



## Stephenson

Environmental Management Australia

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### EMISSION TEST REPORT (ETR) No.6011A

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#### ANNUAL EPL SCRUBBER EMISSIONS MONITORING

#### THE COMFORT GROUP - DUNLOP FOAMS

#### WETHERILL PARK, NSW

**PROJECT NO.:** 6011/S25137/18  
**DATE OF SURVEY:** 11 OCTOBER 2018  
**DATE OF DRAFT ISSUE:** 31 OCTOBER 2018  
**DATE OF FINAL ISSUE** 16 NOVEMBER 2018



NATA accredited laboratory number 15043.

Accredited for Compliance with ISO/IEC 17025 - Testing

## 1 EMISSION TEST REPORT No.6011A

### The sampling and analysis was commissioned by:

<b>Client</b>	Organisation:	The Comfort Group - Dunlop Foams
	Contact:	Mick Meehan
	Site Address:	32-36 Frank Street, Wetherill Park, NSW 2164
	Telephone:	02 8784 9903, 0413 025 259
	Email:	<a href="mailto:Mick.Meehan@dunlopfoams.com.au">Mick.Meehan@dunlopfoams.com.au</a>
	Project Number:	6011/S25137/18
	Test Date:	11 October 2018
	Production Conditions:	Normal operating conditions during testing. Production details are available upon request to Dunlop Foams.
	Analysis Requested:	Flow, velocity, pressure, temperature, moisture, gas density, toluene di-isocyanate (TDI) and dichloromethane (DCM).
	Sample Locations:	EPA ID No.1 Scrubber exhaust stack serving the Pouring line; and EPA ID No.2 Scrubber exhaust stack serving the Hot Block Store
Sample ID Nos.:	Refer to Attachment A	
Identification	The samples are labelled individually. Each label recorded the testing laboratory, sample number, sampling location (or Identification) sampling date and time and whether further analysis is required.	

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NATA accredited laboratory number 15043.

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<i>Test</i>	<i>Test Method Number for Sampling and Analysis</i>	<i>NATA Laboratory Analysis By: NATA Accreditation No. &amp; Report No.</i>
Dry Gas Density	NSW TM-23, USEPA M3	SEMA, Accreditation No. 15043, ETR No. 6011A
Flow	NSW TM-2, USEPA M2	SEMA, Accreditation No. 15043, ETR No. 6011A
Moisture	NSW TM-22, USEPA M4	SEMA, Accreditation No. 15043, Emission Test Report No. 6011A
Stack Pressure	NSW TM-2, USEPA M2	SEMA, Accreditation No. 15043, ETR No. 6011A
Stack Temperature	NSW TM-2, USEPA M2	SEMA, Accreditation No. 15043, ETR No. 6011A
Toluene Di-isocyanate (TDI 2,4 & TDI 2,6) (Isocyanates)	HSE-MDHS 25/3, (WCA 110)	TestSafe Australia, Accreditation No. 3726, Report No. 2018-5055
Velocity	NSW TM-2, USEPA M2	SEMA, Accreditation No. 15043, ETR No. 6011A
Volatile Organic Compounds (VOCs) including Dichloromethane	NSW TM-34, USEPA 18	TestSafe Australia, Accreditation No. 3726, Report No. 2018 - 5056

**Sampling Times**

NSW - As per Test Method requirements or if not specified in the Test Method then as per Protection of the Environment Operations (Clean Air) Regulations Part 2.

**Reference Conditions**

NSW - As per

- (1) Environment Protection Licence conditions, or
- (2) Part 3 of the Protection of the Environment Operations (Clean Air) Regulations

All associated NATA endorsed Test Reports/Certificates of Analysis are provided separately in Attachment A.

This Issue Date - 16 November 2018



P W Stephenson  
Managing Director

## 1.1 SUMMARY OF EPA ID NOS 1 &amp; 2 EMISSION TEST RESULTS – 11 OCTOBER 2018

Parameter	Unit of measure	EPA ID No. 1 Exhaust stack serving Pouring Line	EPA ID No. 2 Exhaust stack serving Hot Block Store	
			Run 1 - Pour	Run 2 - Purge
Stack Temperature	°C	26	20	22
Velocity	m/s	10.4	14	14
Volumetric flow	m <sup>3</sup> /s	11	15	15
Gas density	kg/m <sup>3</sup>	1.30	1.30	1.30
Stack pressure	kPa	102.4	102.5	102.5
Moisture	%	1.7	1.3	1.3
TDI 2,4	mg/m <sup>3</sup>	<0.0018	<0.0018	<0.0005
TDI 2,6	mg/m <sup>3</sup>	<0.0018	<0.0018	<0.0005
DCM	mg/m <sup>3</sup>	105	4.9	79

**Key:**

TDI 2,4	=	Toluene Di-isocyanate 2,4
TDI 2,6	=	Toluene Di-isocyanate 2,6
DCM	=	Dichloromethane
VOC	=	Volatile Organic Compounds
°C	=	degrees Celsius
m/s	=	metres per second
m <sup>3</sup> /s	=	dry cubic metre per second at 0°C and 101.3 kilopascals (kPa)
kg/m <sup>3</sup>	=	Kilograms per cubic metre
kPa	=	Kilo Pascals
%	=	percent
mg/m <sup>3</sup>	=	milligrams per cubic metre at 0°C and 101.3 kilopascals (kPa)
<	=	less than the limit of detection for the analytical method

