SDG COVER PAGE

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51988 MA No.: SDG No.: MBHHA1

SOW No. : SFAM01.1

EPA Sample No.	Lab Sample Id	Analysis Method ICP-AES	ICP-MS	Mercury	Cyanide
MBHHA0	Q1273-01	X			
MBHHA1	Q1273-02	X			
MBHHA2	Q1273-03	X			
MBHHA2D	Q1273-04	X			
MBHHA2S	Q1273-05	X			

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the SDG Narrative. All edits and manual integrations have been peer-reviewed. Release of the data contained in this hardcopy Complete SDG File and in the electronic data submitted has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name:

Date: Title:

68HERH20D0011

SDG # MBHHA1

USEPA CLP COC (LAB COPY)

DateShipped: 1/31/2025

CarrierName: FedEx

AirbillNo: 771794230518

CHAIN OF CUSTODY RECORD

Case #: 51988

Cooler #: 1

No: 3-013125-091046 0006

Lab: Alliance Technical Group LLS

Lab Contact: Mohammad Ahmed

Lab Phone: 908-789-8900

2

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
SQ-S-Entrance-2-013025	MBHHA0	Soil/ Jon King	Composite	ICP-AES(14), TCLP ICP-AES(14)	1113 (None), 1114 (None) (2)	SQ-S	01/30/2025 10:00	
SQ-Headwall-3-013025	MBHHA1	Soil/ Jon King	Composite	ICP-AES(14), TCLP ICP-AES(14)	1099 (None), 1100 (None) (2)	SQ-Headwall	01/30/2025 09:00	
SQ-S-Entrance-1-013025	MBHHA2	Soil/ Jon King	Composite	ICP-AES(14), TCLP ICP-AES(14)	1106 (None), 1107 (None) (2)	SQ-S	01/30/2025 09:30	QC

Special Instructions:

Shipment for Case Complete? Y

Samples Transferred From Chain of Custody #

Analysis Key: ICP-AES=CLP ICP AES 11+ Metals, TCLP ICP-AES=CLP TCLP ICP-AES Metals

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	(Sovereign)	1/31/25 1000		2/1/25	1.2° IR cont
				9:25	Temp blank
					Cooler

FORM DC-1

SAMPLE LOG-IN SHEET

Lab Name : Alliance Technical Group, LLC		Page 1 of 1
Received By (Print Name) Jessamae Rica		Log-in Date 2/1/2025
Received By (Signature)		
Case Number 51988	SDG No. MBHHA1	MA No. N/A

Remarks:	
1. Custody Seal (s)	Present, Intact
2. Custody Seal Nos.	n/a
3. Traffic Reports/Chain Of Custody Records	Present
4. Airbill	Present
5. Airbill No. and Shipping Container ID No.	771794230518 1
6. Shipping Container Temperature Indicator Bottle	Present
7. Shipping Container Temperature	1.2 Degree C
8. Sample Condition	Intact
9. Sample Tags Sample Tag Numbers	Absent Listed on Traffic Report
10. Does information on Traffic Reports/Chain of Custody Records and Sample Tags agree ?	Yes
11. Date Received at Lab	02/01/2025
12.Time Received	09:25

	EPA Sample #	Aqueous/ Water Sample pH	Corresponding Sample Tag #	Corresponding Assigned Lab #	Remarks: Condition of Sample Shipment, etc.
1	MBHHA0	N/A	1114	Q1273-01	Intact
2	MBHHA1	N/A	1100	Q1273-02	Intact
3	MBHHA2	N/A	1107	Q1273-03	Intact
4	MBHHA2D	N/A	1107	Q1273-04	Intact
5	MBHHA2S	N/A	1107	Q1273-05	Intact
6	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A
9	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A
21	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A

* Contact SMO and attach record of resolution

Reviewed By		Logbook No.	N/A
Date	2/1/25	Logbook Page No.	N/A

FORM DC-2
COMPLETE SDG FILE (CSF) INVENTORY SHEET

LAB NAME	**Alliance Technical Group, LLC**		
LAB CODE	**ACE**		
CONTRACT NO.	**68HERH20D0011**		
CASE NO.	**51988**	SDG NO.	**MBHHA1**
MA NO.		SOW NO.	**SFAM01.1**

All documents delivered in the Complete SDG File must be original documents where possible. (Reference - Exhibit B Section 2.4)

	PAGE NOs: FROM	PAGE NOs: TO	CHECK LAB	CHECK REGION
1. SDG Cover Page	1	1	✓	
2. Traffic Report/Chain of Custody Record(s)	2	2	✓	
3. Sample Log-In Sheet (DC-1)	3	3	✓	
4. CSF Inventory Sheet (DC-2)	4	6	✓	
5. SDG Narrative	7	9	✓	
6. Communication Logs	10	11	✓	
7. Percent Solids Log	NA	NA	✓	
Analysis Forms and Data (ICP-AES)				
8. Sample Analysis Data Forms (1A-OR, 1B-OR, and 1-IN) for each sample or sample analysis, laboratory QC as applicable	12	14	✓	
9. Instrument raw data by instrument in analysis order	15	196	✓	
Other Data				
10. Standard and Reagent Preparation Logs	197	348	✓	
11. Original Preparation and Cleanup forms or copies of Preparation and Cleanup Logbooks	349	350	✓	
12. Original Analysis or Instrument Run forms or copies of Analysis or Instrument Logbooks	351	354	✓	
13. Performance Evaluation (PE)/Proficiency Testing (PT) Sample Instructions	NA	NA	✓	
14. Extraction Logs for TCLP and SPLP	355	358	✓	
15. Raw GPC Data	NA	NA	✓	
16. Raw Florisil Data	NA	NA	✓	
Analysis Forms and Data (ICP-MS)				
17. Sample Analysis Data Forms (1A-OR, 1B-OR, and 1-IN) for each sample or sample analysis, laboratory QC as applicable	NA	NA	✓	
18. Instrument raw data by instrument in analysis order	NA	NA	✓	
Other Data				
19. Standard and Reagent Preparation Logs	NA	NA	✓	
20. Original Preparation and Cleanup forms or copies of Preparation and Cleanup Logbooks	NA	NA	✓	
21. Original Analysis or Instrument Run forms or copies of Analysis or Instrument Logbooks	NA	NA	✓	
22. Performance Evaluation (PE)/Proficiency Testing (PT) Sample Instructions	NA	NA	✓	

	PAGE NOs: FROM	TO	CHECK LAB	REGION
23. Extraction Logs for TCLP and SPLP	NA	NA	✓	
24. Raw GPC Data	NA	NA	✓	
25. Raw Florisil Data	NA	NA	✓	
Analysis Forms and Data (Mercury)				
26. Sample Analysis Data Forms (1A-OR, 1B-OR, and 1-IN) for each sample or sample analysis, laboratory QC as applicable	NA	NA	✓	
27. Instrument raw data by instrument in analysis order	NA	NA	✓	
Other Data				
28. Standard and Reagent Preparation Logs	NA	NA	✓	
29. Original Preparation and Cleanup forms or copies of Preparation and Cleanup Logbooks	NA	NA	✓	
30. Original Analysis or Instrument Run forms or copies of Analysis or Instrument Logbooks	NA	NA	✓	
31. Performance Evaluation (PE)/Proficiency Testing (PT) Sample Instructions	NA	NA	✓	
32. Extraction Logs for TCLP and SPLP	NA	NA	✓	
33. Raw GPC Data	NA	NA	✓	
34. Raw Florisil Data	NA	NA	✓	
Analysis Forms and Data (Cyanide)				
35. Sample Analysis Data Forms (1A-OR, 1B-OR, and 1-IN) for each sample or sample analysis, laboratory QC as applicable	NA	NA	✓	
36. Instrument raw data by instrument in analysis order	NA	NA	✓	
Other Data				
37. Standard and Reagent Preparation Logs	NA	NA	✓	
38. Original Preparation and Cleanup forms or copies of Preparation and Cleanup Logbooks	NA	NA	✓	
39. Original Analysis or Instrument Run forms or copies of Analysis or Instrument Logbooks	NA	NA	✓	
40. Performance Evaluation (PE)/Proficiency Testing (PT) Sample Instructions	NA	NA	✓	
41. Extraction Logs for TCLP and SPLP	NA	NA	✓	
42. Raw GPC Data	NA	NA	✓	
43. Raw Florisil Data	NA	NA	✓	

	PAGE NOs: FROM	TO	CHECK LAB	REGION
Additional				
44. EPA Shipping/Receiving Documents				
Airbill (No. of Shipments 1)	359	359	✓	
Sample Tags	NA	NA	✓	
Sample Log-In Sheet (Lab)	360	360	✓	
45. Misc. Shipping/Receiving Records (list all individual records)				
	NA	NA	✓	
46. Internal Lab Sample Transfer Records and Tracking Sheets (describe or list)				
	361	361	✓	
47. Other Records and related Communication Logs (describe or list)				
	NA	NA	✓	

48. Comments:

Completed by: (CLP Lab)		Nimisha Pandya, Document Control Officer	
	(Signature)	(Print Name & Title)	(Date)
Audited by: (EPA)			
	(Signature)	(Print Name & Title)	(Date)

284 Sheffield Street
Mountainside, NJ 07092

SDG NARRATIVE

USEPA
SDG # MBHHA1
CASE # 51988
CONTRACT # 68HERH20D0011
SOW# SFAM01.1
LAB NAME: Alliance Technical Group, LLC
LAB CODE: ACE
LAB ORDER ID # Q1273

A. Number of Samples and Date of Receipt

03 Soil sample were delivered to the laboratory intact on 02/01/2025.

B. Parameters

Test requested for TCLP ICP Metals = Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver,

C. Cooler Temp

Indicator Bottle**: Presence/**Absence

Cooler: 1.2^{o}C

D. Detail Documentation (related to Sample Handling Shipping, Analytical Problem, Temp of Cooler etc):

Issue 1: A "P" or "M" prefix was listed at the beginning of a CLP sample ID.

Issue 2: Laboratory QC is scheduled for ICP-AES and TCLP ICP-AES analysis, but no sample was Designated for laboratory QC on the COC. The laboratory would like to use sample MBHHA2 for laboratory QC. The laboratory confirms that these samples are not blanks, rinsates, or PT.

E. Corrective Action taken for above:

Resolution 1: To maintain COC integrity, ASB requests no changes to the Sample IDs. The laboratory will note the issue in the SDG Narrative and proceed with the analysis of the samples.

Resolution 2: Per SOW SFAM01.1 Exhibit A, Section 5.5.4.1., please note the issue in the SDG Narrative and proceed with the analysis of the samples.

F. Analytical Techniques:

All analyses were based on CLP Methodology by method SFAM01.1.

Inter Element correction factors (IECs) are determined annually and correction factor are applied during ICP-AES analysis.

G. Calculation:

Calculation for ICP-AES Water Sample:

$$\text{Concentration or Result } (\mu g/L) = C \times \frac{Vf}{Vi} \times DF \times 1000$$

Where,

C = Instrument value in ppm (The average of all replicate exposures)
Vf = Final digestion volume (mL)
Vi = Initial aliquot amount (mL) (Sample amount taken in prep)
DF = Dilution Factor

Example Calculation For Sample MBHHA0 For Arsenic:

If C = 0.0053967 ppm
Vf = 50 ml
Vi = 50 ml
DF = 1

$$\text{Concentration or Result } (\mu g/L) = 0.0053967 \times \frac{50}{50} \times 1 \times 1000$$

$$= 5.3967\ \mu g/L$$

$$= 5.4\ \mu g/L \text{ (Reported Result with Signification)}$$

H. QA/ QC

Calibrations met requirements. Interference check met requirements. Blank analyses did not indicate any presence of contamination. Laboratory Control sample was within control limits. Spike sample did meet requirements. Duplicate sample did meet requirements. Serial Dilution did meet requirements.

I certify that the data package is in compliance with the terms and conditions of the contract both technically and for completeness, for other than the conditions detailed above. Release of the data

284 Sheffield Street
Mountainside, NJ 07092

contained in this hard copy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Signature_____ Name: Nimisha Pandya

Date _____ Title: Document Control Officer

From: DeBerry, Eric <Eric.Deberry@gdit.com>
Sent: Monday, February 03, 2025 9:30 AM
To: Deepak Parmar; Sohil Jodhani; Mohammad Ahmed
Cc: Bauer, Heather E; Johnson, Matthew; Burman, Jarmael; 'Moody, Brett'; Gambrah, Derrick; Patel, Bhavita; Vargas.Magda@epa.gov; Britz, Helen
Subject: Task Area SST | Region 03 | Case 51988 | Lab ACE | Issue Insufficient/inappropriate designation of laboratory QC | FINAL
Attachments: SKM_95825020111380.pdf

EXTERNAL EMAIL - This email was sent by a person from outside your organization. Exercise caution when clicking links, opening attachments or taking further action, before validating its authenticity.

Secured by Check Point

Good morning Deepak,

Issue: Laboratory QC is scheduled for ICP-AES and TCLP ICP-AES analysis, but no sample was designated for laboratory QC on the COC. The laboratory would like to use sample MBHHA2 for laboratory QC. The laboratory confirms that these samples are not blanks, rinsates, or PT.

Resolution: Per SOW SFAM01.1 Exhibit A, Section 5.5.4.1., please note the issue in the SDG Narrative and proceed with the analysis of the samples.

Please note that the laboratory may contact the appropriate CLP PM should any defects need to be waived for this issue.

Thanks,

Eric DeBerry

Associate Environmental Analyst
CLP QSS Coordinator – EPA Regions 1 & 3

Under contract to the EPA

T: (571) 833-5166
Eric.DeBerry@GDIT.com
15036 Conference Center Drive
Chantilly, VA 20151
www.gdit.com

GENERAL DYNAMICS
information technology

From: Deepak Parmar <Deepak.Parmar@alliancetg.com>
Sent: Monday, February 3, 2025 8:21 AM
To: DeBerry, Eric <Eric.Deberry@gdit.com>

Cc: Sohil Jodhani <Sohil.Jodhani@AllianceTG.com>
Subject: Region 3 | Case 51988 | Lab ACE | Issue Discrepancies with tags, jars, and/or COC/QC

This Message Is From an External Sender

Please use caution with links, attachments, and any requests for credentials.

Good morning,

Issue 1: QC Scheduled for ICP-AES and TCLP ICP-AES analysis However, a sample was not designated for Laboratory QC. Lab like to use sample MBHHA2 for Lab QC. these samples is not blanks, rinsates or PT.

Please see attachment for your reference.

Thanks & Regards,

Deepak Parmar
QA/QC
An Alliance Technical Group Company
Main: 908-789-8900
Direct: 908-728-3154
Address: 284 Sheffield St, Ste 1, Mountainside, NJ 07092
www.alliancetg.com

EPA SAMPLE NO.

MBHHA0

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51988 MA No. : SDG No.: MBHHA1

Matrix: WATER Lab Sample ID: Q1273-01

% Solids: Date Received: 02/01/2025

Analytical Method: ICP_AES

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7440-38-2	Arsenic	5.4	J	02/06/2025	1508
7440-39-3	Barium	2600		02/06/2025	1508
7440-43-9	Cadmium	2.0	J	02/06/2025	1508
7440-47-3	Chromium	2.5	J	02/06/2025	1508
7439-92-1	Lead	10	U	02/06/2025	1508
7782-49-2	Selenium	35	U	02/06/2025	1508
7440-22-4	Silver	10	U	02/06/2025	1508

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

MBHHA1

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51988 MA No. : SDG No.: MBHHA1

Matrix: WATER Lab Sample ID: Q1273-02

% Solids: Date Received: 02/01/2025

Analytical Method: ICP_AES

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7440-38-2	Arsenic	10	U	02/06/2025	1512
7440-39-3	Barium	2700		02/06/2025	1512
7440-43-9	Cadmium	0.66	J	02/06/2025	1512
7440-47-3	Chromium	3.2	J	02/06/2025	1512
7439-92-1	Lead	10	U	02/06/2025	1512
7782-49-2	Selenium	35	U	02/06/2025	1512
7440-22-4	Silver	2.6	J	02/06/2025	1512

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

MBHHA2

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51988 MA No. : SDG No.: MBHHA1

Matrix: WATER Lab Sample ID: Q1273-03

% Solids: Date Received: 02/01/2025

Analytical Method: ICP_AES

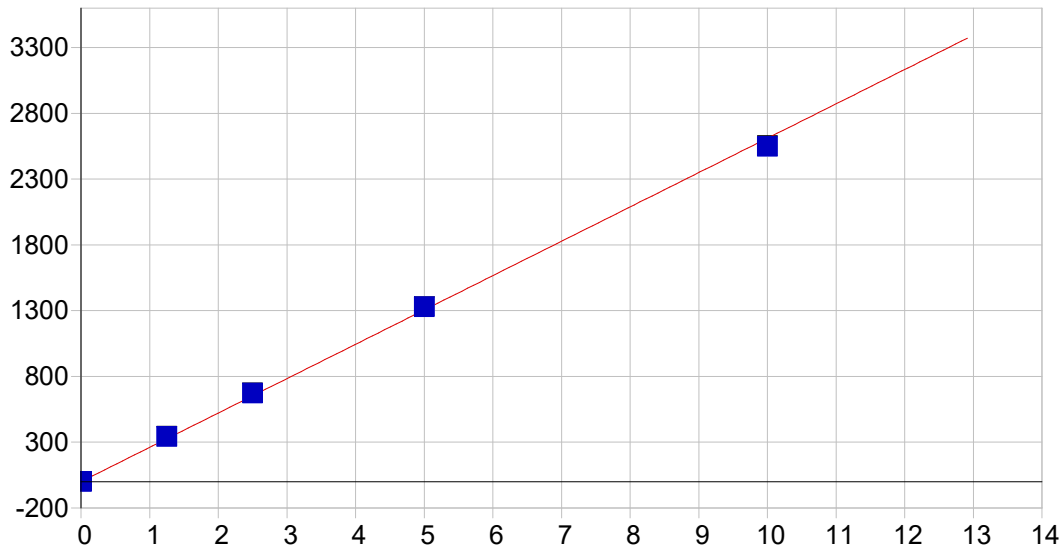
Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7440-38-2	Arsenic	10	U	02/07/2025	1449
7440-39-3	Barium	1900		02/07/2025	1449
7440-43-9	Cadmium	2.8	J	02/07/2025	1449
7440-47-3	Chromium	4.0	J	02/07/2025	1449
7439-92-1	Lead	23		02/07/2025	1449
7782-49-2	Selenium	35	U	02/07/2025	1449
7440-22-4	Silver	10	U	02/07/2025	1449

NOTE: Hardness (total) is reported in mg/L

Comments:

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



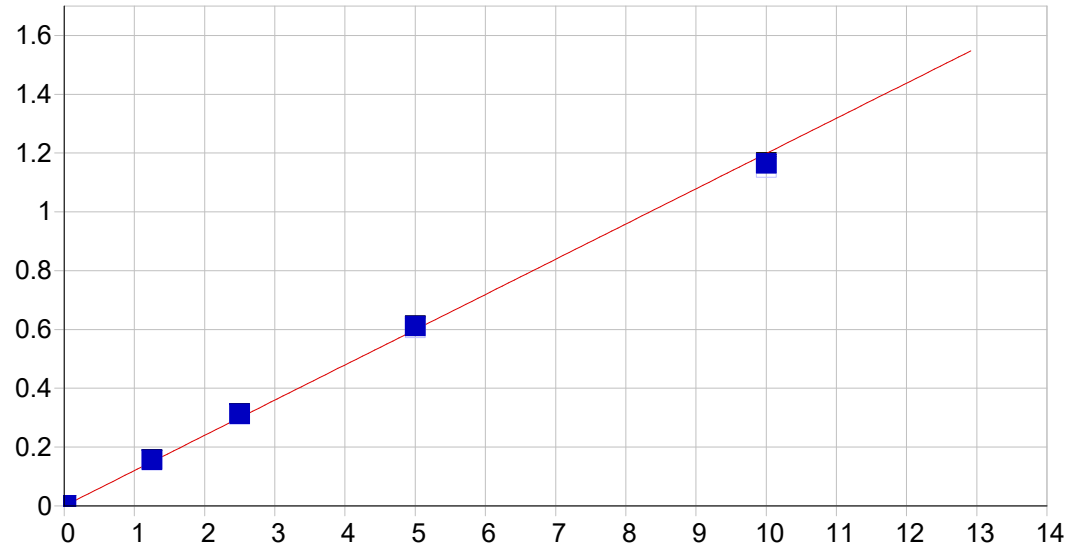
As 189.042 {478}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.152502	Re-Slope:	1.000000
A1 (Gain):	261.116852	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999641	Status:	OK.
Std Error of Est:	0.117261		
Predicted MDL:	0.003778		
Predicted MQL:	0.012593		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.15325	.542	1
S1	.01000	.01209	.002	20.9	3.0023	.757	1
S2	1.2500	1.3166	.067	5.32	343.23	1.29	1
S3	2.5000	2.5758	.076	3.03	671.65	1.07	1
S4	5.0000	5.0908	.091	1.82	1327.6	1.36	1
S5	10.000	9.7648	-.235	-2.35	2546.5	3.90	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



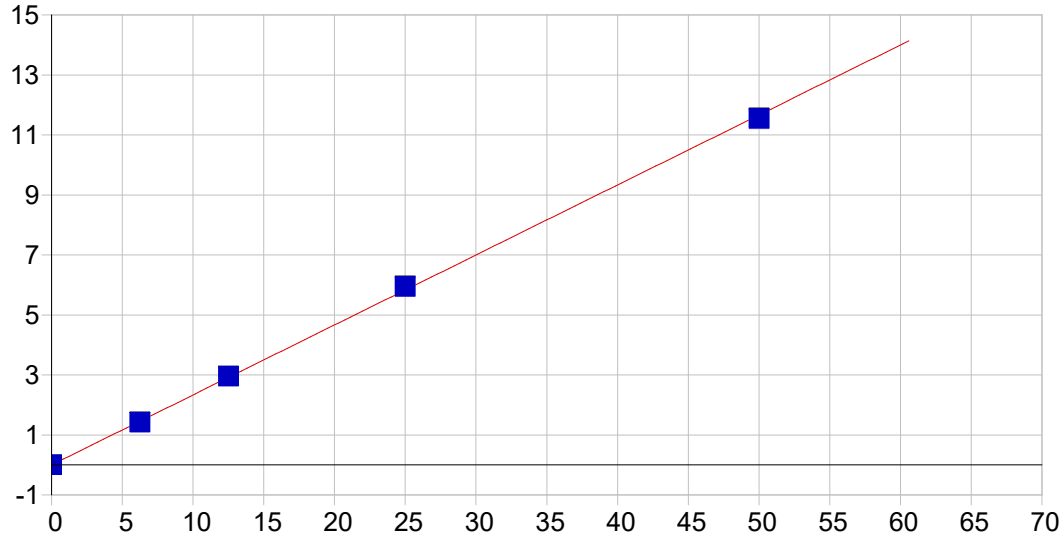
Tl 190.856 {477}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000172	Re-Slope:	1.000000
A1 (Gain):	0.119814	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999506	Status:	OK.
Std Error of Est:	0.000099		
Predicted MDL:	0.001486		
Predicted MQL:	0.004952		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00017	.000	1
S1	.02500	.02621	.001	4.84	.00320	.000	1
S2	1.2500	1.3073	.057	4.58	.15507	.000	1
S3	2.5000	2.6158	.116	4.63	.31012	.000	1
S4	5.0000	5.1057	.106	2.11	.60497	.001	1
S5	10.000	9.7200	-.280	-2.80	1.1509	.003	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



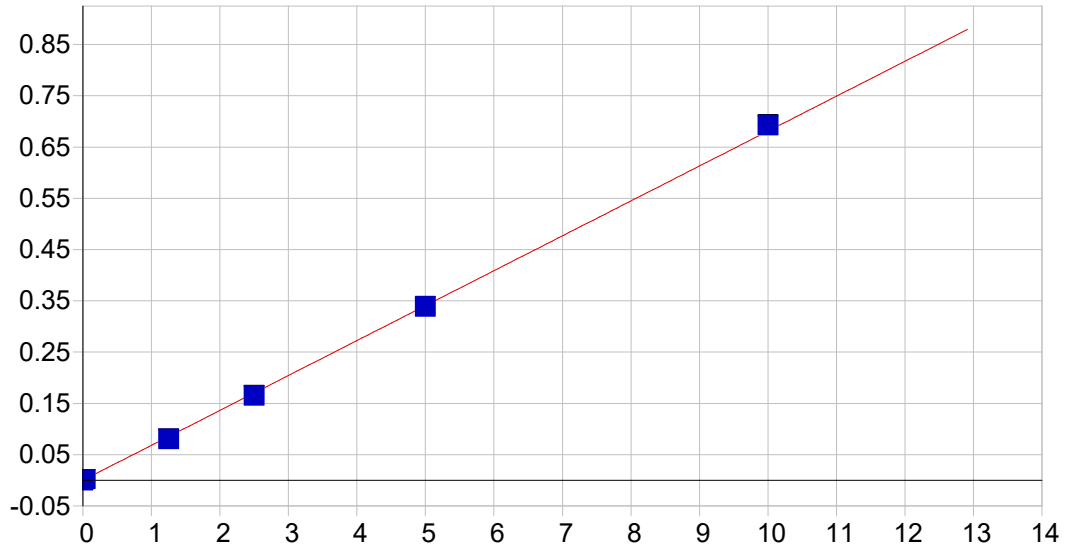
Pb 220.353 {453}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000153	Re-Slope:	1.000000
A1 (Gain):	0.233270	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999891	Status:	OK.
Std Error of Est:	0.000129		
Predicted MDL:	0.001819		
Predicted MQL:	0.006062		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00015	.000	1
S1	.01000	.01026	.000	2.56	.00222	.000	1
S2	6.2500	6.1007	-.149	-2.39	1.4196	.002	1
S3	12.500	12.663	.163	1.31	2.9472	.003	1
S4	25.000	25.489	.489	1.96	5.9324	.017	1
S5	50.000	49.496	-.504	-1.01	11.519	.016	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



