Stephenson

Environmental Management Australia

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EMISSION TEST REPORT (ETR) NO. 7398/S26251/24

STYRENE SCRUBBER EMISSION MONITORING

ROCBOLT RESINS PTY LIMITED

SMEATON GRANGE, NSW 2567

PROJECT NO.: **7398/S26251/24**

DATE OF SURVEY: **30 APRIL 2024**

DATE OF ISSUE: **18 JUNE 2024**

EMISSION TEST REPORT NO. 7398/S26251/24

The sampling and analysis was commissioned by:

Client	Organisation:	Rocbolt Resins Pty Limited
	Contact:	Andrew Sykes
	Address:	40-44 Anzac Avenue, Smeaton Grange NSW 2567
	Telephone:	02 4647 8388
	Email:	asykes@rocboltresins.com.au
	Project Number:	7398/S26251/24
	Test Date:	30 April 2024
	Production Conditions:	Normal operating conditions during testing
	Analysis Requested:	Volumetric flowrate, velocity, temperature, moisture, oxygen, volatile organic compounds including styrene and benzene
	Sample Locations:	Styrene dry scrubber exhaust stack
	Sample ID Nos.:	See 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.

Test	*Test Method Number for Sampling & Analysis*	*Laboratory Analysis & Report No.*
Moisture	NSW TM-22, USEPA M4	SEMA, ETR No. 7398
Oxygen	NSW TM-25, USEPA M3A	SEMA, ETR No. 7398
Stack Pressure	NSW TM-2, USEPA M2	SEMA, ETR No. 7398
Stack Temperature	NSW TM-2, USEPA M2	SEMA, ETR No. 7398
Velocity	NSW TM-2, USEPA M2	SEMA, ETR No. 7398
Volatile Organic Compounds (styrene, benzene, total as n-Propane)	NSW TM-34, USEPA M18	TestSafe Australia, Accreditation No. 3726, Report No. 2024-2266
Volumetric Flowrate	NSW TM-2, USEPA M2	SEMA, ETR No. 7398

Deviations from Test Methods Nil

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.

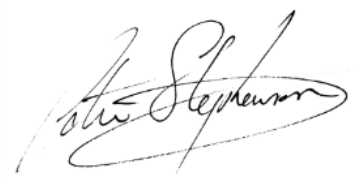
Reference Conditions NSW – As per

(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 in Attachment A.

Issue date: 18 June 2024



P W Stephenson
Managing Director

1.1 SCOPE OF WORK

The scope of work undertaken at Rocbolt Resins, Smeaton Grange, on April 30, 2024 is tabled below. Rocbolt Resins holds Environment Protection Licence (EPL) No. 20944.

Parameter	Styrene Scrubber Exhaust Stack	Units of Measure	NSW Approved Test Method
VOCs including Styrene and Benzene	2 samples	mg/m^3 or g/s	TM-34
Oxygen	✓	%	TM-25
Moisture	✓	%	TM-22
Temperature	✓	K	TM-2
Velocity	✓	m/s	TM-2
Volumetric flowrate	✓	m^3/s	TM-2

Key:

mg/m^3	=	milligrams per cubic metre at 0^oC and 101.3 kilopascals (kPa)
g/s	=	grams per second
%	=	percentage
g/s	=	grams per second
^oC	=	degrees Celsius
TM	=	test method
m/s	=	metres per second
m^3/s	=	dry cubic metre per second 0^oC and 101.3 kilopascals (kPa)
AS	=	Australian Standard
hr	=	hour
*	=	method agreed to by Chris Kelly, NSW EPA. Refer Benbow Environmental.

1.2 PRODUCTION AND SAMPLING CONDITIONS

Rocbolt Resins personnel considered the manufacturing facility was operating under typical conditions on the day of testing. Details of production conditions are available on request.

