



Ektimo

REPORT NUMBER R010826

**Emission Testing Report
Sika Australia Pty Ltd, Wetherill Park**

Document Information

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Client Name: Sika Australia Pty Ltd
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Attention: Tanya Ballantyne
Address: 55 Elizabeth St
Wetherill Park NSW 2164
Testing Laboratory: Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation



NATA Accredited Laboratory
No. 14601

Steven Cooper
Senior Air Monitoring
Consultant

Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC mutual recognition arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

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1 EXECUTIVE SUMMARY

1.1 Background

Ektimo was engaged by Sika Australia Pty Ltd to perform emission testing at their Wetherill Park plant.

Testing was carried out in accordance with Environment Protection Licence (EPL) 6459.

1.2 Project Objectives

The objectives of the project were to conduct a monitoring programme to quantify emissions from one discharge point to determine compliance with Sika Australia Pty Ltd's EPL.

In addition to this one investigatory static sample was conducted.

Monitoring was performed as follows:

Location	Test Date	Test Parameters
EPA 1 - Concrete Powders Stack	4 May 2021	Solid Particles*
Liquid Adhesives Area (static)		Speciated volatile organic compounds

* Flow rate, velocity, temperature and moisture were also determined.

As the ducting had been previously removed from the baghouse exhaust a static VOC sample was taken in a central location of the Liquid Adhesives area adjacent to the control desk on the mezzanine level.

All results are reported on a dry basis at STP.

Plant operating conditions have been noted in the report.

1.3 Licence Comparison

The following licence comparison table shows that all analytes highlighted in green are within the licence set by the NSW EPA as per licence 6459 (last amended on 28 April 2015)

EPA	Location Description	Unit of measure	Parameter	Licence limit	Detected values 4/05/2021
1	Concrete Powders Stack	milligrams per cubic meter (mg/m ³)	Solid Particles	40	<1

Please note that the measurement uncertainty associated with the test results **was not** considered when determining whether the results were compliant or non-compliant.

Refer to the Test Methods table for the measurement uncertainties.

2 RESULTS

2.1 EPA 1 – Concrete Powders Stack

Date	4/05/2021	Client	Sika Australia
Report	R010826	Stack ID	EPA 1 - Concrete Powders Stack
Licence No.	6459	Location	Wetherill Park
Ektimo Staff	Steven Cooper & Harrison Handicott	State	NSW
Process Conditions	Please refer to client records.		

2 10503

Sampling Plane Details

Sampling plane dimensions	375 mm
Sampling plane area	0.11 m ²
Sampling port size, number & depth	2" Flange (x2), 70 mm
Access & height of ports	Ground level 2 m
Duct orientation & shape	Inclined Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Bend 2.5 D
No. traverses & points sampled	2 12
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

The discharge is assumed to be composed of dry air and moisture

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D
 The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	<0.4	
Gas molecular weight, g/g mole	28.9 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.29 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	1.20	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0917 & 1043
Temperature, °C	22
Temperature, K	295
Velocity at sampling plane, m/s	25
Volumetric flow rate, actual, m ³ /s	2.8
Volumetric flow rate (wet STP), m ³ /s	2.6
Volumetric flow rate (dry STP), m ³ /s	2.6
Mass flow rate (wet basis), kg/hour	12000

Isokinetic Results

Sampling time	Results	
	0925-1028	
	Concentration mg/m ³	Mass Rate g/min
Solid particles	<1	<0.2
Isokinetic Sampling Parameters		
Sampling time, min	60	
Isokinetic rate, %	100	
Velocity difference, %	1	

2.2 Liquid Adhesives Area (Static)

Date	4/05/2021	Client	Sika Australia
Report	R010826	Stack ID	Liquid Adhesives Area
Licence No.	6459	Location	Wetherill Park
Ektimo Staff	Steven Cooper & Harrison Handicott	State	NSW
Process Conditions	Please refer to client records.		

Comments

The sample was taken from the mezzanine level adjacent to the control desk.
 The discharge is assumed to be composed of dry air and moisture

Total VOCs (as n-Propane)	Sampling time	Results
		0840-1240
		Concentration mg/m ³
Total		0.21

VOC (speciated)	Sampling time	Results
		0840-1240
		Concentration mg/m ³
Detection limit ⁽¹⁾		<0.009
Toluene		0.017
Ethylbenzene		0.013
m + p-Xylene		0.028
1,3,5-Trimethylbenzene		0.014
1,2,4-Trimethylbenzene		0.049
1,2,3-Trimethylbenzene		0.013
Acetone		0.14
Butyl acetate		0.039
Butyl acrylate		0.056
Nonane		0.015
Decane		0.02
Undecane		0.015

(1) Unless otherwise reported, the following target compounds were found to be below detection:

Dichloromethane, Ethanol, Isopropanol, 1,1-Dichloroethene, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene, Chloroform, 1,1,1-Trichloroethane, 1,2-Dichloroethane, Benzene, Carbon tetrachloride, Butanol, 1-Methoxy-2-propanol, Trichloroethylene, 1,1,2-Trichloroethane, Tetrachloroethene, Chlorobenzene, Styrene, o-Xylene, 2-Butoxyethanol, 1,1,2,2-Tetrachloroethane, Isopropylbenzene, Propylbenzene, tert-Butylbenzene, Pentane, Acrylonitrile, Methyl ethyl ketone, n-Hexane, Ethyl acetate, Cyclohexane, 2-Methylhexane, Isopropyl acetate, 2,3-Dimethylpentane, 3-Methylhexane, Heptane, Ethyl acrylate, Methyl methacrylate, Propyl acetate, Methylcyclohexane, Methyl Isobutyl Ketone, 2-Hexanone, Octane, 1-Methoxy-2-propyl acetate, Cellosolve acetate, alpha-Pinene, beta-Pinene, 3-Carene, D-Limonene, Dodecane, Tridecane, Tetradecane

3 PLANT OPERATING CONDITIONS

See Sika Australia Pty Ltd records for complete process conditions. Sika personnel confirmed that production on that day is considered normal.

