



Stephenson

Environmental Management Australia

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EMISSION TEST REPORT (ETR) No.7092

ANNUAL EPL 2732 SCRUBBER EMISSIONS MONITORING

THE COMFORT GROUP - DUNLOP FLEXIBLE FOAMS

WETHERILL PARK, NSW

PROJECT NO.: 7092/S25679/20

DATE OF SURVEY: 9 SEPTEMBER 2020

DATE OF ISSUE: 23 SEPTEMBER 2020

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NATA accredited laboratory number 15043.

Accredited for Compliance with ISO/IEC 17025 - Testing

1 EMISSION TEST REPORT No.7092

The sampling and analysis was commissioned by:

Organisation:	The Comfort Group - Dunlop Flexible Foams
Contact:	Mick Meehan
Site Address:	32-36 Frank Street, Wetherill Park, NSW 2164
Telephone:	02 8784 9903, 0413 025 259
Email:	Mick.Meehan@dunlopfoams.com.au
Project Number:	7092/S25679/20
Test Date:	9 September 2020
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, 2,4 & 2,6 TDI and DCM as per Condition U1.2 of EPL 2732.
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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<i>Test</i>	<i>Test Method Number for Sampling and Analysis</i>	<i>NATA Laboratory Analysis By: NATA Accreditation No. & Report No.</i>
Dry Gas Density	NSW TM-23, USEPA M3	SEMA, Accreditation No. 15043, ETR No. 7092
Flow	NSW TM-2, USEPA M2	SEMA, Accreditation No. 15043, ETR No. 7092
Moisture	NSW TM-22, USEPA M4	SEMA, Accreditation No. 15043, ETR No. 7092
Stack Pressure	NSW TM-2, USEPA M2	SEMA, Accreditation No. 15043, ETR No. 7092
Stack Temperature	NSW TM-2, USEPA M2	SEMA, Accreditation No. 15043, ETR No. 7092
Toluene Di-isocyanate (TDI 2,4 and 2,6)	HSE-MDHS 25/3, (WCA 110)	TestSafe Australia, Accreditation No. 3726, Report No. 2020-3288
Velocity	NSW TM-2, USEPA M2	SEMA, Accreditation No. 15043, ETR No. 7092
Volatile Organic Compounds (VOCs) including Dichloromethane (DCM)	NSW TM-34, USEPA 18	TestSafe Australia, Accreditation No. 3726, Report No. 2020-3289

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.

Issue Date - 23 September 2020



P W Stephenson
Managing Director

1.1 SUMMARY OF EPA ID NOS 1 & 2 EMISSION TEST RESULTS – 9 SEPTEMBER 2020

Parameter	Unit of measure	EPA ID No. 1 Exhaust stack serving Pouring Line	EPA ID No. 2 Exhaust stack serving Hot Block Store		EPL 2732 EPA concentration limit
			Run 1 Pour	Run 2 Purge	
Stack Temperature	°C	24	16	16	--
Velocity	m/s	8.6	11	11	--
Volumetric flow	m ³ /s	8.9	12	12	--
Gas density	kg/m ³	1.30	1.30	1.30	--
Stack pressure	kPa	102.8	102.8	102.8	--
Moisture	%	1.71	1.68	1.7	--
TDI 2,4 and TDI 2,6	mg/m ³	<0.0014	<0.0014	<0.0006	0.002
DCM	mg/m ³	366	267	161	1200

Key: TDI 2,4 = Toluene Di-isocyanate 2,4
 DCM = Dichloromethane
 VOC = Volatile Organic Compounds
 °C = degrees Celsius
 m/s = metres per second
 m³/s = dry cubic metre per second at 0°C and 101.3 kilopascals (kPa)
 kg/m³ = Kilograms per cubic metre
 kPa = Kilo Pascals
 % = percent
 mg/m³ = milligrams per cubic metre at 0°C and 101.3 kilopascals (kPa)
 < = less than the limit of detection for the analytical method