The following description of the process was supplied by Rocbolt Resins,

> *Rocbolt Resins manufactures resin capsules used as reinforcement for rocks/strata in the mining industry in conjunction with steel bolts and cables.*
>
> *The capsules are a 2 part capsule, an outer plastic skin, sealed at both ends with clips and a separate inner compartment. The larger compartment consists of a highly viscous polyester resin mastic paste comprising approximately 20% polyester resin (contains Styrene monomer) & 80% inert limestone fillers. The smaller compartment consists of catalyst containing inert limestone fillers, benzoyl peroxide paste and oil or water as the carrier. The ratio of the two compartment ranges from 80:20 to 93:7 by weight.*

1.3 SUMMARY OF EMISSION TEST RESULTS – 30 APRIL 2024

Parameter		Unit of measure	Average Measured Concentrations 30 April 2024 Exhaust Stack	EPL Licence 20944 Limit
Styrene	(as Styrene)	mg/m^3	7.00	**220**
	(as n-propane)	mg/m^3	2.69	--
	MER (as Styrene)	g/s	0.019	--
Benzene	(as Benzene)	mg/m^3	<LOQ(0.11)	--
	MER (as Benzene)	g/s	$<3.8 \times 10^{-5}$	--
VOC (total)	(as n- propane)	g/s	0.02	--
Oxygen		%	20.9	--
Stack temperature		^oC	22.4	--
Stack velocity		m/s	4.89	--
Stack volumetric flow		m^3/s	0.32	--
Moisture		%	0.33	--
Stack pressure		kPa	102.7	--

Key:
- EPL = Environment Protection Licence
- MER = Mass Emission Rate
- VOC = Volatile organic compounds
- mg/m^3 = milligrams per cubic metre at 0^oC and 101.3 kilopascals (kPa)
- g/s = grams per second
- ^oC = degrees Celsius
- m/s = metres per second
- m^3/s = dry cubic metre per second 0^oC and 101.3 kilopascals (kPa)
- % = percentage
- < = less than
- kPa = Kilo Pascals
- -- = not specified in EPL 20944

1.4 ESTIMATED UNCERTAINTY OF MEASUREMENT

Pollutant	Methods	Uncertainty
Moisture	AS4323.2, NSW TM-22, USEPA 4	25%
Velocity	AS4323.1, NSW TM-2, USEPA 2	5%
Oxygen	NSW TM-25, USEPA M3A	1% actual
Volatile Organic Compounds including benzene (adsorption tube)	NSW TM-34, USEPA M18	25%
Styrene as Volatile Organic Compound (adsorption tube)	NSW TM-34, USEPA 18	25%

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)

