

Middlewood Environmental Limited

Middlewood Environmental Limited

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REPORT OF PERIODIC MONITORING OF EMISSIONS TO AIR

On behalf of

Xpress Centres

18 Wildmere Road

Wildmere Industrial Estate

Banbury

Oxfordshire

OX16 3JU

At

Tesco Extra

Maidenwell Avenue

Hamilton

Leicester

LE5 1BJ

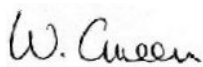
Customer Contact: Dean Heath
Monitoring Date: 05 January 2018
Middlewood Env Ref: E0563
Customer Ref: dh291217

Report Written By: William Green

MCERTS Registration No.: SIRA MP 02 012

Function: Director - Middlewood Environmental Limited

Signed: _____



Date: _____

20 January 2018

Report Ref.: E0563/2018/Visit No.1

Report Version No.: 2

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Note: Results from any sampling or analysis activity that are designated with an asterisk do not comply with the minimum requirements of the relevant Standard.

PART I: EXECUTIVE SUMMARY REPORT

1.0 MONITORING OBJECTIVES

Sampling of emissions at Xpress Centres, Leicester was undertaken at the request of Mr Dean Heath.

The aim of the monitoring campaign was to:

- undertake annual compliance monitoring

The company is regulated as a Part B process. The available guidance notes applicable to the process are:

Process Guidance Note 6/34(11) Statutory guidance for re-spraying of road vehicles. Revised July 2013

Tests were performed to quantify the levels of emissions from the following processes:

Stack Ref	Emission Source	Substances Monitored
XPL 1	Spray Booth	Particulates
XPL 2	Spray Booth	Particulates

There were no special requirements applicable to the monitoring.

2.0 EXECUTIVE SUMMARY

Stack Ref	Emission Source	Test Date	Substances Monitored	Emission Concentration mg m ⁻³	Uncertainty mg m ⁻³	Mass Emission g hr ⁻¹	In Stack Velocity m s ⁻¹	Monitoring Method	Emission Limit Value mg m ⁻³
XPL 1	Spray Booth	05/01/2018	Particulates	0.26	0.29	1.2	17.0	BS EN 13284-1:2017 Determination of low range mass concentrations of dust	10
XPL 2	Spray Booth	05/01/2018	Particulates	0.44	0.34	1.7	14.7		

Uncertainty figures quoted in the report represent the uncertainty at the 95% confidence level

3.0 MONITORING RESULTS

Stack Ref.:

XPL 1

Spray Booth

Particulates	Units	Test 1	Emission Limit Value
Concentration:	mg m ⁻³	0.26	10
Mass release:	g hr ⁻¹	1.2	-
Uncertainty:	mg m ⁻³	± 0.29	-
Blank Value:	mg m ⁻³	0.01	< 10 % ELV
Isokinetic Rate:	%	103	95 to 115
Reference Conditions:	-	273K and 101.3kPa, without correction for water vapour content	
Date:	-	05/01/2018	-
Test Period:	-	13:50 to 16:16	-
Test Duration:	Minutes	64	-
In Stack Velocity:	m s ⁻¹	17.0	-
Efflux Velocity:	m s ⁻¹	17.0	15
Volume Flow:*	-	As Measured	-
	m ³ hr ⁻¹	4,770	-
	-	Reference Conditions	-
	m ³ hr ⁻¹	4,440	-
Process Status:	Vehicle preparation, application of Primer, Base Coat and Lacquer.		-
Visibility:	No visible emission.		Free from persistent visible emission
Monitoring Method:	BS EN 13284-1:2017 Determination of low range mass concentrations of dust		

Stack Ref.:

XPL 2

Spray Booth

Particulates	Units	Test 1	Emission Limit Value
Concentration:	mg m ⁻³	0.44	< 10
Mass release:	g hr ⁻¹	1.7	-
Uncertainty:	mg m ⁻³	± 0.34	-
Blank Value:	mg m ⁻³	0.44	< 10 % ELV
Isokinetic Rate:	%	104	95 to 115
Reference Conditions:	-	273K and 101.3kPa, without correction for water vapour content	
Date:	-	05/01/2018	-
Test Period:	-	13:50 to 16:11	-
Test Duration:	Minutes	64	-
In Stack Velocity:	m s ⁻¹	14.7	-
Efflux Velocity:	m s ⁻¹	14.7	15
Volume Flow:*	-	As Measured	-
	m ³ hr ⁻¹	4,120	-
	-	Reference Conditions	-
	m ³ hr ⁻¹	3,840	-
Process Status:	Vehicle preparation, application of Primer, Base Coat and Lacquer.		-
Visibility:	No visible emission.		Free from persistent visible emission
Monitoring Method:	BS EN 13284-1:2017 Determination of low range mass concentrations of dust		

