

**Environmental Management Australia** 

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# **EMISSION TEST REPORT (ETR) No. 7460/S26295/24**

STYRENE SCRUBBER EMISSION MONITORING

**ROCBOLT RESINS PTY LIMITED** 

**SMEATON GRANGE, NSW 2567** 

PROJECT No.: 7460/\$26295/24

DATE OF SURVEY: 17 OCTOBER 2024

Date of Issue: 30 November 2024

# EMISSION TEST REPORT No. 7460/S26295/24

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: drabbani@rocboltresins.com.au

Project Number: 7460/S26295/24

Test Date: 17 October 2024

**Production Conditions:** Normal operating conditions during testing

Dry gas density, volumetric flowrate, velocity, Analysis Requested:

> temperature, moisture, molecular weight of stack gases, nitrogen oxides, particulate matter less than 10 microns, volatile organic compounds including styrene and

benzene

Sample Locations: Styrene dry scrubber exhaust stack

See attachment A Sample ID Nos.:

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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Test	Test Method Number for Sampling & Analysis	Laboratory Analysis & Report No.
Dry Gas Density	NSW TM-23, USEPA M3	
Moisture	NSW TM-22, USEPA M4	
Molecular Weight of Stack Gases	NSW TM-23, USEPA M3	_
Oxides of Nitrogen	NSW TM-11, USEPA M7E	Trinity Consultants Australia;
Particulate Matter less than 10 microns	NSW OM-5, USEPA M201A	NATA Accreditation No. 15841; Report No. 247401.0144
Stack Pressure & Volumetric Flow	NSW TM-2, USEPA M2	-
Stack Temperature	NSW TM-2, USEPA M2	<del>-</del>
Velocity	NSW TM-2, USEPA M2	_
Volatile Organic Compounds (styrene, benzene, total as n- Propane)	NSW TM-34, USEPA M18	TestSafe Australia, NATA Accreditation No. 3726, Report No. 2024-5051

**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: 30 November 2024

P W Stephenson Managing Director

#### 1.1 **SCOPE OF WORK**

The scope of work undertaken at Rocbolt Resins, Smeaton Grange, on 17 October, 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/m³ or g/s	OM-2, TM-34
Particulate matter less than 10 microns	1 sample	mg/m³	OM-5, USEPA 201A
Nitrogen Oxides	Continuous	mg/m³	TM-11
Dry Gas Density	✓	kg/m²	TM-23
Moisture	✓	%	TM-22
Molecular weight of stack gases	✓	g.g-mole	TM-23
Temperature	✓	K	TM-2
Velocity	✓	m/s	TM-2
Volumetric flowrate	✓	m³/s	TM-2

Key:

m/s

kg/m<sup>3</sup> kilograms per cubic metre

mg/m<sup>3</sup> milligrams per cubic metre at 0°C and 101.3 kilopascals (kPa)

g/s grams per second

% percentage

grams per gram mole g.g-mole grams per second g/s ٥C degrees Celsius TMtest method

metres per second  $m^3/s$ dry cubic metre per second 0°C 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.

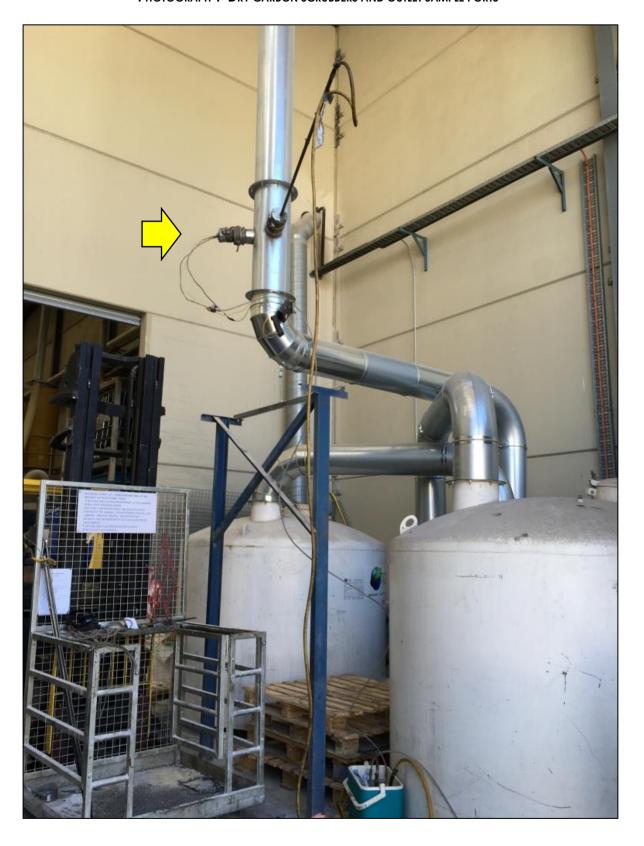
# 1.3 SUMMARY OF EMISSION TEST RESULTS – 17 OCTOBER 2024

Parameter		Unit of measure	Average Measured Concentrations 17 October 2024 Exhaust Stack	EPL Licence 20944 Limit
Chamara	(as Styrene)	mg/m³	34.1	220
Styrene	MER (as Styrene)	g/s	0.011	
Dannara	(as Benzene)	mg/m³	<0.017 ( <loq)< td=""><td></td></loq)<>	
Benzene	MER (as Benzene)	g/s	<0.0000053	
VOC (total)	(as n- propane)	mg/m³	44.0	
DM	concentration	mg/m³	<0.0007	
$PM_{10}$	MER	g/s	0.0000002	
0.11(-11	concentration	mg/m³	<0.21	
Oxides of nitrogen	MER	g/s	<0.00007	
Oxygen (average)	•	%	21.03	
Stack temperature		°C	19	
Velocity		m/s	5.0	
Volumetric flow		m³/s	0.32	
Moisture		%	1.6	
Molecular weight dry	stack gas	g/g mole	28.85	