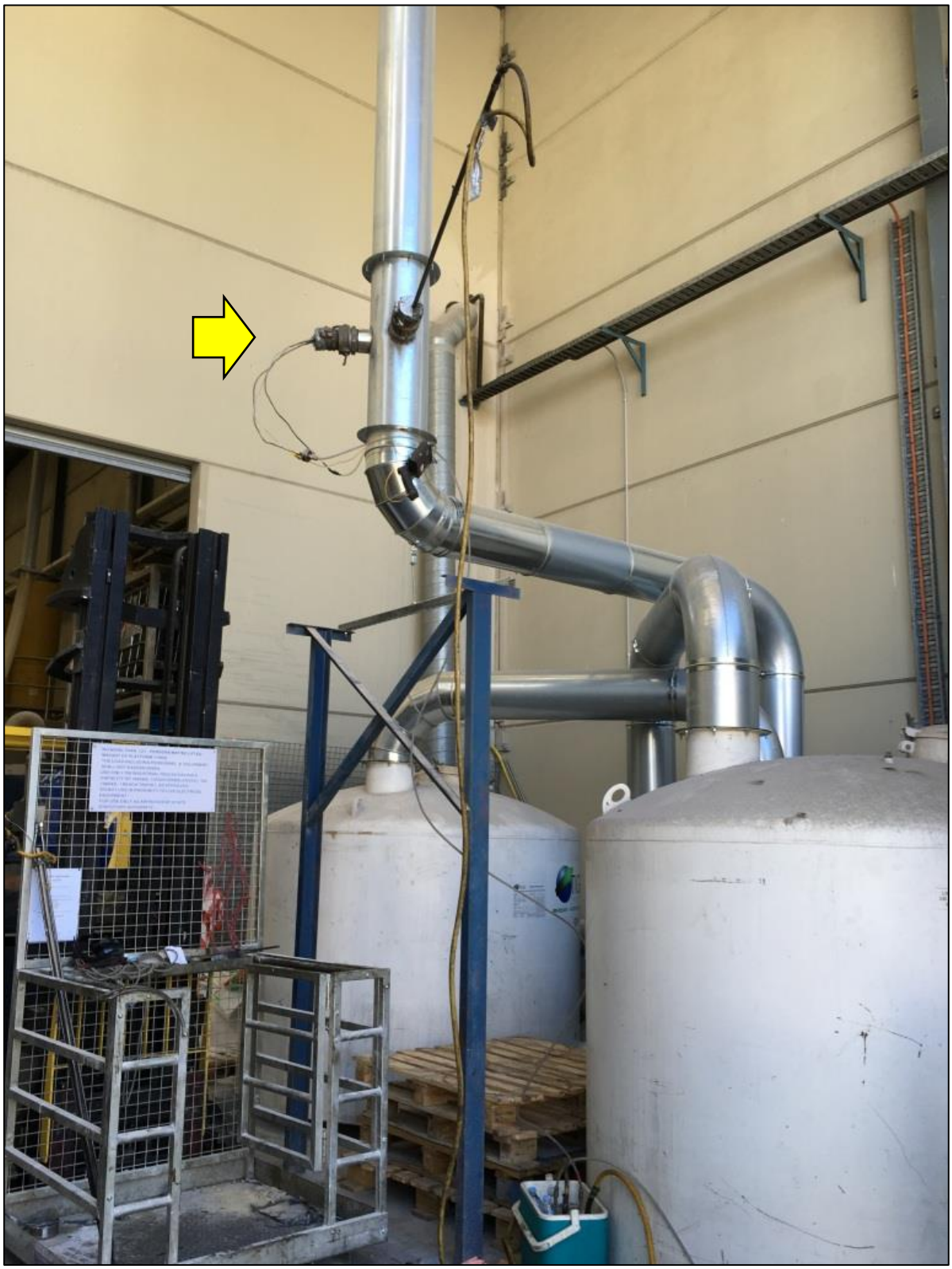
Sources: *Measurement Uncertainty – implications for the enforcement of emission limits by Maciek Lewandowski (Environment Agency) & Michael Woodfield (AEAT) UK*

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

Note: ISO 9096 is for 20-1000 mg/m^{3-} which AS4323.2 is based on. Note DSEN 13284-1 testing for < 5 mg/m^3 correlates to 5 mg/m^3 with most quoted uncertainties of $\pm$ 5.3 mg/m^3 @ 6.4 mg/m^3. From Clean Air Engineering in the United States the lowest practical limit of USEPA M5 is 5 mg/m^3 under lab conditions.