4.0 OPERATING INFORMATION

Stack Ref.	Process Type	Process Duration (Batch processes only)	Fuel	Feedstock	Abatement Type & operational status if abnormal	Load	Comparison with Automatic Monitoring System (AMS) Data			
							Substance	AMS Result	Periodic Monitoring Result	Units
XPL 1	Semi-continuous	-	N/A	Primer, Base Coat and Lacquer	Depth Filter and Carbon Filter	Normal	Particulates	-	0.26	mg m ⁻³
XPL 2	Semi-continuous								0.44	mg m ⁻³

5.0 MONITORING DEVIATIONS

All substances were monitored in accordance with Environment Agency TGN M2.

Other issues:

Stack Ref.	Parameter	Comments
All	Mass emission	Mass emission rates are included for additional information and are not a condition of the relevant Guidance Note or Permit.

PART II:

SUPPORTING INFORMATION

APPENDIX I

General Information

A) Monitoring Organisation Staff Details

The following Middlewood Environmental staff were involved in the monitoring work reported:

Name	MCERTS Registration	Personnel Competency					Function
			TE1	TE2	TE3	TE4	
Bill Green	SIRA MM 02 012	L2	✓	✓	✓	✓	Director – Middlewood Environmental Limited
		08-18	08-18	12-19	06-19	06-19	

B) Monitoring Organisation Method Details

The following methods were used for the monitoring work reported:

Substance	Standard Method
Temperature & pressure	BS EN 16911-1:2013
Moisture	BS EN 14790:2005
Particulates	BS EN 13284-1:2017

C) Monitoring Equipment and Quality Assurance***Velocity Measurements***

Oil gauge manometer coupled with S-type pitot static tube. Digital Manometer.

Manometers and pitot calibrated to UKAS traceable standards.

Temperature

Digital Thermometer with type K thermocouple wire probe.

Thermometer and thermocouple calibrated to UKAS traceable standards.

Particulates

CAE / Westech USEPA Method 5 type sampler and in-stack filter.

Dry gas meter calibrated to UKAS traceable standards.

Filter holder containing a 47mm Whatman QMA Filter.

Sampling

In all cases, sampling equipment is chosen and configured to suit the particular duct conditions, and includes attention to duct size, temperature, moisture, emission composition, loading rate, and the nature of the process. MCERTS accredited analysis and UKAS calibrated equipment is used wherever possible.

Data Collection and Calculations

Monitoring Method	Site Recording	Data Analysis	Data Quality Check
Manual - Particulates	Procedure specific data sheets	Method specific spreadsheet	Analysis by Level 2 consultant

The specific equipment used is referenced on the sampling sheets. Details of historical use of the equipment are kept in the Monitoring Equipment register.

Middlewood Environmental Limited

Xpress Centres
Leicester

External Particulate Calculation Template

PARTICULATE CALCULATION

QAF 686 Iss2, T.P., Dec17

Site: XPL 1

Date:

17-Jan-18

Standard 9096 or 13284: 13284

Filter ID: 2657

Filter Size 37, 47, 110 or 4: 47

Sample Ref: XPL 1-1

Filter Weights:

Tare Test One: 0.146430

Gross Test One: 0.147022

Mass Collected: 0.00059

Tare Test Two:

Gross Test Two:

Wash Out Weights:

Tare Test One: 58.93639

Gross Test One: 58.93678

Mass Collected: 0.0004

Tare Test Two:

Gross Test Two:

Control Weights: Test 1

Mass Change: Filter: 0.00000

Mass Change: Beaker: 0.00052

2658

47

XPL 1-B

Blank

0.146516

0.146570

0.00005

Blank

64.47978

64.48028

0.0005

Blank

0.00000

0.00052

			Filter	Filter	Rinsings
Maximum Sampling Temperature: °C	Filter Material	Filter Size	Pre-sampling conditioning Temperature: °C	Post-sampling conditioning Temperature: °C	
12	Whatman QMA	47mm	180 °C	160 °C	160 °C

Test Detection Limit:

Particulates Collected, (Mass): 0.28 mg 0.28 mg

Uncertainty:

