trimethyl-		0.06								0.15									
49		108-38-3	Benzene, 1,3-dimethyl-		10.69	2.17	0.09	0.04	0.03				26.72	5.44	0.23	0.10	0.07			180.10	1.93	0.98
50		98-82-8	Benzene, isopropyl		2.74	0.83							6.86	2.06								
51		103-65-1	Benzene, propyl-		0.93	0.37							2.32	0.92								
52		100-41-4	Ethylbenzene		3.14	0.67	0.03						7.86	1.68	0.08					88.25	2.20	1.00
53		91-20-3	Naphthalene		0.22								0.56									
54		99-87-6	p-Cymene																			
55		100-42-5	Styrene		1.01	0.46	0.08		0.05	0.04	0.04		2.53	1.16	0.20		0.12	0.09	0.11	5.93	0.91	0.94
56		108-88-3	Toluene	0.05	0.53	0.50	0.14	0.19	0.06	0.06	0.06		1.21	1.12	0.23	0.34	0.03	0.03	0.03	5.81	1.05	0.81
57		98-83-9	2-Phenylpropene		0.48								1.20									
58		95-13-6	Indene																			
59	Esters	108-21-4	Acetic acid, 1-methylethyl		0.51								1.27									
60		111-15-9	Acetic acid, 2-ethoxyethyl																			
61		123-86-4	Acetic acid, butyl ester																			
62		141-78-6	Acetic acid, ethyl ester		5.07	2.27							12.68	5.68								
63		80-62-6	Methyl methacrylate		0.63								1.56									
64		103-09-3	2-Ethylhexyl acetate																			
65		96-48-0	Butyrolactone																			
66		25265-77-4	Texanol		9.16	14.96	4.55	2.81	1.56	1.04	0.78		22.89	37.40	11.38	7.02	3.91	2.60	1.96	82.88	0.70	0.91
67		6846-50-0	TXIB		4.49	4.83	2.97	2.46	2.68	2.24	1.54		11.23	12.06	7.43	6.15	6.69	5.61	3.85	16.80	0.25	0.91

Table A. 29 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48.2 h	72.1 h	96 h	192 h	0 h	3 h	6 h	24 h	48.2 h	72.1 h	96 h	192 h	a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		38405.8	26691.8	4879.6	2331.8	1168.3	856.2	399.5		96014.4	66729.5	12199.1	5829.5	2920.7	2140.4	998.8	4.2E+05	1.14	0.99
69		110-49-6	2-Methoxyethylacetate																			
70		111-90-0	Diethylene glycol monoeth		3.98	2.92	0.65	0.52	0.29	0.29	0.13		9.96	7.31	1.63	1.31	0.73	0.73	0.33	26.01	0.81	0.98
71		107-98-2	Propanol, 1-methoxy-2-																			
72		111-76-2	Ethanol, 2-butoxy-		47.93	16.05	2.71	1.51	0.95	0.83	0.44		119.83	40.11	6.78	3.77	2.38	2.07	1.11	423.55	1.25	0.99
73		112-34-5	Ethanol, 2-butoxyethoxy-																			
74		110-80-5	Ethanol, 2-ethoxy-																			
75		109-86-4	Ethanol, 2-methoxy-																			
76		75-65-0	Propanol, 2-methyl-2-																			
77		5131-66-8	Proylene glycol monobuty																			
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																			
79		95-50-1	1,2-Dichlorobenzene																			
80		107-06-2	1,2-Dichloroethane																			
81		78-87-5	1,2-Dichloropropane																			
82		106-46-7	1,4-Dichlorobenzene																			
83		75-27-4	Bromodichloromethane																			
84		56-23-5	Carbon tetrachloride																			
85		67-66-3	Chloroform																			
86		124-48-1	Dibromochloromethane																			
87		75-09-2	Dichloromethane																			
88		127-18-4	Tetrachloroethylene																			
89		79-01-6	Trichloroethylene		1.19	0.85	0.03	0.57	0.01	0.21			2.98	2.11	0.08	1.43	0.02	0.52		6.34	0.84	0.37
90		79-34-5	1,1,2,2-Tetrachloroethane																			
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																			
92		110-82-7	Cyclohexane																			
93		1678-93-9	Cyclohexane, butyl-																			
94		1678-91-7	Cyclohexane, ethyl-																			
95		1678-92-8	Cyclohexane, propyl-																			
96		91-17-8	Decahydronaphthalene																			
97	Terpenes	80-56-8	alpha-Pinene																			
98		99-86-5	alpha-Terpinene																			
99		127-91-3	beta-Pinene																			
100		99-85-4	gamma-Terpinene																			
101		13466-78-9	3-Carene																			
102		79-92-5	Camphene																			
103		5989-27-5	Limonene																			
104	Acids	64-19-7	Acetic acid		69.84	100.43	36.26	38.05	33.76	21.60	10.21		174.59	251.06	90.64	95.12	84.40	54.00	25.51	413.99	0.45	0.82
105		79-31-2	Isobutyric acid																			
106		107-92-6	Butyric acid																			
107		111-14-8	Heptanoic acid																			
108		149-57-5	2-Ethylhexanoic acid																			
109		142-62-1	Hexanoic acid																			
110		109-52-4	Pentanoic Acid																			
111	Other	3777-69-3	Furan, 2-pentyl		0.76								1.91									
112		872-50-4	2-Pyrrolidinone, 1-methyl																			
113		123-91-1	1,4-Dioxane			1.44	0.44		0.13					3.60	1.09		0.33					
114		78-40-0	Triethyl phosphate																			
115		142-96-1	n-Butyl ether		289.51	114.15	18.20	4.91	1.34	0.40			723.78	285.37	45.49	12.26	3.35	0.99		7138.88	1.78	0.96
116		96-29-7	2-Butanone oxime																			
117		121-44-8	Triethylamine																			
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3.8 h	6.7 h	24.8 h	49.3 h	73.4 h	97.3 h	193.4 h	0 h	3.8 h	6.7 h	24.8 h	49.3 h	73.4 h	97.3 h	193.4 h	a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	2.6	25.2	10.9	7.7	5.2	3.7	0.7	0.3		56.7	21.0	12.7	6.6	2.8			155.86	0.87	0.93
119		50-00-0	Formaldehyde	1.0	5.8	4.6	3.5	2.5	2.3	0.5	0.3		11.9	8.9	6.3	3.7	3.2			21.68	0.44	0.97
120		123-38-6	Propanal	0.5	2.3	1.7	1.2	0.8	0.9				4.6	3.2	1.8	0.8	1.0			9.62	0.57	0.95
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	2.7 h	5.7 h	24 h	48.2 h	72.1 h	96 h	192 h	0 h	2.7 h	5.7 h	24 h	48.2 h	72.1 h	96 h	192 h	a	b	R^2
121	PFPH	107-02-8	Acrolein	2.3	9.5	5.5	1.6	1.3	1.4	0.8	1.8		18.0	7.9								

Note: Levels below the method detection limit are highlighted.

Table A. 30: Small-scale chamber concentration & emission factor for PT13c2 (interior, acrylic latex, light color, VOC < 150 g/L)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96 h	192.1 h	0 h	3 h	6 h	24 h	48 h	72 h	96 h	192.1 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.63	82.27	40.50	12.72	6.76	4.23	3.16	1.81		204.09	99.68	30.22	15.32	8.99	6.32	2.95	643.92	1.00	1.00
2		71-23-8	1-Propanol																			
3		104-76-7	Hexanol, 2-ethyl-1-	1.31	5.42	4.93	4.09	2.36	2.13	1.68	1.73		10.28	9.06	6.96	2.64	2.07	0.95	1.07	26.75	0.62	0.88
4		67-63-0	2-Propanol		44.78	28.38	4.93	1.20	0.27				111.96	70.95	12.32	3.00	0.69			892.10	1.53	0.95
5		64-17-5	Ethanol																			
6		108-95-2	Phenol	0.33	6.93	5.12	2.73	1.04	1.26	0.92	0.53		16.50	11.97	6.01	1.77	2.32	1.48	0.51	49.71	0.80	0.94
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.90	0.76	0.19						2.26	1.89	0.47					6.20	0.79	0.95
8		67-64-1	Acetone	0.20	31.20	20.72	4.28	2.74	0.93	0.74	0.80		77.51	51.31	10.20	6.34	1.81	1.35	1.51	291.81	1.08	0.95
9		98-86-2	Acetophenone	0.16	1.99	5.70	0.89	0.40	0.53	0.37	0.25		4.58	13.85	1.81	0.59	0.92	0.52	0.21	25.84	0.87	0.85
10		108-94-1	Cyclohexanone																			
11		108-10-1	Methylisobutyl ketone		0.64	0.43							1.59	1.06								
12		100-52-7	Benzaldehyde	0.47	32.86	19.80	5.46	2.63	2.02	1.64	1.03		80.96	48.32	12.47	5.40	3.87	2.92	1.40	263.56	0.99	1.00
13		123-72-8	Butanal		8.80	4.43	1.72						22.01	11.08	4.30					48.29	0.77	0.99
14		112-31-2	Decanal			1.57	1.10		0.33					3.92	2.75		0.81			13.78	0.62	0.87
15		3913-81-3	2-Decenal																			
16		98-01-1	Furfural		1.46	1.60		0.31					3.65	4.00		0.77				8.96	0.62	0.92
17		111-71-7	Heptanal		4.17	2.98				0.20			10.42	7.46				0.49		32.31	0.91	0.99
18		66-25-1	Hexanal		34.76	23.50	7.50	2.59	1.24	0.61	0.63		86.89	58.74	18.76	6.48	3.09	1.53	1.56	363.33	1.08	0.96
19		124-19-6	Nonanal		4.76	3.62	1.65	0.68	0.53	0.30	0.35		11.91	9.05	4.12	1.71	1.31	0.75	0.88	29.74	0.72	0.95
20		18829-56-6	2-Nonenal																			
21		124-13-0	Octanal				0.49								1.23							
22		2548-87-0	2-Octenal																			
23		110-62-3	Pentanal		6.25	4.84	0.86						15.64	12.11	2.14					55.73	1.00	0.95
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																			
25		96-14-0	Pentane, 3-methyl-																			
26		540-84-1	2,2,4-Trimethylpentane																			
27		108-08-7	2,4-Dimethylpentane																			
28		124-18-5	Decane		0.88	0.55							2.21	1.38								
29		112-40-3	Dodecane																			
30		142-82-5	Heptane																			
31		544-76-3	Hexadecane																			
32		110-54-3	Hexane																			
33		111-84-2	Nonane																			
34		111-65-9	Octane																			
35		629-62-9	Pentadecane																			
36		629-59-4	Tetradecane		1.12	0.62	0.21						2.81	1.54	0.52					6.67	0.80	1.00
37		629-50-5	Tridecane																			
38		1120-21-4	Undecane			0.49								1.21								
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet		0.07								0.18									
40		611-14-3	Toluene, 2-ethyl-																			
41		620-14-4	Toluene, 3-ethyl-		0.25	0.14							0.62	0.35								
42		622-96-8	Toluene, 4-ethyl-		0.31	0.14							0.77	0.35								
43		31017-40-0	Cyclohexene, 4-phenyl																			
44		71-43-2	Benzene		0.09	0.62	0.19	0.21		0.01			0.23	1.56	0.47	0.52		0.04		19.55	1.01	0.71
45		526-73-8	Benzene, 1,2,3-trimethyl-																			
46		95-63-6	Benzene, 1,2,4-trimethyl-																			
47		95-47-6	Benzene, 1,2-dimethyl-		1.16	0.42							2.91	1.05								
48		108-67-8	Benzene, 1,3,5-trimethyl-		0.62	0.29	0.07						1.56	0.71	0.17					4.80	1.05	1.00
49		108-38-3	Benzene, 1,3-dimethyl-		14.07	4.78	0.88	0.34	0.17	0.10	0.06		35.18	11.94	2.19	0.85	0.42	0.26	0.15	143.56	1.34	1.00
50		98-82-8	Benzene, isopropyl																			
51		103-65-1	Benzene, propyl-		0.52	0.27							1.30	0.66								
52		100-41-4	Ethylbenzene		4.29	1.46	0.23	0.09	0.04	0.02	0.01		10.74	3.64	0.58	0.23	0.11	0.05	0.03	51.25	1.44	0.99
53		91-20-3	Naphthalene																			
54		99-87-6	p-Cymene																			
55		100-42-5	Styrene		2.76	1.16	0.18	0.10	0.09		0.05		6.89	2.89	0.45	0.24	0.24		0.14	15.60	0.98	0.95
56		108-88-3	Toluene	0.06	0.76	1.24	0.12	0.13	0.05	0.04	0.08		1.74	2.94	0.16	0.17			0.05	7.56	1.00	0.89
57		98-83-9	2-Phenylpropene																			
58		95-13-6	Indene																			
59	Esters	108-21-4	Acetic acid, 1-methylethy		1.05								2.63									
60		111-15-9	Acetic acid, 2-ethoxyethyl																			
61		123-86-4	Acetic acid, butyl ester																			
62		141-78-6	Acetic acid, ethyl ester		3.63	1.16							9.06	2.89								
63		80-62-6	Methyl methacrylate																			
64		103-09-3	2-Ethylhexyl acetate																			
65		96-48-0	Butyrolactone																			
66		25265-77-4	Texanol		26215.5	22105.9	6178.1	2852.4	1890.5	1427.1	879.3		65538.6	55264.8	15445.3	7131.1	4726.2	3567.9	2198.3	2.1E+05	0.88	0.99
67		6846-50-0	TXIB		55.11	44.15	13.68	6.66	5.11	4.14	3.44		137.78	110.38	34.19	16.66	12.76	10.35	8.61	342.91	0.74	0.98

Table A. 30 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	192.1 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72 h	96 h	192.1 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		23011.4	12429.3	2717.3	948.3	558.0	421.7	246.6		57528.6	31073.3	6793.2	2370.8	1395.1	1054.3	616.5	2.2E+05	1.15	0.99
69		110-49-6	2-Methoxyethylacetate																			
70		111-90-0	Diethylene glycol monoet		4.41	1.92	0.69		0.20	0.20			11.02	4.80	1.73		0.49	0.51		27.44	0.90	0.99
71		107-98-2	Propanol, 1-methoxy-2-																			
72		111-76-2	Ethanol, 2-butoxy-		3.05		0.74		0.38				7.63		1.84		0.95			15.51	0.66	1.00
73		112-34-5	Ethanol, 2-butoxyethoxy-		3.26	2.81	0.91						8.16	7.03	2.27					18.66	0.64	0.95
74		110-80-5	Ethanol, 2-ethoxy-																			
75		109-86-4	Ethanol, 2-methoxy-																			
76		75-65-0	Propanol, 2-methyl-2-																			
77		5131-66-8	Proylene glycol monobuty																			
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																			
79		95-50-1	1,2-Dichlorobenzene																			
80		107-06-2	1,2-Dichloroethane																			
81		78-87-5	1,2-Dichloropropane																			
82		106-46-7	1,4-Dichlorobenzene																			
83		75-27-4	Bromodichloromethane																			
84		56-23-5	Carbon tetrachloride	0.24																		
85		67-66-3	Chloroform																			
86		124-48-1	Dibromochloromethane																			
87		75-09-2	Dichloromethane																			
88		127-18-4	Tetrachloroethylene																			
89		79-01-6	Trichloroethylene	0.08	1.81	0.95	0.23	0.45	0.02		0.13		4.31	2.17	0.36	0.92			0.12	9.21	0.80	0.86
90		79-34-5	1,1,2,2-Tetrachloroethane																			
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																			
92		110-82-7	Cyclohexane																			
93		1678-93-9	Cyclohexane, butyl-																			
94		1678-91-7	Cyclohexane, ethyl-																			
95		1678-92-8	Cyclohexane, propyl-																			
96		91-17-8	Decahydronaphthalene																			
97	Terpenes	80-56-8	alpha-Pinene																			
98		99-86-5	alpha-Terpinene																			
99		127-91-3	beta-Pinene																			
100		99-85-4	gamma-Terpinene																			
101		13466-78-9	3-Carene																			
102		79-92-5	Camphene																			
103		5989-27-5	Limonene																			
104	Acids	64-19-7	Acetic acid		49.44	17.00	9.71	3.41	8.61	5.90	3.64		123.60	42.51	24.28	8.52	21.52	14.74	9.10	153.61	0.56	0.81
105		79-31-2	Isobutyric acid						1.36								3.41					
106		107-92-6	Butyric acid																			
107		111-14-8	Heptanoic acid																			
108		149-57-5	2-Ethylhexanoic acid																			
109		142-62-1	Hexanoic acid																			
110		109-52-4	Pentanoic Acid																			
111	Other	3777-69-3	Furan, 2-pentyl		0.51								1.27									
112		872-50-4	2-Pyrrolidinone, 1-methyl																			
113		123-91-1	1,4-Dioxane																			
114		78-40-0	Triethyl phosphate																			
115		142-96-1	n-Butyl ether		240.95	114.27	26.34	8.49	3.45	1.78	0.47		602.37	285.66	65.86	21.22	8.62	4.45	1.18	4227.40	1.47	0.97
116		96-29-7	2-Butanone oxime																			
117		121-44-8	Triethylamine																			
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3.7 h	6.7 h	24.8 h	49.1 h	73.3 h	97.3 h	193.4 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3.7 h	6.7 h	24.8 h	49.1 h	73.3 h	97.3 h	193.4 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	3.5	44.0	11.3	7.9	5.0	3.8	0.5	0.5		101.3	19.4	11.0	3.8	0.7			473.22	1.36	0.90
119		50-00-0	Formaldehyde	1.4	6.1	4.9	4.0	2.8	2.2	0.5	0.4		11.6	8.7	6.4	3.3	2.0			25.31	0.53	0.91
120		123-38-6	Propanal	0.6	2.8	1.8	1.5	0.5	0.7	0.0	0.0		5.5	3.1	2.1		0.3			21.81	0.94	0.87
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	2.7 h	5.7 h	24 h	48 h	72 h	96 h	192.1 h	Emission factor (µg m^{-2} h^{-1}) 0 h	2.7 h	5.7 h	24 h	48 h	72 h	96 h	192.1 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPH	107-02-8	Acrolein	2.0	6.5	3.0	2.4	0.4	1.4	0.4	1.1		11.2	2.4	1.0					23.39	1.05	0.90

Note: Levels below the method detection limit are highlighted.