1.2 FLOW EMISSION TEST RESULTS - EPA ID Nos.1 & 2

Emission Test Results	Flow	Flow	Flow
Project Number	7092	7092	7092
Project Name	The Comfort Group Dunlop Flexible Foams	The Comfort Group Dunlop Flexible Foams	The Comfort Group Dunlop Flexible Foams
Test Location	EPA ID No.1 Scrubber stack serving the Pouring Line (Pour)	EPA ID No.2 Scrubber stack serving the Hot Block Store (Pour)	EPA ID No.2 Scrubber stack serving the Hot Block Store (Purge)
Date	9 September 2020	9 September 2020	9 September 2020
RUN	1	1	2
Sample Start Time (hours)	11:40	11:38	13:01
Sample Finish Time (hours)	12:53	12:51	15:55
Sample Location (Inlet/Exhaust)	Exhaust	Exhaust	Exhaust
Stack Temperature (°C)	24	16	16
Stack Cross-Sectional area (m ²)	1.13	1.11	1.11
Average Stack Gas Velocity (m/s)	8.6	11	11
Actual Gas Flow Volume (am ³ /min)	580	740	740
Total Normal Gas Flow Volume (m ³ /min)	530	700	700
Total Normal Gas Flow Volume (m ³ /sec)	8.9	12	12
Total Stack Pressure (kPa)	102.8	102.8	102.8
Moisture Content (% by volume)	1.71	1.68	1.70
Molecular Weight Dry Stack Gas (g/g-mole)	29	29	29
Dry Gas Density (kg/m ³)	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
- m² = square metres
- m/s = metres per second
- am³/min = cubic metres at actual conditions per minute
- m³/min = cubic metres per minute
- m³/sec = cubic metres per second
- kPa = Kilo Pascals
- g/g-mole = grams per gram mole
- kg/m³ = 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)	28%
VOCs (Dichloromethane) (adsorption tube)	NSW TM-34	25%
Velocity	AS4323.1, NSW TM-2, USEPA 2	5%

Key:

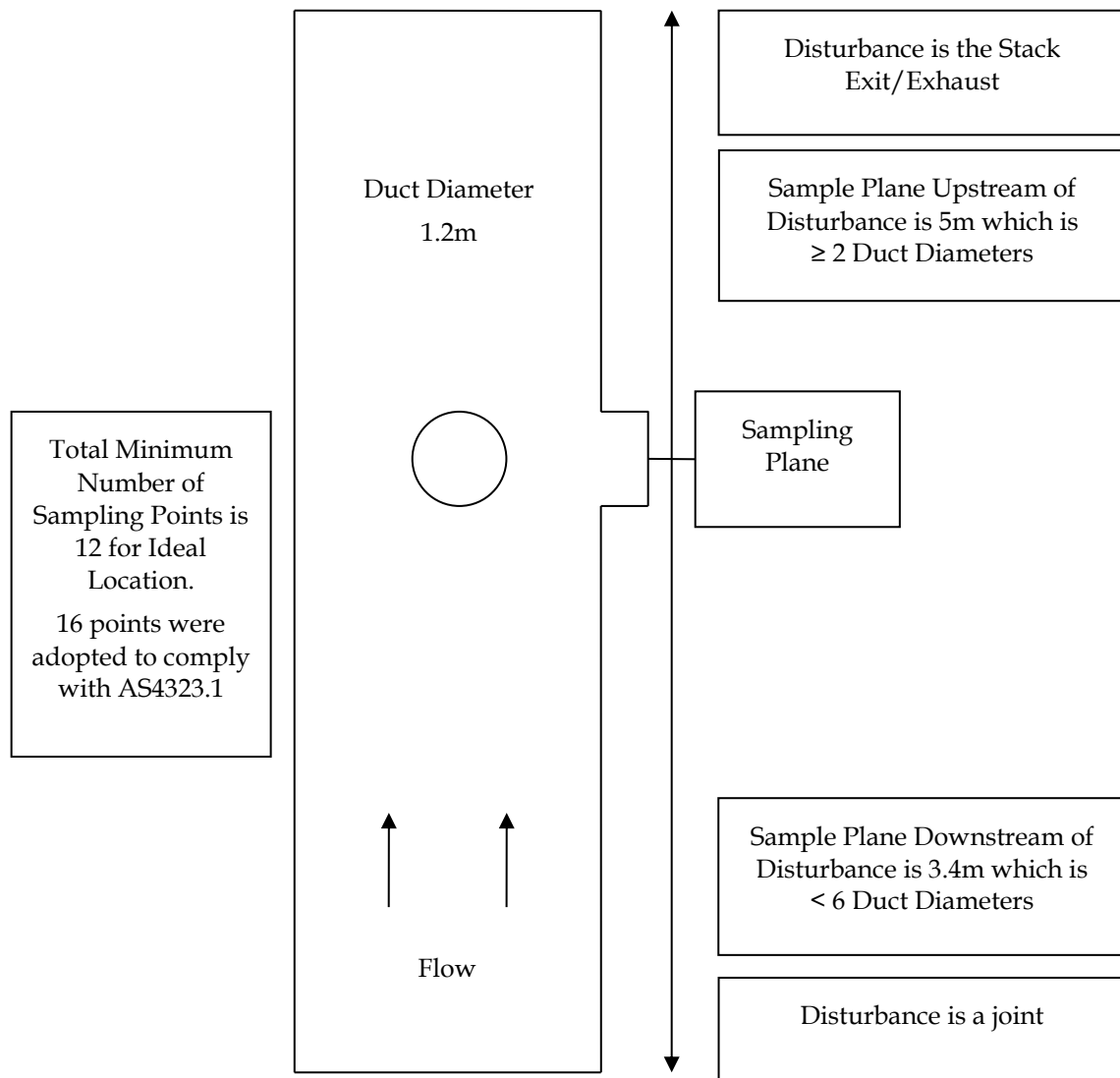
Unless otherwise indicated the uncertainties quoted have been determined @ 95% level of Confidence level (i.e. by multiplying the repeatability standard deviation by a co-efficient equal to 1.96) (Source - Measurement Uncertainty).