Calculated Uncertainty: +/- 0.26 mg #VALUE! mg

Version 1
Date Issued: May 13

Authorised by:RK

Report Ref.: E0563/2018/Visit No.1
Report Version No.: 2

PARTICULATE CALCULATION

External Particulate Calculation Template

QAF 686 Iss2, T.P., Dec17

Site: XPL 2 Date: 17-Jan-18

Standard 9096 or 13284: 13284

Filter ID: 2660 2661

Filter Size 37, 47, 110 or 4: 47 47

Sample Ref: XPL 2-1 XPL 2-B

Filter Weights:

Tare Test One: 0.145903 Tare Test Two: Blank

Gross Test One: 0.146970 Gross Test Two: 0.147650

Mass Collected: 0.00107 0.00007

Wash Out Weights:

Tare Test One: 46.93063 Tare Test Two: Blank

Gross Test One: 46.93074 Gross Test Two: 47.81368

Mass Collected: 0.0001 0.0004

Control Weights: Test 1 Blank

Mass Change: Filter: 0.00000 0.00000

Mass Change: Beaker: 0.00052 0.00052

			Filter	Filter	Rinsings
Maximum Sampling Temperature: °C	Filter Material	Filter Size	Pre-sampling conditioning Temperature: °C	Post-sampling conditioning Temperature: °C	
12	Whatman QMA	47mm	180 °C	160 °C	160 °C

Test Detection Limit:

Particulates Collected, (Mass): 0.28 mg 0.28 mg

Uncertainty:

Calculated Uncertainty: +/- 0.26 mg #VALUE! mg

Version 1
Date Issued: May 13

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Report Ref.: E0563/2018/Visit No.1
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APPENDIX II

Emission Point Description and Calculations

A)	Emission Source	XPL 1	Spray Booth
	Substances monitored:	Particulates	
	Arrestment:	Depth Filter and Carbon Filter	

Emission Point Description:		BS EN 15259 & EA TGN M1 Compliant
Duct dimensions:	0.315 m diameter	✓
Location of sampling plane:	In vertical exhaust duct	✓
Access to sampling position:	Top of Booth	✓
Adequacy of work area:	> 5 m ²	✓
Availability of required utilities:	Power available in Booth – 240v	✓
Access to sample points	Full access available	✓
Type of sampling port:	1 x 4" BSP	✓
Number of sample lines:	One	✓
Arrangement of sample lines:	N/A	✓
Orientation of sample lines:	Horizontal	✓
Gas Flow Parameters	Flow: angle <15°, > 5Pa, Ratio <3:1, no –ve flow	✓
Temperature and moisture:	12 °C, 0.7%	✓
Velocity profile:	170 - 200 Pa	✓
Homogeneity test	N/A	-

Sample
Position

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BS EN 15284 PARTICULATE CALCULATION												
Site:	Xpress Centres		Location:	Spray Booth		Plant Ref:	XPL 2		Process:	Spray Booth	Date:	05/01/2018
Standard 9096 or 13284:	13284											
Filter ID:	2660			0			2661					
Filter Size 37, 47, 110 or 4:	47			47			47					
Sample Ref:	XPL 2-1			0.0000			XPL 2-B					
Filter weights:							Blank					
Tare Test One:	0.14590						0.14765					
Gross Test One:	0.14697						0.14772					
mass collected:	0.00107						0.00007					
Wash Out Weights:							Blank					
Tare Test One:	46.93063						47.81368					
Gross Test One:	46.93074						47.81409					
mass collected:	0.00011						0.00041					
Control Weights:	Test 1						Blank					
Mass Change:	Filter:	0.00000					0.00000					
Mass Change:	Beaker:	0.00052					0.00052					
Duct O2(O2):	%											
Ref O2(Or):	%											
Particulates collected, (Mass):	mg		0.66				Mass Emission with or without Oxygen Reference correction					
Concentration at STP dry(Cm):	mg/m ³		0.44				With = Y Without = N:			n		
Concentration at STP wet(Cw):	mg/m ³		0.44				0.4			#DIV/0!		
Concentration at ref O2(C-O2):	mg/m ³		0.44									
Minus Blank:	mg		0.69				Mass Emission				LOD	
	mg/m ³		0.47				Test One				Test One	Test Two
	mg/m ³		0.46				Test Two					
	mg/m ³		0.47									
							0.5			mg/s	0.2	
Test Blank:	mg		-0.04				1.7			g/hr	0.7	
	mg/m ³		-0.02				13.0			g/8 hr day	5.7	
	mg/m ³		-0.02				0.07			kg/5 day week	0.03	
	mg/m ³		-0.02				3.2			kg/48 week year	1.4	
Emission Limit:	mg/m ³	10										
Test Detection limit:												
Particulates collected, (Mass):	mg		0.28				Swirl Adjusted				Swirl Adjusted	
Concentration at STP dry(Cm):	mg/m ³		0.19				Test One				Test One	Test Two
Concentration at STP wet(Cw):	mg/m ³		0.19				Test Two					
Concentration at ref O2(C-O2):	mg/m ³		0.19									
							0.5			mg/s	0.2	
Number of traverses:	1						1.7			g/hr	0.7	
Theoretical Number of Traverses:	1						14.0			g/8 hr day	5.7	
Theoretical Points / Traverse	1						0.07			kg/5 day week	0.03	
Actual Points / Traverse	4						3.2			kg/48 week year	1.4	
Calculated Uncertainty:	+/-	0.34										