## 1.2 DETAILED EMISSION TEST RESULTS - EPA ID Nos.1 &amp; 2

<b>Emission Test Results</b>	<b>Flow</b>	<b>Flow</b>	<b>Flow</b>
Project Number	6011A	6011A	6011A
Project Name	Dunlop Foams	Dunlop Foams	Dunlop Foams
Test Location	<b>EPA ID No.1 Scrubber stack serving the Pouring Line (Pour)</b>	<b>EPA ID No.2 Scrubber stack serving the Hot Block Store (Pour)</b>	<b>EPA ID No.2 Scrubber stack serving the Hot Block Store (Purge)</b>
Date	11 October 2018	11 October 2018	11 October 2018
RUN	1	1	2
Sample Start Time (hours)	10:11	10:11	11:16
Sample Finish Time (hours)	11:11	11:11	15:40
Sample Location (Inlet/Exhaust)	Exhaust	Exhaust	Exhaust
Stack Temperature (°C)	26	20	22
Stack Cross-Sectional area (m <sup>2</sup> )	1.13	1.11	1.11
Average Stack Gas Velocity (m/s)	10	14	14
Actual Gas Flow Volume (am <sup>3</sup> /min)	710	960	970
Total Normal Gas Flow Volume (m <sup>3</sup> /min)	640	890	890
Total Normal Gas Flow Volume (m <sup>3</sup> /sec)	11	15	15
Total Stack Pressure (kPa)	102.4	102.5	102.5
Moisture Content (% by volume)	1.7	1.3	1.3
Molecular Weight Dry Stack Gas (g/g-mole)	29	29	29
Dry Gas Density (kg/m <sup>3</sup> )	1.3	1.3	1.3
Sampling Performed by	PWS, JW	PWS, JW	PWS, JW
Sample Analysed by (Laboratory)	SEMA	SEMA	SEMA
Calculations Entered by	JW	JW	JW
Calculations Checked by	PWS	PWS	PWS

**Key:**

°C	=	degrees Celsius
m <sup>2</sup>	=	square metres
m/s	=	metres per second
am <sup>3</sup> /min	=	cubic metres at actual conditions per minute
m <sup>3</sup> /min	=	cubic metres per minute
m <sup>3</sup> /sec	=	cubic metres per second
kPa	=	Kilo Pascals
g/g-mole	=	grams per gram mole
kg/m <sup>3</sup>	=	kilograms per cubic metre
%	=	percent

### 1.3 ESTIMATED UNCERTAINTY OF MEASUREMENT

Pollutant	Methods	Uncertainty
TDI as part of Total Isocyanates	HSE-MDHS 25/3 (WCA.110)	NA
VOCs (Dichloromethane) (adsorption tube)	NSW TM-34	25%
Velocity	AS4323.1, NSW TM-2, USEPA 2	5%

**Key:**

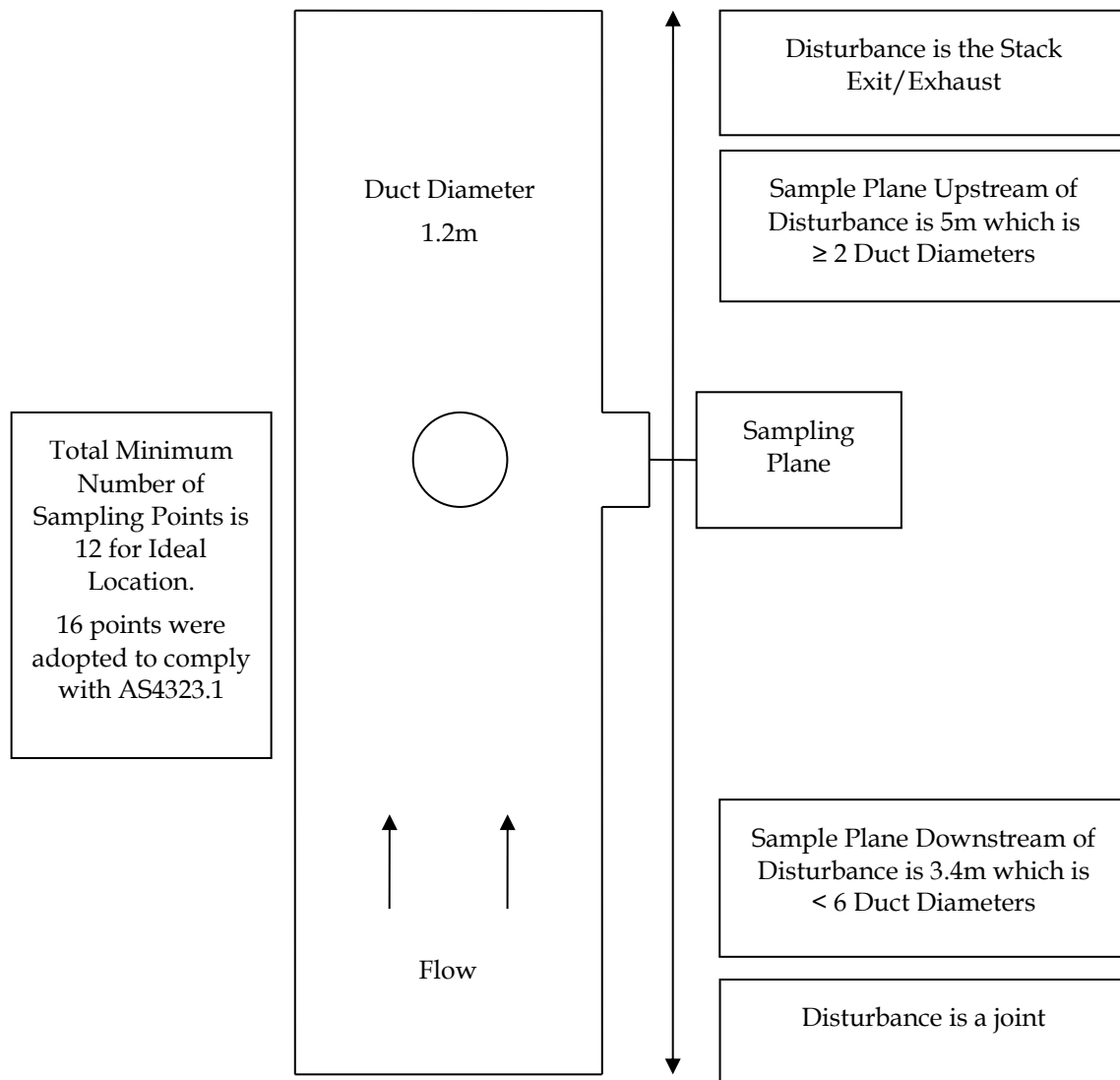
Unless otherwise indicated the uncertainties quoted have been determined @ 95% level of Confidence level (i.e. by multiplying the repeatability standard deviation by a co-efficient equal to 1.96) (Source - Measurement Uncertainty).