Table A. 31: Small-scale chamber concentration & emission factor for PT13p (acrylic latex paint + primer)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72.1 h	96 h	192 h	0 h	3 h	6 h	24 h	48 h	72.1 h	96 h	192 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	1.32	129.86	62.52	20.37	13.66	8.29	0.44	3.24		321.34	152.99	47.62	30.84	17.41		4.78	955.90	0.96	0.99
2		71-23-8	1-Propanol																			
3		104-76-7	Hexanol, 2-ethyl-1-	1.91	6.70	5.13	4.42	4.05	3.42	0.19	2.85		11.98	8.04	6.28	5.34	3.76		2.34	17.57	0.36	0.95
4		67-63-0	2-Propanol		42.90	23.76	4.02	0.70	0.10				107.25	59.40	10.06	1.74	0.24			1220.89	1.78	0.92
5		64-17-5	Ethanol																			
6		108-95-2	Phenol	0.18	5.67	4.23	1.84	2.17	1.56	0.32	0.58		13.75	10.15	4.15	4.99	3.45	0.37	1.01	36.20	0.70	0.70
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		1.25	0.70							3.13	1.76								
8		67-64-1	Acetone	0.28	37.59	17.49	6.92	4.52	1.36	0.33	0.86		93.26	43.01	16.58	10.59	2.69	0.13	1.44	466.73	1.26	0.72
9		98-86-2	Acetophenone	0.13	2.21	1.63	0.69	0.63	0.66	0.31	0.36		5.21	3.74	1.38	1.25	1.33	0.44	0.58	9.67	0.56	0.90
10		108-94-1	Cyclohexanone																			
11		108-10-1	Methylisobutyl ketone		0.68	0.40							1.69	1.00								
12		100-52-7	Benzaldehyde	0.37	22.99	13.60	4.90	3.30	2.25	0.81	0.97		56.54	33.07	11.33	7.32	4.70	1.08	1.50	180.32	0.93	0.92
13		123-72-8	Butanal		6.63	4.50	1.95						16.58	11.26	4.87							
14		112-31-2	Decanal			1.89	0.78	0.72	0.41					4.71	1.94	1.79	1.03			12.70	0.56	0.94
15		3913-81-3	2-Decenal		8.64								21.61									
16		98-01-1	Furfural		1.22	0.93	0.47	0.34		0.10			3.05	2.33	1.17	0.84		0.25		7.35	0.65	0.90
17		111-71-7	Heptanal		2.73	2.27	1.40	1.04	0.57				6.82	5.67	3.49	2.60	1.43			12.19	0.44	0.92
18		66-25-1	Hexanal		20.03	16.53	7.36	4.20	1.59		0.69		50.07	41.32	18.41	10.50	3.97		1.73	168.53	0.82	0.94
19		124-19-6	Nonanal		5.00	3.56	1.71	1.34	0.83		0.54		12.49	8.89	4.27	3.35	2.09		1.35	23.21	0.54	0.99
20		18829-56-6	2-Nonenal																			
21		124-13-0	Octanal					0.60	0.27							1.51	0.67					
22		2548-87-0	2-Octenal																			
23		110-62-3	Pentanal		3.32	3.91							8.29	9.78								
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																			
25		96-14-0	Pentane, 3-methyl-																			
26		540-84-1	2,2,4-Trimethylpentane																			
27		108-08-7	2,4-Dimethylpentane																			
28		124-18-5	Decane		0.82	0.35							2.05	0.87								
29		112-40-3	Dodecane																			
30		142-82-5	Heptane																			
31		544-76-3	Hexadecane		1.09	0.62	0.23	0.17	0.11				2.74	1.54	0.58	0.42	0.27			5.67	0.70	0.99
32		110-54-3	Hexane																			
33		111-84-2	Nonane																			
34		111-65-9	Octane																			
35		629-62-9	Pentadecane		0.85								2.12									
36		629-59-4	Tetradecane		0.83	0.56			0.13				2.07	1.39			0.32			3.98	0.59	1.00
37		629-50-5	Tridecane																			
38		1120-21-4	Undecane																			
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetrame																			
40		611-14-3	Toluene, 2-ethyl-		0.24	0.24	0.10	0.05	0.02				0.60	0.60	0.24	0.12	0.05			1.81	0.74	0.91
41		620-14-4	Toluene, 3-ethyl-		1.32	1.23	0.22	0.07					3.29	3.06	0.56	0.18				14.78	1.08	0.95
42		622-96-8	Toluene, 4-ethyl-		1.80	1.37	0.22	0.06					4.51	3.42	0.55	0.15				23.44	1.25	0.97
43		31017-40-0	Cyclohexene, 4-phenyl																			
44		71-43-2	Benzene	0.07	0.83	0.72	0.01	0.19		0.10	0.08		1.91	1.62		0.30		0.08	0.01	16.34	0.92	0.91
45		526-73-8	Benzene, 1,2,3-trimethyl-		0.16	0.11							0.39	0.28								
46		95-63-6	Benzene, 1,2,4-trimethyl-		0.93	0.75	0.30	0.15	0.06				2.31	1.88	0.75	0.37	0.16			6.91	0.80	0.94
47		95-47-6	Benzene, 1,2-dimethyl-		0.88	0.50	0.10						2.20	1.25	0.26					7.27	1.04	1.00
48		108-67-8	Benzene, 1,3,5-trimethyl-		0.53	0.31	0.09	0.05					1.32	0.78	0.22	0.13				3.42	0.85	1.00
49		108-38-3	Benzene, 1,3-dimethyl-		14.65	7.36	0.83	0.32	0.14	0.02			36.63	18.40	2.07	0.80	0.35	0.06		331.64	1.69	0.95
50		98-82-8	Benzene, isopropyl		0.82	0.93	0.26	0.13	0.04				2.05	2.33	0.65	0.32	0.11			8.33	0.90	0.90
51		103-65-1	Benzene, propyl-		1.51	1.12	0.16	0.05					3.78	2.81	0.39	0.14				18.92	1.24	0.98
52		100-41-4	Ethylbenzene		5.00	2.33	0.23	0.07	0.03				12.51	5.84	0.57	0.19	0.08			84.59	1.59	1.00
53		91-20-3	Naphthalene																			
54		99-87-6	p-Cymene																			
55		100-42-5	Styrene		2.46	1.37	0.41	0.09	0.04				6.16	3.43	1.03	0.22	0.10			30.93	1.26	0.96
56		108-88-3	Toluene	0.06	0.57	0.21	0.17	0.06	0.04	0.05	0.06		1.29	0.38	0.29	0.02			0.02	3.68	1.09	0.86
57		98-83-9	2-Phenylpropene																			
58		95-13-6	Indene																			
59	Esters	108-21-4	Acetic acid, 1-methylethy																			
60		111-15-9	Acetic acid, 2-ethoxyethyl																			
61		123-86-4	Acetic acid, butyl ester																			
62		141-78-6	Acetic acid, ethyl ester		0.46								1.14									
63		80-62-6	Methyl methacrylate																			
64		103-09-3	2-Ethylhexyl acetate																			
65		96-48-0	Butyrolactone																			
66		25265-77-4	Texanol		25246	16988	4526	2763	1727	63	731		63115	42469	11315	6907	4317	157	1828	2.8E+05	1.12	0.70
67		6846-50-0	TXIB	0.44	51.74	38.20	14.74	11.57	8.51	0.29	5.19		128.25	94.39	35.74	27.83	20.18		11.88	249.07	0.58	1.00

Table A. 31 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72.1 h	96 h	192 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72.1 h	96 h	192 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		45369	25526	4946	2996	1624	62	775		113423	63816	12365	7490	4060	155	1937	5.4E+05	1.26	0.75
69		110-49-6	2-Methoxyethylacetate																			
70		111-90-0	Diethylene glycol monoet		11.06	5.36	1.28	0.69	0.51				27.65	13.39	3.20	1.72	1.27			77.96	0.98	1.00
71		107-98-2	Propanol, 1-methoxy-2-																			
72		111-76-2	Ethanol, 2-butoxy-		2.24	0.89							5.60	2.23								
73		112-34-5	Ethanol, 2-butoxyethoxy-		26.78	23.93	4.68	1.81	1.00		0.35		66.94	59.83	11.69	4.52	2.51		0.88	316.27	1.10	0.98
74		110-80-5	Ethanol, 2-ethoxy-		3.77	2.06							9.43	5.14								
75		109-86-4	Ethanol, 2-methoxy-		2.79								6.97									
76		75-65-0	Propanol, 2-methyl-2-																			
77		5131-66-8	Proylene glycol monobuty																			
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																			
79		95-50-1	1,2-Dichlorobenzene																			
80		107-06-2	1,2-Dichloroethane																			
81		78-87-5	1,2-Dichloropropane																			
82		106-46-7	1,4-Dichlorobenzene																			
83		75-27-4	Bromodichloromethane																			
84		56-23-5	Carbon tetrachloride	0.21																		
85		67-66-3	Chloroform																			
86		124-48-1	Dibromochloromethane																			
87		75-09-2	Dichloromethane																			
88		127-18-4	Tetrachloroethylene																			
89		79-01-6	Trichloroethylene	0.05	1.38	0.24	0.19	0.20	0.04	0.13	0.36		3.33	0.49	0.36	0.39		0.21	0.77	1.81	0.35	0.34
90		79-34-5	1,1,2,2-Tetrachloroethane																			
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																			
92		110-82-7	Cyclohexane																			
93		1678-93-9	Cyclohexane, butyl-																			
94		1678-91-7	Cyclohexane, ethyl-																			
95		1678-92-8	Cyclohexane, propyl-																			
96		91-17-8	Decahydronaphthalene																			
97	Terpenes	80-56-8	alpha-Pinene																			
98		99-86-5	alpha-Terpinene																			
99		127-91-3	beta-Pinene																			
100		99-85-4	gamma-Terpinene																			
101		13466-78-9	3-Carene																			
102		79-92-5	Camphene																			
103		5989-27-5	Limonene																			
104	Acids	64-19-7	Acetic acid		19.39	9.65	9.22	6.61	6.10	1.45	4.31		48.49	24.11	23.05	16.54	15.26	3.64	10.77	67.77	0.42	0.63
105		79-31-2	Isobutyric acid					5.22	5.30		2.16					13.05	13.25		5.40	210.66	0.69	0.91
106		107-92-6	Butyric acid																			
107		111-14-8	Heptanoic acid																			
108		149-57-5	2-Ethylhexanoic acid																			
109		142-62-1	Hexanoic acid																			
110		109-52-4	Pentanoic Acid																			
111	Other	3777-69-3	Furan, 2-pentyl																			
112		872-50-4	2-Pyrrolidinone, 1-methyl																			
113		123-91-1	1,4-Dioxane																			
114		78-40-0	Triethyl phosphate																			
115		142-96-1	n-Butyl ether		276.81	171.50	43.36	14.57	4.60	0.16	0.36		692.02	428.75	108.41	36.43	11.51	0.39	0.91	9838.45	1.75	0.84
116		96-29-7	2-Butanone oxime																			
117		121-44-8	Triethylamine																			
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3.7 h	6.6 h	24.8 h	49 h	73.4 h	97.3 h	193.4 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3.7 h	6.6 h	24.8 h	49 h	73.4 h	97.3 h	193.4 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	2.8	42.6	12.2	7.8	5.6	0.6	0.6	0.1		99.4	23.5	12.3	6.9				219.34	0.91	0.89
119		50-00-0	Formaldehyde	0.9	5.2	4.6	3.8	2.6	0.6	0.5	0.3		10.7	9.4	7.2	4.3				17.04	0.32	0.90
120		123-38-6	Propanal	0.4	3.4	1.5	1.6	1.1		0.0	0.1		7.4	2.8	3.0	1.8				9.74	0.43	0.72
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	2.7 h	5.7 h	24 h	48 h	72.1 h	96 h	192 h	Emission factor (µg m^{-2} h^{-1}) 0 h	2.7 h	5.7 h	24 h	48 h	72.1 h	96 h	192 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPH	107-02-8	Acrolein	2.6	13.0	6.9	2.4	1.1	1.0	2.3	0.7		26.0	10.8								

Note: Levels below the method detection limit are highlighted.

Table A. 32: Small-scale chamber concentration & emission factor for PT14 (Chalk board paint, latex, VOC < 250 g/L)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	2.5 h	6.1 h	24.1 h	48.3 h	72 h	96 h	192 h	0 h	2.5 h	6.1 h	24.1 h	48.3 h	72 h	96 h	192 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.51	5.09	3.14	2.54	1.73	2.00	1.78	1.01		11.46	6.59	5.07	3.06	3.73	3.18	1.24	16.91	0.42	0.88
2		71-23-8	1-Propanol																			
3		104-76-7	Hexanol, 2-ethyl-1-	1.98	1092.81	423.79	12.08	4.21	3.54	2.93	0.98		2727.08	1054.54	25.26	5.59	3.91	2.39		25058.4	2.08	0.98
4		67-63-0	2-Propanol																			
5		64-17-5	Ethanol		6.98	6.35	1.86	0.72					17.44	15.87	4.65	1.80				47.60	0.79	0.93
6		108-95-2	Phenol	0.41	9.80	10.59	4.93	2.22	2.18	2.14	0.73		23.47	25.45	11.30	4.52	4.42	4.33	0.80	74.06	0.71	0.85
7	Aldehydes & ketones	78-93-3	Methylethyl ketone		0.35	0.28	0.16			0.09			0.87	0.69	0.39			0.22		1.31	0.39	0.99
8		67-64-1	Acetone		14.04	17.74	7.98	2.31	0.94	0.50	0.18		35.11	44.35	19.96	5.77	2.35	1.25	0.45	216.36	1.06	0.87
9		98-86-2	Acetophenone	0.09	2.56	1.53	0.42	0.21	0.27	0.19	0.12		6.17	3.59	0.81	0.30	0.45	0.26	0.09	17.32	0.96	0.97
10		108-94-1	Cyclohexanone																			
11		108-10-1	Methylisobutyl ketone																			
12		100-52-7	Benzaldehyde	0.30	24.05	11.19	2.46	1.12	1.05	0.79	0.34		59.38	27.25	5.42	2.05	1.89	1.23	0.12	276.08	1.29	0.94
13		123-72-8	Butanal																			
14		112-31-2	Decanal																			
15		3913-81-3	2-Decenal																			
16		98-01-1	Furfural		1.11	1.11	0.25	0.22	0.16				2.77	2.77	0.62	0.54	0.41			6.10	0.64	0.93
17		111-71-7	Heptanal			1.72			0.28					4.30			0.70					
18		66-25-1	Hexanal		6.95	7.63	4.05	1.69	1.18	1.13			17.37	19.08	10.12	4.22	2.95	2.83		41.05	0.57	0.90
19		124-19-6	Nonanal				1.19	0.70	0.77	0.64	0.24				2.97	1.75	1.92	1.60	0.59	31.61	0.71	0.85
20		18829-56-6	2-Nonenal			14.36								35.90								
21		124-13-0	Octanal			0.96								2.40								
22		2548-87-0	2-Octenal																			
23		110-62-3	Pentanal			1.12	0.45							2.80	1.12							
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																			
25		96-14-0	Pentane, 3-methyl-																			
26		540-84-1	2,2,4-Trimethylpentane																			
27		108-08-7	2,4-Dimethylpentane																			
28		124-18-5	Decane		1.78	0.86	0.15						4.45	2.16	0.38					13.79	1.11	0.99
29		112-40-3	Dodecane				0.45	0.29	0.18	0.15					1.14	0.73	0.46	0.38		15.74	0.82	0.98
30		142-82-5	Heptane																			
31		544-76-3	Hexadecane		36.86	34.48	13.58	7.05	5.13	3.84	0.81		92.15	86.19	33.95	17.62	12.82	9.59	2.03	318.30	0.81	0.89
32		110-54-3	Hexane																			
33		111-84-2	Nonane		0.83	0.41							2.08	1.03								
34		111-65-9	Octane																			
35		629-62-9	Pentadecane		93.32	78.09	21.38	7.89	4.51	3.60	0.98		233.30	195.23	53.46	19.73	11.27	9.00	2.44	1014.03	1.06	0.96
36		629-59-4	Tetradecane		92.62	61.63	9.01	2.56	1.78	1.52	0.49		231.56	154.06	22.53	6.41	4.46	3.81	1.22	1046.83	1.26	0.99
37		629-50-5	Tridecane		24.58	11.77	1.28	0.56	0.45	0.31	0.10		61.44	29.43	3.21	1.41	1.12	0.78	0.26	227.68	1.28	0.99
38		1120-21-4	Undecane		5.35	1.48	0.30	0.09					13.38	3.70	0.75	0.24				45.23	1.33	1.00
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet		0.38	0.23	0.04	0.02					0.94	0.56	0.11	0.05				2.99	1.05	0.98
40		611-14-3	Toluene, 2-ethyl-		0.84	0.34	0.05						2.10	0.84	0.12					7.49	1.28	0.99
41		620-14-4	Toluene, 3-ethyl-		3.22	1.34	0.15	0.03					8.06	3.36	0.37	0.07				47.49	1.62	0.98
42		622-96-8	Toluene, 4-ethyl-		2.11	0.79	0.07	0.03					5.28	1.96	0.18	0.08				23.76	1.49	0.99
43		31017-40-0	Cyclohexene, 4-phenyl																			
44		71-43-2	Benzene					0.02	0.19	0.02						0.06	0.47	0.05				
45		526-73-8	Benzene, 1,2,3-trimethyl-		0.30	0.23							0.74	0.57								
46		95-63-6	Benzene, 1,2,4-trimethyl-		1.22	0.77	0.12						3.06	1.93	0.30					9.82	1.06	0.96
47		95-47-6	Benzene, 1,2-dimethyl-		8.90	3.58	0.21						22.24	8.94	0.52					136.72	1.71	0.97
48		108-67-8	Benzene, 1,3,5-trimethyl-		0.40	0.16	0.04	0.02					0.99	0.40	0.09	0.06				2.46	1.00	1.00
49		108-38-3	Benzene, 1,3-dimethyl-		30.60	11.49	0.60	0.12					76.51	28.73	1.50	0.31				614.55	1.91	0.99
50		98-82-8	Benzene, isopropyl		21.59	8.36	0.91	0.19	0.06				53.98	20.89	2.28	0.47	0.16			377.16	1.74	0.98
51		103-65-1	Benzene, propyl-		20.93	7.96	0.70	0.15	0.05				52.31	19.89	1.74	0.37	0.12			394.62	1.81	0.98
52		100-41-4	Ethylbenzene		12.84	4.54	0.30						32.10	11.35	0.74					187.75	1.71	0.98
53		91-20-3	Naphthalene			0.51	0.19	0.07	0.05	0.03				1.29	0.46	0.18	0.12	0.08		9.06	1.01	0.98
54		99-87-6	p-Cymene																			
55		100-42-5	Styrene		10.60	3.74	0.24	0.08	0.12	0.13	0.03		26.50	9.36	0.61	0.19	0.30	0.34	0.07	80.00	1.35	0.94
56		108-88-3	Toluene	0.04	13.52	4.25	0.12	0.09	0.06	0.08	0.06		33.70	10.53	0.21	0.13	0.05	0.12	0.05	115.56	1.64	0.92
57		98-83-9	2-Phenylpropene																			
58		95-13-6	Indene																			
59	Esters	108-21-4	Acetic acid, 1-methylethyl																			
60		111-15-9	Acetic acid, 2-ethoxyethyl																			
61		123-86-4	Acetic acid, butyl ester																			
62		141-78-6	Acetic acid, ethyl ester																			
63		80-62-6	Methyl methacrylate																			
64		103-09-3	2-Ethylhexyl acetate		621.06	239.48	8.81	2.67	2.09	1.67	0.55		1552.64	598.70	22.01	6.67	5.24	4.18	1.37	8018.73	1.71	0.98
65		96-48-0	Butyrolactone																			
66		25265-77-4	Texanol	1.39	27522	23679	12688	8018	5999	5076	905		68802	59194	31716	20042	14995	12688	2258	1.9E+05	0.67	0.82
67		6846-50-0	TXIB	0.11	43.98	45.77	25.67	31.68	15.36	11.95	2.47		109.66	114.15	63.89	78.92	38.13	29.59	5.89	295.35	0.55	0.67