B)	Emission Source	XPL 2	Spray Booth
	Substances monitored:	Particulates	
	Arrestment:	Depth Filter and Carbon Filter	

Emission Point Description:		BS EN 15259 & EA TGN M1 Compliant
Duct dimensions:	0.315 m diameter	✓
Location of sampling plane:	In vertical exhaust duct	✓
Access to sampling position:	Top of Booth	✓
Adequacy of work area:	> 5 m ²	✓
Availability of required utilities:	Power available in Booth – 240v	✓
Access to sample points	Full access available	✓
Type of sampling port:	1 x 4" BSP	✓
Number of sample lines:	One	✓
Arrangement of sample lines:	N/A	✓
Orientation of sample lines:	Horizontal	✓
Gas Flow Parameters	Flow: angle <15°, > 5Pa, Ratio <3:1, no –ve flow	✓
Temperature and moisture:	12 °C, 0.7%	✓
Velocity profile:	130 - 136 Pa	✓
Homogeneity test	N/A	-

Sample
Position

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BS EN 13284 Particulate Test Data Sheet										EPA Leak Test				
Date:	05-Jan-18			Static:			° H ₂ O		mm H ₂ O	Pa	Stack Dia m:	0.315		
Company:	Xpress Centres			Moisture:			32.7				Stack Depth m:			
Site:	Leicester			DN:			5.90				Stack Width m:			
Location:	Spray Booth			K Factor:			2.69				Port mm:	80		
Stack No:	XPL 2			Min/point:			30		Min/data	5	Clamp mm:	110		
Process:	Spray Booth			Est Sample Rate:			25		I/min		Flue Area:	0.078		
Meter DH@:	1.692			Test No:			1				Control Box:	+VE		
Pitot Cp:	0.833			Standard:			9096		3405		Balance No:	MEL P5		
Ts:	8			13284-1			9096		3405		Caliper No:	MEL P2		
Tm:				9096			3405				Tape No:	MEL P3		
Ps Ave:				9096			3405				Barometer No:	MEL F13		
Atm P mBar	Start	Finish		9096			3405				Probe No:	1.2m EPA	MEL F7	Pitot
Pitot Leak Test	OK	OK		9096			3405				Nozzle No:	T10	T1	Material
EPA Leak Test	OK	OK		9096			3405				Filter No:	2660	47	Filter Size
DGM	2578.2	4169.31		9096			3405				Washout No:	XPL 2-1	R1	Residue Rinse
Impinger 1 g				9096			3405				Filter Blank No:	2661	Tecora	Filter Holder
Impinger 2 g				9096			3405				W/O Blank No:	XPL 2-B		
Impinger 3 g				9096			3405				Heater Box T:	In Stack		
Silica Gel g	815.8	824.2		9096			3405				Probe T:	In Stack		
Tp Dist mm	Tp No	Time	DGM in °C	DGM out °C	Ts °C	Cp	K Factor:	DP cm	DH cm	DGM litres	% Isokinetic	DGM Vol at STP Litres	Theoretical Vol at STP	Time mins
348	A1	13:50:00	7	7	12	0.833	2.72	2.00	5.44	2656	109	73	67	3.00
		13:53:00												
		13:57:00	7	7	13	0.833	2.71	2.00	5.42	2709	110	122	112	2.00
		13:59:00												
		14:03:00	7	7	12	0.833	2.72	1.95	5.30	2835	108	240	223	5.00
		14:08:00	11	8	12	0.833	2.74	2.00	5.49	2955	105	349	336	5.00
		14:13:00	10	7	11	0.833	2.74	1.99	5.46	3028	105	418	403	3.00
		14:16:00												
		14:21:00	10	8	11	0.833	2.75	2.00	5.50	3054	105	442	426	1.00
		14:22:00												
		15:26:00	7	7	13	0.833	2.71	2.00	5.42	3176	105	559	538	5.00
		15:31:00	7	7	10	0.833	2.74	2.00	5.48	3295	104	670	651	5.00
		15:36:00	10	7	11	0.833	2.74	2.00	5.49	3418	103	781	763	5.00
		15:41:00	10	7	11	0.833	2.74	2.00	5.49	3550	104	904	876	5.00
		15:46:00	11	8	11	0.833	2.75	2.00	5.51	3666	103	1008	989	5.00
		15:51:00	12	8	10	0.833	2.77	1.98	5.48	3800	103	1130	1101	5.00
		15:56:00	12	8	11	0.833	2.76	1.94	5.35	3922	103	1243	1212	5.00
		16:01:00	13	10	10	0.833	2.78	1.95	5.43	4044	103	1349	1323	5.00
		16:06:00	13	10	10	0.833	2.78	1.95	5.43	4169	103	1464	1435	5.00
		16:11:00												
Averages	Moisture	Atm P:	DGM °C	Ts °C				DP	DH	DGM	% Isokinetic	DGM Vol at STP	Theoretical Vol at STP	Time
	%	mBar	°C	°C				cm	cm	litres	%	litres	litres	mins
	0.70	978	8.8	11.2				2.0	5.4	1591.11	104	1484.29	1435.40	64
Notes:	Filter Holder 2													

