Title: Monitoring of Hydrogen Chloride, Ammonia And Nickel Emissions

Permit Number:	TBC
Operator:	CBE Plus Limited
Installation:	Plating Line 2A
Monitoring Dates:	5 November 2025

Reference Number:	EI/10720
Client Organisation: Address:	CBE Plus Limited Enterprise Drive Holmewood Chesterfield S42 5UZ
Monitoring Organisation: Address:	CES Environmental Instruments Ltd Bretby Business Park Ashby Road Burton on Trent Staffordshire DE15 0YZ
Date of Report:	1 December 2025
Report Prepared By: MCERTS Registration Number:	Martin Rodgers MM 04 531 (Level 2, TE1, TE2, TE3, TE4)
Signed:	.....
Report Approved By: MCERTS Registration Number:	Robert Allen MM 02 009 (Level 2, TE1, TE2, TE3, TE4)
Signed:	.....

Contents

Part 1: Executive Summary

1.1 Monitoring Objectives

CBE Plus Limited placed a contract with CES Environmental Instruments Ltd for the compliance check monitoring of emissions to air from the Plating Line 2A.

Plating Line 2A

Plating Process
CBE+ is a global leader in precision Electroless Nickel Plating (ENP), complemented by precision CNC machining and a range of specialist ancillary services.

The test work was undertaken on 5 November 2025 by CES Environmental Instruments Ltd Engineers and carried out as part of CES Environmental Instruments Ltd job reference EI/10720.

The substances monitored were: -

Hydrogen Chloride (HCl)
Ammonia (NH3)
Nickel (Ni)

On the day of testing there were no special requirements for the monitoring.

1.2 Monitoring Results

Emission Point Reference: Plating Line 2A

Substance to be Monitored	Emission Limit Value	Periodic Monitoring Result	Uncertainty of Measurement (95% CI)	Blank Result	Units	Reference Conditions	Emission Rate	Date of Sampling	Start and End Times	Monitoring Method Reference	Accreditation for use of Method	Operating Status
Hydrogen Chloride	To Be Confirmed	0.0*	0.00	0.0*	mg/m³	273K, 101.3kPa	-	5 November 2025	12:50-13:50	BS EN 1911	UKAS & MCERTS	Normal Operation
Ammonia	To Be Confirmed	0.5	0.06	0.0*	mg/m³	273K, 101.3kPa	-	5 November 2025	11:45-12:45	EN ISO 21877	UKAS & MCERTS	Normal Operation
Nickel	To Be Confirmed	0.0001	0.0001	0.0000*	mg/m³	273K, 101.3kPa	0.0020g/hr	5 November 2025	10:30-11:30	BS EN 14385	UKAS & MCERTS	Normal Operation

*****Indicates where the calculated concentration is below the detection limit of the monitoring standard. Where an analytical result is reported to be below the limit of detection, the limit of detection has been used.

1.3 Operating Information

Emission Point Reference: Plating Line 2A

Process Type	Batch Sample Details	Fuel	Product	Load	Abatement
Continuous	-	Metal Components / HCl Rinse	High Phos Nickel De Lote Striper	Plating Average 9.3 microns/hr	None

Comparison of Operator Continuous Emissions Monitoring Systems (CEMS) and Periodic Monitoring Results								
Substance to be Monitored	Emission Limit Value	Periodic Monitoring Result	Uncertainty of Measurement (95% CI)	Units	Reference Conditions	Date of Sampling	Start and End Times	CEMS Results
No CEMS Installed								

1.4 Monitoring Deviations

The sample plane does not comply upstream and downstream as per the requirements of BS EN 15259.

Part 2: Supporting Information

Appendix 1
General Information

CES Environmental Instruments Ltd staff details

Name	Role	MCERT Registration Number	Level 1	Level 2	TE1	TE2	TE3	TE4	At site
Paul Broxham	Team Leader	MM 13 1254		✓	✓	✓	✓	✓	T
				Feb 2030	Feb 2030	Feb 2030	Nov 2029	Nov 2029	
Derek Harvey	Team Leader	MM 06 686		✓	✓				✓
				June 2027	June 2027				

T = Nominated Team Leader on Site

CES Environmental Instruments Ltd method details

Pollutant	Method	CES Procedure
Hydrogen Chloride	BS EN 1911	WI 4/39
Ammonia	EN ISO 21877	WI 4/46
Nickel	BS EN 14385	WI4/30

Monitoring Equipment Used

Pump Box CES Environmental Instruments Ltd Reference: C286
Pitot 'S' Type CES Environmental Instruments Ltd Reference: C148

Appendix 2
Diagrams of Emission Point

Sampling Location

Dimensions	Cross Sectional Area	Orientation	Sample Ports Available/Used	Sampling Positions Per Plane	Standard
Dia = 800mm	0.503m²	Vertical	Nickle (Ni) -2/2 HCL&NH3 – 2/1	8 1	BS EN 15259
Comments: Sample ports: 2 off 4" BSP sockets Single Point Sampling					
				Yes	No
Has homogeneity test been carried out?					✓
If Yes - Is stack gas homogenous?					
Any physical or regulatory restrictions regarding usage of equipment? N/A					

Compliance with BS EN 15259 / EA TGN M1	Yes	No
Does the sample plane comply upstream?		✓*
Does the sample plane comply downstream?		✓*
Are the appropriate sample ports fitted?	✓	
Do the stack gas velocity / temperature profiles comply?	✓	
Minimum platform area >5m²	✓	

*BS 15259 has a general requirement that the sampling plane shall be in a straight section of duct at least 5 hydraulic diameters downstream and 2 hydraulic diameters upstream of any bend or obstruction which could produce turbulent flow.

Appendix 3
Gas (Non-Instrumental Measurement & Results)

CES Environmental Instruments

Determination of Pollutants by Absorption	**Site Name**	CBE Plus Ltd	**Date**	05-Nov-25
RESULT SHEET	**Job Reference**	10720	**Test No.**	1
	Sample Location	Line 2A	**Time**	12:50-13:50

Pollutant Hydrogen Chloride (HCl)
Analyte De Chlorinated Water (H2O)

Inputs

Reference Temp T_{ref}	0 °C	273 K	Metered Gas Reading (Start)	1413.0146	m³
Reference Pressure P_{ref}	101.3 kPa		Metered Gas Reading (End)	1414.4162	m³
Reference Oxygen O_{2ref}	% v/v dry		Metered Correction	0.9667	
Reference Moisture H_2O_{ref}	0.0 %		Metered Gas Volume VM_{meas}	1354.9	litres
			Meter Temperature TM_{meas}	28.0	°C
Duct Temperature T_{meas}	30.0 °C		Meter Pressure PM_{meas}	99200.0	Pa
Duct Oxygen O_{2meas}	% v/v dry		Differential Meter Press (Pme)	0.0	Pa
Duct Shape (Round/Rect)	Round		Barometric Pressure (Pb)	99200.0	Pa
Duct Diameter	0.800 m		Duct Pressure, Abs (Pda)	99270.0	Pa
Duct Area	0.503 m^2		Differential Duct Press(Pd)	70.0	Pa

Moisture Collection

Vessel	Wt on (g)	Wt off (g)	Δ W (g)
Trap 1	617.6	619.0	1.4
Trap 2	604.1	605.5	1.4
Trap 3	613.9	613.9	0.0
Trap 4	781.1	789.6	8.5
Trap 5			0.0
Total Weight Gain (g) =			11.3

Metered Sample Vol @stp = V x $\frac{273}{(TM_{meas} + 273)}$ x $\frac{PM_{meas}}{101300}$

Sample Vol @stp = 1203.4 litres

H_2O Gas Vol @stp = ΔW/18 x 22.412

H_2O Vol = 14.07 litres

(stp = 101.3kPa and 0°C)

Moisture = $\frac{H_2O \text{ Gas Vol stp} \times 100}{\text{Vol stp} + H_20 \text{ (vol gas stp)}}$

= 1.16 %

Analysis Results

Trap 1	Vol	116.0	ml
Trap 1	Conc	0.050	µg/ml
Trap 2	Vol	105.0	ml
Trap 2	Conc **	0.050	µg/ml
Trap 3	Vol	81.0	ml
Trap 3	Conc **	0.050	µg/ml
Trap 4	Vol		ml
Trap 4	Conc		µg/ml
Washing	Vol		ml
Washing	Conc		µg/ml
Reagent Blank	Vol	111.0	ml
Reagent Blank	Conc **	0.050	µg/ml
Mass on Filter			µg

Calculations

Meter Gas Vol Vref = Vm x (T_{ref} /TM_{meas}) x (PM_{meas}/P_{ref})

= 1203.412 dm^3

Vref = 1.203412 m^3 (101.3kPa, 0°C and dry)

Total Net Mass Sampled = ∑Mass in Sample - ∑Mass in Reagent

= 0.000 µg

Sample Analysis

Mass in Sample =	Concentration x Volume
Mass in Trap 1 =	0.000 µg
Mass in Trap 2 =	0.000 µg
Mass in Trap 3 =	0.000 µg
Mass in Trap 4 =	0.000 µg
Mass in Washing =	0.000 µg
Mass in Reagent =	5.550 µg
Mass in Filter =	0.000 µg

Abs Eff = T1+T2/(T1+T2+T3) 73.17880795 %

Concentration = Trap µg/ml - Reagent µg/ml

** indicates where a value less than the limit of detection has been reported, the value lies somewhere between the detection limit and zero. The limit of detection is used to determine the concentration. If analytical concentration is at the limit of detection the absorber efficiency cannot be reliably calculated

Concentration

C1 @Concentration Actual = 0.0 mg/m³

C2 @ 101.3kPa, 0°C and wet = C3 x (100-H_2Omeas)/(100-H_2O_{ref})
= **0.0 mg/m³**

C3 @ 101.3kPa, 0°C and dry = Total Net Mass Sampled x 0.001/Meter Gas Vol Vref
0.0 mg/m³

C4 @ 101.3kPa, 0°C, O_{2ref} and dry = C3 x (20.9-O_{2ref})/(20.9-O_{2meas})
= **0.0 mg/m³**

Verified

Weighing Machine ID = 264 Gas Meter ID = 286

Verified by = PB

Weight	Pre-test	Post-test
200g (± 1g)	199.6	199.6
400g (± 1g)	399.7	399.7
600g (± 1g)	599.3	599.3
Off CTR Test (±1g)	199.6	199.6
Leak Check (l/min)	0.0	0.0
Flow Rate (l/min)	1.5	1.5

CES Environmental Instruments

Determination of Pollutants by Absorption	**Site Name**	CBE Plus Ltd	**Date**	05-Nov-25
RESULT SHEET	**Job Reference**	10720	**Test No.**	Blank
	Sample Location	Line 2A	**Time**	12:50-13:50

Pollutant Hydrogen Chloride (HCl)
Analyte De Chlorinated Water (H2O)

Inputs

Reference Temp T_{ref}	0 °C	273 K	Metered Gas Reading (Start)	1413.0146	m³
Reference Pressure P_{ref}	101.3 kPa		Metered Gas Reading (End)	1414.4162	m³
Reference Oxygen O_{2ref}	0.0 % v/v dry		Metered Correction	0.9667	
Reference Moisture H_2O_{ref}	0.0 %		Metered Gas Volume VM_{meas}	1354.9	litres
			Meter Temperature TM_{meas}	28.0	°C
Duct Temperature T_{meas}	30.0 °C		Meter Pressure PM_{meas}	99200.0	Pa
Duct Oxygen O_{2meas}	0.0 % v/v dry		Differential Meter Press (Pme)	0.0	Pa
Duct Shape (Round/Rect)	Round		Barometric Pressure (Pb)	99200.0	Pa
Duct Diameter	0.800 m		Duct Pressure, Abs (Pda)	99270.0	Pa
Duct Area	0.503 m^2		Differential Duct Press(Pd)	70.0	Pa

Moisture Collection

Vessel	Wt on (g)	Wt off (g)	Δ W (g)
Trap 1	617.6	619.0	1.4
Trap 2	604.1	605.5	1.4
Trap 3	613.9	613.9	0.0
Trap 4	781.1	789.6	8.5
Trap 5	0.0	0.0	0.0
Total Weight Gain (g) =			11.3

Metered Sample Vol @stp = V x 273 / (TM_meas + 273) x PM_meas / 101300

Sample Vol @stp = 1203.4 litres

H_2O Gas Vol @stp = ΔW/18 x 22.412

H_2O Vol = 14.07 litres

(stp = 101.3kPa and 0°C)

Moisture = H_2O Gas Vol stp x 100 / Vol stp + H_2O (vol gas stp)

= 1.16 %

Analysis Results

Trap 1	Vol	110.0	ml
Trap 1	Conc **	0.050	µg/ml
Trap 2	Vol	106.0	ml
Trap 2	Conc **	0.050	µg/ml
Trap 3	Vol	111.0	ml
Trap 3	Conc **	0.050	µg/ml
Trap 4	Vol		ml
Trap 4	Conc		µg/ml
Washing	Vol		ml
Washing	Conc		µg/ml
Reagent Blank	Vol	111.0	ml
Reagent Blank	Conc **	0.050	µg/ml
Mass on Filter			µg

Calculations

Meter Gas Vol Vref = Vm x (T_{ref} /TM_{meas}) x (PM_{meas}/P_{ref})

= 1203.412 dm^3

Vref = 1.203412 m^3 (101.3kPa, 0°C and dry)

Total Net Mass Sampled = ∑Mass in Sample - ∑Mass in Reagent

= 0.000 µg

Sample Analysis

Mass in Sample =	Concentration x Volume
Mass in Trap 1 =	0.000 µg
Mass in Trap 2 =	0.000 µg
Mass in Trap 3 =	0.000 µg
Mass in Trap 4 =	0.000 µg
Mass in Washing =	0.000 µg
Mass in Reagent =	5.550 µg
Mass in Filter =	0.000 µg
Abs Eff = T1+T2/(T1+T2+T3)	66.06 %