Table A. 32 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	2.5 h	6.1 h	24.1 h	48.3 h	72 h	96 h	192 h	Emission factor (µg m^{-2} h^{-1}) 0 h	2.5 h	6.1 h	24.1 h	48.3 h	72 h	96 h	192 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		14094	7313	938	244	131	101	14		35234	18282	2345	610	329	251	34	2.4E+05	1.57	0.98
69		110-49-6	2-Methoxyethylacetate																			
70		111-90-0	Diethylene glycol monoetl																			
71		107-98-2	Propanol, 1-methoxy-2-																			
72		111-76-2	Ethanol, 2-butoxy-		10.40	3.55	0.92						25.99	8.88	2.29					67.34	1.07	1.00
73		112-34-5	Ethanol, 2-butoxyethoxy-		108.54	71.03	8.56	2.57	0.91	0.73			271.34	177.58	21.41	6.43	2.28	1.83		1658.62	1.47	0.97
74		110-80-5	Ethanol, 2-ethoxy-																			
75		109-86-4	Ethanol, 2-methoxy-																			
76		75-65-0	Propanol, 2-methyl-2-																			
77		5131-66-8	Proylene glycol monobuty																			
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																			
79		95-50-1	1,2-Dichlorobenzene																			
80		107-06-2	1,2-Dichloroethane																			
81		78-87-5	1,2-Dichloropropane																			
82		106-46-7	1,4-Dichlorobenzene																			
83		75-27-4	Bromodichloromethane																			
84		56-23-5	Carbon tetrachloride																			
85		67-66-3	Chloroform																			
86		124-48-1	Dibromochloromethane																			
87		75-09-2	Dichloromethane																			
88		127-18-4	Tetrachloroethylene																			
89		79-01-6	Trichloroethylene	0.11	0.58	0.20	0.17	0.16	0.19	0.10	0.13		1.15	0.20	0.13	0.11	0.18		0.04	1.15	0.59	0.77
90		79-34-5	1,1,2,2-Tetrachloroethane																			
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																			
92		110-82-7	Cyclohexane																			
93		1678-93-9	Cyclohexane, butyl-		2.03	0.91							5.07	2.27								
94		1678-91-7	Cyclohexane, ethyl-		0.47								1.17									
95		1678-92-8	Cyclohexane, propyl-																			
96		91-17-8	Decahydronaphthalene					0.15								0.38						
97	Terpenes	80-56-8	alpha-Pinene																			
98		99-86-5	alpha-Terpinene																			
99		127-91-3	beta-Pinene																			
100		99-85-4	gamma-Terpinene																			
101		13466-78-9	3-Carene																			
102		79-92-5	Camphene																			
103		5989-27-5	Limonene	0.17	2.55	1.89	0.46			0.14			5.94	4.29	0.73					17.82	0.96	0.94
104	Acids	64-19-7	Acetic acid		3.77			2.28	6.27		4.37		9.43			5.70	15.66		10.93			
105		79-31-2	Isobutyric acid				16.90	7.55	4.93	3.18					42.26	18.88	12.32	7.96		1856.37	1.18	1.00
106		107-92-6	Butyric acid																			
107		111-14-8	Heptanoic acid																			
108		149-57-5	2-Ethylhexanoic acid																			
109		142-62-1	Hexanoic acid																			
110		109-52-4	Pentanoic Acid																			
111	Other	3777-69-3	Furan, 2-pentyl																			
112		872-50-4	2-Pyrrolidinone, 1-methyl-																			
113		123-91-1	1,4-Dioxane																			
114		78-40-0	Triethyl phosphate																			
115		142-96-1	n-Butyl ether		0.51								1.27									
116		96-29-7	2-Butanone oxime																			
117		121-44-8	Triethylamine																			

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3.3 h	6.6 h	24.8 h	49.2 h	73.1 h	97 h	193 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3.3 h	6.6 h	24.8 h	49.2 h	73.1 h	97 h	193 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	2.6	35.7	10.5	7.9	5.2	4.2	0.2	0.1		82.7	19.6	13.2	6.4	3.9			166.61	0.86	0.92
119		50-00-0	Formaldehyde	1.0	5.9	5.2	3.5	2.4	2.2	0.4	0.2		12.4	10.7	6.3	3.6	3.0			24.06	0.47	0.97
120		123-38-6	Propanal		2.8	1.7	1.6	1.3	0.7				6.9	4.1	4.1	3.3	1.6			9.87	0.34	0.75

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4 h	7.1 h	25.4 h	49.1 h	73.4 h	97.4 h	168.9 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4 h	7.1 h	25.4 h	49.1 h	73.4 h	97.4 h	168.9 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPH	107-02-8	Acrolein	1.1	3.3	2.4	2.0	1.2	0.9	0.7	0.8		5.5	3.3	2.3	0.2				30.23	1.09	0.77

Note: Levels below the method detection limit are highlighted.

Table A. 33: Small-scale chamber concentration & emission factor for PT15 (interior, primer combined, latex, VOC ~ 0 g/L)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	2.5 h	6 h	24 h	48.2 h	72 h	96 h	192 h	0 h	2.5 h	6 h	24 h	48.2 h	72 h	96 h	192 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol		365.90	40.95	11.44	7.26	6.02	6.05	2.63		914.75	102.37	28.59	18.16	15.05	15.12	6.57	1164.55	1.02	0.92
2		71-23-8	1-Propanol																			
3		104-76-7	Hexanol, 2-ethyl-1-	0.11				0.26	0.14	0.41						0.37	0.08	0.76				
4		67-63-0	2-Propanol																			
5		64-17-5	Ethanol		13.55	5.61	1.14						33.88	14.03	2.85					96.63	1.10	1.00
6		108-95-2	Phenol	0.38	2.02	2.63	0.89	0.92	0.57	0.60	0.32		4.12	5.63	1.29	1.37	0.48	0.55		10.96	0.64	0.86
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.44	0.27	0.19		0.09	0.08	0.04		1.10	0.68	0.48		0.23	0.19	0.10	1.93	0.52	0.96
8		67-64-1	Acetone		9.74	10.75	2.85	0.63	0.46	0.51	0.23		24.35	26.88	7.13	1.57	1.15	1.27	0.57	95.17	0.97	0.94
9		98-86-2	Acetophenone	0.06	2.35	1.47	0.38	0.24	0.15	0.18	0.11		5.72	3.52	0.79	0.43	0.21	0.30	0.12	14.90	0.92	0.98
10		108-94-1	Cyclohexanone																			
11		108-10-1	Methylisobutyl ketone																			
12		100-52-7	Benzaldehyde	0.32	41.41	19.53	3.83	1.67	1.08	1.01	0.57		102.73	48.03	8.78	3.38	1.90	1.75	0.64	352.62	1.19	1.00
13		123-72-8	Butanal		4.71	2.71			0.50	0.37			11.78	6.78			1.26	0.93		22.77	0.69	1.00
14		112-31-2	Decanal							1.17								2.92				
15		3913-81-3	2-Decenal																			
16		98-01-1	Furfural		5.69	2.23	0.55	0.27			0.11		14.24	5.57	1.37	0.69			0.27	29.74	0.93	0.99
17		111-71-7	Heptanal		1.60	1.67	0.89	0.46	0.35				3.99	4.16	2.24	1.14	0.87			7.88	0.48	0.90
18		66-25-1	Hexanal		16.59	11.97	6.68	3.81	2.33	2.69	0.89		41.46	29.91	16.70	9.52	5.83	6.72	2.23	92.03	0.63	0.93
19		124-19-6	Nonanal		5.02	2.43	1.24		0.62	0.86			12.55	6.08	3.11		1.55	2.15		17.52	0.52	0.94
20		18829-56-6	2-Nonenal																			
21		124-13-0	Octanal		5.06								12.64									
22		2548-87-0	2-Octenal																			
23		110-62-3	Pentanal		2.07	1.58	1.06	0.50	0.42	0.29			5.17	3.94	2.64	1.26	1.06	0.73		9.72	0.52	0.94
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																			
25		96-14-0	Pentane, 3-methyl-																			
26		540-84-1	2,2,4-Trimethylpentane																			
27		108-08-7	2,4-Dimethylpentane																			
28		124-18-5	Decane		0.20		0.09						0.50		0.22							
29		112-40-3	Dodecane		6.57	4.17	0.97	0.41	0.27	0.27	0.08		16.43	10.43	2.43	1.01	0.67	0.68	0.21	52.31	1.01	0.98
30		142-82-5	Heptane		0.50	0.29							1.25	0.71								
31		544-76-3	Hexadecane	0.45		0.80	0.69	0.37	0.39	0.37				0.87	0.61							
32		110-54-3	Hexane																			
33		111-84-2	Nonane																			
34		111-65-9	Octane																			
35		629-62-9	Pentadecane	1.13	1.25	1.18	1.28	0.99	0.72	0.68	0.28		0.29	0.12	0.37							
36		629-59-4	Tetradecane	0.93	2.89	2.43	1.63	0.90	0.72	0.65	0.26		4.90	3.76	1.75					7.95	0.47	0.98
37		629-50-5	Tridecane				0.26	0.16	0.14	0.15					0.64	0.40	0.35	0.36		2.33	0.43	0.87
38		1120-21-4	Undecane																			
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																			
40		611-14-3	Toluene, 2-ethyl-			0.08	0.02							0.19	0.06							
41		620-14-4	Toluene, 3-ethyl-		0.24	0.16	0.05						0.59	0.40	0.12					1.26	0.73	0.98
42		622-96-8	Toluene, 4-ethyl-		0.20	0.12	0.04						0.50	0.29	0.11					0.98	0.70	1.00
43		31017-40-0	Cyclohexene, 4-phenyl																			
44		71-43-2	Benzene				0.24	0.05	0.29						0.59	0.14	0.72			0.52	0.08	0.00
45		526-73-8	Benzene, 1,2,3-trimethyl-		0.09								0.22									
46		95-63-6	Benzene, 1,2,4-trimethyl-				0.12								0.29							
47		95-47-6	Benzene, 1,2-dimethyl-		0.36	0.21							0.90	0.52								
48		108-67-8	Benzene, 1,3,5-trimethyl-		0.12	0.08	0.02						0.29	0.20	0.06					0.60	0.70	0.97
49		108-38-3	Benzene, 1,3-dimethyl-		22.17	10.94	2.17	0.50	0.15	0.09			55.42	27.34	5.43	1.25	0.37	0.23		347.10	1.52	0.96
50		98-82-8	Benzene, isopropyl		0.19	0.12							0.47	0.29								
51		103-65-1	Benzene, propyl-		0.99	0.55	0.13	0.05					2.47	1.37	0.32	0.12				7.39	1.03	0.98
52		100-41-4	Ethylbenzene		6.16	3.11	0.51	0.10	0.03	0.02			15.39	7.79	1.26	0.25	0.07	0.05		107.73	1.61	0.96
53		91-20-3	Naphthalene		0.42	0.28	0.13	0.05	0.04	0.03	0.02		1.04	0.71	0.32	0.13	0.11	0.08	0.05	2.41	0.73	0.98
54		99-87-6	p-Cymene																			
55		100-42-5	Styrene		8.47	3.85	0.68	0.17	0.13	0.08	0.04		21.18	9.61	1.70	0.44	0.33	0.21	0.10	82.83	1.30	0.99
56		108-88-3	Toluene	0.06	0.98	0.35	0.10	0.05	0.06	0.09	0.06		2.31	0.74	0.11		0.01	0.09	0.00	7.65	1.30	0.88
57		98-83-9	2-Phenylpropene																			
58		95-13-6	Indene																			
59	Esters	108-21-4	Acetic acid, 1-methylethyl																			
60		111-15-9	Acetic acid, 2-ethoxyethyl																			
61		123-86-4	Acetic acid, butyl ester						2.03	1.65	0.96						5.08	4.13	2.40	136.52	0.77	1.00
62		141-78-6	Acetic acid, ethyl ester																			
63		80-62-6	Methyl methacrylate		3.44	1.26	0.51						8.60	3.15	1.28					16.58	0.83	0.97
64		103-09-3	2-Ethylhexyl acetate																			
65		96-48-0	Butyrolactone																			
66		25265-77-4	Texanol		19.80	27.05	12.20	7.76	7.38	4.96	2.11		49.51	67.63	30.49	19.40	18.45	12.41	5.27	124.25	0.51	0.85
67		6846-50-0	TXIB	0.25	7.52	3.43	0.96	0.57	0.68	0.44	0.28		18.18	7.97	1.78	0.82	1.07	0.49	0.08	60.32	1.11	0.94

Table A. 33 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	2.5 h	6 h	24 h	48.2 h	72 h	96 h	192 h	Emission factor (µg m^{-2} h^{-1}) 0 h	2.5 h	6 h	24 h	48.2 h	72 h	96 h	192 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		2090.0	1366.9	223.4	53.4	26.4	18.2	2.7		5224.9	3417.1	558.6	133.5	65.9	45.5	6.8	#######	1.51	0.96
69		110-49-6	2-Methoxyethylacetate																			
70		111-90-0	Diethylene glycol monoetl		1.92	0.82							4.81	2.05								
71		107-98-2	Propanol, 1-methoxy-2-																			
72		111-76-2	Ethanol, 2-butoxy-																			
73		112-34-5	Ethanol, 2-butoxyethoxy-																			
74		110-80-5	Ethanol, 2-ethoxy-		0.88								2.21									
75		109-86-4	Ethanol, 2-methoxy-																			
76		75-65-0	Propanol, 2-methyl-2-																			
77		5131-66-8	Proylene glycol monobuty																			
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																			
79		95-50-1	1,2-Dichlorobenzene		0.12								0.30									
80		107-06-2	1,2-Dichloroethane																			
81		78-87-5	1,2-Dichloropropane																			
82		106-46-7	1,4-Dichlorobenzene																			
83		75-27-4	Bromodichloromethane																			
84		56-23-5	Carbon tetrachloride																			
85		67-66-3	Chloroform																			
86		124-48-1	Dibromochloromethane																			
87		75-09-2	Dichloromethane																			
88		127-18-4	Tetrachloroethylene																			
89		79-01-6	Trichloroethylene		2.01	0.63	0.13	0.11	0.13	0.08	0.09		5.04	1.57	0.32	0.27	0.33	0.20	0.24	6.23	0.73	0.88
90		79-34-5	1,1,2,2-Tetrachloroethane																			
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																			
92		110-82-7	Cyclohexane																			
93		1678-93-9	Cyclohexane, butyl-																			
94		1678-91-7	Cyclohexane, ethyl-																			
95		1678-92-8	Cyclohexane, propyl-																			
96		91-17-8	Decahydronaphthalene																			
97	Terpenes	80-56-8	alpha-Pinene																			
98		99-86-5	alpha-Terpinene																			
99		127-91-3	beta-Pinene																			
100		99-85-4	gamma-Terpinene																			
101		13466-78-9	3-Carene																			
102		79-92-5	Camphene																			
103		5989-27-5	Limonene		0.95	1.00	0.53	0.24	0.14	0.13			2.36	2.49	1.31	0.60	0.35	0.32		5.73	0.60	0.90
104	Acids	64-19-7	Acetic acid	6.58		28.39	12.16	5.18	10.30	6.88	8.87			54.52	13.96		9.30	0.75	5.72	220.67	0.87	0.58
105		79-31-2	Isobutyric acid																			
106		107-92-6	Butyric acid																			
107		111-14-8	Heptanoic acid																			
108		149-57-5	2-Ethylhexanoic acid																			
109		142-62-1	Hexanoic acid																			
110		109-52-4	Pentanoic Acid																			
111	Other	3777-69-3	Furan, 2-pentyl		0.17	0.19							0.43	0.48								
112		872-50-4	2-Pyrrolidinone, 1-methyl																			
113		123-91-1	1,4-Dioxane		4.50	0.80			0.14				11.25	1.99			0.36			18.51	0.96	0.93
114		78-40-0	Triethyl phosphate																			
115		142-96-1	n-Butyl ether		1369.38	484.11	74.07	34.83	22.75	20.80	7.79		3423.45	1210.27	185.17	87.07	56.87	52.00	19.48	9642.50	1.19	1.00
116		96-29-7	2-Butanone oxime																			
117		121-44-8	Triethylamine																			

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3.3 h	6.5 h	24.8 h	49.2 h	73 h	97 h	193 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3.3 h	6.5 h	24.8 h	49.2 h	73 h	97 h	193 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	2.6	25.2	10.9	7.7	5.2	3.7	0.7	0.3		56.7	21.0	12.7	6.6	2.8			137.04	0.84	0.93
119		50-00-0	Formaldehyde	1.0	5.8	4.6	3.5	2.5	2.3	0.5	0.3		11.9	8.9	6.3	3.7	3.2			20.22	0.42	0.97
120		123-38-6	Propanal	0.5	2.3	1.7	1.2	0.8	0.9				4.6	3.2	1.8	0.8	1.0			8.81	0.54	0.95

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	2.5 h	6 h	24 h	48.2 h	72 h	96 h	192 h	Emission factor (µg m^{-2} h^{-1}) 0 h	2.5 h	6 h	24 h	48.2 h	72 h	96 h	192 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPH	107-02-8	Acrolein		0.1	0.3							0.4	0.8								

Note: Levels below the method detection limit are highlighted.