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

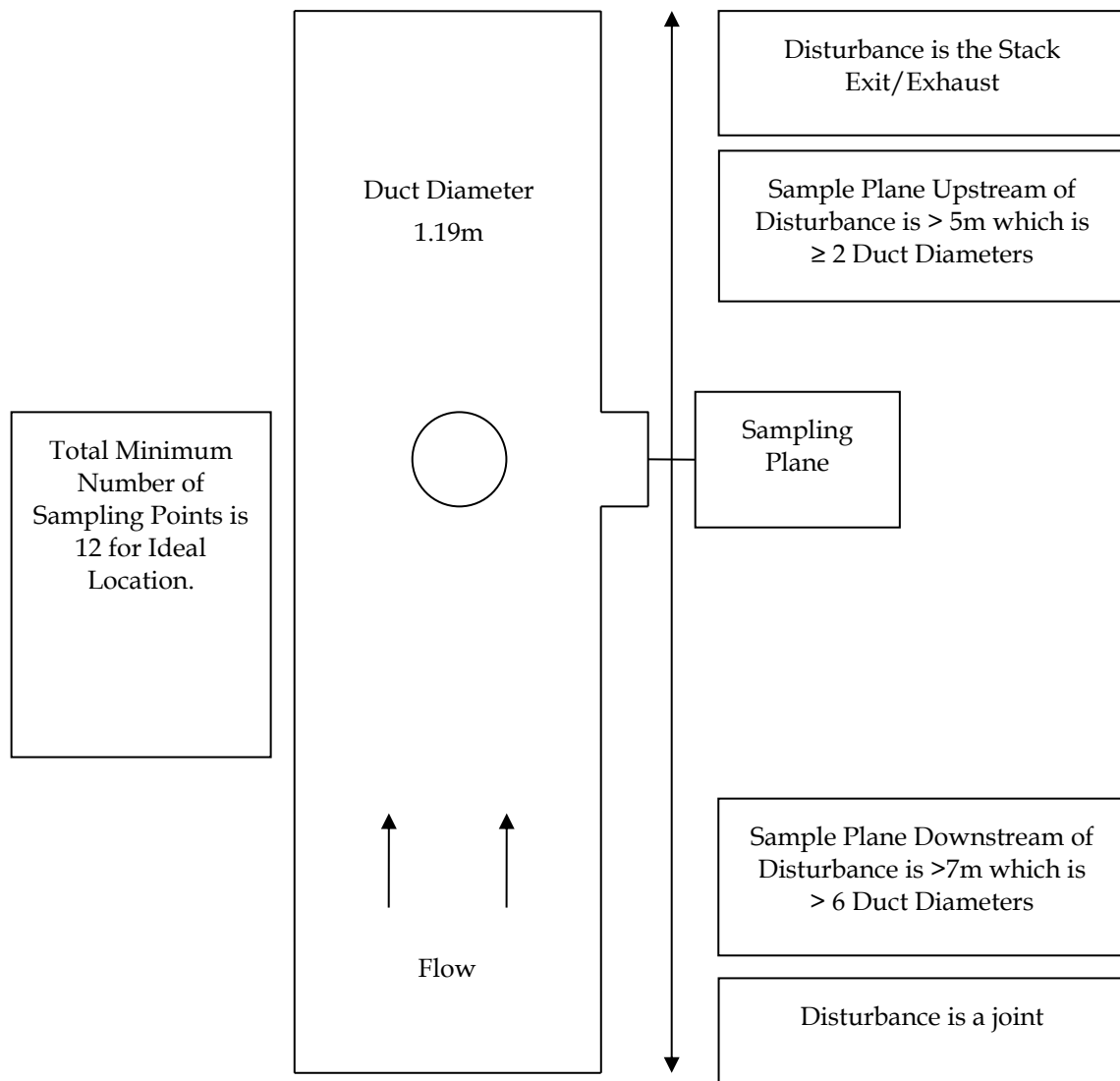


In the absence of cyclonic flow activity ideal sampling plane conditions will be found to exist at 6-8 duct diameters downstream and 2-3 duct diameters upstream from a flow disturbance. The sampling plane does not meet this criterion. Additional sample points were used in compliance with AS4323.1 as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

SEMA Asset No.	Equipment Description	Date Last Calibrated	Calibration Due Date
857	Digital Temperature Reader	07-May-20	07-Nov-20
858	Digital Temperature Reader	07-May-20	07-Nov-20
769	Thermocouple	07-May-20	07-Nov-20
920	Thermocouple	07-May-20	07-Nov-20
815	Digital Manometer	06-Dec-19	06-Dec-20
885	Digital Manometer	06-Dec-19	06-Dec-20
613	Barometer	05-Dec-19	05-Dec-20
934	Personal Sampler	10-Aug-20	10-Aug-21
835	Personal Sampler	26-Feb-20	26-Feb-21
24	Personal Sampler	12-Mar-20	12-Mar-21
753	Personal Sampler	12-Mar-20	12-Mar-21
726	Pitot	17-Mar-20	17-Mar-2021 Visually inspected On-Site before use
183	Pitot	17-Mar-20	17-Mar-2021 Visually inspected On-Site before use

ATTACHMENT A – NATA CERTIFICATES OF ANALYSIS



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

Lab. Reference: 2020-3288

SAMPLE ORIGIN: PO#5156; Project No 7092