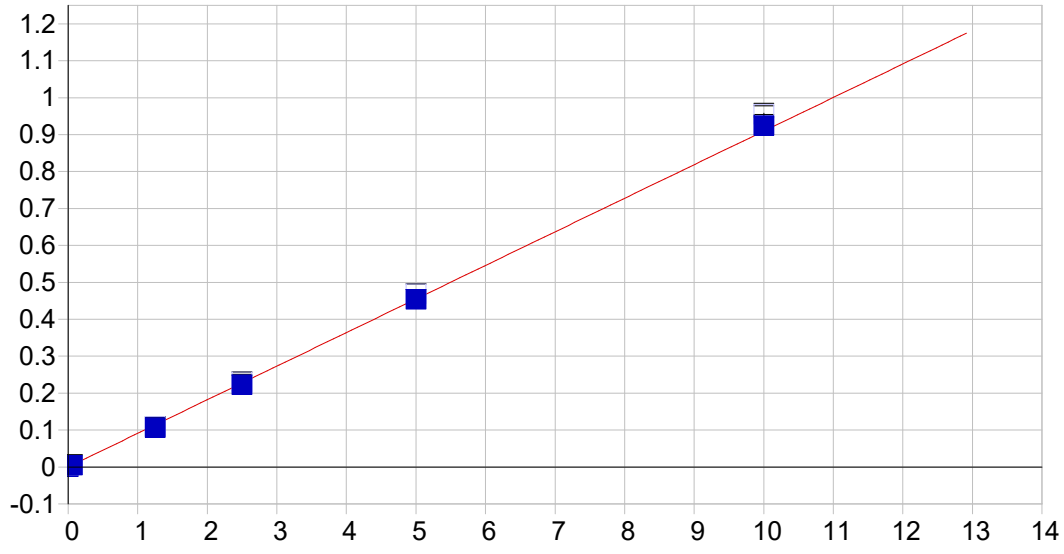
Se 196.090 {472}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000121	Re-Slope:	1.000000
A1 (Gain):	0.068097	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999758	Status:	OK.
Std Error of Est:	0.000047		
Predicted MDL:	0.003511		
Predicted MQL:	0.011702		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00012	.000	1
S1	.03500	.03171	-.003	-9.41	.00228	.000	1
S2	1.2500	1.1834	-.067	-5.33	.08058	.000	1
S3	2.5000	2.4261	-.074	-2.96	.16507	.000	1
S4	5.0000	4.9736	-.026	-.528	.33830	.001	1
S5	10.000	10.170	.170	1.70	.69166	.001	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



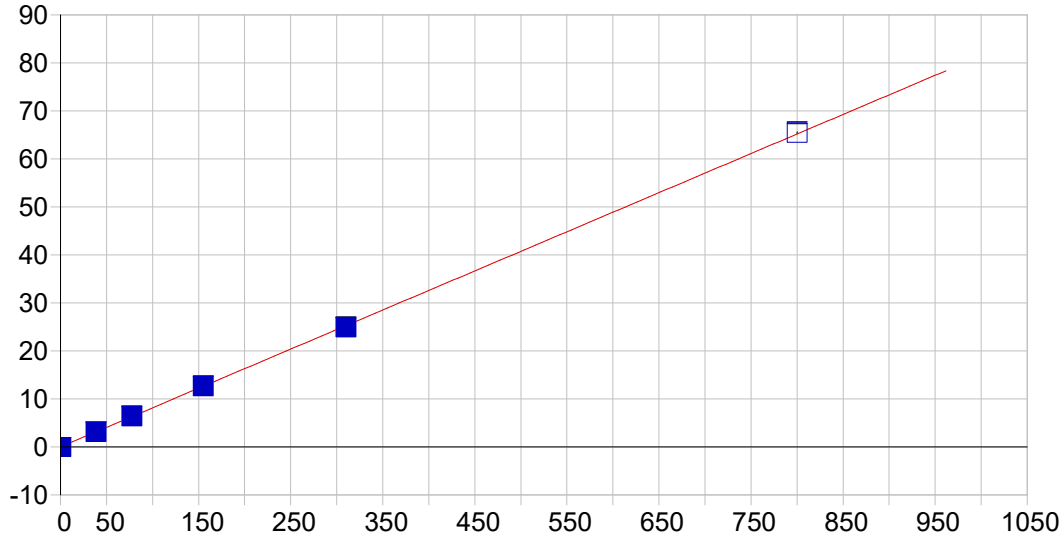
Sb 206.833 {463}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000188	Re-Slope:	1.000000
A1 (Gain):	0.090929	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999746	Status:	OK.
Std Error of Est:	0.000087		
Predicted MDL:	0.003406		
Predicted MQL:	0.011354		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00019	.000	1
S1	.06000	.05470	-.005	-8.83	.00516	.000	1
S2	1.2500	1.1641	-.086	-6.87	.10984	.000	1
S3	2.5000	2.4447	-.055	-2.21	.23008	.001	1
S4	5.0000	4.9857	-.014	-.286	.46873	.000	1
S5	10.000	10.161	.161	1.61	.95448	.003	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



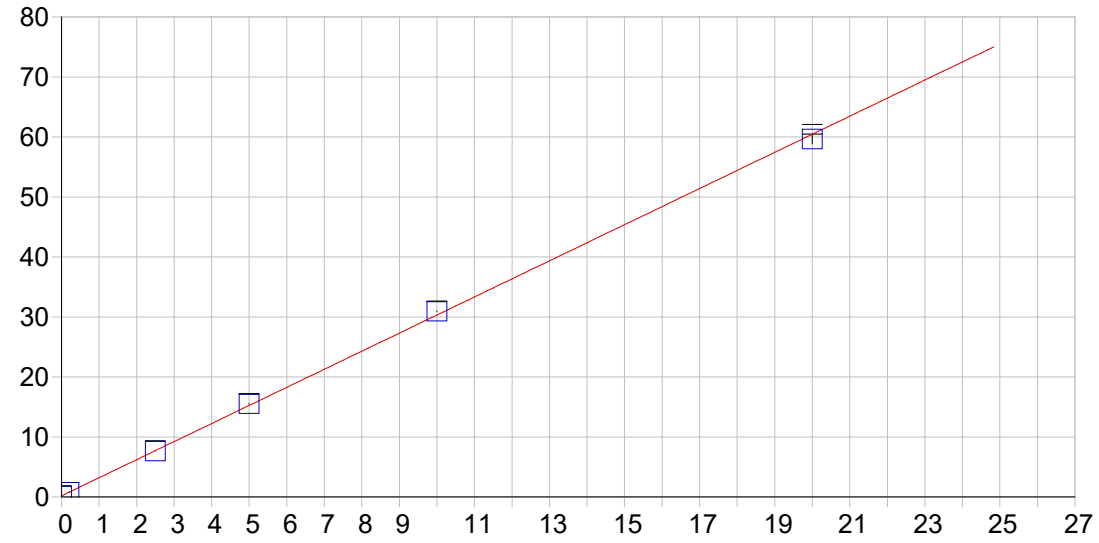
Al 396.152 { 85}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000851	Re-Slope:	1.000000
A1 (Gain):	0.081490	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999966	Status:	OK.
Std Error of Est:	0.000417		
Predicted MDL:	0.020700		
Predicted MQL:	0.069000		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00002	-.000	.000	-.00085	.001	1
S1	.20000	.21843	.018	9.22	.01698	.001	1
S2	38.750	38.301	-.449	-1.16	3.1237	.014	1
S3	77.500	78.458	.958	1.24	6.3995	.035	1
S4	155.00	155.53	.525	.339	12.687	.017	1
S5	310.00	305.69	-4.31	-1.39	24.937	.092	1
S6	800.00	803.26	3.26	.407	65.457	.187	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



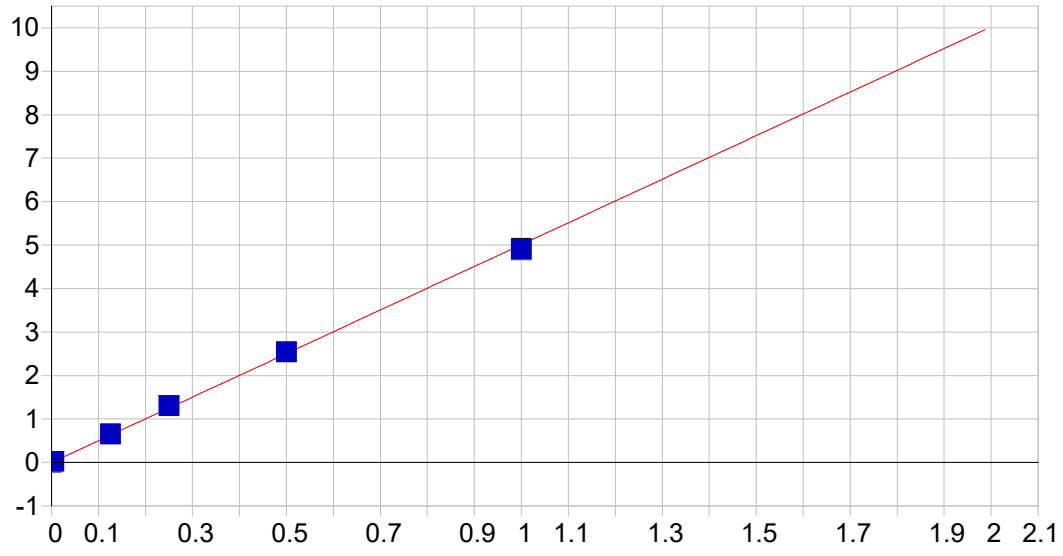
Ba 493.409 { 68}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.185362	Re-Slope:	1.000000
A1 (Gain):	3.012758	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999868	Status:	OK.
Std Error of Est:	0.005196		
Predicted MDL:	0.001483		
Predicted MQL:	0.004943		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.18532	.008	1
S1	.20000	.20954	.010	4.77	.81666	.002	1
S2	2.5000	2.4774	-.023	-.906	7.6490	.022	1
S3	5.0000	5.0849	.085	1.70	15.505	.055	1
S4	10.000	10.202	.202	2.02	30.921	.060	1
S5	20.000	19.726	-.274	-1.37	59.616	.791	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



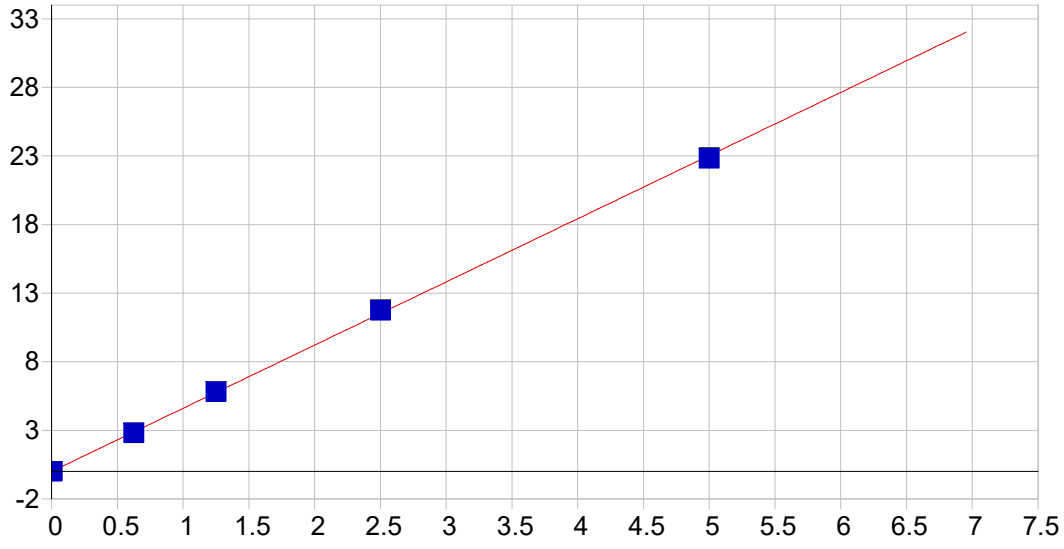
Be 234.861 {144}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000666	Re-Slope:	1.000000
A1 (Gain):	5.012945	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999672	Status:	OK.
Std Error of Est:	0.000480		
Predicted MDL:	0.000155		
Predicted MQL:	0.000517		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00067	.001	1
S1	.00500	.00542	.000	8.46	.02650	.000	1
S2	.12500	.12973	.005	3.78	.64679	.003	1
S3	.25000	.26026	.010	4.11	1.2983	.004	1
S4	.50000	.50682	.007	1.36	2.5285	.004	1
S5	1.0000	.97777	-.022	-2.22	4.8778	.023	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



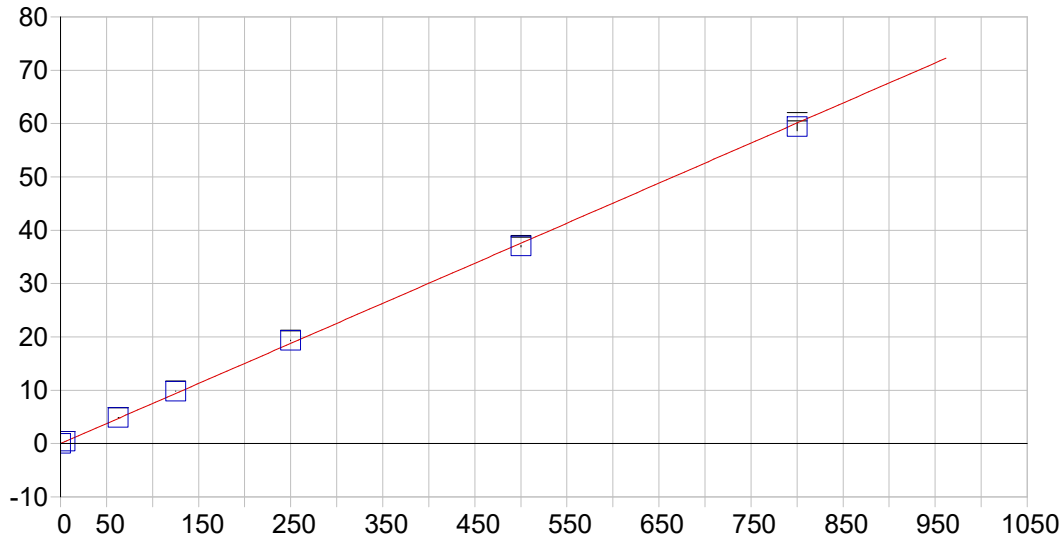
Cd 214.438 {457}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000185	Re-Slope:	1.000000
A1 (Gain):	4.606757	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999903	Status:	OK.
Std Error of Est:	0.000539		
Predicted MDL:	0.000065		
Predicted MQL:	0.000215		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00019	.000	1
S1	.00500	.00487	-.000	-2.54	.02272	.000	1
S2	.62500	.61106	-.014	-2.23	2.8196	.001	1
S3	1.2500	1.2625	.012	.997	5.8249	.006	1
S4	2.5000	2.5486	.049	1.94	11.759	.035	1
S5	5.0000	4.9530	-.047	-.940	22.853	.035	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



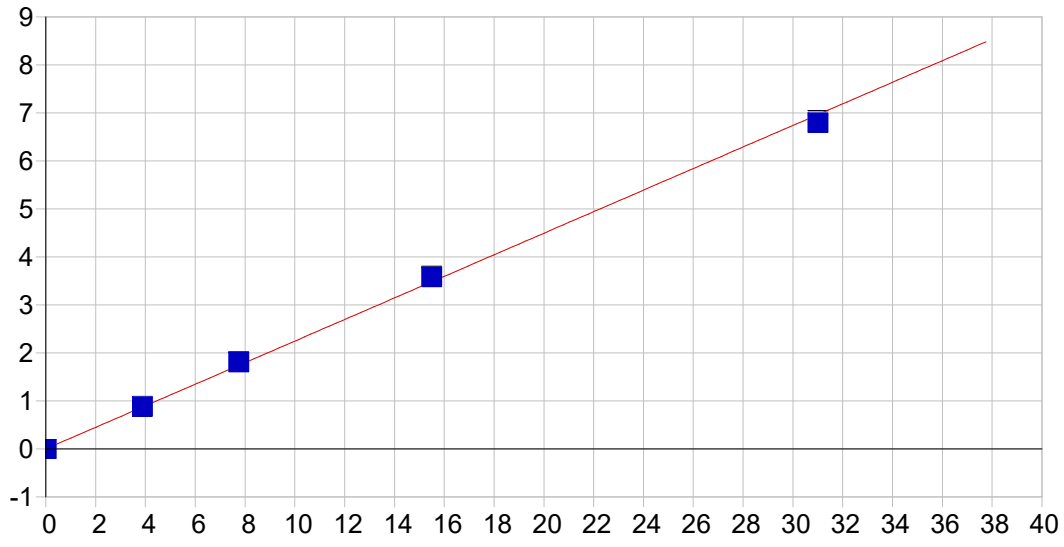
Ca 373.690 { 90}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001102	Re-Slope:	1.000000
A1 (Gain):	0.075125	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999758	Status:	OK.
Std Error of Est:	0.005774		
Predicted MDL:	0.018866		
Predicted MQL:	0.062887		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00090	-.001	.000	.00103	.002	1
S1	5.0000	5.4460	.446	8.92	.41023	.002	1
S2	62.500	65.018	2.52	4.03	4.8856	.022	1
S3	125.00	130.80	5.80	4.64	9.8277	.044	1
S4	250.00	257.53	7.53	3.01	19.348	.042	1
S5	500.00	492.81	-7.19	-1.44	37.023	.134	1
S6	800.00	790.89	-9.11	-1.14	59.417	.763	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



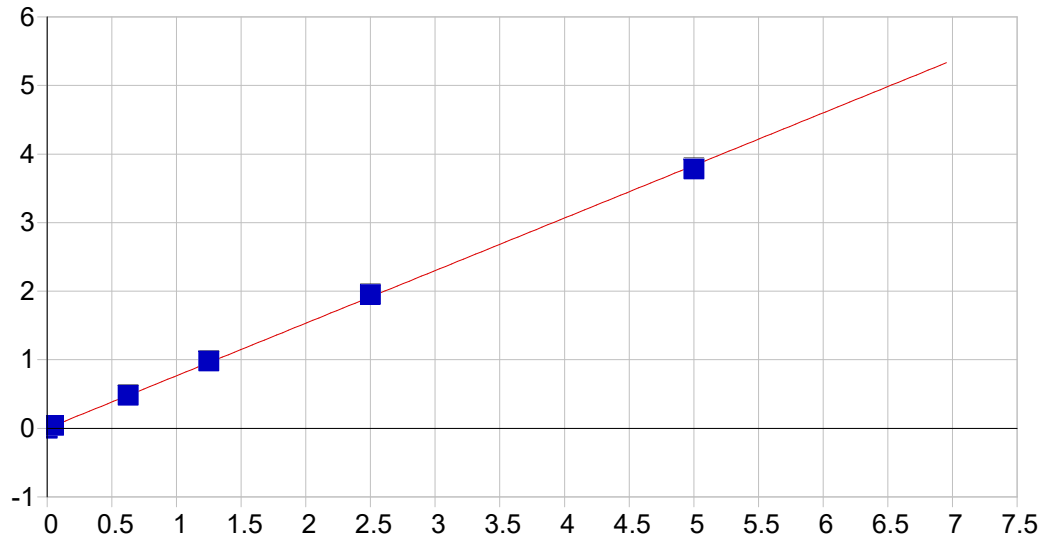
Cr 267.716 {126}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000067	Re-Slope:	1.000000
A1 (Gain):	0.224665	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999644	Status:	OK.
Std Error of Est:	0.000177		
Predicted MDL:	0.000841		
Predicted MQL:	0.002802		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00007	.000	1
S1	.01000	.01139	.001	13.9	.00249	.000	1
S2	3.8750	3.9312	.056	1.45	.88382	.004	1
S3	7.7500	8.0272	.277	3.58	1.8047	.008	1
S4	15.500	15.928	.428	2.76	3.5811	.016	1
S5	31.000	30.237	-.763	-2.46	6.7985	.044	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



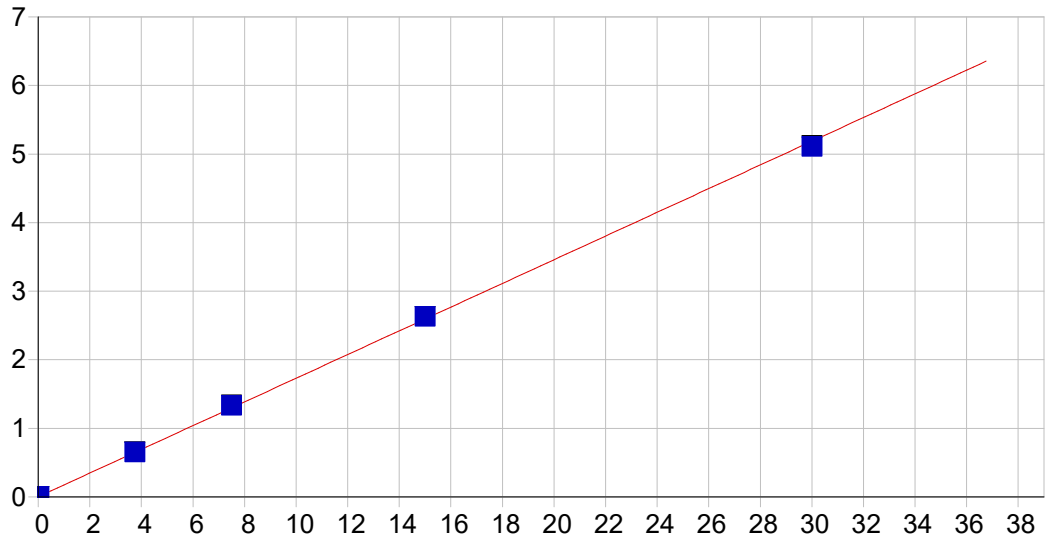
Co 228.616 {448}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000121	Re-Slope:	1.000000
A1 (Gain):	0.766687	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999870	Status:	OK.
Std Error of Est:	0.000329		
Predicted MDL:	0.000368		
Predicted MQL:	0.001225		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00012	.000	1
S1	.05000	.05231	.002	4.61	.04011	.000	1
S2	.62500	.62756	.003	.410	.48257	.001	1
S3	1.2500	1.2766	.027	2.13	.98175	.000	1
S4	2.5000	2.5418	.042	1.67	1.9548	.005	1
S5	5.0000	4.9267	-.073	-1.47	3.7895	.008	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



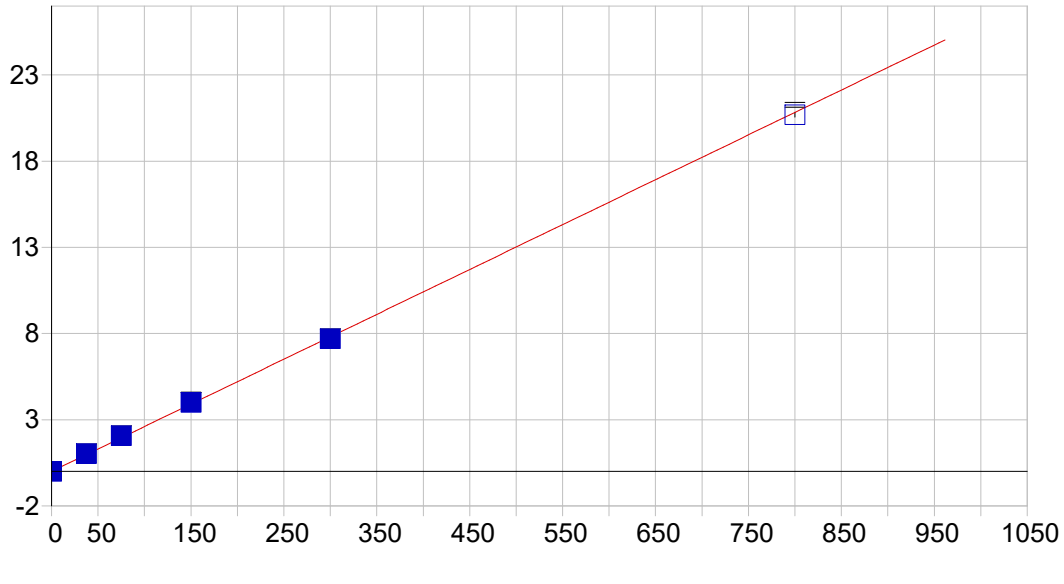
Cu 324.754 {104}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002542	Re-Slope:	1.000000
A1 (Gain):	0.172810	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999860	Status:	OK.
Std Error of Est:	0.000133		
Predicted MDL:	0.005531		
Predicted MQL:	0.018437		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00254	.000	1
S1	.02500	.02832	.003	13.3	.00743	.001	1
S2	3.7500	3.7735	.024	.627	.65457	.003	1
S3	7.5000	7.7058	.206	2.74	1.3340	.005	1
S4	15.000	15.210	.210	1.40	2.6307	.002	1
S5	30.000	29.557	-.443	-1.48	5.1098	.015	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