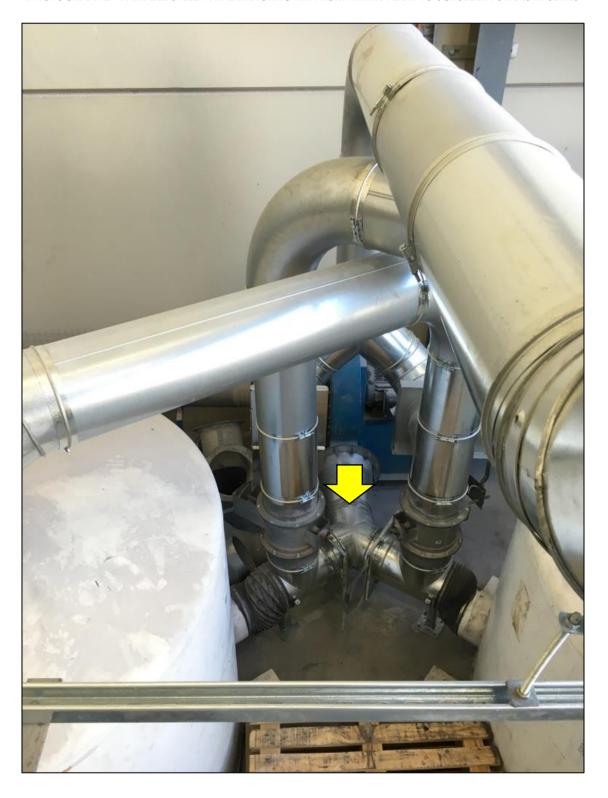
Key:	EPL	=	Environment Protection Licence
	MER	=	Mass Emission Rate
	VOC	=	Volatile organic compounds
	LOQ	=	Limit of Quantitation
	$mg/m^3$	=	milligrams per cubic metre at 0°C and 101.3 kilopascals (kPa)
	g/s	=	grams per second
	°C	=	degrees Celsius
	m/s	=	metres per second
	$m^3/s$	=	dry cubic metre per second 0°C and 101.3 kilopascals (kPa)
	%	=	percentage
	<	=	less than
	g/g mole	=	grams per gram mole
	kg/m³	=	Kilograms per cubic metre
	kPa	=	Kilo Pascals
		=	not specified in EPL 20944

# 1.4 DRY SCRUBBER SAMPLING LOCATIONS





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



#### PHOTOGRAPH 3 DRY SCRUBBER MANUFACTURER'S DETAILS



#### 1.5 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 34.1 mg/m³ which was compliant with the EPL limit of 220 mg/m³. The styrene mass emission rate (MER) was less than 0.011 grams per second (g/s).
- The average benzene MER (reported as benzene) was less than 5.3 X 10-6 g/s;
- The average total VOC MER (reported as n-propane) was 0.07 g/s;
- o The average emission concentration of Oxides of Nitrogen  $(NO_x)$  (expressed as nitrogen dioxide  $(NO_2)$ ) was <0.21 mg/m³. The  $NO_x$  MER was <0.00007 g/s.
- $\circ$  The average PM  $_{10}$  emission concentration was <0.0007 mg/m  $^3$  . The PM  $_{10}$  MER was 0.0000002 g/s.
- Although, still readily compliant (16% of EPL limit) the styrene emission
  has increased over the past year which may mean the activated carbon
  packing in the solid substrate dry scrubber is approaching saturation.
  However, the progress of this increasing saturation can be monitored by
  your in-house laboratory with a hand-held VOC monitor over the next
  12 months.
- 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;
- o 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.
- Sampling plane location is satisfactory for sampling of gases and low concentrations of very fine particles which have been filtered through two beds of activated carbon. However, the sampling plane could be relocated further downstream but would have no impact on this emission test work for these parameters.

ATTACHMENT A – NATA CERTIFICATES OF ANALYSIS

TESTSAFE NSW – REPORT NO. 2024-5051

TCA- REPORT NO. 247401.0144

SEMA - CHAIN OF CUSTODY \$26488-7460





2024-5051

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

Samples analysed as received

Lab. Reference:

SAMPLE ORIGIN: Project No: 7460

DATE OF INVESTIGATION: 17/10/2024 DATE RECEIVED: 21/10/24

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 Chemical Analysis Branch

Date: 24/10/24

TestSafe Australia – Chemical Analysis Branch Level 2, Building 1, 9-15 Chilvers Road, Thornleigh, NSW 2120, Australia T: +61 2 9473 4000 E: lab@safework.nsw.gov.au W: testsafe.com.au ABN 81 913 830 179



Accreditation No. 3726 Accredited for compliance with ISO/IEC 170.25 - Testing

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Analysis of Volatile Organic Compounds in Workplace Air by GC/MS
Client: Stephenson Date Sampled: 17/10/2024 Sample ID: 730212 Date Analysed: 21/10/2024 Reference Number: 2024-5051-1