Concentration = Trap µg/ml - Reagent µg/ml

** indicates where a value less than the limit of detection has been reported, the value lies somewhere between the detection limit and zero. The limit of detection is used to determine the concentration. If analytical concentration is at the limit of detection the absorber efficiency cannot be reliably calculated

Concentration

C1 @Concentration Actual = 0.0 mg/m³

C2 @ 101.3kPa, 0°C and wet = C3 x (100-H_2Omeas)/(100-H_2O_{ref})
= **0.0 mg/m³**

C3 @ 101.3kPa, 0°C and dry = Total Net Mass Sampled x 0.001/Meter Gas Vol Vref
0.0 mg/m³

C4 @ 101.3kPa, 0°C, O_{2ref} and dry = C3 x (20.9-O_{2ref})/(20.9-O_{2meas})
= **0.0 mg/m³**

Verified

Weighing Machine ID = 264 Gas Meter ID = 286

Verified by = PB

Weight	Pre-test	Post-test
200g (± 1g)	199.6	199.6
400g (± 1g)	399.7	399.7
600g (± 1g)	599.3	599.3
Off CTR Test (±1g)	199.6	199.6
Leak Check (l/min)	0.0	0.0
Flow Rate (l/min)	1.5	1.5

CES Environmental Instruments

Determination of Pollutants by Absorption	**Site Name**	CBE Plus Ltd	**Date**	05-Nov-25
RESULT SHEET	**Job Reference**	10720	**Test No.**	1
	Sample Location	Line 2A	**Time**	11:45-12:45

Pollutant Ammonia (NH3)
Analyte H2SO4

Inputs

Reference Temp T_{ref}	0 °C	273 K	Metered Gas Reading (Start)	1411.5152	m³
Reference Pressure P_{ref}	101.3 kPa		Metered Gas Reading (End)	1412.9168	m³
Reference Oxygen O_{2ref}	% v/v dry		Metered Correction	0.9667	
Reference Moisture H_2O_{ref}	0.0 %		Metered Gas Volume VM_{meas}	1354.9	litres
			Meter Temperature TM_{meas}	25.9	°C
Duct Temperature T_{meas}	28.0 °C		Meter Pressure PM_{meas}	99200.0	Pa
Duct Oxygen O_{2meas}	% v/v dry		Differential Meter Press (Pme)	0.0	Pa
Duct Shape (Round/Rect)	Round		Barometric Pressure (Pb)	99200.0	Pa
Duct Diameter	0.800 m		Duct Pressure, Abs (Pda)	99270.0	Pa
Duct Area	0.503 m^2		Differential Duct Press(Pd)	70.0	Pa

Moisture Collection

Vessel	Wt on (g)	Wt off (g)	Δ W (g)
Trap 1	587.2	589.1	1.9
Trap 2	583.7	585.0	1.3
Trap 3	585.9	586.0	0.1
Trap 4	696.6	705.6	9.0
Trap 5			0.0
Total Weight Gain (g) =			12.3

Metered Sample Vol @stp = V x 273 / (TM_meas + 273) x PM_meas / 101300

Sample Vol @stp = 1212.0 litres

H_2O Gas Vol @stp = ΔW/18 x 22.412

H_2O Vol = 15.31 litres

(stp = 101.3kPa and 0°C)

Moisture = H_2O Gas Vol stp x 100 / Vol stp + H_2O (vol gas stp)

= 1.25 %

Analysis Results

Trap 1	Vol	113.0	ml
Trap 1	Conc	5.100	µg/ml
Trap 2	Vol	98.0	ml
Trap 2	Conc **	0.100	µg/ml
Trap 3	Vol	109.0	ml
Trap 3	Conc **	0.100	µg/ml
Trap 4	Vol		ml
Trap 4	Conc		µg/ml
Washing	Vol		ml
Washing	Conc		µg/ml
Reagent Blank	Vol	62.0	ml
Reagent Blank	Conc **	0.100	µg/ml
Mass on Filter			µg

Calculations

Meter Gas Vol Vref = Vm x (T_{ref} /TM_{meas}) x (PM_{meas}/P_{ref})

= 1211.968 dm^3

Vref = 1.211968 m^3 (101.3kPa, 0°C and dry)

Total Net Mass Sampled = ∑Mass in Sample - ∑Mass in Reagent

= 565.000 µg

Sample Analysis

Mass in Sample =	Concentration x Volume
Mass in Trap 1 =	565.000 µg
Mass in Trap 2 =	0.000 µg
Mass in Trap 3 =	0.000 µg
Mass in Trap 4 =	0.000 µg
Mass in Washing =	0.000 µg
Mass in Reagent =	6.200 µg
Mass in Filter =	0.000 µg

Abs Eff = T1+T2/(T1+T2+T3) 98.17420436 %

Concentration = Trap µg/ml - Reagent µg/ml

** indicates where a value less than the limit of detection has been reported, the value lies somewhere between the detection limit and zero. The limit of detection is used to determine the concentration. If analytical concentration is at the limit of detection the absorber efficiency cannot be reliably calculated

Concentration

C1 @Concentration Actual = 0.4 mg/m³

C2 @ 101.3kPa, 0°C and wet = C3 x (100-H_2Omeas)/(100-H_2O_{ref})
= **0.5 mg/m³**

C3 @ 101.3kPa, 0°C and dry = Total Net Mass Sampled x 0.001/Meter Gas Vol Vref
0.5 mg/m³

C4 @ 101.3kPa, 0°C, O_{2ref} and dry = C3 x (20.9-O_{2ref})/(20.9-O_{2meas})
= **0.5 mg/m³**

Verified

Weighing Machine ID = 264 Gas Meter ID = 286

Verified by = PB

Weight	Pre-test	Post-test
200g (± 1g)	199.6	199.6
400g (± 1g)	399.7	399.7
600g (± 1g)	599.3	599.3
Off CTR Test (±1g)	199.6	199.6
Leak Check (l/min)	0.0	0.0
Flow Rate (l/min)	1.5	1.5

CES Environmental Instruments

Determination of Pollutants by Absorption	**Site Name**	CBE Plus Ltd	**Date**	05-Nov-25
RESULT SHEET	**Job Reference**	10720	**Test No.**	Blank
	Sample Location	Line 2A	**Time**	11:45-12:45

Pollutant Ammonia (NH3)
Analyte H2SO4

Inputs

Reference Temp T_{ref}	0 °C	273 K	Metered Gas Reading (Start)	1411.5152	m³
Reference Pressure P_{ref}	101.3 kPa		Metered Gas Reading (End)	1412.9168	m³
Reference Oxygen O_{2ref}	0.0 % v/v dry		Metered Correction	0.9667	
Reference Moisture H_2O_{ref}	0.0 %		Metered Gas Volume VM_{meas}	1354.9	litres
			Meter Temperature TM_{meas}	25.9	°C
Duct Temperature T_{meas}	28.0 °C		Meter Pressure PM_{meas}	99200.0	Pa
Duct Oxygen O_{2meas}	0.0 % v/v dry		Differential Meter Press (Pme)	0.0	Pa
Duct Shape (Round/Rect)	Round		Barometric Pressure (Pb)	99200.0	Pa
Duct Diameter	0.800 m		Duct Pressure, Abs (Pda)	99270.0	Pa
Duct Area	0.503 m^2		Differential Duct Press(Pd)	70.0	Pa

Moisture Collection

Vessel	Wt on (g)	Wt off (g)	Δ W (g)
Trap 1	587.2	589.1	1.9
Trap 2	583.7	585.0	1.3
Trap 3	585.9	586.0	0.1
Trap 4	696.6	705.6	9.0
Trap 5	0.0	0.0	0.0
Total Weight Gain (g) =			12.3

Metered Sample Vol @stp = V x 273 / (TM_meas + 273) x PM_meas / 101300

Sample Vol @stp = 1212.0 litres

H_2O Gas Vol @stp = ΔW/18 x 22.412

H_2O Vol = 15.31 litres

(stp = 101.3kPa and 0°C)

Moisture = H_2O Gas Vol stp x 100 / Vol stp + H_2O (vol gas stp)

= 1.25 %

Analysis Results

Trap 1	Vol	112.0	ml
Trap 1	Conc **	0.100	µg/ml
Trap 2	Vol	92.0	ml
Trap 2	Conc **	0.100	µg/ml
Trap 3	Vol	100.0	ml
Trap 3	Conc **	0.100	µg/ml
Trap 4	Vol		ml
Trap 4	Conc		µg/ml
Washing	Vol		ml
Washing	Conc		µg/ml
Reagent Blank	Vol	62.0	ml
Reagent Blank	Conc **	0.100	µg/ml
Mass on Filter			µg

Calculations

Meter Gas Vol Vref = Vm x (T_{ref} /TM_{meas}) x (PM_{meas}/P_{ref})

= 1211.968 dm^3

Vref = 1.211968 m^3 (101.3kPa, 0°C and dry)

Total Net Mass Sampled = ∑Mass in Sample - ∑Mass in Reagent

= 0.000 µg

Sample Analysis

Mass in Sample =	Concentration x Volume
Mass in Trap 1 =	0.000 µg
Mass in Trap 2 =	0.000 µg
Mass in Trap 3 =	0.000 µg
Mass in Trap 4 =	0.000 µg
Mass in Washing =	0.000 µg
Mass in Reagent =	6.200 µg
Mass in Filter =	0.000 µg
Abs Eff = T1+T2/(T1+T2+T3)	67.11 %

Concentration = Trap µg/ml - Reagent µg/ml

** indicates where a value less than the limit of detection has been reported, the value lies somewhere between the detection limit and zero. The limit of detection is used to determine the concentration. If analytical concentration is at the limit of detection the absorber efficiency cannot be reliably calculated

Concentration

C1 @Concentration Actual = 0.0 mg/m³

C2 @ 101.3kPa, 0°C and wet = C3 x (100-H_2Omeas)/(100-H_2O_{ref})
= **0.0 mg/m³**

C3 @ 101.3kPa, 0°C and dry = Total Net Mass Sampled x 0.001/Meter Gas Vol Vref
0.0 mg/m³

C4 @ 101.3kPa, 0°C, O_{2ref} and dry = C3 x (20.9-O_{2ref})/(20.9-O_{2meas})
= **0.0 mg/m³**

Verified

Weighing Machine ID = 264 Gas Meter ID = 286

Verified by = PB

Weight	Pre-test	Post-test
200g (± 1g)	199.6	199.6
400g (± 1g)	399.7	399.7
600g (± 1g)	599.3	599.3
Off CTR Test (±1g)	199.6	199.6
Leak Check (l/min)	0.0	0.0
Flow Rate (l/min)	1.5	1.5

Appendix 4
Trace Species (Sampling Measurement & Results)

CES Environmental Instruments Ltd

Determination of Gas Flows		**Client**	CBE Plus Ltd	**Date**	05/11/2025
By Pitot Tube, with Dalton Corrections		**Job Number**	10720	**Test**	Nickel
Heavy Metal Concentration	BS EN 14385: 2004	**Site**	Line 2A	**Test Period**	10:30-11:30

Type of tube (E/S)	S	Metered Gas Reading (Start)	1410.0564	m³	Leak Correction
Pitot Factor, Cp	0.87	Metered Gas Reading (End)	1411.1512	m³	0
Duct Shape	Round	Metered Correction	0.9667		
Duct Diameter	0.800 m	Metered Gas Volume VM_{meas}	1058.3	litres	
Duct Area	0.503 m^2	Meter Temperature TM_{meas}	16.8125	°C	
Nozzle Diameter	5.0 mm	Meter Pressure PM_{meas}	744.0	mmHg	
		Differential Meter Press (Pme)	0	mmH_2O	
ΔH@	46.5752	Barometric Pressure (Pb)	744.0	mmHg	
		Static Duct Press(Pd)	7.0	mmH_2O	
		Duct Pressure, Abs (Pda)	744.5	mmHg	

Velocity Traverse

Line					A	B
Traverse data (D %)	Δ p (mmH_2O)	Temp (°C)	Δ p (mmH_2O)	Temp (°C)	√h (mmH_2O)	√h (mmH_2O)
11 6.7	18.5	19.0	19.5	19.0	4.301	4.416
12 25.0	19.0	19.0	19.5	19.0	4.359	4.416
13 75.0	20.0	19.0	18.0	19.0	4.472	4.243
14 93.3	19.0	19.0	18.0	19.0	4.359	4.243
Totals	**76.50**	**76.00**	**75.00**	**76.00**	**17.491**	**17.317**
Line Mean	19.13	19.00	18.75	19.00	4.373	4.329
Overall Mean	**h mean:**	18.94	**Temp mean:**	19.00	°C **Öh mean:**	4.351

Mean Flue Gas Temperature (in K) = 292.00
Permitted Gas Temperature Range (°C) = 4.4 to 33.6
Highest Pitot-Static Reading (either sampling line) (in Pa) = 196.14
Lowest Pitot-Static Reading (either sampling line) (in Pa) = 176.52
Ratio Highest/Lowest = 1.1 (Maximum Permitted Ratio = 9 :1)

Moisture Collection

Vessel	Wt on (g)	Wt off (g)	Δ W (g)
Trap 1	610.7	612.3	1.6
Trap 2	606.6	608.9	2.3
Trap 3	612.4	612.4	0.0
Trap 4	767.2	781.1	13.9
Trap 5			0.0
Trap 6			0.0
Trap 7			0.0

Total Weight Gain (g) = 17.8

H_2O Gas Vol @stp = DW/18 x 22.412
H_2O Vol = 22.16 litres

Metered Sample Vol @stp = V. 273 x Pm / Tm + 273 760
Sample Vol @stp = 975.96 litres

% moisture = H_2O Gas Vol stp x 100 / Vol stp + H_2O (vol gas stp)
= 2.22

Sampling Grid

Line							A	B		
Traverse data (D %)	Temp (°C)	Δ p (mmH_2O)	Δ H (mmH_2O)	Temp (°C)	Δ p (mmH_2O)	Δ H (mmH_2O)	Duration of Sampling (s)	Duration of Sampling (s)	K Factor	% Isokinetic
11 6.7	19.0	18.5	52.0	19.0	19.5	55.0	450	450	1.66	100.92
12 25.0	19.0	19.0	54.0	19.0	19.5	55.0	450	450		
13 75.0	19.0	20.0	56.0	19.0	18.0	50.0	450	450		
14 93.3	19.0	19.0	54.0	19.0	18.0	50.0	450	450		