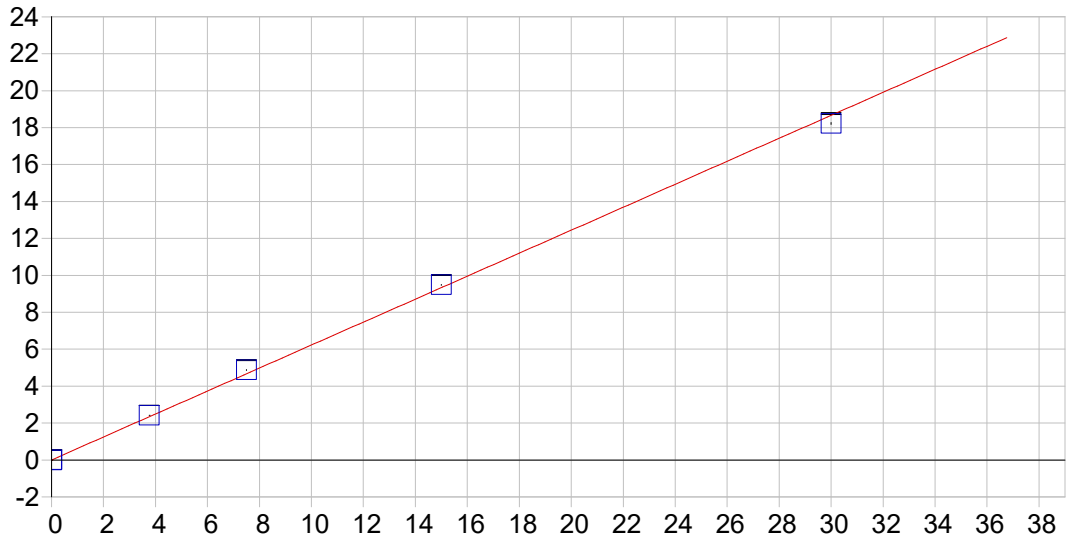
Fe 259.837 {130}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000475	Re-Slope:	1.000000
A1 (Gain):	0.026038	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999803	Status:	OK.
Std Error of Est:	0.000226		
Predicted MDL:	0.017806		
Predicted MQL:	0.059354		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00003	-.000	.000	-.00048	.000	1
S1	.10000	.11933	.019	19.3	.00263	.000	1
S2	37.500	39.417	1.92	5.11	1.0261	.002	1
S3	75.000	79.288	4.29	5.72	2.0644	.011	1
S4	150.00	153.59	3.59	2.39	3.9994	.010	1
S5	300.00	295.44	-4.56	-1.52	7.6939	.018	1
S6	800.00	794.74	-5.26	-.657	20.693	.140	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



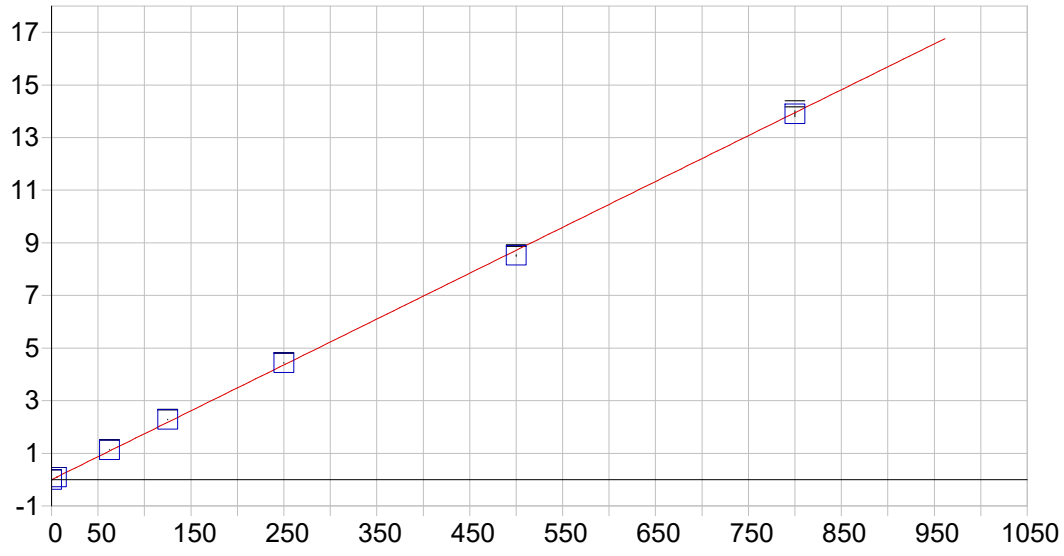
Mn 257.610 {131}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000325	Re-Slope:	1.000000
A1 (Gain):	0.622290	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999632	Status:	OK.
Std Error of Est:	0.000601		
Predicted MDL:	0.000810		
Predicted MQL:	0.002701		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00033	.001	1
S1	.01500	.01752	.003	16.8	.01058	.000	1
S2	3.7500	3.8908	.141	3.76	2.4209	.006	1
S3	7.5000	7.8328	.333	4.44	4.8739	.025	1
S4	15.000	15.241	.241	1.60	9.4837	.020	1
S5	30.000	29.283	-.717	-2.39	18.222	.049	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



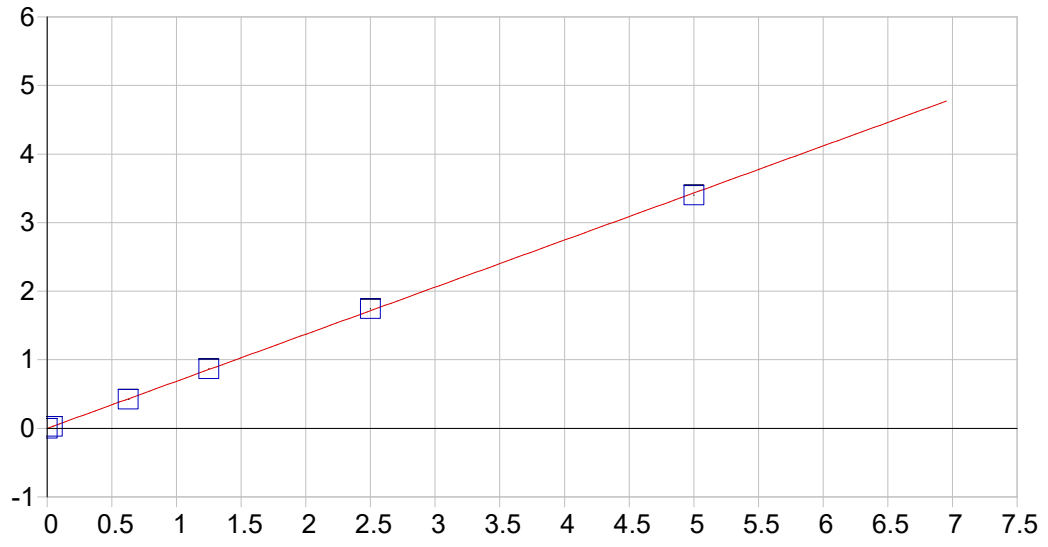
Mg 279.079 {121}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000601	Re-Slope:	1.000000
A1 (Gain):	0.017434	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999783	Status:	OK.
Std Error of Est:	0.001267		
Predicted MDL:	0.035671		
Predicted MQL:	0.118903		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00074	-.001	.000	-.00061	.000	1
S1	5.0000	5.3216	.322	6.43	.09218	.001	1
S2	62.500	65.108	2.61	4.17	1.1345	.002	1
S3	125.00	130.99	5.99	4.79	2.2830	.014	1
S4	250.00	254.61	4.61	1.84	4.4383	.012	1
S5	500.00	488.89	-11.1	-2.22	8.5227	.030	1
S6	800.00	797.59	-2.41	-.301	13.905	.112	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



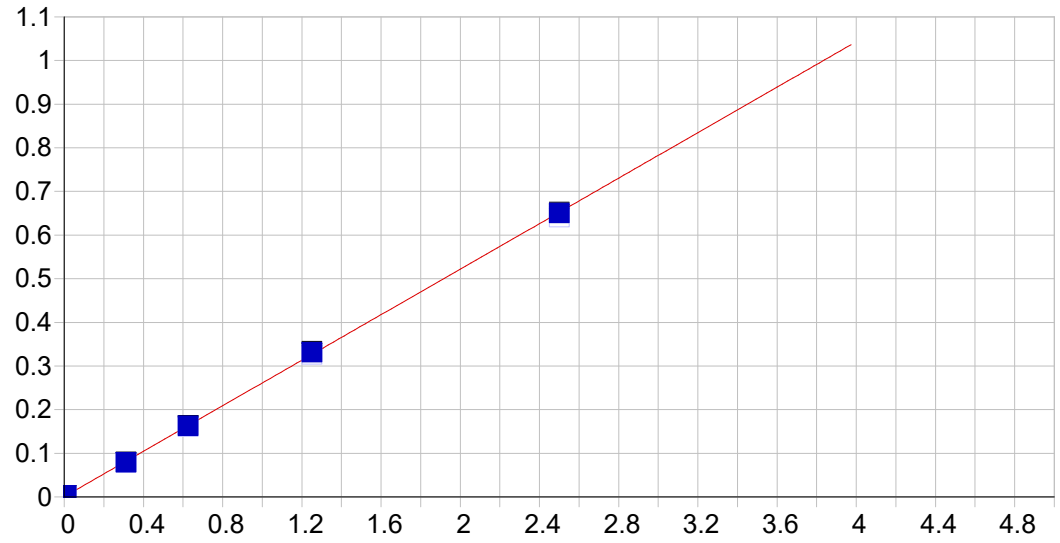
Ni 231.604 {446}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000181	Re-Slope:	1.000000
A1 (Gain):	0.686397	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999929	Status:	OK.
Std Error of Est:	0.000194		
Predicted MDL:	0.000481		
Predicted MQL:	0.001604		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00018	.000	1
S1	.04000	.03936	-.001	-1.61	.02683	.000	1
S2	.62500	.61654	-.008	-1.35	.42301	.000	1
S3	1.2500	1.2660	.016	1.28	.86882	.001	1
S4	2.5000	2.5385	.038	1.54	1.7422	.005	1
S5	5.0000	4.9546	-.045	-.908	3.4006	.005	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



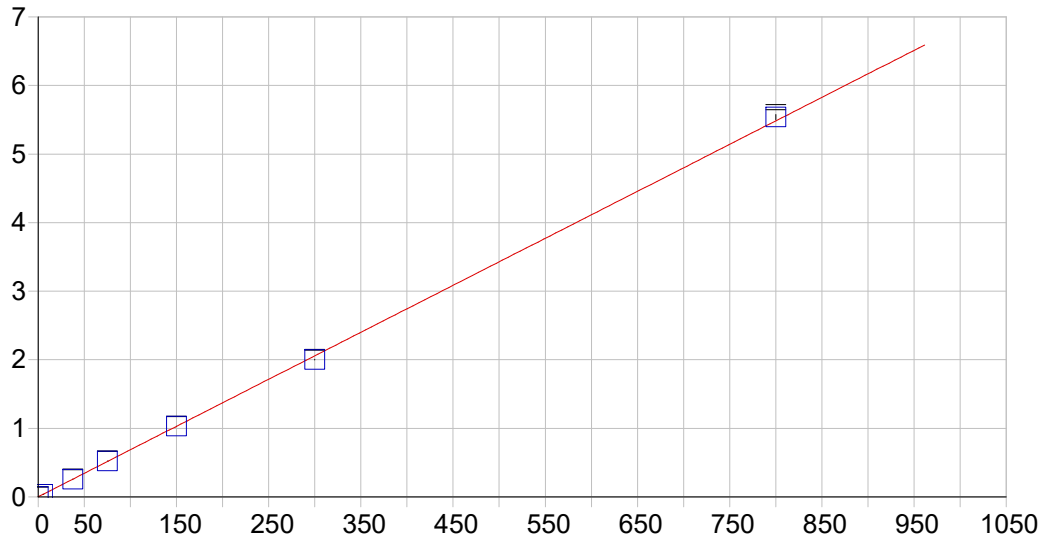
Ag 328.068 {103}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000515	Re-Slope:	1.000000
A1 (Gain):	0.260714	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999921	Status:	OK.
Std Error of Est:	0.000027		
Predicted MDL:	0.001125		
Predicted MQL:	0.003749		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00052	.000	1
S1	.01000	.01104	.001	10.4	.00339	.000	1
S2	.31250	.30241	-.010	-3.23	.07818	.000	1
S3	.62500	.62376	-.001	-.198	.16079	.001	1
S4	1.2500	1.2680	.018	1.44	.32642	.003	1
S5	2.5000	2.4922	-.008	-.311	.64089	.003	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



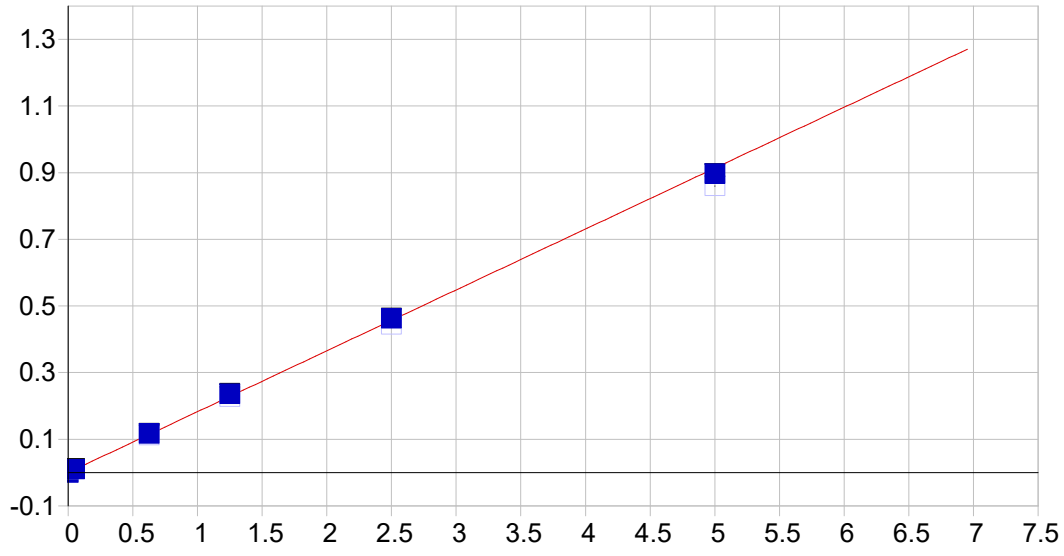
Na 818.326 { 41}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002554	Re-Slope:	1.000000
A1 (Gain):	0.006852	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999879	Status:	OK.
Std Error of Est:	0.000329		
Predicted MDL:	0.438431		
Predicted MQL:	1.461435		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00004	.000	.000	.00255	.001	1
S1	5.0000	5.0463	.046	.926	.03713	.001	1
S2	37.500	37.135	-.365	-.972	.25700	.004	1
S3	75.000	75.840	.840	1.12	.52219	.002	1
S4	150.00	149.94	-.060	-.040	1.0299	.001	1
S5	300.00	291.57	-8.43	-2.81	2.0003	.005	1
S6	800.00	807.97	7.97	.996	5.5386	.038	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



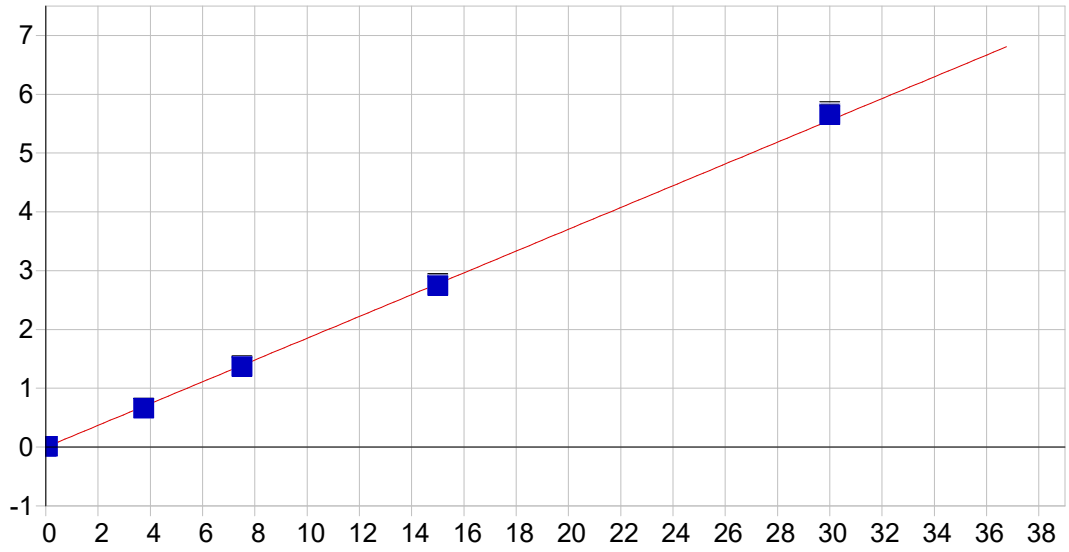
V 292.402 {115}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000094	Re-Slope:	1.000000
A1 (Gain):	0.182705	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999745	Status:	OK.
Std Error of Est:	0.000105		
Predicted MDL:	0.004394		
Predicted MQL:	0.014646		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.00009	.001	1
S1	.05000	.05453	.005	9.07	.01003	.001	1
S2	.62500	.63997	.015	2.39	.11244	.001	1
S3	1.2500	1.2934	.043	3.47	.22725	.001	1
S4	2.5000	2.5309	.031	1.24	.44420	.002	1
S5	5.0000	4.9060	-.094	-1.88	.85984	.000	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



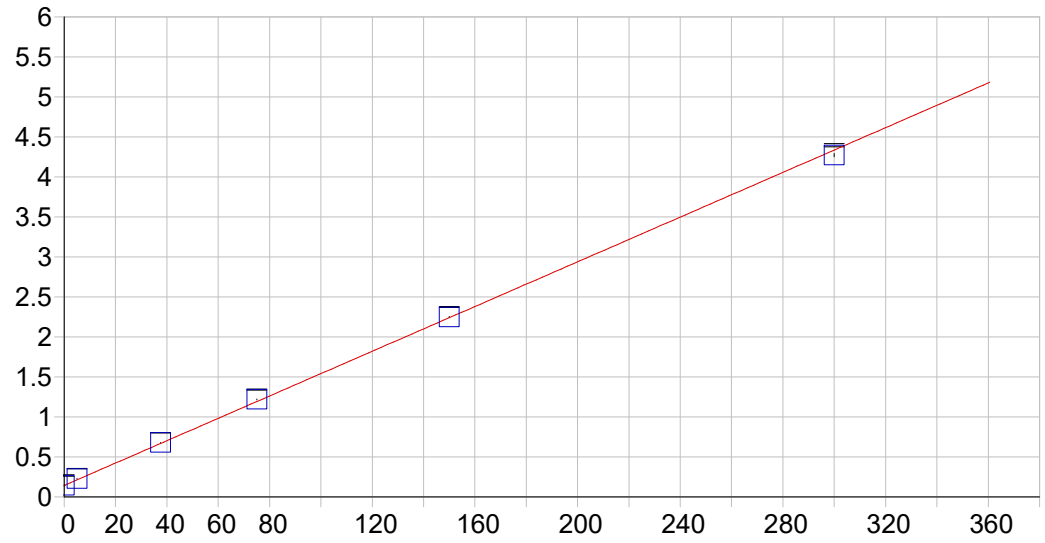
Zn 213.856 {158}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000520	Re-Slope:	1.000000
A1 (Gain):	0.185219	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999796	Status:	OK.
Std Error of Est:	0.000268		
Predicted MDL:	0.002543		
Predicted MQL:	0.008476		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00052	.000	1
S1	.06000	.05949	-.001	-.845	.01053	.000	1
S2	3.7500	3.5514	-.199	-5.29	.66067	.001	1
S3	7.5000	7.3757	-.124	-1.66	1.3724	.009	1
S4	15.000	14.819	-.181	-1.21	2.7578	.023	1
S5	30.000	30.505	.505	1.68	5.6767	.025	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



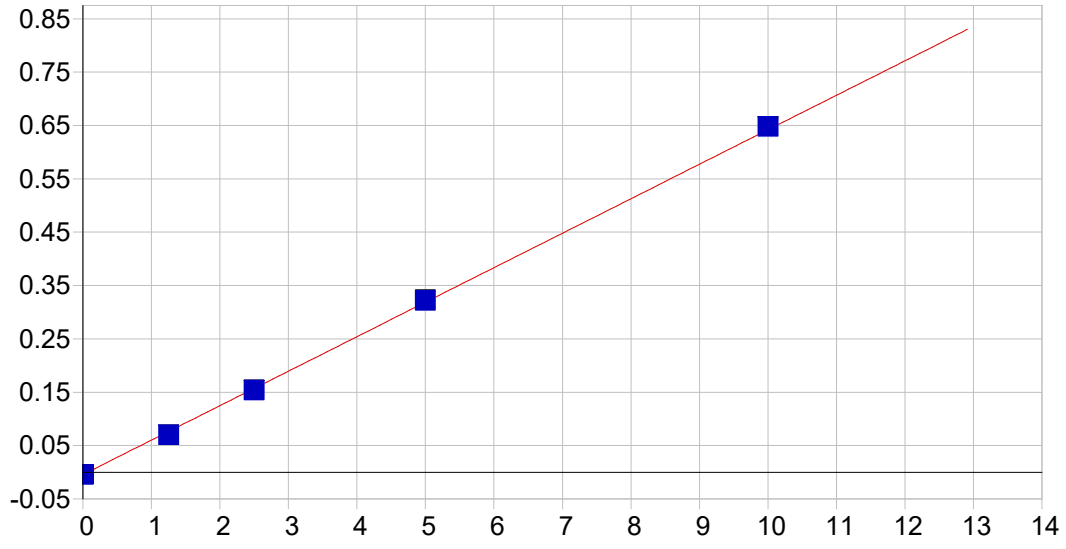
K 769.896 { 44}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.143555	Re-Slope:	1.000000
A1 (Gain):	0.013975	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999640	Status:	OK.
Std Error of Est:	0.000773		
Predicted MDL:	0.179845		
Predicted MQL:	0.599482		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00134	-.001	.000	.14354	.009	1
S1	5.0000	6.1542	1.15	23.1	.22956	.002	1
S2	37.500	38.296	.796	2.12	.67875	.002	1
S3	75.000	76.958	1.96	2.61	1.2191	.006	1
S4	150.00	150.69	.686	.457	2.2494	.007	1
S5	300.00	295.41	-4.59	-1.53	4.2719	.022	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



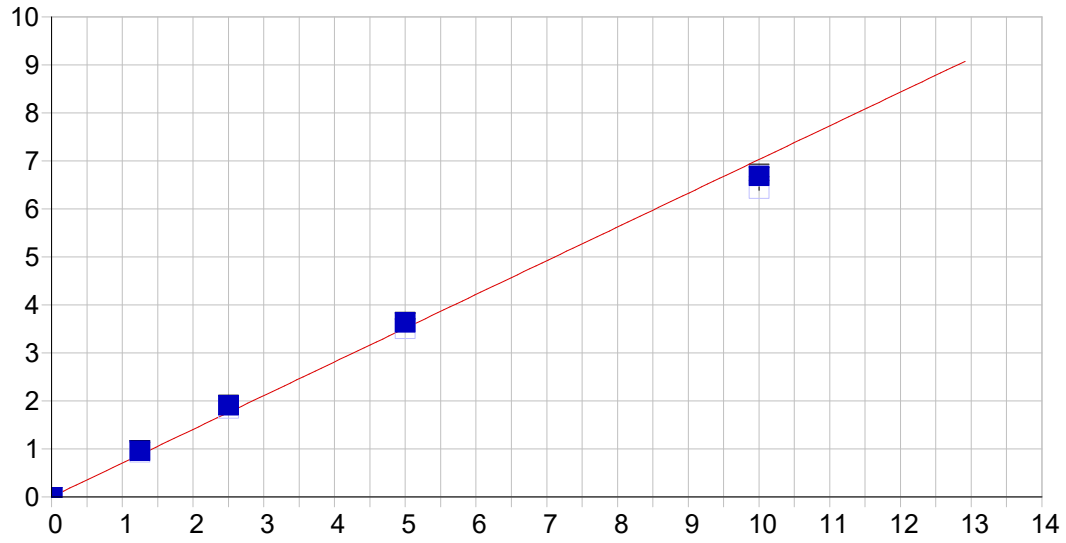
P 177.495 {490}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.004528	Re-Slope:	1.000000
A1 (Gain):	0.064651	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999731	Status:	OK.
Std Error of Est:	0.000025		
Predicted MDL:	0.002093		
Predicted MQL:	0.006978		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00453	.000	1
S1	.01000	.00756	-.002	-24.4	-.00404	.000	1
S2	1.2500	1.1565	-.093	-7.48	.07012	.000	1
S3	2.5000	2.4494	-.051	-2.03	.15359	.000	1
S4	5.0000	5.0534	.053	1.07	.32171	.001	1
S5	10.000	10.093	.093	.932	.64706	.000	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



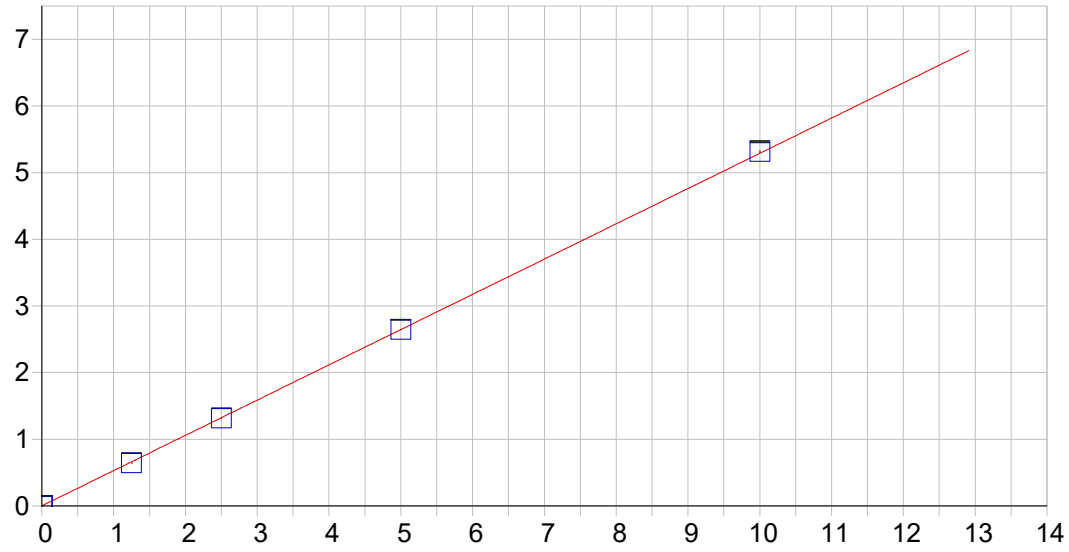
B 249.678 {135}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001339	Re-Slope:	1.000000
A1 (Gain):	0.702690	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.998144	Status:	OK.
Std Error of Est:	0.000692		
Predicted MDL:	0.001452		
Predicted MQL:	0.004839		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00134	.001	1
S1	.01000	.00129	-.009	-87.1	.00221	.001	1
S2	1.2500	1.3678	.118	9.42	.92906	.005	1
S3	2.5000	2.7080	.208	8.32	1.8374	.009	1
S4	5.0000	5.1650	.165	3.30	3.4971	.012	1
S5	10.000	9.5183	-.482	-4.82	6.4225	.034	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