	C	CAS No	Front	Back	No	C	CAS No	Front	Back	
No	Compounds	CAS No	μg/se	ction	No	Compounds			ection	
	Aliphatic hydrocarbon	5 (LOQ =1µg/c/c	; #10, #18 - #2	23 -5µg/cls)		Aromatic hydrocarbon	(LOQ = Iµg/co	mpound/section	m)	
1	2-Methylbutane	78-78-4	⊲LOQ	⊲LOQ	39	Benzene	71-43-2	<l0q< td=""><td><l0q< td=""></l0q<></td></l0q<>	<l0q< td=""></l0q<>	
2	n-Pentane	109-66-0	⊲LOQ	⊲LOQ	40	Ethylbenzene	100-41-4	⊲L0Q	⊲LOQ	
3	2-Methylpentane	107-83-5	⊲LOQ	⊲LOQ	41	Isopropyibenzene	98-82-8	⊲L0Q	⊲LOQ	
4	3-Methylpentane	96-14-0	⊲LOQ	⊲LOQ	42	1,2,3-Trimethylbenzene	526-73-8	⊲L0Q	⊲LOQ	
5	Cyclopentane	287-92-3	⊲LOQ	⊲LOQ	43	1,2,4-Trimethylbenzene	95-63-6	<l0q< td=""><td><l0q< td=""></l0q<></td></l0q<>	<l0q< td=""></l0q<>	
6	Methylcyclopentane	96-37-7	⊲LOQ	⊲LOQ	44	1,3,5-Trimethylbenzene	108-67-8	<l0q< td=""><td><l0q< td=""></l0q<></td></l0q<>	<l0q< td=""></l0q<>	
7	2,3-Dimethylpentane	565-59-3	⊲LOQ	⊲LOQ	45	Styrene	100-42-5	193	⊲LOQ	
8	n-Hexane	110-54-3	⊲LOQ	⊲LOQ	46	Tohisme	108-88-3	⊲L0Q	⊲LOQ	
9	3-Methylhexane	589-34-4	⊲LOQ	⊲LOQ	47	p-Xylene &/or m-Xylene	206-42-3-8	⊲L0Q	⊲LOQ	
10	Cyclohexane	110-82-7	⊲LOQ	⊲LOQ	48	o-Xylene	95-47-6	⊲L0Q	⊲LOQ	
11	Methylcyclohexane	108-87-2	⊲LOQ	⊲LOQ		Ketones (LOQ -1µg/c/s; LOQ	649, #53 =10µg/c	/s; #50, #51 -6	Stugick)	
12	2,2,4-Trimethylpentane	540-84-1	⊲LOQ	⊲LOQ	49	Acetone	67-64-1	42	<l0q< td=""></l0q<>	
13	n-Heptane	142-82-5	⊲LOQ	⊲LOQ	50	Acetoin	513-86-0	-L0Q	<l0q< td=""></l0q<>	
14	n-Octane	111-65-9	⊲LOQ	⊲LOQ	51	Diacetone alcohol	123-42-2	-L0Q	⊲LOQ	
15	n-Nonane	111-84-2	⊲LOQ	⊲LOQ	52	Cycloheranone	108-94-1	<l0q< td=""><td>⊲LOQ</td></l0q<>	⊲LOQ	
16	n-Decane	124-18-5	⊲LOQ	⊲LOQ	53	Isophorone	78-59-1	⊲L0Q	⊲LOQ	
17	n-Undecane	1120-21-4	⊲LOQ	⊲LOQ	54	Methyl ethyl ketone (MEK)	78-93-3	<l0q< td=""><td><l0q< td=""></l0q<></td></l0q<>	<l0q< td=""></l0q<>	
18	n-Dodecane	112-40-3	⊲LOQ	⊲LOQ	55	Methyl isobutyl ketone (MIBK)	108-10-1	-LOQ	<l0q< td=""></l0q<>	
19	n-Tridecane	629-50-5	⊲LOQ	⊲LOQ	П	Alcohols (LOQ-1µg/c/s; #56,	#57, #58, #60 -D	Bµg/o/s)		
20	n-Tetradecane	629-59-4	⊲LOQ	⊲LOQ	56	Ethyl alcohol	64-17-5	⊲L0Q	⊲LOQ	
21	o-Pinene	80-56-8	⊲LOQ	⊲LOQ	57	n-Butyl alcohol	71-36-3	<l0q< td=""><td>⊲LOQ</td></l0q<>	⊲LOQ	
22	β-Pinene	127-91-3	⊲LOQ	⊲LOQ	58	Isobutyl alcohol	78-83-1	⊲L0Q	⊲LOQ	
23	D-Limonene	138-86-3	⊲LOQ	⊲LOQ	59	Isopropyl alcohol	67-63-0	-LOQ	<l0q< td=""></l0q<>	
	Chlorinated hydrocarb	005 (LOQ-1)	µg/c/c, #30 −5	ug/c/s)	60	2-Ethyl hexanol	104-76-7	-L0Q	⊲LOQ	
24	Dichloromethane	75-09-2	⊲LOQ	⊲LOQ	61	Cycloheranol	108-93-0	⊲L0Q	⊲LOQ	
25	1,1-Dichloroethane	75-34-3	⊲LOQ	⊲LOQ		Acetates (LOQ=Iµg/c/s; #62	-10µg/c/s)			
26	1,2-Dichloroethane	107-06-2	⊲LOQ	⊲LOQ	62	Ethyl acetate	141-78-6	⊲L0Q	⊲LOQ	
27	Chloroform	67-66-3	⊲LOQ	⊲LOQ	63	n-Propyl acetate	109-60-4	-L0Q	⊲LOQ	
28	1,1,1-Trichloroethane	71-55-6	⊲LOQ	⊲LOQ	64	n-Butyl acetate	123-86-4	⊲L0Q	<l0q< td=""></l0q<>	
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 =16	Jug(c/s)			
31	Carbon tetrachloride	56-23-5	⊲LOQ	⊲LOQ	66	Ethyl ether	60-29-7	⊲L0Q	⊲LOQ	
32	Perchloroethylene	127-18-4	⊲LOQ	⊲LOQ	67	tert -Butyl methyl other (1888)	1634-04-4	⊲L0Q	⊲LOQ	
33	1,1,2,2-Tetrachloroethane	79-34-5	⊲LOQ	⊲LOQ	68	Tetrahydrofuran (THF)	109-99-9	⊲L0Q	⊲LOQ	
34	Chlorobenzene	108-90-7	⊲LOQ	⊲LOQ		Glycols (LOQ-tµg/c/s; #69, #	73 =50µg/c/s)			
35	1,2-Dichlorobenzene	95-50-1	⊲LOQ	⊲LOQ	69	PGME	107-98-2	<l0q< td=""><td><loq< td=""></loq<></td></l0q<>	<loq< td=""></loq<>	
36	1,4-Dichlorobenzene	106-46-7	⊲LOQ	⊲LOQ	70	Ethylene glycol diethyl ether	629-14-1	⊲L0Q	⊲LOQ	
	Miscellaneous (Log #37-	10µg & #38-50µ	g/compound/s	ample)	71	PGMEA	108-65-6	<l0q< td=""><td><l0q< td=""></l0q<></td></l0q<>	<l0q< td=""></l0q<>	
37	Acetonitrile	75-05-8	⊲LOQ	⊲LOQ	72	Cellosolve acetate	111-15-9	⊲L0Q	⊲LOQ	
38	n-Vinyl-2-pyrrolidinone	88-12-0	⊲LOQ	⊲LOQ	73	DGMEA	112-15-2	<l0q< td=""><td><loq< td=""></loq<></td></l0q<>	<loq< td=""></loq<>	
	Extra compound a.oo- Bromopropane *	10ng/compound	(sample)			Extra compound (1.00)	50µg/compound/	sample)		
74				⊴T00	75	Naphthalene *	91-20-3	⊲L0Q	⊲LOQ	
Щ	Total VOCs (LOQ-56µg/comp	ound/section)	235	⊲LOQ	Ш	Worksheet check		20	24-5051-1	



2024-5051

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Analysis of Volatile Organic Compounds in Workplace Air by GC/MS
Client: Stephenson Date Sampled: 17/10/2024 Sample ID: 730213 Date Analysed: 21/10/2024 Reference Number: 2024-5051-2