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BS EN 15284 PARTICULATE CALCULATION									
Site:	Xpress Centres	Location:	Spray Booth	Plant Ref:	XPL 2	Process:	Spray Booth	Date:	05/01/2018
Standard 9096 or 13284:	13284								
Filter ID:	2660		0		2661				
Filter Size 37, 47, 110 or 4:	47		47		47				
Sample Ref:	XPL 2-1		0.0000		XPL 2-B				
Filter weights:					Blank				
Tare Test One:	0.14590				0.14765				
Gross Test One:	0.14697				0.14772				
mass collected:	0.00107				0.00007				
Wash Out Weights:					Blank				
Tare Test One:	46.93063				47.81368				
Gross Test One:	46.93074				47.81409				
mass collected:	0.00011				0.00041				
Control Weights:	Test 1				Blank				
Mass Change:	Filter: 0.00000				0.00000				
Mass Change:	Beaker: 0.00052				0.00052				
Duct O2(O2):	%								
Ref O2(Or):	%								
Particulates collected, (Mass):	mg	0.66							
Concentration at STP dry(Cm):	mg/m ³	0.44							
Concentration at STP wet(Cw):	mg/m ³	0.44							
Concentration at ref O2(C-O2):	mg/m ³	0.44							
Minus Blank:	mg	0.69							
	mg/m ³	0.47							
	mg/m ³	0.46							
	mg/m ³	0.47							
Test Blank:	mg	-0.04							
	mg/m ³	-0.02							
	mg/m ³	-0.02							
	mg/m ³	-0.02							
Emission Limit:	mg/m ³	10							
Test Detection limit:									
Particulates collected, (Mass):	mg	0.28							
Concentration at STP dry(Cm):	mg/m ³	0.19							
Concentration at STP wet(Cw):	mg/m ³	0.19							
Concentration at ref O2(C-O2):	mg/m ³	0.19							
Number of traverses:	1								
Theoretical Number of Traverses:	1								
Theoretical Points / Traverse	1								
Actual Points / Traverse	4								
Calculated Uncertainty:	+/- 0.34								
Mass Emission with or without Oxygen Reference correction									
With = Y Without = N:					n				
					0.4		#DIV0!		
Mass Emission									
Test One									
Test Two									
mg/s									
0.5									
1.7									
g/hr									
13.0									
g/8 hr day									
0.07									
kg/5 day week									
3.2									
kg/48 week year									
1.4									
Swirl Adjusted									
Test One									
Test Two									
mg/s									
0.5									
1.7									
g/hr									
14.0									
g/8 hr day									
0.07									
kg/5 day week									
3.2									
kg/48 week year									
1.4									