DATE OF INVESTIGATION: 09/09/2020

DATE RECEIVED: 11/09/20

ANALYSIS REQUIRED: Isocyanates in air analysis

AMENDED REPORT OF ANALYSIS

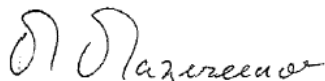
See attached sheet(s) for sample description and test results.

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.

This report replaces the report sent on 21/09/2020. Report amended to include individual isocyanates.


 Martin Mazereeuw
 Manager

Date: 22/09/20

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 ABN 81 913 830 179



Accreditation No. 3726

Accredited for compliance with ISO/IEC 17025 - Testing

Analysis of Total Isocyanates in Air

(amended report)

Client: Jay Weber

Project Number: 7092

Organisation: Stephenson Environmental Management Australia Data Analysed: 18-Sep-2020

Reference Number	Sample ID	Sample Type	TDI (2,4) (µg NCO/Sample)	TDI (2,6) (µg NCO/Sample)
2020-3288-1	728080-F	Filter	ND	ND
	728080-I	Impinger	ND	ND
2020-3288-2	728081-F	Filter	ND	ND
	728081-I	Impinger	ND	ND
2020-3288-3	728082-F	Filter	ND	ND
	728082-I	Impinger	ND	ND
2020-3288-4	728083-F	Filter	ND	ND
	728083-I	Impinger	ND	ND

ND = Not Detected

Method : Analysis of Total Isocyanates in Air by HPLC

Method No : WCA.110

Quantification 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.