4 TEST METHODS

All sampling and analysis performed by Ektimo unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling Method	Analysis Method	Uncertainty*	NATA Accredited	
				Sampling	Analysis
Sample plane criteria	NSW TM-1	NA	NA	✓	NA
Flow rate, temperature and velocity	NSW TM-2	NSW TM-2	8%, 2%, 7%	NA	✓
Moisture content	NSW TM-22	NSW TM-22	8%	✓	✓
Molecular weight	NA	NSW TM-23	not specified	NA	✓
Speciated volatile organic compounds (VOC's)	NSW TM-34 ^d	Ektimo 344	19%	✓	✓ [†]
Solid particles (total)	NSW TM-15	NSW TM-15 ^{††}	3%	✓	✓

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* Uncertainty values cited in this table are calculated at the 95% confidence level (coverage factor = 2)

[†] Analysis conducted at the Ektimo Mitcham, VIC laboratory, NATA accreditation number 14601. Results were reported on 1 June 2021 in report number LV-001439

^{††} Gravimetric analysis conducted at the Ektimo Unanderra, NSW laboratory, NATA accreditation number 14601.

^d Excludes recovery study as specified in section 8.4.3 of USEPA Test Method 18.

5 QUALITY ASSURANCE/QUALITY CONTROL INFORMATION

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

Ektimo is accredited by NATA (National Association of Testing Authorities) to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director.

NATA is a member of APLAC (Asia Pacific Laboratory Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through the mutual recognition arrangements with both of these organisations, NATA accreditation is recognised worldwide.

6 DEFINITIONS

The following symbols and abbreviations may be used in this test report:

% v/v	Volume to volume ratio, dry or wet basis
~	Approximately
<	Less than
>	Greater than
≥	Greater than or equal to
APHA	American public health association, Standard Methods for the Examination of Water and Waste Water
AS	Australian Standard
BSP	British standard pipe
CARB	Californian Air Resources Board
CEM	Continuous Emission Monitoring
CEMS	Continuous Emission Monitoring System
CTM	Conditional test method
D	Duct diameter or equivalent duct diameter for rectangular ducts
D ₅₀	'Cut size' of a cyclone defined as the particle diameter at which the cyclone achieves a 50% collection efficiency ie. half of the particles are retained by the cyclone and half are not and pass through it to the next stage. The D ₅₀ method simplifies the capture efficiency distribution by assuming that a given cyclone stage captures all of the particles with a diameter equal to or greater than the D ₅₀ of that cyclone and less than the D ₅₀ of the preceding cyclone.
DECC	Department of Environment & Climate Change (NSW)
Disturbance	A flow obstruction or instability in the direction of the flow which may impede accurate flow determination. This includes centrifugal fans, axial fans, partially closed or closed dampers, louvres, bends, connections, junctions, direction changes or changes in pipe diameter.
DWER	Department of Water and Environmental Regulation (WA)
DEHP	Department of Environment and Heritage Protection (QLD)
EPA	Environment Protection Authority
FTIR	Fourier Transform Infra-red
ISC	Intersociety committee, Methods of Air Sampling and Analysis
ISO	International Organisation for Standardisation
Lower Bound	Defines values reported below detection as equal to zero.
Medium Bound	Defines values reported below detection are equal to half the detection limit.
NA	Not applicable
NATA	National Association of Testing Authorities
NIOSH	National Institute of Occupational Safety and Health
NT	Not tested or results not required
OM	Other approved method
OU	The number of odour units per unit of volume. The numerical value of the odour concentration is equal to the number of dilutions to arrive at the odour threshold (50% panel response).
PM ₁₀	Atmospheric suspended particulate matter having an equivalent aerodynamic diameter of less than approximately 10 microns (µm).
PM _{2.5}	Atmospheric suspended particulate matter having an equivalent aerodynamic diameter of less than approximately 2.5 microns (µm).
PSA	Particle size analysis
RATA	Relative Accuracy Test Audit
Semi-quantified VOCs	Unknown VOCs (those not matching a standard compound), are identified by matching the mass spectrum of the chromatographic peak to the NIST Standard Reference Database (version 14.0), with a match quality exceeding 70%. An estimated concentration will be determined by matching the integrated area of the peak with the nearest suitable compound in the analytical calibration standard mixture.
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0°C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa, unless otherwise specified.
TM	Test Method
TOC	The sum of all compounds of carbon which contain at least one carbon to carbon bond, plus methane and its derivatives.
USEPA	United States Environmental Protection Agency
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
Velocity Difference	The percentage difference between the average of initial flows and afterflows.
Vic EPA	Victorian Environment Protection Authority
VOC	Any chemical compound based on carbon with a vapour pressure of at least 0.010 kPa at 25°C or having a corresponding volatility under the particular conditions of use. These compounds may contain oxygen, nitrogen and other elements, but specifically excluded are carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonate salts.
XRD	X-ray Diffractometry
Upper Bound	Defines values reported below detection are equal to the detection limit.
95% confidence interval	Range of values that contains the true result with 95% certainty. This means there is a 5% risk that the true result is outside this range.

7 APPENDIX 1. SITE PHOTOS



EPA 1 - Concrete Powders Stack



Liquid Adhesives Area

Address (Head Office)

7 Redland Drive
Mitcham VIC 3132

Postal Address

52 Cooper Road
Cockburn Central WA 6164

Office Locations

VIC NSW WA QLD

Freecall: 1300 364 005

www.ektimo.com.au

ABN 86 600 381 413