Our Ref: EN187712

9th August 2021

Malcolm Grinstead
Mastic Asphalt Council
27 Greenways Cres
Shoreham By Sea
BN43 6HR

Email:
info@masticasphaltcouncil.co.uk
Report Number: 21_06_EN187712_DW_01

SOCOTEC
Environment and Safety
2-8 Langlands Place
Kelvin South Business Park
East Kilbride
Glasgow
G75 0YF

Tel: 01355 247622
Web: www.socotec.co.uk

MASTIC ASPHALT COUNCIL

Dear Mr Grinstead,

Workplace Monitoring Assessment at St Bartholomew's Primary School, Brighton

Please find enclosed the report relating to the recent Workplace Monitoring Survey carried out during spreading of Roofing Mastic Asphalt and Paving Mastic Asphalt by Sussex Asphalt at St Bartholomew's Primary School in Brighton. The assessment was carried out by David Wright of SOCOTEC on the 30th June and 1st July 2021 comprising the elements detailed below:

- Cyclohexane Extractable Material (Asphalt fumes)
- Poly Aromatic Hydrocarbons (PAHs)
- Volatile Organic Compounds (VOCs)

An account for this work will be forwarded to you under separate cover. The work was undertaken according to our General Conditions of Contract.

If we can be of any further assistance to you in this matter, please do not hesitate to contact me.

Yours sincerely

On behalf of **SOCOTEC**

David Wright DipOH MFOH PgDip GradIOSH MSc
Occupational Hygiene Team Leader
Environment and Safety
SOCOTEC
Direct Line: 01355 247622
Email: david.wright@socotec.com

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https://www.surveymonkey.co.uk/r/CEN_customer_feedback

Mastic Asphalt Council

Workplace Monitoring Assessment
St Bartholomews Primary School, Brighton
June/July 2021

MASTIC ASPHALT COUNCIL

Carried out for:

Malcolm Grinstead
Mastic Asphalt Council
27 Greenways Cres
Shoreham By Sea
BN43 6HR

Issue date:- 9th August 2021

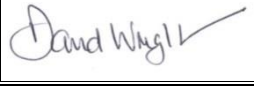
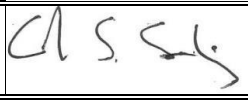
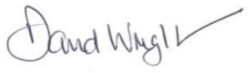
Report No:- 21_06_EN187712_DW_01 –Rev 1

SOCOTEC
Environment and Safety
Units 2-8 Langlands Place
Kelvin South Business Park
East Kilbride
Glasgow
G75 0YF

Report No:- 21_06_EN187712_DW_01

Issue date:- 9th August 2021

Authorisations

Prepared by	David Wright MSc CMFOH|Team Leader Occupational Hygiene | East Kilbride	
Technically Checked by	Colin Stirling BSc CertOH LFOH |Consultant Occupational Hygienist | East Kilbride	
Approved for Issue by	David Wright MSc CMFOH|Team Leader Occupational Hygiene | East Kilbride	

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MASTIC ASPHALT COUNCIL

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MASTIC ASPHALT COUNCIL

EXECUTIVE SUMMARY

This report presents the findings of a workplace monitoring assessment made for Mastic Asphalt Council at the St Bartholomew's Primary School site in Brighton. Monitoring was carried out during application of Roofing Mastic Asphalt and Paving Mastic Asphalt on the 31st June 2021 and 1st July 2021. The site visit was carried out by David Wright MSc DipOH PgDip CMFOH GradIOSH of SOCOTEC. The site was represented by Matt.

SOCOTEC were asked to carry out a workplace monitoring assessment during the laying of Asphalt to determine exposure levels of Cyclohexane Extractable Material (Asphalt fumes), Poly Aromatic Hdrocarbons (PAHs) and Volatile Organic Compounds (VOCs) released from the Asphalt. Monitoring was carried out in static locations immediately adjacent to the operators working area. The monitors were moved to remain in close proximity to the works as the work progressed.

Results

The results have been compared against the HSE Workplace Exposure Level (WEL), as set out in HSE Document EH40/2005 (amended 2020), or other relevant exposure limits where no WEL exists. The level of all Asphalt/Bitumen(CEM) were found to be less than 10% of the WEL for Asphalt, with the results for all PAHs and VOCs found to be below the analytical detection level.

Control is largely being achieved through the work being carried out in a wide open area with good ventilation present at all times.