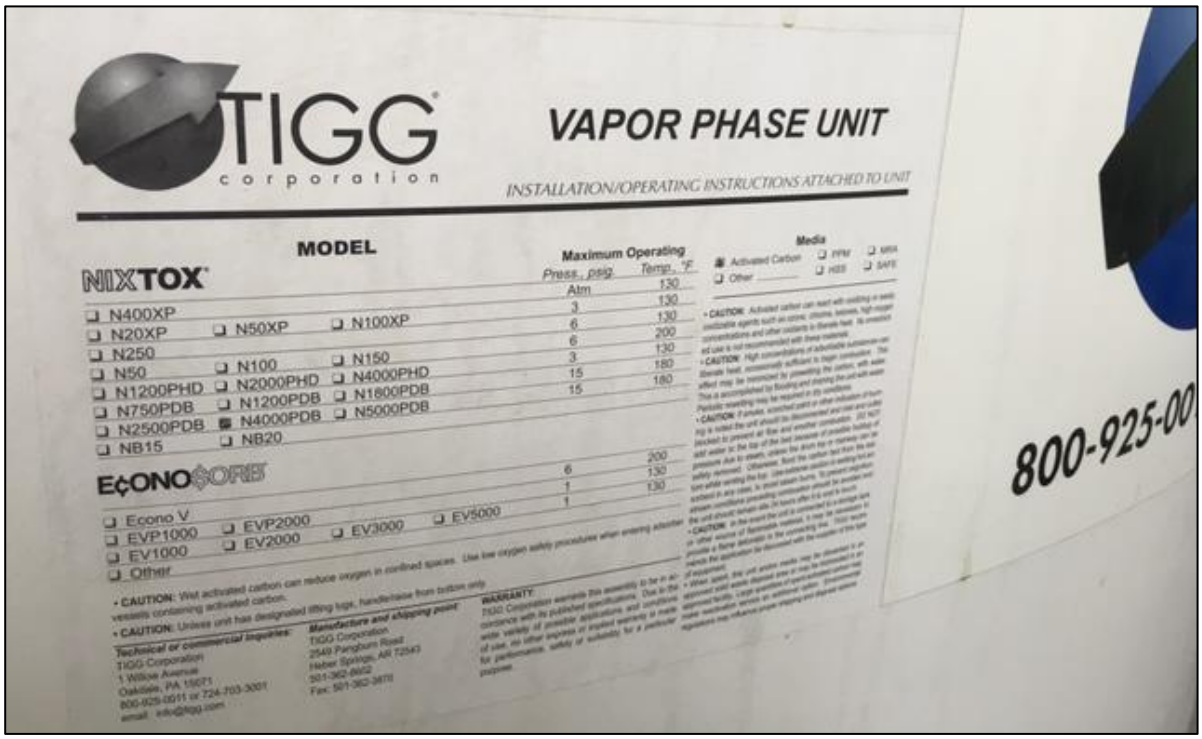
1.5 DRY SCRUBBER SAMPLING LOCATIONS

PHOTOGRAPH 1 DRY CARBON SCRUBBERS AND OUTLET SAMPLE PORTS



PHOTOGRAPH 2 VARIABLE SPEED FAN EXTRACTING AIR FROM WITHIN PLANT TO SCRUBBER TOWERS IN SERIES

PHOTOGRAPH 3 DRY SCRUBBER MANUFACTURER'S DETAILS



1.6 INSTRUMENT CALIBRATION DETAILS

SEMA Asset No.	Equipment Description	Date Last Calibrated	Calibration Due Date
857	Digital Temperature Reader	04-April-24	04-Oct-24
768	Thermocouple	28-Nov-23	28-May-24
815	Digital Manometer	01-Dec-23	01-Dec-24
613	Barometer	01-Dec-23	01-Dec-24
183	Pitot	12-Mar-24	12-Mar-2025 Visually inspected On-Site before use
928	Balance		Response Check with SEMA Site Mass
946	Testo Combustion Analyser 350XL	12-Mar-24	12-Sept-24
934	SKC PCX Sampling Pump	13-Jun-23	13-Jun-24
ML 520-24	Mesa Labs Defender DryCal Mass Flowmeter	11-Jul-23	11-Jul-24

1.7 CONCLUSIONS

Emissions were monitored on the discharge side of the two dry carbon scrubbing units connected in series, at the Rocbolt Resins manufacturing facility with the following results:

- The average Styrene emission concentration (reported as Styrene) was 7.00mg/m^3 which was compliant with the EPL limit of 220 mg/m^3. The styrene mass emission rate (MER) was 0.019 grams per second (g/s).
- The average benzene MER (reported as benzene) was less than 3.8 X 10^{-5} g/s;
- The average total VOC MER (reported as n-propane) was 0.02 g/s;
- It is considered that these measured emission test results are consistent with effects of the collection efficiency of the activated carbon packing in these two scrubber towers;
- Rocbolt Resins advised that the variable speed extraction fan serving the scrubber system was running at its normal set point (20 Hertz) during the system efficiency testing. This is of the order of 50% of total flow;
- However, the fan speed is variable depending on demand for extraction within the plant. Rocbolt Resins advise that this is both an energy conservation and scrubber efficiency optimisation policy.