Aliphatic hydrocarbons	Back	Front	CAS No	Compounds	No	Back	Front	CAS No	Compounds	No
2 Naferfortumes	ection	μg/se	CAS No	Сотрония	140	ction			Compounds	
2 Naferfyltrutnas	ion)	mpound/sect	(LOQ = Iµg/co	Aromatic hydrocarbon		3 =5µg/cls)	#10, #18 - #2	(LOQ=lµg/c/c	Aliphatic hydrocarbons	
2   2   2   2   2   2   2   2   2   2	⊲L0Q				39					1
4 3-Medrylpeatmas	<l0q< td=""><td>⊲L0Q</td><td>100-41-4</td><td>Ethylbenzene</td><td>40</td><td>⊲LOQ</td><td>⊲LOQ</td><td>109-66-0</td><td>n-Pentane</td><td>2</td></l0q<>	⊲L0Q	100-41-4	Ethylbenzene	40	⊲LOQ	⊲LOQ	109-66-0	n-Pentane	2
5   Cyclopentane   267-32-3   cLOQ   cloq	<l0q< td=""><td>⊲L0Q</td><td>98-82-8</td><td>Isopropyibenzene</td><td>41</td><td>⊲LOQ</td><td>⊲LOQ</td><td>107-83-5</td><td>2-Methylpentane</td><td>3</td></l0q<>	⊲L0Q	98-82-8	Isopropyibenzene	41	⊲LOQ	⊲LOQ	107-83-5	2-Methylpentane	3
6   Methylcyclopeatrans	<l0q< td=""><td>⊲L0Q</td><td>526-73-8</td><td>1,2,3-Trimethylbenzene</td><td>42</td><td>⊲LOQ</td><td>⊲LOQ</td><td>96-14-0</td><td>3-Methylpentane</td><td>4</td></l0q<>	⊲L0Q	526-73-8	1,2,3-Trimethylbenzene	42	⊲LOQ	⊲LOQ	96-14-0	3-Methylpentane	4
7   2.3-Dimenshippentane   365.59.3   cLOQ   cLOQ   45   Styrace   100.42.5   209     8   n-Harame   110.54.3   cLOQ   cLOQ   45   Tohane   108.88.3   cLOQ     9   3-Medrytherane   359.34.4   cLOQ   cLOQ   47   p-Nylace k/or m:Nylace   mains   cLOQ     10   Cyclobarame   110.82.7   cLOQ   cLOQ   48   o-Nylace   0.00   cloq   94.7-6   cLOQ     11   Medrytcyclobarame   110.82.7   cLOQ   cLOQ   cLOQ   49   Aretone   0.7-64.1   76     12   2.2.4-Trimethylosatame   340.84.1   cLOQ   cLOQ   49   Aretone   0.7-64.1   76     13   n-Haptane   142.83.5   cLOQ   cLOQ   50   Aretoni   513.86.0   cLOQ     14   n-Octane   111.65.9   cLOQ   cLOQ   51   Directone slocial   123.42.2   cLOQ     15   n-Docane   112.48.5   cLOQ   cLOQ   52   Cyclobarane   108.94.1   cLOQ     16   n-Decane   112.48.5   cLOQ   cLOQ   53   Lophorone   108.94.1   cLOQ     17   n-Undecane   112.48.5   cLOQ   cLOQ   54   Methyl ethyl kettne (MIX)   78.93.3   cLOQ     18   n-Docane   112.48.3   cLOQ   cLOQ   55   Methyl instrume (MIX)   78.93.3   cLOQ     19   n-Trifectone   629.59.5   cLOQ   cLOQ   55   Methyl instrume (MIX)   78.93.3   cLOQ     10   n-Tetradocane   629.59.5   cLOQ   cLOQ   55   Methyl instrume (MIX)   78.848-10ag(m)     10   n-Tetradocane   629.59.5   cLOQ   cLOQ   55   Ethyl alcohol   71.36.3   cLOQ     10   n-Tetradocane   629.59.5   cLOQ   cLOQ   57   n-Butyl alcohol   77.36.3   cLOQ     11   n-Tetradocane   629.59.5   cLOQ   cLOQ   58   Ethyl alcohol   77.36.3   cLOQ     12   n-Pinene   80.56.8   cLOQ   cLOQ   59   inspuryl alcohol   77.36.3   cLOQ     12   n-Pinene   72.49.2   cLOQ   cLOQ   59   inspuryl alcohol   77.36.3   cLOQ     12   n-Pinene   72.49.2   cLOQ   cLOQ   59   inspuryl alcohol   77.36.3   cLOQ     13   n-Pinene   72.69.2   cLOQ   cLOQ   59   inspuryl alcohol   77.36.3   cLOQ     14   n-Pinene   72.69.2   cLOQ   cLOQ   60   Ethyl acctane   17.36.3   cLOQ     15   n-Pinene   75.43   cLOQ   cLOQ   60   Ethyl acctane   17.36.4   cLOQ     17   n-Pinene   75.44   cLOQ   cLOQ   cloQ   cloQ   cloQ   cloQ   cloQ   cloQ	⊲LOQ	⊲L0Q	95-63-6	1,2,4-Trimethylbenzene	43	<l0q< td=""><td>⊲LOQ</td><td>287-92-3</td><td>Cyclopentane</td><td>5</td></l0q<>	⊲LOQ	287-92-3	Cyclopentane	5
S	<l0q< td=""><td>⊲L0Q</td><td>108-67-8</td><td>1,3,5-Trimethylbenzene</td><td>44</td><td>⊲LOQ</td><td>⊲LOQ</td><td>96-37-7</td><td>Methylcyclopentane</td><td>6</td></l0q<>	⊲L0Q	108-67-8	1,3,5-Trimethylbenzene	44	⊲LOQ	⊲LOQ	96-37-7	Methylcyclopentane	6
9   3-Methylhaxona   389,34.4   4.0Q   4.0Q   47   p-Nylana   6.00   6.0Q   10   Cyclohaxona   110,82.7   4.0Q   4.0Q   48   e-Nylana   93,47.6   4.0Q   11   Methylcyclohaxona   160,87.2   4.0Q   4.0Q   4.0Q   Ketonas   6.0Q -1agioi; 1.0Q +14,873 -18gioi; 876, 81   e-Nylana   1.0Q   4.0Q   4.	<loq< td=""><td>209</td><td>100-42-5</td><td>Styrene</td><td>45</td><td>⊲LOQ</td><td>⊲LOQ</td><td>565-59-3</td><td>2,3-Dimethylpentane</td><td>7</td></loq<>	209	100-42-5	Styrene	45	⊲LOQ	⊲LOQ	565-59-3	2,3-Dimethylpentane	7
10   Cyclobaxma	<loq< td=""><td>⊲L0Q</td><td>108-88-3</td><td>Tohiene</td><td>46</td><td>⊲LOQ</td><td>⊲LOQ</td><td>110-54-3</td><td>n-Hexane</td><td>8</td></loq<>	⊲L0Q	108-88-3	Tohiene	46	⊲LOQ	⊲LOQ	110-54-3	n-Hexane	8
