Report for Periodic Monitoring of Emissions to Atmosphere

Part 1: **Executive Summary**

Permit Number: **PPC/067 Var Ref: 002**

Operator: **Covrad Heat Transfer Ltd**

Installation: **Coventry**

Emission Points: **Assembly Shop Booth (LH), Assembly Shop Booth (Mid), Assembly Shop Booth (RH), Industrial Spray Booth 1 (RH), Industrial Spray Booth 1 (LH), Industrial Spray Booth 2 (LH) & Industrial Spray Booth 2 (RH)**

Monitoring Dates: **12th - 17th January 2011**

Contract Reference:	FTBS14741
Operator:	Covrad Heat Transfer Ltd
Address:	Sir Henry Parks Road Canley Coventry CV5 6BN
Monitoring Organisation:	RPS Consultants Ltd.
Address:	Grafton Building, Caswell Science & Technology Park, Caswell, Towcester, Northamptonshire, NN12 8EQ.
Report Date:	07 February 2011
Report Approved By:	Martin Johnson
Position:	Senior Environmental Consultant
MCERTS Registration Number:	MM 03 168

Signature: [redacted]

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Monitoring Objectives

At the request of Bob Holmes of Covrad Heat Transfer Ltd, RPS Consultants Ltd. conducted stack emission monitoring at the Coventry site in January 2011.

The monitoring programme at this installation was carried out to provide data on emissions to atmosphere for comparison with the limits specified in the air emission criteria for this site.

The following tables detail the parameters requested for monitoring at each emission point and the actual monitoring conducted.

Table 1.1

Parameters Requested to be Monitored	**Emission Point**
	Assembly Shop Booth (LH)
Total Particulate Matter	✓
Specific Requirements	Normal

Notes:
✓ *Represents pollutants sampled*

Table 1.2

Parameters Requested to be Monitored	**Emission Point**
	Assembly Shop Booth (Mid)
Total Particulate Matter	✓
Specific Requirements	Normal

Notes:
✓ *Represents pollutants sampled*

Table 1.3

Parameters Requested to be Monitored	Emission Point Assembly Shop Booth (RH)
Total Particulate Matter	✓
Specific Requirements	Normal

Notes:
✓ *Represents pollutants sampled*

Table 1.4

Parameters Requested to be Monitored	Emission Point Industrial Spray Booth 1 (RH)
Total Particulate Matter	✓
Specific Requirements	Normal

Notes:
✓ *Represents pollutants sampled*

Table 1.5

Parameters Requested to be Monitored	Emission Point Industrial Spray Booth 1 (LH)
Total Particulate Matter	✓
Specific Requirements	Normal

Notes:
✓ *Represents pollutants sampled*

Table 1.6

Parameters Requested to be Monitored	Emission Point Industrial Spray Booth 2 (LH)
Total Particulate Matter	✓
Specific Requirements	Normal

Notes:
✓ *Represents pollutants sampled*

Table 1.7

Parameters Requested to be Monitored	Emission Point Industrial Spray Booth 2 (RH)
Total Particulate Matter	✓
Specific Requirements	Normal

Notes:
✓ *Represents pollutants sampled*

Monitoring Results

Table 2.1 Monitoring results for emission point Assembly Shop Booth (LH), Carried out on 12/01/2011

Substance Monitored	Emission Limit Value	Periodic Monitoring Result	Units	Uncertainty (Expressed expanded k=2)	Reference Conditions 273K, 101.3kPa	Sampling Date	Sampling Times	Monitoring Reference Method	Accreditation Status	Operating Status
Total Particulate Matter	50	1.5	mg/m^3	0.20	273K, 101.3kPa, Wet	12/01/2011	11:29 - 12:31	BS EN 13284-1:2002	MCERTS	Normal

Table 2.2 Monitoring results for emission point Assembly Shop Booth (Mid), Carried out on 12/01/2011

Substance Monitored	Emission Limit Value	Periodic Monitoring Result	Units	Uncertainty (Expressed expanded k=2)	Reference Conditions 273K, 101.3kPa	Sampling Date	Sampling Times	Monitoring Reference Method	Accreditation Status	Operating Status
Total Particulate Matter	50	1.4	mg/m^3	0.19	273K, 101.3kPa, Wet	12/01/2011	13:41 - 14:43	BS EN 13284-1:2002	MCERTS	Normal

Table 2.3 Monitoring results for emission point Assembly Shop Booth (RH), Carried out on 13/01/2011

Substance Monitored	Emission Limit Value	Periodic Monitoring Result	Units	Uncertainty (Expressed expanded k=2)	Reference Conditions 273K, 101.3kPa	Sampling Date	Sampling Times	Monitoring Reference Method	Accreditation Status	Operating Status
Total Particulate Matter	50	3.4	mg/m^3	0.22	273K, 101.3kPa, Wet	13/01/2011	10:24 - 11:26	BS EN 13284-1:2002	MCERTS	Normal

Table 2.4 Monitoring results for emission point Industrial Spray Booth 1 (RH), Carried out on 14/01/2011

Substance Monitored	Emission Limit Value	Periodic Monitoring Result	Units	Uncertainty (Expressed expanded k=2)	Reference Conditions 273K, 101.3kPa	Sampling Date	Sampling Times	Monitoring Reference Method	Accreditation Status	Operating Status
Total Particulate Matter	50	6.3	mg/m^3	0.29	273K, 101.3kPa, Wet	14/01/2011	14:15 - 15:17	BS EN 13284-1:2002	MCERTS	Normal

Table 2.5 Monitoring results for emission point Industrial Spray Booth 1 (LH), Carried out on 14/01/2011

Substance Monitored	Emission Limit Value	Periodic Monitoring Result	Units	Uncertainty (Expressed expanded k=2)	Reference Conditions 273K, 101.3kPa	Sampling Date	Sampling Times	Monitoring Reference Method	Accreditation Status	Operating Status
Total Particulate Matter	50	2.0	mg/m^3	0.20	273K, 101.3kPa, Wet	14/01/2011	10:17 - 11:19	BS EN 13284-1:2002	MCERTS	Normal

Table 2.6 Monitoring results for emission point Industrial Spray Booth 2 (LH), Carried out on 17/01/2011

Substance Monitored	Emission Limit Value	Periodic Monitoring Result	Units	Uncertainty (Expressed expanded k=2)	Reference Conditions 273K, 101.3kPa	Sampling Date	Sampling Times	Monitoring Reference Method	Accreditation Status	Operating Status
Total Particulate Matter	50	2.8	mg/m^3	0.25	273K, 101.3kPa, Wet	17/01/2011	13:34 - 14:36	BS EN 13284-1:2002	MCERTS	Normal

Table 2.7 Monitoring results for emission point Industrial Spray Booth 2 (RH), Carried out on 17/01/2011

Substance Monitored	Emission Limit Value	Periodic Monitoring Result	Units	Uncertainty (Expressed expanded k=2)	Reference Conditions 273K, 101.3kPa	Sampling Date	Sampling Times	Monitoring Reference Method	Accreditation Status	Operating Status
Total Particulate Matter	50	2.2	mg/m^3	0.23	273K, 101.3kPa, Wet	17/01/2011	11:55 - 12:57	BS EN 13284-1:2002	MCERTS	Normal

Operating Information

Table 3.1 Operating conditions during the monitoring of emission point Assembly Shop Booth (LH) carried out on 12/01/2011

Parameter	Result
Sample Date	12/01/2011
Process Type	Batch
Process Duration	1 Hour
If 'Batch', was monitoring carried out over the whole batch?	No
Abatement/Operational?	Operational
Item Sprayed	1.5 Radiators

Comparison of Operator CEM and Periodic Monitoring Results		
Substance	**CEMs Results (mg/m^3)**	**Periodic Monitoring Results (mg/m^3)**
No CEMS Installed/Data Available		

Table 3.2 Operating conditions during the monitoring of emission point Assembly Shop Booth (Mid) carried out on 12/01/2011

Parameter	Result
Sample Date	12/01/2011
Process Type	Batch
Process Duration	1 Hour
If 'Batch', was monitoring carried out over the whole batch?	No
Abatement/Operational?	Operational
Item Sprayed	4 Radiator Parts

Comparison of Operator CEM and Periodic Monitoring Results		
Substance	**CEMs Results (mg/m^3)**	**Periodic Monitoring Results (mg/m^3)**
No CEMS Installed/Data Available		

Table 3.3 Operating conditions during the monitoring of emission point Assembly Shop Booth (RH) carried out on 13/01/2011

Parameter	Result
Sample Date	13/01/2011
Process Type	Batch
Process Duration	1 Hour
If 'Batch', was monitoring carried out over the whole batch?	No
Abatement/Operational?	Operational
Item Sprayed	3 Radiators Sprayed

Comparison of Operator CEM and Periodic Monitoring Results		
Substance	**CEMs Results (mg/m^3)**	**Periodic Monitoring Results (mg/m^3)**
No CEMS Installed/Data Available		

Table 3.4 Operating conditions during the monitoring of emission point Industrial Spray Booth 1 (RH) carried out on 14/01/2011

Parameter	Result
Sample Date	14/01/2011
Process Type	Batch
Process Duration	1 Hour
If 'Batch', was monitoring carried out over the whole batch?	No
Abatement/Operational?	Operational
Item Sprayed	1 x Radiator, 3 x Coolers

Comparison of Operator CEM and Periodic Monitoring Results		
Substance	**CEMs Results (mg/m^3)**	**Periodic Monitoring Results (mg/m^3)**
No CEMS Installed/Data Available		

Table 3.5 Operating conditions during the monitoring of emission point Industrial Spray Booth 1 (LH) carried out on 14/01/2011