ATTACHMENT A – NATA CERTIFICATE OF ANALYSIS

NSW GOVERNMENT | SafeWork NSW

Test Safe AUSTRALIA

Peter Stephenson
Stephenson Environmental Management Australia
PO Box 6398
SILVERWATER NSW 1811

Lab. Reference: 2024-2266

Samples analysed as received

SAMPLE ORIGIN: S26351

DATE OF INVESTIGATION: 30/04/2024 **DATE RECEIVED:** 27/05/24

ANALYSIS REQUIRED: Volatile Organic Compound

REPORT OF ANALYSIS OFFICIAL: Sensitive – Personal

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: 31/05/24

TestSafe Australia – Chemical Analysis Branch
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T: +61 2 9473 4000 E: lab@safework.nsw.gov.au W: testsafe.com.au
ABN 81 913 830 179

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Accreditation No. 3726

Accredited for compliance with ISO/IEC 17025 - Testing

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Test Safe AUSTRALIA

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

Client: Stephenson
Sample ID: 728972

Date Sampled : 30/04/2024
Date Analysed : 28/05/2024
Reference Number : 2024-2266-1

No	Compounds	CAS No	Front µg/section	Back µg/section	No	Compounds	CAS No	Front µg/section	Back µg/section
	Aliphatic hydrocarbons (LOQ =1µg/c/s; #18, #18 - #23 =5µg/c/s)					**Aromatic hydrocarbons** (LOQ = 1µg/compound/section)			
1	2-Methylbutane	78-78-4	<LOQ	<LOQ	39	Benzene	71-43-2	<LOQ	<LOQ
2	n-Pentane	109-66-0	<LOQ	<LOQ	40	Ethylbenzene	100-41-4	<LOQ	<LOQ
3	2-Methylpentane	107-83-5	<LOQ	<LOQ	41	Isopropylbenzene	98-82-8	<LOQ	<LOQ
4	3-Methylpentane	96-14-0	<LOQ	<LOQ	42	1,2,3-Trimethylbenzene	526-73-8	<LOQ	<LOQ
5	Cyclopentane	287-92-3	<LOQ	<LOQ	43	1,2,4-Trimethylbenzene	95-63-6	<LOQ	<LOQ
6	Methylcyclopentane	96-37-7	<LOQ	<LOQ	44	1,3,5-Trimethylbenzene	108-67-8	<LOQ	<LOQ
7	2,3-Dimethylpentane	565-59-3	<LOQ	<LOQ	45	Styrene	100-42-5	68	<LOQ
8	n-Hexane	110-54-3	<LOQ	<LOQ	46	Toluene	108-88-3	<LOQ	<LOQ
9	3-Methylhexane	589-34-4	<LOQ	<LOQ	47	p-Xylene &/or m-Xylene	106-42-3& 108-38-3	<LOQ	<LOQ
10	Cyclohexane	110-82-7	<LOQ	<LOQ	48	o-Xylene	95-47-6	<LOQ	<LOQ
11	Methylcyclohexane	108-87-2	<LOQ	<LOQ		**Ketones** (LOQ =1µg/c/s; LOQ #49, #53 =10µg/c/s; #50, #51 =50µg/c/s)			
12	2,2,4-Trimethylpentane	540-84-1	<LOQ	<LOQ	49	Acetone	67-64-1	<LOQ	<LOQ
13	n-Heptane	142-82-5	<LOQ	<LOQ	50	Acetoin	513-86-0	<LOQ	<LOQ
14	n-Octane	111-65-9	<LOQ	<LOQ	51	Diacetone alcohol	123-42-2	<LOQ	<LOQ
15	n-Nonane	111-84-2	<LOQ	<LOQ	52	Cyclohexanone	108-94-1	<LOQ	<LOQ
16	n-Decane	124-18-5	<LOQ	<LOQ	53	Isophorone	78-59-1	<LOQ	<LOQ
17	n-Undecane	1120-21-4	<LOQ	<LOQ	54	Methyl ethyl ketone (MEK)	78-93-3	<LOQ	<LOQ