Table A. 34: Small-scale chamber concentration & emission factor for PT16 (interior, latex, base for dark color, VOC < 5 g/L)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	2.5 h	5.9 h	24 h	48.1 h	72 h	96 h	192 h	0 h	2.5 h	5.9 h	24 h	48.1 h	72 h	96 h	192 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.63	906.53	125.49	34.62	22.18	17.84	16.10	7.95		2264.74	312.14	84.97	53.86	43.02	38.66	18.30	3171.32	1.02	0.94
2		71-23-8	1-Propanol																			
3		104-76-7	Hexanol, 2-ethyl-1-	15.09			2.06	1.24	0.92	1.22	0.59											
4		67-63-0	2-Propanol																			
5		64-17-5	Ethanol		17.98	6.87	0.97						44.95	17.17	2.43					158.75	1.30	1.00
6		108-95-2	Phenol	1.81	1.96	1.83	1.32	0.59	0.60	0.57	0.38		0.37	0.04								
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.41	0.43	0.18		0.10	0.09			1.04	1.07	0.44		0.26	0.22		1.92	0.47	0.96
8		67-64-1	Acetone		15.06	17.22	1.72	0.69	0.55	0.48	0.34		37.65	43.05	4.31	1.72	1.38	1.19	0.86	133.61	1.03	0.94
9		98-86-2	Acetophenone	0.13	2.28	1.24	0.36	0.21	0.16	0.21	0.14		5.36	2.77	0.57	0.20	0.07	0.19	0.02	21.73	1.22	0.94
10		108-94-1	Cyclohexanone																			
11		108-10-1	Methylisobutyl ketone																			
12		100-52-7	Benzaldehyde	0.39	51.85	20.84	4.34	1.86	1.36	1.29	0.63		128.64	51.11	9.86	3.65	2.40	2.24	0.60	424.53	1.21	0.99
13		123-72-8	Butanal		8.29	3.47	1.14	0.77	0.59	0.83			20.73	8.67	2.86	1.92	1.48	2.08		32.25	0.69	0.94
14		112-31-2	Decanal							0.58								1.46				
15		3913-81-3	2-Decenal																			
16		98-01-1	Furfural		5.56	1.99	0.55		0.21	0.20			13.90	4.97	1.39		0.53	0.50		28.44	0.92	0.99
17		111-71-7	Heptanal		2.66	1.96	0.96	0.69		0.56			6.65	4.91	2.41	1.72		1.41		10.26	0.45	0.99
18		66-25-1	Hexanal	0.87	18.55	16.01	7.98	5.10	3.38	3.46	1.20		44.19	37.85	17.77	10.56	6.25	6.47	0.82	146.94	0.79	0.83
19		124-19-6	Nonanal	0.40	3.12	2.26	1.22	0.96	0.64	0.75	0.46		6.80	4.65	2.05	1.41	0.61	0.88	0.15	18.96	0.78	0.88
20		18829-56-6	2-Nonenal																			
21		124-13-0	Octanal		1.41	0.69	0.54	0.33		0.36			3.52	1.73	1.34	0.82		0.90		4.15	0.37	0.90
22		2548-87-0	2-Octenal																			
23		110-62-3	Pentanal	0.19	2.66	2.35	1.02	0.51	0.39	0.35			6.17	5.40	2.08	0.81	0.50	0.41		16.48	0.76	0.94
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																			
25		96-14-0	Pentane, 3-methyl-																			
26		540-84-1	2,2,4-Trimethylpentane																			
27		108-08-7	2,4-Dimethylpentane																			
28		124-18-5	Decane			0.23								0.57								
29		112-40-3	Dodecane		0.83	0.70	0.36	0.21		0.12			2.07	1.75	0.89	0.52		0.31		3.99	0.53	0.96
30		142-82-5	Heptane		2.43	0.69							6.07	1.73								
31		544-76-3	Hexadecane		0.72	0.60	0.35		0.15				1.80	1.50	0.86		0.38			3.11	0.46	0.95
32		110-54-3	Hexane																			
33		111-84-2	Nonane																			
34		111-65-9	Octane																			
35		629-62-9	Pentadecane		0.76	0.61	0.27	0.15					1.91	1.53	0.67	0.38				3.55	0.55	0.97
36		629-59-4	Tetradecane		1.93	1.27	0.30	0.14			0.03		4.82	3.17	0.75	0.34			0.09	14.20	0.96	0.99
37		629-50-5	Tridecane		0.75	0.76	0.55	0.31	0.21	0.15			1.88	1.90	1.39	0.78	0.54	0.39		3.61	0.43	0.85
38		1120-21-4	Undecane		0.73	0.42		0.09					1.82	1.05		0.23				3.58	0.71	1.00
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet						0.02								0.05					
40		611-14-3	Toluene, 2-ethyl-	0.12	3.33	1.79	0.29	0.06	0.02	0.02			8.01	4.17	0.41					33.89	1.35	0.97
41		620-14-4	Toluene, 3-ethyl-		28.52	14.23	1.84	0.36	0.09	0.06			71.31	35.57	4.60	0.90	0.23	0.14		595.48	1.75	0.96
42		622-96-8	Toluene, 4-ethyl-		44.03	19.55	2.01	0.53	0.12	0.06			110.07	48.87	5.03	1.32	0.31	0.15		929.44	1.81	0.97
43		31017-40-0	Cyclohexene, 4-phenyl																			
44		71-43-2	Benzene		0.27		0.01	0.20		0.01	0.08		0.67		0.01	0.50		0.03	0.20	0.41	0.34	0.99
45		526-73-8	Benzene, 1,2,3-trimethyl-																			
46		95-63-6	Benzene, 1,2,4-trimethyl-		15.81	8.38	1.34	0.41	0.15				39.53	20.95	3.34	1.01	0.37			188.91	1.37	0.97
47		95-47-6	Benzene, 1,2-dimethyl-		0.15	0.13							0.37	0.32								
48		108-67-8	Benzene, 1,3,5-trimethyl-			0.09								0.24								
49		108-38-3	Benzene, 1,3-dimethyl-		7.85	3.38	0.22	0.05					19.63	8.46	0.55	0.13				128.63	1.74	0.99
50		98-82-8	Benzene, isopropyl																			
51		103-65-1	Benzene, propyl-		0.08	0.08							0.20	0.20								
52		100-41-4	Ethylbenzene		1.82	0.72	0.05	0.01					4.54	1.80	0.12	0.03				28.47	1.73	0.99
53		91-20-3	Naphthalene		0.48	0.38	0.12	0.05	0.04	0.02	0.02		1.19	0.95	0.30	0.13	0.11	0.06	0.05	3.17	0.81	0.97
54		99-87-6	p-Cymene		1.57	0.87	0.17	0.07	0.03				3.92	2.18	0.42	0.18	0.07			14.75	1.18	0.98
55		100-42-5	Styrene		0.31				0.05	0.04	0.03		0.78				0.13	0.09	0.07	1.30	0.55	0.99
56		108-88-3	Toluene	0.02	0.76	0.42	0.05	0.05	0.06	0.42	0.07		1.84	1.00	0.06	0.08	0.10	1.00	0.12	1.74	0.55	0.35
57		98-83-9	2-Phenylpropene																			
58		95-13-6	Indene																			
59	Esters	108-21-4	Acetic acid, 1-methylethyl																			
60		111-15-9	Acetic acid, 2-ethoxyethyl																			
61		123-86-4	Acetic acid, butyl ester		49.21	11.58	3.27	1.58	1.00	0.86	0.29		123.04	28.95	8.17	3.94	2.50	2.15	0.72	280.96	1.11	0.99
62		141-78-6	Acetic acid, ethyl ester																			
63		80-62-6	Methyl methacrylate		0.70								1.76									
64		103-09-3	2-Ethylhexyl acetate																			
65		96-48-0	Butyrolactone																			
66		25265-77-4	Texanol		153.4	287.0	307.9	148.6	132.6	105.0	17.1		383.5	717.6	769.8	371.4	331.5	262.4	42.8	1214.3	0.40	0.42
67		6846-50-0	TXIB	0.05	1.34	1.57	0.72	0.43	0.44	0.66	0.31		3.23	3.79	1.66	0.95	0.98	1.52	0.65	5.56	0.38	0.83

Table A. 34 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	2.5 h	5.9 h	24 h	48.1 h	72 h	96 h	192 h	Emission factor (µg m^{-2} h^{-1}) 0 h	2.5 h	5.9 h	24 h	48.1 h	72 h	96 h	192 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		22.0	18.1							55.0	45.2								
69		110-49-6	2-Methoxyethylacetate																			
70		111-90-0	Diethylene glycol monoet		4.67	3.89	0.40	0.13					11.66	9.71	0.99	0.32				56.34	1.29	0.95
71		107-98-2	Propanol, 1-methoxy-2-																			
72		111-76-2	Ethanol, 2-butoxy-																			
73		112-34-5	Ethanol, 2-butoxyethoxy-																			
74		110-80-5	Ethanol, 2-ethoxy-		8.08	0.83							20.19	2.08								
75		109-86-4	Ethanol, 2-methoxy-		6.54	1.13							16.36	2.83								
76		75-65-0	Propanol, 2-methyl-2-																			
77		5131-66-8	Proylene glycol monobuty																			
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																			
79		95-50-1	1,2-Dichlorobenzene																			
80		107-06-2	1,2-Dichloroethane																			
81		78-87-5	1,2-Dichloropropane																			
82		106-46-7	1,4-Dichlorobenzene																			
83		75-27-4	Bromodichloromethane																			
84		56-23-5	Carbon tetrachloride																			
85		67-66-3	Chloroform																			
86		124-48-1	Dibromochloromethane																			
87		75-09-2	Dichloromethane																			
88		127-18-4	Tetrachloroethylene																			
89		79-01-6	Trichloroethylene		1.55	1.13	0.10	0.10	0.10	0.09	0.10		3.87	2.81	0.24	0.24	0.26	0.21	0.25	6.45	0.75	0.82
90		79-34-5	1,1,2,2-Tetrachloroethane																			
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																			
92		110-82-7	Cyclohexane																			
93		1678-93-9	Cyclohexane, butyl-																			
94		1678-91-7	Cyclohexane, ethyl-																			
95		1678-92-8	Cyclohexane, propyl-																			
96		91-17-8	Decahydronaphthalene																			
97	Terpenes	80-56-8	alpha-Pinene																			
98		99-86-5	alpha-Terpinene																			
99		127-91-3	beta-Pinene																			
100		99-85-4	gamma-Terpinene																			
101		13466-78-9	3-Carene																			
102		79-92-5	Camphene																			
103		5989-27-5	Limonene		1.66	1.48	0.61	0.28	0.17	0.17			4.15	3.71	1.52	0.69	0.42	0.42		10.28	0.70	0.95
104	Acids	64-19-7	Acetic acid	1.71							7.27								13.92			
105		79-31-2	Isobutyric acid																			
106		107-92-6	Butyric acid																			
107		111-14-8	Heptanoic acid																			
108		149-57-5	2-Ethylhexanoic acid																			
109		142-62-1	Hexanoic acid																			
110		109-52-4	Pentanoic Acid																			
111	Other	3777-69-3	Furan, 2-pentyl																			
112		872-50-4	2-Pyrrolidinone, 1-methyl																			
113		123-91-1	1,4-Dioxane		7.05	1.74				0.17			17.63	4.34				0.42		34.16	0.98	0.98
114		78-40-0	Triethyl phosphate																			
115		142-96-1	n-Butyl ether		1642.84	418.81	69.79	41.78	26.24	19.73	5.07		4107.10	1047.02	174.47	104.46	65.61	49.32	12.67	#######	1.24	0.99
116		96-29-7	2-Butanone oxime																			
117		121-44-8	Triethylamine																			

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3.3 h	6.5 h	24.8 h	49.1 h	73 h	97 h	193 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3.3 h	6.5 h	24.8 h	49.1 h	73 h	97 h	193 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	3.5	44.0	11.3	7.9	5.0	3.8	0.5	0.5		101.3	19.4	11.0	3.8	0.7			403.15	1.32	0.90
119		50-00-0	Formaldehyde	1.4	6.1	4.9	4.0	2.8	2.2	0.5	0.4		11.6	8.7	6.4	3.3	2.0			23.62	0.52	0.91
120		123-38-6	Propanal	0.6	2.8	1.8	1.5	0.5	0.7	0.0	0.0		5.5	3.1	2.1		0.3			18.58	0.90	0.86

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	2.5 h	5.9 h	24 h	48.1 h	72 h	96 h	192 h	Emission factor (µg m^{-2} h^{-1}) 0 h	2.5 h	5.9 h	24 h	48.1 h	72 h	96 h	192 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFP	107-02-8	Acrolein				0.5								1.2							

Note: Levels below the method detection limit are highlighted.