10   Cyclobaxanas	⊲L0Q	⊲L0Q	306-42-3-8 208-39-3	p-Xylene &/or m-Xylene	47	⊲LOQ	⊲LOQ	589-34-4	3-Methylhexane	9
11   Methylcyclobaszane   108.87-2   CLOQ   CLOQ   CLOQ   Hectones (1.00 - Inglicis t.00 acts, sts Inglicis, sts., sts Inglicis acts, sts Ingli	<loq< td=""><td>⊲LOQ</td><td>95-47-6</td><td>o-Xylene</td><td>48</td><td>⊲LOQ</td><td>⊲LOQ</td><td></td><td>Cyclohexane</td><td>10</td></loq<>	⊲LOQ	95-47-6	o-Xylene	48	⊲LOQ	⊲LOQ		Cyclohexane	10
12   2.2.+Trimethylpentane	50ugich)	de: #50, #51 -		Ketones (1.00 -tug/c/c 1.00	$\Box$	⊲LOQ	⊲LOQ		Methylcyclohexane	11
13	<1.00	_			49	<1.00	⊲L00	540-84-1	2,2,4-Trimethylpentane	12
11	⊲L0Q	⊲L00		Acetoin	50	_	_			13
11	⊲L0Q	_		Diacetone alcohol	51	<1.00	⊲L00		n-Octane	14
15   n-Decame   124-18-5   «LOQ «LOQ 53   Lophorome   78-59-1   «LOQ 17   n-Undecame   1130-21-4   «LOQ «LOQ 54   Methyl ethyl ketone (MIK)   78-93-3   «LOQ 18   n-Dedacame   112-40-3   «LOQ «LOQ 55   Methyl isobutyl ketone (MIK)   108-10-1   «LOQ 19   n-Tridecame   629-59-5   «LOQ «LOQ 55   Methyl isobutyl ketone (MIK)   108-10-1   «LOQ 19   n-Tetradecame   629-59-4   «LOQ «LOQ 56   Ethyl alcohol   64-17-5   «LOQ 19   n-Tetradecame   629-59-4   «LOQ «LOQ 57   n-Butyl alcohol   71-36-3   «LOQ 19   n-Pinsme   80-56-8   «LOQ «LOQ 57   n-Butyl alcohol   71-36-3   «LOQ 19   Lophoromethyl alcohol   71-36-3   «LOQ 19   Lophoromethyl alcohol   78-83-1   «LOQ 19   Lophoromethyl alcohol   78-83-1   «LOQ 19   Lophoromethyl alcohol   78-83-1   «LOQ 19   Lophoromethyl alcohol   67-63-0   «LOQ 19   Lophoromethyl alcohol   67-63-0   «LOQ 19   Lophoromethyl alcohol   78-83-1   «LOQ 19   «LOQ 19   Lophoromethyl alcohol   78-83-1   «LOQ 19	⊲L0Q	⊲L00		Cycloheranone	52	<100	⊲L00		n-Nonane	15
17   n-Undecame	<1.00	_		Isophorone	53	<100	_		n-Decame	16
18   n-Dodecame	<1.00	_		•	54				n-Undecane	17
19    n-Tridecane	<loq< td=""><td>_</td><td></td><td></td><td><math>\rightarrow</math></td><td>_</td><td>_</td><td></td><td>n-Dodecane</td><td>_</td></loq<>	_			$\rightarrow$	_	_		n-Dodecane	_
Decision   Companies   Comp	200			, ,		•				
21   0Pineme	<l00< td=""><td></td><td></td><td></td><td>56</td><td></td><td>_</td><td></td><td></td><td>_</td></l00<>				56		_			_
22   β-Pinane   127-91-3   cLOQ   cLOQ   98   Isoburyi alcohol   78-83-1   cLOQ   cLOQ   D-Limonane   138-86-3   cLOQ   cLOQ   99   Isopropyi alcohol   67-63-0   cLOQ	-LOQ	_			_		_			_
23	-IOQ	_		*	_					
Chlorinated hydrocarbons (LOQ =  LoQ  cloQ  cl	4L00	_		•	$\rightarrow$	_	_		F	_
24   Dichloromethame	<1.00	_					•			-
25	<100	_			_					24
26   1,2-Dichloroethams	-LUQ	-trof		-	01		_			-
27         Chloroform         67.66-3 <ioq< th=""> <ioq< th=""> <ioq< th="">         63         n-Propyl acetate         109.60-4         <ioq< th="">           28         1,1,1-Trichloroschane         71.55-6         <ioq< td=""> <ioq< td="">         64         n-Butyl acetate         123.86-4         <ioq< td="">           29         1,1,2-Trichloroschane         79.00-5         <ioq< td=""> <ioq< td="">         65         Isobutyl acetate         110.19-0         <ioq< td="">           30         Trichloroschylane         79.01-6         <ioq< td=""> <ioq< td="">         Ethers (LOQ-Ipgich; 866-10µgich)         <ioq< td="">           31         Carbon tetrachloride         56.23-5         <ioq< td=""> <ioq< td="">         66         Ethyl ether (LOQ-Ipgich; 866-10µgich)         <ioq< td="">           32         Perchloroschylane         127.18-4         <ioq< td=""> <ioq< td="">         67         terri-Butyl methyl ether (error)         1634-04-4         <ioq< td="">           33         1,1,2-Tetrachloroschane         79.34-5         <ioq< td=""> <ioq< td="">         68         Tetrahydrofuran (THI)         109.99-9         <ioq< td="">           34         Chlorobenzene         108-90-7         <ioq< td=""> <ioq< td="">         Glycols (t.oQ-Iµgich; 866, 873-50µgich)         107.98-2         <ioq< td="">           35         1,2-Dichlorobenzene<td>1</td><td></td><td></td><td></td><td>62</td><td></td><td>_</td><td></td><td>-,</td><td>_</td></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<></ioq<>	1				62		_		-,	_
28	⊲L0Q	_		,	$\rightarrow$	_	_			_
29	⊲L0Q	_		••	_		_			-