18	n-Dodecane	112-40-3	<LOQ	<LOQ	55	Methyl isobutyl ketone (MIBK)	108-10-1	<LOQ	<LOQ
19	n-Tridecane	629-50-5	<LOQ	<LOQ		**Alcohols** (LOQ =1µg/c/s; #56, #57, #58, #60 =10µg/c/s)			
20	n-Tetradecane	629-59-4	<LOQ	<LOQ	56	Ethyl alcohol	64-17-5	<LOQ	<LOQ
21	α-Pinene	80-56-8	<LOQ	<LOQ	57	n-Butyl alcohol	71-36-3	<LOQ	<LOQ
22	β-Pinene	127-91-3	<LOQ	<LOQ	58	Isobutyl alcohol	78-83-1	<LOQ	<LOQ
23	D-Limonene	138-86-3	<LOQ	<LOQ	59	Isopropyl alcohol	67-63-0	<LOQ	<LOQ
	Chlorinated hydrocarbons (LOQ = 1µg/c/s; #30 =5µg/c/s)				60	2-Ethyl hexanol	104-76-7	<LOQ	<LOQ
24	Dichloromethane	75-09-2	<LOQ	<LOQ	61	Cyclohexanol	108-93-0	<LOQ	<LOQ
25	1,1-Dichloroethane	75-34-3	<LOQ	<LOQ		**Acetates** (LOQ =1µg/c/s; #62 =10µg/c/s)			
26	1,2-Dichloroethane	107-06-2	<LOQ	<LOQ	62	Ethyl acetate	141-78-6	<LOQ	<LOQ
27	Chloroform	67-66-3	<LOQ	<LOQ	63	n-Propyl acetate	109-60-4	<LOQ	<LOQ
28	1,1,1-Trichloroethane	71-55-6	<LOQ	<LOQ	64	n-Butyl acetate	123-86-4	<LOQ	<LOQ
29	1,1,2-Trichloroethane	79-00-5	<LOQ	<LOQ	65	Isobutyl acetate	110-19-0	<LOQ	<LOQ
30	Trichloroethylene	79-01-6	<LOQ	<LOQ		**Ethers** (LOQ =1µg/c/s; #66 =10µg/c/s)			
31	Carbon tetrachloride	56-23-5	<LOQ	<LOQ	66	Ethyl ether	60-29-7	<LOQ	<LOQ
32	Perchloroethylene	127-18-4	<LOQ	<LOQ	67	tert -Butyl methyl ether (MTBE)	1634-04-4	<LOQ	<LOQ
33	1,1,2,2-Tetrachloroethane	79-34-5	<LOQ	<LOQ	68	Tetrahydrofuran (THF)	109-99-9	<LOQ	<LOQ
34	Chlorobenzene	108-90-7	<LOQ	<LOQ		**Glycols** (LOQ =1µg/c/s; #69, #73 =50µg/c/s)			
35	1,2-Dichlorobenzene	95-50-1	<LOQ	<LOQ	69	PGME	107-98-2	<LOQ	<LOQ
36	1,4-Dichlorobenzene	106-46-7	<LOQ	<LOQ	70	Ethylene glycol diethyl ether	629-14-1	<LOQ	<LOQ
	Miscellaneous (LOQ #37= 10µg & #38=50µg/compound/sample)				71	PGMEA	108-65-6	<LOQ	<LOQ
37	Acetonitrile	75-05-8	<LOQ	<LOQ	72	Cellosolve acetate	111-15-9	<LOQ	<LOQ
38	n-Vinyl-2-pyrrolidinone	88-12-0	<LOQ	<LOQ	73	DGMEA	112-15-2	<LOQ	<LOQ
	Extra compound (LOQ = 10µg/compound/sample)					**Extra compound** (LOQ = 50µg/compound/sample)			
74	Bromopropane *	106-94-5	<LOQ	<LOQ	75	Naphthalene *	91-20-3	<LOQ	<LOQ
	Total VOCs (LOQ =50µg/compound/section)		68	<LOQ		Worksheet check		2024-2266-1	

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Accreditation No. 3726

Accredited for compliance with ISO/IEC 17025 - Testing

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Test Safe AUSTRALIA

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

Client: Stephenson
Sample ID: 728973

Date Sampled : 30/04/2024
Date Analysed : 28/05/2024
Reference Number : 2024-2266-2