Parameter	Result
Sample Date	14/01/2011
Process Type	Batch
Process Duration	1 Hour
If 'Batch', was monitoring carried out over the whole batch?	No
Abatement/Operational?	Operational
Item Sprayed	7 x Small Coolers

Comparison of Operator CEM and Periodic Monitoring Results		
Substance	**CEMs Results (mg/m^3)**	**Periodic Monitoring Results (mg/m^3)**
No CEMS Installed/Data Available		

Table 3.6 Operating conditions during the monitoring of emission point Industrial Spray Booth 2 (LH) carried out on 17/01/2011

Parameter	Result
Sample Date	17/01/2011
Process Type	Batch
Process Duration	1 Hour
If 'Batch', was monitoring carried out over the whole batch?	Yes
Abatement/Operational?	Operational
Items Sprayed	3 Radiators

Comparison of Operator CEM and Periodic Monitoring Results		
Substance	**CEMs Results (mg/m^3)**	**Periodic Monitoring Results (mg/m^3)**
No CEMS Installed/Data Available		

Table 3.7 Operating conditions during the monitoring of emission point Industrial Spray Booth 2 (RH) carried out on 17/01/2011

Parameter	Result
Sample Date	17/01/2011
Process Type	Batch
Process Duration	1 Hour
If 'Batch', was monitoring carried out over the whole batch?	No
Abatement/Operational?	Not Installed
Item Sprayed	4 x Small Coolers & 1 Radiator

Comparison of Operator CEM and Periodic Monitoring Results		
Substance	**CEMs Results (mg/m^3)**	**Periodic Monitoring Results (mg/m^3)**
No CEMS Installed/Data Available		

Monitoring Deviations

Table 4.1 Monitoring Deviations for Emission Point Assembly Shop Booth (LH)

Pollutant	Substance Deviations	Monitoring Deviations	Other Relevant Issues
Total Particulate Matter	None	None	None

Table 4.2 Monitoring Deviations for Emission Point Assembly Shop Booth (Mid)

Pollutant	Substance Deviations	Monitoring Deviations	Other Relevant Issues
Total Particulate Matter	None	None	None

Table 4.3 Monitoring Deviations for Emission Point Assembly Shop Booth (RH)

Pollutant	Substance Deviations	Monitoring Deviations	Other Relevant Issues
Total Particulate Matter	None	None	None

Table 4.4 Monitoring Deviations for Emission Point Industrial Spray Booth 1 (RH)

Pollutant	Substance Deviations	Monitoring Deviations	Other Relevant Issues
Total Particulate Matter	None	None	None

Table 4.5 Monitoring Deviations for Emission Point Industrial Spray Booth 1 (LH)

Pollutant	Substance Deviations	Monitoring Deviations	Other Relevant Issues
Total Particulate Matter	None	None	None

Table 4.6 Monitoring Deviations for Emission Point Industrial Spray Booth 2 (LH)

Pollutant	Substance Deviations	Monitoring Deviations	Other Relevant Issues
Total Particulate Matter	None	None	None

Table 4.7 Monitoring Deviations for Emission Point Industrial Spray Booth 2 (RH)

Pollutant	Substance Deviations	Monitoring Deviations	Other Relevant Issues
Total Particulate Matter	None	None	None

Report for Periodic Monitoring of Emissions to Atmosphere

Part 2: **Supporting Information**

Permit Number: **PPC/067 Var Ref: 002**

Operator: **Covrad Heat Transfer Ltd**

Installation: **Coventry**

Emission Points: **Assembly Shop Booth (LH), Assembly Shop Booth (Mid), Assembly Shop Booth (RH), Industrial Spray Booth 1 (RH), Industrial Spray Booth 1 (LH), Industrial Spray Booth 2 (LH) & Industrial Spray Booth 2 (RH)**

Monitoring Dates: **12th – 17th January 2011**

Contract Reference:	FTBS14741
Operator:	Covrad Heat Transfer Ltd
Address:	Sir Henry Parks Road Canley Coventry CV5 6BN
Monitoring Organisation:	RPS Consultants Ltd.
Address:	Grafton Building, Caswell Science & Technology Park, Caswell, Towcester, Northamptonshire, NN12 8EQ.
Report Date:	07 February 2011
Report Approved By:	Martin Johnson
Position:	Senior Environmental Consultant
MCERTS Registration Number:	MM 03 168
Signature:	[redacted]

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APPENDIX 1: General Information

Monitoring Organisation Staff Details

Table 5.1 Sampling Personnel

Sampling Personnel	Position	MCERTS Level	Technical Endorsements	MCERTS Registration Number
Katie Brewis	Consultant	Level 2	TE1, TE2, TE3, TE4	MM 07 876
Richard Carter	Consultant	Level 2	TE1, TE2, TE3, TE4	MM 07 861

Table 5.2 Report Author

Report Author	Position	MCERTS Level	Technical Endorsements	MCERTS Registration Number
Richard Carter	Consultant	Level 2	TE1, TE2, TE3, TE4	MM 07 861

Table 5.3 Report Reviewer

Report Reviewer	Position	MCERTS Level	Technical Endorsements	MCERTS Registration Number
Martin Johnson	Senior Environmental Consultant	Level 2	TE1, TE2, TE3, TE4	MM 03 168

Monitoring Organisation Method Details

Table 6.1 Monitoring Methods

Emission Parameter	Standard Method	Monitoring Procedure No.	Monitoring Accreditation	Analysis	Analysis Procedure No.	Analytical Laboratory	Analysis Accreditaton
Practical Considerations Prior to Monitoring	N/A	RPSCE/1/1	UKAS	N/A	N/A	N/A	N/A
Gas Flows	BS-EN 13284-1:2001	RPSCE/1/2	MCERTS	N/A	N/A	N/A	N/A
Gas Temperatures	BS-EN 13284-1:2001	RPSCE/1/2	MCERTS	N/A	N/A	N/A	N/A
Low Concentration Total Particulate Matter	BS EN 13284-1:2002	RPSCE/1/7c	MCERTS	Gravimetric	D9	RPS Laboratories	UKAS

Table 7.1 – Checklist Used

Equipment Checklist Used	File Location Address
FTBS14741 Checklist	FTBS14741 Electronic & Work File

APPENDIX 2:
Assembly Shop Booth (LH) Sampling, Analysis & Uncertainty Data

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Sampling Point Ref: Assembly Shop Booth (LH)
Project Ref: FTBS14741

Date: 12/01/11
Run: TPM

Stack Diamter (m): 0.80
Stack Area (m2): 0.503

Stack Static press.mm H_2O: 2.8

Traverse Point No.	Port A			Port B		
	Δ p, mm H_2O	Root Δ p	Stack Temp °C	Δ p, mm H_2O	Root Δ p	Stack Temp °C
1	7.4	2.720	10	7.6	2.757	10
2	8.6	2.933	10	8	2.828	11
3						
4						
5						
6						
7						
8						
9						
10						
Minimum	7.4	2.720	10	7.6	2.757	10
Maximum	8.6	2.933	10	8.0	2.828	11
Mean	**8.0**	**2.826**	**10.0**	**7.8**	**2.793**	**10.5**
Sum	16	5.653	20	15.6	5.585	21
Total Sum						

Max. pitot press. =	8.6
Min. pitot press. =	7.4
Ratio Max:Min =	1.2 :1

Gas Data

Oxygen %	21.0
CO_2 %	0.04
CO %	

Oxygen Correction

Required Correction Value	0
Actual Oxygen Factor	1
Enter 0 if correction is not required	

BS EN 13284-1 & M1 Sample Point Requirements	Requirement Met?
Duct gas Flow: angle with regard to duct access <15°?	Y
Duct Gas Flow Negative Velocity: Not Permitted	Y
Duct Gas Flow: Ratio of max to min velocity <3:1?	Y
Working Area > 5m²?	Y
Handrails with removable chains / self closing gates across the top of the ladder?	Y
Handrails (approx 0,5 and 1,0 m high) and vertical baseboards (approx 0,25m high)?	Y
Scaffold Built to 'Heavy Duty' Scafftag Rating or at least 2.5kN/m2 loading	Y
Handrails not restricting access to ports?	Y
Room opposite sampling port equal or greater than the length of the sampling probe plus 1 metre?	Y
Sufficient Power (Waterproof 110V BS4343 Standard) close or on the platform?	Y

Company Name: Covrad Heat Transfer Ltc	In-stack Filter?	In	Bar. Press.mm Hg	738	K Factor	8.919	Ambient Temp.	15	Leak Rate (fin / %)	0
Site Ref: Coventry										
Sampling Point Ref: Assembly Shop Boott	Outstack Filter?		Cp	0.824	Dn used	7.983	Start Time	11:29	Leak Rate (start / %)	0
Date: 12/01/11										
Run: TPM	Operators	KB/RC	Bws%	1	Nozzle No.	1016	Stop Time	12:31	Box/Probe setting	
Project Ref: FTBS14741										
					Meter Correction Yd	0.977				

Sample Filter Weights

	Reference	Laboratory	Increase, mg
Filter	67881	RPS	0.84
Probe Washings	T120187	RPS	1.4

Sample Filter Blank Weighings

	Reference	Laboratory	Increase, mg
Filter	67879	RPS	0.17
Probe Wash	T120186	RPS	0.5

Impinger Weights

Weights	Initial	Final	Increase, g
Impinger 1	714.9	709	-5.9
Impinger 2			0.0
Impinger 3			0.0
Impinger 4			0.0
Impinger 5			0.0
Silica Gel	870	886.9	16.9
		Total	11.0