Gas Composition

Gas Composition		MW	Mole Fraction = (1- H2O/100 x Dry%) x (MW Gas/100)
Dry N_2 % v/v	79.070	28.00	21.648
Dry O_2 % v/v	20.900	32.00	6.539
Dry CO_2 % v/v	0.030	44.00	0.013
Total %	**100.000**		
Wet H_2O% v/v	2.220	18.00	0.400

Molecular Weight of Wet Gas = Σ Mole Fraction (M) = 28.6001
Molecular Weight of Dry Air = 28.8400
Specific Gravity S = Molecular Wt Wet Gas / Molecular Wt Dry Gas
S = 0.9917

Velocity and Volume Gas Flow

Actual Gas Velocity = $34.97 \sqrt{\frac{K}{M \times (Pb + Pd)}} \times \sqrt{h} \times Cp$

292.00	21293.183	0.013713	0.11710384

Actual Gas Velocity = **15.50** m/s

Highest Gas Velocity = **15.9** m/s
Lowest Gas Velocity = **15.1** m/s
Ratio Highest/Lowest = **1.1** (Maximum Permitted Ratio = 3 :1)

Gas Flow (actual) = Vel x Duct Area (m^3/s)
= **7.80** m^3/s

Gas Flow (ref wet) = Gas Flow (actual) x 273/K x (Pb + Pd)/760 m3/s (760mmHg, 0°C and wet)
= **7.139** m^3/s (760mmHg, 0°C and wet)
= **25701.8** m^3/hr (760mmHg, 0°C and wet)

Verified

CES Environmental Instruments Ltd

Determination of Heavy Metal		**Client**	CBE Plus Ltd	**Date**	05/11/2025
Concentration	BS EN 14385 : 2004	**Job Number**	10720	**Test**	Nickel
		Site	Line 2A	**Test Period**	10:30-11:30

Inputs

Reference Temp T_{ref}	0.0	°C	273 K
Reference Pressure P_{ref}	101.3	kPa	
Reference Oxygen O_{2ref}	21.0	%	
Reference Moisture H_2O_{ref}	0.0	%	
Metered Gas Volume VM_{meas}	1058.3	litres	
Meter Temperature TM_{meas}	16.8	°C	289.8125 K
Meter Pressure PM_{meas}	99.2	kPa	
Duct Oxygen O_{2meas}	21.0	% v/v dry	
Duct Moisture H_2O_{meas}	2.2	% v/v	
Duct Temperature T_{meas}	19.0	°C	
Duct Pressure, Abs (Pda)	99.3	kPa	
Calculated Actual Gas Flow	7.795	m^3/s	
Calculated Reference Gas Flow Q_{ref}	7.139	m^3/s	(101.3kPa, 0°C and wet)
	25701.8	m^3/hr	(101.3kPa, 0°C and wet)

Volumes

Meter Gas Vol V_{ref} = VM_{meas} x (T_{ref}/TM_{meas}) x (PM_{meas}/P_{ref})

= 976.3 litres

Meter Gas Vol V_{ref} = 0.9763 m^3 (101.3kPa, 0°C and dry)

Calculations

Metal	**Test Filter**	**Batch Filter**	**HNO_3/H_2O_2 1 + 2**	**HNO_3/H_2O_2 1 + 2**	**HNO_3/H_2O_2 1 + 2**	**HNO_3/H_2O_2 3**	**HNO_3/H_2O_2 3**	**HNO_3/H_2O_2 3**	**10% of Total Metal**	**HNO_3/H_2O_2 Reagent**	**Total**
	µg	µg	µg/l	l	µg	µg/l	l	µg	µg	µg/l	µg
Sample ID	**0**	**S30**	**S26**	**S26**		**S27**	**S27**			**S29**	
Nickel	**0.60**	**0.50**	**0.40**	0.219	-0.02	**0.50**	0.108	0.00	0.01	**0.50**	0.08

Where a value less than the limit of detection has been reported, the value lies somewhere between the detection limit and zero. The limit of detection is used to determine the concentration.
The method is applicable to each specific Metal element is in the concentration range 0.005mg/m³ to 0.5mg/m³

Metal Concentration and Mass Emission Rate

Metal	**Concentration** mg/m³@Actual	**Concentration** mg/m³@101.3kPa, 0°C and wet	**Concentration** mg/m³@101.3kPa, 0°C and dry	**Concentration** mg/m³@101.3kPa, 0°C, O_{2ref} and dry	**Emission Rate** g/hr
Nickel	0.0001	0.0001	0.0001	0.0001	**0.0020**
Total*	0.0000	0.0000	0.0000	**0.0000**	**0.0000**
Total Excluding*	0.0001	0.0001	0.0001	**0.0001**	**0.0020**

Verified

CES Environmental Instruments Ltd

Determination of Heavy Metal		**Client**	CBE Plus Ltd	**Date**	05/11/2025
Concentration	BS EN 14385: 2004	**Job Number**	10720	**Test**	Blank
		Site	Line 2A	**Test Period**	10:30-11:30

Inputs

Reference Temp T_{ref}	0.0	°C	273 K
Reference Pressure P_{ref}	101.3	kPa	
Reference Oxygen O_{2ref}	21.0	%	
Reference Moisture H_2O_{ref}	0.0	%	
Metered Gas Volume VM_{meas}	1058.3	litres	
Meter Temperature TM_{meas}	16.8	°C	289.8125 K
Meter Pressure PM_{meas}	99.2	kPa	
Duct Oxygen O_{2meas}	21.0	% v/v dry	
Duct Moisture H_2O_{meas}	2.2	% v/v	
Duct Temperature T_{meas}	19.0	°C	
Duct Pressure, Abs (Pda)	99.3	kPa	
Calculated Actual Gas Flow	7.795	m^3/s	
Calculated Reference Gas Flow Q_{ref}	7.139	m^3/s	(101.3kPa, 0°C and wet)
	25701.8	m^3/hr	(101.3kPa, 0°C and wet)

Volumes

Meter Gas Vol V_{ref} = VM_{meas} x (T_{ref}/TM_{meas}) x (PM_{meas}/P_{ref})

= 976.3 litres

Meter Gas Vol V_{ref} = 0.9763 m^3 (101.3kPa, 0°C and dry)

Calculations

Metal	**Blank Filter**	**Batch Filter**	**HNO_3/H_2O_2 1 + 2**	**HNO_3/H_2O_2 1 + 2**	**HNO_3/H_2O_2 1 + 2**	**HNO_3/H_2O_2 3**	**HNO_3/H_2O_2 3**	**HNO_3/H_2O_2 3**	**10% of Total Metal**	**HNO_3/H_2O_2 Reagent**	**Total**
	µg	µg	µg/l	l	µg	µg/l	l	µg	µg	µg/l	
	S25	**S30**	**S23**	**S23**		**S24**	**S24**			**S29**	
Nickel	**0.50**	**0.50**	**0.30**	0.225	-0.05	**0.30**	0.110	-0.02	-0.01	**0.50**	-0.07

Where a value less than the limit of detection has been reported, the value lies somewhere between the detection limit and zero. The limit of detection is used to determine the concentration.
The method is applicable to each specific Metal element is in the concentration range 0.005mg/m³ to 0.5mg/m³

Metal Concentration and Mass Emission Rate

Metal	**Concentration** mg/m³@Actual	**Concentration** mg/m³@101.3kPa, 0°C and wet	**Concentration** mg/m³@101.3kPa, 0°C and dry	**Concentration** mg/m³@101.3kPa, 0°C, O_{2ref} and dry	**Emission Rate** g/hr
Nickel	-0.0001	-0.0001	-0.0001	-0.0001	**-0.0017**
***Total**	0.0000	0.0000	0.0000	**0.0000**	**0.0000**
Rest of Metals	0.0000	0.0000	0.0000	**0.0000**	**0.0000**

Verified

Appendix 5
Analysis (Laboratory Results)

Certificate of Analysis

Report No.: **25-09820-1**

Issue No.: **1**
Date of Issue **20/11/2025**

Customer Details:	CES Environmental Instruments Ltd, Bretby Business Park, Ashby Road, Burton on Trent, Staffordshire, DE15 0YZ
Customer Contact:	Jane Fowkes
Customer Order No.:	12619
Customer Reference:	Not Supplied
Quotation Reference:	Q25-07745
Description:	6 liquid samples
Date Received:	10/11/2025
Date Started:	11/11/2025
Date Completed:	19/11/2025
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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Unit 12, Waters Edge Business Park, Modwen Road, Salford, M5 3EZ. T +44 161 872 2443
A member of the RPS Group plc. Terms and conditions apply - copy on request

Results Summary

Report No.: 25-09820-1

Customer Reference: Not Supplied

Customer Order No: 12619

Customer Sample No	10720/S31	10720/S32	10720/S33	10720/S34	10720/S35	10720/S36
RPS Sample No	333291	333292	333293	333294	333295	333296
Sample Matrix	SOLUTION	SOLUTION	SOLUTION	SOLUTION	SOLUTION	SOLUTION
Sampling Date	05/11/2025	05/11/2025	05/11/2025	05/11/2025	05/11/2025	05/11/2025

Determinand	CAS No	Codes	SOP	RL	Units						
volume of sample supplied		U	N/A	n/a	ml	110	106	111	116	105	81
hydrogen chloride	7647-01-0	UM	C27	0.05	ug/mL	< 0.05	< 0.05	< 0.05	0.05	< 0.05	< 0.05

Deviating Samples

Report No.: 25-09820-1

Customer Reference: Not Supplied

Customer Order No: 12619

Our policy on Deviating Samples has been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling. Samples submitted may be declared to be deviating.
Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be compromised.
Where no sampling date was supplied, samples have been declared to be deviating. If the date can be supplied, results may be reissued if assessed not deviating.
Where the sample container used was unsuitable or broken, the sample is flagged as deviating and re-sampling/re-submisson may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating	Reason for Deviation
333291	10720/S31		05/11/2025	Container	No	
333292	10720/S32		05/11/2025	Container	No	
333293	10720/S33		05/11/2025	Container	No	
333294	10720/S34		05/11/2025	Container	No	
333295	10720/S35		05/11/2025	Container	No	
333296	10720/S36		05/11/2025	Container	No	

Report No.: 25-09820-1

Key Code	Description
N	Not Accredited Test
U	UKAS Accredited Test - UKAS accreditation is only implied if the report carries the UKAS logo
UF	UKAS Flexible Scope Test
M	MCERTS Accredited Test - MCERTS accreditation is only implied if the report carries the MCERTS logo
O	Marine Management Organisation (MMO) Validated
SN	Subcontracted to approved laboratory not accredited for the test
SU	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SIN	Subcontracted to internal RPS Group laboratory not accredited for the test
SIU	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
SIM	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
L (in results)	Result is outside normal limits

Please note that all samples will be destroyed 4 WEEKS after the report has been issued.

Note: Sample retention may be subject to agreement with the customer for particular projects

Certificate Notes	Description
Note 1	This test report shall not be reproduced except in full, without written approval of the Laboratory.
Note 2	Unless otherwise stated, results are not corrected for analytical recoveries.
Note 3	Samples were taken by the customer and, unless otherwise stated, sampling locations were not supplied.
Note 4	Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
Note 5	Unless otherwise stated, method D9 conditioning temperatures are 180°C for pre-weigh and 160°C for re-weigh.
Note 6	The PDF version of the certificate is the definitive copy and the Excel version is uncontrolled and provided for information only.

Note: Where the following information is included in this certificate, it has usually been supplied by the customer: Customer Sample ID, Sample Location, Sampling Date and Sample Air Volumes. The laboratory shall not be responsible for any information that is supplied by the customer that may affect the validity of results.