Sources: *Measurement Uncertainty – implications for the enforcement of emission limits* by Maciek Lewandowski (Environment Agency) & Michael Woodfield (AEAT) UK

*Technical Guidance Note (Monitoring) M2 Monitoring of stack emissions to air* Environment Agency Version 3.1 June 2005.

## 1.4 EXHAUST SAMPLING LOCATIONS

FIGURE 1-1 EPA No.1 SCRUBBER STACK SERVING THE POURING LINE

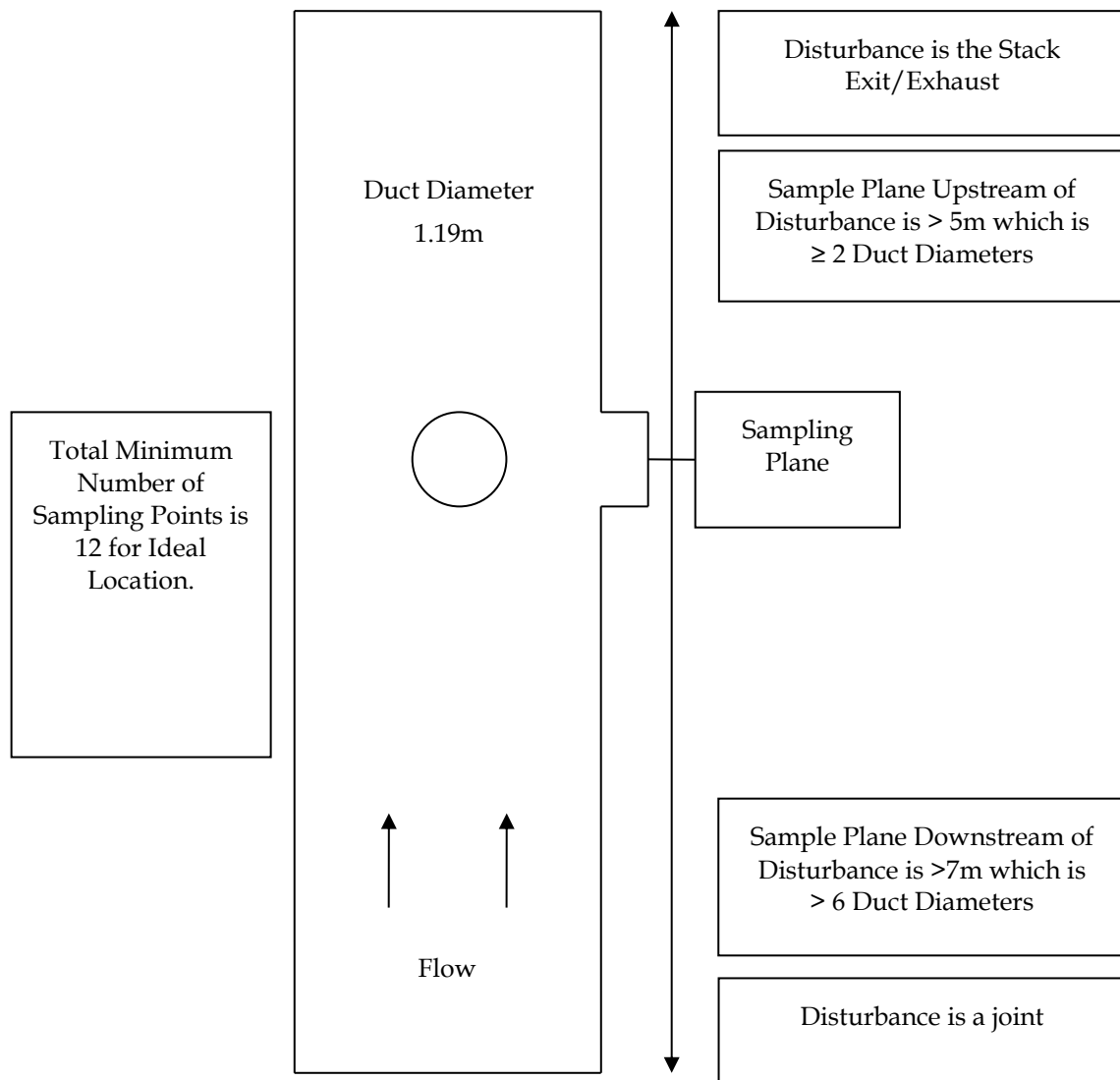


In the absence of cyclonic flow activity ideal sampling plane conditions will be found to exist at 6-8 duct diameters downstream and 2-3 duct diameters upstream from a flow disturbance. The sampling plane does not meet this criterion. Additional sample points were used in compliance with AS4323.1 as the sampling plane was non-ideal.

The sample plane however does meet the minimum sampling plane conditions; sampling plane conditions will be found to exist at 2 duct diameters downstream and 0.5 duct diameters upstream from a flow disturbance.

The location of the sampling plane complies with AS4323.1 criteria for temperature, velocity and gas flow profile and therefore is satisfactory for gas flow sampling.

FIGURE 1-2 EPA No.2 SCRUBBER STACK SERVING THE HOT BLOCK STORE



In the absence of cyclonic flow activity ideal sampling plane conditions will be found to exist at 6-8 duct diameters downstream and 2-3 duct diameters upstream from a flow disturbance. The sampling plane does meet this criterion.