Sample Point	Clock Time min	Pitot Δ p, mm H_2O	Stack Temp, °C	Orifice Δ H, mm H_2O		Gas Meter Reading m^3	Temp at Gas Meter Outlet °C	Condenser Temp, °C	Filter Box Temp °C	Probe Temp °C	Pump Vacuum Inches Hg	Impinger Stem Temp. °C	Root Δ p,
				Desired	Actual								
1	0	7.0	10	62.4	62.4	1455050	13				2.5	10	2.646
	5	7.0	10	62.4	62.4		15				2.5	10	2.646
	10	7.0	10	62.4	62.4		16				2.5	9	2.646
2	15	7.0	10	62.4	62.4		16				2.5	9	2.646
	20	7.6	10	67.8	67.8		17				3	10	2.757
	25	7.6	10	67.8	67.8		18				3	10	2.757
Endpoint	30												
1	0	7.4	10	66.0	66.0		18				3	11	2.720
	5	7.6	10	67.8	67.8		19				3	11	2.757
	10	7.6	11	67.8	67.8		19				3	12	2.757
2	15	7.6	12	67.8	67.8		19				3	12	2.757
	20	7.6	12	67.8	67.8		19				3	12	2.757
	25	7.4	12	66.0	66.0		19				3	12	2.720
Endpoint	30					1456660.2							
	60.00	**7.4**	**10.6**	**65.7**	**65.7**	**1.610**	**17.3**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**2.8**	**10.7**	**2.7**

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Project Ref: FTBS14741

Date: 12/01/11

Sampling Point Ref: Assembly Shop Booth (LH)	Run: TPM
Meter Volume Sampled, acm	1.610
Sample Run Start Time	11:29
Sample Run End Time	12:31
Total Actual Sampling Time, min	60.0
Barometric Pressure, mm Hg	738.00
Stack Pressure, mm Hg	738.21
Average Stack Temp, °C	10.6
Meter Volume at Wet STP, scm	1.459
Stack Moisture Content, %	0.9
Average Stack Velocity, m/sec	9.037
Stack Flow Rate, scms wet, STP	4.245
Nozzle Diameter, mm	7.98
% Isokinetic Variation	**95.7**
Total Mass of Particulate, mg	2.2
Percentage of Total Particulate Collected on Filter	37.5
Stack Particulate Concentration, mg/m^3	**1.5**
Particulate Mass rate, kg/hour	0.023
Emission Limit value	**50**

Sample Train Blank Results	
Sample Blank Particulate Concentration, mg/m^3	0.5
Total Weight Gain, mg (Sample Train Blank)	0.7
Blank Result Less than 10% of Limit Value	Y

Uncertainty Calculation for Total Particulate Matter to BS EN 13284-1

Determined Concentration	1.5	mg/m3 (at Reference Cond)

Measured Values

Sampled Volume	1.6102	m^3
Sampled gas Temperature	290.3333333	k
Sampled gas Pressure	98.43	kPa
Sampled gas Humidity	0	% by volume
Oxygen content	21	% by volume
Mass	2.24	mg

Leak	0.00	%
Uncollected Mass	0	mg

Standard Uncertainties for Measured Values

Sampled Volume	0.001	m3
Sampled gas Temperature	2	k
Sampled gas Pressure	1	kPa
Sampled gas Humidity	1	% by volume
Oxygen content	0.1	% by volume
Mass	0.14152385	mg

Uncertainty Calculation for Volume Correction

Volume Correction Factor	0.914		
	Sensitivity Coefficient		Uncertainty, Uv
Sampled gas Temperature	0.0031		0.0063
Sampled gas Pressure	0.0093		0.0093
Sampled gas Humidity	0.0091		0.0091
		Sqrt (Uv)^2	0.0145
		Total Uv	0.023

Uncertainty Calculation for Oxygen Correction

Oxygen Correction Factor	1.0000		
	Sensitivity Coefficient		Uncertainty, Uo
Oxygen Measurement	N/A		N/A
		Total Uo	N/A

Uncertainty Contributions (Itemised)

	Value		Sensitivity coefficient	Uncertainty Contribution	
				Concentration	%
Volume Correction	1.445	m3	1.06	0.02 $mg.m^{-3}$	1.61 %
Mass (weighing)	2.24	mg	0.69	0.10 $mg.m^{-3}$	6.32 %
Oxygen Correction	N/A		0.00	0.00 $mg.m^{-3}$	0.00 %
System Leak	0.00	$mg.m^{-3}$	1.00	0.00 $mg.m^{-3}$	0.00 %
Uncollected Mass	0.00	mg	0.69	0.00 $mg.m^{-3}$	0.00 %
			Total Uncertainty	0.10 $mg.m^{-3}$	

Uncertainty Result (Uncertainty has been expanded with a coveragefactor of 2 (K=2))

Expanded Uncertainty =	0.20	$mg.m^{-3}$
=>	13.04	% of Result
=>	0.00	% of ELV

APPENDIX 3:
Assembly Shop Booth (Mid) Sampling, Analysis & Uncertainty Data

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Sampling Point Ref: Assembly Shop Booth (Mid)
Project Ref: FTBS14741

Date: 12/01/11
Run: TPM

Stack Diamter (m): 0.80
Stack Area (m2): 0.503

Stack Static press.mm H_2O: -1.4

Traverse Point No.	Port A			Port B		
	Δ p, mm H_2O	Root Δ p	Stack Temp °C	Δ p, mm H_2O	Root Δ p	Stack Temp °C
1	6.6	2.569	10	5	2.236	10
2	6.8	2.608	10	5.4	2.324	9
3						
4						
5						
6						
7						
8						
9						
10						
Minimum	6.6	2.569	10	5.0	2.236	9
Maximum	6.8	2.608	10	5.4	2.324	10
Mean	**6.7**	**2.588**	**10.0**	**5.2**	**2.280**	**9.5**
Sum	13.4	5.177	20	10.4	4.560	19
Total Sum						

Max. pitot press. =	6.8
Min. pitot press. =	5.0
Ratio Max:Min =	1.4 :1

Gas Data

Oxygen %	21.0
CO_2 %	0.04
CO %	

Oxygen Correction

Required Correction Value	0
Actual Oxygen Factor	1
Enter 0 if correction is not required	

BS EN 13284-1 & M1 Sample Point Requirements	Requirement Met?
Duct gas Flow: angle with regard to duct access <15°?	Y
Duct Gas Flow Negative Velocity: Not Permitted	Y
Duct Gas Flow: Ratio of max to min velocity <3:1?	Y
Working Area > 5m²?	Y
Handrails with removable chains / self closing gates across the top of the ladder?	Y
Handrails (approx 0,5 and 1,0 m high) and vertical baseboards (approx 0,25m high)?	Y
Scaffold Built to 'Heavy Duty' Scafftag Rating or at least 2.5kN/m2 loading	Y
Handrails not restricting access to ports?	Y
Room opposite sampling port equal or greater than the length of the sampling probe plus 1 metre?	Y
Sufficient Power (Waterproof 110V BS4343 Standard) close or on the platform?	Y

Company Name: Covrad Heat Transfer Ltc	In-stack Filter?	In	Bar. Press.mm Hg	738	K Factor	15.221	Ambient Temp.	15	Leak Rate (fin / %)	0.2
Site Ref: Coventry										
Sampling Point Ref: Assembly Shop Booth	Outstack Filter?		Cp	0.824	Dn used	9.1	Start Time	13:41	Leak Rate (start / %)	0.2
Date: 12/01/11										
Run: TPM	Operators	KB/RC	Bws%	1	Nozzle No.	1017	Stop Time	14:43	Box/Probe setting	
Project Ref: FTBS14741										
					Meter Correction Yd	0.977				

Sample Filter Weights

	Reference	Laboratory	Increase, mg
Filter	67873	RPS	0.88
Probe Washings	T120189	RPS	1.4

Sample Filter Blank Weighings

	Reference	Laboratory	Increase, mg
Filter	67882	RPS	0.15
Probe Wash	T120188	RPS	0.9

Impinger Weights

Weights	Initial	Final	Increase, g
Impinger 1	709	702.2	-6.8
Impinger 2			0.0
Impinger 3			0.0
Impinger 4			0.0
Impinger 5			0.0
Silica Gel	886.9	903.5	16.6
		Total	9.8

Sample Point	Clock Time min	Pitot Δ p, mm H_2O	Stack Temp, °C	Orifice Δ H, mm H_2O		Gas Meter Reading m^3	Temp at Gas Meter Outlet °C	Condenser Temp, °C	Filter Box Temp °C	Probe Temp °C	Pump Vacuum Inches Hg	Impinger Stem Temp. °C	Root Δ p,
				Desired	Actual								
1	0	5.0	10	76.1	76.1	1456666.6	17				3	7	2.236
	5	5.0	10	76.1	76.1		17				3	7	2.236
	10	5.0	10	76.1	76.1		17				3	7	2.236
2	15	4.4	10	67.0	67.0		18				2.5	8	2.098
	20	4.6	11	70.0	70.0		19				2.5	8	2.145
	25	4.4	11	67.0	67.0		19				2.5	8	2.098
Endpoint	30												
1	0	5.0	11	76.1	76.1		19				2.5	8	2.236
	5	5.0	11	76.1	76.1		19				2.5	9	2.236
	10	5.2	11	79.1	79.1		20				2.5	9	2.280
2	15	5.0	12	76.1	76.1		20				2.5	9	2.236
	20	5.2	12	79.1	79.1		20				2.5	9	2.280
	25	5.0	12	76.1	76.1		20				2.5	9	2.236
Endpoint	30					1458419							
	60.00	**4.9**	**10.9**	**74.6**	**74.6**	**1.752**	**18.8**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**2.6**	**8.2**	**2.2**