No	Compounds	CAS No	Front µg/section	Back µg/section	No	Compounds	CAS No	Front µg/section	Back µg/section
	Aliphatic hydrocarbons (LOQ =1µg/c/s; #18, #18 - #23 =5µg/c/s)					**Aromatic hydrocarbons** (LOQ = 1µg/compound/section)			
1	2-Methylbutane	78-78-4	<LOQ	<LOQ	39	Benzene	71-43-2	<LOQ	<LOQ
2	n-Pentane	109-66-0	<LOQ	<LOQ	40	Ethylbenzene	100-41-4	<LOQ	<LOQ
3	2-Methylpentane	107-83-5	<LOQ	<LOQ	41	Isopropylbenzene	98-82-8	<LOQ	<LOQ
4	3-Methylpentane	96-14-0	<LOQ	<LOQ	42	1,2,3-Trimethylbenzene	526-73-8	<LOQ	<LOQ
5	Cyclopentane	287-92-3	<LOQ	<LOQ	43	1,2,4-Trimethylbenzene	95-63-6	<LOQ	<LOQ
6	Methylcyclopentane	96-37-7	<LOQ	<LOQ	44	1,3,5-Trimethylbenzene	108-67-8	<LOQ	<LOQ
7	2,3-Dimethylpentane	565-59-3	<LOQ	<LOQ	45	Styrene	100-42-5	56	<LOQ
8	n-Hexane	110-54-3	<LOQ	<LOQ	46	Toluene	108-88-3	<LOQ	<LOQ
9	3-Methylhexane	589-34-4	<LOQ	<LOQ	47	p-Xylene &/or m-Xylene	106-42-3 & 108-38-3	<LOQ	<LOQ
10	Cyclohexane	110-82-7	<LOQ	<LOQ	48	o-Xylene	95-47-6	<LOQ	<LOQ
11	Methylcyclohexane	108-87-2	<LOQ	<LOQ		**Ketones** (LOQ =1µg/c/s; LOQ #49, #53 =10µg/c/s; #50, #51 =50µg/c/s)			
12	2,2,4-Trimethylpentane	540-84-1	<LOQ	<LOQ	49	Acetone	67-64-1	<LOQ	<LOQ
13	n-Heptane	142-82-5	<LOQ	<LOQ	50	Acetoin	513-86-0	<LOQ	<LOQ
14	n-Octane	111-65-9	<LOQ	<LOQ	51	Diacetone alcohol	123-42-2	<LOQ	<LOQ
15	n-Nonane	111-84-2	<LOQ	<LOQ	52	Cyclohexanone	108-94-1	<LOQ	<LOQ
16	n-Decane	124-18-5	<LOQ	<LOQ	53	Isophorone	78-59-1	<LOQ	<LOQ
17	n-Undecane	1120-21-4	<LOQ	<LOQ	54	Methyl ethyl ketone (MEK)	78-93-3	<LOQ	<LOQ
18	n-Dodecane	112-40-3	<LOQ	<LOQ	55	Methyl isobutyl ketone (MIBK)	108-10-1	<LOQ	<LOQ
19	n-Tridecane	629-50-5	<LOQ	<LOQ		**Alcohols** (LOQ =1µg/c/s; #56, #57, #58, #60 =10µg/c/s)			
20	n-Tetradecane	629-59-4	<LOQ	<LOQ	56	Ethyl alcohol	64-17-5	<LOQ	<LOQ
21	α-Pinene	80-56-8	<LOQ	<LOQ	57	n-Butyl alcohol	71-36-3	<LOQ	<LOQ
22	β-Pinene	127-91-3	<LOQ	<LOQ	58	Isobutyl alcohol	78-83-1	<LOQ	<LOQ
23	D-Limonene	138-86-3	<LOQ	<LOQ	59	Isopropyl alcohol	67-63-0	<LOQ	<LOQ
	Chlorinated hydrocarbons (LOQ = 1µg/c/s; #30 =5µg/c/s)				60	2-Ethyl hexanol	104-76-7	<LOQ	<LOQ
24	Dichloromethane	75-09-2	<LOQ	<LOQ	61	Cyclohexanol	108-93-0	<LOQ	<LOQ
25	1,1-Dichloroethane	75-34-3	<LOQ	<LOQ		**Acetates** (LOQ =1µg/c/s; #62 =10µg/c/s)			
26	1,2-Dichloroethane	107-06-2	<LOQ	<LOQ	62	Ethyl acetate	141-78-6	<LOQ	<LOQ
27	Chloroform	67-66-3	<LOQ	<LOQ	63	n-Propyl acetate	109-60-4	<LOQ	<LOQ
28	1,1,1-Trichloroethane	71-55-6	<LOQ	<LOQ	64	n-Butyl acetate	123-86-4	<LOQ	<LOQ
29	1,1,2-Trichloroethane	79-00-5	<LOQ	<LOQ	65	Isobutyl acetate	110-19-0	<LOQ	<LOQ
30	Trichloroethylene	79-01-6	<LOQ	<LOQ		**Ethers** (LOQ =1µg/c/s; #66 =10µg/c/s)			
31	Carbon tetrachloride	56-23-5	<LOQ	<LOQ	66	Ethyl ether	60-29-7	<LOQ	<LOQ
32	Perchloroethylene	127-18-4	<LOQ	<LOQ	67	tert -Butyl methyl ether (MTBE)	1634-04-4	<LOQ	<LOQ
33	1,1,2,2-Tetrachloroethane	79-34-5	<LOQ	<LOQ	68	Tetrahydrofuran (THF)	109-99-9	<LOQ	<LOQ
34	Chlorobenzene	108-90-7	<LOQ	<LOQ		**Glycols** (LOQ =1µg/c/s; #69, #73 =50µg/c/s)			
35	1,2-Dichlorobenzene	95-50-1	<LOQ	<LOQ	69	PGME	107-98-2	<LOQ	<LOQ
36	1,4-Dichlorobenzene	106-46-7	<LOQ	<LOQ	70	Ethylene glycol diethyl ether	629-14-1	<LOQ	<LOQ
	Miscellaneous (LOQ #37= 10µg & #38=50µg/compound/sample)				71	PGMEA	108-65-6	<LOQ	<LOQ
37	Acetonitrile	75-05-8	<LOQ	<LOQ	72	Cellosolve acetate	111-15-9	<LOQ	<LOQ
38	n-Vinyl-2-pyrrolidinone	88-12-0	<LOQ	<LOQ	73	DGMEA	112-15-2	<LOQ	<LOQ
	Extra compound (LOQ = 10µg/compound/sample)					**Extra compound** (LOQ = 50µg/compound/sample)			
74	Bromopropane *	106-94-5	<LOQ	<LOQ	75	Naphthalene *	91-20-3	<LOQ	<LOQ
	Total VOCs (LOQ =50µg/compound/section)		56	<LOQ		Worksheet check		2024-2266-2	