It should be noted that for static sampling, the WEL can only be used for guidance purposes. However it is fair to conclude that no materials are likely to be hazardous to health are being released into the workers breathing zone during the process of laying either the roofing mastic or the Paving mastic asphalt. Adequate control of the process is being achieved.

Please refer to section 8 for recommendations.

MASTIC ASPHALT COUNCIL

1 INTRODUCTION

1.1 This report presents the findings of a workplace monitoring assessment made for Mastic Asphalt Council at the St Bartholomew's Primary School site in Brighton. Monitoring was carried out during application of Roofing Mastic Asphalt and Paving Mastic Asphalt by Sussex Asphalt on the 31st June 2021 and 1st July 2021. The site visit was carried out by David Wright MSc DipOH PgDip CMFOH GradIOSH of SOCOTEC. The site was represented by Matt.

2 SCOPE AND EXCLUSIONS

2.1 The objective of this exercise was to carry out monitoring to determine occupational exposure to potentially hazardous substances, and to compare the results of the monitoring with the prescribed legal limits, as required by Regulation 7 (Prevention or Control of Substances Hazardous to Health) of the Control of Substances Hazardous to Health (COSHH) Regulations 2002 (as amended), where available, or other relevant guidelines and to make any suitable recommendations (as appropriate).

2.2 The client requested and SOCOTEC quoted to undertake monitoring to determine staff exposure during the laying of Asphalt. The following analytes were included in the monitoring scope:

- Cyclohexane Extractable Material (Asphalt fumes)
- Poly Aromatic Hydrocarbon (PAHs)
- Volatile Organic Compound (VOCs)

Monitoring was conducted adjacent to the dispensing chute on the asphalt tanker, at the roof pot on day 1 and at both sides of the laying area closest to the working positions of the operators involved.

2.3 The results from this monitoring assessment only relate to the test subject at that time and the site activity and workplace conditions at the time of monitoring. Monitoring was carried out during typical operating conditions. It should be noted that where monitoring is required at fixed or static points, the results cannot be directly compared to the WEL, as sampling is not performed on personnel with the sample head being placed within the breathing zone. Results from static monitoring are indicative of the total exposure that may be present in the atmosphere at the locations monitored.

On the days of monitoring the weather conditions were hot with full sun, dry and only a minimal air flow. It is considered that this is the worst possible case for exposure in an open area.

3 PROCESS / HAZARDS

3.1 Sussex Asphalt were laying an Asphalt surface on the roof of the carpark and used as a recreational area by St Bartholomew's Primary School. The roof was accessed by scaffolding from the roadway behind the car park roof, immediately adjacent to the car park exit.

3.2 On day 1 of the assessment, roofing mastic Asphalt was being dispensed for the tanker into wheel barrows and barrowed onto the roof area where the material was tipped and hand spread by the

MASTIC ASPHALT COUNCIL

operators over the membrane and levelled by hand. Some additional hand tanking work was being undertaken on the edges of the carpark roof by hand using the material from the pot.

On day 2 a similar process was carried out using paving mastic asphalt. Areas being spread were marked out in triangular sections, with the levels finished to ensure the correct run off was being achieved. After levelling the entire area was finished with sand.

It was reported that the asphalt material was being discharged from the tanker at approx. 220º/230ºC.

3.2 Monitoring was conducted adjacent to the tanker discharge chute where exposure could occur during the filling of wheel barrows, and at locations immediately adjacent to the laying operation. The position of the monitors was constantly reviewed to ensure that the sampling position remained close to the operators breathing zones as the work progressed.

4 EXPOSURE CONTROLS

4.1 The work was being carried out on the car park roof in open air conditions. A light wind was present, with the conditions remaining hot and dry throughout the monitoring periods.

4.2 Personal Protective Equipment

4.2.1 No RPE was seen to be in use by staff at the time of monitoring.

5 BACKGROUND INFORMATION

5.1 Total Inhalable Dust

5.1.1 Most industrial dusts contain particles of a wide variety and range of sizes. The behaviour, deposition and fate of any particular particle after entry into human respiratory system and the body depend on the nature and size of the particle. The HSE distinguishes two size fractions for limit setting purposes, which are termed ‘inhalable dust’ and ‘respirable dust’.

5.1.2 Inhalable dust approximates to the fraction of airborne material that enters into the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust is the fraction below 10 μm, which is likely to reach the deepest region of the lungs. Different dusts have different effects on health and can ultimately lead to diseases including chronic bronchitis and occupational asthma.