2020-3288b

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TestSafe Australia – Chemical Analysis Branch

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EW08051 0817



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

Lab. Reference: 2020-3289

Samples analysed as received

SAMPLE ORIGIN: Project No: 7092; PO# 5156

DATE OF INVESTIGATION: 09/09/2020

DATE RECEIVED: 11/09/20

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: 16/09/20

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Accreditation No. 3726

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SafeWork NSW



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

Client : Stephenson
Sample ID : 728084

Date Sampled 9/09/2020
Date Analysed 11/09/2020
Reference Number 2020-3289-1

No	Compounds	CAS No	Front	Back	No	Compounds	CAS No	Front	Back
			µg/section					µg/section	
Aliphatic hydrocarbons (LOQ = 5µg/compound/section)					Aromatic hydrocarbons (LOQ = 1µg/compound/section)				
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	98-52-8	ND	ND
4	3-Methylpentane	96-14-0	ND	ND	42	1,2,3-Trimethylbenzene	536-73-8	ND	ND
5	Cyclopentane	287-92-3	ND	ND	43	1,2,4-Trimethylbenzene	93-63-6	ND	ND
6	Methylcyclopentane	96-37-7	ND	ND	44	1,3,5-Trimethylbenzene	108-67-8	ND	ND
7	2,3-Dimethylpentane	563-59-3	ND	ND	45	Styrene	100-42-5	ND	ND
8	n-Hexane	110-54-3	ND	ND	46	Toluene	108-88-3	2	ND
9	3-Methylhexane	589-34-4	ND	ND	47	p-Xylene &/or m-Xylene	106-42-5 98-94-3	ND	ND
10	Cyclohexane	110-82-7	ND	ND	48	o-Xylene	95-47-6	ND	ND
11	Methylcyclohexane	108-87-2	ND	ND	Ketones (LOQ #49, #54 & #55 = 5µg/section; #50, #51, #52 & #53 = 25µg/section)				
12	2,2,4-Trimethylpentane	340-84-1	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	10	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	Alcohols (LOQ = 25µg/compound/section)				
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	78-63-1	ND	ND
23	D-Limonene	138-86-3	ND	ND	59	Isopropyl alcohol	67-63-0	ND	ND
Chlorinated hydrocarbons (LOQ = 5µg/compound/section)					60	2-Ethyl hexanol	104-76-7	ND	ND
24	Dichloromethane	75-09-2	2395	ND	61	Cyclohexanol	108-93-0	ND	ND
25	1,1-Dichloroethane	75-34-3	ND	ND	Acetates (LOQ = 25µg/compound/section)				
26	1,2-Dichloroethane	107-06-2	ND	ND	62	Ethyl acetate	141-78-6	ND	ND
27	Chloroform	67-68-3	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	Ethers (LOQ = 25µg/compound/section)				
31	Carbon tetrachloride	56-23-3	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	Glycols (LOQ = 25µg/compound/section)				
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
Miscellaneous (LOQ #37 = 5µg & #38 = 25µg/compound/section)					71	PGMEA	108-65-6	ND	ND
37	Acetonitrile	75-05-8	ND	ND	72	Cellulosolve acetate	111-15-9	ND	ND
38	n-Vinyl-2-pyrrolidinone	88-12-0	ND	ND	73	DGMEA	112-15-2	ND	ND
Total VOCs (LOQ = 50µg/compound/section)					2407	ND	Worksheet check 2020-3289-1		