Table A. 35: Small-scale chamber concentration & emission factor for PT16c1 (interior, latex, base for dark color + dark colorant, VOC < 5 g/L)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	2.5 h	5.8 h	23.9 h	48 h	72 h	95.9 h	192 h	0 h	2.5 h	5.8 h	23.9 h	48 h	72 h	95.9 h	192 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	4.85	472.86	63.66	23.36	13.57	10.44	10.06	4.64		1170.02	147.02	46.29	21.79	13.97	13.02		2051.62	1.16	0.96
2		71-23-8	1-Propanol																			
3		104-76-7	Hexanol, 2-ethyl-1-	48.33		10.33	3.84	2.68	3.06	3.59	1.36											
4		67-63-0	2-Propanol																			
5		64-17-5	Ethanol		24.08	5.85	1.22						60.19	14.63	3.05					173.61	1.30	0.99
6		108-95-2	Phenol	11.32	2.62	2.23	1.51	1.21	1.22	1.12	0.47											
7	Aldehydes & ketones	78-93-3	Methylethyl ketone		1.10	0.59	0.25	0.12	0.08	0.07	0.06		2.76	1.48	0.62	0.30	0.21	0.19	0.14	5.30	0.72	0.99
8		67-64-1	Acetone		9.89	7.46	2.62	0.95	0.52	0.49	0.36		24.72	18.64	6.55	2.38	1.30	1.23	0.89	67.98	0.85	0.97
9		98-86-2	Acetophenone	0.14	1.91	1.10	0.45	0.24	0.29	0.19	0.14		4.42	2.39	0.77	0.24	0.38	0.11		11.58	0.93	0.94
10		108-94-1	Cyclohexanone																			
11		108-10-1	Methylisobutyl ketone																			
12		100-52-7	Benzaldehyde	0.32	38.16	14.96	4.78	1.73	1.13	0.87	0.55		94.61	36.59	11.15	3.53	2.02	1.38	0.58	309.56	1.17	0.99
13		123-72-8	Butanal		4.11	2.14	1.32	0.92	0.63	0.57			10.26	5.34	3.30	2.29	1.59	1.44		15.30	0.51	0.98
14		112-31-2	Decanal	1.21																		
15		3913-81-3	2-Decenal		136.06	171.10	72.14	33.82	13.20	7.44			340.14	427.74	180.35	84.54	32.99	18.59		1215.94	0.79	0.83
16		98-01-1	Furfural		4.06	1.69	0.68	0.19					10.14	4.22	1.69	0.47				24.93	0.96	0.96
17		111-71-7	Heptanal		2.75	1.70	1.39	0.62		0.47			6.87	4.24	3.47	1.56		1.16		10.79	0.47	0.92
18		66-25-1	Hexanal		21.17	13.69	9.60	5.04	3.60	2.59	1.04		52.91	34.23	24.01	12.59	9.00	6.48	2.61	117.33	0.63	0.92
19		124-19-6	Nonanal	3.02	3.84	3.98	1.60	1.01	0.86	0.98	0.72		2.05	2.40								
20		18829-56-6	2-Nonenal																			
21		124-13-0	Octanal	0.39			0.55		0.37	0.25					0.41							
22		2548-87-0	2-Octenal																			
23		110-62-3	Pentanal		1.73	1.34	0.98	0.53		0.27			4.31	3.35	2.46	1.32		0.69		7.65	0.47	0.90
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																			
25		96-14-0	Pentane, 3-methyl-																			
26		540-84-1	2,2,4-Trimethylpentane																			
27		108-08-7	2,4-Dimethylpentane																			
28		124-18-5	Decane		15.49	3.44	0.68	0.11					38.71	8.60	1.71	0.27				161.10	1.57	0.98
29		112-40-3	Dodecane		6.00	2.44	0.68	0.22	0.18	0.15			14.99	6.09	1.71	0.56	0.44	0.39		38.56	1.04	0.99
30		142-82-5	Heptane		1.21								3.01									
31		544-76-3	Hexadecane		0.56	0.61	0.27	0.20	0.11	0.14			1.40	1.54	0.67	0.51	0.26	0.35		2.69	0.47	0.90
32		110-54-3	Hexane																			
33		111-84-2	Nonane		9.39	2.69	0.30						23.48	6.72	0.76					94.74	1.52	1.00
34		111-65-9	Octane			0.84								2.09								
35		629-62-9	Pentadecane		1.11	1.02	0.36		0.15	0.18			2.77	2.55	0.89		0.37	0.46		5.57	0.58	0.96
36		629-59-4	Tetradecane		3.35	2.78	0.61	0.28	0.26				8.37	6.94	1.53	0.70	0.66			22.36	0.84	0.97
37		629-50-5	Tridecane		2.26	1.77	0.79	0.40	0.25	0.22			5.66	4.42	1.97	0.99	0.62	0.54		12.68	0.67	0.97
38		1120-21-4	Undecane		5.85	1.29	0.31						14.62	3.24	0.77					39.33	1.27	0.98
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetrame		1.06		0.09						2.65		0.23							
40		611-14-3	Toluene, 2-ethyl-		2.95	0.87	0.10	0.02					7.36	2.17	0.25	0.04				40.47	1.71	0.98
41		620-14-4	Toluene, 3-ethyl-		21.87	6.41	0.51	0.06	0.02				54.67	16.02	1.27	0.15	0.05			488.85	2.05	0.98
42		622-96-8	Toluene, 4-ethyl-		30.07	8.10	0.63	0.11	0.03				75.18	20.25	1.58	0.28	0.07			605.21	2.01	0.99
43		31017-40-0	Cyclohexene, 4-phenyl																			
44		71-43-2	Benzene				0.26		0.04	0.18	0.00				0.66		0.10	0.46	0.00	988.86	2.12	0.63
45		526-73-8	Benzene, 1,2,3-trimethyl-		0.30	0.14							0.76	0.34								
46		95-63-6	Benzene, 1,2,4-trimethyl-		13.49	4.23	0.48						33.73	10.58	1.19					135.20	1.48	1.00
47		95-47-6	Benzene, 1,2-dimethyl-		0.74	0.26							1.84	0.66								
48		108-67-8	Benzene, 1,3,5-trimethyl-		0.16	0.09							0.39	0.23								
49		108-38-3	Benzene, 1,3-dimethyl-		74.87	18.60	0.55	0.09	0.04	0.03			187.18	46.49	1.37	0.21	0.09	0.07		1841.52	2.28	0.99
50		98-82-8	Benzene, isopropyl																			
51		103-65-1	Benzene, propyl-		0.14	0.08							0.35	0.21								
52		100-41-4	Ethylbenzene		1.63	0.45	0.02						4.07	1.12	0.06					26.25	1.91	0.99
53		91-20-3	Naphthalene		0.54	0.38	0.11	0.04	0.02				1.35	0.96	0.28	0.11	0.06			3.97	0.92	0.97
54		99-87-6	p-Cymene		1.51	0.45	0.08						3.77	1.13	0.20					11.61	1.28	1.00
55		100-42-5	Styrene		0.27	0.18	0.05	0.05		0.03	0.02		0.67	0.46	0.13	0.11		0.07	0.06	1.12	0.59	0.97
56		108-88-3	Toluene	0.03	0.69	0.35	0.07	0.04	0.04	0.08	0.09		1.63	0.79	0.09	0.02	0.02	0.10	0.13	2.07	0.80	0.59
57		98-83-9	2-Phenylpropene																			
58		95-13-6	Indene																			
59	Esters	108-21-4	Acetic acid, 1-methylethy																			
60		111-15-9	Acetic acid, 2-ethoxyethyl																			
61		123-86-4	Acetic acid, butyl ester		22.33	6.10	2.47	1.17	0.68	0.63	0.15		55.81	15.25	6.19	2.91	1.70	1.57	0.36	135.03	1.04	0.97
62		141-78-6	Acetic acid, ethyl ester																			
63		80-62-6	Methyl methacrylate																			
64		103-09-3	2-Ethylhexyl acetate																			
65		96-48-0	Butyrolactone	0.19																		
66		25265-77-4	Texanol		430.23	827.87	445.13	292.45	164.45	104.47	7.67		1075.57	2069.66	1112.82	731.13	411.13	261.16	19.18	6002.9	0.76	0.59
67		6846-50-0	TXIB	0.25	8.45	4.58	1.97	2.01	2.15	2.17	0.84		20.52	10.82	4.31	4.40	4.75	4.80	1.48	28.49	0.49	0.86

Table A. 35 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	2.5 h	5.8 h	23.9 h	48 h	72 h	95.9 h	192 h	Emission factor (µg m^{-2} h^{-1}) 0 h	2.5 h	5.8 h	23.9 h	48 h	72 h	95.9 h	192 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		16.73						0.43		41.82						1.08			
69		110-49-6	2-Methoxyethylacetate																			
70		111-90-0	Diethylene glycol monoet		8.46	3.56	0.61	0.28	0.15	0.14			21.15	8.89	1.52	0.71	0.37	0.34		64.65	1.17	1.00
71		107-98-2	Propanol, 1-methoxy-2-																			
72		111-76-2	Ethanol, 2-butoxy-	0.47																		
73		112-34-5	Ethanol, 2-butoxyethoxy-																			
74		110-80-5	Ethanol, 2-ethoxy-		7.01	0.88							17.52	2.19								
75		109-86-4	Ethanol, 2-methoxy-		5.88	0.63							14.70	1.57								
76		75-65-0	Propanol, 2-methyl-2-																			
77		5131-66-8	Proylene glycol monobuty																			
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																			
79		95-50-1	1,2-Dichlorobenzene																			
80		107-06-2	1,2-Dichloroethane																			
81		78-87-5	1,2-Dichloropropane																			
82		106-46-7	1,4-Dichlorobenzene																			
83		75-27-4	Bromodichloromethane																			
84		56-23-5	Carbon tetrachloride																			
85		67-66-3	Chloroform																			
86		124-48-1	Dibromochloromethane																			
87		75-09-2	Dichloromethane																			
88		127-18-4	Tetrachloroethylene																			
89		79-01-6	Trichloroethylene		1.55	0.37	0.18	0.11	0.09	0.10	0.19		3.87	0.93	0.44	0.27	0.23	0.26	0.48	3.30	0.54	0.71
90		79-34-5	1,1,2,2-Tetrachloroethane																			
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																			
92		110-82-7	Cyclohexane																			
93		1678-93-9	Cyclohexane, butyl-																			
94		1678-91-7	Cyclohexane, ethyl-																			
95		1678-92-8	Cyclohexane, propyl-																			
96		91-17-8	Decahydronaphthalene																			
97	Terpenes	80-56-8	alpha-Pinene		0.18								0.44									
98		99-86-5	alpha-Terpinene																			
99		127-91-3	beta-Pinene																			
100		99-85-4	gamma-Terpinene																			
101		13466-78-9	3-Carene																			
102		79-92-5	Camphene																			
103		5989-27-5	Limonene	0.29	2.92	2.16	0.44			0.11			6.57	4.70	0.40					28.58	1.29	0.93
104	Acids	64-19-7	Acetic acid							5.25	3.79							13.13	9.47			
105		79-31-2	Isobutyric acid																			
106		107-92-6	Butyric acid																			
107		111-14-8	Heptanoic acid																			
108		149-57-5	2-Ethylhexanoic acid																			
109		142-62-1	Hexanoic acid																			
110		109-52-4	Pentanoic Acid																			
111	Other	3777-69-3	Furan, 2-pentyl		0.56	0.42							1.40	1.06								
112		872-50-4	2-Pyrrolidinone, 1-methyl																			
113		123-91-1	1,4-Dioxane		4.56								11.40									
114		78-40-0	Triethyl phosphate																			
115		142-96-1	n-Butyl ether		759.23	111.99	38.67	19.30	11.66	9.26	1.86		1898.07	279.97	96.67	48.25	29.15	23.16	4.65	4265.96	1.21	0.96
116		96-29-7	2-Butanone oxime																			
117		121-44-8	Triethylamine																			
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3.2 h	6.4 h	24.7 h	49 h	73 h	96.9 h	193 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3.2 h	6.4 h	24.7 h	49 h	73 h	96.9 h	193 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	2.8	42.6	12.2	7.8	5.6	0.6	0.6	0.1		99.4	23.5	12.3	6.9				196.21	0.88	0.90
119		50-00-0	Formaldehyde	0.9	5.2	4.6	3.8	2.6	0.6	0.5	0.3		10.7	9.4	7.2	4.3				16.24	0.31	0.90
120		123-38-6	Propanal	0.4	3.4	1.5	1.6	1.1		0.0	0.1		7.4	2.8	3.0	1.8				9.27	0.41	0.73
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	2.5 h	5.8 h	23.9 h	48 h	72 h	95.9 h	192 h	Emission factor (µg m^{-2} h^{-1}) 0 h	2.5 h	5.8 h	23.9 h	48 h	72 h	95.9 h	192 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFP	107-02-8	Acrolein			0.4								1.0								

Note: Levels below the method detection limit are highlighted.

Table A. 36: Small-scale chamber concentration & emission factor for PT17 (interior, latex, VOC < 150 g/L)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})							Emission factor (µg m^{-2} h^{-1})							Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96.2 h	0 h	3 h	6 h	24 h	48 h	72 h	96.2 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.74	33.38	6.10	2.28	3.01	2.25	2.66		81.62	13.41	3.86	5.68	3.77	4.80	88.54	0.74	0.76
2		71-23-8	1-Propanol																	
3		104-76-7	Hexanol, 2-ethyl-1-	0.25	2.16	0.98	1.42	2.03	1.04	1.54		4.76	1.81	2.91	4.46	1.96	3.23	3.34	0.04	0.02
4		67-63-0	2-Propanol		2.27							5.68								
5		64-17-5	Ethanol		27.17	8.15	1.41	1.24		0.53		67.92	20.39	3.52	3.09		1.32	172.99	1.09	0.97
6		108-95-2	Phenol	0.17	5.70	5.94	3.21	2.59	1.20	1.43		13.84	14.44	7.61	6.06	2.59	3.17	29.32	0.48	0.88
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.59	0.45	0.26	0.22	0.14	0.11		1.47	1.13	0.65	0.55	0.35	0.27	2.57	0.45	0.96
8		67-64-1	Acetone	0.18	4.66	4.66	2.34	1.36	1.21	0.72		11.20	11.19	5.38	2.94	2.57	1.35	27.19	0.58	0.92
9		98-86-2	Acetophenone	0.10	0.72	0.62	0.22	0.23	0.11	0.17		1.54	1.30	0.29	0.32	0.02	0.18	5.12	0.90	0.70
10		108-94-1	Cyclohexanone		1.07							2.67								
11		108-10-1	Methylisobutyl ketone																	
12		100-52-7	Benzaldehyde	0.25	4.21	2.03	0.66	0.70	0.34	0.47		9.91	4.45	1.03	1.12	0.22	0.55	24.88	0.93	0.89
13		123-72-8	Butanal																	
14		112-31-2	Decanal																	
15		3913-81-3	2-Decenal																	
16		98-01-1	Furfural		0.83	0.67		0.18				2.06	1.69		0.45			4.20	0.57	0.99
17		111-71-7	Heptanal																	
18		66-25-1	Hexanal				1.05	1.27	1.01	1.09				2.63	3.18	2.53	2.72	2.86	0.01	0.00
19		124-19-6	Nonanal			1.01							2.52							
20		18829-56-6	2-Nonenal		4.20							10.50								
21		124-13-0	Octanal																	
22		2548-87-0	2-Octenal																	
23		110-62-3	Pentanal		0.71							1.78								
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																	
25		96-14-0	Pentane, 3-methyl-																	
26		540-84-1	2,2,4-Trimethylpentane																	
27		108-08-7	2,4-Dimethylpentane																	
28		124-18-5	Decane		1.51	0.72	0.15		0.07			3.77	1.81	0.38		0.18		10.27	0.97	0.99
29		112-40-3	Dodecane																	
30		142-82-5	Heptane																	
31		544-76-3	Hexadecane																	
32		110-54-3	Hexane																	
33		111-84-2	Nonane																	
34		111-65-9	Octane																	
35		629-62-9	Pentadecane							0.09							0.24			
36		629-59-4	Tetradecane																	
37		629-50-5	Tridecane																	
38		1120-21-4	Undecane		1.17	0.61	0.15					2.94	1.54	0.36				9.07	1.01	1.00
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet																	
40		611-14-3	Toluene, 2-ethyl-				0.02							0.04						
41		620-14-4	Toluene, 3-ethyl-																	
42		622-96-8	Toluene, 4-ethyl-																	
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene	0.06	0.01	0.29		0.01	0.06	0.03			0.57							
45		526-73-8	Benzene, 1,2,3-trimethyl-				0.02	0.02						0.06	0.05					
46		95-63-6	Benzene, 1,2,4-trimethyl-																	
47		95-47-6	Benzene, 1,2-dimethyl-		0.12							0.31								
48		108-67-8	Benzene, 1,3,5-trimethyl-		0.10	0.04		0.02				0.25	0.09		0.05			0.35	0.55	0.84
49		108-38-3	Benzene, 1,3-dimethyl-		0.35	0.32	0.09					0.88	0.81	0.22				2.26	0.71	0.93
50		98-82-8	Benzene, isopropyl																	
51		103-65-1	Benzene, propyl-																	
52		100-41-4	Ethylbenzene		0.08	0.06	0.02					0.19	0.15	0.05				0.42	0.66	0.97
53		91-20-3	Naphthalene						0.03							0.07				
54		99-87-6	p-Cymene		11.99	4.00	0.96	0.65	0.32	0.29		29.99	10.00	2.39	1.63	0.81	0.72	78.72	1.05	0.99
55		100-42-5	Styrene	0.06	0.14	0.10		0.07	0.02	0.03		0.21	0.10		0.04			0.32	0.53	0.94
56		108-88-3	Toluene	0.05	0.68	0.53	0.19	0.17	0.41	0.16		1.56	1.19	0.34	0.29	0.89	0.27	2.21	0.42	0.57
57		98-83-9	2-Phenylpropene																	
58		95-13-6	Indene																	
59	Esters	108-21-4	Acetic acid, 1-methylethyl																	
60		111-15-9	Acetic acid, 2-ethoxyethyl																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester																	
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone																	
66		25265-77-4	Texanol	6.46	8925	5574	2038	1042	725	662		22297	13920	5079	2589	1797	1639	54876.8	0.78	1.00
67		6846-50-0	TXIB		10.59	7.53	2.64	1.65	1.09	1.10		26.47	18.81	6.59	4.12	2.72	2.74	60.33	0.70	0.99

Table A. 36 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72 h	96.2 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72 h	96.2 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		30130	15475	1265	501	224	306		75324	38688	3164	1252	561	764	4.2E+05	1.47	0.98
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoeth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-		6.08	1.51						15.19	3.76							
73		112-34-5	Ethanol, 2-butoxyethoxy-		3968.32	2594.62	555.90	179.86	74.65	46.69		9920.79	6486.56	1389.76	449.66	186.62	116.72	56442.9	1.30	0.97
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-		8.14	0.83	0.38	0.44	0.38	0.44		20.36	2.08	0.96	1.09	0.95	1.09	17.37	0.71	0.69
77		5131-66-8	Proylene glycol monobuty																	
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane																	
81		78-87-5	1,2-Dichloropropane																	
82		106-46-7	1,4-Dichlorobenzene																	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform																	
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene		0.67	0.42	0.08	0.18	0.06	0.13		1.68	1.06	0.21	0.44	0.15	0.33	2.65	0.57	0.72
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane																	
92		110-82-7	Cyclohexane																	
93		1678-93-9	Cyclohexane, butyl-		0.33							0.83								
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene																	
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	
102		79-92-5	Camphene																	
103		5989-27-5	Limonene		0.97	0.53		0.22	0.15			2.43	1.32		0.55	0.38		0.40	0.54	0.98
104	Acids	64-19-7	Acetic acid	5.52	27.62	79.11	19.47	8.52	6.30	7.77		55.25	183.96	34.85	7.49	1.93	5.60	454.88	1.04	0.75
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid																	
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid																	
109		142-62-1	Hexanoic acid						0.26							0.66				
110		109-52-4	Pentanoic Acid						0.23							0.59				
111	Other	3777-69-3	Furan, 2-pentyl																	
112		872-50-4	2-Pyrrolidinone, 1-methyl-																	
113		123-91-1	1,4-Dioxane																	
114		78-40-0	Triethyl phosphate																	
115		142-96-1	n-Butyl ether		57.60	14.27	3.04	2.33	1.91	1.77		144.01	35.68	7.61	5.83	4.78	4.44	270.99	0.97	0.94
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.1 h	25.2 h	49.1 h	73.1 h	97.3 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.1 h	25.2 h	49.1 h	73.1 h	97.3 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	0.3	12.3	5.5	1.5	0.8	0.6	0.6		30.1	13.0	3.0	1.4	0.8	0.9	136.97	1.16	0.99
119		50-00-0	Formaldehyde	0.3	3.9	1.6	0.7	0.4	0.8	0.6		9.1	3.4	1.0	0.3	1.3	0.9	17.11	0.76	0.66
120		123-38-6	Propanal				0.1	0.2		0.1				0.2	0.5		0.2	0.43	0.08	0.01
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72 h	96.2 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72 h	96.2 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPH	107-02-8	Acrolein	5.7	1.6	11.3	1.0	0.7	7.7	2.1			14.0			4.9				

Note: Levels below the method detection limit are highlighted.