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Project Ref: FTBS14741

Date: 12/01/11

Sampling Point Ref: Assembly Shop Booth (Mid)	Run: TPM
Meter Volume Sampled, acm	1.752
Sample Run Start Time	13:41
Sample Run End Time	14:43
Total Actual Sampling Time, min	60.0
Barometric Pressure, mm Hg	738.00
Stack Pressure, mm Hg	737.90
Average Stack Temp, °C	10.9
Meter Volume at Wet STP, scm	1.579
Stack Moisture Content, %	0.8
Average Stack Velocity, m/sec	7.373
Stack Flow Rate, scms wet, STP	3.458
Nozzle Diameter, mm	9.10
% Isokinetic Variation	**97.8**
Total Mass of Particulate, mg	2.3
Percentage of Total Particulate Collected on Filter	38.6
Stack Particulate Concentration, mg/m^3	**1.4**
Particulate Mass rate, kg/hour	0.018
Emission Limit value	**50**

Sample Train Blank Results	
Sample Blank Particulate Concentration, mg/m^3	0.7
Total Weight Gain, mg (Sample Train Blank)	1.1
Blank Result Less than 10% of Limit Value	Y

Uncertainty Calculation for Total Particulate Matter to BS EN 13284-1

Determined Concentration	1.4	mg/m3 (at Reference Cond)

Measured Values

Sampled Volume	1.7524	m^3
Sampled gas Temperature	291.75	k
Sampled gas Pressure	98.38	kPa
Sampled gas Humidity	0	% by volume
Oxygen content	21	% by volume
Mass	2.28	mg

Leak	0.20	%
Uncollected Mass	0	mg

Standard Uncertainties for Measured Values

Sampled Volume	0.001	m3
Sampled gas Temperature	2	k
Sampled gas Pressure	1	kPa
Sampled gas Humidity	1	% by volume
Oxygen content	0.1	% by volume
Mass	0.14152385	mg

Uncertainty Calculation for Volume Correction

Volume Correction Factor	0.909		
	Sensitivity Coefficient		Uncertainty, Uv
Sampled gas Temperature	0.0031		0.0062
Sampled gas Pressure	0.0092		0.0092
Sampled gas Humidity	0.0091		0.0091
		Sqrt (Uv)^2	0.0144
		Total Uv	0.025

Uncertainty Calculation for Oxygen Correction

Oxygen Correction Factor	1.0000		
	Sensitivity Coefficient		Uncertainty, Uo
Oxygen Measurement	N/A		N/A
		Total Uo	N/A

Uncertainty Contributions (Itemised)

	Value		Sensitivity coefficient	Uncertainty Contribution			
				Concentration		%	
Volume Correction	1.566	m3	0.92	0.02	$mg.m^{-3}$	1.61	%
Mass (weighing)	2.28	mg	0.63	0.09	$mg.m^{-3}$	6.21	%
Oxygen Correction	N/A		0.00	0.00	$mg.m^{-3}$	0.00	%
System Leak	0.00	$mg.m^{-3}$	1.00	0.00	$mg.m^{-3}$	0.12	%
Uncollected Mass	0.00	mg	0.63	0.00	$mg.m^{-3}$	0.00	%
			Total Uncertainty	0.09	$mg.m^{-3}$		

Uncertainty Result (Uncertainty has been expanded with a coveragefactor of 2 (K=2))

Expanded Uncertainty =	0.19	$mg.m^{-3}$
=>	12.83	% of Result
=>	0.00	% of ELV

APPENDIX 4:
Assembly Shop Booth (RH) Sampling, Analysis & Uncertainty Data

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Sampling Point Ref: Assembly Shop Booth (RH)
Project Ref: FTBS14741

Date: 13/01/11
Run: TPM

Stack Diamter (m)	0.80
Stack Area (m2):	0.503

Stack Static press.mm H_2O: 4

Traverse Point No.	Port A			Port B		
	Δ p, mm H_2O	Root Δ p	Stack Temp °C	Δ p, mm H_2O	Root Δ p	Stack Temp °C
1	4.6	2.145	9	5.4	2.324	11
2	6	2.449	11	4	2.000	10
3						
4						
5						
6						
7						
8						
9						
10						
Minimum	4.6	2.145	9	4.0	2.000	10
Maximum	6.0	2.449	11	5.4	2.324	11
Mean	**5.3**	**2.297**	**10.0**	**4.7**	**2.162**	**10.5**
Sum	10.6	4.594	20	9.4	4.324	21
Total Sum						

Max. pitot press. =	6.0
Min. pitot press. =	4.0
Ratio Max:Min =	1.5 :1

Gas Data

Oxygen %	21.0
CO_2 %	0.04
CO %	

Oxygen Correction

Required Correction Value	0
Actual Oxygen Factor	1
Enter 0 if correction is not required	

BS EN 13284-1 & M1 Sample Point Requirements	Requirement Met?
Duct gas Flow: angle with regard to duct access <15°?	Y
Duct Gas Flow Negative Velocity: Not Permitted	Y
Duct Gas Flow: Ratio of max to min velocity <3:1?	Y
Working Area > 5m²?	Y
Handrails with removable chains / self closing gates across the top of the ladder?	Y
Handrails (approx 0,5 and 1,0 m high) and vertical baseboards (approx 0,25m high)?	Y
Scaffold Built to 'Heavy Duty' Scafftag Rating or at least 2.5kN/m2 loading	Y
Handrails not restricting access to ports?	Y
Room opposite sampling port equal or greater than the length of the sampling probe plus 1 metre?	Y
Sufficient Power (Waterproof 110V BS4343 Standard) close or on the platform?	Y

Company Name: Covrad Heat Transfer Ltc	In-stack Filter?	In	Bar. Press.mm Hg	738	K Factor	15.359	Ambient Temp.	19	Leak Rate (fin / %)	0.2
Site Ref: Coventry										
Sampling Point Ref: Assembly Shop Booth	Outstack Filter?		Cp	0.824	Dn used	9.1	Start Time	10:24	Leak Rate (start / %)	0.2
Date: 13/01/11										
Run: TPM	Operators	KB/RC	Bws%	1	Nozzle No.	1017	Stop Time	11:26	Box/Probe setting	
Project Ref: FTBS14741										
					Meter Correction Yd	0.977				

Sample Filter Weights

	Reference	Laboratory	Increase, mg
Filter	67877	RPS	2.8
Probe Washings	T120191	RPS	2.3

Sample Filter Blank Weighings

	Reference	Laboratory	Increase, mg
Filter	67876	RPS	0.21
Probe Wash	T120190	RPS	0.5

Impinger Weights

Weights	Initial	Final	Increase, g
Impinger 1	702.2	695.4	-6.8
Impinger 2			0.0
Impinger 3			0.0
Impinger 4			0.0
Impinger 5			0.0
Silica Gel	903.5	914.5	11.0
		Total	4.2

Sample Point	Clock Time min	Pitot Δ p, mm H_2O	Stack Temp, °C	Orifice Δ H, mm H_2O		Gas Meter Reading m^3	Temp at Gas Meter Outlet °C	Condenser Temp, °C	Filter Box Temp °C	Probe Temp °C	Pump Vacuum Inches Hg	Impinger Stem Temp. °C	Root Δ p,
				Desired	Actual								
1	0	4.4	9	67.6	67.6	1458429.8	18				3	9	2.098
	5	4.4	9	67.6	67.6		18				3	7	2.098
	10	4.4	9	67.6	67.6		18				3	7	2.098
2	15	4.4	9	67.6	67.6		19				3	7	2.098
	20	4.4	10	67.6	67.6		19				3	8	2.098
	25	4.8	11	73.7	73.7		20				3	8	2.191
Endpoint	30												
1	0	4.8	10	73.7	73.7		20				3	9	2.191
	5	4.8	10	73.7	73.7		21				3	9	2.191
	10	4.8	10	73.7	73.7		21				3	8	2.191
2	15	4.8	11	73.7	73.7		21				3	8	2.191
	20	4.8	11	73.7	73.7		21				3	8	2.191
	25	4.4	11	67.6	67.6		#REF!				3	8	2.098
Endpoint	30					1460115.8							
	60.00	**4.6**	**10.0**	**70.7**	**70.7**	**1.686**	**19.8**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**3.0**	**8.0**	**2.1**

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Project Ref: FTBS14741

Date: 13/01/11

Sampling Point Ref: Assembly Shop Booth (RH)	Run: TPM
Meter Volume Sampled, acm	1.686
Sample Run Start Time	10:24
Sample Run End Time	11:26
Total Actual Sampling Time, min	60.0
Barometric Pressure, mm Hg	738.00
Stack Pressure, mm Hg	738.29
Average Stack Temp, °C	10.0
Meter Volume at Wet STP, scm	1.506
Stack Moisture Content, %	0.3
Average Stack Velocity, m/sec	7.125
Stack Flow Rate, scms wet, STP	3.354
Nozzle Diameter, mm	9.10
% Isokinetic Variation	**96.2**
Total Mass of Particulate, mg	5.1
Percentage of Total Particulate Collected on Filter	54.9
Stack Particulate Concentration, mg/m^3	**3.4**
Particulate Mass rate, kg/hour	0.041
Emission Limit value	**50**

Sample Train Blank Results	
Sample Blank Particulate Concentration, mg/m^3	0.5
Total Weight Gain, mg (Sample Train Blank)	0.7
Blank Result Less than 10% of Limit Value	Y

Uncertainty Calculation for Total Particulate Matter to BS EN 13284-1

Determined Concentration	3.4	mg/m3 (at Reference Cond)

Measured Values

Sampled Volume	1.686	m^3
Sampled gas Temperature	292.75	k
Sampled gas Pressure	98.44	kPa
Sampled gas Humidity	0	% by volume
Oxygen content	21	% by volume
Mass	5.1	mg