TestSafe Australia – Chemical Analysis Branch

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Safework NSW



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

Client : Stephenson
Sample ID : 728085

Date Sampled 9/09/2020
Date Analysed 11/09/2020
Reference Number 2020-3289-2

No	Compounds	CAS No	Front	Back	No	Compounds	CAS No	Front	Back
			µg/section					µg/section	
Aliphatic hydrocarbons (LOQ = 5µg/compound/section)					Aromatic hydrocarbons (LOQ = 1µg/compound/section)				
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	110-41-4	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	287-92-1	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	563-59-3	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	389-34-4	ND	ND	47	p-Xylene &/or m-Xylene	106-42-4 (m-xylene)	ND	ND
10	Cyclohexane	110-82-7	ND	ND	48	o-Xylene	95-47-6	ND	ND
11	Methylcyclohexane	108-87-2	ND	ND	Ketones (LOQ 40, 854 & 855 = 5µg/c; 850, 851, 852 & 851 = 25µg/c)				
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	Alcohols (LOQ = 25µg/compound/section)				
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
Chlorinated hydrocarbons (LOQ = 5µg/compound/section)					60	2-Ethyl hexanol	104-76-7	ND	ND
24	Dichloromethane	75-09-2	2004	ND	61	Cyclohexanol	108-93-0	ND	ND
25	1,1-Dichloroethane	75-34-3	ND	ND	Acetates (LOQ = 25µg/compound/section)				
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	79-105-5	ND	ND	65	Isobutyl acetate	110-19-0	ND	ND
30	Trichloroethylene	79-01-6	ND	ND	Ethers (LOQ = 25µg/compound/section)				
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)	1634-04-9	ND	ND
33	1,1,2,2-Tetrachloroethane	79-34-3	ND	ND	68	Tetrahydrofuran (THF)	109-99-9	ND	ND
34	Chlorobenzene	108-90-7	ND	ND	Glycols (LOQ = 25µg/compound/section)				
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
Miscellaneous (LOQ 837 = 5µg & 838 = 25µg/compound/section)					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	112-15-2	ND	ND
Total VOCs (LOQ = 50µg/compound/section)					2004	ND	Worksheet check		2020-3289-2

TestSafe Australia – Chemical Analysis Branch

ABN 81 913 830 179 Level 2, Building 1, 9-15 Chivers Road, Thornleigh, NSW 2120, Australia
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



SafeWork NSW



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

Client : Stephenson
Sample ID : 728086

Date Sampled 9/09/2020
Date Analysed 11/09/2020
Reference Number 2020-3289-3

No	Compounds	CAS No	Front	Back	No	Compounds	CAS No	Front	Back
			µg/section					µg/section	
Aliphatic hydrocarbons (LOQ = 5µg/compound/section)					Aromatic hydrocarbons (LOQ = 1µg/compound/section)				
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	98-82-8	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	565-39-3	ND	ND	45	Styrene	100-42-5	ND	ND
8	n-Hexane	110-54-3	ND	ND	46	Toluene	108-88-5	1	ND
9	3-Methylhexane	589-34-4	ND	ND	47	p-Xylene &/or m-Xylene	106-27-8 106-46-1	ND	ND
10	Cyclohexane	110-82-7	ND	ND	48	o-Xylene	95-47-6	ND	ND
11	Methylcyclohexane	108-87-2	ND	ND	Ketones (LOQ #49, #54 & #55 = 5µg/c; #50, #51, #52 & #53 = 25µg/c)				
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	124-18-3	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	Alcohols (LOQ = 25µg/compound/section)				
20	n-Tetradecane	629-39-4	ND	ND	56	Ethyl alcohol	64-17-5	ND	ND
21	α-Pinene	109-56-8	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
Chlorinated hydrocarbons (LOQ = 5µg/compound/section)					60	2-Ethyl hexanol	104-76-7	ND	ND
24	Dichloromethane	75-09-2	2750	47	61	Cyclohexanol	108-93-0	ND	ND
25	1,1-Dichloroethane	75-34-3	ND	ND	Acetates (LOQ = 25µg/compound/section)				
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	Ethers (LOQ = 25µg/compound/section)				
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	Glycols (LOQ = 25µg/compound/section)				
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
Miscellaneous (LOQ #37= 5µg & #38=25µg/compound/section)					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	112-15-2	ND	ND
Total VOCs (LOQ = 50µg/compound/section)					2751	ND	Worksheet check		2020-3289-3

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

ND = Not Detected
 All compounds numbered 1-73 are included of this analysis in the scope of NATA accreditation.

Method : Analysis of Volatile Organic Compounds in Workplace Air by Gas Chromatography/Mass Spectrometry
 Method Number : WCA.207
 Limit of Quantitation : 5µg/section; 25µg/section for oxygenated hydrocarbons except acetone, MEK and MIBK at 5µg/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 CS₂. 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 Monoethyl Ether Acetate

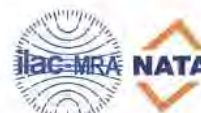
Measurement Uncertainty
 The measurement uncertainty is an estimate that characterises the range of values within which the true value is asserted to lie. The uncertainty estimate is an expanded uncertainty using a coverage factor of 2, which gives a level of confidence of approximately 95%. The estimate 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.

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