Table A. 37: Small-scale chamber concentration & emission factor for PT18 (recycled latex, VOC < 50 g/L)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3})								Emission factor (µg m^{-2} h^{-1})								Coefficient: E = a t^{-b} with t > 3 h		
				0 h	3 h	6 h	24 h	48 h	72 h	96.1 h	168.1 h	0 h	3 h	6 h	24 h	48 h	72 h	96.1 h	168.1 h	a	b	R^2
1	Alcohols	71-36-3	1-Butanol	0.55	132.29	41.65	10.56	6.64	5.66	5.58	4.20		329.37	102.76	25.03	15.22	12.78	12.58	9.13	581.48	0.87	0.95
2		71-23-8	1-Propanol		62.83	21.47	7.00	4.11	3.05	3.02	2.27		157.07	53.69	17.49	10.28	7.64	7.55	5.68	278.93	0.81	0.97
3		104-76-7	Hexanol, 2-ethyl-1-		219.29	157.55	21.35	7.22	4.31	3.82	2.44		548.23	393.89	53.38	18.05	10.79	9.55	6.09	2518.66	1.22	0.99
4		67-63-0	2-Propanol		25.47	6.48	3.22	1.87	1.50				63.67	16.20	8.04	4.67	3.74			109.02	0.81	0.93
5		64-17-5	Ethanol		151.83	56.62	10.18	3.25	0.73	0.22			379.56	141.54	25.45	8.11	1.82	0.54		3521.54	1.75	0.95
6		108-95-2	Phenol				9.26	4.69	2.59	2.78	1.33				23.14	11.73	6.48	6.94	3.33	500.47	0.97	0.97
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		1.74	1.83	0.84	0.40	0.22	0.16	0.12		4.34	4.58	2.10	0.99	0.55	0.41	0.31	13.84	0.73	0.94
8		67-64-1	Acetone		5.22	5.97	4.62	2.64	1.85	1.42	0.96		13.05	14.92	11.54	6.61	4.63	3.56	2.41	29.56	0.44	0.85
9		98-86-2	Acetophenone	0.09	2.63	2.77	0.77	0.31	0.18	0.27	0.12		6.35	6.71	1.71	0.56	0.23	0.45	0.09	32.47	1.06	0.93
10		108-94-1	Cyclohexanone																			
11		108-10-1	Methylisobutyl ketone																			
12		100-52-7	Benzaldehyde	0.36		6.73	2.00	0.91	0.62	0.72	0.53			15.94	4.10	1.38	0.65	0.91	0.42	118.77	1.12	0.97
13		123-72-8	Butanal				1.53								3.82							
14		112-31-2	Decanal																			
15		3913-81-3	2-Decenal																			
16		98-01-1	Furfural							0.18								0.45				
17		111-71-7	Heptanal																			
18		66-25-1	Hexanal																			
19		124-19-6	Nonanal																			
20		18829-56-6	2-Nonenal																			
21		124-13-0	Octanal																			
22		2548-87-0	2-Octenal																			
23		110-62-3	Pentanal																			
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																			
25		96-14-0	Pentane, 3-methyl-																			
26		540-84-1	2,2,4-Trimethylpentane																			
27		108-08-7	2,4-Dimethylpentane		1.38								3.46									
28		124-18-5	Decane		269.81	223.57	27.78	13.56	8.29	5.99	2.35		674.52	558.93	69.44	33.91	20.73	14.98	5.87	3432.98	1.21	0.99
29		112-40-3	Dodecane		24.33	21.59	3.51	1.07	0.73	0.47	0.24		60.82	53.98	8.78	2.68	1.83	1.18	0.61	337.39	1.22	0.98
30		142-82-5	Heptane		1.29								3.21									
31		544-76-3	Hexadecane		0.56	0.94	0.69	0.33	0.24	0.21	0.13		1.41	2.34	1.73	0.81	0.59	0.51	0.33	3.71	0.42	0.75
32		110-54-3	Hexane																			
33		111-84-2	Nonane		107.38	84.50	12.50	4.56	1.76	0.87	0.13		268.44	211.24	31.25	11.40	4.40	2.16	0.33	2987.94	1.59	0.94
34		111-65-9	Octane		26.38	24.18	1.97	0.22					65.96	60.44	4.93	0.55				777.24	1.74	0.93
35		629-62-9	Pentadecane		0.98	1.50	0.68	0.43	0.23	0.20	0.16		2.45	3.75	1.69	1.07	0.57	0.50	0.39	6.99	0.54	0.88
36		629-59-4	Tetradecane		1.75		0.53	0.24	0.19	0.14	0.10		4.39		1.34	0.60	0.48	0.35	0.25	10.63	0.73	0.99
37		629-50-5	Tridecane																			
38		1120-21-4	Undecane		232.15	180.89	26.72	9.36	5.98	4.42	2.84		580.37	452.22	66.81	23.40	14.94	11.06	7.09	2724.18	1.19	0.99
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramet		6.98	4.72	0.75	0.33	0.20	0.13	0.07		17.44	11.80	1.88	0.81	0.49	0.31	0.19	78.03	1.18	0.99
40		611-14-3	Toluene, 2-ethyl-		11.04	7.07	1.07	0.49	0.25	0.18	0.05		27.61	17.67	2.68	1.21	0.63	0.45	0.14	152.37	1.30	0.99
41		620-14-4	Toluene, 3-ethyl-		18.92	11.69	1.78	0.68	0.31	0.22	0.05		47.30	29.22	4.44	1.70	0.78	0.56	0.14	319.92	1.42	0.98
42		622-96-8	Toluene, 4-ethyl-		14.74	10.02	1.06	0.51	0.22	0.14	0.06		36.85	25.04	2.65	1.28	0.56	0.34	0.15	235.10	1.41	0.99
43		31017-40-0	Cyclohexene, 4-phenyl																			
44		71-43-2	Benzene			0.70		0.13	0.02					1.74		0.33	0.04			19.81	1.28	0.82
45		526-73-8	Benzene, 1,2,3-trimethyl-		19.98	12.77	2.29	0.90	0.49	0.37	0.14		49.94	31.94	5.72	2.25	1.22	0.92	0.34	253.11	1.25	0.99
46		95-63-6	Benzene, 1,2,4-trimethyl-		50.40	31.23	4.59	2.05	1.09	0.81	0.26		126.00	78.07	11.48	5.14	2.73	2.03	0.66	664.29	1.29	0.99
47		95-47-6	Benzene, 1,2-dimethyl-		24.85	14.83	2.10	0.63	0.25	0.15	0.04		62.11	37.07	5.25	1.57	0.64	0.37	0.09	559.19	1.60	0.98
48		108-67-8	Benzene, 1,3,5-trimethyl-		15.15	9.82	1.59	0.72	0.40	0.30	0.09		37.88	24.56	3.97	1.81	1.00	0.76	0.21	196.66	1.25	0.98
49		108-38-3	Benzene, 1,3-dimethyl-		78.52	46.22	5.54	1.42	0.50	0.25	0.07		196.29	115.54	13.85	3.55	1.24	0.63	0.18	2220.64	1.76	0.98
50		98-82-8	Benzene, isopropyl-		4.59	3.03	0.49	0.19	0.08	0.05			11.47	7.57	1.22	0.47	0.20	0.13		50.51	1.19	0.99
51		103-65-1	Benzene, propyl-		11.33	7.61	1.04	0.37	0.19	0.11			28.34	19.02	2.61	0.93	0.48	0.28		141.69	1.27	0.98
52		100-41-4	Ethylbenzene		19.77	11.67	1.29	0.28	0.10	0.06	0.02		49.44	29.17	3.23	0.70	0.26	0.15	0.04	567.24	1.78	0.98
53		91-20-3	Naphthalene								0.06								0.14			
54		99-87-6	p-Cymene		2.94	2.08	0.32	0.15	0.10	0.07	0.02		7.36	5.20	0.79	0.37	0.24	0.18	0.06	34.92	1.19	0.99
55		100-42-5	Styrene	0.13	2.65	1.91	0.22	0.13	0.08	0.09	0.05		6.32	4.46	0.25	0.02				110.28	2.10	0.94
56		108-88-3	Toluene	0.06	10.15	8.39	1.00	0.57	0.27	0.69	0.13		25.21	20.82	2.34	1.28	0.51	1.57	0.15	122.82	1.19	0.91
57		98-83-9	2-Phenylpropene																			
58		95-13-6	Indene																			
59	Esters	108-21-4	Acetic acid, 1-methylethyl																			
60		111-15-9	Acetic acid, 2-ethoxyethyl																			
61		123-86-4	Acetic acid, butyl ester																			
62		141-78-6	Acetic acid, ethyl ester																			
63		80-62-6	Methyl methacrylate																			
64		103-09-3	2-Ethylhexyl acetate																			
65		96-48-0	Butyrolactone																			
66		25265-77-4	Texanol		5523.95	7962.56	4860.80	2767.85	1596.80	1119.21	420.21		13810	19906	12152	6919.62	3992.01	2798.04	1050.52	49254	0.62	0.79
67		6846-50-0	TXIB		78.42	146.68	98.10	59.44	36.84	28.82	13.61		196.04	366.69	245.25	148.61	92.10	72.06	34.03	603.65	0.45	0.69

Table A. 37 (continued)

#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	3 h	6 h	24 h	48 h	72 h	96.1 h	168.1 h	Emission factor (µg m^{-2} h^{-1}) 0 h	3 h	6 h	24 h	48 h	72 h	96.1 h	168.1 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
68	Glycols, GlycoEthers	57-55-6	1,2-Propanediol		6968.0	10757.8	1354.1	352.3	170.1	150.1	45.0		17420.1	26894.4	3385.4	880.6	425.3	375.3	112.5	#######	1.35	0.95
69		110-49-6	2-Methoxyethylacetate																			
70		111-90-0	Diethylene glycol monoeth		34.87	41.91	4.17						87.18	104.77	10.43					433.83	1.11	0.84
71		107-98-2	Propanol, 1-methoxy-2-		23.58	5.96	0.56						58.94	14.90	1.39					398.48	1.79	1.00
72		111-76-2	Ethanol, 2-butoxy-		890.01	268.74	11.81	3.59	2.13	1.89	0.99		2225.03	671.84	29.51	8.98	5.32	4.71	2.47	#######	1.77	0.98
73		112-34-5	Ethanol, 2-butoxyethoxy-		2710.65	4189.04	1359.27	291.94	113.43	63.25	14.47		6776.61	#######	3398.17	729.85	283.57	158.13	36.18	#######	1.32	0.88
74		110-80-5	Ethanol, 2-ethoxy-																			
75		109-86-4	Ethanol, 2-methoxy-																			
76		75-65-0	Propanol, 2-methyl-2-		6.28	2.12	0.71	0.42	0.31	0.29	0.20		15.71	5.31	1.77	1.06	0.77	0.73	0.50	28.93	0.83	0.98
77		5131-66-8	Proylene glycol monobuty		38.16								95.41									
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																			
79		95-50-1	1,2-Dichlorobenzene																			
80		107-06-2	1,2-Dichloroethane																			
81		78-87-5	1,2-Dichloropropane																			
82		106-46-7	1,4-Dichlorobenzene																			
83		75-27-4	Bromodichloromethane																			
84		56-23-5	Carbon tetrachloride																			
85		67-66-3	Chloroform																			
86		124-48-1	Dibromochloromethane																			
87		75-09-2	Dichloromethane																			
88		127-18-4	Tetrachloroethylene																			
89		79-01-6	Trichloroethylene			1.98	0.34	0.20	0.18	0.11	0.09			4.94	0.85	0.49	0.45	0.28	0.22			
90		79-34-5	1,1,2,2-Tetrachloroethane																			
91	Cyclo Alkanes	108-87-2	Methylcyclohexane		4.66	3.59	0.16						11.64	8.98	0.39					111.58	1.72	0.93
92		110-82-7	Cyclohexane																			
93		1678-93-9	Cyclohexane, butyl-		38.37	32.74	5.51	2.36	1.27	0.96			95.92	81.85	13.78	5.90	3.17	2.41		395.28	1.06	0.97
94		1678-91-7	Cyclohexane, ethyl-		18.49	17.09	1.83	0.32	0.14				46.23	42.73	4.57	0.80	0.35			465.82	1.61	0.96
95		1678-92-8	Cyclohexane, propyl-		27.07	27.64	4.06	1.31	0.51	0.27			67.67	69.10	10.16	3.28	1.28	0.67		346.12	1.15	0.94
96		91-17-8	Decahydronaphthalene		20.26	17.60	3.49	1.51	0.90	0.58			50.64	44.00	8.72	3.77	2.26	1.45		189.28	0.98	0.97
97	Terpenes	80-56-8	alpha-Pinene																			
98		99-86-5	alpha-Terpinene																			
99		127-91-3	beta-Pinene																			
100		99-85-4	gamma-Terpinene																			
101		13466-78-9	3-Carene																			
102		79-92-5	Camphene																			
103		5989-27-5	Limonene				0.77	0.28	0.21						1.92	0.71	0.52			87.49	1.21	0.98
104	Acids	64-19-7	Acetic acid		3.72	71.67	17.39	15.52	7.35	10.85	4.31		9.29	179.17	43.48	38.79	18.38	27.12	10.79	53.39	0.18	0.07
105		79-31-2	Isobutyric acid		130.64	301.07	45.69	20.66	12.70	10.93	3.69		326.60	752.68	114.22	51.66	31.76	27.33	9.22	2045.11	0.97	0.90
106		107-92-6	Butyric acid																			
107		111-14-8	Heptanoic acid																			
108		149-57-5	2-Ethylhexanoic acid																			
109		142-62-1	Hexanoic acid																			
110		109-52-4	Pentanoic Acid																			
111	Other	3777-69-3	Furan, 2-pentyl																			
112		872-50-4	2-Pyrrolidinone, 1-methyl-		54.09	57.36	12.03	2.65	1.27	0.96	0.46		135.24	143.40	30.07	6.63	3.17	2.41	1.15	984.14	1.29	0.96
113		123-91-1	1,4-Dioxane		1.61		1.52	0.18	0.16	0.12	0.09		4.02		3.81	0.45	0.41	0.29	0.23	14.41	0.80	0.78
114		78-40-0	Triethyl phosphate																			
115		142-96-1	n-Butyl ether		98.44	43.07	5.49	3.53	2.80	2.69	1.67		246.10	107.68	13.72	8.84	7.01	6.72	4.17	612.16	1.03	0.96
116		96-29-7	2-Butanone oxime																			
117		121-44-8	Triethylamine		6.77								16.92									
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.3 h	169.3 h	Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.3 h	169.3 h	Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
118	DNPH	75-07-0	Acetaldehyde	1.8	2.0	1.5	0.6	2.1	1.6	1.1	1.4		0.1			0.2						
119		50-00-0	Formaldehyde	0.1	6.2	3.1	1.1	2.9	2.6	2.0	1.6		3.9	1.9	0.7	1.8	1.6	1.2	1.0	3.79	0.26	0.41
120		123-38-6	Propanal																			
#	Class	CAS #	Compound	Chamber concentration (µg m^{-3}) 0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.3 h		Emission factor (µg m^{-2} h^{-1}) 0 h	4.1 h	7.1 h	25.1 h	49.1 h	73.1 h	97.3 h		Coefficient: E = a t^{-b} with t > 3 h a	b	R^2
121	PFPH	107-02-8	Acrolein	0.7	2.6	2.1	1.7	1.3	1.5	1.1			1.2	0.9	0.6	0.4	0.5	0.3		2.12	0.41	0.91

Note: Levels below the method detection limit are highlighted.

A.3 Emission factors at 24 h for different groups of materials

Table A. 38: Emission factors (µg m^2 h^{-1}) at 24 h for VOCs emitted from wood materials

				Kitchen furniture & door			I-beam joist						Other structural				Shelving		Panel		
#	Class	CAS #		DI1	KC1	CT3	IB1	IB2	IB3	IB4	IB5	IB6	PLY4	OSB8	OSB10	SPR1	SHV1	SHV2	MDF3	PB7	PIN2
1	Alcohols	71-36-3	1-Butanol	2.7	1.3	2.5	11.9	32.9	6.4	3.9	5.2	4.0	2.2	12.0	12.3	14.3	3.3		30.9	6.7	3.5
2		71-23-8	1-Propanol				0.8	5.7											2.4		
3		104-76-7	Hexanol, 2-ethyl-1-	3.7	0.4	1.3		5.4	1.2	0.2	0.8	1.5	0.3	1.5	3.0	2.8			9.1	3.5	0.4
4		67-63-0	2-Propanol				2.4	66.0	4.9	3.0	1.5	3.1	0.4			0.8			84.9	7.2	
5		64-17-5	Ethanol	9.4		6.1	6.8	17.4	3.5	31.8	218.8	28.0		0.7	2.6	0.5	1.0		1.2	0.5	
6		108-95-2	Phenol	0.6	0.4	12.8	97.8	172.7	0.9	44.6	104.7	100.5		19.9	4.4	1.5			8.4	0.8	0.5
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone	0.4		0.6	0.3	1.7	0.8	0.6	0.7	0.5		1.4	1.3	4.1	0.7		0.9	1.0	
8		67-64-1	Acetone	10.5	0.5	3.5	30.3	212.8	3.7	5.6	2.0	9.9	4.2	121.9	8.0	105.7	10.8	4.2	467.2	502.3	12.5
9		98-86-2	Acetophenone	0.3	0.2		0.1	0.1	0.1	0.1	0.2	0.3		0.8	0.3	0.1			6.7	0.5	
10		108-94-1	Cyclohexanone			0.2								0.2	0.7				0.5	0.2	
11		108-10-1	Methylisobutyl ketone	0.5			2.0	1.2	0.2	0.4	2.6	0.6							0.6		
12		100-52-7	Benzaldehyde	0.8	0.6	0.4	0.8	2.5	1.8	1.0	1.6	2.2		1.4	1.6	0.4	0.5		52.9	2.8	0.0
13		123-72-8	Butanal	3.2		3.5	4.4	7.6	4.6	4.1	2.8	1.8		13.4	8.9	6.3	1.2		51.0	3.9	1.0
14		112-31-2	Decanal																		
15		3913-81-3	2-Decenal	5.8		3.4	0.4	1.3	2.7	1.2									3.6		
16		98-01-1	Furfural				3.5	2.8	8.6	14.8	13.9	22.3	2.0	1.5		4.5			1.9		
17		111-71-7	Heptanal	2.9		2.8	7.9	12.3	7.2	4.0	2.5	1.3		4.5	9.7	2.6			51.9	6.5	2.1
18		66-25-1	Hexanal	630.2		340.2	1618.9	757.5	2068.0	492.9	429.1	209.1	23.7	908.2	824.8	709.0	38.7	15.2	15674.6	585.7	192.5
19		124-19-6	Nonanal	3.1		1.9	29.7	20.5	4.2	5.8		2.7		1.9	3.6	1.6			38.1	7.0	0.8
20		18829-56-6	2-Nonenal			2.1	0.4	0.8	3.3	2.5	3.1	1.7		1.1	5.8				4.6		
21		124-13-0	Octanal			1.9	2.5	9.4			0.5			1.0	2.7	0.9			26.6	5.1	
22		2548-87-0	2-Octenal	27.5		19.6	6.3	5.3	106.8	25.6	15.5	13.4		9.8	79.0	4.7			70.1	3.0	
23		110-62-3	Pentanal	18.6		14.5	55.0	45.3	93.6	33.5	26.5	13.5	0.8	67.1	39.1	26.5	1.1		527.6	22.1	8.1
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-																		
25		96-14-0	Pentane, 3-methyl-																		
26		540-84-1	2,2,4-Trimethylpentane			1.2										0.2				0.1	
27		108-08-7	2,4-Dimethylpentane																		
28		124-18-5	Decane			0.1	0.1		0.2					0.6		0.5			1.0	0.1	
29		112-40-3	Dodecane	0.2		0.1	0.3	0.5					0.1		0.5	2.0			0.7	1.0	
30		142-82-5	Heptane					0.8								2.6			2.7	1.1	
31		544-76-3	Hexadecane	0.2		0.1	0.1	0.2						0.6		0.3			0.9		
32		110-54-3	Hexane				0.1	0.2						0.6					0.7		
33		111-84-2	Nonane					0.1	0.1					0.3	0.1	0.2			0.4		
34		111-65-9	Octane				0.2	0.9	0.4					0.5		0.9			2.3	0.7	
35		629-62-9	Pentadecane				0.0	0.4			0.1			0.6	0.1	0.2			1.3	0.2	
36		629-59-4	Tetradecane	0.2		0.1	0.0	0.7			0.1			0.5	0.3	1.3			2.3	0.3	
37		629-50-5	Tridecane	0.1			0.9	1.2					0.2	0.1	0.3	0.2			0.7	1.3	
38		1120-21-4	Undecane					0.1						0.5	1.7	0.2			0.5	0.2	