ilac-MRA NATA

Accreditation No. 3726
Accredited for compliance with ISO/IEC 17025 - Testing

NSW GOVERNMENT | SafeWork NSW

Test Safe AUSTRALIA

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

All compounds (numbered 1-73) that are reported in the analysis are covered within the scope of NATA accreditation. Any additional compounds denoted with * are not covered by NATA accreditation.

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

Limit of Quantitation (LOQ) : 1 µg/sample except Cyclohexane, n-Dodecane, n-Tridecane, n-Tetradecane, a-Pinene, b-Pinene, Limonene and Trichloroethylene at 5 µg/sample; 10 µg/sample for Acetonitrile, Acetone, Isophorone, Ethanol, n-Butyl alcohol, Isobutyl alcohol, 2-Ethyl hexanol, Ethyl acetate, Ethyl ether and Bromopropane; 50 µg/sample for n-Vinyl-2-pyrrolidione, Acetoin, Diacetone alcohol, PGME, DGMEA and Naphthalene.

Method Description : Volatile organic compounds were trapped from the workplace air onto charcoal tubes by the use of a personal air monitoring pump. The volatile organic compounds were desorbed from the charcoal in the laboratory with CS_2. An aliquot of the desorbant was analysed by 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. The measurement uncertainty relates to the analysis of the analyte on the sampling device and does not take into consideration the sampling parameters such as pump flowrate, time, temperature and pressure. The measurement of uncertainty estimates are available upon request.

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