5.1.3 The COSHH (Control of Substances Hazardous to Health) definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to, or greater than 10 $mg.m^3$ (8-hour Time Weighted Average) of inhalable dust. This means that any dust will be subject to COSHH if people are exposed above this level, although reasonable control measures will keep exposure below these levels in most workplaces. However, some dusts have been assigned specific Workplace Exposure Limits (WELs), and exposure to these must comply with the appropriate limit.

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5.2 Asphalt fumes

5.2.1 Asphalt is a black material, semi viscous at 220ºC.

5.3 Poly Aromatic Hydrocarbons (PAHs)

5.3.1 One possible component of Asphalt or bitumen is a group of compounds described as PAHs. Aldehydes and ketones are simple compounds which contain a carbonyl group – a carbon-oxygen double bond. An aldehyde differs from a ketone by having a hydrogen atom attached to the carbonyl group. This makes the aldehydes very easy to oxidise.

5.3.2 Some associated distillates (e.g bitumen) can result in the production of aldehydes such as acrolein, which are particularly active respiratory and eye irritants. Acetaldehyde is also an irritant of eyes as well as skin, mucous membranes, throat, and respiratory tract. This occurs at concentrations up to 1000 ppm (1800 $mg.m^{-3}$). Symptoms of exposure to this compound include nausea, vomiting and headaches. These symptoms may not happen immediately. The perception limit of acetaldehyde in air is in the range between 0.07 (0.13 $mg.m^{-3}$) and 0.25 ppm (0.45 $mg.m^{-3}$)

5.4 Volatile Organic Compounds (VOCs)

5.3.1 As asphalt is derived from oil residues, a further potential group of compound which could be present are VOCs. VOC refer to a wide group of organic compound and all are potential narcotic by nature.

5.4 Exposure Limits

5.4.1 Exposure of employees to substances hazardous to health should be prevented, or, where this is not reasonably practicable, adequately controlled. This is a fundamental requirement of the Control of Substances Hazardous to Health (COSHH) Regulations 2002 (as amended).

Without prejudice to the requirement to prevent exposure, control of a substance hazardous to health shall only be treated as adequate if:

- the eight principles of good practice for the control of substances hazardous to health have been applied (regardless of whether a substance has an exposure limit);
- the Workplace Exposure Limit (WEL) is not exceeded; and
- exposure to substances that can cause occupational asthma; cancer; or damage to genes that can be passed from one generation to another; is reduced as low as is reasonably practicable.

5.4.2 The eight principles of good practice are set out in Schedule 2A of the COSHH Regulations, and are as follows:

MASTIC ASPHALT COUNCIL

- Design and operate processes and activities to minimise emission, release and spread of substances hazardous to health.
- Take into account all relevant routes of exposure - inhalation, skin absorption and ingestion - when developing control measures.
- Control exposure by measures that are proportionate to the health risk.
- Choose the most effective and reliable control options that minimise the escape and spread of substances hazardous to health.
- Where adequate control of exposure cannot be achieved by other means, provide, in combination with other control measures, suitable personal protective equipment.
- Check and review regularly all elements of control measures for their continuing effectiveness.
- Inform and train all employees on the hazards and risks from the substances with which they work and the use of control measures developed to minimise the risks.
- Ensure that the introduction of control measures does not increase the overall risk to health and safety.

5.4.3 The COSHH (Control of Substances Hazardous to Health) definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than **10 mg.m^{-3}** (8-hour Time Weighted Average) of **inhalable dust**, or **4 mg.m^{-3}** (8-hour Time Weighted Average) of **respirable dust**. These levels will be treated as WELs for the purposes of this report.

5.4.4 The HSE publishes a list of Workplace Exposure Limits (WELs) in their Guidance Note EH40 2005 which form part of the requirements of the Control of Substances Hazardous to Health (COSHH) Regulations 2002 (as amended).

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The following WELs are relevant to this survey, and are shown in the table below.

Table 2 – Workplace Exposure Limits (WELs)

Substance	Workplace Exposure Limit				Notes
	LTEL (8h TWA)		STEL (15 min TWA)		
	ppm	mg.m^{-3}	ppm	mg.m^{-3}	
Formaldehyde	2	2.5	2	2.5	
Benzene	1	3.25	-	-	Carc, Sk
Toluene	50	191	100	384	Sk
Ethyl Benzene	100	441	125	552	
Acetaldehyde	20	37	50	92	
Asphalt (Bitumen)		5		10	

TWA – Time weighted average *LTEL – Long term exposure limit*
ppm – parts per million *STEL – Short term exposure limit*
BMGV - Biological monitoring guidance value available
Carc - Capable of causing cancer and/or heritable genetic damage

6 MONITORING METHODS

See Appendix A – Methods for the monitoring and analytical techniques used and the corresponding accreditation status.