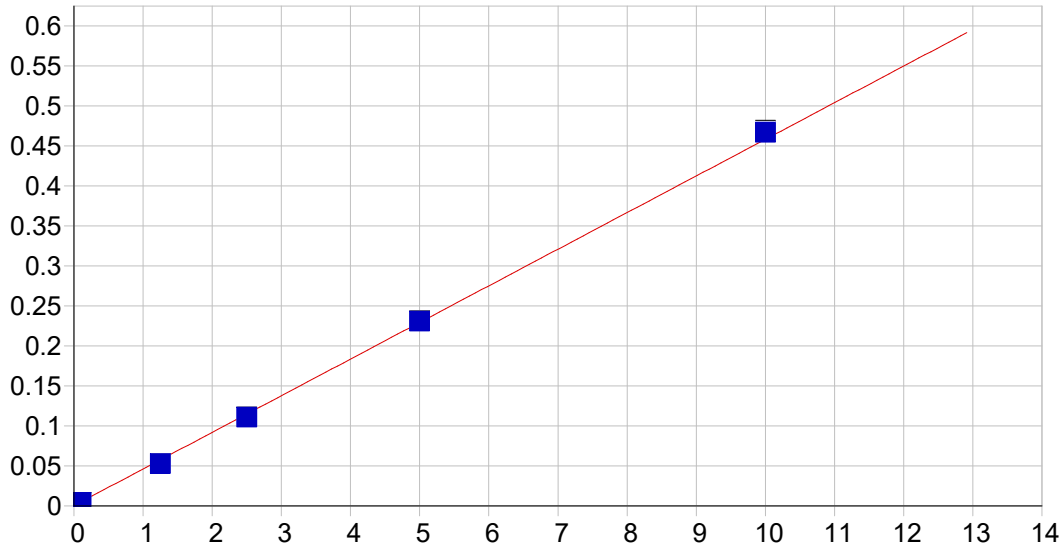
Mo 202.030 {467}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000579	Re-Slope:	1.000000
A1 (Gain):	0.529005	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999967	Status:	OK.
Std Error of Est:	0.000072		
Predicted MDL:	0.000484		
Predicted MQL:	0.001613		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00058	.000	1
S1	.01000	.01046	.000	4.56	.00611	.000	1
S2	1.2500	1.2155	-.035	-2.76	.64358	.001	1
S3	2.5000	2.4860	-.014	-.558	1.3157	.003	1
S4	5.0000	5.0036	.004	.072	2.6475	.005	1
S5	10.000	10.044	.044	.444	5.3141	.014	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



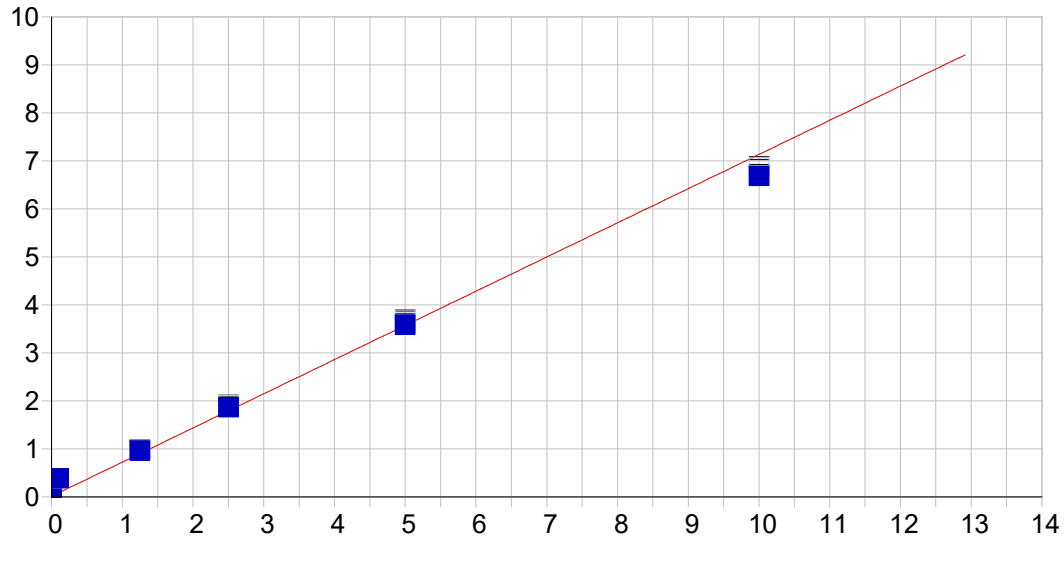
S 182.034 {485}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000406	Re-Slope:	1.000000
A1 (Gain):	0.045796	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999521	Status:	OK.
Std Error of Est:	0.000076		
Predicted MDL:	0.003187		
Predicted MQL:	0.010623		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00002	.000	.000	.00041	.000	1
S1	.10000	.08693	-.013	-13.1	.00439	.000	1
S2	1.2500	1.1410	-.109	-8.72	.05284	.000	1
S3	2.5000	2.4079	-.092	-3.68	.11105	.000	1
S4	5.0000	5.0293	.029	.586	.23146	.000	1
S5	10.000	10.185	.185	1.85	.46830	.001	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



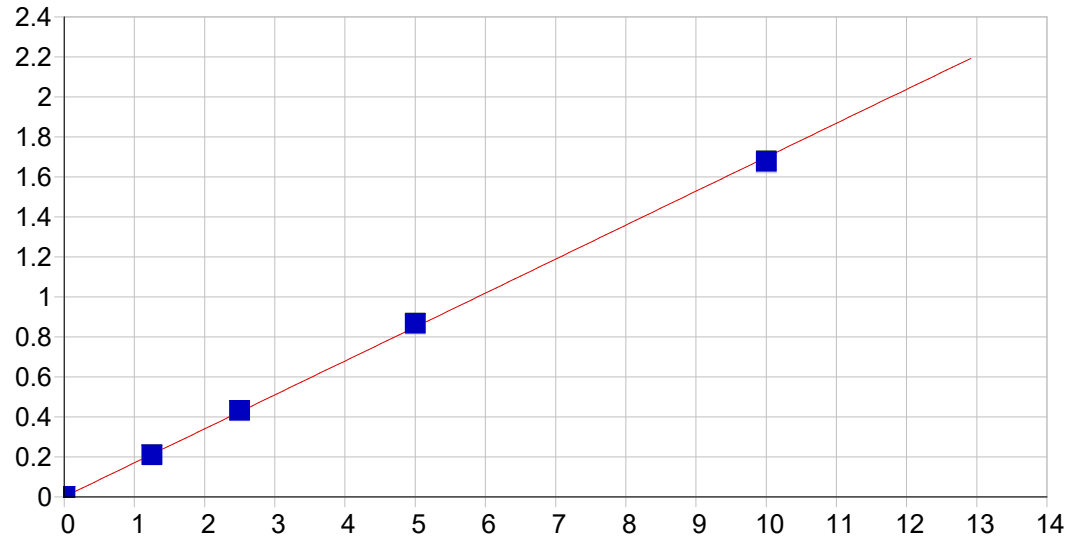
Si 251.611 {134}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.012138	Re-Slope:	1.000000
A1 (Gain):	0.712224	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.956341	Status:	OK.
Std Error of Est:	0.011828		
Predicted MDL:	0.001459		
Predicted MQL:	0.004864		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00043	-.000	.000	.01183	.000	1
S1	.10000	.52316	.423	423.	.38575	.005	1
S2	1.2500	1.3279	.078	6.23	.97811	.003	1
S3	2.5000	2.6055	.105	4.22	1.9082	.007	1
S4	5.0000	5.0212	.021	.424	3.6692	.019	1
S5	10.000	9.3758	-.624	-6.24	6.8515	.029	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



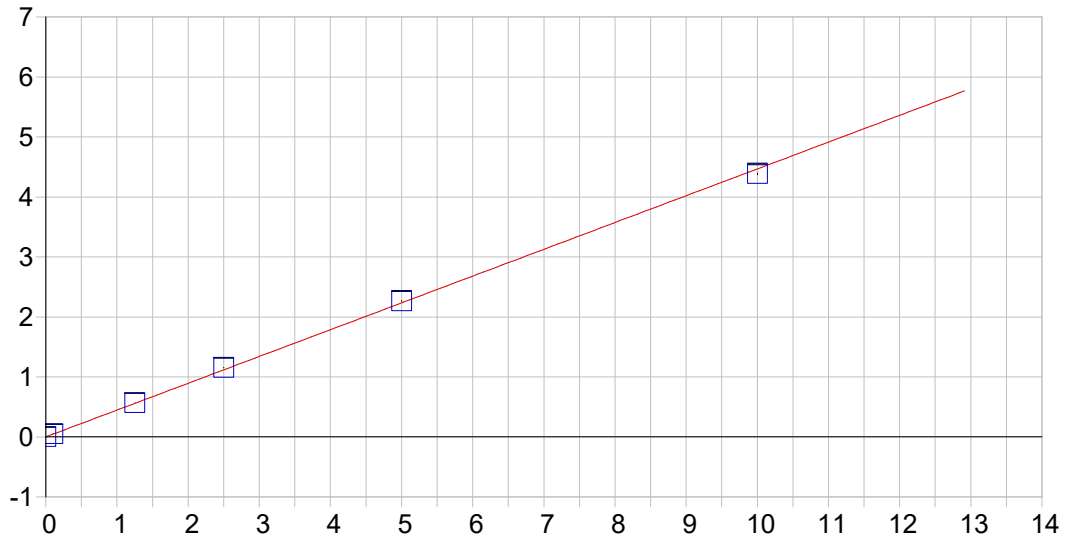
Sn 189.989 {478}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000633	Re-Slope:	1.000000
A1 (Gain):	0.169758	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999881	Status:	OK.
Std Error of Est:	0.000037		
Predicted MDL:	0.000852		
Predicted MQL:	0.002839		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00063	.000	1
S1	.00700	.00757	.001	8.13	.00187	.000	1
S2	1.2500	1.2330	-.017	-1.36	.20889	.000	1
S3	2.5000	2.5390	.039	1.56	.42952	.000	1
S4	5.0000	5.1004	.100	2.01	.86222	.002	1
S5	10.000	9.8770	-.123	-1.23	1.6688	.003	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



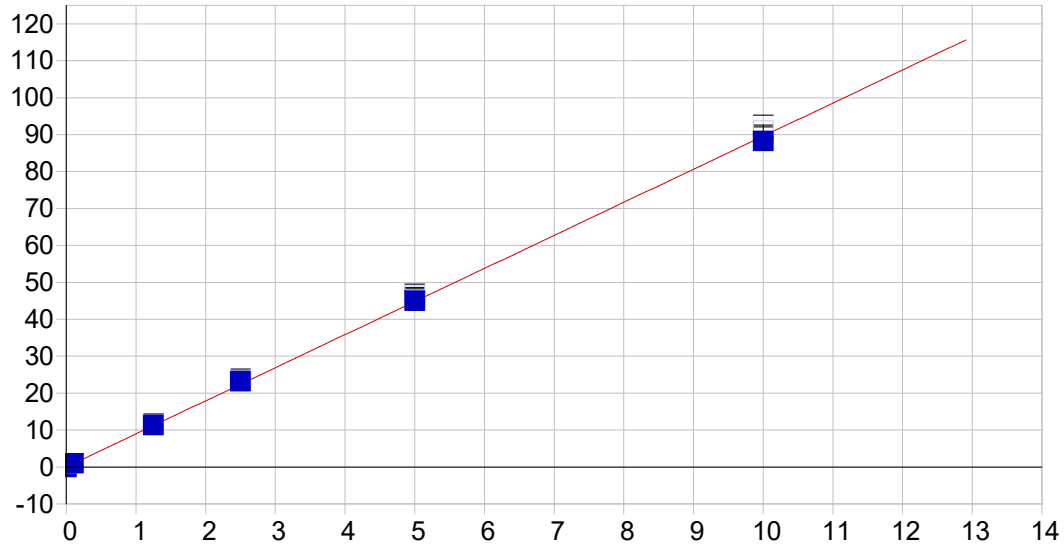
Ti 336.121 {100}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000294	Re-Slope:	1.000000
A1 (Gain):	0.446632	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999786	Status:	OK.
Std Error of Est:	0.000491		
Predicted MDL:	0.002364		
Predicted MQL:	0.007881		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.00029	.001	1
S1	.10000	.10715	.007	7.15	.04815	.000	1
S2	1.2500	1.2666	.017	1.33	.56600	.001	1
S3	2.5000	2.5862	.086	3.45	1.1554	.007	1
S4	5.0000	5.0721	.072	1.44	2.2657	.006	1
S5	10.000	9.8179	-.182	-1.82	4.3853	.014	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



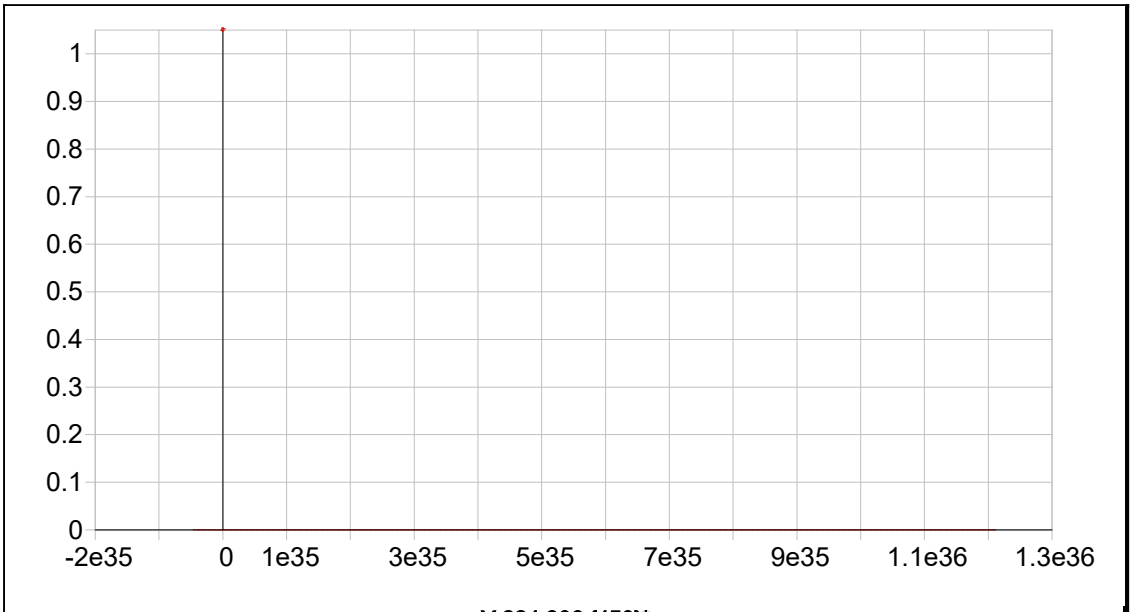
Sr 407.771 { 83}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.002833	Re-Slope:	1.000000
A1 (Gain):	8.958101	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999836	Status:	OK.
Std Error of Est:	0.008886		
Predicted MDL:	0.000183		
Predicted MQL:	0.000611		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	-.00296	.002	1
S1	.10000	.10970	.010	9.70	.98078	.006	1
S2	1.2500	1.2682	.018	1.45	11.694	.033	1
S3	2.5000	2.5896	.090	3.58	23.867	.103	1
S4	5.0000	5.0251	.025	.501	46.356	.506	1
S5	10.000	9.8577	-.142	-1.42	90.991	1.60	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

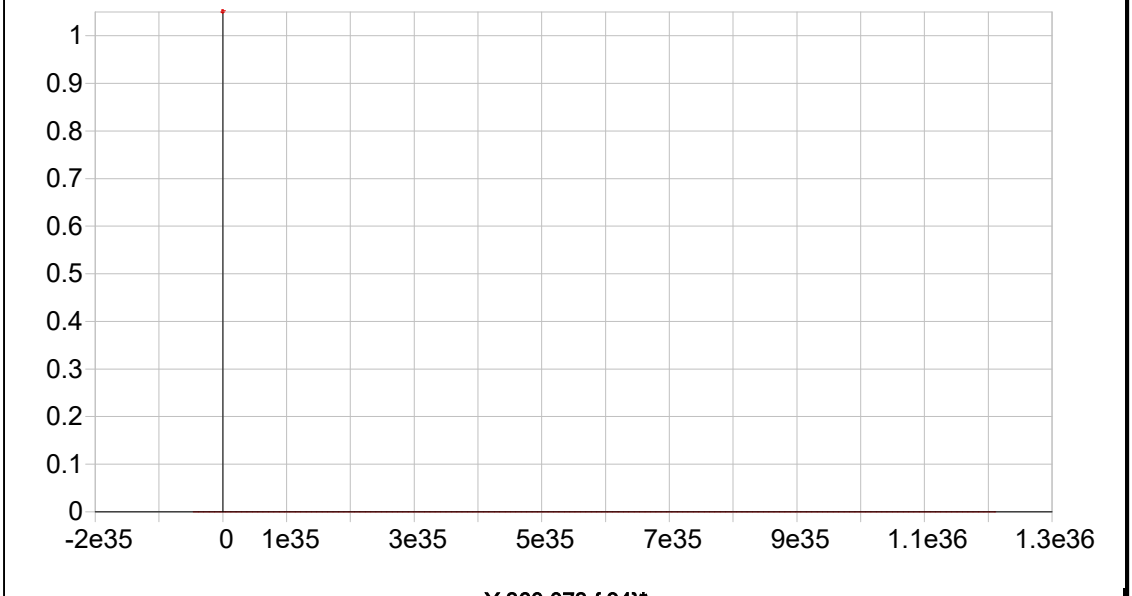


Y 224.306 {450}*

Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.000000	Status:	Warning Zero Gain
Std Error of Est:	0.000000		
Predicted MDL:	n/a		
Predicted MQL:	n/a		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



Y 360.073 { 94}*

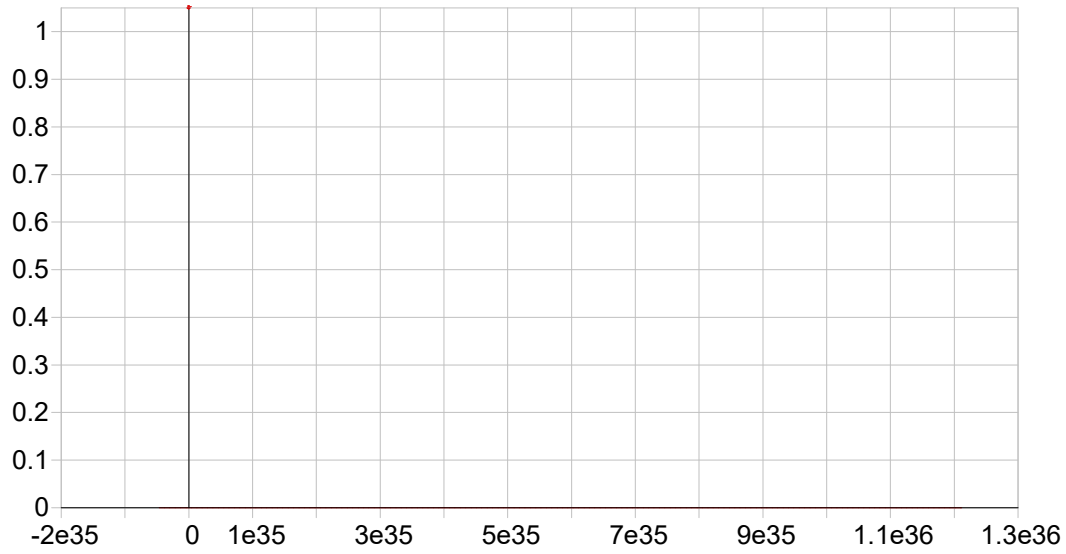
Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

A2 (Curvature):	0.000000					
n (Exponent):	1.000000					
Correlation:	0.000000		Status:	Warning	Zero Gain	
Std Error of Est:	0.000000					
Predicted MDL:	n/a					
Predicted MQL:	n/a					

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis

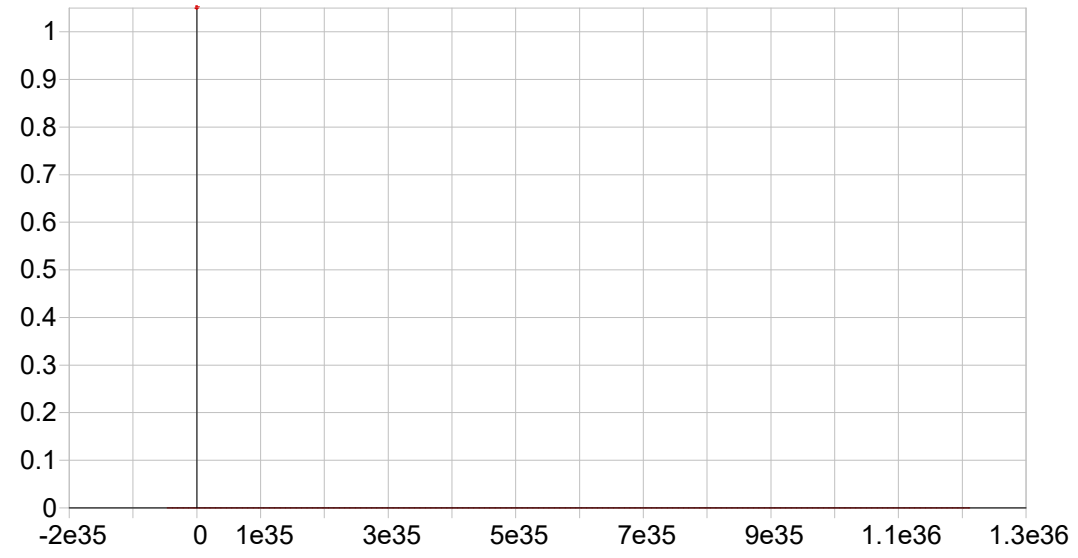


Y 371.030 { 91}*

Date of Fit:	<not fit>		Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):		0.000000		Re-Slope:	1.000000	
A1 (Gain):		0.000000		Y-int:	0.000000	
A2 (Curvature):		0.000000				
n (Exponent):		1.000000				
Correlation:		0.000000		Status:	Warning	Zero Gain
Std Error of Est:		0.000000				
Predicted MDL:		n/a				
Predicted MQL:		n/a				

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis

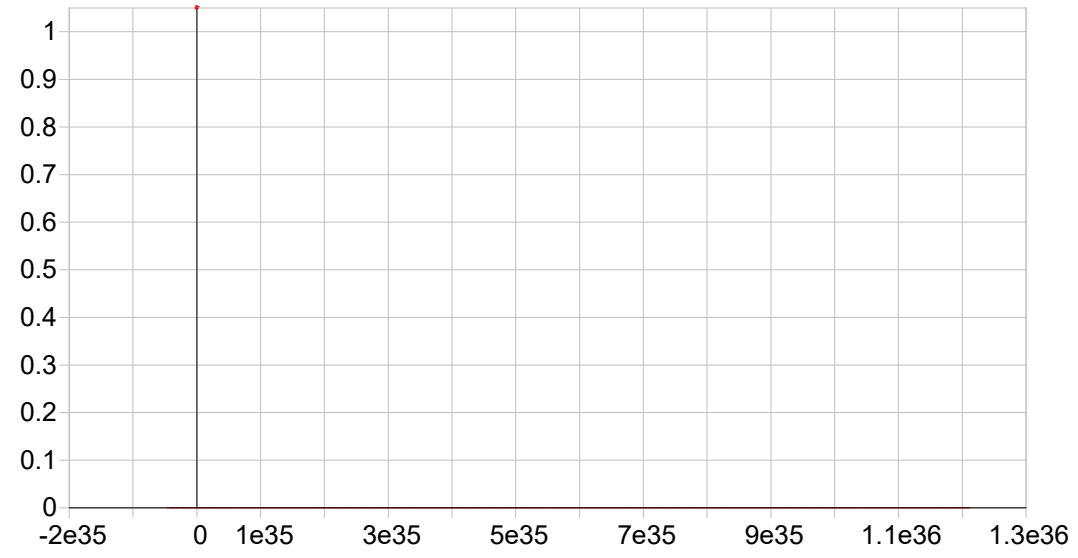
Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5



Y 224.306 {150}*

Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000		Re-Slope:	1.000000	
A1 (Gain):	0.000000		Y-int:	0.000000	
A2 (Curvature):	0.000000				
n (Exponent):	1.000000				
Correlation:	0.000000		Status:	Warning	Zero Gain
Std Error of Est:	0.000000				
Predicted MDL:	n/a				
Predicted MQL:	n/a				

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



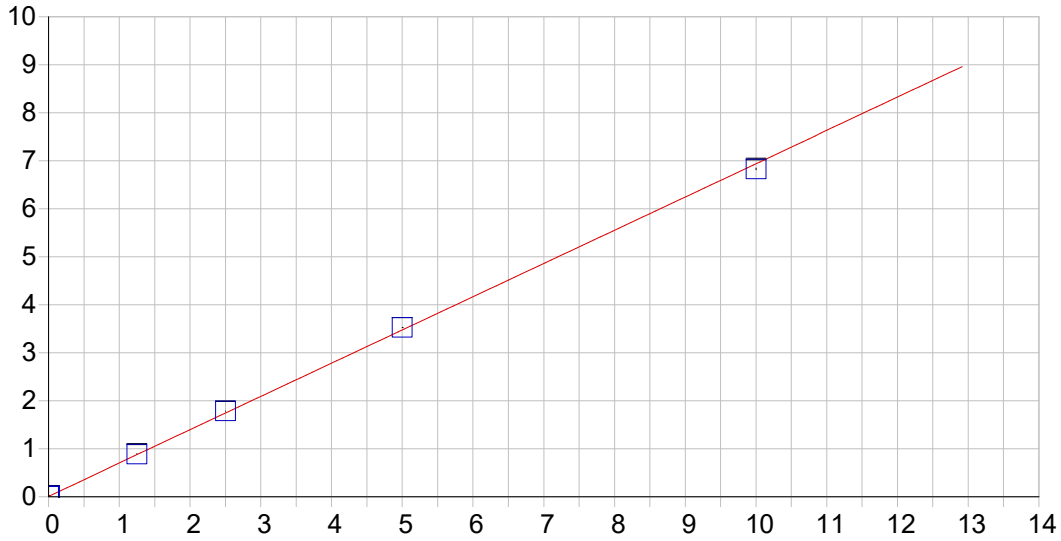
In 230.606 {446}*

Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000		Re-Slope:	1.000000	
A1 (Gain):	0.000000		Y-int:	0.000000	