The location of the sampling plane complies with AS4323.1 criteria for temperature, velocity and gas flow profile and therefore is satisfactory for gas flow sampling.



**1.5 INSTRUMENT CALIBRATION DETAILS**

<b>SEMA Asset No.</b>	<b>Equipment Description</b>	<b>Date Last Calibrated</b>	<b>Calibration Due Date</b>
857	Digital Temperature Reader	13-Jul-18	13-Jan-19
858	Digital Temperature Reader	13-Jul-18	13-Jan-19
720	Thermocouple	13-Jul-18	13-Jan-19
805	Thermocouple	13-Jul-18	13-Jan-19
815	Digital Manometer	07-Feb-18	07-Feb-19
885	Digital Manometer	07-Feb-18	07-Feb-19
613	Barometer	05-Feb-18	05-Feb-19
753	Personal Sampler	07-May-18	07-May-19
833	Personal Sampler	21-Mar-18	21-Mar-19
24	Personal Sampler	07-May-18	07-May-19
832	Personal Sampler	21-Mar-18	21-Mar-19
675	Personal Sampler	07-May-18	07-May-19
835	Personal Sampler	21-Mar-18	21-Mar-19

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**ATTACHMENT A – NATA CERTIFICATES OF ANALYSIS**



Jay Weber  
 Stephenson Environmental Management Australia  
 PO Box 6398  
 SILVERWATER NSW 1811

**Lab. Reference:** 2018-5056

**SAMPLE ORIGIN:** Project No. 6011

**DATE OF INVESTIGATION:** 11/10/2018

**DATE RECEIVED:** 15/10/18

**ANALYSIS REQUIRED:** Volatile Organic Compounds

### REPORT OF ANALYSIS

See attached sheet(s) for sample description and test results.

The results of this report have been approved by the signatory whose signature appears below.

For all administrative or account details please contact the Laboratory.

Increment and total pagination can be seen on the following pages.