Leak	0.20	%
Uncollected Mass	0	mg

Standard Uncertainties for Measured Values

Sampled Volume	0.001	m3
Sampled gas Temperature	2	k
Sampled gas Pressure	1	kPa
Sampled gas Humidity	1	% by volume
Oxygen content	0.1	% by volume
Mass	0.14152385	mg

Uncertainty Calculation for Volume Correction

Volume Correction Factor	0.906		
	Sensitivity Coefficient		Uncertainty, Uv
Sampled gas Temperature	0.0031		0.0062
Sampled gas Pressure	0.0092		0.0092
Sampled gas Humidity	0.0091		0.0091
		Sqrt (Uv)^2	0.0143
		Total Uv	0.024

Uncertainty Calculation for Oxygen Correction

Oxygen Correction Factor	1.0000		
	Sensitivity Coefficient		Uncertainty, Uo
Oxygen Measurement	N/A		N/A
		Total Uo	N/A

Uncertainty Contributions (Itemised)

	Value		Sensitivity coefficient	Uncertainty Contribution			
				Concentration		%	
Volume Correction	1.501	m3	2.26	0.05	$mg.m^{-3}$	1.61	%
Mass (weighing)	5.10	mg	0.66	0.09	$mg.m^{-3}$	2.77	%
Oxygen Correction	N/A		0.00	0.00	$mg.m^{-3}$	0.00	%
System Leak	0.00	$mg.m^{-3}$	1.00	0.00	$mg.m^{-3}$	0.12	%
Uncollected Mass	0.00	mg	0.66	0.00	$mg.m^{-3}$	0.00	%
			Total Uncertainty	0.11	$mg.m^{-3}$		

Uncertainty Result (Uncertainty has been expanded with a coveragefactor of 2 (K=2))

Expanded Uncertainty =	0.22	$mg.m^{-3}$
=>	6.42	% of Result
=>	0.00	% of ELV

APPENDIX 5:
Industrial Spray Booth 1 (RH) Sampling, Analysis & Uncertainty Data

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Sampling Point Ref: Industrial Spary Booth 1 (RH)
Project Ref: FTBS14741

Date: 14/01/11
Run: TPM

Stack Diamter (m): 0.59
Stack Static press.mm H_2O: 5.8
Stack Area (m2): 0.273

Traverse Point No.	Port A			Port B		
	Δ p, mm H_2O	Root Δ p	Stack Temp °C	Δ p, mm H_2O	Root Δ p	Stack Temp °C
1	15.6	3.950	18	13.8	3.715	19
2	3.6	1.897	18	3.8	1.949	17
3						
4						
5						
6						
7						
8						
9						
10						
Minimum	3.6	1.897	18	3.8	1.949	17
Maximum	15.6	3.950	18	13.8	3.715	19
Mean	**9.6**	**2.924**	**18.0**	**8.8**	**2.832**	**18.0**
Sum	19.2	5.847	36	17.6	5.664	36
Total Sum						

Max. pitot press. =	15.6
Min. pitot press. =	3.6
Ratio Max:Min =	4.3 :1

Gas Data

Oxygen %	21.0
CO_2 %	0.04
CO %	

Oxygen Correction

Required Correction Value	0
Actual Oxygen Factor	1
Enter 0 if correction is not required	

BS EN 13284-1 & M1 Sample Point Requirements	Requirement Met?
Duct gas Flow: angle with regard to duct access <15°?	Y
Duct Gas Flow Negative Velocity: Not Permitted	Y
Duct Gas Flow: Ratio of max to min velocity <3:1?	Y
Working Area > 5m²?	Y
Handrails with removable chains / self closing gates across the top of the ladder?	Y
Handrails (approx 0,5 and 1,0 m high) and vertical baseboards (approx 0,25m high)?	Y
Scaffold Built to 'Heavy Duty' Scafftag Rating or at least 2.5kN/m2 loading	Y
Handrails not restricting access to ports?	Y
Room opposite sampling port equal or greater than the length of the sampling probe plus 1 metre?	Y
Sufficient Power (Waterproof 110V BS4343 Standard) close or on the platform?	Y

Company Name: Covrad Heat Transfer Ltc	In-stack Filter?	In	Bar. Press.mm Hg	738	K Factor	8.946	Ambient Temp.	12	Leak Rate (fin / %)	0
Site Ref: Coventry										
Sampling Point Ref: Industrial Spary Booth	Outstack Filter?		Cp	0.824	Dn used	7.983	Start Time	14:15	Leak Rate (start / %)	0
Date: 14/01/11										
Run: TPM	Operators	KB/RC	Bws%	1	Nozzle No.	1017	Stop Time	15:17	Box/Probe setting	
Project Ref: FTBS14741										
					Meter Correction Yd	0.977				

Sample Filter Weights

	Reference	Laboratory	Increase, mg
Filter	67964	RPS	5.97
Probe Washings	T120024	RPS	2.6

Sample Filter Blank Weighings

	Reference	Laboratory	Increase, mg
Filter	67960	RPS	0.04
Probe Wash	T120023	RPS	0.8

Impinger Weights

Weights	Initial	Final	Increase, g
Impinger 1	890.9	883.4	-7.5
Impinger 2			0.0
Impinger 3			0.0
Impinger 4			0.0
Impinger 5			0.0
Silica Gel	876.5	893.6	17.1
		Total	9.6

Sample Point	Clock Time min	Pitot Δ p, mm H_2O	Stack Temp, °C	Orifice Δ H, mm H_2O		Gas Meter Reading m^3	Temp at Gas Meter Outlet °C	Condenser Temp, °C	Filter Box Temp °C	Probe Temp °C	Pump Vacuum Inches Hg	Impinger Stem Temp. °C	Root Δ p,
				Desired	Actual								
1	0	9.6	17	85.9	85.9	1461852.6	16				4.5	16	3.098
	5	9.6	17	85.9	85.9		16				5	16	3.098
	10	8.8	17	78.7	78.7		17				5	17	2.966
2	15	4.2	17	37.6	37.6		17				2.5	17	2.049
	20	4.0	17	35.8	35.8		17				2	17	2.000
	25	4.0	17	35.8	35.8		17				2	17	2.000
Endpoint	30												
1	0	10.4	17	93.0	93.0		17				6	17	3.225
	5	10.4	17	93.0	93.0		17				6	17	3.225
	10	10.4	18	93.0	93.0		17				6	17	3.225
2	15	4.4	18	39.4	39.4		17				2	17	2.098
	20	4.4	18	39.4	39.4		17				2	17	2.098
	25	4.0	18	35.8	35.8		17				2	17	2.000
Endpoint	30					1463364.1							
	60.00	**7.0**	**17.3**	**62.8**	**62.8**	**1.512**	**16.8**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**3.8**	**16.8**	**2.6**

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Project Ref: FTBS14741

Date: 14/01/11

Sampling Point Ref: Industrial Spary Booth 1 (RH)	Run: TPM
Meter Volume Sampled, acm	1.512
Sample Run Start Time	14:15
Sample Run End Time	15:17
Total Actual Sampling Time, min	60.0
Barometric Pressure, mm Hg	738.00
Stack Pressure, mm Hg	738.43
Average Stack Temp, °C	17.3
Meter Volume at Wet STP, scm	1.370
Stack Moisture Content, %	0.9
Average Stack Velocity, m/sec	8.726
Stack Flow Rate, scms wet, STP	2.178
Nozzle Diameter, mm	7.98
% Isokinetic Variation	**95.3**
Total Mass of Particulate, mg	8.6
Percentage of Total Particulate Collected on Filter	69.7
Stack Particulate Concentration, mg/m^3	**6.3**
Particulate Mass rate, kg/hour	0.049
Emission Limit value	**50**

Sample Train Blank Results	
Sample Blank Particulate Concentration, mg/m^3	0.6
Total Weight Gain, mg (Sample Train Blank)	0.8
Blank Result Less than 10% of Limit Value	Y

Uncertainty Calculation for Total Particulate Matter to BS EN 13284-1

Determined Concentration	6.3	mg/m3 (at Reference Cond)

Measured Values

Sampled Volume	1.5115	m^3
Sampled gas Temperature	289.8333333	k
Sampled gas Pressure	98.45	kPa
Sampled gas Humidity	0	% by volume
Oxygen content	21	% by volume
Mass	8.57	mg

Leak	0.00	%
Uncollected Mass	0	mg

Standard Uncertainties for Measured Values

Sampled Volume	0.001	m3
Sampled gas Temperature	2	k
Sampled gas Pressure	1	kPa
Sampled gas Humidity	1	% by volume
Oxygen content	0.1	% by volume
Mass	0.14152385	mg

Uncertainty Calculation for Volume Correction

Volume Correction Factor	0.915		
	Sensitivity Coefficient		Uncertainty, Uv
Sampled gas Temperature	0.0032		0.0063
Sampled gas Pressure	0.0093		0.0093
Sampled gas Humidity	0.0092		0.0092
		Sqrt (Uv)^2	0.0145
		Total Uv	0.022

Uncertainty Calculation for Oxygen Correction

Oxygen Correction Factor	1.0000		
	Sensitivity Coefficient		Uncertainty, Uo
Oxygen Measurement	N/A		N/A
		Total Uo	N/A

Uncertainty Contributions (Itemised)

	Value		Sensitivity coefficient	Uncertainty Contribution Concentration		Uncertainty Contribution %	
Volume Correction	1.358	m3	4.60	0.10	$mg.m^{-3}$	1.61	%
Mass (weighing)	8.57	mg	0.73	0.10	$mg.m^{-3}$	1.65	%
Oxygen Correction	N/A		0.00	0.00	$mg.m^{-3}$	0.00	%
System Leak	0.00	$mg.m^{-3}$	1.00	0.00	$mg.m^{-3}$	0.00	%
Uncollected Mass	0.00	mg	0.73	0.00	$mg.m^{-3}$	0.00	%
			Total Uncertainty	0.14	$mg.m^{-3}$		