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

A2 (Curvature):	0.000000				
n (Exponent):	1.000000				
Correlation:	0.000000	Status:	Warning	Zero Gain	
Std Error of Est:	0.000000				
Predicted MDL:	n/a				
Predicted MQL:	n/a				

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



Li 670.784 { 50}

Date of Fit:	02/06/2025 5:56:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.009448	Re-Slope:	1.000000
A1 (Gain):	0.692971	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999848	Status:	OK.
Std Error of Est:	0.000248		
Predicted MDL:	0.004449		
Predicted MQL:	0.014830		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00945	.004	1
S5	10.000	9.8402	-.160	-1.60	6.8284	.016	1
S4	5.0000	5.0767	.077	1.53	3.5275	.001	1
S3	2.5000	2.5633	.063	2.53	1.7857	.003	1
S2	1.2500	1.2685	.019	1.48	.88851	.010	1
S1	.01500	.01618	.001	7.88	.02066	.004	1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S0 Acquired: 02/06/2025 12:47:36 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S0 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.15325	.00017	-.00015	.00012	.00019	-.00085	.18532	-.00067
Stddev	.54226	.00008	.00034	.00022	.00025	.00111	.00791	.00064
%RSD	353.84	48.436	222.53	184.97	131.23	130.32	4.2694	95.235
#1	-.63979	.00012	-.00038	-.00013	.00047	-.00154	.17619	-.00141
#2	.43135	.00027	.00024	.00031	.00000	-.00145	.19003	-.00035
#3	-.25131	.00013	-.00032	.00018	.00009	.00043	.18975	-.00026

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00019	.00103	-.00007	-.00012	.00254	-.00048	-.00033	-.00061
Stddev	.00033	.00154	.00011	.00037	.00045	.00036	.00058	.00026
%RSD	178.99	149.14	166.99	296.48	17.571	76.258	178.26	42.027
#1	.00034	.00168	-.00019	.00011	.00240	-.00018	.00027	-.00082
#2	-.00020	-.00073	-.00005	-.00055	.00218	-.00037	-.00089	-.00032
#3	.00041	.00215	.00003	.00006	.00304	-.00088	-.00036	-.00070

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00018	.00052	.00255	.00009	-.00052	.14354	-.00453	.00134
Stddev	.00017	.00008	.00102	.00068	.00035	.00879	.00004	.00112
%RSD	94.780	15.305	39.950	737.68	67.284	6.1227	.83031	83.439
#1	.00001	.00044	.00237	-.00056	-.00091	.13365	-.00457	.00229
#2	-.00033	.00051	.00164	.00080	-.00024	.14648	-.00451	.00163
#3	-.00022	.00060	.00365	.00004	-.00041	.15048	-.00450	.00011

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00058	.00041	.01183	.00063	.00029	-.00296	.00945
Stddev	.00001	.00010	.00028	.00011	.00110	.00180	.00377
%RSD	2.4050	24.693	2.3589	17.330	381.08	60.911	39.958
#1	.00059	.00040	.01156	.00074	.00020	-.00462	.00513
#2	.00057	.00051	.01183	.00063	.00143	-.00105	.01215
#3	.00058	.00031	.01211	.00052	-.00077	-.00320	.01106

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S0 Acquired: 02/06/2025 12:47:36 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S0 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4527.2	38530.	5327.7	3153.7	5428.1
Stddev	8.1	132.	299.5	11.6	7.6
%RSD	.17928	.34253	5.6218	.36760	.13922
#1	4520.5	38639.	5673.3	3166.7	5419.6
#2	4524.9	38383.	5166.2	3144.4	5434.0
#3	4536.2	38569.	5143.6	3149.9	5430.6

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S1 Acquired: 02/06/2025 12:51:40 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.0023	.00320	.00222	.00228	.00516	.01698	.81666	.02650
Stddev	.7567	.00012	.00035	.00025	.00029	.00115	.00160	.00023
%RSD	25.206	3.8859	15.730	10.865	5.6547	6.7846	.19542	.85331
#1	3.3057	.00322	.00210	.00199	.00517	.01576	.81830	.02669
#2	2.1409	.00332	.00195	.00243	.00487	.01805	.81511	.02625
#3	3.5602	.00307	.00262	.00242	.00545	.01711	.81657	.02655

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02272	.41023	.00249	.04011	.00743	.00263	.01058	.09218
Stddev	.00011	.00208	.00008	.00010	.00082	.00024	.00016	.00056
%RSD	.50135	.50603	3.2402	.25118	10.990	9.0687	1.4734	.60845
#1	.02282	.40803	.00243	.03999	.00765	.00245	.01073	.09167
#2	.02274	.41215	.00258	.04015	.00653	.00255	.01059	.09208
#3	.02260	.41051	.00247	.04017	.00812	.00290	.01042	.09278

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02683	.00339	.03713	.01003	.01053	.22956	-.00404	.00221
Stddev	.00009	.00050	.00085	.00108	.00028	.00245	.00007	.00072
%RSD	.32899	14.626	2.2896	10.751	2.6397	1.0665	1.8328	32.599
#1	.02682	.00395	.03631	.01052	.01037	.22727	-.00411	.00283
#2	.02676	.00322	.03708	.00880	.01038	.23214	-.00397	.00238
#3	.02693	.00300	.03800	.01078	.01085	.22928	-.00403	.00142

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00611	.00439	.38575	.00187	.04815	.98078	.02066
Stddev	.00010	.00019	.00461	.00006	.00044	.00612	.00384
%RSD	1.6037	4.4025	1.1945	3.3295	.90764	.62449	18.600
#1	.00622	.00442	.39093	.00185	.04765	.97585	.01682
#2	.00607	.00456	.38424	.00182	.04838	.98764	.02451
#3	.00603	.00418	.38209	.00194	.04842	.97886	.02065

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S1 Acquired: 02/06/2025 12:51:40 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S01 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4485.6	38218.	5099.8	3129.4	5151.7
Stddev	17.8	37.	23.9	19.5	20.7
%RSD	.39721	.09758	.46952	.62314	.40161
#1	4505.8	38261.	5074.3	3151.7	5173.8
#2	4478.6	38203.	5103.3	3120.5	5148.4
#3	4472.3	38191.	5121.8	3115.9	5132.8

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S2 Acquired: 02/06/2025 12:55:43 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	343.23	.15507	1.4196	.08058	.10984	3.1237	7.6490	.64679
Stddev	1.29	.00019	.0020	.00017	.00016	.0141	.0218	.00346
%RSD	.37470	.12281	.14006	.21551	.14536	.45309	.28548	.53461
#1	343.54	.15523	1.4175	.08058	.10977	3.1295	7.6721	.64985
#2	341.82	.15486	1.4200	.08040	.11002	3.1075	7.6464	.64304
#3	344.33	.15512	1.4214	.08075	.10972	3.1340	7.6286	.64749

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.8196	4.8856	.88382	.48257	.65457	1.0261	2.4209	1.1345
Stddev	.0007	.0224	.00438	.00074	.00291	.0020	.0065	.0022
%RSD	.02424	.45894	.49564	.15359	.44456	.19288	.26804	.19444
#1	2.8188	4.9114	.88727	.48173	.65763	1.0270	2.4245	1.1361
#2	2.8200	4.8748	.87889	.48315	.65423	1.0238	2.4134	1.1320
#3	2.8200	4.8706	.88530	.48282	.65184	1.0274	2.4248	1.1354

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.42301	.07818	.25700	.11244	.66067	.67875	.07012	.92906
Stddev	.00041	.00041	.00368	.00106	.00126	.00173	.00009	.00485
%RSD	.09605	.52923	1.4337	.93906	.19056	.25518	.13370	.52160
#1	.42266	.07847	.25666	.11265	.66121	.68069	.07021	.93277
#2	.42345	.07771	.25349	.11130	.66158	.67821	.07002	.92358
#3	.42292	.07837	.26084	.11338	.65924	.67736	.07014	.93084

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.64358	.05284	.97811	.20889	.56600	11.694	.88851
Stddev	.00146	.00002	.00299	.00017	.00082	.034	.00982
%RSD	.22651	.04043	.30543	.08091	.14532	.28646	1.1055
#1	.64219	.05285	.98152	.20869	.56519	11.701	.89232
#2	.64510	.05282	.97685	.20897	.56684	11.657	.89586
#3	.64344	.05286	.97596	.20900	.56597	11.723	.87736

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S2 Acquired: 02/06/2025 12:55:43 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S02 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4240.9	35600.	5018.1	2943.1	4506.4
Stddev	7.3	129.	13.0	14.5	9.7
%RSD	.17165	.36322	.25889	.49208	.21473
#1	4239.7	35451.	5003.4	2932.6	4503.4
#2	4234.3	35681.	5022.5	2937.1	4498.7
#3	4248.7	35669.	5028.2	2959.6	4517.3

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S3 Acquired: 02/06/2025 12:59:28 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	671.65	.31012	2.9472	.16507	.23008	6.3995	15.505	1.2983
Stddev	1.07	.00028	.0034	.00046	.00118	.0352	.055	.0035
%RSD	.15990	.08929	.11560	.27592	.51102	.55039	.35410	.27178
#1	670.82	.31019	2.9441	.16462	.22899	6.4280	15.475	1.2976
#2	672.86	.30981	2.9466	.16508	.22992	6.4105	15.568	1.3021
#3	671.27	.31035	2.9508	.16553	.23133	6.3602	15.471	1.2951

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5.8249	9.8277	1.8047	.98175	1.3340	2.0644	4.8739	2.2830
Stddev	.0060	.0439	.0080	.00041	.0054	.0114	.0251	.0140
%RSD	.10211	.44698	.44540	.04182	.40579	.55177	.51538	.61169
#1	5.8241	9.8490	1.7968	.98141	1.3356	2.0703	4.8839	2.2931
#2	5.8194	9.8569	1.8044	.98163	1.3385	2.0717	4.8925	2.2888
#3	5.8312	9.7772	1.8129	.98220	1.3280	2.0513	4.8454	2.2671

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.86882	.16079	.52219	.22725	1.3724	1.2191	.15359	1.8374
Stddev	.00112	.00059	.00184	.00123	.0085	.0055	.00024	.0091
%RSD	.12870	.36990	.35164	.54110	.61946	.45215	.15349	.49675
#1	.86870	.16024	.52407	.22768	1.3761	1.2245	.15386	1.8349
#2	.86777	.16071	.52211	.22821	1.3784	1.2191	.15344	1.8475
#3	.86999	.16142	.52040	.22587	1.3627	1.2135	.15347	1.8298

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.3157	.11105	1.9082	.42952	1.1554	23.867	1.7857
Stddev	.0030	.00022	.0072	.00039	.0070	.103	.0032
%RSD	.22564	.19583	.37533	.08981	.60388	.43160	.18071
#1	1.3136	.11083	1.9037	.42982	1.1590	23.908	1.7880
#2	1.3144	.11126	1.9165	.42908	1.1598	23.943	1.7872
#3	1.3191	.11105	1.9046	.42966	1.1474	23.750	1.7820

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S3 Acquired: 02/06/2025 12:59:28 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S03 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4008.9	33801.	4912.5	2794.0	4177.7
Stddev	11.8	49.	18.1	17.4	8.1
%RSD	.29444	.14533	.36936	.62130	.19320
#1	4011.6	33857.	4916.7	2801.2	4177.2
#2	4019.1	33766.	4892.6	2774.2	4185.9
#3	3995.9	33779.	4928.1	2806.5	4169.8

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S4 Acquired: 02/06/2025 13:03:13 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1327.6	.60497	5.9324	.33830	.46873	12.687	30.921	2.5285
Stddev	1.4	.00115	.0166	.00082	.00013	.017	.060	.0040
%RSD	.10262	.18999	.28015	.24198	.02759	.13717	.19367	.15699
#1	1326.1	.60409	5.9270	.33813	.46859	12.684	30.987	2.5299
#2	1328.8	.60456	5.9192	.33758	.46884	12.671	30.907	2.5240
#3	1327.8	.60627	5.9511	.33919	.46876	12.705	30.870	2.5315

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	11.759	19.348	3.5811	1.9548	2.6307	3.9994	9.4837	4.4383
Stddev	.035	.042	.0160	.0054	.0020	.0103	.0203	.0122
%RSD	.29954	.21897	.44787	.27803	.07437	.25657	.21409	.27476
#1	11.752	19.386	3.5627	1.9551	2.6327	3.9994	9.4950	4.4374
#2	11.727	19.302	3.5884	1.9493	2.6289	3.9892	9.4603	4.4265
#3	11.797	19.357	3.5923	1.9601	2.6304	4.0097	9.4959	4.4508

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.7422	.32642	1.0299	.44420	2.7578	2.2494	.32171	3.4971
Stddev	.0050	.00279	.0012	.00150	.0226	.0068	.00098	.0124
%RSD	.28669	.85361	.11745	.33857	.81931	.30223	.30367	.35445
#1	1.7397	.32324	1.0289	.44584	2.7826	2.2442	.32144	3.4832
#2	1.7390	.32757	1.0313	.44387	2.7526	2.2470	.32089	3.5015
#3	1.7480	.32845	1.0295	.44288	2.7383	2.2571	.32279	3.5068

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.6475	.23146	3.6692	.86222	2.2657	46.356	3.5275
Stddev	.0049	.00035	.0185	.00238	.0064	.506	.0013
%RSD	.18572	.15139	.50499	.27641	.28335	1.0917	.03621
#1	2.6442	.23124	3.6479	.86072	2.2686	46.871	3.5261
#2	2.6451	.23128	3.6780	.86096	2.2583	45.859	3.5286
#3	2.6532	.23187	3.6817	.86496	2.2701	46.338	3.5278

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S4 Acquired: 02/06/2025 13:03:13 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S04 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3837.9	32668.	4908.3	2685.2	3974.8
Stddev	4.2	34.	5.7	26.5	10.7
%RSD	.10977	.10412	.11689	.98629	.26865
#1	3834.6	32631.	4901.8	2660.1	3970.4
#2	3842.6	32675.	4910.6	2682.5	3987.0
#3	3836.5	32698.	4912.5	2712.9	3967.0

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S5 Acquired: 02/06/2025 13:07:06 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S05 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2546.5	1.1509	11.519	.69166	.95448	24.937	59.616	4.8778
Stddev	3.9	.0030	.016	.00144	.00338	.092	.791	.0232
%RSD	.15320	.25749	.14218	.20845	.35369	.36850	1.3276	.47554
#1	2545.7	1.1490	11.507	.69026	.95059	24.987	59.249	4.8759
#2	2543.0	1.1494	11.512	.69158	.95659	24.994	60.524	4.9019
#3	2550.7	1.1543	11.538	.69314	.95627	24.831	59.074	4.8556

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	22.853	37.023	6.7985	3.7895	5.1098	7.6939	18.222	8.5227
Stddev	.035	.134	.0437	.0078	.0152	.0179	.049	.0300
%RSD	.15112	.36094	.64249	.20693	.29811	.23268	.26924	.35148
#1	22.834	37.158	6.8342	3.7822	5.1222	7.6973	18.258	8.5325
#2	22.832	37.022	6.8115	3.7884	5.1144	7.7099	18.243	8.5465
#3	22.893	36.890	6.7498	3.7978	5.0928	7.6746	18.166	8.4891

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.4006	.64089	2.0003	.85984	5.6767	4.2719	.64706	6.4225
Stddev	.0051	.00269	.0051	.00044	.0251	.0217	.00048	.0344
%RSD	.15079	.41909	.25672	.05087	.44202	.50700	.07354	.53503
#1	3.3983	.63876	1.9987	.86023	5.6984	4.2808	.64663	6.4150
#2	3.3971	.64000	2.0061	.85992	5.6492	4.2877	.64699	6.4600
#3	3.4065	.64391	1.9962	.85936	5.6825	4.2472	.64757	6.3925

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5.3141	.46830	6.8515	1.6688	4.3853	90.991	6.8284
Stddev	.0137	.00135	.0293	.0031	.0143	1.600	.0162
%RSD	.25729	.28770	.42692	.18679	.32664	1.7582	.23709
#1	5.2999	.46702	6.8328	1.6665	4.3982	89.872	6.8469
#2	5.3151	.46819	6.8852	1.6676	4.3879	92.824	6.8220
#3	5.3272	.46971	6.8365	1.6724	4.3699	90.278	6.8165

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S5 Acquired: 02/06/2025 13:07:06 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S05 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3571.8	31861.	4943.1	2476.6	3774.5
Stddev	6.7	60.	38.2	6.8	4.8
%RSD	.18690	.18757	.77246	.27255	.12590
#1	3579.5	31851.	4936.0	2471.2	3779.7
#2	3567.6	31807.	4909.0	2474.6	3773.5
#3	3568.2	31925.	4984.4	2484.2	3770.3

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: S6 Acquired: 02/06/2025 13:11:16 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S06 Custom ID2: Custom ID3:
Comment:

Elem	Al3961	Ca3736	Fe2598	Mg2790	Na8183
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	65.457	59.417	20.693	13.905	5.5386
Stddev	.187	.763	.140	.112	.0383
%RSD	.28629	1.2837	.67472	.80718	.69111
#1	65.248	59.278	20.543	13.789	5.4948
#2	65.610	58.733	20.716	13.913	5.5555
#3	65.512	60.240	20.819	14.013	5.5655

Int. Std.	Y_3710
Units	Cts/S
Avg	4802.6
Stddev	37.0
%RSD	.76964
#1	4832.0
#2	4814.7
#3	4761.1

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: ICV002 Acquired: 02/06/2025 14:09:25 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICV002 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.078390	1.096619	.9927724	1.000393	.9084876	2.421396
Stddev	.003751	.001149	.0015494	.001800	.0035038	.072788
%RSD	.3477919	.1048206	.1560658	.1799739	.3856752	3.006019
#1	1.074123	1.095308	.9910177	.998484	.9111310	2.339933
#2	1.081164	1.097094	.9939521	1.000636	.9098185	2.444212
#3	1.079882	1.097454	.9933473	1.002060	.9045134	2.480042

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5234280	.5292396	.4898060	10.42960	.5514758	.5048443
Stddev	.0155471	.0124181	.0007719	.29143	.0018733	.0004997
%RSD	2.970256	2.346407	.1575822	2.794237	.3396892	.0989741
#1	.5055735	.5153155	.4889770	10.09380	.5533402	.5043959
#2	.5307348	.5332356	.4899372	10.57847	.5514935	.5047539
#3	.5339757	.5391679	.4905039	10.61651	.5495937	.5053829

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5247958	10.40608	.5315997	6.029586	.5037313	.2460558
Stddev	.0226659	.28610	.0149955	.146557	.0003227	.0012972
%RSD	4.318985	2.749354	2.820831	2.430631	.0640596	.5271992
#1	.4998789	10.07657	.5142947	5.860969	.5039719	.2464124
#2	.5303187	10.59132	.5407707	6.126354	.5033646	.2471374
#3	.5441898	10.55035	.5397336	6.101434	.5038573	.2446176

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.12224	.5161408	.9119059	8.985126	F -.001912	F .0044014
Stddev	.44950	.0148793	.0053540	.451682	.002793	.0008628
%RSD	4.440714	2.882801	.5871210	5.027000	146.0872	19.60187
#1	9.63387	.4990928	.9062434	8.466445	-.000442	.0050989
#2	10.21419	.5265137	.9125884	9.197094	-.005133	.0034366
#3	10.51865	.5228160	.9168859	9.291840	-.000161	.0046688

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: ICV002 Acquired: 02/06/2025 14:09:25 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICV002 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0000496	F .0030131	F -.000121	F .0015817	F .0005342	F -.009008
Stddev	.0007795	.0020526	.001285	.0006746	.0022562	.000444
%RSD	1571.151	68.12380	1059.415	42.65053	422.3750	4.934022
#1	.0008236	.0013392	-.001085	.0021533	-.002013	-.008497
#2	-.000735	.0053033	.001338	.0008376	.002281	-.009227
#3	.000061	.0023969	-.000617	.0017541	.001335	-.009301

Elem	Li6707
Units	ppm
Avg	F -.002802
Stddev	.003826
%RSD	136.5484
#1	-.002053
#2	.000594
#3	-.006947

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4353.721	36347.29	5058.016	3034.152	4897.165
Stddev	10.545	78.22	110.745	11.154	5.755
%RSD	.2422137	.2151920	2.189502	.3676185	.1175226
#1	4344.553	36295.07	5185.393	3045.974	4891.309
#2	4365.245	36309.59	5004.114	3032.666	4902.814
#3	4351.364	36437.22	4984.540	3023.815	4897.372

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: ICB002 Acquired: 02/06/2025 14:14:08 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICB002 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0020730	-.000583	.0001438	-.000614	.0002805	.0049590	.0009313
Stddev	.0025829	.001438	.0026294	.000680	.0018785	.0247410	.0000943
%RSD	124.5973	246.7565	1828.474	110.6850	669.6730	498.9077	10.12908
#1	.0049495	-.001664	-.001336	.000001	.0005882	.0139523	.0008600
#2	-.000047	-.001133	.003180	-.000500	.0019861	.0239456	.0010383
#3	.001317	.001049	-.001412	-.001344	-.001733	-.023021	.0008957

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000228	.0000557	.0133175	.0001157	.0000624	-.001387	.0034880
Stddev	.000042	.0000397	.0148946	.0004224	.0001756	.003830	.0108109
%RSD	18.64114	71.18764	111.8422	365.0481	281.5670	276.1454	309.9430
#1	-.000274	.0000147	.0304993	-.000313	-.000131	-.005633	.0159090
#2	-.000192	.0000939	.0040644	.000129	.000212	.001808	-.001643
#3	-.000216	.0000586	.0053889	.000531	.000105	-.000336	-.003802

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000210	-.010235	-.000345	.0002416	-.384774	-.002072	-.000834
Stddev	.000484	.002929	.000288	.0003427	.352161	.005459	.002994
%RSD	230.9375	28.61478	83.24464	141.8121	91.52409	263.4929	358.9167
#1	-.000741	-.011498	-.000018	-.000058	-.785301	-.004017	.001451
#2	.000207	-.006886	-.000460	.000167	-.245352	-.006292	-.004223
#3	-.000095	-.012319	-.000558	.000615	-.123670	.004093	.000269

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5865343	-.001014	-.000430	-.000320	-.004352	-.002561	.0014824
Stddev	.1243737	.000892	.001100	.000481	.000663	.000664	.0004543
%RSD	21.20485	87.95257	255.4829	150.1275	15.23864	25.91395	30.64285
#1	.4713859	-.001782	-.001500	-.000306	-.004584	-.002838	.0011661
#2	.7184352	-.001224	-.000490	.000153	-.003604	-.001804	.0020029
#3	.5697816	-.000036	.000698	-.000808	-.004868	-.003042	.0012781

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: ICB002 Acquired: 02/06/2025 14:14:08 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICB002 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.0009734	.0001134	.0005104
Stddev	.0005283	.0000261	.0019769
%RSD	54.27019	22.99590	387.3008
#1	.0015044	.0001125	.0008266
#2	.0009679	.0001399	-.001605
#3	.0004479	.0000878	.002310

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4364.427	37189.75	4916.953	3058.069	5231.033
Stddev	10.163	106.72	4.506	9.777	16.367
%RSD	.2328659	.2869601	.0916511	.3197233	.3128803
#1	4365.441	37078.78	4911.944	3046.785	5222.315
#2	4374.046	37198.82	4920.679	3064.013	5249.914
#3	4353.795	37291.64	4918.237	3063.410	5220.871

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: ICSA002 Acquired: 02/06/2025 14:18:10 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSA002 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002384	-.003203	.0018293	-.025783	.0039192	240.1811
Stddev	.002827	.000958	.0020524	.003810	.0024219	.9182
%RSD	118.6092	29.91687	112.1969	14.77713	61.79621	.3823042
#1	-.001502	-.002356	.0000786	-.028628	.0053997	240.6393
#2	-.000102	-.003010	.0040879	-.021455	.0011242	240.7801
#3	-.005546	-.004243	.0013213	-.027267	.0052336	239.1239

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0070301	.0025778	.0009324	249.3229	.0524308	.0295509
Stddev	.0010072	.0000427	.0000739	.6333	.0001527	.0002276
%RSD	14.32747	1.655674	7.920604	.2540273	.2912487	.7701021
#1	.0080149	.0025739	.0008488	249.6043	.0525825	.0296578
#2	.0060018	.0026223	.0009593	249.7668	.0524328	.0292896
#3	.0070737	.0025373	.0009890	248.5976	.0522771	.0297053

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.013900	101.3617	.0060612	247.0400	.0070465	-.008315
Stddev	.001480	.3969	.0006054	.5345	.0003479	.000395
%RSD	10.64413	.3915983	9.987599	.2163807	4.937076	4.751281
#1	-.012370	101.6970	.0056317	247.6254	.0067815	-.008315
#2	-.015323	101.4646	.0067535	246.9168	.0074405	-.007920
#3	-.014009	100.9234	.0057983	246.5778	.0069175	-.008710

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1062605	-.000218	-.033842	-1.01174	.0017806	F .0509463
Stddev	.0664170	.003401	.004082	.11211	.0009613	.0014107
%RSD	62.50388	1562.569	12.06295	11.08114	53.98734	2.769031
#1	.0430361	.003028	-.035240	-1.14026	.0021682	.0495966
#2	.1754655	-.003754	-.029244	-.93404	.0024877	.0524110
#3	.1002799	.000073	-.037041	-.96092	.0006860	.0508313