Martin Mazereeuw

Manager

**Date:** 24/10/18

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 ABN 81 913 830 179



Accreditation No. 3726

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SafeWork NSW



Analysis of Volatile Organic Compounds in Workplace Air by GC/MS

Client : Jay Weber  
Sample ID : 727198

Date Sampled : 11-Oct-2018  
Reference Number : 2018-5056-1

No	Compounds	CAS No	Front	Back	No	Compounds	CAS No	Front	Back
			µg/section					µg/section	
<b>Aliphatic hydrocarbons (LOQ = 5µg/compound/section)</b>					<b>Aromatic hydrocarbons (LOQ = 1µg/compound/section)</b>				
1	2-Methylbutane	78-78-4	ND	ND	39	Benzene	71-43-2	ND	ND
2	n-Pentane	109-66-0	ND	ND	40	Ethylbenzene	100-41-4	ND	ND
3	2-Methylpentane	107-83-5	ND	ND	41	Isopropylbenzene	98-83-8	ND	ND
4	3-Methylpentane	96-14-0	ND	ND	42	1,2,3-Trimethylbenzene	526-73-8	ND	ND
5	Cyclopentane	287-93-3	ND	ND	43	1,2,4-Trimethylbenzene	95-63-6	ND	ND
6	Methylcyclopentane	96-37-7	ND	ND	44	1,3,5-Trimethylbenzene	108-67-8	ND	ND
7	2,3-Dimethylpentane	565-59-3	ND	ND	45	Styrene	100-42-5	ND	ND
8	n-Hexane	110-54-3	ND	ND	46	Toluene	108-88-3	ND	ND
9	3-Methylhexane	589-34-4	ND	ND	47	p-Xylene &/or m-Xylene	106-42-6 106-33-7	ND	ND
10	Cyclohexane	110-82-7	ND	ND	48	o-Xylene	95-47-6	ND	ND
11	Methylcyclohexane	108-87-2	ND	ND	<b>Ketones (LOQ #49, #54 &amp; #55 = 5µg/cv; #50, #51, #57 &amp; #53 = 25µg/cv)</b>				
12	2,2,4-Trimethylpentane	540-84-1	ND	ND	49	Acetone	67-64-1	ND	ND
13	n-Heptane	142-82-5	ND	ND	50	Acetoin	513-86-0	ND	ND
14	n-Octane	111-65-9	ND	ND	51	Diacetone alcohol	133-42-2	ND	ND
15	n-Nonane	111-84-2	ND	ND	52	Cyclohexanone	108-94-1	ND	ND
16	n-Decane	124-18-5	ND	ND	53	Isophorone	78-59-1	ND	ND
17	n-Undecane	1120-21-4	ND	ND	54	Methyl ethyl ketone (MEK)	78-93-3	7	ND
18	n-Dodecane	112-40-3	ND	ND	55	Methyl isobutyl ketone (MIBK)	108-10-1	ND	ND
19	n-Tridecane	629-50-5	ND	ND	<b>Alcohols (LOQ = 25µg/compound/section)</b>				
20	n-Tetradecane	629-59-4	ND	ND	56	Ethyl alcohol	64-17-5	ND	ND
21	α-Pinene	80-56-8	ND	ND	57	n-Butyl alcohol	71-36-3	ND	ND
22	β-Pinene	127-91-5	ND	ND	58	Isobutyl alcohol	78-83-1	ND	ND
23	D-Limonene	138-86-3	ND	ND	59	Isopropyl alcohol	67-63-0	ND	ND
<b>Chlorinated hydrocarbons (LOQ = 5µg/compound/section)</b>					60	2-Ethyl hexanol	104-76-7	ND	ND
24	Dichloromethane	75-09-2	611	ND	61	Cyclohexanol	108-93-0	ND	ND
25	1,1-Dichloroethane	75-34-3	ND	ND	<b>Acetates (LOQ = 25µg/compound/section)</b>				
26	1,2-Dichloroethane	107-06-2	ND	ND	62	Ethyl acetate	141-78-6	ND	ND
27	Chloroform	87-66-3	ND	ND	63	n-Propyl acetate	109-60-4	ND	ND
28	1,1,1-Trichloroethane	71-35-6	ND	ND	64	n-Butyl acetate	123-86-4	ND	ND
29	1,1,2-Trichloroethane	79-00-5	ND	ND	65	Isobutyl acetate	110-19-0	ND	ND
30	Trichloroethylene	79-01-6	ND	ND	<b>Ethers (LOQ = 25µg/compound/section)</b>				
31	Carbon tetrachloride	56-23-5	ND	ND	66	Ethyl ether	60-29-7	ND	ND
32	Perchloroethylene	127-18-4	ND	ND	67	tert-Butyl methyl ether (MTBE)	1634-04-4	ND	ND
33	1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	68	Tetrahydrofuran (THF)	109-99-9	ND	ND
34	Chlorobenzene	108-90-7	ND	ND	<b>Glycols (LOQ = 25µg/compound/section)</b>				
35	1,2-Dichlorobenzene	95-50-1	ND	ND	69	PGME	107-98-2	ND	ND
36	1,4-Dichlorobenzene	106-46-7	ND	ND	70	Ethylene glycol diethyl ether	629-14-1	ND	ND
<b>Miscellaneous (LOQ #37 = 5µg &amp; #38 = 25µg/compound/section)</b>					71	PGMEA	108-65-6	ND	ND
37	Acetonitrile	75-05-8	ND	ND	72	Cellosolve acetate	111-15-9	ND	ND
38	n-Vinyl-2-pyrrolidone	88-12-0	ND	ND	73	DGMEA	112-13-2	ND	ND
<b>Total VOCs (LOQ = 5µg/compound/section)</b>			618	ND	<b>Worksheet check</b>				
								yes	yes