7 RESULTS

The following tables give the results obtained.

The results have been colour coded as follows in reference to the WELs:

Result below 50% of WEL	Result above 50% of WEL	Result above WEL

It should be noted that static sampling cannot be compared directly to the WEL, which is applicable to personal sampling only. The WEL can only be used for indicative or guidance purposes in these instances.

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Table 3: Monitoring Results (Asphalt)

Sample ID	Location	Start Time	Stop Time	Duration (min)	Average Flow Rate (l.min-1)	Air Volume (m3)	**Mass of Inhalable CEM (blank corrected) mg**	**Concentration of Bitumen in Air mg/m3**
204011	Static at Tanker Discharge Chute (30/6/21)	11:15	15:05	230	2.017	0.464	**0.23**	**0.50**
204012	Static at Roof Pot (30/6/21)	11:17	15:01	224	1.976	0.443	**0.11**	**0.25**
204013	Static at Laying area (30/6/21)	11:21	15:00	219	1.998	0.437	**0.14**	**0.32**
204014	Static to RHS of laying area (1/7/21)	08:11	12:13	242	2.012	0.487	**0.09**	**0.18**
CEM 1	Static at Tanker Discharge Chute (1/7/21)	08:22	12:15	233	2.004	0.467	**0.16**	**0.34**
CEM 3	Static to LHS of laying area (1/7/21)	08:16	12:13	237	2.010	0.476	**0.09**	**0.19**
HSE WEL (8hr TWA) for Petroleum Fume (Asphalt) mg/m3								**5**

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Table 4: Monitoring Results (PAH)

Sample ID	Location	Start Time	Stop Time	Duration (min)	Average Flow Rate (l.min-1)	Air Volume (m3)	**Mass of PAH detected (blank corrected) mg**	**Concentration of PAH in Air mg/m3**
9804660	Static at Tanker Discharge Chute (30/6/21)	11:15	15:05	230	0.2577	0.059	**<0.0001**	**<0.01**
9804655	Static at Roof Pot (30/6/21)	11:17	15:01	224	0.2051	0.046	**<0.0001**	**<0.01**
9804656	Static at Laying area (30/6/21)	11:21	15:00	219	0.2502	0.055	**<0.0001**	**<0.01**
98047	Static to RHS of laying area (1/7/21)	08:11	12:13	242	0.2725	0.066	**<0.0001**	**<0.01**
9804658	Static at Tanker Discharge Chute (1/7/21)	08:22	12:15	233	0.2514	0.059	**<0.0001**	**<0.01**
9804662	Static to LHS of laying area (1/7/21)	08:16	12:13	237	0.2070	0.049	**<0.0001**	**<0.01**

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Table 4: Monitoring Results (VOC)

Sample ID	Location	Start Time	Stop Time	Duration (min)	Average Flow Rate (l.min-1)	Air Volume (m3)	**Mass of VOC Detected (blank corrected) mg**	**Concentration of VOC in Air mg/m3**
613954	Static at Tanker Discharge Chute (30/6/21)	11:15	15:05	230	0.2661	0.061	**<0.0005**	**<0.08**
613960	Static at Roof Pot (30/6/21)	11:17	15:01	224	0.2815	0.063	**<0.0005**	**<0.08**
613955	Static at Laying area (30/6/21)	11:21	15:00	219	0.2570	0.056	**<0.0005**	**<0.09**
6195216	Static to RHS of laying area (1/7/21)	08:11	12:13	242	0.2664	0.065	**<0.0005**	**<0.08**
613961	Static at Tanker Discharge Chute (1/7/21)	08:22	12:15	233	0.2426	0.057	**<0.0005**	**<0.09**
613957	Static to LHS of laying area (1/7/21)	08:16	12:13	237	0.2185	0.052	**<0.0005**	**<0.10**

8 DISCUSSION

8.1 General Discussion

8.1.1 The results have been compared against the HSE Workplace Exposure Level (WEL), as set out in HSE Document EH40/2005 (amended 2020), or other relevant exposure limits where no WEL exists.