Report No.: 25-09820-1

Determinand	CAS No	Media	SOP	% Recovery	% Uncertainty
acetaldehyde	75-07-0	tube	A40	98	16.2
benzaldehyde	100-52-7	tube	A40	100	19.4
butyraldehyde	123-72-8	tube	A40	92	11.5
formaldehyde	50-00-0	tube	A40	97	12.8
hexanal	66-25-1	tube	A40	89	11
propionaldehyde	123-38-6	tube	A40	96	12.6
valeraldehyde	110-62-3	tube	A40	93	12.3
ammonia	7664-41-7	sulphuric scid solution	A6	n/a	8.9
chlorine	7782-50-5	sodium hydroxide solution	C27	n/a	15.2
hydrogen bromide	10035-10-6	sulphuric acid solution	C27	n/a	10.9
hydrogen chloride	7647-01-0	deionised water	C27	n/a	7.9
hydrogen chloride	7647-01-0	sulphuric acid solution	C27	n/a	13.3
hydrogen fluoride	7664-3-3	sodium hydroxide solution	C27	n/a	7.9
sulphur dioxide	7446-09-5	hydrogen peroxide solution	C27	n/a	7.7
nitrogen oxide	10102-43-9	potassium permanganate solution	C27	n/a	11.7
particulates	n/a	filter	D9	n/a	12.2
particulates	n/a	wash solution	D9	n/a	14.8
formaldehyde	50-00-0	deionised water	M103	n/a	23.7
2,4- & 2,6-toluene diisocyanate (TDI)	n/a	filter	M119	n/a	8.6
hexamethylene diisocyanate (HDI)	822-06-0	filter	M119	n/a	5.6
methylene diphenyl diisocyanate (MDI)	101-68-8	filter	M119	n/a	11.8
hydrogen sulphide	7783-06-4	zinc acetate solution	M120	n/a	4.2
antimony	7440-36-0	filter	M31	n/a	10.3
arsenic	7440-38-2	filter	M31	n/a	17.1
cadmium	7440-43.9	filter	M31	n/a	12.1
chromium	7440-47-3	filter	M31	n/a	17.1
cobalt	7440-48-4	filter	M31	n/a	13.1
copper	7440-50-8	filter	M31	n/a	14
lead	7439-92-1	filter	M31	n/a	9.8
manganese	7439-96-5	filter	M31	n/a	17.5
nickel	7440-02-0	filter	M31	n/a	14.4
thallium	7440-28-0	filter	M31	n/a	15.3
tin	7440-31-5	filter	M31	n/a	18.5
vanadium	7440-62-2	filter	M31	n/a	12.1
zinc	7440-66-6	filter	M31	n/a	15.2
antimony	7440-36-0	nitric acid wash	M31	n/a	10.3
arsenic	7440-38-2	nitric acid wash	M31	n/a	17.1
cadmium	7440-43-9	nitric acid wash	M31	n/a	12.1
chromium	7440-47-3	nitric acid wash	M31	n/a	17.1
cobalt	7440-48-4	nitric acid wash	M31	n/a	13.1
copper	7440-50-8	nitric acid wash	M31	n/a	14
lead	7439-92-1	nitric acid wash	M31	n/a	9.8
manganese	7439-96-5	nitric acid wash	M31	n/a	17.5
nickel	7440-02-0	nitric acid wash	M31	n/a	14.4
selenium	7782-49-2	nitric acid wash	M31	n/a	15.1
thallium	7440-28-0	nitric acid wash	M31	n/a	15.3
tin	7440-31-5	nitric acid wash	M31	n/a	18.5
vanadium	7440-62-2	nitric acid wash	M31	n/a	12.1
zinc	7440-66-6	nitric acid wash	M31	n/a	15.2
antimony	7440-36-0	nitric/peroxide solution	M31	n/a	5.9
arsenic	7440-38-2	nitric/peroxide solution	M31	n/a	6.8
cadmium	7440-43-9	nitric/peroxide solution	M31	n/a	6.3
chromium	7440-47-3	nitric/peroxide solution	M31	n/a	7.2
cobalt	7440-48-4	nitric/peroxide solution	M31	n/a	5.2
copper	7440-50-8	nitric/peroxide solution	M31	n/a	6.8
lead	7439-92-1	nitric/peroxide solution	M31	n/a	8.6
manganese	7439-96-5	nitric/peroxide solution	M31	n/a	9.6
nickel	7440-02-0	nitric/peroxide solution	M31	n/a	5.5
selenium	7782-49-2	nitric/peroxide solution	M31	n/a	8.7
thallium	7440-28-0	nitric/peroxide solution	M31	n/a	7.7
tin	7440-31-5	nitric/peroxide solution	M31	n/a	5.8
vanadium	7440-62-2	nitric/peroxide solution	M31	n/a	6.7
zinc	7440-66-6	nitric/peroxide solution	M31	n/a	11.9
1,2,4-trimethylbenzene	95-63-6	tube	O8	88	8.1
1,3,5-trimethylbenzene	108-67-8	tube	O8	92	7.7
2-ethyltoluene	611-14-3	tube	O8	91	8.4
3- & 4-ethyltoluene	n/a	tube	O8	91	8.4
benzene	71-43-2	tube	O8	90	13.9
butyl acetate	123-86-4	tube	O8	90	10.3
decane	124-18-5	tube	O8	97	6.7
dichloromethane	75-09-2	tube	O8	88	24
ethyl acetate	141-78-6	tube	O8	n/a	n/a
ethyl benzene	100-41-4	tube	O8	92	9.8
heptane	142-82-5	tube	O8	94	10.5
hexane	110-54-3	tube	O8	n/a	n/a
limonene	138-86-3	tube	O8	93	13
m- & p-xylene	n/a	tube	O8	90	9.3
methyl isobutyl ketone (MIBK)	108-10-1	tube	O8	86	10
methyl tert-butyl ether (MTBE)	1634-04-4	tube	O8	92	15
o-xylene	95-47-6	tube	O8	86	9.9
propylbenzene	103-65-1	tube	O8	92	7.5
tetrachloroethylene	127-18-4	tube	O8	91	9.3
tetrahydrofuran (THF)	109-99-9	tube	O8	87	14.7
toluene	108-88-3	tube	O8	89	10.7
trichloroethylene	79-01-6	tube	O8	91	10.6
m- & p-cresol	n/a	tube	P1	n/a	11
m- & p-xylenol	n/a	tube	P1	n/a	11.9
o-cresol	95-48-7	tube	P1	n/a	10.8
o-xylenol	526-75-0	tube	P1	n/a	12
phenol	108-95-2	tube	P1	n/a	10.4

Certificate of Analysis

Report No.: **25-09822-1**

Issue No.: **1**
Date of Issue **20/11/2025**

Customer Details:	CES Environmental Instruments Ltd, Bretby Business Park, Ashby Road, Burton on Trent, Staffordshire, DE15 0YZ
Customer Contact:	Jane Fowkes
Customer Order No.:	12620
Customer Reference:	Not Supplied
Quotation Reference:	Q25-07745
Description:	1 liquid sample
Date Received:	10/11/2025
Date Started:	11/11/2025
Date Completed:	19/11/2025
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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Results Summary

Report No.: 25-09822-1

Customer Reference: Not Supplied

Customer Order No: 12620

Customer Sample No	**10720/S37**
RPS Sample No	333298
Sample Matrix	SOLUTION
Sampling Date	05/11/2025

Determinand	CAS No	Codes	SOP	RL	Units	
volume of sample supplied		U	N/A	n/a	ml	111
hydrogen chloride	7647-01-0	UM	C27	0.05	ug/mL	< 0.05

Deviating Samples

Report No.: 25-09822-1

Customer Reference: Not Supplied

Customer Order No: 12620

Our policy on Deviating Samples has been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling. Samples submitted may be declared to be deviating.
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Where no sampling date was supplied, samples have been declared to be deviating. If the date can be supplied, results may be reissued if assessed not deviating.
Where the sample container used was unsuitable or broken, the sample is flagged as deviating and re-sampling/re-submisson may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating	Reason for Deviation
333298	10720/S37		05/11/2025	Container	No	

Report No.: 25-09822-1

Key Code	Description
N	Not Accredited Test
U	UKAS Accredited Test - UKAS accreditation is only implied if the report carries the UKAS logo
UF	UKAS Flexible Scope Test
M	MCERTS Accredited Test - MCERTS accreditation is only implied if the report carries the MCERTS logo
O	Marine Management Organisation (MMO) Validated
SN	Subcontracted to approved laboratory not accredited for the test
SU	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SIN	Subcontracted to internal RPS Group laboratory not accredited for the test
SIU	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
SIM	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
L (in results)	Result is outside normal limits

Please note that all samples will be destroyed 4 WEEKS after the report has been issued.

Note: Sample retention may be subject to agreement with the customer for particular projects

Certificate Notes	Description
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Report No.: 25-09822-1

Determinand	CAS No	Media	SOP	% Recovery	% Uncertainty
acetaldehyde	75-07-0	tube	A40	98	16.2
benzaldehyde	100-52-7	tube	A40	100	19.4
butyraldehyde	123-72-8	tube	A40	92	11.5
formaldehyde	50-00-0	tube	A40	97	12.8
hexanal	66-25-1	tube	A40	89	11
propionaldehyde	123-38-6	tube	A40	96	12.6
valeraldehyde	110-62-3	tube	A40	93	12.3
ammonia	7664-41-7	sulphuric scid solution	A6	n/a	8.9
chlorine	7782-50-5	sodium hydroxide solution	C27	n/a	15.2
hydrogen bromide	10035-10-6	sulphuric acid solution	C27	n/a	10.9
hydrogen chloride	7647-01-0	deionised water	C27	n/a	7.9
hydrogen chloride	7647-01-0	sulphuric acid solution	C27	n/a	13.3
hydrogen fluoride	7664-3-3	sodium hydroxide solution	C27	n/a	7.9
sulphur dioxide	7446-09-5	hydrogen peroxide solution	C27	n/a	7.7
nitrogen oxide	10102-43-9	potassium permanganate solution	C27	n/a	11.7
particulates	n/a	filter	D9	n/a	12.2
particulates	n/a	wash solution	D9	n/a	14.8
formaldehyde	50-00-0	deionised water	M103	n/a	23.7
2,4- & 2,6-toluene diisocyanate (TDI)	n/a	filter	M119	n/a	8.6
hexamethylene diisocyanate (HDI)	822-06-0	filter	M119	n/a	5.6
methylene diphenyl diisocyanate (MDI)	101-68-8	filter	M119	n/a	11.8
hydrogen sulphide	7783-06-4	zinc acetate solution	M120	n/a	4.2
antimony	7440-36-0	filter	M31	n/a	10.3
arsenic	7440-38-2	filter	M31	n/a	17.1
cadmium	7440-43.9	filter	M31	n/a	12.1
chromium	7440-47-3	filter	M31	n/a	17.1
cobalt	7440-48-4	filter	M31	n/a	13.1
copper	7440-50-8	filter	M31	n/a	14
lead	7439-92-1	filter	M31	n/a	9.8
manganese	7439-96-5	filter	M31	n/a	17.5
nickel	7440-02-0	filter	M31	n/a	14.4
thallium	7440-28-0	filter	M31	n/a	15.3
tin	7440-31-5	filter	M31	n/a	18.5
vanadium	7440-62-2	filter	M31	n/a	12.1
zinc	7440-66-6	filter	M31	n/a	15.2
antimony	7440-36-0	nitric acid wash	M31	n/a	10.3
arsenic	7440-38-2	nitric acid wash	M31	n/a	17.1
cadmium	7440-43-9	nitric acid wash	M31	n/a	12.1
chromium	7440-47-3	nitric acid wash	M31	n/a	17.1
cobalt	7440-48-4	nitric acid wash	M31	n/a	13.1
copper	7440-50-8	nitric acid wash	M31	n/a	14
lead	7439-92-1	nitric acid wash	M31	n/a	9.8
manganese	7439-96-5	nitric acid wash	M31	n/a	17.5
nickel	7440-02-0	nitric acid wash	M31	n/a	14.4
selenium	7782-49-2	nitric acid wash	M31	n/a	15.1
thallium	7440-28-0	nitric acid wash	M31	n/a	15.3
tin	7440-31-5	nitric acid wash	M31	n/a	18.5
vanadium	7440-62-2	nitric acid wash	M31	n/a	12.1
zinc	7440-66-6	nitric acid wash	M31	n/a	15.2
antimony	7440-36-0	nitric/peroxide solution	M31	n/a	5.9
arsenic	7440-38-2	nitric/peroxide solution	M31	n/a	6.8
cadmium	7440-43-9	nitric/peroxide solution	M31	n/a	6.3
chromium	7440-47-3	nitric/peroxide solution	M31	n/a	7.2
cobalt	7440-48-4	nitric/peroxide solution	M31	n/a	5.2
copper	7440-50-8	nitric/peroxide solution	M31	n/a	6.8
lead	7439-92-1	nitric/peroxide solution	M31	n/a	8.6
manganese	7439-96-5	nitric/peroxide solution	M31	n/a	9.6
nickel	7440-02-0	nitric/peroxide solution	M31	n/a	5.5
selenium	7782-49-2	nitric/peroxide solution	M31	n/a	8.7
thallium	7440-28-0	nitric/peroxide solution	M31	n/a	7.7
tin	7440-31-5	nitric/peroxide solution	M31	n/a	5.8
vanadium	7440-62-2	nitric/peroxide solution	M31	n/a	6.7
zinc	7440-66-6	nitric/peroxide solution	M31	n/a	11.9
1,2,4-trimethylbenzene	95-63-6	tube	O8	88	8.1
1,3,5-trimethylbenzene	108-67-8	tube	O8	92	7.7
2-ethyltoluene	611-14-3	tube	O8	91	8.4
3- & 4-ethyltoluene	n/a	tube	O8	91	8.4
benzene	71-43-2	tube	O8	90	13.9
butyl acetate	123-86-4	tube	O8	90	10.3
decane	124-18-5	tube	O8	97	6.7
dichloromethane	75-09-2	tube	O8	88	24
ethyl acetate	141-78-6	tube	O8	n/a	n/a
ethyl benzene	100-41-4	tube	O8	92	9.8
heptane	142-82-5	tube	O8	94	10.5
hexane	110-54-3	tube	O8	n/a	n/a
limonene	138-86-3	tube	O8	93	13
m- & p-xylene	n/a	tube	O8	90	9.3
methyl isobutyl ketone (MIBK)	108-10-1	tube	O8	86	10
methyl tert-butyl ether (MTBE)	1634-04-4	tube	O8	92	15
o-xylene	95-47-6	tube	O8	86	9.9
propylbenzene	103-65-1	tube	O8	92	7.5
tetrachloroethylene	127-18-4	tube	O8	91	9.3
tetrahydrofuran (THF)	109-99-9	tube	O8	87	14.7
toluene	108-88-3	tube	O8	89	10.7
trichloroethylene	79-01-6	tube	O8	91	10.6
m- & p-cresol	n/a	tube	P1	n/a	11
m- & p-xylenol	n/a	tube	P1	n/a	11.9
o-cresol	95-48-7	tube	P1	n/a	10.8
o-xylenol	526-75-0	tube	P1	n/a	12
phenol	108-95-2	tube	P1	n/a	10.4

Certificate of Analysis

Report No.: **25-09823-1**

Issue No.: **1**
Date of Issue **20/11/2025**

Customer Details:	CES Environmental Instruments Ltd, Bretby Business Park, Ashby Road, Burton on Trent, Staffordshire, DE15 0YZ
Customer Contact:	Jane Fowkes
Customer Order No.:	12621
Customer Reference:	Not Supplied
Quotation Reference:	Q25-07745
Description:	6 liquid samples
Date Received:	10/11/2025
Date Started:	11/11/2025
Date Completed:	19/11/2025
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Joanne Dewhurst, Operational Manager**

RPS Environmental Management Limited trading as RPS Laboratories. Registered in England No. 01756175.
Unit 12, Waters Edge Business Park, Modwen Road, Salford, M5 3EZ. T +44 161 872 2443
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A TETRA TECH COMPANY