Trichloroethylene	<t00< td=""><td>_</td><td></td><td></td><td>-</td><td></td><td>_</td><td></td><td>-1-1-</td><td>_</td></t00<>	_			-		_		-1-1-	_
31   Carbon tetrachloride   56.23.5   <loq (1.00="" (110)="" (1998)="" -="" 107.98.2="" 108.65.6="" 109.99.9="" 127.18.4="" 1634.04.4="" 190,="" 193.5="" 197.5="" 199.8="" 199.9="" 32="" 57="" 58="" 59="" 60.29.7="" 629.14.1="" 66="" 67="" 70="" 71="" <l<="" <loq="" calycols="" diethyl="" ether="" ethyl="" ethylane="" glycol="" lugicis;="" methyl="" miscellaneous="" perchloroethylane="" pgme="" pgmea="" td="" terri-butyl="" tetralhydrofuran=""  =""><td><t00< td=""><td>⊲LOQ</td><td></td><td></td><td>60</td><td>_</td><td>_</td><td></td><td>-1-1-</td><td>-</td></t00<></td></loq>	<t00< td=""><td>⊲LOQ</td><td></td><td></td><td>60</td><td>_</td><td>_</td><td></td><td>-1-1-</td><td>-</td></t00<>	⊲LOQ			60	_	_		-1-1-	-
32   Perchloroethylens							_		,	-
33   1,1,2,2-Tetrachloroschane   79,34-5   cLOQ   cLOQ   68   Tetralnydrofuran (THF)   109,99-9   cLOQ     34   Chlorobenzene   108-90-7   cLOQ   cLOQ   clycols (LOQ-lugicic, 60, 673-58µgicio)     35   1,2-Dichlorobenzene   95-50-1   cLOQ   cLOQ   69   PGME   107-98-2   cLOQ     36   1,4-Dichlorobenzene   106-46-7   cLOQ   cLOQ   70   Ethylene glycol diethyl other   629,14-1   cLOQ     Miscellaneous (LOQ-655-18µg & 638-58µgicompound/sample)   71   PGMEA   108-65-6   cLOQ     37   Acetonitrile   75-05-8   cLOQ   cLOQ   72   Cellosolva acetate   111-15-9   cLOQ     38   n-Vimyl-2-pytrolidinone   88-12-0   cLOQ   cLOQ   73   DGMEA   112-15-2   cLOQ     Extra compound (LOQ - Sharkompound/sample)   Extra compound (LOQ - Sharkompound/s	<loq< td=""><td>_</td><td></td><td></td><td><math>\rightarrow</math></td><td>_</td><td>_</td><td></td><td></td><td>_</td></loq<>	_			$\rightarrow$	_	_			_
34   Chlorobenzene   108-90-7   CLOQ   CloQ   Glycols (1.0Q -lugicis; 60, 873 -58agicis)     35   1,2-Dichlorobenzene   95-50-1   CLOQ   CLOQ   69   PGME   107-98-2   CLOQ     36   1,4-Dichlorobenzene   106-46-7   CLOQ   CLOQ   70   Ethylene glycol diethyl other   629-14-1   CLOQ     Miscellaneous (1.0Q 657-189g & 638-58agiconpound/sample)   71   PGMEA   108-65-6   CLOQ     37   Acetonitrile   75-05-8   CLOQ   CLOQ   72   Cellosolva acetate   111-15-9   CLOQ     38   n-Vimyl-2-pytrolidinone   88-12-0   CLOQ   CLOQ   73   DGMEA   112-15-2   CLOQ     Extra compound (1.00 = thesiconpound/sample)   Extra compound (1.00 = thesiconpound/sample)     Extra compound (1.00 = thesiconpound/sample)   Extra compound (1.00 = thesiconpound/sample)	<t00< td=""><td><u> </u></td><td></td><td></td><td>-</td><td>_</td><td>•</td><td></td><td>,</td><td>_</td></t00<>	<u> </u>			-	_	•		,	_
35   1,2-Dichlorobennesses   95.50.1   ClQ   ClQ   69   PCME   107.98-2   ClQ     36   1,4-Dichlorobennesses   106.46.7   ClQ   ClQ   70   Ethylene glycol diethyl ether   629.14.1   ClQ     Miscellaneous (1.00 e57-169g & e586-569g(compound/sample)   71   PGMEA   108.65.6   ClQ     37   Acetonitrile   75.05.8   ClQ   ClQ   72   Cellosolve acetate   111.15.9   ClQ     38   n-Vimyl-2-pytrolidinous   88.12.0   ClQ   ClQ   73   DGMEA   112.15.2   ClQ     Extra compound (1.00 = the foreground/sample)   Extra	⊲LOQ	⊲LOQ		,	68		_ `		-1-1-1-	-
36					Ц		_			_
Miscellaneous (LOQ 657-10gg & 638-55qg)compound/sample)   71   PGMEA   108-65-6   CLOQ	⊲L0Q	<u> </u>			_		_		-,	_
37   Acetonitrile	<l0q< td=""><td>_</td><td>629-14-1</td><td></td><td><math>\rightarrow</math></td><td></td><td>_</td><td></td><td>-,</td><td>36</td></l0q<>	_	629-14-1		$\rightarrow$		_		-,	36
38 n-Vinyl-2-pytrolidinose 88.12.0 «LOQ «LOQ 73 DGMEA 1/12.15.2 «LOQ Extra compound (100 n the temperatural).	<l0q< td=""><td>_</td><td>108-65-6</td><td></td><td>-</td><td></td><td></td><td>10µg &amp; #38-50µg</td><td></td><td></td></l0q<>	_	108-65-6		-			10µg & #38-50µg		
Extra compound (100 = thusbaneouthample) Extra compound (100 = thusbaneouthample)	<t00< td=""><td>⊲LOQ</td><td>111-15-9</td><td></td><td></td><td></td><td>_</td><td>75-05-8</td><td></td><td>_</td></t00<>	⊲LOQ	111-15-9				_	75-05-8		_
Extra compound (1.00 - 16 <sub>sug</sub> /compound/comple)	⊲LOQ				73	⊲LOQ	_			38
	700	(ample)	50µg/compound/	Extra compound (1.00-	72	100	sample)	Hug/compound/	Extra compound a.oo-	741
	<loq 024-5051-</loq 	⊲L0Q	91-20-3	Naphthalene *	75		⊲LOQ	106-94-5	Bromopropane *	74