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: ICSA002 Acquired: 02/06/2025 14:18:10 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSA002 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0039166	.0220594	-.007949	F .0099443	.0031083	.0032766
Stddev	.0004490	.0075728	.001942	.0009851	.0013933	.0001926
%RSD	11.46463	34.32893	24.42848	9.905863	44.82657	5.877384
#1	.0043894	.0305923	-.006636	.0107906	.0015495	.0032741
#2	.0038645	.0161377	-.007031	.0088630	.0042328	.0030853
#3	.0034959	.0194483	-.010180	.0101795	.0035425	.0034704

Elem	Li6707
Units	ppm
Avg	.0075111
Stddev	.0053760
%RSD	71.57379
#1	.0029599
#2	.0061308
#3	.0134427

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4008.335	32759.65	4845.681	2798.437	4130.946
Stddev	5.971	233.65	16.037	29.264	9.457
%RSD	.1489690	.7132403	.3309492	1.045730	.2289239
#1	4002.278	32679.83	4827.331	2784.583	4124.292
#2	4008.511	33022.75	4857.009	2832.056	4126.775
#3	4014.217	32576.36	4852.702	2778.673	4141.771

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: ICSAB002 Acquired: 02/06/2025 14:25:09 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSAB002 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0970646	.0969064	.0505638	.0251493	.5404391	235.4937
Stddev	.0058432	.0002454	.0023814	.0024649	.0050663	1.5447
%RSD	6.019871	.2532490	4.709751	9.801173	.9374449	.6559464
#1	.1036632	.0969279	.0504317	.0252539	.5389555	233.7119
#2	.0949846	.0966509	.0482511	.0275603	.5362803	236.4564
#3	.0925461	.0971403	.0530085	.0226337	.5460816	236.3127

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5215429	.5095222	.9833905	247.1160	.5878444	.5176536
Stddev	.0021801	.0032843	.0010580	.6039	.0026729	.0006367
%RSD	.4180035	.6445791	.1075908	.2443856	.4546993	.1230024
#1	.5191937	.5057816	.9835095	246.4338	.5847628	.5183798
#2	.5235009	.5119336	.9822780	247.5823	.5892357	.5173900
#3	.5219340	.5108513	.9843840	247.3320	.5895347	.5171910

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4914903	99.39877	.5060653	243.0205	.9844455	.2000793
Stddev	.0049180	.67826	.0026185	1.3772	.0007749	.0014902
%RSD	1.000621	.6823591	.5174279	.5667167	.0787174	.7447837
#1	.4922414	98.63774	.5030709	241.4310	.9850245	.1983965
#2	.4862400	99.61909	.5079257	243.8605	.9835651	.2006100
#3	.4959895	99.93947	.5071993	243.7698	.9847468	.2012315

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2543729	.4943906	.8950811	-2.46382	.0013463	F .0489215
Stddev	.2401093	.0056127	.0053146	.11050	.0028682	.0009523
%RSD	94.39264	1.135281	.5937531	4.485049	213.0352	1.946611
#1	.5233797	.4938299	.8982051	-2.52499	-.000342	.0478806
#2	.0617404	.5002627	.8889447	-2.33626	-.000277	.0491348
#3	.1779987	.4890793	.8980936	-2.53022	.004658	.0497491

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: ICSAB002 Acquired: 02/06/2025 14:25:09 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSAB002 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0035301	.0261269	-.006187	F .0094801	-.003118	.0041126
Stddev	.0004856	.0036218	.001096	.0007648	.002256	.0001745
%RSD	13.75578	13.86257	17.70964	8.067651	72.32891	4.243328
#1	.0029713	.0274360	-.004925	.0095825	-.003546	.0041602
#2	.0037689	.0289121	-.006739	.0101886	-.005129	.0042584
#3	.0038500	.0220325	-.006897	.0086693	-.000680	.0039193

Elem	Li6707
Units	ppm
Avg	.0058824
Stddev	.0017111
%RSD	29.08916
#1	.0044145
#2	.0054708
#3	.0077617

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4088.527	33027.63	4938.533	2859.671	4229.781
Stddev	17.178	83.50	32.230	5.678	19.886
%RSD	.4201541	.2528257	.6526155	.1985459	.4701411
#1	4069.226	33003.39	4959.175	2855.859	4207.498
#2	4094.218	32958.94	4901.394	2856.958	4236.121
#3	4102.137	33120.58	4955.029	2866.197	4245.724

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: CCV003 Acquired: 02/06/2025 14:29:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV003 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.897817	4.946963	25.25169	4.968958	5.025551	405.7819	10.31806
Stddev	.006855	.005355	.01209	.001068	.006282	1.4676	.05355
%RSD	.1399577	.1082507	.0478591	.0214969	.1250053	.3616613	.5189572
#1	4.893888	4.941072	25.24521	4.968080	5.019428	404.1073	10.26362
#2	4.893829	4.948279	25.24422	4.970147	5.025245	406.8439	10.37067
#3	4.905732	4.951537	25.26563	4.968648	5.031982	406.3946	10.31989

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5062189	2.555506	409.1906	15.79171	2.541833	15.29538	408.6421
Stddev	.0040583	.002620	1.3193	.04806	.000974	.05107	1.7903
%RSD	.8016975	.1025080	.3224287	.3043279	.0383111	.3339150	.4381204
#1	.5015593	2.552810	407.6987	15.78382	2.542295	15.24162	406.6402
#2	.5081173	2.555667	410.2035	15.84322	2.540714	15.34325	410.0899
#3	.5089801	2.558041	409.6698	15.74808	2.542490	15.30127	409.1963

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.03079	404.0257	2.548769	1.262898	401.6293	2.524563	15.02723
Stddev	.06273	1.3785	.000851	.004078	.4603	.007680	.08195
%RSD	.4173487	.3411796	.0334022	.3228913	.1145994	.3042043	.5453496
#1	14.95901	402.4955	2.548857	1.262992	401.0984	2.517187	15.10804
#2	15.07507	405.1703	2.549573	1.266927	401.9144	2.532514	14.94418
#3	15.05829	404.4114	2.547877	1.258773	401.8753	2.523987	15.02948

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	152.5057	5.114138	5.043480	4.972645	5.153454	4.810930	5.098738
Stddev	.7160	.002518	.039827	.002899	.010716	.042248	.005108
%RSD	.4695064	.0492390	.7896690	.0583085	.2079451	.8781735	.1001797
#1	151.6883	5.112940	4.997675	4.972549	5.141667	4.762305	5.092926
#2	153.0218	5.112442	5.069928	4.969795	5.156084	4.838660	5.102516
#3	152.8070	5.117031	5.062838	4.975591	5.162610	4.831823	5.100771

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: CCV003 Acquired: 02/06/2025 14:29:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV003 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	5.074469	4.815236	5.123634
Stddev	.020797	.061993	.028236
%RSD	.4098328	1.287438	.5511000
#1	5.051907	4.749028	5.091332
#2	5.092872	4.871910	5.143625
#3	5.078628	4.824769	5.135944

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3651.707	31105.33	4806.042	2558.423	3735.720
Stddev	5.166	113.52	34.558	4.196	4.293
%RSD	.1414801	.3649394	.7190595	.1640248	.1149163
#1	3645.767	31054.43	4844.358	2554.878	3731.695
#2	3655.152	31026.17	4777.231	2563.057	3735.228
#3	3654.202	31235.39	4796.537	2557.335	3740.238

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: CCB003 Acquired: 02/06/2025 14:32:51 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB003 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005745	.0011764	-.000324	-.002572	.0030080	-.019291	.0017297
Stddev	.0020977	.0009888	.002316	.001928	.0026260	.008529	.0018664
%RSD	365.1219	84.05214	715.2915	74.98814	87.29956	44.21060	107.9006
#1	.0029753	.0005088	.000950	-.000563	.0059644	-.023160	.0031671
#2	-.000904	.0023124	-.002997	-.002744	.0009459	-.025200	-.000380
#3	-.000348	.0007081	.001076	-.004408	.0021139	-.009514	.002402

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000081	.0000734	.0133987	.0004990	.0003346	-.002870	.0279919
Stddev	.000121	.0000416	.0197206	.0002554	.0001359	.007841	.0039267
%RSD	148.7739	56.64379	147.1824	51.18549	40.60180	273.2210	14.02804
#1	-.000103	.0000917	.0359015	.0006433	.0003716	.000210	.0279169
#2	.000049	.0001027	.0051673	.0006495	.0001841	-.011783	.0319557
#3	-.000189	.0000258	-.000873	.0002041	.0004482	.002964	.0241033

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005750	.0168537	-.000176	.0001743	-.135851	.0017609	.0004874
Stddev	.0006605	.0168535	.000510	.0003274	.425878	.0047811	.0020237
%RSD	114.8606	99.99883	290.2085	187.8129	313.4903	271.5222	415.1940
#1	.0011073	.0348296	.000116	.0000527	-.616106	.0004290	.0026665
#2	-.000164	.0014089	-.000765	.0005452	.195865	-.002213	-.001333
#3	.000782	.0143225	.000122	-.000075	.012689	.007067	.000129

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6467297	-.000589	.0088263	.0006045	-.000843	-.001428	.0009983
Stddev	.0374253	.001195	.0013624	.0002007	.000897	.000192	.0000575
%RSD	5.786857	202.9229	15.43547	33.20598	106.3820	13.43441	5.763193
#1	.6107488	-.001864	.0072922	.0004203	.000063	-.001219	.0009319
#2	.6854491	-.000405	.0098949	.0005748	-.000862	-.001596	.0010326
#3	.6439913	.000503	.0092919	.0008185	-.001730	-.001470	.0010304

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: CCB003 Acquired: 02/06/2025 14:32:51 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB003 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	-.000116	.0001298	.0007911
Stddev	.001278	.0001015	.0026504
%RSD	1097.819	78.16925	335.0279
#1	-.000192	.0002123	.0030655
#2	-.001355	.0000165	-.002119
#3	.001197	.0001607	.001427

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4338.112	36892.40	4934.976	3051.072	5199.149
Stddev	4.984	123.09	29.087	14.461	10.943
%RSD	.1148780	.3336582	.5894064	.4739747	.2104813
#1	4333.910	36905.49	4944.367	3067.143	5189.365
#2	4336.809	36763.28	4958.208	3039.109	5197.115
#3	4343.618	37008.42	4902.354	3046.965	5210.966

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1151-13 Acquired: 02/06/2025 14:36:55 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MC0B02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0006211	-.000538	.0008981	-.001941	.0008418	-.008331
Stddev	.0036013	.001422	.0022150	.004048	.0013260	.014388
%RSD	579.8341	264.0837	246.6346	208.5685	157.5082	172.7051
#1	.0028232	-.001456	.0001898	.002181	-.000603	-.023358
#2	-.003535	.001099	.0033806	-.002093	.002002	.005318
#3	.002575	-.001258	-.000876	-.005911	.001126	-.006952

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000510	-.000090	.0000024	-.002943	.0003237	.0003176
Stddev	.000554	.000067	.0000634	.019638	.0002679	.0001189
%RSD	108.5953	74.78240	2635.590	667.2471	82.75628	37.42508
#1	-.000866	-.000022	-.000030	.019357	.0000522	.0004335
#2	-.000793	-.000092	-.000038	-.010532	.0005878	.0003235
#3	.000128	-.000156	.000076	-.017654	.0003312	.0001959

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.009660	.0139941	-.000340	.0376820	.0003326	.0012592
Stddev	.004826	.0138960	.000190	.0192482	.0003331	.0009404
%RSD	49.96531	99.29921	55.88032	51.08068	100.1488	74.68399
#1	-.014405	-.001669	-.000401	.0481501	.0005757	.0022865
#2	-.009818	.018807	-.000491	.0154683	-.000047	.0010504
#3	-.004756	.024844	-.000127	.0494276	.000469	.0004407

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.123676	.0021858	.0001848	F -9.96484	.0056457	.0042529
Stddev	.583959	.0016675	.0011723	.08221	.0009019	.0009487
%RSD	472.1696	76.28757	634.3413	.8249869	15.97492	22.30702
#1	.455361	.0028618	.0015383	-9.88224	.0047517	.0035686
#2	-.113954	.0002865	-.000507	-9.96562	.0056300	.0038542
#3	-.712435	.0034091	-.000477	-10.0467	.0065553	.0053359

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1151-13 Acquired: 02/06/2025 14:36:55 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MC0B02 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000900	-.003296	.0160634	-.004214	.0001958	-.000029
Stddev	.0001790	.002672	.0005965	.000211	.0021897	.000254
%RSD	198.9074	81.06845	3.713476	5.000980	1118.188	877.6784
#1	.0002911	-.005230	.0159595	-.004022	.0004931	.000108
#2	-.000052	-.000247	.0155256	-.004440	.0022217	.000127
#3	.000031	-.004412	.0167050	-.004179	-.002127	-.000321

Elem	Li6707
Units	ppm
Avg	-.008840
Stddev	.004127
%RSD	46.68667
#1	-.006766
#2	-.013592
#3	-.006161

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4594.514	38863.87	5098.709	3238.763	5637.524
Stddev	18.164	110.11	18.733	10.109	20.052
%RSD	.3953438	.2833284	.3673998	.3121237	.3556865
#1	4610.576	38739.73	5094.452	3231.377	5656.164
#2	4598.164	38949.77	5119.204	3250.284	5640.099
#3	4574.802	38902.10	5082.471	3234.628	5616.309

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1251-10 Acquired: 02/06/2025 14:41:00 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: E1498 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007371	-.000286	.0027206	-.002383	.0002248	.0182975
Stddev	.0013517	.001226	.0005189	.001628	.0026503	.0110258
%RSD	183.3759	428.5499	19.07268	68.30550	1178.842	60.25834
#1	.0022734	.000362	.0025307	-.000926	.0032058	.0074350
#2	-.000270	.000480	.0023234	-.004140	-.001865	.0294795
#3	.000208	-.001701	.0033076	-.002084	-.000666	.0179779

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000750	-.000072	.0000634	.0214564	.0060285	.0003555
Stddev	.001907	.000153	.0000490	.0093155	.0005008	.0001494
%RSD	254.1407	212.0938	77.34458	43.41582	8.306308	42.03651
#1	-.002936	.000098	.0000826	.0318931	.0058582	.0002627
#2	.000577	-.000117	.0000999	.0184928	.0056352	.0005279
#3	.000108	-.000198	.0000077	.0139833	.0065922	.0002759

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0018144	.0837930	.0020767	-.003862	.0017612	-.000011
Stddev	.0067444	.0139527	.0007896	.030377	.0000950	.000313
%RSD	371.7154	16.65140	38.02172	786.6374	5.391264	2810.363
#1	.0092908	.0762727	.0026201	.030201	.0018648	-.000354
#2	-.000036	.0752136	.0024389	-.013642	.0016784	.000259
#3	-.003812	.0998925	.0011710	-.028144	.0017404	.000062

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1399145	.0021952	.0004139	F -10.0951	.0044706	.0072898
Stddev	.1372625	.0028615	.0016591	.1666	.0027089	.0011439
%RSD	98.10452	130.3551	400.8768	1.650624	60.59279	15.69242
#1	.2974162	.0006824	.0019523	-10.1207	.0022072	.0073563
#2	.0458047	.0004076	.0006335	-9.9172	.0037327	.0083990
#3	.0765226	.0054956	-.001344	-10.2475	.0074720	.0061140

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1251-10 Acquired: 02/06/2025 14:41:00 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: E1498 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000505	.0255590	.0409030	-.003758	.0016372	.0000867
Stddev	.000264	.0046044	.0021801	.000159	.0007663	.0000227
%RSD	52.21849	18.01463	5.330009	4.223904	46.80492	26.20775
#1	-.000500	.0253055	.0433750	-.003781	.0011481	.0000859
#2	-.000771	.0210866	.0392548	-.003904	.0025203	.0000644
#3	-.000243	.0302848	.0400791	-.003589	.0012431	.0001098

Elem	Li6707
Units	ppm
Avg	-.005193
Stddev	.004100
%RSD	78.95219
#1	-.009529
#2	-.001378
#3	-.004673

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4552.049	37931.68	5066.794	3200.115	5602.264
Stddev	7.994	91.38	11.052	15.605	7.781
%RSD	.1756174	.2408991	.2181313	.4876502	.1388856
#1	4558.472	38018.77	5063.007	3182.662	5610.776
#2	4543.096	37939.71	5079.242	3204.959	5595.518
#3	4554.578	37836.55	5058.132	3212.723	5600.499

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: PB166571BL Acquired: 02/06/2025 14:45:04 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: PBW571 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0009511	-.001854	.0013262	.0019190	-.001839	-.013516	.0005400
Stddev	.0008329	.000191	.0016630	.0020830	.002650	.024267	.0007054
%RSD	87.57238	10.29776	125.3901	108.5486	144.0929	179.5442	130.6281
#1	.0019128	-.001660	.0010957	-.000193	.001075	.013696	.0006813
#2	.0004712	-.002042	.0030924	.001978	-.004105	-.032912	.0011641
#3	.0004692	-.001861	-.000209	.003972	-.002487	-.021331	-.000225

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000121	.0000371	-.004970	.0000720	.0002684	-.005235	.0028128
Stddev	.000041	.0000826	.014577	.0005460	.0002529	.003208	.0103983
%RSD	33.60314	222.8238	293.2820	758.8886	94.23475	61.27792	369.6779
#1	-.000075	-.000047	.008869	.0007017	.0000131	-.004878	.0145581
#2	-.000153	.000039	-.020186	-.000269	.0005189	-.002220	-.005219
#3	-.000135	.000119	-.003593	-.000217	.0002731	-.008605	-.000901

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007437	.0137347	-.000077	.0013053	.0207204	-.000232	.0005736
Stddev	.0011087	.0124394	.000376	.0009507	.3368971	.001800	.0015159
%RSD	149.0916	90.56892	487.4441	72.83612	1625.923	775.4713	264.2696
#1	.0020026	.0053961	.000355	.0023107	.3972160	-.001686	-.000603
#2	-.000087	.0077753	-.000334	.0004208	-.252309	-.000791	.002284
#3	.000316	.0280326	-.000253	.0011844	-.082746	.001781	.000040

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1563866	-.000276	.0019366	-.000301	-.004830	-.003269	.0001329
Stddev	.1674007	.000440	.0014959	.000858	.004109	.001386	.0008158
%RSD	107.0429	159.0090	77.24069	284.9254	85.07275	42.39387	613.6864
#1	.2409299	-.000646	.0019011	-.001233	-.002710	-.002933	-.000488
#2	.2646551	-.000393	.0004588	-.000124	-.002214	-.002082	-.000170
#3	-.036425	.000210	.0034499	.000454	-.009567	-.004791	.001057

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: PB166571BL Acquired: 02/06/2025 14:45:04 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: PBW571 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	-.000463	.0001094	-.000330
Stddev	.002511	.0000970	.004810
%RSD	542.0256	88.63093	1459.406
#1	-.000354	.0002191	-.005829
#2	.001991	.0000350	.003095
#3	-.003027	.0000742	.001745

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4382.662	36614.56	4979.039	3057.955	5249.321
Stddev	13.624	237.47	28.949	16.965	17.371
%RSD	.3108721	.6485758	.5814215	.5547761	.3309098
#1	4368.433	36346.63	4946.567	3048.796	5236.203
#2	4383.966	36697.99	4988.400	3047.538	5242.739
#3	4395.588	36799.06	5002.149	3077.530	5269.020

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: PB166571BS Acquired: 02/06/2025 14:49:08 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LCS571 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0244538	.0522066	.0178718	.0659741	.1085260	.4134502
Stddev	.0023150	.0008312	.0022384	.0017633	.0018047	.0122109
%RSD	9.466912	1.592216	12.52504	2.672707	1.662883	2.953409
#1	.0260420	.0515900	.0186779	.0665580	.1066441	.4139216
#2	.0217975	.0518778	.0195955	.0639929	.1086918	.4254185
#3	.0255218	.0531519	.0153419	.0673713	.1102420	.4010104

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4164419	.0105990	.0097214	10.63717	.0218159	.1039138
Stddev	.0005271	.0000639	.0000110	.00911	.0003865	.0002142
%RSD	.1265615	.6029431	.1132436	.0856322	1.771644	.2060947
#1	.4163202	.0105319	.0097260	10.63814	.0219685	.1041033
#2	.4170192	.0106591	.0097088	10.62761	.0213763	.1036815
#3	.4159864	.0106062	.0097293	10.64575	.0221027	.1039565

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0486557	.2029766	.0321149	10.19501	.0785074	.0196612
Stddev	.0024212	.0310180	.0001053	.08748	.0003515	.0007904
%RSD	4.976261	15.28155	.3278388	.8580954	.4477650	4.020003
#1	.0498563	.2062597	.0319939	10.24118	.0787695	.0198810
#2	.0458688	.1704477	.0321854	10.09412	.0781079	.0187842
#3	.0502420	.2322225	.0321655	10.24974	.0786449	.0203184

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.31588	.1092650	.1198085	10.65257	.0156689	F .0012580
Stddev	.29449	.0025040	.0015605	.11772	.0012219	.0017847
%RSD	2.854734	2.291645	1.302477	1.105075	7.798476	141.8743
#1	9.97772	.1080214	.1180699	10.75353	.0166234	.0018337
#2	10.51598	.1121473	.1202680	10.52327	.0160914	-.000744
#3	10.45394	.1076262	.1210877	10.68092	.0142917	.002684

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: PB166571BS Acquired: 02/06/2025 14:49:08 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LCS571 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0203076	.1655490	F 1.003342	.0151852	.2047885	.2127685
Stddev	.0002005	.0028355	.007997	.0008204	.0018090	.0004514
%RSD	.9874015	1.712777	.7970346	5.402633	.8833674	.2121368
#1	.0204719	.1630414	1.004018	.0159615	.2059416	.2125016
#2	.0200842	.1686260	.995028	.0143269	.2027035	.2132897
#3	.0203668	.1649797	1.010979	.0152673	.2057204	.2125143

Elem	Li6707
Units	ppm
Avg	.0305765
Stddev	.0017705
%RSD	5.790336
#1	.0308948
#2	.0321663
#3	.0286685

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4340.552	36372.82	5039.773	3039.453	4897.539
Stddev	10.504	113.10	24.946	17.480	13.806
%RSD	.2420051	.3109588	.4949807	.5751152	.2818969
#1	4328.756	36454.62	5034.460	3025.704	4881.635
#2	4344.006	36243.75	5066.948	3033.529	4906.437
#3	4348.895	36420.10	5017.912	3059.125	4904.546

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: PB166568BL Acquired: 02/06/2025 14:53:06 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: PBW568 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0013223	-.000047	-.000477	-.003850	-.000442	-.015221	.0013266
Stddev	.0022963	.000761	.001702	.000513	.001199	.010297	.0010159
%RSD	173.6669	1611.096	356.6412	13.32202	271.2274	67.65347	76.58264
#1	-.001276	.000804	.001335	-.004337	-.001361	-.024923	.0023459
#2	.003081	-.000663	-.000725	-.003315	-.000880	-.004417	.0013199
#3	.002161	-.000283	-.002042	-.003900	.000914	-.016322	.0003140

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000202	-.000001	.0037212	.0004598	.0000981	-.006259	.0197528
Stddev	.000172	.000008	.0069497	.0003059	.0001859	.003208	.0062623
%RSD	84.80329	727.3143	186.7602	66.52973	189.5540	51.25048	31.70365
#1	-.000350	-.000005	.0112029	.0005587	.0001676	-.002709	.0269701
#2	-.000014	.000008	-.002533	.0007040	-.000113	-.007119	.0165315
#3	-.000243	-.000006	.002494	.0001167	.000239	-.008948	.0157568

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000215	.0131270	-.000392	.0014215	-.441751	.0036387	-.002400
Stddev	.000387	.0146596	.000111	.0009518	.399716	.0048134	.002055
%RSD	179.4891	111.6748	28.22685	66.95966	90.48461	132.2819	85.61377
#1	-.000565	.0274403	-.000284	.0006354	-.902625	.0011098	-.000936
#2	-.000282	.0137966	-.000505	.0011493	-.232981	.0006170	-.001516
#3	.000200	-.001856	-.000385	.0024797	-.189646	.0091895	-.004749

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5266897	.0006331	.0004716	-.000359	-.004199	-.001249	.0004828
Stddev	.0477154	.0010423	.0011334	.000524	.001131	.001189	.0005880
%RSD	9.059489	164.6329	240.3079	145.9075	26.92990	95.17799	121.8040
#1	.5730117	.0017223	-.000181	.000132	-.002899	-.000410	.0002541
#2	.5293639	-.000355	-.000185	-.000911	-.004746	-.002609	.0011508
#3	.4776934	.000532	.001780	-.000298	-.004953	-.000727	.0000434

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: PB166568BL Acquired: 02/06/2025 14:53:06 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: PBW568 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.0000832	-.000062	-.002459
Stddev	.0002043	.000008	.002502
%RSD	245.5273	13.09413	101.7171
#1	-.000002	-.000054	-.003444
#2	.000316	-.000064	-.004319
#3	-.000064	-.000070	.000385

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4420.878	37413.20	5025.620	3090.190	5296.057
Stddev	13.783	60.04	20.302	12.393	16.650
%RSD	.3117812	.1604718	.4039756	.4010315	.3143881
#1	4425.894	37368.95	5044.407	3101.793	5299.039
#2	4431.451	37481.54	5028.369	3091.642	5311.015
#3	4405.289	37389.11	5004.083	3077.135	5278.118

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: PB166568BS Acquired: 02/06/2025 14:57:06 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LCS568 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0240339	.0522156	.0184160	.0634187	.1089415	.4233959
Stddev	.0027037	.0017592	.0005689	.0046364	.0052945	.0054780
%RSD	11.24943	3.369040	3.088988	7.310713	4.859921	1.293814
#1	.0239722	.0534223	.0190671	.0685478	.1028305	.4296842
#2	.0213616	.0501971	.0180151	.0595258	.1121492	.4208440
#3	.0267679	.0530273	.0181658	.0621824	.1118448	.4196594