Results Summary

Report No.: 25-09823-1

Customer Reference: Not Supplied

Customer Order No: 12621

Customer Sample No	10720/S38	10720/S39	10720/S40	10720/S41	10720/S42	10720/S43
RPS Sample No	333299	333300	333301	333302	333303	333304
Sample Matrix	SOLUTION	SOLUTION	SOLUTION	SOLUTION	SOLUTION	SOLUTION
Sampling Date	05/11/2025	05/11/2025	05/11/2025	05/11/2025	05/11/2025	05/11/2025

Determinand	CAS No	Codes	SOP	RL	Units						
volume of sample supplied		U	N/A	n/a	ml	112	92	100	113	98	109
ammonia	7664-41-7	UM	A6	0.1	ug/mL	< 0.1	< 0.1	< 0.1	5.1	< 0.1	< 0.1

Deviating Samples

Report No.: 25-09823-1

Customer Reference: Not Supplied

Customer Order No: 12621

Our policy on Deviating Samples has been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling. Samples submitted may be declared to be deviating.
Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be compromised.
Where no sampling date was supplied, samples have been declared to be deviating. If the date can be supplied, results may be reissued if assessed not deviating.
Where the sample container used was unsuitable or broken, the sample is flagged as deviating and re-sampling/re-submisson may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating	Reason for Deviation
333299	10720/S38		05/11/2025	Container	No	
333300	10720/S39		05/11/2025	Container	No	
333301	10720/S40		05/11/2025	Container	No	
333302	10720/S41		05/11/2025	Container	No	
333303	10720/S42		05/11/2025	Container	No	
333304	10720/S43		05/11/2025	Container	No	

Report No.: 25-09823-1

Key Code	Description
N	Not Accredited Test
U	UKAS Accredited Test - UKAS accreditation is only implied if the report carries the UKAS logo
UF	UKAS Flexible Scope Test
M	MCERTS Accredited Test - MCERTS accreditation is only implied if the report carries the MCERTS logo
O	Marine Management Organisation (MMO) Validated
SN	Subcontracted to approved laboratory not accredited for the test
SU	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SIN	Subcontracted to internal RPS Group laboratory not accredited for the test
SIU	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
SIM	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
L (in results)	Result is outside normal limits

Please note that all samples will be destroyed 4 WEEKS after the report has been issued.

Note: Sample retention may be subject to agreement with the customer for particular projects

Certificate Notes	Description
Note 1	This test report shall not be reproduced except in full, without written approval of the Laboratory.
Note 2	Unless otherwise stated, results are not corrected for analytical recoveries.
Note 3	Samples were taken by the customer and, unless otherwise stated, sampling locations were not supplied.
Note 4	Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
Note 5	Unless otherwise stated, method D9 conditioning temperatures are 180°C for pre-weigh and 160°C for re-weigh.
Note 6	The PDF version of the certificate is the definitive copy and the Excel version is uncontrolled and provided for information only.

Note: Where the following information is included in this certificate, it has usually been supplied by the customer: Customer Sample ID, Sample Location, Sampling Date and Sample Air Volumes. The laboratory shall not be responsible for any information that is supplied by the customer that may affect the validity of results.

Report No.: 25-09823-1

Determinand	CAS No	Media	SOP	% Recovery	% Uncertainty
acetaldehyde	75-07-0	tube	A40	98	16.2
benzaldehyde	100-52-7	tube	A40	100	19.4
butyraldehyde	123-72-8	tube	A40	92	11.5
formaldehyde	50-00-0	tube	A40	97	12.8
hexanal	66-25-1	tube	A40	89	11
propionaldehyde	123-38-6	tube	A40	96	12.6
valeraldehyde	110-62-3	tube	A40	93	12.3
ammonia	7664-41-7	sulphuric scid solution	A6	n/a	8.9
chlorine	7782-50-5	sodium hydroxide solution	C27	n/a	15.2
hydrogen bromide	10035-10-6	sulphuric acid solution	C27	n/a	10.9
hydrogen chloride	7647-01-0	deionised water	C27	n/a	7.9
hydrogen chloride	7647-01-0	sulphuric acid solution	C27	n/a	13.3
hydrogen fluoride	7664-3-3	sodium hydroxide solution	C27	n/a	7.9
sulphur dioxide	7446-09-5	hydrogen peroxide solution	C27	n/a	7.7
nitrogen oxide	10102-43-9	potassium permanganate solution	C27	n/a	11.7
particulates	n/a	filter	D9	n/a	12.2
particulates	n/a	wash solution	D9	n/a	14.8
formaldehyde	50-00-0	deionised water	M103	n/a	23.7
2,4- & 2,6-toluene diisocyanate (TDI)	n/a	filter	M119	n/a	8.6
hexamethylene diisocyanate (HDI)	822-06-0	filter	M119	n/a	5.6
methylene diphenyl diisocyanate (MDI)	101-68-8	filter	M119	n/a	11.8
hydrogen sulphide	7783-06-4	zinc acetate solution	M120	n/a	4.2
antimony	7440-36-0	filter	M31	n/a	10.3
arsenic	7440-38-2	filter	M31	n/a	17.1
cadmium	7440-43.9	filter	M31	n/a	12.1
chromium	7440-47-3	filter	M31	n/a	17.1
cobalt	7440-48-4	filter	M31	n/a	13.1
copper	7440-50-8	filter	M31	n/a	14
lead	7439-92-1	filter	M31	n/a	9.8
manganese	7439-96-5	filter	M31	n/a	17.5
nickel	7440-02-0	filter	M31	n/a	14.4
thallium	7440-28-0	filter	M31	n/a	15.3
tin	7440-31-5	filter	M31	n/a	18.5
vanadium	7440-62-2	filter	M31	n/a	12.1
zinc	7440-66-6	filter	M31	n/a	15.2
antimony	7440-36-0	nitric acid wash	M31	n/a	10.3
arsenic	7440-38-2	nitric acid wash	M31	n/a	17.1
cadmium	7440-43-9	nitric acid wash	M31	n/a	12.1
chromium	7440-47-3	nitric acid wash	M31	n/a	17.1
cobalt	7440-48-4	nitric acid wash	M31	n/a	13.1
copper	7440-50-8	nitric acid wash	M31	n/a	14
lead	7439-92-1	nitric acid wash	M31	n/a	9.8
manganese	7439-96-5	nitric acid wash	M31	n/a	17.5
nickel	7440-02-0	nitric acid wash	M31	n/a	14.4
selenium	7782-49-2	nitric acid wash	M31	n/a	15.1
thallium	7440-28-0	nitric acid wash	M31	n/a	15.3
tin	7440-31-5	nitric acid wash	M31	n/a	18.5
vanadium	7440-62-2	nitric acid wash	M31	n/a	12.1
zinc	7440-66-6	nitric acid wash	M31	n/a	15.2
antimony	7440-36-0	nitric/peroxide solution	M31	n/a	5.9
arsenic	7440-38-2	nitric/peroxide solution	M31	n/a	6.8
cadmium	7440-43-9	nitric/peroxide solution	M31	n/a	6.3
chromium	7440-47-3	nitric/peroxide solution	M31	n/a	7.2
cobalt	7440-48-4	nitric/peroxide solution	M31	n/a	5.2
copper	7440-50-8	nitric/peroxide solution	M31	n/a	6.8
lead	7439-92-1	nitric/peroxide solution	M31	n/a	8.6
manganese	7439-96-5	nitric/peroxide solution	M31	n/a	9.6
nickel	7440-02-0	nitric/peroxide solution	M31	n/a	5.5
selenium	7782-49-2	nitric/peroxide solution	M31	n/a	8.7
thallium	7440-28-0	nitric/peroxide solution	M31	n/a	7.7
tin	7440-31-5	nitric/peroxide solution	M31	n/a	5.8
vanadium	7440-62-2	nitric/peroxide solution	M31	n/a	6.7
zinc	7440-66-6	nitric/peroxide solution	M31	n/a	11.9
1,2,4-trimethylbenzene	95-63-6	tube	O8	88	8.1
1,3,5-trimethylbenzene	108-67-8	tube	O8	92	7.7
2-ethyltoluene	611-14-3	tube	O8	91	8.4
3- & 4-ethyltoluene	n/a	tube	O8	91	8.4
benzene	71-43-2	tube	O8	90	13.9
butyl acetate	123-86-4	tube	O8	90	10.3
decane	124-18-5	tube	O8	97	6.7
dichloromethane	75-09-2	tube	O8	88	24
ethyl acetate	141-78-6	tube	O8	n/a	n/a
ethyl benzene	100-41-4	tube	O8	92	9.8
heptane	142-82-5	tube	O8	94	10.5
hexane	110-54-3	tube	O8	n/a	n/a
limonene	138-86-3	tube	O8	93	13
m- & p-xylene	n/a	tube	O8	90	9.3
methyl isobutyl ketone (MIBK)	108-10-1	tube	O8	86	10
methyl tert-butyl ether (MTBE)	1634-04-4	tube	O8	92	15
o-xylene	95-47-6	tube	O8	86	9.9
propylbenzene	103-65-1	tube	O8	92	7.5
tetrachloroethylene	127-18-4	tube	O8	91	9.3
tetrahydrofuran (THF)	109-99-9	tube	O8	87	14.7
toluene	108-88-3	tube	O8	89	10.7
trichloroethylene	79-01-6	tube	O8	91	10.6
m- & p-cresol	n/a	tube	P1	n/a	11
m- & p-xylenol	n/a	tube	P1	n/a	11.9
o-cresol	95-48-7	tube	P1	n/a	10.8
o-xylenol	526-75-0	tube	P1	n/a	12
phenol	108-95-2	tube	P1	n/a	10.4

Certificate of Analysis

Report No.: **25-09821-1**

Issue No.: **1**
Date of Issue **20/11/2025**

Customer Details:	CES Environmental Instruments Ltd, Bretby Business Park, Ashby Road, Burton on Trent, Staffordshire, DE15 0YZ
Customer Contact:	Jane Fowkes
Customer Order No.:	12622
Customer Reference:	Not Supplied
Quotation Reference:	Q25-07745
Description:	1 liquid sample
Date Received:	10/11/2025
Date Started:	11/11/2025
Date Completed:	19/11/2025
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Joanne Dewhurst, Operational Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
This certificate shall not be reproduced except in full without the prior written approval of the laboratory.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.
Results on an Interim Report are not dry-weight corrected.
Where the laboratory is not responsible for the sampling, results apply to the sample(s) as they were received.
The laboratory shall not be responsible for any information that is supplied by the customer that may affect the validity of results.

UKAS TESTING 0605

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Results Summary

Report No.: 25-09821-1

Customer Reference: Not Supplied

Customer Order No: 12622

Customer Sample No	**10720/S44**
RPS Sample No	333297
Sample Matrix	SOLUTION
Sampling Date	05/11/2025

Determinand	CAS No	Codes	SOP	RL	Units	
volume of sample supplied		U	N/A	n/a	ml	62
ammonia	7664-41-7	UM	A6	0.1	ug/mL	< 0.1

Deviating Samples

Report No.: 25-09821-1

Customer Reference: Not Supplied

Customer Order No: 12622

Our policy on Deviating Samples has been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling. Samples submitted may be declared to be deviating.
Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be compromised.
Where no sampling date was supplied, samples have been declared to be deviating. If the date can be supplied, results may be reissued if assessed not deviating.
Where the sample container used was unsuitable or broken, the sample is flagged as deviating and re-sampling/re-submisson may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating	Reason for Deviation
333297	10720/S44		05/11/2025	Container	No	

Report No.: 25-09821-1

Key Code	Description
N	Not Accredited Test
U	UKAS Accredited Test - UKAS accreditation is only implied if the report carries the UKAS logo
UF	UKAS Flexible Scope Test
M	MCERTS Accredited Test - MCERTS accreditation is only implied if the report carries the MCERTS logo
O	Marine Management Organisation (MMO) Validated
SN	Subcontracted to approved laboratory not accredited for the test
SU	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SIN	Subcontracted to internal RPS Group laboratory not accredited for the test
SIU	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
SIM	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
L (in results)	Result is outside normal limits

Please note that all samples will be destroyed 4 WEEKS after the report has been issued.

Note: Sample retention may be subject to agreement with the customer for particular projects

Certificate Notes	Description
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Note 3	Samples were taken by the customer and, unless otherwise stated, sampling locations were not supplied.
Note 4	Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
Note 5	Unless otherwise stated, method D9 conditioning temperatures are 180°C for pre-weigh and 160°C for re-weigh.
Note 6	The PDF version of the certificate is the definitive copy and the Excel version is uncontrolled and provided for information only.

Note: Where the following information is included in this certificate, it has usually been supplied by the customer: Customer Sample ID, Sample Location, Sampling Date and Sample Air Volumes. The laboratory shall not be responsible for any information that is supplied by the customer that may affect the validity of results.