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#### 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<sub>2</sub>. An aliquot of the desorbant was analyzed 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.



2024-5051

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# STYRENE SCRUBBER EXHAUST EMISSION MONITORING - 17 OCTOBER 2024

40-44 Anzac Avenue, Smeaton Grange NSW 2567

# Rocbolt Resins PTY LTD







# DOCUMENT CONTROL

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Should you have any queries regarding the contents of this document, please contact Trinity Consultants Australia.

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# **APPENDICES**

Appendix A Glossary

# **TABLES**

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Table 1.1: Monitoring Locations and Parameters	
Table 2.1: Summary of Emission Monitoring Methods	
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Table 3.1: Flow and Sample Characteristics for the Dry Scrubber Exhaust Stack	. (
Table 3.2: Estimated Method Uncertainties for the Dry Scrubber Exhaust Stack	





# **EXECUTIVE SUMMARY**

Stack Emission testing for VOC's,  $NO_x$  and Particulate matter less than 10 microns ( $PM_{10}$ ) was conducted at the Rocbolt Resins Pty Ltd site in Smeaton Grange, NSW. The emission testing from the Dry Scrubber Exhaust Stack was completed on 17 October 2024. A summary of the results are included in **Table E1.1**.

Table E1.1: Summary of Results for the Rocbolt Resins Dry Scrubber Exhaust Stack

Paramete <del>r</del>	Results	Units	EPL 20944 Licence Limit
Particulate Matter (PM <sub>10</sub> )	<0.00072	mg/Nm <sup>3</sup>	-
Styrene	34.1	mg/Nm³	220
TVOC (as n-propane)	44.0	mg/Nm <sup>3</sup>	-
Nitrogen Oxides (expressed as NO <sub>2</sub> )	<0.21	mg/Nm³	-
Velocity	5.0	m/s	-
Temperature	19	°C	-
Molecular weight (dry)	28.85	g/g-mole	-
Volumetric flow	0.32	Nm³/s	-
Moisture	1.6	%	-
Oxygen	21.03	%	-





#### 1. INTRODUCTION

Stephenson Environmental Management Australia (SEMA) commissioned Trinity Consultants Australia to assist with conducting monitoring of air emissions from the Rocbolt Resins Pty Ltd site in Smeaton Grange NSW. The emission testing from the Dry Scrubber Exhaust stack was completed on 17 October 2024.

The objectives of the emission testing were to meet the annual monitoring requirements for the stack under the site's Environmental Protection Licence (EPL) 20944 to determine if the concentration limits specified in the EPL were met.

Table 1.1 details the monitoring location and the monitoring performed.

Table 1.1: Monitoring Locations and Parameters

Parameter	Styrene Scrubber Exhaust stack	Units of Measure	NSW Approved Test Method	EPL 20944 Licence Limit
VOC's including Styrene	2 Samples	mg/Nm³	OM-2, TM-34	220 (Styrene)
Particulate matter less than 10 microns	1 Sample	mg/Nm³	OM-5	-
Nitrogen Oxides	Continuous	mg/Nm³	TM-11	-
Oxygen	✓	%	TM-25	-
Moisture	✓	%	TM-22	-
Molecular weight of stack gases	✓	g/g-mole	TM-23	-
Temperature	✓	°C	TM-2	-
Velocity	✓	m/s	TM-2	-
Volumetric flow rate	✓	m³/s	TM-2	-

The monitoring of air emissions at the Smeaton Grange facility was completed during normal operating conditions. Any factors that may have affected the monitoring results were not observed by, or brought to the notice of Trinity Consultants Australia staff except where noted in this report.





### 2. METHODOLOGY

## 2.1 Emission Testing

Table 2.1 below lists the Methods used when undertaking emission monitoring at the Rocbolt Resins Pty Ltd site.

All air quality monitoring undertaken by the Trinity Consultants Australia staff has been undertaken in accordance with the methods identified in Table 2.1 below unless as specified in section 2.2 below.

Table 2.1: Summary of Emission Monitoring Methods

Measurement Parameter	Method Equivalency				
Temperature	TM-2 (USEPA Method 2 Determination of Stack Gas Velocity and Flow Rate)				
Dry Gas Density	TM23 (USEPA Method 3 Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources)				
Flow	TM-2 (USEPA Method 2 Determination of Stack Gas Velocity and Flow Rate)				
Moisture Content	TM-22 (USEPA Method 4 Determination of Moisture Content in Stack Gases)				
Molecular Weight	TM23 (USEPA Method 3 Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources)				
NO <sub>x</sub>	TM-11 (US EPA Method 7E Determination of Nitrous Oxide emissions from stationary sources)				
Oxygen	TM23 (USEPA Method 3a Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources)				
Particulate Matter less than 10 microns (PM <sub>10</sub> )	OM-5 (USEPA 201A Determination of PM <sub>10</sub> and PM <sub>2.5</sub> Emissions from Stationary Sources)				
VOC's (including Styrene, Benzene, Toluene, Acetone)	TM-34 (USEPA Method 18 Measurement of Gaseous Organic Compounds by Gas Chromatography)				

### 2.2 Deviation from Methods

Post sampling, VOC sample tubes were provided to SEMA who submitted the samples to Test Safe Laboratories for analysis.

# 2.3 Laboratory Analysis

**Table 2.2** below presents a list of the NATA accredited laboratories that performed the applicable analysis and their NATA accreditation number and the report number.

Table 2.2: Table of NATA accredited Laboratories with Accreditation Number

Measurement Parameter	NATA Accreditation Number	Report Number		
VOC's (including Styrene, Benzene, Toluene, Acetone)	SafeWork NSW TestSafe Australia 3726	2024-5051		





### 3. RESULTS

## 3.1 Production Conditions

On the day of testing, the plant operating procedures and production rate was considered typical by Rocbolt Resins Pty Ltd personnel.

# 3.2 Monitoring Results - Dry Scrubber Exhaust Stack

Results of emissions monitoring for the Dry Scrubber Exhaust Stack are provided in **Table 3.1** below for emissions monitoring completed on 17 October 2024.

Table 3.1: Flow and Sample Characteristics for the Dry Scrubber Exhaust Stack

Parameter	Units of Measure	Average Measured Concentration	EPL 20944 Licence Limit	
Styrene	mg/Nm³	34.1	220	
Styrene	g/s	0.011	-	
TVOC (as n-propane)	mg/Nm³	44.0	-	
TVOC (as n-propane)	g/s	0.07	-	
NO <sub>x</sub> (expressed as NO <sub>2</sub> )	mg/Nm³	<0.21	-	
NO <sub>x</sub> (expressed as NO <sub>2</sub> )	g/s	<0.000066	-	
Particulate Matter (PM <sub>10</sub> )	mg/Nm³	<0.00072	-	
Particulate Matter (PM <sub>10</sub> )	g/s	<0.0000023	-	
Stack Temperature	°C	19	-	
Velocity	m/s	5.0	-	
Volumetric flow	Nm³/s	0.32	-	
Moisture	%	1.6	-	
Molecular weight (dry)	g/g-mole	28.85	-	
Average Oxygen	%	21.03	-	

# 3.3 Accuracy of Monitoring Results

Table 3.2 presents a summary of the estimated method uncertainties for each of the monitoring parameters.