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4153705	.0108129	.0095305	10.62019	.0207528	.1033437
Stddev	.0019627	.0001143	.0000311	.04577	.0009158	.0007498
%RSD	.4725277	1.057294	.3261706	.4310072	4.412706	.7255086
#1	.4136852	.0108936	.0095015	10.59674	.0218048	.1024931
#2	.4175255	.0108630	.0095634	10.67294	.0201342	.1036295
#3	.4149009	.0106821	.0095267	10.59090	.0203193	.1039086

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0532201	.2282413	.0328893	10.32030	.0780583	.0204635
Stddev	.0021048	.0147155	.0003964	.09702	.0004420	.0002638
%RSD	3.954816	6.447322	1.205319	.9401030	.5662027	1.289135
#1	.0508344	.2130971	.0332269	10.24960	.0775706	.0207653
#2	.0548143	.2424868	.0324528	10.43091	.0784323	.0203486
#3	.0540118	.2291400	.0329882	10.28039	.0781720	.0202767

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.34987	.1136562	.1174315	10.52132	.0181947	F .0014512
Stddev	.34622	.0075934	.0019699	.31859	.0028865	.0015716
%RSD	3.345151	6.681039	1.677493	3.028077	15.86457	108.2993
#1	9.95367	.1155188	.1187051	10.66741	.0198626	.0019500
#2	10.59422	.1053048	.1184270	10.74068	.0148617	-.000309
#3	10.50171	.1201450	.1151626	10.15589	.0198600	.002713

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: PB166568BS Acquired: 02/06/2025 14:57:06 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LCS568 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0205207	.1667959	F 1.010989	.0141663	.2047641	.2143031
Stddev	.0004917	.0013405	.004441	.0010819	.0007811	.0004181
%RSD	2.396011	.8036967	.4393039	7.637100	.3814698	.1951180
#1	.0201130	.1654350	1.009553	.0129926	.2040267	.2139351
#2	.0203823	.1681151	1.015970	.0143824	.2055826	.2147578
#3	.0210667	.1668376	1.007442	.0151238	.2046831	.2142164

Elem	Li6707
Units	ppm
Avg	.0296244
Stddev	.0026038
%RSD	8.789275
#1	.0326305
#2	.0281705
#3	.0280724

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4282.279	36133.26	4948.025	2980.691	4852.984
Stddev	8.711	94.19	21.369	15.524	5.252
%RSD	.2034232	.2606766	.4318638	.5208220	.1082225
#1	4273.009	36050.73	4956.232	2967.730	4847.653
#2	4290.295	36113.19	4923.770	2976.447	4853.144
#3	4283.535	36235.87	4964.074	2997.896	4858.154

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: PB166494TB Acquired: 02/06/2025 15:01:00 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LEB494 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0038289	-.002249	-.000450	.0035083	.0016644	-.025220
Stddev	.0028837	.000562	.002165	.0005635	.0009511	.013561
%RSD	75.31388	24.98009	480.7270	16.06171	57.14151	53.77106
#1	.0005015	-.001671	.001659	.0030706	.0008826	-.009747
#2	.0056021	-.002793	-.002667	.0041441	.0013873	-.035042
#3	.0053832	-.002285	-.000342	.0033103	.0027232	-.030872

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001473	-.000039	-.000007	.0141217	.0021578	.0007695
Stddev	.001237	.000116	.000044	.0172082	.0003847	.0002406
%RSD	83.97143	294.9312	678.2325	121.8568	17.82704	31.26621
#1	-.000848	.000076	-.000058	-.000490	.0017137	.0005073
#2	-.002897	-.000039	.000016	.009766	.0023860	.0009802
#3	-.000673	-.000155	.000022	.033089	.0023736	.0008210

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.009654	.0133344	.0009584	.0505846	.0031683	.0009771
Stddev	.007321	.0041783	.0010869	.0028001	.0003977	.0011088
%RSD	75.82982	31.33440	113.4110	5.535528	12.55166	113.4700
#1	-.009171	.0085847	.0010231	.0538051	.0030998	-.000252
#2	-.002587	.0149757	.0020116	.0487258	.0035958	.001902
#3	-.017205	.0164428	-.000159	.0492228	.0028093	.001281

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1387.901	.0004322	.0005361	F -8.74701	.0001817	-.000540
Stddev	6.191	.0053768	.0031532	.14613	.0016982	.002412
%RSD	.4461029	1243.937	588.2243	1.670651	934.7427	446.3546
#1	1381.802	-.004888	.0028528	-8.90633	-.001492	-.003310
#2	1394.181	.000320	.0018102	-8.71549	.001904	.001105
#3	1387.721	.005864	-.003055	-8.61922	.000133	.000583

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: PB166494TB Acquired: 02/06/2025 15:01:00 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LEB494 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0003084	.0244430	-.004281	-.001907	.0019962	.0001164
Stddev	.0002344	.0025518	.001141	.000862	.0018114	.0003298
%RSD	75.99901	10.43977	26.65895	45.17621	90.74056	283.2837
#1	.0005634	.0220543	-.005570	-.001758	-.000035	.0004801
#2	.0001026	.0271315	-.003877	-.001130	.003444	.0000323
#3	.0002591	.0241433	-.003397	-.002834	.002579	-.000163

Elem	Li6707
Units	ppm
Avg	-.009093
Stddev	.001933
%RSD	21.25944
#1	-.010819
#2	-.007004
#3	-.009457

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4214.901	33469.94	5323.463	2939.796	4236.942
Stddev	13.592	94.81	28.783	11.737	13.141
%RSD	.3224647	.2832669	.5406806	.3992416	.3101617
#1	4202.412	33444.85	5350.436	2936.486	4223.646
#2	4229.376	33390.20	5293.159	2930.069	4249.923
#3	4212.916	33574.77	5326.792	2952.832	4237.259

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1272-03A Acquired: 02/06/2025 15:05:00 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2A Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1209910	-.041184	.4344795	-.043044	.1385913	115.3771	1.025544
Stddev	.0030860	.001339	.0062736	.001719	.0029325	.4188	.002517
%RSD	2.550635	3.252322	1.443931	3.992450	2.115902	.3629975	.2453866
#1	.1200952	-.041083	.4363853	-.043035	.1357666	114.8949	1.022777
#2	.1244258	-.042571	.4274740	-.041331	.1383864	115.5855	1.027696
#3	.1184519	-.039898	.4395791	-.044768	.1416208	115.6508	1.026159

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0165688	-.000346	85.59022	.3097389	.2065893	.2236408	310.8348
Stddev	.0001962	.000076	.21931	.0018070	.0021981	.0017734	1.2000
%RSD	1.184131	22.09923	.2562331	.5834089	1.063980	.7929864	.3860466
#1	.0163434	-.000258	85.44853	.3077469	.2058047	.2252485	309.4523
#2	.0167012	-.000393	85.84284	.3112730	.2048912	.2239353	311.4460
#3	.0166617	-.000387	85.47930	.3101967	.2090720	.2217385	311.6062

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.066574	86.97952	.3723281	-.018405	1.869422	.3763821	2.156257
Stddev	.031506	.36918	.0045088	.001460	.239769	.0043828	.004005
%RSD	.3905710	.4244442	1.210971	7.932636	12.82584	1.164464	.1857259
#1	8.030230	86.55324	.3700350	-.018887	2.128608	.3723057	2.160214
#2	8.086139	87.19577	.3694267	-.016765	1.824126	.3810177	2.152207
#3	8.083353	87.18955	.3775225	-.019563	1.655531	.3758229	2.156350

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.731157	5.477019	.2094207	.0171019	2.367719	7.621283	.0575880
Stddev	.223963	.063852	.0036623	.0002287	.030887	.049921	.0025400
%RSD	3.327258	1.165820	1.748756	1.337097	1.304513	.6550203	4.410582
#1	6.475518	5.450086	.2064373	.0168959	2.350258	7.571589	.0578230
#2	6.825121	5.431046	.2135079	.0170618	2.349517	7.671428	.0549387
#3	6.892831	5.549925	.2083168	.0173480	2.403382	7.620832	.0600023

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1272-03A Acquired: 02/06/2025 15:05:00 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2A Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	3.849619	.3760081	.3155430
Stddev	.007237	.0010272	.0035514
%RSD	.1879843	.2731887	1.125503
#1	3.841298	.3748220	.3193344
#2	3.853121	.3765944	.3150007
#3	3.854439	.3766079	.3122938

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5161.086	42633.15	6208.990	3650.207	4487.755
Stddev	38.928	22.48	14.442	5.719	43.865
%RSD	.7542664	.0527333	.2325907	.1566808	.9774335
#1	5181.042	42658.20	6225.476	3646.377	4506.997
#2	5185.990	42626.53	6198.575	3647.462	4518.710
#3	5116.226	42614.72	6202.921	3656.781	4437.558

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1273-01 Acquired: 02/06/2025 15:08:47 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA0 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0053967	.0064452	-.000715	-.004172	-.011076	.1542328
Stddev	.0018590	.0020245	.001401	.002546	.003977	.0164402
%RSD	34.44606	31.41119	195.8360	61.02483	35.90856	10.65936
#1	.0033366	.0071330	-.000068	-.002297	-.015476	.1690407
#2	.0059044	.0080361	-.002323	-.007071	-.007737	.1365417
#3	.0069490	.0041664	.000245	-.003148	-.010016	.1571159

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.558497	.0003785	.0019935	85.64776	.0024457	.0265129
Stddev	.009197	.0002109	.0000409	.41606	.0004364	.0004233
%RSD	.3594613	55.73194	2.049578	.4857762	17.84250	1.596385
#1	2.563210	.0005037	.0019844	85.69124	.0019424	.0266780
#2	2.547899	.0001349	.0019580	85.21167	.0027173	.0268287
#3	2.564382	.0004968	.0020382	86.04036	.0026775	.0260320

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0033831	.0958555	1.678662	14.59721	.0042393	.0010627
Stddev	.0067537	.0249099	.007109	.09136	.0006456	.0016009
%RSD	199.6311	25.98690	.4234911	.6258813	15.22782	150.6400
#1	.0039373	.0673904	1.672296	14.53196	.0036029	-.000584
#2	.0098426	.1136667	1.677355	14.55805	.0042214	.001159
#3	-.003631	.1065093	1.686333	14.70163	.0048936	.002613

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1340.901	-.000097	1.753945	-.850751	.1285282	.9546525
Stddev	3.737	.005415	.014205	.122652	.0007556	.0113672
%RSD	.2786770	5573.733	.8098633	14.41685	.5878598	1.190711
#1	1341.758	-.002368	1.761809	-.991845	.1283481	.9447307
#2	1336.810	.006083	1.762479	-.769578	.1278790	.9521717
#3	1344.134	-.004007	1.737548	-.790831	.1293575	.9670552

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1273-01 Acquired: 02/06/2025 15:08:47 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA0 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0029293	3.083888	2.985400	.0006934	.0034509	.6046202
Stddev	.0006066	.008158	.028213	.0005849	.0023255	.0024039
%RSD	20.70783	.2645292	.9450323	84.34691	67.38762	.3975880
#1	.0028510	3.074812	2.963316	.0012447	.0015604	.6026264
#2	.0023656	3.086241	2.975701	.0000799	.0027447	.6039446
#3	.0035712	3.090610	3.017183	.0007556	.0060476	.6072896

Elem	Li6707
Units	ppm
Avg	-.001246
Stddev	.003166
%RSD	254.0698
#1	-.004822
#2	-.000119
#3	.001202

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4234.250	33967.57	5304.907	2983.475	4178.865
Stddev	11.802	144.51	47.067	11.823	10.441
%RSD	.2787292	.4254295	.8872276	.3962969	.2498512
#1	4220.866	33927.10	5342.536	2977.541	4169.197
#2	4238.720	34128.00	5320.052	2975.794	4177.463
#3	4243.164	33847.62	5252.132	2997.090	4189.937

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1273-02 Acquired: 02/06/2025 15:12:37 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA1 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0011381	.0085276	.0013761	-.001379	-.011852	.1790766
Stddev	.0019895	.0016464	.0021090	.001252	.003815	.0241548
%RSD	174.8013	19.30610	153.2651	90.79655	32.18820	13.48852
#1	.0009713	.0086743	-.001035	-.001725	-.015625	.1818795
#2	.0032058	.0068128	.002283	.000010	-.011933	.1536426
#3	-.000763	.0100957	.002880	-.002421	-.007997	.2017077

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.714315	.0008179	.0006568	104.2454	.0031566	.0399164
Stddev	.008165	.0000767	.0000358	.2456	.0004560	.0002945
%RSD	.3008267	9.373095	5.457531	.2356182	14.44633	.7379090
#1	2.705012	.0007635	.0006387	103.9728	.0031319	.0399539
#2	2.717639	.0009055	.0006981	104.3139	.0036245	.0401904
#3	2.720294	.0007846	.0006336	104.4495	.0027134	.0396049

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0403304	.0187715	1.717882	25.51666	.0190368	.0026381
Stddev	.0061682	.0152182	.008917	.15346	.0002212	.0001272
%RSD	15.29427	81.07050	.5190695	.6013937	1.161925	4.823115
#1	.0434322	.0046274	1.709060	25.46077	.0192673	.0026627
#2	.0443320	.0168130	1.717696	25.39898	.0190168	.0027512
#3	.0332269	.0348741	1.726891	25.69023	.0188263	.0025004

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1323.103	.0016787	.7845885	-3.15322	.0092764	.4948601
Stddev	3.880	.0036822	.0026892	.14640	.0033047	.0043743
%RSD	.2932839	219.3442	.3427477	4.642794	35.62497	.8839563
#1	1319.881	.0039876	.7867529	-2.99931	.0124383	.4898101
#2	1322.018	-.002568	.7854345	-3.16965	.0095456	.4974750
#3	1327.411	.003616	.7815781	-3.29072	.0058453	.4972951

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1273-02 Acquired: 02/06/2025 15:12:37 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA1 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0026032	1.800613	5.018493	.0003203	-.000949	.5605711
Stddev	.0005014	.003243	.038878	.0005153	.003065	.0030289
%RSD	19.26016	.1800879	.7746851	160.8936	323.0803	.5403337
#1	.0031817	1.796921	4.973683	.0002186	-.001691	.5576406
#2	.0023338	1.803000	5.043236	.0008789	-.003573	.5603829
#3	.0022941	1.801917	5.038562	-.000137	.002419	.5636897

Elem	Li6707
Units	ppm
Avg	.0237098
Stddev	.0035565
%RSD	15.00024
#1	.0202535
#2	.0235172
#3	.0273587

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4142.834	33439.79	5230.917	2913.292	4064.045
Stddev	6.597	106.72	36.563	5.263	6.736
%RSD	.1592460	.3191281	.6989743	.1806645	.1657362
#1	4149.772	33324.42	5268.725	2915.136	4071.686
#2	4136.640	33534.97	5228.282	2917.385	4058.965
#3	4142.091	33459.97	5195.742	2907.355	4061.485

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1273-03 Acquired: 02/06/2025 15:16:29 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0038979	.0138338	.0271375	-.004980	-.016066	.1138464
Stddev	.0010293	.0035830	.0022870	.004195	.000877	.0115741
%RSD	26.40698	25.90033	8.427417	84.24088	5.461242	10.16637
#1	.0035785	.0097719	.0268865	-.000691	-.016974	.1008321
#2	.0030662	.0151837	.0249864	-.009075	-.016002	.1177212
#3	.0050491	.0165458	.0295397	-.005175	-.015223	.1229860

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.948409	.0000063	.0028485	200.4475	.0033780	.0346011
Stddev	.006094	.0002151	.0000073	.4703	.0006352	.0004979
%RSD	.3127716	3425.818	.2559751	.2346073	18.80320	1.439064
#1	1.941509	.0001126	.0028404	199.9364	.0026539	.0349914
#2	1.953054	.0001475	.0028507	200.8620	.0038408	.0340403
#3	1.950663	-.000241	.0028545	200.5440	.0036394	.0347714

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0687463	.0480927	3.995862	32.44588	.0097944	.0021433
Stddev	.0026204	.0110771	.002182	.08741	.0002336	.0001548
%RSD	3.811771	23.03291	.0546046	.2693909	2.385362	7.222114
#1	.0658344	.0538342	3.994242	32.34660	.0095746	.0023206
#2	.0694899	.0353235	3.995000	32.51122	.0100398	.0020736
#3	.0709146	.0551204	3.998343	32.47984	.0097690	.0020355

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1349.907	.0010464	.4741510	4.489561	.0848179	.2511780
Stddev	3.328	.0021821	.0031686	.212213	.0012688	.0017350
%RSD	.2465717	208.5332	.6682633	4.726817	1.495904	.6907406
#1	1346.102	.0022535	.4721978	4.333058	.0845266	.2515442
#2	1352.280	-.001473	.4724483	4.404518	.0862070	.2492892
#3	1351.339	.002358	.4778069	4.731105	.0837200	.2527007

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1273-03 Acquired: 02/06/2025 15:16:29 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0030814	1.798972	3.332333	.0010469	-.001000	1.421465
Stddev	.0004803	.004572	.005144	.0012102	.001088	.004127
%RSD	15.58693	.2541221	.1543758	115.5990	108.7663	.2903332
#1	.0035027	1.801543	3.326913	-.000130	-.002021	1.417013
#2	.0025584	1.793694	3.337148	.000983	-.001125	1.422219
#3	.0031832	1.801679	3.332939	.002288	.000145	1.425163

Elem	Li6707
Units	ppm
Avg	.0030903
Stddev	.0040464
%RSD	130.9378
#1	.0022069
#2	-.000441
#3	.007505

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4100.250	33245.64	5210.686	2865.847	4026.844
Stddev	11.530	8.94	12.603	9.672	6.576
%RSD	.2811934	.0268821	.2418724	.3375055	.1633045
#1	4103.104	33239.69	5224.483	2858.461	4028.526
#2	4110.085	33255.91	5199.778	2876.795	4032.416
#3	4087.562	33241.31	5207.797	2862.284	4019.590

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1273-04 Acquired: 02/06/2025 15:20:21 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2D Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0038759	.0124035	.0253369	-.004312	-.015301	.1012850
Stddev	.0013674	.0027755	.0007728	.002969	.003503	.0264763
%RSD	35.27824	22.37670	3.050045	68.84907	22.89392	26.14040
#1	.0026362	.0155683	.0247413	-.007739	-.012693	.1135992
#2	.0053425	.0103834	.0250592	-.002519	-.013927	.1193616
#3	.0036490	.0112590	.0262101	-.002678	-.019283	.0708944

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.819256	.0000245	.0026331	185.9746	.0034381	.0325020
Stddev	.008786	.0000538	.0000840	.9039	.0005229	.0004051
%RSD	.4829476	219.3655	3.191742	.4860232	15.20866	1.246247
#1	1.829133	.0000336	.0025361	186.9506	.0040064	.0329646
#2	1.816322	-.000033	.0026847	185.8067	.0029773	.0323306
#3	1.812312	.000073	.0026786	185.1664	.0033307	.0322109

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0615425	.0479698	3.696928	30.00559	.0088822	.0018635
Stddev	.0022542	.0043803	.022113	.25959	.0008609	.0009741
%RSD	3.662785	9.131316	.5981346	.8651284	9.692000	52.27213
#1	.0593733	.0488637	3.711434	30.26567	.0093991	.0029857
#2	.0613811	.0518341	3.707873	30.00461	.0078884	.0013693
#3	.0638730	.0432115	3.671477	29.74650	.0093590	.0012356

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1255.189	.0024052	.4481132	3.341609	.0782225	.2366001
Stddev	6.844	.0029209	.0049288	.165124	.0003695	.0009197
%RSD	.5452635	121.4413	1.099901	4.941459	.4723710	.3886957
#1	1260.985	.0035601	.4455451	3.531557	.0778140	.2372495
#2	1256.945	-.000917	.4537957	3.232293	.0785334	.2370029
#3	1247.638	.004572	.4449988	3.260976	.0783200	.2355477

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1273-04 Acquired: 02/06/2025 15:20:21 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2D Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0033529	1.697694	3.132505	-.000150	-.003096	1.317534
Stddev	.0000398	.005222	.026937	.000994	.002722	.009239
%RSD	1.187449	.3075988	.8599302	664.0871	87.91058	.7012156
#1	.0033083	1.699297	3.163316	.000999	-.006205	1.323022
#2	.0033848	1.691858	3.120795	-.000724	-.001940	1.322714
#3	.0033656	1.701927	3.113405	-.000723	-.001143	1.306868

Elem	Li6707
Units	ppm
Avg	.0021556
Stddev	.0032670
%RSD	151.5623
#1	.0057512
#2	.0013460
#3	-.000631

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4236.631	34258.75	5477.697	2974.326	4171.807
Stddev	28.812	187.33	49.347	10.980	25.294
%RSD	.6800743	.5468049	.9008651	.3691648	.6063027
#1	4260.810	34244.11	5422.949	2983.722	4193.996
#2	4244.332	34079.17	5491.393	2962.256	4177.162
#3	4204.751	34452.97	5518.748	2977.001	4144.265

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1273-03LX5 Acquired: 02/06/2025 15:24:12 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2L Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0008580	.0039022	.0037619	-.004789	-.007916	.0056832	.3779745
Stddev	.0047701	.0008278	.0031042	.002168	.001092	.0206173	.0026345
%RSD	555.9597	21.21518	82.51796	45.27978	13.79175	362.7723	.6969961
#1	.0001777	.0033162	.0025984	-.004697	-.006936	-.016906	.3749430
#2	.0059318	.0048492	.0072798	-.002668	-.009093	.010470	.3797090
#3	-.003535	.0035410	.0014075	-.007001	-.007718	.023486	.3792715

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000099	.0005856	39.01354	.0006779	.0175086	.0101244	.0355775
Stddev	.000107	.0000540	.27060	.0003623	.0004722	.0005416	.0090251
%RSD	107.7159	9.228699	.6935978	53.43517	2.697118	5.349576	25.36749
#1	.000004	.0006457	38.70486	.0002597	.0170486	.0095534	.0436723
#2	-.000210	.0005411	39.12588	.0008935	.0179921	.0106309	.0372142
#3	-.000092	.0005700	39.20987	.0008806	.0174851	.0101888	.0258460

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7657056	6.313585	.0012491	.0007220	260.2455	.0009825	.0833293
Stddev	.0043853	.056015	.0002837	.0003481	1.4860	.0020886	.0045354
%RSD	.5727102	.8872082	22.71027	48.21167	.5710084	212.5813	5.442725
#1	.7606576	6.249011	.0014576	.0010281	258.5400	.0033934	.0835313
#2	.7678854	6.342658	.0013635	.0007945	260.9342	-.000279	.0786963
#3	.7685739	6.349085	.0009260	.0003434	261.2622	-.000166	.0877603

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.009717	.0111998	.0545050	.0016047	.3335440	.6872810	.0009914
Stddev	.324827	.0031715	.0017987	.0003135	.0060265	.0081040	.0013506
%RSD	10.79262	28.31716	3.300023	19.53718	1.806795	1.179131	136.2398
#1	2.727674	.0143059	.0544382	.0014980	.3279669	.6782106	.0005334
#2	2.936608	.0079667	.0563361	.0013585	.3399368	.6898239	-.000071
#3	3.364868	.0113269	.0527406	.0019576	.3327283	.6938085	.002511

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1273-03LX5 Acquired: 02/06/2025 15:24:12 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2L Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.0017600	.2697571	.0243972
Stddev	.0007702	.0017401	.0037523
%RSD	43.76342	.6450764	15.37995
#1	.0015652	.2677611	.0206294
#2	.0026090	.2705554	.0281337
#3	.0011059	.2709549	.0244285

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4209.849	34292.02	5034.554	2959.965	4371.800
Stddev	13.642	109.96	27.370	16.251	19.156
%RSD	.3240420	.3206476	.5436388	.5490251	.4381778
#1	4219.312	34185.71	5061.406	2941.751	4383.408
#2	4194.211	34405.29	5006.694	2972.980	4349.689
#3	4216.023	34285.04	5035.562	2965.164	4382.302

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1273-05 Acquired: 02/06/2025 15:28:08 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2S Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0030952	.0128836	.0268476	-.006681	-.016428	.1104922
Stddev	.0010408	.0010922	.0002699	.001702	.004965	.0252400
%RSD	33.62686	8.477813	1.005223	25.46723	30.22466	22.84320
#1	.0037709	.0140656	.0265751	-.007079	-.013008	.1165920
#2	.0018966	.0119116	.0271148	-.008149	-.022123	.1321233
#3	.0036180	.0126738	.0268527	-.004816	-.014152	.0827614

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.969573	-.000015	.0028126	201.5828	.0026797	.0339928
Stddev	.006398	.000091	.0000200	.2143	.0009076	.0006859
%RSD	.3248546	602.7768	.7121137	.1063253	33.86882	2.017748
#1	1.962477	.000089	.0028357	201.3353	.0036145	.0334620
#2	1.971338	-.000083	.0028013	201.7035	.0026225	.0337491
#3	1.974903	-.000051	.0028008	201.7094	.0018020	.0347673

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0813390	.0398734	3.986759	32.32035	.0098437	.0013983
Stddev	.0037068	.0150511	.011392	.04981	.0004550	.0001021
%RSD	4.557266	37.74707	.2857496	.1541149	4.622062	7.304271
#1	.0817191	.0251437	3.980939	32.29823	.0094556	.0014651
#2	.0848412	.0552264	3.999885	32.37739	.0103444	.0012807
#3	.0774568	.0392502	3.979452	32.28544	.0097311	.0014490

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1354.419	-.000416	.4719165	4.704351	.0860466	.2498278
Stddev	2.564	.002785	.0008850	.046345	.0035081	.0024120
%RSD	.1892894	668.8283	.1875359	.9851445	4.076929	.9654692
#1	1356.167	.001037	.4714008	4.651128	.0833378	.2506240
#2	1355.613	.001341	.4714102	4.735786	.0900093	.2517411
#3	1351.476	-.003627	.4729384	4.726140	.0847927	.2471184