Report No.: 25-09821-1

Determinand	CAS No	Media	SOP	% Recovery	% Uncertainty
acetaldehyde	75-07-0	tube	A40	98	16.2
benzaldehyde	100-52-7	tube	A40	100	19.4
butyraldehyde	123-72-8	tube	A40	92	11.5
formaldehyde	50-00-0	tube	A40	97	12.8
hexanal	66-25-1	tube	A40	89	11
propionaldehyde	123-38-6	tube	A40	96	12.6
valeraldehyde	110-62-3	tube	A40	93	12.3
ammonia	7664-41-7	sulphuric scid solution	A6	n/a	8.9
chlorine	7782-50-5	sodium hydroxide solution	C27	n/a	15.2
hydrogen bromide	10035-10-6	sulphuric acid solution	C27	n/a	10.9
hydrogen chloride	7647-01-0	deionised water	C27	n/a	7.9
hydrogen chloride	7647-01-0	sulphuric acid solution	C27	n/a	13.3
hydrogen fluoride	7664-3-3	sodium hydroxide solution	C27	n/a	7.9
sulphur dioxide	7446-09-5	hydrogen peroxide solution	C27	n/a	7.7
nitrogen oxide	10102-43-9	potassium permanganate solution	C27	n/a	11.7
particulates	n/a	filter	D9	n/a	12.2
particulates	n/a	wash solution	D9	n/a	14.8
formaldehyde	50-00-0	deionised water	M103	n/a	23.7
2,4- & 2,6-toluene diisocyanate (TDI)	n/a	filter	M119	n/a	8.6
hexamethylene diisocyanate (HDI)	822-06-0	filter	M119	n/a	5.6
methylene diphenyl diisocyanate (MDI)	101-68-8	filter	M119	n/a	11.8
hydrogen sulphide	7783-06-4	zinc acetate solution	M120	n/a	4.2
antimony	7440-36-0	filter	M31	n/a	10.3
arsenic	7440-38-2	filter	M31	n/a	17.1
cadmium	7440-43.9	filter	M31	n/a	12.1
chromium	7440-47-3	filter	M31	n/a	17.1
cobalt	7440-48-4	filter	M31	n/a	13.1
copper	7440-50-8	filter	M31	n/a	14
lead	7439-92-1	filter	M31	n/a	9.8
manganese	7439-96-5	filter	M31	n/a	17.5
nickel	7440-02-0	filter	M31	n/a	14.4
thallium	7440-28-0	filter	M31	n/a	15.3
tin	7440-31-5	filter	M31	n/a	18.5
vanadium	7440-62-2	filter	M31	n/a	12.1
zinc	7440-66-6	filter	M31	n/a	15.2
antimony	7440-36-0	nitric acid wash	M31	n/a	10.3
arsenic	7440-38-2	nitric acid wash	M31	n/a	17.1
cadmium	7440-43-9	nitric acid wash	M31	n/a	12.1
chromium	7440-47-3	nitric acid wash	M31	n/a	17.1
cobalt	7440-48-4	nitric acid wash	M31	n/a	13.1
copper	7440-50-8	nitric acid wash	M31	n/a	14
lead	7439-92-1	nitric acid wash	M31	n/a	9.8
manganese	7439-96-5	nitric acid wash	M31	n/a	17.5
nickel	7440-02-0	nitric acid wash	M31	n/a	14.4
selenium	7782-49-2	nitric acid wash	M31	n/a	15.1
thallium	7440-28-0	nitric acid wash	M31	n/a	15.3
tin	7440-31-5	nitric acid wash	M31	n/a	18.5
vanadium	7440-62-2	nitric acid wash	M31	n/a	12.1
zinc	7440-66-6	nitric acid wash	M31	n/a	15.2
antimony	7440-36-0	nitric/peroxide solution	M31	n/a	5.9
arsenic	7440-38-2	nitric/peroxide solution	M31	n/a	6.8
cadmium	7440-43-9	nitric/peroxide solution	M31	n/a	6.3
chromium	7440-47-3	nitric/peroxide solution	M31	n/a	7.2
cobalt	7440-48-4	nitric/peroxide solution	M31	n/a	5.2
copper	7440-50-8	nitric/peroxide solution	M31	n/a	6.8
lead	7439-92-1	nitric/peroxide solution	M31	n/a	8.6
manganese	7439-96-5	nitric/peroxide solution	M31	n/a	9.6
nickel	7440-02-0	nitric/peroxide solution	M31	n/a	5.5
selenium	7782-49-2	nitric/peroxide solution	M31	n/a	8.7
thallium	7440-28-0	nitric/peroxide solution	M31	n/a	7.7
tin	7440-31-5	nitric/peroxide solution	M31	n/a	5.8
vanadium	7440-62-2	nitric/peroxide solution	M31	n/a	6.7
zinc	7440-66-6	nitric/peroxide solution	M31	n/a	11.9
1,2,4-trimethylbenzene	95-63-6	tube	O8	88	8.1
1,3,5-trimethylbenzene	108-67-8	tube	O8	92	7.7
2-ethyltoluene	611-14-3	tube	O8	91	8.4
3- & 4-ethyltoluene	n/a	tube	O8	91	8.4
benzene	71-43-2	tube	O8	90	13.9
butyl acetate	123-86-4	tube	O8	90	10.3
decane	124-18-5	tube	O8	97	6.7
dichloromethane	75-09-2	tube	O8	88	24
ethyl acetate	141-78-6	tube	O8	n/a	n/a
ethyl benzene	100-41-4	tube	O8	92	9.8
heptane	142-82-5	tube	O8	94	10.5
hexane	110-54-3	tube	O8	n/a	n/a
limonene	138-86-3	tube	O8	93	13
m- & p-xylene	n/a	tube	O8	90	9.3
methyl isobutyl ketone (MIBK)	108-10-1	tube	O8	86	10
methyl tert-butyl ether (MTBE)	1634-04-4	tube	O8	92	15
o-xylene	95-47-6	tube	O8	86	9.9
propylbenzene	103-65-1	tube	O8	92	7.5
tetrachloroethylene	127-18-4	tube	O8	91	9.3
tetrahydrofuran (THF)	109-99-9	tube	O8	87	14.7
toluene	108-88-3	tube	O8	89	10.7
trichloroethylene	79-01-6	tube	O8	91	10.6
m- & p-cresol	n/a	tube	P1	n/a	11
m- & p-xylenol	n/a	tube	P1	n/a	11.9
o-cresol	95-48-7	tube	P1	n/a	10.8
o-xylenol	526-75-0	tube	P1	n/a	12
phenol	108-95-2	tube	P1	n/a	10.4

Certificate of Analysis

Report No.: **25-09818-1**

Issue No.: **1**
Date of Issue **21/11/2025**

Customer Details:	CES Environmental Instruments Ltd, Bretby Business Park, Ashby Road, Burton on Trent, Staffordshire, DE15 0YZ
Customer Contact:	Jane Fowkes
Customer Order No.:	12617
Customer Reference:	Not Supplied
Quotation Reference:	Q25-07745
Description:	5 liquid samples, 2 solid samples
Date Received:	10/11/2025
Date Started:	11/11/2025
Date Completed:	21/11/2025
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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Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.
Results on an Interim Report are not dry-weight corrected.
Where the laboratory is not responsible for the sampling, results apply to the sample(s) as they were received.
The laboratory shall not be responsible for any information that is supplied by the customer that may affect the validity of results.

UKAS TESTING 0605

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Results Summary

Report No.: 25-09818-1

Customer Reference: Not Supplied

Customer Order No: 12617

Customer Sample No	10720/S23	10720/S24	10720/S25	10720/S26	10720/S27	10720/S28A	10720/S28B
RPS Sample No	333282	333283	333284	333285	333286	333287	333288
Sample Matrix	SOLUTION	SOLUTION	FILTER	SOLUTION	SOLUTION	SOLUTION	FILTER
Sampling Date	05/11/2025	05/11/2025	05/11/2025	05/11/2025	05/11/2025	05/11/2025	05/11/2025

Determinand	CAS No	Codes	SOP	RL	Units							
volume of sample supplied		U	N/A	n/a	ml	225	110		219	108	84	
nickel	7440-02-0	UM	M31	0.5	ug			< 0.5				< 0.5
nickel	7440-02-0	UM	M31	0.1	ug						< 0.1	
nickel	7440-02-0	UM	M31	0.3	ug/L	< 0.3	< 0.3		0.4	0.5		

Deviating Samples

Report No.: 25-09818-1

Customer Reference: Not Supplied

Customer Order No: 12617

Our policy on Deviating Samples has been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling. Samples submitted may be declared to be deviating.
Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be compromised.
Where no sampling date was supplied, samples have been declared to be deviating. If the date can be supplied, results may be reissued if assessed not deviating.
Where the sample container used was unsuitable or broken, the sample is flagged as deviating and re-sampling/re-submisson may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating	Reason for Deviation
333282	10720/S23		05/11/2025	Container	No	
333283	10720/S24		05/11/2025	Container	No	
333284	10720/S25		05/11/2025	Container	No	
333285	10720/S26		05/11/2025	Container	No	
333286	10720/S27		05/11/2025	Container	No	
333287	10720/S28A		05/11/2025	Container	No	
333288	10720/S28B		05/11/2025	Container	No	

Report No.: 25-09818-1

Key Code	Description
N	Not Accredited Test
U	UKAS Accredited Test - UKAS accreditation is only implied if the report carries the UKAS logo
UF	UKAS Flexible Scope Test
M	MCERTS Accredited Test - MCERTS accreditation is only implied if the report carries the MCERTS logo
O	Marine Management Organisation (MMO) Validated
SN	Subcontracted to approved laboratory not accredited for the test
SU	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SIN	Subcontracted to internal RPS Group laboratory not accredited for the test
SIU	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
SIM	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
L (in results)	Result is outside normal limits

Please note that all samples will be destroyed 4 WEEKS after the report has been issued.

Note: Sample retention may be subject to agreement with the customer for particular projects

Certificate Notes	Description
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Note 2	Unless otherwise stated, results are not corrected for analytical recoveries.
Note 3	Samples were taken by the customer and, unless otherwise stated, sampling locations were not supplied.
Note 4	Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
Note 5	Unless otherwise stated, method D9 conditioning temperatures are 180°C for pre-weigh and 160°C for re-weigh.
Note 6	The PDF version of the certificate is the definitive copy and the Excel version is uncontrolled and provided for information only.

Note: Where the following information is included in this certificate, it has usually been supplied by the customer: Customer Sample ID, Sample Location, Sampling Date and Sample Air Volumes. The laboratory shall not be responsible for any information that is supplied by the customer that may affect the validity of results.

Report No.: 25-09818-1

Determinand	CAS No	Media	SOP	% Recovery	% Uncertainty
acetaldehyde	75-07-0	tube	A40	98	16.2
benzaldehyde	100-52-7	tube	A40	100	19.4
butyraldehyde	123-72-8	tube	A40	92	11.5
formaldehyde	50-00-0	tube	A40	97	12.8
hexanal	66-25-1	tube	A40	89	11
propionaldehyde	123-38-6	tube	A40	96	12.6
valeraldehyde	110-62-3	tube	A40	93	12.3
ammonia	7664-41-7	sulphuric scid solution	A6	n/a	8.9
chlorine	7782-50-5	sodium hydroxide solution	C27	n/a	15.2
hydrogen bromide	10035-10-6	sulphuric acid solution	C27	n/a	10.9
hydrogen chloride	7647-01-0	deionised water	C27	n/a	7.9
hydrogen chloride	7647-01-0	sulphuric acid solution	C27	n/a	13.3
hydrogen fluoride	7664-3-3	sodium hydroxide solution	C27	n/a	7.9
sulphur dioxide	7446-09-5	hydrogen peroxide solution	C27	n/a	7.7
nitrogen oxide	10102-43-9	potassium permanganate solution	C27	n/a	11.7
particulates	n/a	filter	D9	n/a	12.2
particulates	n/a	wash solution	D9	n/a	14.8
formaldehyde	50-00-0	deionised water	M103	n/a	23.7
2,4- & 2,6-toluene diisocyanate (TDI)	n/a	filter	M119	n/a	8.6
hexamethylene diisocyanate (HDI)	822-06-0	filter	M119	n/a	5.6
methylene diphenyl diisocyanate (MDI)	101-68-8	filter	M119	n/a	11.8
hydrogen sulphide	7783-06-4	zinc acetate solution	M120	n/a	4.2
antimony	7440-36-0	filter	M31	n/a	10.3
arsenic	7440-38-2	filter	M31	n/a	17.1
cadmium	7440-43.9	filter	M31	n/a	12.1
chromium	7440-47-3	filter	M31	n/a	17.1
cobalt	7440-48-4	filter	M31	n/a	13.1
copper	7440-50-8	filter	M31	n/a	14
lead	7439-92-1	filter	M31	n/a	9.8
manganese	7439-96-5	filter	M31	n/a	17.5
nickel	7440-02-0	filter	M31	n/a	14.4
thallium	7440-28-0	filter	M31	n/a	15.3
tin	7440-31-5	filter	M31	n/a	18.5
vanadium	7440-62-2	filter	M31	n/a	12.1
zinc	7440-66-6	filter	M31	n/a	15.2
antimony	7440-36-0	nitric acid wash	M31	n/a	10.3
arsenic	7440-38-2	nitric acid wash	M31	n/a	17.1
cadmium	7440-43-9	nitric acid wash	M31	n/a	12.1
chromium	7440-47-3	nitric acid wash	M31	n/a	17.1
cobalt	7440-48-4	nitric acid wash	M31	n/a	13.1
copper	7440-50-8	nitric acid wash	M31	n/a	14
lead	7439-92-1	nitric acid wash	M31	n/a	9.8
manganese	7439-96-5	nitric acid wash	M31	n/a	17.5
nickel	7440-02-0	nitric acid wash	M31	n/a	14.4
selenium	7782-49-2	nitric acid wash	M31	n/a	15.1
thallium	7440-28-0	nitric acid wash	M31	n/a	15.3
tin	7440-31-5	nitric acid wash	M31	n/a	18.5
vanadium	7440-62-2	nitric acid wash	M31	n/a	12.1
zinc	7440-66-6	nitric acid wash	M31	n/a	15.2
antimony	7440-36-0	nitric/peroxide solution	M31	n/a	5.9
arsenic	7440-38-2	nitric/peroxide solution	M31	n/a	6.8
cadmium	7440-43-9	nitric/peroxide solution	M31	n/a	6.3
chromium	7440-47-3	nitric/peroxide solution	M31	n/a	7.2
cobalt	7440-48-4	nitric/peroxide solution	M31	n/a	5.2
copper	7440-50-8	nitric/peroxide solution	M31	n/a	6.8
lead	7439-92-1	nitric/peroxide solution	M31	n/a	8.6
manganese	7439-96-5	nitric/peroxide solution	M31	n/a	9.6
nickel	7440-02-0	nitric/peroxide solution	M31	n/a	5.5
selenium	7782-49-2	nitric/peroxide solution	M31	n/a	8.7
thallium	7440-28-0	nitric/peroxide solution	M31	n/a	7.7
tin	7440-31-5	nitric/peroxide solution	M31	n/a	5.8
vanadium	7440-62-2	nitric/peroxide solution	M31	n/a	6.7
zinc	7440-66-6	nitric/peroxide solution	M31	n/a	11.9
1,2,4-trimethylbenzene	95-63-6	tube	O8	88	8.1
1,3,5-trimethylbenzene	108-67-8	tube	O8	92	7.7
2-ethyltoluene	611-14-3	tube	O8	91	8.4
3- & 4-ethyltoluene	n/a	tube	O8	91	8.4
benzene	71-43-2	tube	O8	90	13.9
butyl acetate	123-86-4	tube	O8	90	10.3
decane	124-18-5	tube	O8	97	6.7
dichloromethane	75-09-2	tube	O8	88	24
ethyl acetate	141-78-6	tube	O8	n/a	n/a
ethyl benzene	100-41-4	tube	O8	92	9.8
heptane	142-82-5	tube	O8	94	10.5
hexane	110-54-3	tube	O8	n/a	n/a
limonene	138-86-3	tube	O8	93	13
m- & p-xylene	n/a	tube	O8	90	9.3
methyl isobutyl ketone (MIBK)	108-10-1	tube	O8	86	10
methyl tert-butyl ether (MTBE)	1634-04-4	tube	O8	92	15
o-xylene	95-47-6	tube	O8	86	9.9
propylbenzene	103-65-1	tube	O8	92	7.5
tetrachloroethylene	127-18-4	tube	O8	91	9.3
tetrahydrofuran (THF)	109-99-9	tube	O8	87	14.7
toluene	108-88-3	tube	O8	89	10.7
trichloroethylene	79-01-6	tube	O8	91	10.6
m- & p-cresol	n/a	tube	P1	n/a	11
m- & p-xylenol	n/a	tube	P1	n/a	11.9
o-cresol	95-48-7	tube	P1	n/a	10.8
o-xylenol	526-75-0	tube	P1	n/a	12
phenol	108-95-2	tube	P1	n/a	10.4