Table 3.2: Estimated Method Uncertainties for the Dry Scrubber Exhaust Stack

Measurement Parameter	Method	% Uncertainty	Uncertainty	Units
Oxygen	USEPA Method 3A	2	0.42	%
Particulates	M201A	10	-	mg/Nm³
NO <sub>x</sub>	US EPA Method 7E	5	-8	mg/Nm <sup>3</sup>
VOC	USEPA Method 18	5.1	2.04	mg/Nm³

<sup>#</sup> Uncertainty values cited are calculated at the 95% confidence level, with a coverage factor of 2.

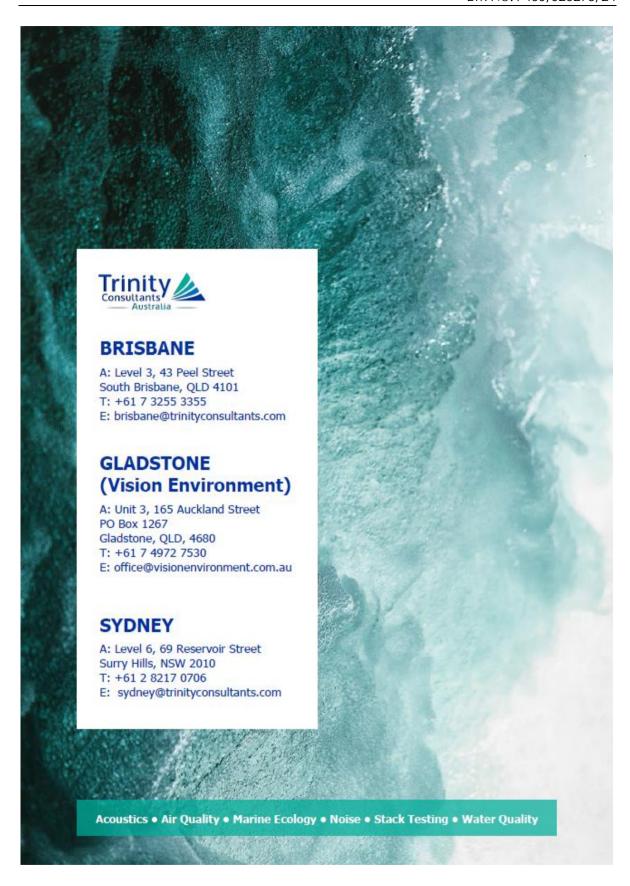
<sup>\*</sup> NO<sub>x</sub> results less than detection limits.





# APPENDIX A GLOSSARY

Parameter or Term	Description				
<	The analytes tested for was not detected, the value stated is the reportable limit of detection				
μд	Micrograms (10 <sup>-6</sup> grams)				
AS	Australian Standard				
dscm	dry standard cubic meters (at 0°C and 1 atmosphere)				
g	grams				
kg	kilograms				
m	metres				
m <sup>3</sup>	Cubic Metres, actual gas volume in cubic metres as measured.				
mg	Milligrams				
min	Minute				
mg/m <sup>3</sup>	Milligrams (10 <sup>-3</sup> ) per cubic metre.				
mmH <sub>2</sub> O	Millimetres of water				
Mole	The mole, symbol mol, is the SI unit of amount of substance. One mole contains exactly 6.022 $140.76 \times 10^{23}$ elementary entities. This number is the fixed numerical value of the Avogadro constant, N <sub>A</sub> , when expressed in the unit mol <sup>-1</sup> and is called the Avogadro number. The amount of substance, symbol n, of a system is a measure of the number of specified elementary entities. An elementary entity may be an atom, a molecule, an ion, an electron, any other particle or specified group of particles. This definition implies the exact relation N <sub>A</sub> = 6.022 140.76 $\times$ 10 <sup>23</sup> mol <sup>-1</sup> . Inverting this relation gives an exact expression for the mole in terms of the defining constant N <sub>A</sub> :				
	$   \text{I mol} = \left( \frac{6.02214076\times10^{33}}{N_A} \right) $ The effect of this definition is that the mole is the amount of substance of a system that contains 6.022 140 76 $\times$ 10 <sup>23</sup> specified elementary entities.				
N/A	Not Applicable				
ng	Nanograms (10 <sup>-9</sup> grams)				
Nm <sup>3</sup>	Normalised Cubic Metres - Gas volume in dry cubic metres at standard temperature and pressure (0°C and 101.3 kPa).				
ou	Odour Units				
°C	Degrees Celsius				
μg/m³	Micrograms (10 <sup>-6</sup> ) per cubic metre. Conversions from μg/m³ to parts per volume concentrations (ie, ppb) are calculated at 25 °C.				
ppb / ppm	Parts per billion / million.				
PM	Particulate Matter.				
PM <sub>10</sub> , PM <sub>2.5</sub> , PM <sub>1</sub>	Fine particulate matter with an equivalent aerodynamic diameter of less than 10, 2.5 or 1 micrometres respectively. Fine particulates are predominantly sourced from combustion processes. Vehicle emissions are a key source in urban environments.				
sec	Second				
Sm <sup>3</sup>	Standardised Cubic Metres - Gas volume in dry cubic metres at standard temperature and pressure (0°C and 101.3 kPa) and corrected to a standardised value (e.g. 7% O <sub>2</sub> ).				
STP	Standard Temperature and Pressure (0°C and 101.3 kPa).				
TVOC	Total Volatile Organic Compounds. These compounds can be both toxic and odorous.				
USEPA	United States Environmental Protection Agency				





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# Chain of Custody & Analysis Request

S26488 Document No: Project No: Purchase Order No.: 5340 \_ Purchase Results Required By: Normal \_ Lab Name: Workcover Testsafe Australia \_ (02) 9473 4000 \_ Lab Telephone: Lab Facsimile: (02) 9980 6849 \_ Lab Contact Name: Martin \_

Location	Sampling Date	Sample ID		Lab Sample ID	Parameter	NSW Test Method	Workcover Method	Temperature Chilled/ Ambient
R1	17/10/2024	730212			VOC Screen including	TM-34	WCA.207	chilled
R2	17/10/2024	730213			styrene & benzene	TM-34	WCA.207	chilled
Relinquished By: margot kimber Date/Time: 21/10 / 2024 @		4 @ 10:30	Received By:		Date/Time: / / @			
Samples Sent Intact: YES / NO			Samples Received Intact: YES / NO					
Comments: Please contact us immediately should you have any questions with regards to the samples or analysis or if there will be any delays with the reporting.								

P: QUALITY SYSTEMS/FORMS/SITE WORK ISSUE DATE: 27 May 2016

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