2018-5056.xlsx

Page 2 of 5

TestSafe Australia – Chemical Analysis Branch

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Accreditation No. 3726

Accredited for compliance with ISO/IEC 17025 - Testing

SW09051 0817



SafeWork NSW



Analysis of Volatile Organic Compounds in Workplace Air by GC/MS

Client : Jay Weber  
Sample ID : 727199

Date Sampled : 11-Oct-2018  
Reference Number ie : 2018-5056-2

No	Compounds	CAS No	Front	Back	No	Compounds	CAS No	Front	Back
			µg/section					µg/section	
<b>Aliphatic hydrocarbons (LOQ = 5µg/compound/section)</b>					<b>Aromatic hydrocarbons (LOQ = 1µg/compound/section)</b>				
1	2-Methylbutane	78-78-4	ND	ND	39	Benzene	71-43-2	ND	ND
2	n-Pentane	109-66-0	ND	ND	40	Ethylbenzene	106-41-4	ND	ND
3	2-Methylpentane	107-83-5	ND	ND	41	Isopropylbenzene	98-82-8	ND	ND
4	3-Methylpentane	96-14-0	ND	ND	42	1,2,3-Trimethylbenzene	526-73-8	ND	ND
5	Cyclopentane	287-92-3	ND	ND	43	1,2,4-Trimethylbenzene	95-63-6	ND	ND
6	Methylcyclopentane	96-37-7	ND	ND	44	1,3,5-Trimethylbenzene	108-67-8	ND	ND
7	2,3-Dimethylpentane	565-59-3	ND	ND	45	Styrene	106-42-5	ND	ND
8	n-Hexane	110-54-3	ND	ND	46	Toluene	108-88-3	ND	ND
9	3-Methylhexane	589-34-4	ND	ND	47	p-Xylene &/or m-Xylene	106-45-8 95-49-8	ND	ND
10	Cyclohexane	110-82-7	ND	ND	48	o-Xylene	95-47-6	ND	ND
11	Methylcyclohexane	108-87-2	ND	ND	<b>Ketones (LOQ #49, #54 &amp; #55 = 5µg/section; #50, #51, #52 &amp; #53 = 25µg/section)</b>				
12	2,2,4-Trimethylpentane	540-84-1	ND	ND	49	Acetone	67-64-1	ND	ND
13	n-Heptane	142-82-5	ND	ND	50	Acetoin	513-86-0	ND	ND
14	n-Octane	111-65-9	ND	ND	51	Diacetone alcohol	123-42-2	ND	ND
15	n-Nonane	111-84-2	ND	ND	52	Cyclohexanone	108-94-1	ND	ND
16	n-Decane	124-18-5	ND	ND	53	Isophorone	78-59-1	ND	ND
17	n-Undecane	1120-21-4	ND	ND	54	Methyl ethyl ketone (MEK)	78-93-3	ND	ND
18	n-Dodecane	112-40-3	ND	ND	55	Methyl isobutyl ketone (MIBK)	108-10-1	ND	ND
19	n-Tridecane	629-50-5	ND	ND	<b>Alcohols (LOQ = 25µg/compound/section)</b>				
20	n-Tetradecane	629-59-4	ND	ND	56	Ethyl alcohol	64-17-5	ND	ND
21	α-Pinene	80-56-8	ND	ND	57	n-Butyl alcohol	71-36-5	ND	ND
22	β-Pinene	127-91-3	ND	ND	58	Isobutyl alcohol	78-83-1	ND	ND
23	D-Limonene	138-86-3	ND	ND	59	Isopropyl alcohol	67-63-0	ND	ND
<b>Chlorinated hydrocarbons (LOQ = 5µg/compound/section)</b>					60	2-Ethyl hexanol	104-76-7	ND	ND
24	Dichloromethane	75-09-2	28	ND	61	Cyclohexanol	108-93-0	ND	ND
25	1,1-Dichloroethane	75-34-3	ND	ND	<b>Acetates (LOQ = 25µg/compound/section)</b>				
26	1,2-Dichloroethane	107-06-2	ND	ND	62	Ethyl acetate	141-78-6	ND	ND
27	Chloroform	67-66-3	ND	ND	63	n-Propyl acetate	109-60-4	ND	ND
28	1,1,1-Trichloroethane	71-55-6	ND	ND	64	n-Butyl acetate	123-86-4	ND	ND
29	1,1,2-Trichloroethane	79-00-5	ND	ND	65	Isobutyl acetate	130-19-0	ND	ND
30	Trichloroethylene	79-01-6	ND	ND	<b>Ethers (LOQ = 25µg/compound/section)</b>				
31	Carbon tetrachloride	56-23-5	ND	ND	66	Ethyl ether	60-29-7	ND	ND
32	Perchloroethylene	127-18-4	ND	ND	67	tert-Butyl methyl ether (tBME)	1634-04-4	ND	ND
33	1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	68	Tetrahydrofuran (THF)	109-99-9	ND	ND
34	Chlorobenzene	108-90-7	ND	ND	<b>Glycols (LOQ = 25µg/compound/section)</b>				
35	1,2-Dichlorobenzene	93-30-1	ND	ND	69	PGME	107-98-2	ND	ND
36	1,4-Dichlorobenzene	106-46-7	ND	ND	70	Ethylene glycol diethyl ether	629-14-1	ND	ND
<b>Miscellaneous (LOQ #37= 5µg &amp; #38=25µg/compound/section)</b>					71	PGMEA	108-65-6	ND	ND
37	Acetonitrile	75-05-8	ND	ND	72	Cellosolve acetate	111-15-9	ND	ND
38	n-Vinyl-2-pyrrolidinone	88-12-0	ND	ND	73	DGMEA	112-15-2	ND	ND
<b>Total VOCs (LOQ = 50µg/compound/section)</b>			ND	ND	Worksheet check			yes	yes