Note: Pink (EF > 10,000 µg m^2 h^{-1}); Yellow (1,000 < EF < 10,000 µg m^2 h^{-1}); Green (100 < EF < 1,000 µg m^2 h^{-1}); Grey (10 < EF < 100 µg m^2 h^{-1})

Table A. 38 (continued)

				Kitchen furniture & door			I-beam joist						Other structural				Shelving		Panel		
#	Class	CAS #		DI1	KC1	CT3	IB1	IB2	IB3	IB4	IB5	IB6	PLY4	OSB8	OSB10	SPR1	SHV1	SHV2	MDF3	PB7	PIN2
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetram																0.1		
40		611-14-3	Toluene, 2-ethyl-											0.1		0.0	0.1				
41		620-14-4	Toluene, 3-ethyl-											0.1		0.0			0.1		
42		622-96-8	Toluene, 4-ethyl-											0.1					0.1		
43		31017-40-0	Cyclohexene, 4-phenyl						0.1												
44		71-43-2	Benzene				0.2	0.0	0.2	0.2	0.2	0.6	0.2	0.3					1.0	0.3	0.1
45		526-73-8	Benzene, 1,2,3-trimethy											0.1			0.2		0.3		
46		95-63-6	Benzene, 1,2,4-trimethy					0.0						0.2			0.5		0.4		0.1
47		95-47-6	Benzene, 1,2-dimethyl-					0.0					0.0	0.1	0.1	0.1	2.3			0.1	
48		108-67-8	Benzene, 1,3,5-trimethy											0.1		0.0			0.1		
49		108-38-3	Benzene, 1,3-dimethyl-	0.1	0.0		0.0	0.1					0.1	0.2		0.2	6.0		0.2	0.4	
50		98-82-8	Benzene, isopropyl												0.2		0.3	0.5	0.2		
51		103-65-1	Benzene, propyl-					0.0							0.3	0.0			0.1		
52		100-41-4	Ethylbenzene	0.1		0.0		0.0					0.0	0.0	6.4	0.1	1.8		0.1	0.1	
53		91-20-3	Naphthalene	0.1		0.0		0.0						0.1		0.1			0.3		
54		99-87-6	p-Cymene	0.3		0.1	10.6	0.8	51.9	1.9	0.5	1.3	0.3	0.1	0.0	0.1	0.2		0.1	1.0	0.3
55		100-42-5	Styrene	0.3		0.0	0.1		1.2	0.1	0.1	0.2	0.1	0.1	5.9	0.1			1.2	0.1	0.2
56		108-88-3	Toluene				1.0		64.9	0.5	0.2	0.4		0.6	0.2	8.1	1.2		0.2		0.4
57		98-83-9	2-Phenylpropene																		
58		95-13-6	Indene																		
59	Esters	108-21-4	Acetic acid, 1-methyleth																		
60		111-15-9	Acetic acid, 2-ethoxyeth																		
61		123-86-4	Acetic acid, butyl ester	2.7																	
62		141-78-6	Acetic acid, ethyl ester			0.2	0.9	2.1	0.3	1.7	6.5	1.4									
63		80-62-6	Methyl methacrylate																		
64		103-09-3	2-Ethylhexyl acetate																		
65		96-48-0	Butyrolactone						1.5	1.1	1.6	1.4		6.7							
66		25265-77-4	Texanol	2.2	0.9	2.3		1.5	1.3		0.6	2.5		0.8	16.8	1.0	3.9				
67		6846-50-0	TXIB	0.8	1.1	0.6		0.9				0.3	0.1	5.9	0.6	1.4			6.1	0.1	0.1
68	Glycols & Glycol Ethers	57-55-6	1,2-Propanediol	2.8	0.9							1.9			15.6						
69		110-49-6	2-Methoxyethylacetate																		
70		111-90-0	Diethylene glycol mono																		
71		107-98-2	Propanol, 1-methoxy-2-																		
72		111-76-2	Ethanol, 2-butoxy-	3.7													36.6				
73		112-34-5	Ethanol, 2-butoxyethox												0.6						
74		110-80-5	Ethanol, 2-ethoxy-																		
75		109-86-4	Ethanol, 2-methoxy-																		
76		75-65-0	Propanol, 2-methyl-2-								1.7										
77		5131-66-8	Proylene glycol monobu																		

Note: Pink (EF > 10,000 µg m^2 h^{-1}); Yellow (1,000 < EF < 10,000 µg m^2 h^{-1}); Green (100 < EF < 1,000 µg m^2 h^{-1}); Grey (10 < EF < 100 µg m^2 h^{-1})

Table A. 38 (continued)

				Kitchen furniture & door			I-beam joist						Other structural				Shelving		Panel		
#	Class	CAS #		DI1	KC1	CT3	IB1	IB2	IB3	IB4	IB5	IB6	PLY4	OSB8	OSB10	SPR1	SHV1	SHV2	MDF3	PB7	PIN2
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																		
79		95-50-1	1,2-Dichlorobenzene																		
80		107-06-2	1,2-Dichloroethane																		
81		78-87-5	1,2-Dichloropropane																		
82		106-46-7	1,4-Dichlorobenzene				0.0			0.0											
83		75-27-4	Bromodichloromethane																		
84		56-23-5	Carbon tetrachloride																		
85		67-66-3	Chloroform											0.2					1.1		
86		124-48-1	Dibromochloromethane																		
87		75-09-2	Dichloromethane																		
88		127-18-4	Tetrachloroethylene																		
89		79-01-6	Trichloroethylene	0.1		0.2	0.2	0.3						11.4	0.2		1.4	1.6	4.2		
90		79-34-5	1,1,2,2-Tetrachloroetha																		
91	Cyclo Alkanes	108-87-2	Methylcyclohexane													12.3				3.4	
92		110-82-7	Cyclohexane		0.4											0.6				0.2	
93		1678-93-9	Cyclohexane, butyl-																		
94		1678-91-7	Cyclohexane, ethyl-													0.4					
95		1678-92-8	Cyclohexane, propyl-																		
96		91-17-8	Decahydronaphthalene																		
97	Terpenes	80-56-8	alpha-Pinene	7.8		0.8	171.6	15.9	232.5	18.7	1.5	17.9	3.3	0.7	0.1	1.0	2.9	4.6	0.7	16.6	2.5
98		99-86-5	alpha-Terpinene				4.5		29.6												
99		127-91-3	beta-Pinene	1.4		0.3	108.9	7.7	172.1	5.6	0.8	3.1	0.3	0.2		0.2	0.7	0.7	0.3	2.3	0.1
100		99-85-4	gamma-Terpinene				1.5		9.2												
101		13466-78-9	3-Carene	1.1		0.1	71.7	1.3	38.2	2.8	0.9	5.8	0.1			0.1				1.3	
102		79-92-5	Camphene	0.7			14.9	1.1	64.6	0.7	0.1	0.9				0.1				0.9	
103		5989-27-5	Limonene	2.2		0.5	37.6	3.8	64.4	5.7	0.5	12.2	0.6	0.3	0.4	0.4	0.8		0.9	1.4	0.5
104	Acids	64-19-7	Acetic acid	197.5	13.3	750.1	719.3	1015.6	834.5	1277.4	2656.2	1220.9		118.2	1696.0	326.6			984.3	21.1	24.4
105		79-31-2	Isobutyric acid			1.5													34.8		
106		107-92-6	Butyric acid			3.9	1.2	0.9	0.8	2.0	1.6	0.6			5.0				11.1		
107		111-14-8	Heptanoic acid			0.4				2.2					2.5				3.2		
108		149-57-5	2-Ethylhexanoic acid																1.1		
109		142-62-1	Hexanoic acid	10.0		10.1	9.6	7.9	45.3	10.6	5.1	3.2		6.4	200.0	5.9			922.1	4.3	
110		109-52-4	Pentanoic Acid			3.1	1.4	2.3	5.8	3.6	1.6	0.8		1.8	29.8	1.3			178.3		
111	Other	3777-69-3	Furan, 2-pentyl	1.0		0.2	13.9	5.9	6.0	3.1	3.1	0.2		11.8	7.0	1.0			80.4	0.5	
112		872-50-4	2-Pyrrolidinone, 1-meth	0.6																	
113		123-91-1	1,4-Dioxane																		
114		78-40-0	Triethyl phosphate																		
115		142-96-1	n-Butyl ether																		
116		96-29-7	2-Butanone oxime																		
117		121-44-8	Triethylamine																		
118	DN PH	75-07-0	Acetaldehyde	16.4	1.0	11.5	123.2	27.9	83.5	4.0	30.0	28.3	21.8	90.4	48.0	22.1			49.2	61.3	7.6
119		50-00-0	Formaldehyde	69.4	1.9	90.4	20.6	9.1	4.7	1.9	37.3	7.7	16.7	10.2	7.8	9.7		15.7	103.5	114.9	9.1
120		123-38-6	Propanal	3.3		4.1	9.3	6.9	11.9	0.7	2.6	0.4		32.0	17.2	14.3	1.0	1.2	18.1	10.4	
121	PFPH	107-02-8	Acrolein	0.55		1.03	3.65	2.42	4.73		0.40	0.10		1.43		1.46			2.74	5.62	0.78

Note: Pink (EF > 10,000 µg m^2 h^{-1}); Yellow (1,000 < EF < 10,000 µg m^2 h^{-1}); Green (100 < EF < 1,000 µg m^2 h^{-1}); Grey (10 < EF < 100 µg m^2 h^{-1})

Table A. 39: Emission factors (µg m^2 h^{-1}) at 24 h for VOCs emitted from insulation materials

				Spray foam (1-component)					Spray foam (2-component)			Loose (organic)		Loose (inorganic)		Foam board				Other
				MDI-based				Latex	DIY	Professional		Recycled denim	Cellulose	Stone wool	Fiber glass	XPS	EPS	EPS	Polyisocyanurate	Reflec-tive
#		CAS #		CAK32	CAK33	CAK34	SPF4	CAK35	SPF1c	SPF2	SPF3	INS3	INS4	INS5	INS9	INS7	INS8	INS2	INS10	INS6
1	Alcohols	71-36-3	1-Butanol				1.0	214.3		0.3	4.7	0.0	1.6	0.1	0.0	0.3		16.8		0.1
2		71-23-8	1-Propanol					49.9												
3		104-76-7	Hexanol, 2-ethyl-1-				0.8	22.5	0.6	0.3	1.1	0.1	0.1	0.0		0.3	0.2	16.1	0.3	0.1
4		67-63-0	2-Propanol	2.3				85759.1					2.6							
5		64-17-5	Ethanol										0.2						0.6	
6		108-95-2	Phenol	5.1	11.1	1.9	0.3	15.8			0.0	0.3		0.1		0.0		2.2		0.1
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone					15.5					0.1		0.0					
8		67-64-1	Acetone	10.3	3.6	2.2	0.4	1048.4	0.5	0.3	0.2	0.0	0.7		0.0	0.5	0.2	4.2	0.6	
9		98-86-2	Acetophenone	1.3	3.1	1.8		17.3		0.1	0.1	0.0	0.0	0.0	0.0	2.7	0.2	0.3	0.4	
10		108-94-1	Cyclohexanone										0.5							
11		108-10-1	Methylisobutyl ketone					0.9												
12		100-52-7	Benzaldehyde	2.3	3.7	2.4		27.4	0.3			0.0	0.3		0.0	1.3	0.5	11.7	0.0	0.0
13		123-72-8	Butanal					15.9					0.4							
14		112-31-2	Decanal									0.1								
15		3913-81-3	2-Decenal												0.1					
16		98-01-1	Furfural									1.1	0.2	0.3						
17		111-71-7	Heptanal										0.3							
18		66-25-1	Hexanal				4.4						60.1	0.5	0.7					
19		124-19-6	Nonanal					1.9	0.3			0.2	0.4		0.2				2.0	0.1
20		18829-56-6	2-Nonenal										0.6							
21		124-13-0	Octanal										0.1		0.0					
22		2548-87-0	2-Octenal										2.6							
23		110-62-3	Pentanal										1.7		0.1			0.3		
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-	16.1		15.9	5.3											1.7		
25		96-14-0	Pentane, 3-methyl-	7.0	1.1	6.4	2.1											0.3		
26		540-84-1	2,2,4-Trimethylpentane	1.2	2.0													0.2		
27		108-08-7	2,4-Dimethylpentane				0.6	6.6												
28		124-18-5	Decane			0.5	0.2	5.5										0.2		0.0
29		112-40-3	Dodecane	0.4		0.4		1.3					0.0						0.4	0.1
30		142-82-5	Heptane	6.1		5.5	8.2	2.4												
31		544-76-3	Hexadecane									0.1	2.6		0.0			0.1		
32		110-54-3	Hexane	17.9	2.1	16.4	20.1											0.5		
33		111-84-2	Nonane				0.4	3.1												
34		111-65-9	Octane	2.2		2.3	2.0													
35		629-62-9	Pentadecane	1.6		1.7		0.8				0.1	4.9			0.3		0.3	0.3	
36		629-59-4	Tetradecane	7.4		9.4		2.1				0.1	3.7	0.1				1.0	0.3	
37		629-50-5	Tridecane					0.3				0.0	0.3							
38		1120-21-4	Undecane	0.5		0.2		1.5												

Note: Pink (EF > 10,000 µg m^2 h^{-1}); Yellow (1,000 < EF < 10,000 µg m^2 h^{-1}); Green (100 < EF < 1,000 µg m^2 h^{-1}); Grey (10 < EF < 100 µg m^2 h^{-1})

Table A. 39 (continued)

				Spray foam (1-component)					Spray foam (2-component)			Loose (organic)		Loose (inorganic)		Foam board				Other
				MDI-based				Latex	DIY	Professional		Recycled denim	Cellulose	Stone wool	Fiber glass	XPS	EPS	EPS	Polyisocy anurate	Reflec-tive
#		CAS #		CAK32	CAK33	CAK34	SPF4	CAK35	SPF1c	SPF2	SPF3	INS3	INS4	INS5	INS9	INS7	INS8	INS2	INS10	INS6
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramethyl-					0.7					0.0							
40		611-14-3	Toluene, 2-ethyl-			0.0		153.8												
41		620-14-4	Toluene, 3-ethyl-					469.5					0.0					0.0		
42		622-96-8	Toluene, 4-ethyl-					433.3					0.0					0.1		
43		31017-40-0	Cyclohexene, 4-phenyl																	
44		71-43-2	Benzene	3.7		0.4	3.8	4.2		0.6		0.0		0.0	0.0	0.1	0.7	2.4		0.0
45		526-73-8	Benzene, 1,2,3-trimethyl-					209.8												
46		95-63-6	Benzene, 1,2,4-trimethyl-					430.9										0.1		
47		95-47-6	Benzene, 1,2-dimethyl-	0.3		0.5		93.5								0.1	0.5	0.1	0.1	
48		108-67-8	Benzene, 1,3,5-trimethyl-					178.5					0.0					0.0		
49		108-38-3	Benzene, 1,3-dimethyl-	1.5	0.2	2.6	0.4	127.2		0.1						0.1	0.6	0.1	0.2	0.0
50		98-82-8	Benzene, isopropyl					122.7									0.2			
51		103-65-1	Benzene, propyl-					285.2									0.1	0.0		
52		100-41-4	Ethylbenzene	0.3	0.1	0.3	0.1	33.7		0.1						0.4	0.7	5.6	0.1	0.0
53		91-20-3	Naphthalene	0.1				0.9				0.0	0.0	0.0				0.0		
54		99-87-6	p-Cymene					6.3												0.0
55		100-42-5	Styrene	0.4		0.8		265.5		1.4	0.2		0.0		0.0	22.9	3.1	27.9		
56		108-88-3	Toluene	63.3	114.1	6.9	3.7			0.2	0.0	0.1	0.0			0.3	0.3	7.5	1.0	0.0
57		98-83-9	2-Phenylpropene					4.0								0.6				
58		95-13-6	Indene					0.2												
59	Esters	108-21-4	Acetic acid, 1-methylethyl ester					497.1												
60		111-15-9	Acetic acid, 2-ethoxyethyl ester																	
61		123-86-4	Acetic acid, butyl ester																	
62		141-78-6	Acetic acid, ethyl ester					252.0												
63		80-62-6	Methyl methacrylate																	
64		103-09-3	2-Ethylhexyl acetate																	
65		96-48-0	Butyrolactone									0.1								
66		25265-77-4	Texanol					15.3	1.5	2.9	7.1	0.3				1.0	0.1	3.7	6.5	0.2
67		6846-50-0	TXIB	0.7		1.7	0.3	6.8				0.3	5.4		0.0	0.2		4.1	0.4	0.0
68	Glycols & Glycol Ethers	57-55-6	1,2-Propanediol					61.4				3.2	0.5							
69		110-49-6	2-Methoxyethylacetate																	
70		111-90-0	Diethylene glycol monoethyl eth																	
71		107-98-2	Propanol, 1-methoxy-2-																	
72		111-76-2	Ethanol, 2-butoxy-									0.2	1.9							
73		112-34-5	Ethanol, 2-butoxyethoxy-					3.1		0.4										
74		110-80-5	Ethanol, 2-ethoxy-																	
75		109-86-4	Ethanol, 2-methoxy-																	
76		75-65-0	Propanol, 2-methyl-2-					1612.6					0.0							
77		5131-66-8	Proylene glycol monobutyl ether																	