Uncertainty Result (Uncertainty has been expanded with a coveragefactor of 2 (K=2))

Expanded Uncertainty =	0.29	$mg.m^{-3}$
=>	4.62	% of Result
=>	0.00	% of ELV

APPENDIX 6:
Industrial Spray Booth 1 (LH) Sampling, Analysis & Uncertainty Data

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Sampling Point Ref: Industrial Spray Booth 1 (LH)
Project Ref: FTBS14741

Date: 14/01/11
Run: TPM

Stack Static press.mm H_2O: 19.8

Stack Diamter (m): 0.60
Stack Area (m2): 0.283

Traverse Point No.	Port A			Port B		
	Δ p, mm H_2O	Root Δ p	Stack Temp °C	Δ p, mm H_2O	Root Δ p	Stack Temp °C
1	4.4	2.098	20	19	4.359	15
2	6.6	2.569	20	19	4.359	2
3						
4						
5						
6						
7						
8						
9						
10						
Minimum	4.4	2.098	20	19.0	4.359	2
Maximum	6.6	2.569	20	19.0	4.359	15
Mean	**5.5**	**2.333**	**20.0**	**19.0**	**4.359**	**8.5**
Sum	11	4.667	40	38	8.718	17
Total Sum						

Max. pitot press. =	19.0
Min. pitot press. =	4.4
Ratio Max:Min =	4.3 :1

Gas Data

Oxygen %	21.0
CO_2 %	0.04
CO %	

Oxygen Correction

Required Correction Value	0
Actual Oxygen Factor	1
Enter 0 if correction is not required	

BS EN 13284-1 & M1 Sample Point Requirements	Requirement Met?
Duct gas Flow: angle with regard to duct access <15°?	Y
Duct Gas Flow Negative Velocity: Not Permitted	Y
Duct Gas Flow: Ratio of max to min velocity <3:1?	Y
Working Area > 5m²?	Y
Handrails with removable chains / self closing gates across the top of the ladder?	Y
Handrails (approx 0,5 and 1,0 m high) and vertical baseboards (approx 0,25m high)?	Y
Scaffold Built to 'Heavy Duty' Scafftag Rating or at least 2.5kN/m2 loading	Y
Handrails not restricting access to ports?	Y
Room opposite sampling port equal or greater than the length of the sampling probe plus 1 metre?	Y
Sufficient Power (Waterproof 110V BS4343 Standard) close or on the platform?	Y

Company Name: Covrad Heat Transfer Ltc | In-stack Filter? | IN | Bar. Press.mm Hg | 738 | K Factor | 15.05 | Ambient Temp. | 12 | Leak Rate (fin / %) | 0.3
Site Ref: Coventry
Sampling Point Ref: Industrial Spray Booth | Outstack Filter? | | Cp | 0.824 | Dn used | 9.1 | Start Time | 10:17 | Leak Rate (start / %) | 0
Date: 14/01/11
Run: TPM | Operators | KB/RC | Bws% | 1 | Nozzle No. | 1017 | Stop Time | 11:19 | Box/Probe setting |
Project Ref: FTBS14741
Meter Correction Yd | 0.977

Sample Filter Weights

	Reference	Laboratory	Increase, mg
Filter	67875	RPS	1.7
Probe Washings	T120193	RPS	1.4

Sample Filter Blank Weighings

	Reference	Laboratory	Increase, mg
Filter	67874	RPS	0.14
Probe Wash	T120192	RPS	1

Impinger Weights

Weights	Initial	Final	Increase, g
Impinger 1	925.1	889.3	-35.8
Impinger 2			0.0
Impinger 3			0.0
Impinger 4			0.0
Impinger 5			0.0
Silica Gel	914.3	959.8	45.5
		Total	9.7

Sample Point	Clock Time min	Pitot Δ p, mm H_2O	Stack Temp, °C	Orifice Δ H, mm H_2O		Gas Meter Reading m^3	Temp at Gas Meter Outlet °C	Condenser Temp, °C	Filter Box Temp °C	Probe Temp °C	Pump Vacuum Inches Hg	Impinger Stem Temp. °C	Root Δ p,
				Desired	Actual								
1	0	4.0	17	60.2	60.2	1460139.6	17				2	18	2.000
	5	4.0	18	60.2	60.2		18				2	18	2.000
	10	4.0	19	60.2	60.2		19				2	18	2.000
2	15	4.8	19	72.2	72.2		19				2	18	2.191
	20	4.8	19	72.2	72.2		19				2	18	2.191
	25	4.8	19	72.2	72.2		19				2	18	2.191
Endpoint	30												
1	0	6.0	19	90.3	90.3		19				4	18	2.449
	5	6.0	19	90.3	90.3		19				4	18	2.449
	10	6.0	19	90.3	90.3		19				3	18	2.449
2	15	4.0	19	60.2	60.2		19				3	18	2.000
	20	4.0	19	60.2	60.2		19				3	18	2.000
	25	4.2	19	63.2	63.2		19				3	18	2.049
Endpoint	30					1461839.2							
	60.00	**4.7**	**18.8**	**71.0**	**71.0**	**1.700**	**18.8**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**2.7**	**18.0**	**2.2**

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Project Ref: FTBS14741

Date: 14/01/11

Sampling Point Ref: Industrial Spray Booth 1 (LH)	Run: TPM
Meter Volume Sampled, acm	1.700
Sample Run Start Time	10:17
Sample Run End Time	11:19
Total Actual Sampling Time, min	60.0
Barometric Pressure, mm Hg	738.00
Stack Pressure, mm Hg	739.46
Average Stack Temp, °C	18.8
Meter Volume at Wet STP, scm	1.531
Stack Moisture Content, %	0.8
Average Stack Velocity, m/sec	7.302
Stack Flow Rate, scms wet, STP	1.879
Nozzle Diameter, mm	9.10
% Isokinetic Variation	**98.2**
Total Mass of Particulate, mg	3.1
Percentage of Total Particulate Collected on Filter	54.8
Stack Particulate Concentration, mg/m^3	**2.0**
Particulate Mass rate, kg/hour	0.014
Emission Limit value	**50**

Sample Train Blank Results	
Sample Blank Particulate Concentration, mg/m^3	0.7
Total Weight Gain, mg (Sample Train Blank)	1.1
Blank Result Less than 10% of Limit Value	Y

Uncertainty Calculation for Total Particulate Matter to BS EN 13284-1

Determined Concentration	2.0	mg/m3 (at Reference Cond)

Measured Values

Sampled Volume	1.6996	m^3
Sampled gas Temperature	291.75	k
Sampled gas Pressure	98.59	kPa
Sampled gas Humidity	0	% by volume
Oxygen content	21	% by volume
Mass	3.1	mg

Leak	0.15	%
Uncollected Mass	0	mg

Standard Uncertainties for Measured Values

Sampled Volume	0.001	m3
Sampled gas Temperature	2	k
Sampled gas Pressure	1	kPa
Sampled gas Humidity	1	% by volume
Oxygen content	0.1	% by volume
Mass	0.14152385	mg

Uncertainty Calculation for Volume Correction

Volume Correction Factor	0.911		
	Sensitivity Coefficient		Uncertainty, Uv
Sampled gas Temperature	0.0031		0.0062
Sampled gas Pressure	0.0092		0.0092
Sampled gas Humidity	0.0091		0.0091
		Sqrt (Uv)^2	0.0144
		Total Uv	0.024

Uncertainty Calculation for Oxygen Correction

Oxygen Correction Factor	1.0000		
	Sensitivity Coefficient		Uncertainty, Uo
Oxygen Measurement	N/A		N/A
		Total Uo	N/A

Uncertainty Contributions (Itemised)

	Value		Sensitivity coefficient	Uncertainty Contribution			
				Concentration		%	
Volume Correction	1.519	m3	1.33	0.03	$mg.m^{-3}$	1.61	%
Mass (weighing)	3.10	mg	0.65	0.09	$mg.m^{-3}$	4.57	%
Oxygen Correction	N/A		0.00	0.00	$mg.m^{-3}$	0.00	%
System Leak	0.00	$mg.m^{-3}$	1.00	0.00	$mg.m^{-3}$	0.09	%
Uncollected Mass	0.00	mg	0.65	0.00	$mg.m^{-3}$	0.00	%
			Total Uncertainty	0.10	$mg.m^{-3}$		

Uncertainty Result (Uncertainty has been expanded with a coveragefactor of 2 (K=2))

Expanded Uncertainty =	0.20	$mg.m^{-3}$
=>	9.68	% of Result
=>	0.00	% of ELV

APPENDIX 7:
Industrial Spray Booth 2 (LH) Sampling, Analysis & Uncertainty Data

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Sampling Point Ref: Industrial Spray Booth 2 (LH)
Project Ref: FTBS14741

Date: 17/01/11
Run: TPM

Stack Diamter (m): 0.59
Stack Area (m2): 0.273

Stack Static press.mm H_2O: -3

Traverse Point No.	Port A			Port B		
	Δ p, mm H_2O	Root Δ p	Stack Temp °C	Δ p, mm H_2O	Root Δ p	Stack Temp °C
1	13.2	3.633	19	13	3.606	19
2	15.6	3.950	19	17	4.123	19
3						
4						
5						
6						
7						
8						
9						
10						
Minimum	13.2	3.633	19	13.0	3.606	19
Maximum	15.6	3.950	19	17.0	4.123	19
Mean	**14.4**	**3.791**	**19.0**	**15.0**	**3.864**	**19.0**
Sum	28.8	7.583	38	30	7.729	38
Total Sum						