8.1.2 The level of all Asphalt/Bitumen(CEM) were found to be less than 10% of the WEL for Asphalt.

8.1.3 The results for all PAHs and VOCs found to be below the analytical detection level, and equate to well below any relevant WELs.

8.1.4 Static sampling carried out during the monitoring exercise cannot be directly compared to the WEL, as the point of sampling is not within the breathing area of personnel; results from static monitoring are instead indicative of the total emissions that may be present in the atmosphere at the locations monitored and can only be used for guidance purposes. It should be noted however that the position of the static samples were as close as possible to the operators breathing zones at all times and are considered to be representative of the likely exposure for all operators.

8.1.5 It should be noted that the results are only representative of the conditions of the day, and suitable controls where provided should always be used. The work was being undertaken in an open well ventilated area. If the same process was being undertaken in a confined or enclosed space, then higher results would be expected.

8.1.6 Due to the high air temperatures in full sun, the heat of the material being handled and the heavy manual handling involved in the process, including awkward postures being adopted to push the barrows up the scaffolding ramp, it was considered that personal monitoring involving fitting of 3 pumps to each operator would be impracticable, and would likely hinder the work being carried out.

9 RECOMMENDATIONS

9.1 The results obtained during monitoring would indicate that good control of components of the asphalt coatings were being achieved at the time of monitoring.

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10 REFERENCES

MDHS 14/4: General Methods for sampling and gravimetric analysis of respirable, thoracic and inhalable aerosols.

Guidance Note HSG 97: A step by step guide to COSHH assessment.

HSE Document EH40/2005: Workplace Exposure Limits (Amended 2020)

HSE Publication L5: Control of Substances Hazardous to Health (Fifth Edition) Approved Code of Practise

HSE Guidance Notes: HSG173: Monitoring Strategies for Toxic Substances.

HSE Guidance Note HSG 53: Respiratory Protection at Work (A Practical Guide).

HSE Document INDG311: Beryllium and You

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APPENDIX A – METHODS

Substance	Air Monitoring for CEM (Bitumen)
Analytical Method	Gravimetric Analysis
Reference Documentation	In house method ENV/054 for gravimetric analysis of filters In house method ENV/009A (Determination of dust and organic vapours in the workplace or general atmosphere) based on HSE MDHS 14/4
Monitoring equipment	Personal sampling pump
Flow Rate	2.0 ± 0.1 l.min^{-1} Set by Defender 520 Flow Meter (S/N: 133491, Calibrated 09/11/20)
Stop Watch	Fisher Traceable Stopwatch, S/N 192187463, Calibration Due 17/05/21
Sampling Head	SKC 7-Hole Sampling Head
Sample Media	25mm Prewashed GF/A filters
Method Deviation	None
UKAS Accreditation	UKAS accreditation for dust monitoring UKAS 1015 UKAS for total inhalable dust analysis, UKAS 1015
Analysis Laboratory	Subcontracted to RPS Laboratories

Substance	Volatile Organic Compounds
Analytical Method	GC-MS
Reference Documentation	In house method ENV/009A based on HSE MDHS 14/4
Monitoring equipment	Personal sampling pump
Flow Rate	0.05 – 0.25 l.min-1 Set by Defender 520-M (SN: 149671, Calibrated 9/11/20)
Stop Watch	Fisher Scientific Traceable (SN: 192187463, Calibration Due 17/05/21)
Sampling Head	SKC Tube Holders
Sample Media	SKC 226-01 Sorbent Tubes
Method Deviation	None
UKAS Accreditation	Not accredited
Analysis Laboratory	SOCOTEC Bretby

Substance	Polycyclic Aromatic Hydrocarbons
Analytical Method	GC-MS
Reference Documentation	Personal sampling pump
Monitoring equipment	1.0 ± 0.1 l.min-1 Set by Defender 520-M (SN: 149671, Calibrated 9/11/20)
Flow Rate	Fisher Scientific Traceable (SN: 192187463, Calibration Due 17/05/21)
Stop Watch	SKC Tube Holders
Sampling Head	SKC 226-30-04 Sorbent Tubes
Sample Media	None
Method Deviation	Not accredited
UKAS Accreditation	In house method ENV/009A based on HSE MDHS 14/4
Analysis Laboratory	Subcontracted to RPS Laboratories

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APPENDIX B – ANALYTICAL RESULTS