TestSafe Australia – Chemical Analysis Branch

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Accreditation No. 3726

Accredited for compliance with ISO/IEC 17025 - Testing



SafeWork NSW



**Analysis of Volatile Organic Compounds in Workplace Air by GC/MS**

Client : Jay Weber  
Sample ID : 727200

Date Sampled : 11-Oct-2018  
Reference Number : 2018-5056-3

No	Compounds	CAS No	Front	Back	No	Compounds	CAS No	Front	Back
			µg/section					µg/section	
<b>Aliphatic hydrocarbons (LOQ = 5µg/compound/section)</b>					<b>Aromatic hydrocarbons (LOQ = 1µg/compound/section)</b>				
1	2-Methylbutane	78-78-4	ND	ND	39	Benzene	71-43-3	ND	ND
2	n-Pentane	109-66-0	ND	ND	40	Ethylbenzene	106-41-4	ND	ND
3	2-Methylpentane	107-83-5	ND	ND	41	Isopropylbenzene	98-82-8	ND	ND
4	3-Methylpentane	96-14-0	ND	ND	42	1,2,3-Trimethylbenzene	526-73-8	ND	ND
5	Cyclopentane	287-92-3	ND	ND	43	1,2,4-Trimethylbenzene	95-63-6	ND	ND
6	Methylcyclopentane	96-37-7	ND	ND	44	1,3,5-Trimethylbenzene	108-67-8	ND	ND
7	2,3-Dimethylpentane	565-59-3	ND	ND	45	Styrene	100-42-3	ND	ND
8	n-Hexane	110-54-3	ND	ND	46	Toluene	108-88-3	ND	ND
9	3-Methylhexane	589-34-4	ND	ND	47	p-Xylene &/or m-Xylene	106-42-3 106-48-8	ND	ND
10	Cyclohexane	110-82-7	ND	ND	48	o-Xylene	95-47-6	ND	ND
11	Methylcyclohexane	108-87-2	ND	ND	<b>Ketones (LOQ #49, #54 &amp; #55 = 5µg/section; #50, #51, #52 &amp; #53 = 25µg/section)</b>				
12	2,2,4-Trimethylpentane	540-84-1	ND	ND	49	Acetone	67-64-1	ND	ND
13	n-Heptane	142-82-5	ND	ND	50	Acetoin	513-88-0	ND	ND
14	n-Octane	111-65-9	ND	ND	51	Diacetone alcohol	123-42-2	ND	ND
15	n-Nonane	111-84-2	ND	ND	52	Cyclohexanone	108-94-1	ND	ND
16	n-Decane	124-18-5	ND	ND	53	Isophorone	78-59-1	ND	ND
17	n-Undecane	1120-21-4	ND	ND	54	Methyl ethyl ketone (MEK)	78-93-3	ND	ND
18	n-Dodecane	112-40-3	ND	ND	55	Methyl isobutyl ketone (MIBK)	108-10-1	ND	ND
19	n-Tridecane	629-30-5	ND	ND	<b>Alcohols (LOQ = 25µg/compound/section)</b>				
20	n-Tetradecane	629-59-4	ND	ND	56	Ethyl alcohol	64-17-5	ND	ND
21	α-Pinene	80-56-8	ND	ND	57	n-Butyl alcohol	71-36-3	ND	ND
22	β-Pinene	127-91-3	ND	ND	58	Isobutyl alcohol	78-83-1	ND	ND
23	D-Limonene	138-86-3	ND	ND	59	Isopropyl alcohol	67-63-0	ND	ND
<b>Chlorinated hydrocarbons (LOQ = 5µg/compound/section)</b>					60	2-Ethyl hexanol	104-76-7	ND	ND
24	Dichloromethane	75-09-2	1990	ND	61	Cyclohexanol	108-93-0	ND	ND
25	1,1-Dichloroethane	75-34-3	ND	ND	<b>Acetates (LOQ = 25µg/compound/section)</b>				
26	1,2-Dichloroethane	107-06-2	ND	ND	62	Ethyl acetate	141-78-6	ND	ND
27	Chloroform	67-66-3	ND	ND	63	n-Propyl acetate	109-60-4	ND	ND
28	1,1,1-Trichloroethane	71-55-6	ND	ND	64	n-Butyl acetate	123-86-4	ND	ND
29	1,1,2-Trichloroethane	79-00-5	ND	ND	65	Isobutyl acetate	110-19-0	ND	ND
30	Trichloroethylene	79-01-6	ND	ND	<b>Ethers (LOQ = 25µg/compound/section)</b>				
31	Carbon tetrachloride	56-23-5	ND	ND	66	Ethyl ether	60-29-7	ND	ND
32	Perchloroethylene	127-18-4	ND	ND	67	tert-Butyl methyl ether (MTBE)	1634-04-4	ND	ND
33	1,1,2,2-Tetrachloroethane	79-34-5	ND	ND	68	Tetrahydrofuran (THF)	109-99-9	ND	ND
34	Chlorobenzene	108-90-7	ND	ND	<b>Glycols (LOQ = 25µg/compound/section)</b>				
35	1,2-Dichlorobenzene	95-50-1	ND	ND	69	PGME	107-98-2	ND	ND
36	1,4-Dichlorobenzene	106-46-7	ND	ND	70	Ethylene glycol diethyl ether	629-14-1	ND	ND
<b>Miscellaneous (LOQ #37 = 5µg &amp; #38 = 25µg/compound/section)</b>					71	PGMEA	108-63-6	ND	ND
37	Acetonitrile	75-05-8	ND	ND	72	Cellosolve acetate	111-13-9	ND	ND
38	n-Vinyl-2-pyrrolidone	88-12-0	ND	ND	73	DGMEA	112-13-2	ND	ND
<b>Total VOCs (LOQ = 50µg/compound/section)</b>			1990	ND	Worksheet check			yes	yes