Certificate of Analysis

Report No.: **25-09819-1**

Issue No.: **1**
Date of Issue **21/11/2025**

Customer Details:	CES Environmental Instruments Ltd, Bretby Business Park, Ashby Road, Burton on Trent, Staffordshire, DE15 0YZ
Customer Contact:	Jane Fowkes
Customer Order No.:	12618
Customer Reference:	Not Supplied
Quotation Reference:	Q25-07745
Description:	1 liquid sample, 1 solid sample
Date Received:	10/11/2025
Date Started:	11/11/2025
Date Completed:	21/11/2025
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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UKAS TESTING 0605

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Results Summary

Report No.: 25-09819-1

Customer Reference: Not Supplied

Customer Order No: 12618

Customer Sample No	10720/S29	10720/S30
RPS Sample No	333289	333290
Sample Matrix	SOLUTION	FILTER
Sampling Date	05/11/2025	05/11/2025

Determinand	CAS No	Codes	SOP	RL	Units		
volume of sample supplied		U	N/A	n/a	ml	137	
nickel	7440-02-0	UM	M31	0.5	ug		< 0.5
nickel	7440-02-0	UM	M31	0.3	ug/L	0.5	

Deviating Samples

Report No.: 25-09819-1

Customer Reference: Not Supplied

Customer Order No: 12618

Our policy on Deviating Samples has been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling. Samples submitted may be declared to be deviating.
Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be compromised.
Where no sampling date was supplied, samples have been declared to be deviating. If the date can be supplied, results may be reissued if assessed not deviating.
Where the sample container used was unsuitable or broken, the sample is flagged as deviating and re-sampling/re-submisson may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating	Reason for Deviation
333289	10720/S29		05/11/2025	Container	No	
333290	10720/S30		05/11/2025	Container	No	

Report No.: 25-09819-1

Key Code	Description
N	Not Accredited Test
U	UKAS Accredited Test - UKAS accreditation is only implied if the report carries the UKAS logo
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O	Marine Management Organisation (MMO) Validated
SN	Subcontracted to approved laboratory not accredited for the test
SU	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SIN	Subcontracted to internal RPS Group laboratory not accredited for the test
SIU	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
SIM	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
L (in results)	Result is outside normal limits

Please note that all samples will be destroyed 4 WEEKS after the report has been issued.

Note: Sample retention may be subject to agreement with the customer for particular projects

Certificate Notes	Description
Note 1	This test report shall not be reproduced except in full, without written approval of the Laboratory.
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Report No.: 25-09819-1

Determinand	CAS No	Media	SOP	% Recovery	% Uncertainty
acetaldehyde	75-07-0	tube	A40	98	16.2
benzaldehyde	100-52-7	tube	A40	100	19.4
butyraldehyde	123-72-8	tube	A40	92	11.5
formaldehyde	50-00-0	tube	A40	97	12.8
hexanal	66-25-1	tube	A40	89	11
propionaldehyde	123-38-6	tube	A40	96	12.6
valeraldehyde	110-62-3	tube	A40	93	12.3
ammonia	7664-41-7	sulphuric scid solution	A6	n/a	8.9
chlorine	7782-50-5	sodium hydroxide solution	C27	n/a	15.2
hydrogen bromide	10035-10-6	sulphuric acid solution	C27	n/a	10.9
hydrogen chloride	7647-01-0	deionised water	C27	n/a	7.9
hydrogen chloride	7647-01-0	sulphuric acid solution	C27	n/a	13.3
hydrogen fluoride	7664-3-3	sodium hydroxide solution	C27	n/a	7.9
sulphur dioxide	7446-09-5	hydrogen peroxide solution	C27	n/a	7.7
nitrogen oxide	10102-43-9	potassium permanganate solution	C27	n/a	11.7
particulates	n/a	filter	D9	n/a	12.2
particulates	n/a	wash solution	D9	n/a	14.8
formaldehyde	50-00-0	deionised water	M103	n/a	23.7
2,4- & 2,6-toluene diisocyanate (TDI)	n/a	filter	M119	n/a	8.6
hexamethylene diisocyanate (HDI)	822-06-0	filter	M119	n/a	5.6
methylene diphenyl diisocyanate (MDI)	101-68-8	filter	M119	n/a	11.8
hydrogen sulphide	7783-06-4	zinc acetate solution	M120	n/a	4.2
antimony	7440-36-0	filter	M31	n/a	10.3
arsenic	7440-38-2	filter	M31	n/a	17.1
cadmium	7440-43.9	filter	M31	n/a	12.1
chromium	7440-47-3	filter	M31	n/a	17.1
cobalt	7440-48-4	filter	M31	n/a	13.1
copper	7440-50-8	filter	M31	n/a	14
lead	7439-92-1	filter	M31	n/a	9.8
manganese	7439-96-5	filter	M31	n/a	17.5
nickel	7440-02-0	filter	M31	n/a	14.4
thallium	7440-28-0	filter	M31	n/a	15.3
tin	7440-31-5	filter	M31	n/a	18.5
vanadium	7440-62-2	filter	M31	n/a	12.1
zinc	7440-66-6	filter	M31	n/a	15.2
antimony	7440-36-0	nitric acid wash	M31	n/a	10.3
arsenic	7440-38-2	nitric acid wash	M31	n/a	17.1
cadmium	7440-43-9	nitric acid wash	M31	n/a	12.1
chromium	7440-47-3	nitric acid wash	M31	n/a	17.1
cobalt	7440-48-4	nitric acid wash	M31	n/a	13.1
copper	7440-50-8	nitric acid wash	M31	n/a	14
lead	7439-92-1	nitric acid wash	M31	n/a	9.8
manganese	7439-96-5	nitric acid wash	M31	n/a	17.5
nickel	7440-02-0	nitric acid wash	M31	n/a	14.4
selenium	7782-49-2	nitric acid wash	M31	n/a	15.1
thallium	7440-28-0	nitric acid wash	M31	n/a	15.3
tin	7440-31-5	nitric acid wash	M31	n/a	18.5
vanadium	7440-62-2	nitric acid wash	M31	n/a	12.1
zinc	7440-66-6	nitric acid wash	M31	n/a	15.2
antimony	7440-36-0	nitric/peroxide solution	M31	n/a	5.9
arsenic	7440-38-2	nitric/peroxide solution	M31	n/a	6.8
cadmium	7440-43-9	nitric/peroxide solution	M31	n/a	6.3
chromium	7440-47-3	nitric/peroxide solution	M31	n/a	7.2
cobalt	7440-48-4	nitric/peroxide solution	M31	n/a	5.2
copper	7440-50-8	nitric/peroxide solution	M31	n/a	6.8
lead	7439-92-1	nitric/peroxide solution	M31	n/a	8.6
manganese	7439-96-5	nitric/peroxide solution	M31	n/a	9.6
nickel	7440-02-0	nitric/peroxide solution	M31	n/a	5.5
selenium	7782-49-2	nitric/peroxide solution	M31	n/a	8.7
thallium	7440-28-0	nitric/peroxide solution	M31	n/a	7.7
tin	7440-31-5	nitric/peroxide solution	M31	n/a	5.8
vanadium	7440-62-2	nitric/peroxide solution	M31	n/a	6.7
zinc	7440-66-6	nitric/peroxide solution	M31	n/a	11.9
1,2,4-trimethylbenzene	95-63-6	tube	O8	88	8.1
1,3,5-trimethylbenzene	108-67-8	tube	O8	92	7.7
2-ethyltoluene	611-14-3	tube	O8	91	8.4
3- & 4-ethyltoluene	n/a	tube	O8	91	8.4
benzene	71-43-2	tube	O8	90	13.9
butyl acetate	123-86-4	tube	O8	90	10.3
decane	124-18-5	tube	O8	97	6.7
dichloromethane	75-09-2	tube	O8	88	24
ethyl acetate	141-78-6	tube	O8	n/a	n/a
ethyl benzene	100-41-4	tube	O8	92	9.8
heptane	142-82-5	tube	O8	94	10.5
hexane	110-54-3	tube	O8	n/a	n/a
limonene	138-86-3	tube	O8	93	13
m- & p-xylene	n/a	tube	O8	90	9.3
methyl isobutyl ketone (MIBK)	108-10-1	tube	O8	86	10
methyl tert-butyl ether (MTBE)	1634-04-4	tube	O8	92	15
o-xylene	95-47-6	tube	O8	86	9.9
propylbenzene	103-65-1	tube	O8	92	7.5
tetrachloroethylene	127-18-4	tube	O8	91	9.3
tetrahydrofuran (THF)	109-99-9	tube	O8	87	14.7
toluene	108-88-3	tube	O8	89	10.7
trichloroethylene	79-01-6	tube	O8	91	10.6
m- & p-cresol	n/a	tube	P1	n/a	11
m- & p-xylenol	n/a	tube	P1	n/a	11.9
o-cresol	95-48-7	tube	P1	n/a	10.8
o-xylenol	526-75-0	tube	P1	n/a	12
phenol	108-95-2	tube	P1	n/a	10.4

Appendix 6
Calibration Certificates

Certificate of Calibration

Date of Issue: 9th September 2024

Certificate No. CES2673

CES Environmental Instruments Ltd
Bretby Business Park, Ashby Road
Burton-on-Trent, Staffordshire, DE15 0YZ
Tel: 01283 216334 Fax: 01283 550939

Certified By

Instrument Details

Instrument Type	Manual Sample Train
Instrument Make	Apex
Instrument Serial No.	1303012
Dry Gas Meter Serial No.	2012-014440
Quality No.	C286
Calibration Date	09 09 25
Calibrated By Name	D.Woolley

Ambient Conditions

Air Temperature (°C)	23
Relative Humidity (%)	65
Barometric Pressure P_b	752.3 mm Hg
	1003 mbar

Instruments used to undertake calibration

Manometer Type FC012	UKAS Certificate No. 29299	(Qu. No. C082)
Manometer Type FC012	UKAS Certificate No. 27300	(Qu. No. C081)
Barometer Type 104	UKAS Certificate No. K55933P	(Qu. No. C138)
RIS Supercal XT	UKAS Certificate No. 10345	(Qu. No. C014)
Gallus Dry Gas Meter	UKAS Certificate No. N039726	(Qu. No. C333)

Pressure Measurement

The instrument under test provides an indication by means of a liquid manometer corresponding to an applied pressure. The liquid manometer was calibrated against a FCO12 Digital Micromanometer whose calibration is traceable to UKAS standards. The readings of the reference instrument and the instrument under test were taken simutaneously and compared.

Dry Gas Meter Calibration

A calibrated dry gas meter was connected to the sampling inlet of the Control Unit. A volume of air is pulled through the sampling system. The measured value shown on the calibrated dry gas meter is then compared to the indicated value on the dry gas meter contained within the control unit.

Temperature Calibration

The instrument under test provides an indication by means of an Electronic Display corresponding to an applied simulated temperature. The Display was calibrated against a reference temperature instrument whose calibration is traceable to UKAS standards. The readings of the reference instrument and the instrument under test were taken simutaneously and compared.