Max. pitot press. =	17.0
Min. pitot press. =	13.0
Ratio Max:Min =	1.3 :1

Gas Data

Oxygen %	21.0
CO_2 %	0.04
CO %	

Oxygen Correction

Required Correction Value	0
Actual Oxygen Factor	1
Enter 0 if correction is not required	

BS EN 13284-1 & M1 Sample Point Requirements	Requirement Met?
Duct gas Flow: angle with regard to duct access <15°?	Y
Duct Gas Flow Negative Velocity: Not Permitted	Y
Duct Gas Flow: Ratio of max to min velocity <3:1?	Y
Working Area > 5m²?	Y
Handrails with removable chains / self closing gates across the top of the ladder?	Y
Handrails (approx 0,5 and 1,0 m high) and vertical baseboards (approx 0,25m high)?	Y
Scaffold Built to 'Heavy Duty' Scafftag Rating or at least 2.5kN/m2 loading	Y
Handrails not restricting access to ports?	Y
Room opposite sampling port equal or greater than the length of the sampling probe plus 1 metre?	Y
Sufficient Power (Waterproof 110V BS4343 Standard) close or on the platform?	Y

Company Name: Covrad Heat Transfer Ltc	In-stack Filter?	In	Bar. Press.mm Hg	746	K Factor	2.871	Ambient Temp.	13	Leak Rate (fin / %)	0.3
Site Ref: Coventry										
Sampling Point Ref: Industrial Spray Booth	Outstack Filter?		Cp	0.824	Dn used	6.067	Start Time	13:34	Leak Rate (start / %)	0.3
Date: 17/01/11										
Run: TPM	Operators	KB/RC	Bws%	1	Nozzle No.	1016	Stop Time	14:36	Box/Probe setting	
Project Ref: FTBS14741										
					Meter Correction Yd	0.977				

Sample Filter Weights

	Reference	Laboratory	Increase, mg
Filter	67961	RPS	1.4
Probe Washings	T120026	RPS	2

Sample Filter Blank Weighings

	Reference	Laboratory	Increase, mg
Filter	67976	RPS	0.04
Probe Wash	T120025	RPS	0.5

Impinger Weights

Weights	Initial	Final	Increase, g
Impinger 1	880	695.6	-184.4
Impinger 2			0.0
Impinger 3			0.0
Impinger 4			0.0
Impinger 5			0.0
Silica Gel	906.8	1091.6	184.8
		Total	0.4

Sample Point	Clock Time min	Pitot Δ p, mm H_2O	Stack Temp, °C	Orifice Δ H, mm H_2O		Gas Meter Reading m^3	Temp at Gas Meter Outlet °C	Condenser Temp, °C	Filter Box Temp °C	Probe Temp °C	Pump Vacuum Inches Hg	Impinger Stem Temp. °C	Root Δ p,
				Desired	Actual								
1	0	12.0	16	34.5	34.5	1465177.1	14				2	9	3.464
	5	12.2	16	35.0	35.0		12				2	11	3.493
	10	12.2	16	35.0	35.0		10				2	11	3.493
2	15	18.8	17	54.0	54.0		10				2	14	4.336
	20	19.0	16	54.5	54.5		10				5	18	4.359
	25	19.0	16	54.5	54.5		11				5	18	4.359
Endpoint	30												
1	0	12.5	16	35.9	35.9		11				3	18	3.536
	5	12.5	16	35.9	35.9		12				3	17	3.536
	10	12.5	16	35.9	35.9		12				3	17	3.536
2	15	18.4	17	52.8	52.8		14				4	11	4.290
	20	18.4	17	52.8	52.8		12				4	11	4.290
	25	18.4	17	52.8	52.8		12				4	11	4.290
Endpoint	30					1466484							
	60.00	**15.5**	**16.3**	**44.5**	**44.5**	**1.307**	**11.7**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**3.3**	**13.8**	**3.9**

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Project Ref: FTBS14741

Date: 17/01/11

Sampling Point Ref: Industrial Spray Booth 2 (LH)	Run: TPM
Meter Volume Sampled, acm	1.307
Sample Run Start Time	13:34
Sample Run End Time	14:36
Total Actual Sampling Time, min	60.0
Barometric Pressure, mm Hg	746.00
Stack Pressure, mm Hg	745.78
Average Stack Temp, °C	16.3
Meter Volume at Wet STP, scm	1.207
Stack Moisture Content, %	0.0
Average Stack Velocity, m/sec	13.080
Stack Flow Rate, scms wet, STP	3.309
Nozzle Diameter, mm	6.07
% Isokinetic Variation	**95.6**
Total Mass of Particulate, mg	3.4
Percentage of Total Particulate Collected on Filter	41.2
Stack Particulate Concentration, mg/m^3	**2.8**
Particulate Mass rate, kg/hour	0.034
Emission Limit value	**50**

Sample Train Blank Results	
Sample Blank Particulate Concentration, mg/m^3	0.4
Total Weight Gain, mg (Sample Train Blank)	0.5
Blank Result Less than 10% of Limit Value	Y

Uncertainty Calculation for Total Particulate Matter to BS EN 13284-1

Determined Concentration	2.8	mg/m3 (at Reference Cond)

Measured Values

Sampled Volume	1.3069	m^3
Sampled gas Temperature	284.6666667	k
Sampled gas Pressure	99.43	kPa
Sampled gas Humidity	0	% by volume
Oxygen content	21	% by volume
Mass	3.4	mg

Leak	0.30	%
Uncollected Mass	0	mg

Standard Uncertainties for Measured Values

Sampled Volume	0.001	m3
Sampled gas Temperature	2	k
Sampled gas Pressure	1	kPa
Sampled gas Humidity	1	% by volume
Oxygen content	0.1	% by volume
Mass	0.14152385	mg

Uncertainty Calculation for Volume Correction

Volume Correction Factor	0.941		
	Sensitivity Coefficient		Uncertainty, Uv
Sampled gas Temperature	0.0033		0.0066
Sampled gas Pressure	0.0095		0.0095
Sampled gas Humidity	0.0094		0.0094
		Sqrt (Uv)^2	0.0149
		Total Uv	0.019

Uncertainty Calculation for Oxygen Correction

Oxygen Correction Factor	1.0000		
	Sensitivity Coefficient		Uncertainty, Uo
Oxygen Measurement	N/A		N/A
		Total Uo	N/A

Uncertainty Contributions (Itemised)

	Value		Sensitivity coefficient	Uncertainty Contribution			
				Concentration		%	
Volume Correction	1.207	m3	2.33	0.05	$mg.m^{-3}$	1.62	%
Mass (weighing)	3.40	mg	0.83	0.12	$mg.m^{-3}$	4.16	%
Oxygen Correction	N/A		0.00	0.00	$mg.m^{-3}$	0.00	%
System Leak	0.00	$mg.m^{-3}$	1.00	0.00	$mg.m^{-3}$	0.17	%
Uncollected Mass	0.00	mg	0.83	0.00	$mg.m^{-3}$	0.00	%
			Total Uncertainty	0.13	$mg.m^{-3}$		

Uncertainty Result (Uncertainty has been expanded with a coveragefactor of 2 (K=2))

Expanded Uncertainty =	0.25	$mg.m^{-3}$
=>	8.94	% of Result
=>	0.00	% of ELV

APPENDIX 8:
Industrial Spray Booth 2 (RH) Sampling, Analysis & Uncertainty Data

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Sampling Point Ref: Industrial Spray Booth 2 (RH)
Project Ref: FTBS14741

Date: 17/01/11
Run: TPM

Stack Diamter (m): 0.59
Stack Area (m2): 0.273

Stack Static press.mm H_2O: -5

Traverse Point No.	Port A			Port B		
	Δ p, mm H_2O	Root Δ p	Stack Temp °C	Δ p, mm H_2O	Root Δ p	Stack Temp °C
1	10.5	3.240	14	14.2	3.768	14
2	19	4.359	14	20.4	4.517	14
3						
4						
5						
6						
7						
8						
9						
10						
Minimum	10.5	3.240	14	14.2	3.768	14
Maximum	19.0	4.359	14	20.4	4.517	14
Mean	**14.8**	**3.800**	**14.0**	**17.3**	**4.142**	**14.0**
Sum	29.5	7.599	28	34.6	8.285	28
Total Sum						

Max. pitot press. =	20.4
Min. pitot press. =	10.5
Ratio Max:Min =	1.9 :1

Gas Data

Oxygen %	21.0
CO_2 %	0.04
CO %	

Oxygen Correction

Required Correction Value	0
Actual Oxygen Factor	1
Enter 0 if correction is not required	

BS EN 13284-1 & M1 Sample Point Requirements	Requirement Met?
Duct gas Flow: angle with regard to duct access <15°?	Y
Duct Gas Flow Negative Velocity: Not Permitted	Y
Duct Gas Flow: Ratio of max to min velocity <3:1?	Y
Working Area > 5m²?	Y
Handrails with removable chains / self closing gates across the top of the ladder?	Y
Handrails (approx 0,5 and 1,0 m high) and vertical baseboards (approx 0,25m high)?	Y
Scaffold Built to 'Heavy Duty' Scafftag Rating or at least 2.5kN/m2 loading	Y
Handrails not restricting access to ports?	Y
Room opposite sampling port equal or greater than the length of the sampling probe plus 1 metre?	Y
Sufficient Power (Waterproof 110V BS4343 Standard) close or on the platform?	Y

Company Name: Covrad Heat Transfer Ltc	In-stack Filter?	In	Bar. Press.mm Hg	746	K Factor	2.941	Ambient Temp.	15	Leak Rate (fin / %)	0.1
Site Ref: Coventry										
Sampling Point Ref: Industrial Spray Booth	Outstack Filter?		Cp	0.824	Dn used	6.067	Start Time	11:55	Leak Rate (start / %)	0.1
Date: 17/01/11										
Run: TPM	Operators	KB/RC	Bws%	1	Nozzle No.	1014	Stop Time	12:57	Box/Probe setting	
Project Ref: FTBS14741										
					Meter Correction Yd	0.977				