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Certificate of Analysis

Report No.:	**21-08465-1**
Issue No.:	**1**
Date of Issue	**26/07/2021**
Customer Details:	SOCOTEC, 2-8 Langlands Place, Kelvin South Business Park, East Kilbride, G75 0YF, Scotland
Customer Contact:	David Wright
Customer Order No.:	0000187712SSL
Customer Reference:	Not Supplied
Quotation Reference:	Q21-01439
Description:	6 solid samples
Date Received:	07/07/2021
Date Started:	13/07/2021
Date Completed:	23/07/2021
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Lora McKerracher, Technical Quality Manager**

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Results on an Interim Report are not dry-weight corrected.
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MAKING COMPLEX EASY

Results Summary

Report No.: 21-08465-1

Customer Reference: Not Supplied

Customer Order No: 0000187712SSL

Customer Sample No	CEM Filter 1	CEM Filter 3	204011	204012	204013	204014
RPS Sample No	49334	49335	49336	49337	49338	49339
Sample Matrix	FILTER	FILTER	FILTER	FILTER	FILTER	FILTER
Sampling Date	05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021

Determinand	CAS No	Codes	SOP	RL	Units						
oil mist		U	C16	0.04	mg	0.16	0.09	0.23	0.11	0.14	0.09

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MASTIC ASPHALT COUNCIL

Certificate of Analysis

Report No.:	**21-08466-1**
Issue No.:	**1**
Date of Issue	**26/07/2021**
Customer Details:	SOCOTEC, 2-8 Langlands Place, Kelvin South Business Park, East Kilbride, G75 0YF, Scotland
Customer Contact:	David Wright
Customer Order No.:	177604SSL
Customer Reference:	Not Supplied
Quotation Reference:	Q21-01439
Description:	6 gas samples
Date Received:	07/07/2021
Date Started:	13/07/2021
Date Completed:	26/07/2021
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Lora McKerracher, Technical Quality Manager**

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MASTIC ASPHALT COUNCIL

MAKING COMPLEX EASY

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Results Summary

Report No.: 21-08466-1

Customer Reference: Not Supplied

Customer Order No: 177604SSL

Determinand	CAS No	Codes	SOP	RL	Units	Customer Sample No	Tube end 9804655	Tube end 9804656	Tube end 9804660	Tube end 9804657	Tube end 9804658	Tube end 9804662
						RPS Sample No	49340	49341	49342	49343	49344	49345
						Sample Matrix	TUBE	TUBE	TUBE	TUBE	TUBE	TUBE
						Sampling Date	05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021
naphthalene	91-20-3	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
acenaphthene	83-32-9	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
acenaphthylene	208-96-8	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
fluorene	86-73-7	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
phenanthrene	85-01-8	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
anthracene	120-12-7	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
fluoranthene	206-44-0	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
pyrene	129-00-0	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
benzo[a]anthracene	56-55-3	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
chrysene	218-01-9	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
benzo[b]fluoranthene	205-99-2	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
benzo[k]fluoranthene	207-08-9	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
benzo[a]pyrene	50-32-8	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
dibenz[ah]anthracene	53-70-3	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
indeno[123-cd]pyrene	193-39-5	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
benzo[ghi]perylene	191-24-2	N	A40	0.1	ug		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

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MAKING COMPLEX EASY

Results Summary

Report No.: 21-08467-1

Customer Reference: Not Supplied

Customer Order No: 177604SSL

					Customer Sample No	Tube end 613957	Tube end 613956	Tube end 613961	Tube end 613960	Tube end 613955	Tube end 613954
					RPS Sample No	49346	49347	49348	49349	49350	49351
					Sample Matrix	TUBE	TUBE	TUBE	TUBE	TUBE	TUBE
					Sampling Date	05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021
Determinand	**CAS No**	**Codes**	**SOP**	**RL**	**Units**						
GC-MS screen (10)		N	M109	5	ug	S/C	S/C	S/C	S/C	S/C	S/C

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MASTIC ASPHALT COUNCIL

MAKING COMPLEX EASY

Certificate of Analysis

Report No.: 21-08467-1

Issue No.: 1
Date of Issue 06/08/2021

Customer Details:	SOCOTEC, 2-8 Langlands Place, Kelvin South Business Park, East Kilbride, G75 0YF, Scotland
Customer Contact:	David Wright
Customer Order No.:	177604SSL
Customer Reference:	Not Supplied
Quotation Reference:	Q21-01439
Description:	6 gas samples
Date Received:	07/07/2021
Date Started:	13/07/2021
Date Completed:	19/07/2021
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: Joanne Dewhurst, Operational Manager

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