Certificate of Calibration

Date of Issue: 9th September 2025

Certificate No CES2673
page 2 of 2

CES Environmental Instruments Ltd
Bretby Business Park, Ashby Road
Burton-on-Trent, Staffordshire, DE15 0YZ
Tel: 01283 216334 Fax: 01283 550939

Certified By

Instrument Details

Instrument Type	Manual Sample Train
Instrument Make	Andersen
Instrument Serial No	1303012
Dry Gas Meter Serial No	2012-014440
Quality No	C286
Calibration Date	09 09 25

Ambient Conditions

Air Temperature (°C)	23
Relative Humidity (%)	65
Barometric Pressure (P_b)	752 3 mm Hg
	1003 mbar

Calibration Details

Orifice manometer setting	Calibrated Dry Gas Meter	Dry Gas Meter (UUT) Volume	Uncertainty Volume (l) ±	Temperatures				Time min
				Calibrated Gas Meter Temp	Dry Gas Inlet t_i	Dry Gas Outlet t_o	Dry Gas Average t_m	
0.3	35.0	35.2	0.7	24.0	24.0	24.0	24.0	20.0
15	242.8	259.2	4.6	22.0	25.0	25.0	25.0	20.0
25	314.0	335.4	5.9	22.0	24.0	24.0	24.0	20.0
50	440.9	470.2	8.3	23.0	28.0	28.0	28.0	20.0
100	654.2	680.4	12.3	24.0	28.0	28.0	28.0	20.0

ΔH setting mm H2O @ 5"Hg	Y $\frac{V_w P_b (t_m + 273)}{[P_b + (\Delta H + 13.6)] (t_w + 273)}$	ΔH@ $\frac{1170\ \Delta H}{P_b (t_o + 273)} \left[\frac{(T_w + 273)\ 0}{V_w} \right]^2$
0.3	0.9943	45.2470
15	0.9853	46.2242
25	0.9894	46.2186
50	0.9667	46.5752
100	0.9775	42.5964
Average	**0.9826**	**45.3723**
As Found	0.9773	44.8958

Manometer 1 (ΔH)					Manometer 2 (ΔP)				
Required Pressure mmH_2O/Pa	Reference Pressure Pa	Reference Pressure mmH2O	Display Pressure mmH2O (ΔH)	Uncertainly mmH2O =	Required Pressure mmH_2O/Pa	Reference Pressure Pa	Reference Pressure mmH2O	Display Pressure mmH2O (ΔP)	Uncertainly mmH2O =
0.0 / 0.0	0.0	0.0	0.0	0.00	0.0 / 0.0	0.0	0.0	0.0	0.00
5.0 /49.0	49.0	5.0	5.0	0.60	5.0 /49.0	49.0	5.0	5.0	0.60
10.0 / 98.1	98.1	10.0	10.0	0.76	10.0 / 98.1	98.1	10.0	10.0	0.76
15.0 / 147.1	147.1	15.0	15.0	1.06	15.0 / 147.1	147.1	15.0	15.0	1.06
20.0 / 196.1	196.1	20.0	20.0	1.10	20.0 / 196.1	196.1	20.0	20.0	1.10
25.0 / 245.2	245.2	25.0	25.0	1.50	25.0 / 245.2	245.2	25.0	25.0	1.50
50.0 / 490.3	490.3	50.0	50.0	2.20	50.0 / 490.3	490.3	50.0	50.0	2.20
100.0 / 980.1	980.1	100.0	100.0	2.20	100.0 / 980.1	980.1	100.0	100.0	2.20
150.0 / 1471.0	1471.0	150.0	150.0	3.60	150.0 / 1471.0	1471.0	150.0	150.0	3.60
200.0 / 1961.3	1961.3	200.0	200.0	4.50	200.0 / 1961.3	1961.3	200.0	200.0	4.50
250.0 / 2451.1	2451.1	250.0	250.0	4.70	250.0 / 2451.1	2451.1	250.0	250.0	4.70

Test °C	Display 1 °C	Display 2 °C	Display 3 °C	Display 4 °C	Display 5 °C	Display 6 °C	Display 7 °C	Uncertainty °C
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.37
50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	0.93
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	2.13
200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	4.05
300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	5.80
700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	13.13

Appendix 7
Uncertainty Calculations

Uncertainty calculation for BS EN 1911 : 1998 Manual Method of Determination of HCl , Reference method

Limit value (ELV)		**mg.m^{-3}**	**Reference oxygen**		**% by volume**
Measured concentration	0.0	**mg.m^{-3} (at reference conditions)**			

Measurement Equation

$$c = \frac{m}{V} f_c$$

Measured Quantities	**Symbol**	**Value**	**Standard uncertainty**		**Units**	**Uncertainty as percentage**	**Uncertainty at lv**	**Requirement of std**
Sampled Volume Gas	V_m	1.3549	uV_m	0.001	**m^3**	0.07		<=2%
Sampled gas Temperature	T_m	301	uTm	2	k	2.00		<2.5 k
Sampled gas Pressure	ρ_m	99.2	$u\rho_m$	1.0	**kPa**	1.00		<=1%
Sampled gas Humidity	H_m	0	uH_m	1	**% by volume**	1.00		<=1%
Oxygen content	$O_{2,m}$		$uO_{2,m}$	0.1	**% by volume**	#DIV/0!		<=5%
Concentration in impinger 1	C	0.05	uC	0.002	**mg/l**	4.03		<=5%
Impinger solution volume 1	VS	0.12	uVS	0.001	**l**	0.86		<2%
Concentration in impinger 2	C	0.05	uC	0.002	**mg/l**	4.03		<=5%
Impinger solution volume 2	VS	0.11	uVS	0.001	**l**	0.95		<2%
Concentration in impinger 3	C	0.05	uC	0.002	**mg/l**	4.03		<=5%
Impinger solution volume 3	VS	0.081	uVS	0.001	**l**	1.23		<2%
Mass HCl	m	0.0151	um	0.00	**mg**	5.47	#DIV/0!	<10% of limit value
Note - Sampled gas humidity, temperature and pressure are values at the gas meter								
Leak	L	2			**%**	2.00		<=2%
Analytical Uncertainty (V)	Ua	4.03 %						

Intermediate calculations							
Factor for std conds	fs	0.89					
uncertainty components	symbol	**sensitivity coeff**		**u (in units of fs)**			
	ρ_m	0.009		0.009			
	H_m	0.009		0.009	$f_s = \frac{(100 - H_m)}{100} \frac{273}{T_m} \frac{\rho_m}{101.3}$		
	T_m	0.003		0.006			
	ufs			0.014			1.56
Corrected volume	V	1.20	uV	0.019	**m^3**	$V = V_m f_s$	1.56
Factor for O2 correction	fc	1.00					
uncertainty components	symbol	**sensitivity coeff**		**u**		$f_c = \frac{21 - O_{2,ref}}{21 - O_{2,m}}$	
	$O_{2,m}$	0.05		0.005			
Factor for O2 Correction	ufc	1.00		0.005			0.48

Parameter		**Value**	**Units**	**Sensitivity coeff**	**Uncertainty contribution**	**Uncertainty as %**
Corrected Volume (standard conditio	V	1.203	m^3	0.01	0.00 mg.m^{-3}	1.56 %
Mass	m	0.02	mg	0.83	0.00 mg.m^{-3}	5.47 %
Factor for O2 Correction	fc	1.00		0.01	0.00 mg.m^{-3}	0.48 %
Leak	L	0.00	mg.m^{-3}	1.00	0.00 mg.m^{-3}	1.15 %
Combined uncertainty					**0.00** mg.m^{-3}	

Expanded uncertainty as percentage of measured value	**11.66**	**% measured of value**	**expressed with a level of confidence of 95%** **(Using a coverage factor k=2)**
Expanded uncertainty in units of measurement	**0.00**	**mg.m^{-3}**	
Expanded uncertainty as percentage of limit value	**#DIV/0!**	**% ELV**	

Verified

Uncertainty calculation for Ammonia

Uncertainty calculation for BS-EN-ISO-21877:2019 - Stationary source emissions. Determination of the mass concentration of ammonia. Manual method

Limit value (ELV)		**mg.m^{-3}**	**Reference oxygen**		**% by volume**
Measured concentration	0.5	**mg.m^{-3} (at reference conditions)**			

Measurement Equation

$$c = \frac{m}{V} f_c$$

Measured Quantities	**Symbol**	**Value**	**Standard uncertainty**		**Units**	**Uncertainty as percentage**	**Uncertainty at lv**	**Requirement of std**
Sampled Volume Gas	V_m	1.3549	uV_m	0.001	**m^3**	0.07		<=2%
Sampled gas Temperature	T_m	298.875	uTm	2	k	2.00		<2.5 k
Sampled gas Pressure	ρ_m	99.2	$u\rho_m$	1.0	**kPa**	1.00		<=1%
Sampled gas Humidity	H_m	0	uH_m	1	**% by volume**	1.00		<=1%
Oxygen content	$O_{2,m}$		$uO_{2,m}$	0.1	**% by volume**	#DIV/0!		<=5%
Concentration in impinger 1	C	5.10	uC	0.232	**mg/l**	4.54		<=5%
Impinger solution volume 1	VS	0.11	uVS	0.001	**l**	0.88		<2%
Concentration in impinger 2	C	0.10	uC	0.005	**mg/l**	4.54		<=5%
Impinger solution volume 2	VS	0.10	uVS	0.001	**l**	1.02		<2%
Concentration in impinger 3	C	0.1	uC	0.005	**mg/l**	4.54		<=5%
Impinger solution volume 3	VS	0.109	uVS	0.001	**l**	0.92		<2%
Mass NH3	m	0.597	um	0.04	**mg**	6.10	#DIV/0!	<10% of limit value
Note - Sampled gas humidity, temperature and pressure are values at the gas meter								
Leak	L	2			**%**	2.00		<=2%
Analytical Uncertainty (V)	Ua	4.54 %						

Intermediate calculations							
Factor for std conds	fs	0.89					
uncertainty components	symbol	**sensitivity coeff**	**u (in units of fs)**				
	ρ_m	0.009	0.009				
	H_m	0.009	0.009	$f_s = \frac{(100 - H_m)}{100} \frac{273}{T_m} \frac{\rho_m}{101.3}$			
	T_m	0.003	0.006				
	ufs		0.014				1.56
Corrected volume	V	1.21	uV	0.019	**m^3**	$V = V_m f_s$	1.57
Factor for O2 correction	fc	1.00					
uncertainty components	symbol	**sensitivity coeff**	**u**				
	$O_{2,m}$	0.05	0.005	$f_c = \frac{21 - O_{2,ref}}{21 - O_{2,m}}$			
Factor for O2 Correction	ufc	1.00	0.005				0.48

Parameter		**Value**	**Units**	**Sensitivity coeff**	**Uncertainty contribution**	**Uncertainty as %**
Corrected Volume (standard conditio	V	1.212	m^3	0.41	0.01 mg.m^{-3}	1.57 %
Mass	m	0.60	mg	0.83	0.03 mg.m^{-3}	6.10 %
Factor for O2 Correction	fc	1.00		0.49	0.00 mg.m^{-3}	0.48 %
Leak	L	0.01	mg.m^{-3}	1.00	0.01 mg.m^{-3}	1.15 %
Combined uncertainty					**0.03** mg.m^{-3}	

Expanded uncertainty as percentage of measured value	**12.85**	**% measured of value**	**expressed with a level of confidence of 95%** **(Using a coverage factor k=2)**
Expanded uncertainty in units of measurement	**0.06**	**mg.m^{-3}**	
Expanded uncertainty as percentage of limit value	**#DIV/0!**	**% ELV**	

Verified

Uncertainty calculation for BS EN 14385 Determination of mass concentration of metal, Reference method

Limit value (ELV)		**mg.m^{-3}**	**Reference oxygen**		**% by volume**
Measured concentration	0.0008	**mg.m^{-3} (at reference conditions)**			

Measurement Equation

$$c = \frac{m}{V} f_c$$

Measured Quantities	**Symbol**	**Value**	**Standard uncertainty**		**Units**	**Uncertainty as percentage**	**Uncertainty at lv**	**Requirement of std**
Sampled Volume Gas	V_m	1.0583	uV_m	0.001	**m^3**	0.09		<=2%
Sampled gas Temperature	T_m	289.81	uTm	2	k	2.00		<2.5 k
Sampled gas Pressure	ρ_m	99.2	$u\rho_m$	1.0	**kPa**	1.00		<=1%
Sampled gas Humidity	H_m	0	uH_m	1.0	**% by volume**	1.00		<=1%
Oxygen content	$O_{2,m}$		$uO_{2,m}$	0.1	**% by volume**	#DIV/0!		<=5%
Concentration in impinger 1+2	C	0.400	uC	0.011	**µg/l**	2.81		<=15%
Impinger solution volume 1+2	VS	0.219	uVS	0.001	**l**	0.46		<2%
Concentration in impinger 3	C	0.500	uC	0.014	**µg/l**	2.81		<=15%
Impinger solution volume 3	VS	0.108	uVS	0.001	**l**	0.93		<2%
Concentration Filter	C	0.600	uC	0.044	**µg**	7.35		<=15%
Mass Metal	m	0.7416	um	0.047	**mg**	6.39	#DIV/0!	<10% of limit value
Note - Sampled gas humidity, temperature and pressure are values at the gas meter								
Leak	L	2 %				2.00		<=2%
Analytical Uncertainty (P)	Ua	7.35 %						
Analytical Uncertainty (V)	Ua	2.81 %						

Intermediate calculations							
Factor for std conds	fs	0.92					
uncertainty components	symbol	**sensitivity coeff**	**u (in units of fs)**				
	ρ_m	0.009	0.009				
	H_m	0.009	0.009		$f_s = \frac{(100 - H_m)}{100} \frac{273}{T_m} \frac{\rho_m}{101.3}$		
	T_m	0.003	0.006				
	ufs		0.015			1.57	
Corrected volume	V	0.98	uV	0.015	**m^3**	$V = V_m f_s$	1.58
Factor for O2 correction	fc	1.00					
uncertainty components	symbol	**sensitivity coeff**	**u**				
	$O_{2,m}$	0.05	0.005		$f_c = \frac{21 - O_{2,ref}}{21 - O_{2,m}}$		
Factor for O2 Correction	ufc	1.00	0.005			0.48	

Parameter		**Value**	**Units**	**Sensitivity coeff**	**Uncertainty contribution**		**Uncertainty as %**	
Corrected Volume (standard conditio	V	0.976	m^3	0.00	0.00001	mg.m^{-3}	1.58	%
Mass	m	0.000742	mg	1.02	0.00005	mg.m^{-3}	6.39	%
Factor for O2 Correction	fc	1.00		0.00	0.00000	mg.m^{-3}	0.48	%
Leak	L	0.00	mg.m^{-3}	1.00	0.00001	mg.m^{-3}	1.15	%
Combined uncertainty					**0.00**	mg.m^{-3}		

Expanded uncertainty as percentage of measured value	**13.40**	**% measured of value**	**expressed with a level of confidence of 95% (Using a coverage factor k=2)**
Expanded uncertainty in units of measurement	**0.0001**	**mg.m^{-3}**	
Expanded uncertainty as percentage of limit value	**#DIV/0!**	**% ELV**	

Verified