2018-5056.xlsx

Page 4 of 5

**TestSafe Australia – Chemical Analysis Branch**

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Telephone +61 2 9473 4000 Email lab@safework.nsw.gov.au Website testsafe.com.au



Accreditation No. 3726

Accredited for compliance with ISO/IEC 17025 - Testing

<W08061 0817



SafeWork NSW



*Analysis of Volatile Organic Compounds in Workplace Air by GC/MS*

Client : Jay Weber

ND = Not Detected

Method : Analysis of Volatile Organic Compounds in Workplace Air by Gas Chromatography/Mass Spectrometry  
Method Number : WCA.207

Limit of Quantitation : 5 µg/section; 25 µg/section for oxygenated hydrocarbons except acetone, MEK and MIBK at 5 µg/section.

Brief Description : Volatile organic compounds are trapped from the workplace air onto charcoal tubes by the use of a personal air monitoring pump. The volatile organic compounds are then desorbed from the charcoal in the laboratory with CS<sub>2</sub>. An aliquot of the desorbant is analysed by capillary gas chromatography with mass spectrometry detection.

PGME : Propylene Glycol Monomethyl Ether

PGMEA : Propylene Glycol Monomethyl Ether Acetate

DGMEA : Diethylene Glycol Monomethyl Ether Acetate

**Measurement Uncertainty**

The measurement uncertainty is an estimate that characterises the range of values within which the true value is asserted to lie. The uncertainty estimate is an expanded uncertainty using a coverage factor of 2, which gives a level of confidence of approximately 95%. The estimate is compliant with the "ISO Guide to the Expression of Uncertainty in Measurement" and is a full estimate based on in-house method validation and quality control data.

**Quality Assurance**

In order to ensure the highest degree of accuracy and precision in our analytical results, we undertake extensive intra- and inter-laboratory quality assurance (QA) activities. Within our own laboratory, we analyse laboratory and field blanks and perform duplicate and repeat analysis of samples. Spiked QA samples are also included routinely in each run to ensure the accuracy of the analyses. WorkCover Laboratory Services has participated for many years in several national and international inter-laboratory comparison programs listed below:-

- Workplace Analysis Scheme for Proficiency (WASP) conducted by the Health & Safety Executive UK;
- Quality Management in Occupational and Environmental Medicine QA Program, conducted by the Institute for Occupational, Social and Environmental Medicine, University of Erlangen – Nuremberg, Germany;
- Quality Control Technologies QA Program, Australia;
- Royal College of Pathologists QA Program, Australia.

2018-5056.xlsx

Page 5 of 5

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SW08061 0817



Jay Weber  
 Stephenson Environmental Management Australia  
 PO Box 6398  
 SILVERWATER NSW 1811

Lab. Reference: 2018-5055

SAMPLE ORIGIN: Project No. 6011

DATE OF INVESTIGATION: 11/10/2018

DATE RECEIVED: 15/10/18

ANALYSIS REQUIRED: Isocyanates

**REPORT OF ANALYSIS**

See attached sheet(s) for sample description and test results.

The results of this report have been approved by the signatory whose signature appears below.

For all administrative or account details please contact the Laboratory.

Increment and total pagination can be seen on the following pages.

  
 Martin Mazereeuw  
 Manager

Date: 29/10/18

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Accreditation No. 3726

Standard for Competence per ISO/IEC 17025 – Testing





SafeWork NSW



### Analysis of Total Isocyanates in Air

Client: Jay Weber

Date Sampled: 15/10/18

SEMA

Reference Number	Sample ID	Sample Type	Total Isocyanates (µg NCO/Sample)
2018-5055-1	727194	Filter	ND
2018-5055-1	727194	Solution	ND
2018-5055-2	727195	Filter	ND
2018-5055-2	727195	Solution	ND
2018-5055-3	727196	Filter	ND
2018-5055-3	727196	Solution	ND
2018-5055-4	727197 (Blank)	Filter	ND
2018-5055-4	727197 (Blank)	Solution	ND

ND – Not Detected

Method : Analysis of Total Isocyanates in Air by HPLC

Method No : WCA 110

Detection Limit : 0.1 µg NCO/Sample

Brief Description : Isocyanates are collected onto filters and/or impingers, containing 1-(2-methoxyphenyl) piperazine/toluene absorbing solution. The filters trap the greater proportion of isocyanates in the vapour phase and the impingers trap the greater proportion of isocyanates in the aerosol phase. The organic isocyanates react to form urea derivatives that are measured by HPLC using UV detection at 242 nm and electrochemical detection.

2018-5055-1.xls

Page 2 of 2

TertSafe Australia – Chemical Analysis Branch

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Accreditation No. 3724

Accredited for compliance with ISO/IEC 17025 Testing

05/08/2017