Note: Pink (EF > 10,000 µg m^2 h^{-1}); Yellow (1,000 < EF < 10,000 µg m^2 h^{-1}); Green (100 < EF < 1,000 µg m^2 h^{-1}); Grey (10 < EF < 100 µg m^2 h^{-1})

Table A. 39 (continued)

#		CAS #		Spray foam (1-component)					Spray foam (2-component)			Loose (organic)		Loose (inorganic)		Foam board				Other
				MDI-based				Latex	DIY	Professional		Recycled denim	Cellulose	Stone wool	Fiber glass	XPS	EPS	EPS	Polyisocyanurate	Reflec-tive
				CAK32	CAK33	CAK34	SPF4	CAK35	SPF1c	SPF2	SPF3	INS3	INS4	INS5	INS9	INS7	INS8	INS2	INS10	INS6
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane																	
79		95-50-1	1,2-Dichlorobenzene																	
80		107-06-2	1,2-Dichloroethane						1.0							0.5				
81		78-87-5	1,2-Dichloropropane	22.1	2.8	32.0	1.6		0.6	4.5	0.7								5.9	
82		106-46-7	1,4-Dichlorobenzene				0.6												0.1	
83		75-27-4	Bromodichloromethane																	
84		56-23-5	Carbon tetrachloride																	
85		67-66-3	Chloroform				0.5			0.2							0.5			
86		124-48-1	Dibromochloromethane																	
87		75-09-2	Dichloromethane																	
88		127-18-4	Tetrachloroethylene																	
89		79-01-6	Trichloroethylene	8.5							0.3				0.0	0.2		1.4		
90		79-34-5	1,1,2,2-Tetrachloroethane																	
91	Cyclo Alkanes	108-87-2	Methylcyclohexane	4.9		4.2	4.2	1.5												
92		110-82-7	Cyclohexane	3.7		3.8	2.2													
93		1678-93-9	Cyclohexane, butyl-																	
94		1678-91-7	Cyclohexane, ethyl-																	
95		1678-92-8	Cyclohexane, propyl-																	
96		91-17-8	Decahydronaphthalene																	
97	Terpenes	80-56-8	alpha-Pinene									0.0								0.1
98		99-86-5	alpha-Terpinene																	
99		127-91-3	beta-Pinene																	0.0
100		99-85-4	gamma-Terpinene																	
101		13466-78-9	3-Carene																	0.0
102		79-92-5	Camphene																	
103		5989-27-5	Limonene																	0.0
104	Acids	64-19-7	Acetic acid				3.0	2143.1		3.1	2.4	42.2	209.8		0.2	0.8	2.2			
105		79-31-2	Isobutyric acid																	
106		107-92-6	Butyric acid									0.9	0.2							
107		111-14-8	Heptanoic acid																	
108		149-57-5	2-Ethylhexanoic acid									0.1								
109		142-62-1	Hexanoic acid									0.3	0.8							
110		109-52-4	Pentanoic Acid																	
111	Other	3777-69-3	Furan, 2-pentyl										0.0							
112		872-50-4	2-Pyrrolidinone, 1-methyl-									0.1								
113		123-91-1	1,4-Dioxane					4.5		46.4	9.7								2.3	
114		78-40-0	Triethyl phosphate						53.6											
115		142-96-1	n-Butyl ether																	
116		96-29-7	2-Butanone oxime																	
117		121-44-8	Triethylamine																	
118	DNPH	75-07-0	Acetaldehyde	1.9		0.9	2.7	194.5	1.4	6.0		0.3	1.1	1.1	0.2	0.3	0.5	2.6	29.7	0.1
119		50-00-0	Formaldehyde	7.8	5.8	2.7	1.5	80.3	0.6	6.9		3.8	4.6	7.1	10.1	0.7	2.4	14.8	2.9	0.1
120		123-38-6	Propanal	69.8		19.7	1.7		5.6	0.2	1.0		1.5		0.1	0.8	0.4		3.0	0.1
121	PFPH	107-02-8	Acrolein	16.7		9.4		25.4	0.1			1.4		0.6						

Table A. 40: Emission factors (µg m^2 h^{-1}) at 24 h for VOCs emitted from paint products

#	Class	CAS #		VOC ~ 0 g/L		VOC < 5 g/L			VOC < 50 g/L		VOC < 150 g/L						VOC < 250 g/L
				White	Paint & Primer in One	White	Base for dark color	Base + Dark color (blue)	White	Recycled content, white	White	White	White	Light color (beige)	Dark color (blue)	Primed substrate, white	Chalk board, dark
				PT9	PT15	PT11	PT16	PT16c1	PT10	PT18	PT12	PT17	PT13	PT13c2	PT13c1	PT13p	PT14
1	Alcohols	71-36-3	1-Butanol	7.4	28.6	29.8	85.0	46.3	15.0	25.0	21.7	3.9	25.8	30.2	32.1	47.6	5.1
2		71-23-8	1-Propanol							17.5							
3		104-76-7	Hexanol, 2-ethyl-1-			1.6			5.2	53.4	16.5	2.9	4.2	7.0	3.6	6.3	25.3
4		67-63-0	2-Propanol							8.0	5.8		6.8	12.3	0.2	10.1	
5		64-17-5	Ethanol		2.8		2.4	3.0	0.8	25.5	5.9	3.5					4.7
6		108-95-2	Phenol	3.3	1.3	4.5			4.3	23.1	21.2	7.6	3.7	6.0	7.1	4.2	11.3
7	Aldehydes & Ketones	78-93-3	Methylethyl ketone		0.5	0.2	0.4	0.6		2.1	0.2	0.6		0.5			0.4
8		67-64-1	Acetone		7.1	6.2	4.3	6.6	1.3	11.5	6.9	5.4	13.4	10.2	4.5	16.6	20.0
9		98-86-2	Acetophenone		0.8		0.6	0.8	0.4	1.7	3.7	0.3	1.1	1.8	4.5	1.4	0.8
10		108-94-1	Cyclohexanone														
11		108-10-1	Methylisobutyl ketone														
12		100-52-7	Benzaldehyde	1.7	8.8	1.5	9.9	11.1	2.7	4.1	4.9	1.0	9.7	12.5	8.6	11.3	5.4
13		123-72-8	Butanal				2.9	3.3		3.8	3.8		4.4	4.3	2.2	4.9	
14		112-31-2	Decanal										1.8	2.7	2.7	1.9	
15		3913-81-3	2-Decenal					180.3									
16		98-01-1	Furfural		1.4		1.4	1.7					1.1		1.0	1.2	0.6
17		111-71-7	Heptanal	1.9	2.2	2.4	2.4	3.5	2.4		3.7		3.0		2.3	3.5	
18		66-25-1	Hexanal	18.1	16.7	24.5	17.8	24.0	23.3		44.0	2.6	17.2	18.8	15.9	18.4	10.1
19		124-19-6	Nonanal	1.3	3.1		2.1		1.5				3.8	4.1	3.0	4.3	3.0
20		18829-56-6	2-Nonenal														
21		124-13-0	Octanal			1.2	1.3	0.4					0.9	1.2			
22		2548-87-0	2-Octenal														
23		110-62-3	Pentanal	1.7	2.6	2.9	2.1	2.5	2.5		3.2			2.1			1.1
24	Aliphatic Hydrocarbons	107-83-5	Pentane, 2-methyl-														
25		96-14-0	Pentane, 3-methyl-	1.1		0.9			5.7								
26		540-84-1	2,2,4-Trimethylpentane														
27		108-08-7	2,4-Dimethylpentane														
28		124-18-5	Decane	0.2	0.2	0.3		1.7	0.2	69.4	2.3	0.4					0.4
29		112-40-3	Dodecane		2.4		0.9	1.7		8.8							1.1
30		142-82-5	Heptane														
31		544-76-3	Hexadecane		0.6	0.8	0.9	0.7	0.3	1.7	0.7		0.5		0.8	0.6	33.9
32		110-54-3	Hexane														
33		111-84-2	Nonane					0.8		31.2							
34		111-65-9	Octane							4.9							
35		629-62-9	Pentadecane	0.4	0.4		0.7	0.9	0.4	1.7	0.7				0.7		53.5
36		629-59-4	Tetradecane	0.3	1.7	2.3	0.8	1.5	0.5	1.3	3.4		0.6	0.5			22.5
37		629-50-5	Tridecane		0.6		1.4	2.0			0.4						3.2
38		1120-21-4	Undecane	0.1				0.8	0.4	66.8	1.1	0.4					0.8

Note: Pink (EF > 10,000 µg m^2 h^{-1}); Yellow (1,000 < EF < 10,000 µg m^2 h^{-1}); Green (100 < EF < 1,000 µg m^2 h^{-1}); Grey (10 < EF < 100 µg m^2 h^{-1})

Table A. 40 (continued)

				VOC ~ 0 g/L		VOC < 5 g/L			VOC < 50 g/L		VOC < 150 g/L						VOC < 250 g/L
				White	Paint & Primer in One	White	Base for dark color	Base + Dark color (blue)	White	Recycled content, white	White	White	White	Light color (beige)	Dark color (blue)	Primed substrate, white	Chalk board, dark
#	Class	CAS #		PT9	PT15	PT11	PT16	PT16c1	PT10	PT18	PT12	PT17	PT13	PT13c2	PT13c1	PT13p	PT14
39	Aromatic Hydrocarbons	95-93-2	Benzene, 1,2,4,5-tetramethyl-					0.2		1.9					0.2		0.1
40		611-14-3	Toluene, 2-ethyl-	0.2	0.1	0.1	0.4	0.3		2.7		0.0				0.2	0.1
41		620-14-4	Toluene, 3-ethyl-	0.9	0.1	0.5	4.6	1.3	0.2	4.4						0.6	0.4
42		622-96-8	Toluene, 4-ethyl-	0.9	0.1	0.3	5.0	1.6	0.1	2.7						0.5	0.2
43		31017-40-0	Cyclohexene, 4-phenyl														
44		71-43-2	Benzene		1.3		0.8	1.5		0.4		0.1	0.9	1.5	1.3	0.8	0.6
45		526-73-8	Benzene, 1,2,3-trimethyl-							5.7		0.1					
46		95-63-6	Benzene, 1,2,4-trimethyl-	0.5	0.3		3.3	1.2		11.5						0.8	0.3
47		95-47-6	Benzene, 1,2-dimethyl-	0.1		0.2			0.5	5.2	0.3		0.2			0.3	0.5
48		108-67-8	Benzene, 1,3,5-trimethyl-	0.1	0.1	0.1			0.0	4.0				0.2		0.2	0.1
49		108-38-3	Benzene, 1,3-dimethyl-	0.8	5.4	1.6	0.5	1.4	0.9	13.8	1.3	0.2	2.0	2.2	0.2	2.1	1.5
50		98-82-8	Benzene, isopropyl	2.2		4.2			1.7	1.2						0.6	2.3
51		103-65-1	Benzene, propyl-	1.9	0.3	2.7			1.4	2.6						0.4	1.7
52		100-41-4	Ethylbenzene	0.2	1.3	0.4	0.1	0.1	0.3	3.2	0.4	0.1	0.6	0.6	0.1	0.6	0.7
53		91-20-3	Naphthalene	0.2	0.3	0.1	0.3	0.3	0.2								0.5
54		99-87-6	p-Cymene				0.4	0.2		0.8	7.2	2.4					
55		100-42-5	Styrene	0.8	1.7	0.6		0.1	1.7	0.2	0.5		0.5	0.4	0.2	1.0	0.6
56		108-88-3	Toluene		0.1	1.0	0.1	0.1	0.2	2.3	1.1	0.3	0.5	0.2	0.2	0.3	0.2
57		98-83-9	2-Phenylpropene														
58		95-13-6	Indene						0.2								
59	Esters	108-21-4	Acetic acid, 1-methylethyl ester														
60		111-15-9	Acetic acid, 2-ethoxyethyl ester														
61		123-86-4	Acetic acid, butyl ester	3.5		2.7	8.2	6.2	3.5								
62		141-78-6	Acetic acid, ethyl ester														
63		80-62-6	Methyl methacrylate		1.3	1.0											
64		103-09-3	2-Ethylhexyl acetate						0.7								22.0
65		96-48-0	Butyrolactone														
66		25265-77-4	Texanol	6.2	30.5		769.8	1112.8	54.9	12152.0	23080.1	5079.2	11069.4	15445.3	11.4	11315.4	31716.3
67		6846-50-0	TXIB	0.4	1.8	4.7	1.7	4.3	0.9	245.2	57.3	6.6	24.0	34.2	7.4	35.7	63.9
68	Glycols & Glycol Ethers	57-55-6	1,2-Propanediol		558.6					3385.4	11913.6	3163.5	5689.8	6793.2	12199.1	12365.4	2345.0
69		110-49-6	2-Methoxyethylacetate														
70		111-90-0	Diethylene glycol monoethyl ether				1.0	1.5		10.4			1.0	1.7	1.6	3.2	
71		107-98-2	Propanol, 1-methoxy-2-							1.4							
72		111-76-2	Ethanol, 2-butoxy-							29.5	2.3			1.8	6.8		2.3
73		112-34-5	Ethanol, 2-butoxyethoxy-							3398.2	2830.4	1389.8	7.8	2.3		11.7	21.4
74		110-80-5	Ethanol, 2-ethoxy-														
75		109-86-4	Ethanol, 2-methoxy-														
76		75-65-0	Propanol, 2-methyl-2-	3.3		2.9			17.6	1.8	11.2	1.0					
77		5131-66-8	Proylene glycol monobutyl ether														

Table A. 40 (continued)

#	Class	CAS #		VOC ~ 0 g/L		VOC < 5 g/L			VOC < 50 g/L		VOC < 150 g/L						VOC < 250 g/L
				White	Paint & Primer in One	White	Base for dark color	Base + Dark color (blue)	White	Recycled content, white	White	White	White	Light color (beige)	Dark color (blue)	Primed substrate, white	Chalk board, dark
				PT9	PT15	PT11	PT16	PT16c1	PT10	PT18	PT12	PT17	PT13	PT13c2	PT13c1	PT13p	PT14
78	Halo Carbons	71-55-6	1,1,1-Trichloroethane														
79		95-50-1	1,2-Dichlorobenzene														
80		107-06-2	1,2-Dichloroethane														
81		78-87-5	1,2-Dichloropropane														
82		106-46-7	1,4-Dichlorobenzene														
83		75-27-4	Bromodichloromethane														
84		56-23-5	Carbon tetrachloride														
85		67-66-3	Chloroform														
86		124-48-1	Dibromochloromethane														
87		75-09-2	Dichloromethane														
88		127-18-4	Tetrachloroethylene														
89		79-01-6	Trichloroethylene		0.3	4.0	0.2	0.4	1.1	0.8	10.7	0.2	2.4	0.4	0.1	0.4	0.1
90		79-34-5	1,1,2,2-Tetrachloroethane														
91	Cyclo Alkanes	108-87-2	Methylcyclohexane							0.4							
92		110-82-7	Cyclohexane														
93		1678-93-9	Cyclohexane, butyl-							13.8							
94		1678-91-7	Cyclohexane, ethyl-							4.6							
95		1678-92-8	Cyclohexane, propyl-							10.2							
96		91-17-8	Decahydronaphthalene							8.7							
97	Terpenes	80-56-8	alpha-Pinene														
98		99-86-5	alpha-Terpinene														
99		127-91-3	beta-Pinene														
100		99-85-4	gamma-Terpinene														
101		13466-78-9	3-Carene														
102		79-92-5	Camphene														
103		5989-27-5	Limonene		1.3	1.4	1.5	0.4	3.6	1.9							0.7
104	Acids	64-19-7	Acetic acid	28.0	14.0				47.9	43.5	54.6	34.9	45.7	24.3	90.6	23.0	
105		79-31-2	Isobutyric acid							114.2			18.5				42.3
106		107-92-6	Butyric acid														
107		111-14-8	Heptanoic acid														
108		149-57-5	2-Ethylhexanoic acid														
109		142-62-1	Hexanoic acid														
110		109-52-4	Pentanoic Acid														
111	Other	3777-69-3	Furan, 2-pentyl														
112		872-50-4	2-Pyrrolidinone, 1-methyl-							30.1	3.0						
113		123-91-1	1,4-Dioxane						1.0	3.8					1.1		
114		78-40-0	Triethyl phosphate														
115		142-96-1	n-Butyl ether	43.0	185.2	67.8	174.5	96.7	55.5	13.7	42.4	7.6	62.3	65.9	45.5	108.4	
116		96-29-7	2-Butanone oxime														
117		121-44-8	Triethylamine														
118	DNPH	75-07-0	Acetaldehyde	11.1	12.7	5.3	11.0	12.3	15.8			3.0	13.2	11.0	12.7	12.3	13.2
119		50-00-0	Formaldehyde	73.5	6.3	36.5	6.4	7.2	35.8	0.7	0.0	1.0	6.3	6.4	6.3	7.2	6.3
120		123-38-6	Propanal		1.8		2.1	3.0	4.6			0.2	4.1	2.1	1.8	3.0	4.1
121	PFPH	107-02-8	Acrolein	0.1		0.7	1.2		1.2	0.6	45.5		1.7	1.0			2.3