Sample Filter Weights

	Reference	Laboratory	Increase, mg
Filter	67963	RPS	1.1
Probe Washings	T120195	RPS	1.68

Sample Filter Blank Weighings

	Reference	Laboratory	Increase, mg
Filter	67962	RPS	0.04
Probe Wash	T120194	RPS	1.1

Impinger Weights

Weights	Initial	Final	Increase, g
Impinger 1	883.4	880	-3.4
Impinger 2			0.0
Impinger 3			0.0
Impinger 4			0.0
Impinger 5			0.0
Silica Gel	893.6	906.8	13.2
		Total	9.8

Sample Point	Clock Time min	Pitot Δ p, mm H_2O	Stack Temp, °C	Orifice Δ H, mm H_2O		Gas Meter Reading m^3	Temp at Gas Meter Outlet °C	Condenser Temp, °C	Filter Box Temp °C	Probe Temp °C	Pump Vacuum Inches Hg	Impinger Stem Temp. °C	Root Δ p,
				Desired	Actual								
1	0	13.0	14	38.2	38.2	1463763	14				4	12	3.606
	5	13.2	12	38.8	38.8		15				4	9	3.633
	10	13.0	14	38.2	38.2		15				4	9	3.606
2	15	18.0	14	52.9	52.9		14				4	9	4.243
	20	18.0	14	52.9	52.9		14				4	9	4.243
	25	18.0	14	52.9	52.9		14				4.5	9	4.243
Endpoint	30												
1	0	13.4	14	39.4	39.4		14				4	9	3.661
	5	13.4	14	39.4	39.4		14				4	9	3.661
	10	13.4	14	39.4	39.4		14				4	9	3.661
2	15	15.8	14	46.5	46.5		13				4	10	3.975
	20	17.4	14	51.2	51.2		13				4	10	4.171
	25	17.4	14	51.2	51.2		13				4	10	4.171
Endpoint	30					1465155.5							
	60.00	**15.3**	**13.8**	**45.1**	**45.1**	**1.393**	**13.9**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**4.0**	**9.5**	**3.9**

Company Name: Covrad Heat Transfer Ltd
Site Ref: Coventry
Project Ref: FTBS14741

Date: 17/01/11

Sampling Point Ref: Industrial Spray Booth 2 (RH)	Run: TPM
Meter Volume Sampled, acm	1.393
Sample Run Start Time	11:55
Sample Run End Time	12:57
Total Actual Sampling Time, min	60.0
Barometric Pressure, mm Hg	746.00
Stack Pressure, mm Hg	745.63
Average Stack Temp, °C	13.8
Meter Volume at Wet STP, scm	1.288
Stack Moisture Content, %	0.9
Average Stack Velocity, m/sec	13.017
Stack Flow Rate, scms wet, STP	3.321
Nozzle Diameter, mm	6.07
% Isokinetic Variation	**101.6**
Total Mass of Particulate, mg	2.8
Percentage of Total Particulate Collected on Filter	39.6
Stack Particulate Concentration, mg/m^3	**2.2**
Particulate Mass rate, kg/hour	0.026
Emission Limit value	**50**

Sample Train Blank Results	
Sample Blank Particulate Concentration, mg/m^3	0.9
Total Weight Gain, mg (Sample Train Blank)	1.1
Blank Result Less than 10% of Limit Value	Y

Uncertainty Calculation for Total Particulate Matter to BS EN 13284-1

Determined Concentration	2.2	mg/m3 (at Reference Cond)

Measured Values

Sampled Volume	1.3925	m^3
Sampled gas Temperature	286.9166667	k
Sampled gas Pressure	99.42	kPa
Sampled gas Humidity	0	% by volume
Oxygen content	21	% by volume
Mass	2.78	mg

Leak	0.10	%
Uncollected Mass	0	mg

Standard Uncertainties for Measured Values

Sampled Volume	0.001	m3
Sampled gas Temperature	2	k
Sampled gas Pressure	1	kPa
Sampled gas Humidity	1	% by volume
Oxygen content	0.1	% by volume
Mass	0.14152385	mg

Uncertainty Calculation for Volume Correction

Volume Correction Factor	0.934		
	Sensitivity Coefficient		Uncertainty, Uv
Sampled gas Temperature	0.0033		0.0065
Sampled gas Pressure	0.0094		0.0094
Sampled gas Humidity	0.0093		0.0093
		Sqrt (Uv)^2	0.0148
		Total Uv	0.021

Uncertainty Calculation for Oxygen Correction

Oxygen Correction Factor	1.0000		
	Sensitivity Coefficient		Uncertainty, Uo
Oxygen Measurement	N/A		N/A
		Total Uo	N/A

Uncertainty Contributions (Itemised)

	Value		Sensitivity coefficient	Uncertainty Contribution			
				Concentration		%	
Volume Correction	1.276	m3	1.69	0.03	$mg.m^{-3}$	1.61	%
Mass (weighing)	2.78	mg	0.78	0.11	$mg.m^{-3}$	5.09	%
Oxygen Correction	N/A		0.00	0.00	$mg.m^{-3}$	0.00	%
System Leak	0.00	$mg.m^{-3}$	1.00	0.00	$mg.m^{-3}$	0.06	%
Uncollected Mass	0.00	mg	0.78	0.00	$mg.m^{-3}$	0.00	%
			Total Uncertainty	0.12	$mg.m^{-3}$		

Uncertainty Result (Uncertainty has been expanded with a coveragefactor of 2 (K=2))

Expanded Uncertainty =	0.23	$mg.m^{-3}$
=>	10.68	% of Result
=>	0.00	% of ELV

Certificate of Analysis

RPS Laboratories

UKAS TESTING 0605

Test Certificate

Date 31/01/2011

Client	RPS Towcester Grafton Building Caswell Science & Technology Park Caswell, Towcester Northants NN12 8EQ	Order No.	FTBS 14741
		Certificate No.	WK11-0298
		Issue No.	1
Contact	Katie Brewis	Date Received	20/01/2011
Description	14 filters & 14 solutions for TPM	Technique	Gravimetric

Sample No.	633765	067879	Method
Total particulate matter		0.17 mg	D9(U)
Sample No.	633766	T120186	Method
Total particulate matter		<0.5 mg	D9(U)
Sample No.	633767	067881	Method
Total particulate matter		0.84 mg	D9(U)
Sample No.	633768	T120187	Method
Total particulate matter		1.4 mg	D9(U)
Sample No.	633769	067882	Method
Total particulate matter		0.15 mg	D9(U)
Sample No.	633770	T120188	Method
Total particulate matter		0.9 mg	D9(U)
Sample No.	633771	067873	Method
Total particulate matter		0.88 mg	D9(U)
Sample No.	633772	T120189	Method
Total particulate matter		1.4 mg	D9(U)
Sample No.	633773	067876	Method
Total particulate matter		0.21 mg	D9(U)
Sample No.	633774	T120190	Method
Total particulate matter		<0.5 mg	D9(U)
Sample No.	633775	067877	Method
Total particulate matter		2.80 mg	D9(U)
Sample No.	633776	T120191	Method
Total particulate matter		2.3 mg	D9(U)

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UKAS TESTING 0605

Date 31/01/2011

Test Certificate

Client	RPS Towcester	Certificate No.	WK11-0298
		Issue No.	1

Sample No.	633777	067874	Method
Total particulate matter		0.14 mg	D9(U)
Sample No.	633778	T120192	Method
Total particulate matter		1.0 mg	D9(U)
Sample No.	633779	067875	Method
Total particulate matter		1.70 mg	D9(U)
Sample No.	633780	T120193	Method
Total particulate matter		1.4 mg	D9(U)
Sample No.	633781	067960	Method
Total particulate matter		<0.04 mg	D9(U)
Sample No.	633782	T120023	Method
Total particulate matter		0.8 mg	D9(U)
Sample No.	633783	067964	Method
Total particulate matter		5.97 mg	D9(U)
Damaged filter			
Sample No.	633784	T120024	Method
Total particulate matter		2.6 mg	D9(U)
Sample No.	633785	067962	Method
Total particulate matter		0.04 mg	D9(U)
Sample No.	633786	T120194	Method
Total particulate matter		1.1 mg	D9(U)
Sample No.	633787	067963	Method
Total particulate matter		1.68 mg	D9(U)
Sample No.	633788	T120195	Method
Total particulate matter		1.9 mg	D9(U)
Sample No.	633789	067976	Method
Total particulate matter		<0.04 mg	D9(U)
Sample No.	633790	T120025	Method
Total particulate matter		0.5 mg	D9(U)
Sample No.	633791	067961	Method
Total particulate matter		1.42 mg	D9(U)
Sample No.	633792	T120026	Method
Total particulate matter		2.0 mg	D9(U)

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0605

Date 31/01/2011

Test Certificate

Client	RPS Towcester	Certificate No.	WK11-0298
		Issue No.	1

Tested By	Ceri Wanklyn	Date	28/01/2011
Approved By	[redacted]	Date	31/01/2011

Joanne Dewhurst
Laboratory Manager

For and on authority of RPS Laboratories Ltd.
RPS Laboratories terms and conditions apply - a copy is available on request.

Method Symbols
(U) Analysis is UKAS Accredited
(N) Analysis is not UKAS Accredited

Concentration values (mg/m3 and ppm) are provided to assist with interpretation only, they are not covered by the scope of UKAS accreditation

Analysis carried out on samples 'as received'

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