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: Q1273-05 Acquired: 02/06/2025 15:28:08 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2S Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0033199	1.814655	3.344048	.0007267	-.001981	1.421911
Stddev	.0008444	.007322	.016810	.0006544	.001476	.004300
%RSD	25.43450	.4034800	.5026923	90.04916	74.50932	.3024054
#1	.0026812	1.811493	3.353481	.0001629	-.003673	1.423610
#2	.0030013	1.809447	3.354025	.0014442	-.000954	1.425102
#3	.0042772	1.823027	3.324640	.0005729	-.001317	1.417021

Elem	Li6707
Units	ppm
Avg	.0026815
Stddev	.0042135
%RSD	157.1340
#1	-.001520
#2	.006907
#3	.002657

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4123.787	33317.23	5254.037	2894.372	4059.552
Stddev	14.539	122.71	7.797	6.204	10.804
%RSD	.3525758	.3682950	.1484094	.2143486	.2661419
#1	4122.112	33448.61	5245.057	2901.263	4060.612
#2	4139.091	33297.49	5257.965	2889.231	4069.786
#3	4110.157	33205.60	5259.089	2892.623	4048.256

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: CCV004 Acquired: 02/06/2025 15:31:59 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV004 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.946935	4.927557	25.16357	4.979684	5.048762	404.5170	10.22991
Stddev	.005791	.002792	.02011	.014690	.005647	2.0854	.03600
%RSD	.1170628	.0566638	.0799162	.2949922	.1118464	.5155245	.3519042
#1	4.950997	4.929711	25.18460	4.983656	5.055279	402.7008	10.23027
#2	4.940304	4.928557	25.16156	4.991980	5.045330	404.0557	10.19373
#3	4.949503	4.924402	25.14454	4.963417	5.045676	406.7944	10.26573

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5047959	2.541482	406.2170	15.63628	2.528157	15.16069	406.0647
Stddev	.0017410	.002580	1.7925	.02690	.003138	.06312	1.7042
%RSD	.3448978	.1014999	.4412583	.1720061	.1241306	.4163725	.4196988
#1	.5030656	2.543984	405.8008	15.63581	2.530119	15.14347	404.5178
#2	.5047746	2.541632	404.6693	15.66341	2.529814	15.10797	405.7847
#3	.5065475	2.538831	408.1810	15.60962	2.524537	15.23065	407.8916

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.92323	400.7920	2.538796	1.251160	399.0791	2.508524	15.00620
Stddev	.07030	1.8694	.000460	.004090	2.9566	.008537	.04203
%RSD	.4710952	.4664266	.0181026	.3268750	.7408673	.3403164	.2800729
#1	14.87108	399.1971	2.538945	1.251791	398.2527	2.501908	15.05449
#2	14.89543	400.3296	2.538280	1.254898	396.6235	2.505503	14.97788
#3	15.00319	402.8492	2.539162	1.246792	402.3610	2.518160	14.98623

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	153.1942	5.107492	5.013436	4.963208	5.169283	4.776902	5.079407
Stddev	1.0482	.007484	.022671	.000323	.008620	.029399	.002215
%RSD	.6842563	.1465336	.4521964	.0065023	.1667568	.6154326	.0436024
#1	152.2288	5.114676	4.990708	4.962836	5.165021	4.744137	5.080556
#2	153.0445	5.108059	5.013552	4.963403	5.179204	4.785595	5.076854
#3	154.3092	5.099740	5.036049	4.963385	5.163624	4.800973	5.080811

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: CCV004 Acquired: 02/06/2025 15:31:59 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV004 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	5.047730	4.816639	5.065178
Stddev	.039722	.064153	.028918
%RSD	.7869215	1.331897	.5709176
#1	5.022844	4.763856	5.052009
#2	5.026806	4.888042	5.045189
#3	5.093539	4.798019	5.098337

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3684.451	31602.28	4888.721	2568.685	3777.266
Stddev	4.788	86.09	17.444	12.179	5.892
%RSD	.1299585	.2724262	.3568281	.4741203	.1559898
#1	3682.572	31564.71	4908.816	2562.777	3774.042
#2	3680.888	31541.36	4879.882	2560.588	3773.688
#3	3689.894	31700.78	4877.466	2582.691	3784.066

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

Sample Name: CCB004 Acquired: 02/06/2025 15:35:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB004 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0036847	.0000550	-.000007	-.004828	.0000186	-.006411
Stddev	.0026105	.0013978	.000915	.004639	.0028314	.005224
%RSD	70.84662	2540.397	13281.82	96.09266	15258.20	81.49164
#1	.0029785	-.001018	.000554	-.007407	.0025689	-.009553
#2	.0015000	-.000453	-.001063	.000528	.0005150	-.009300
#3	.0065757	.001636	.000489	-.007605	-.003028	-.000380

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0016872	.0000762	.0001357	.0071051	.0011149	.0007158
Stddev	.0007536	.0001972	.0000531	.0102056	.0002776	.0002281
%RSD	44.66615	258.8970	39.13522	143.6383	24.90002	31.86027
#1	.0025180	-.000151	.0001773	.0187936	.0012413	.0004758
#2	.0014961	.000181	.0001539	.0025600	.0013069	.0007420
#3	.0010476	.000199	.0000759	-.000038	.0007966	.0009296

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.006334	.0195428	.0007233	.0489625	-.000141	.0008649
Stddev	.005753	.0187941	.0008595	.0182055	.000774	.0007467
%RSD	90.82235	96.16899	118.8339	37.18252	549.7923	86.32940
#1	-.011507	.0410410	-.000245	.0366825	.000749	.0015101
#2	-.000138	.0062266	.001018	.0698789	-.000509	.0010377
#3	-.007359	.0113609	.001397	.0403262	-.000663	.0000470

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1911111	.0021598	-.000037	1.197418	.0010610	.0065817
Stddev	.1419942	.0013140	.000233	.305769	.0003215	.0007231
%RSD	74.29928	60.83920	621.9783	25.53567	30.30155	10.98625
#1	.0394787	.0007012	-.000158	.935296	.0012038	.0073251
#2	.2129082	.0025273	.000231	1.533329	.0006928	.0065393
#3	.3209463	.0032509	-.000185	1.123627	.0012863	.0058808

Reviewed By:JANVI
On:2/10/2025 1:38:43 PM
Inst Id :P5

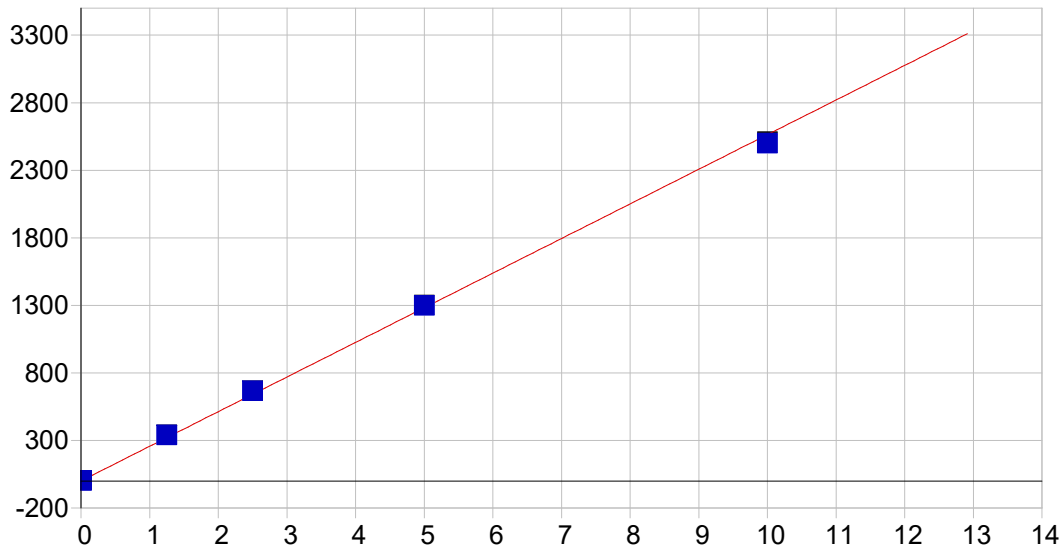
Sample Name: CCB004 Acquired: 02/06/2025 15:35:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v132) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB004 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001879	-.003434	-.001764	.0003105	.0013424	.0002742
Stddev	.0002170	.001620	.000514	.0011967	.0027931	.0001969
%RSD	115.5048	47.18230	29.15132	385.4404	208.0739	71.80302
#1	.0001028	-.001715	-.001209	-.000431	-.000770	.0003707
#2	.0000264	-.004933	-.002223	.001691	.004509	.0000477
#3	.0004346	-.003656	-.001859	-.000328	.000288	.0004042

Elem	Li6707
Units	ppm
Avg	F .0174513
Stddev	.0025087
%RSD	14.37558
#1	.0159811
#2	.0160248
#3	.0203481

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4376.907	37398.28	4974.395	3050.928	5250.814
Stddev	4.898	163.72	41.451	8.025	3.640
%RSD	.1119001	.4377694	.8332910	.2630361	.0693314
#1	4382.562	37524.71	4962.167	3056.774	5249.519
#2	4374.075	37456.78	4940.434	3054.231	5254.925
#3	4374.083	37213.35	5020.585	3041.779	5247.998

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



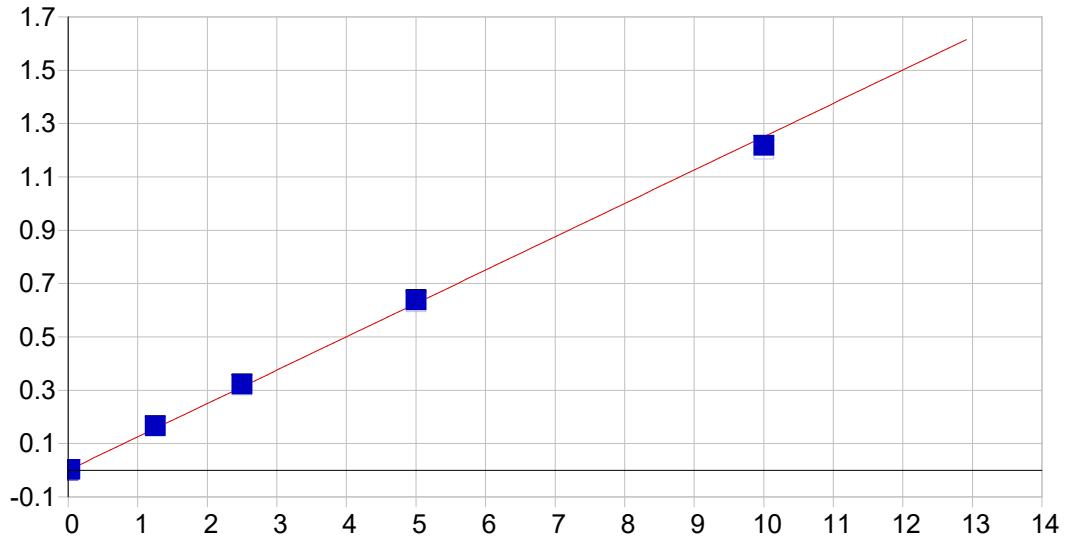
As 189.042 {478}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.354501	Re-Slope:	1.000000
A1 (Gain):	256.316166	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999584	Status:	OK.
Std Error of Est:	0.123811		
Predicted MDL:	0.003845		
Predicted MQL:	0.012816		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.35407	.400	1
S1	.01000	.01078	.001	7.80	3.1166	.597	1
S2	1.2500	1.3230	.073	5.84	339.08	1.54	1
S3	2.5000	2.6015	.102	4.06	666.39	1.15	1
S4	5.0000	5.0716	.072	1.43	1298.8	1.62	1
S5	10.000	9.7531	-.247	-2.47	2497.1	9.27	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

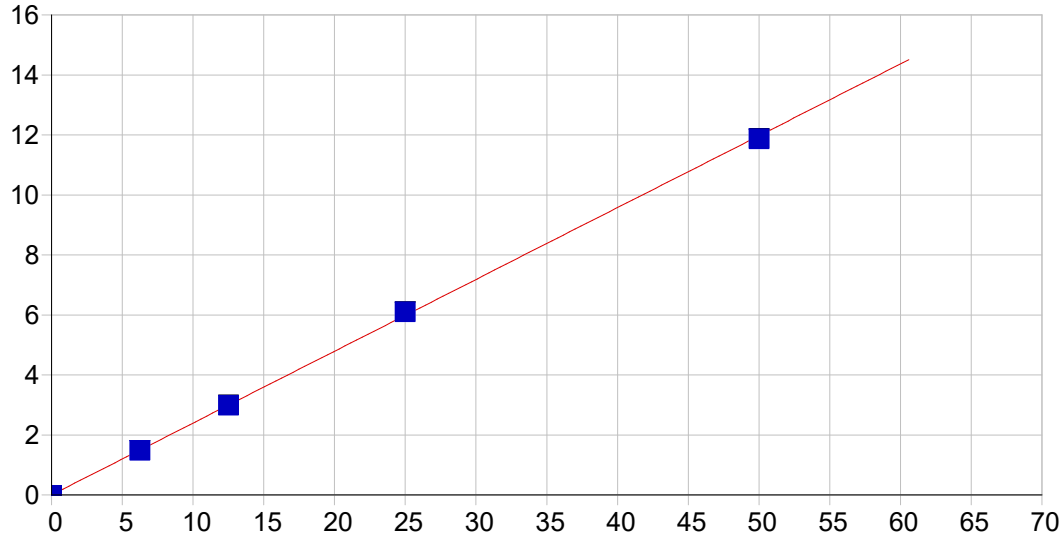


Tl 190.856 {477}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000057	Re-Slope:	1.000000
A1 (Gain):	0.125061	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999546	Status:	OK.
Std Error of Est:	0.000099		
Predicted MDL:	0.001491		
Predicted MQL:	0.004971		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00006	.000	1
S1	.02500	.02772	.003	10.9	.00341	.000	1
S2	1.2500	1.3254	.075	6.04	.16401	.000	1
S3	2.5000	2.5808	.081	3.23	.31919	.000	1
S4	5.0000	5.1054	.105	2.11	.63131	.001	1
S5	10.000	9.7357	-.264	-2.64	1.2031	.001	1



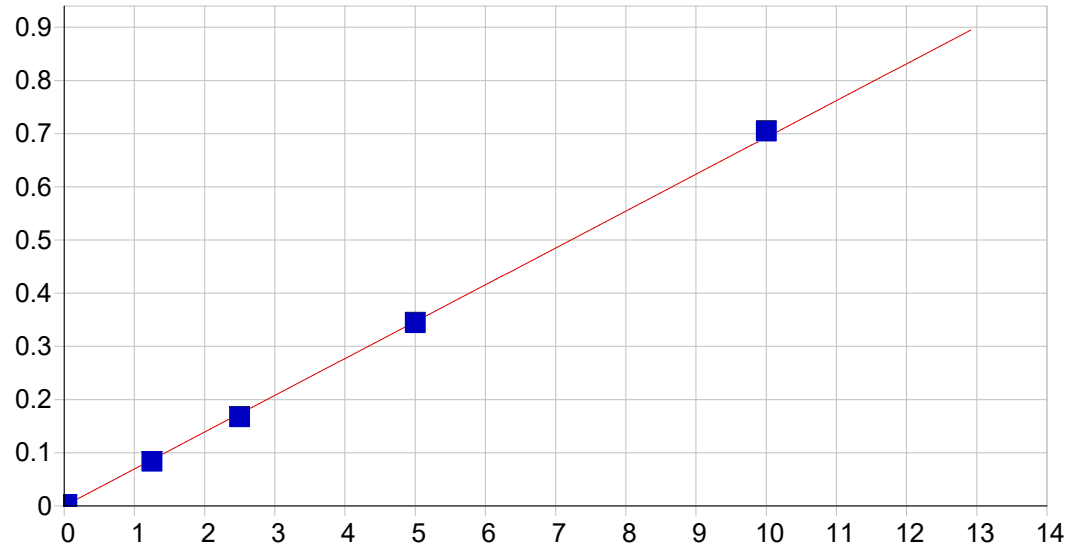
Pb 220.353 {453}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000285	Re-Slope:	1.000000
A1 (Gain):	0.239423	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999928	Status:	OK.
Std Error of Est:	0.000107		
Predicted MDL:	0.001854		
Predicted MQL:	0.006179		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00029	.000	1
S1	.01000	.00896	-.001	-10.4	.00241	.001	1
S2	6.2500	6.1935	-.057	-.904	1.4797	.003	1
S3	12.500	12.483	-.017	-.138	2.9821	.004	1
S4	25.000	25.485	.485	1.94	6.0883	.012	1
S5	50.000	49.590	-.410	-.820	11.846	.010	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



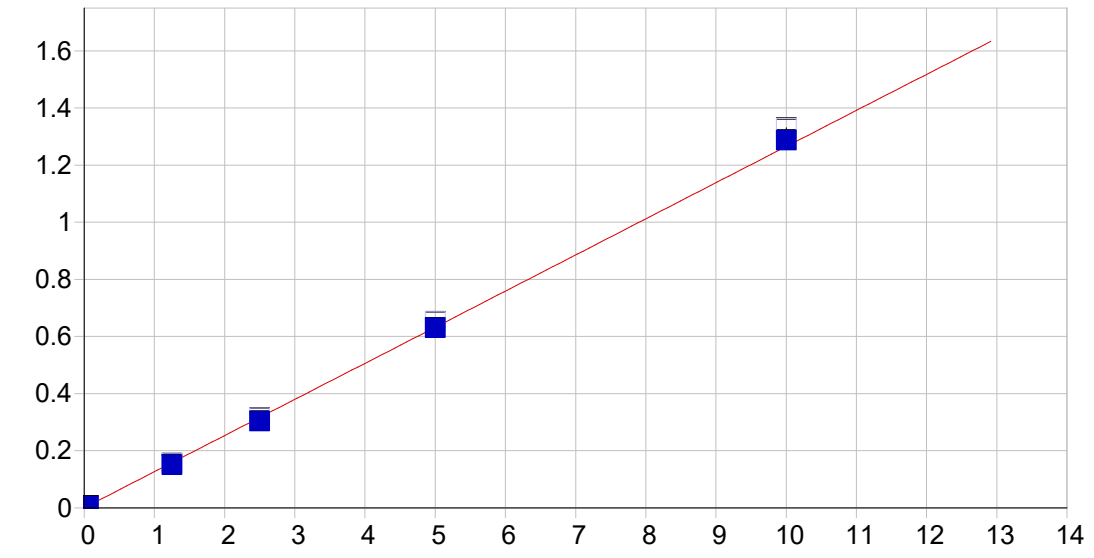
Se 196.090 {472}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000149	Re-Slope:	1.000000
A1 (Gain):	0.069269	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999781	Status:	OK.
Std Error of Est:	0.000045		
Predicted MDL:	0.003591		
Predicted MQL:	0.011969		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00015	.000	1
S1	.03500	.03124	-.004	-10.7	.00231	.000	1
S2	1.2500	1.2033	-.047	-3.73	.08337	.000	1
S3	2.5000	2.4124	-.088	-3.51	.16699	.000	1
S4	5.0000	4.9702	-.030	-.596	.34391	.001	1
S5	10.000	10.168	.168	1.68	.70343	.001	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



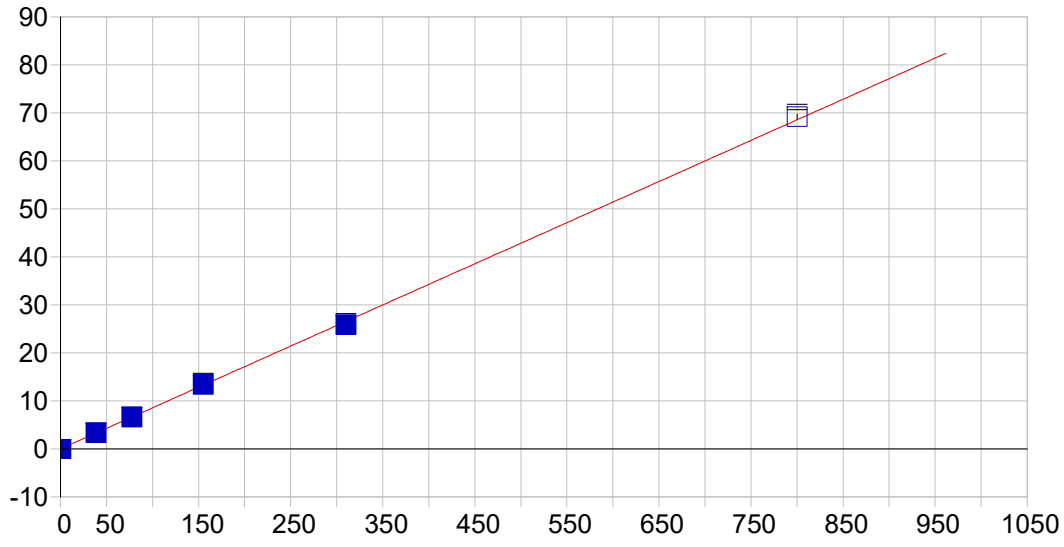
Sb 206.833 {463}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000269	Re-Slope:	1.000000
A1 (Gain):	0.126473	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999755	Status:	OK.
Std Error of Est:	0.000119		
Predicted MDL:	0.002556		
Predicted MQL:	0.008520		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00027	.000	1
S1	.06000	.05526	-.005	-7.90	.00726	.000	1
S2	1.2500	1.1931	-.057	-4.56	.15644	.000	1
S3	2.5000	2.4023	-.098	-3.91	.31467	.001	1
S4	5.0000	4.9857	-.014	-.286	.65197	.001	1
S5	10.000	10.174	.174	1.74	1.3292	.002	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



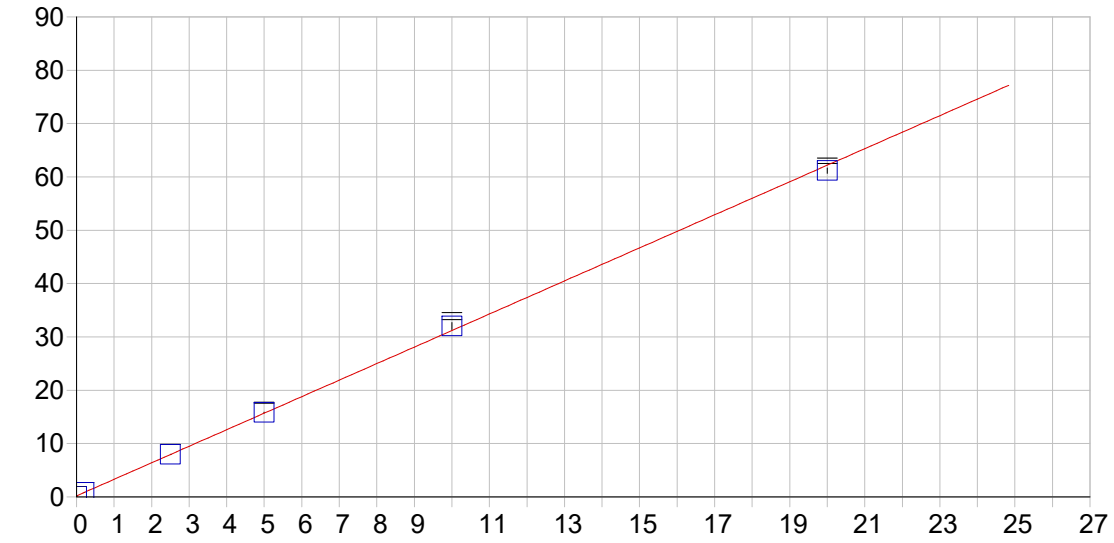
Al 396.152 { 85}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000182	Re-Slope:	1.000000
A1 (Gain):	0.085702	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999895	Status:	OK.
Std Error of Est:	0.000772		
Predicted MDL:	0.021763		
Predicted MQL:	0.072544		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00018	.000	1
S1	.20000	.19582	-.004	-2.09	.01699	.001	1
S2	38.750	38.634	-.116	-.300	3.3148	.012	1
S3	77.500	76.901	-.599	-.773	6.5979	.018	1
S4	155.00	156.62	1.62	1.04	13.437	.225	1
S5	310.00	302.02	-7.98	-2.57	25.913	.172	1
S6	800.00	807.09	7.09	.886	69.169	.540	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



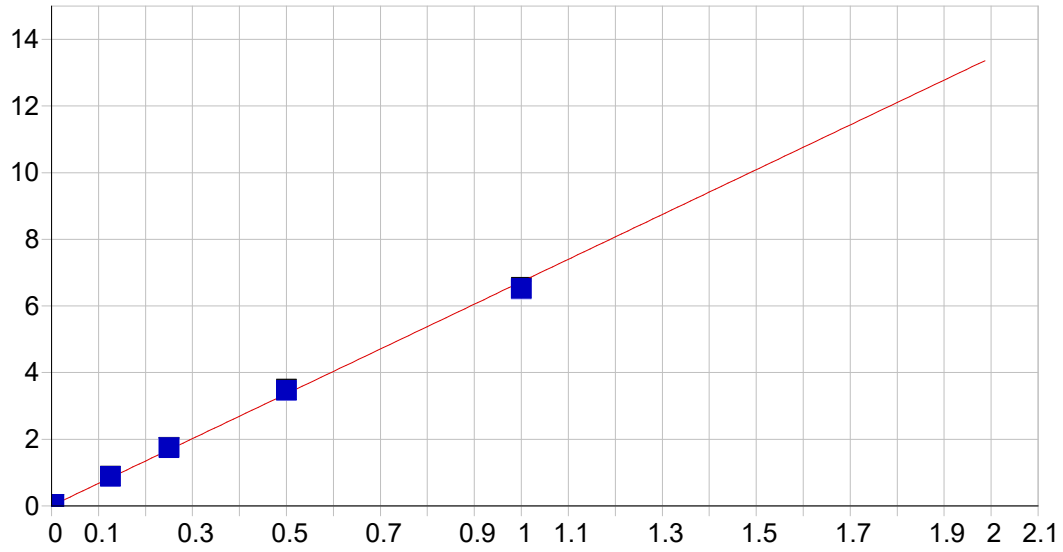
Ba 493.409 { 68}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.201200	Re-Slope:	1.000000
A1 (Gain):	3.099513	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999822	Status:	OK.
Std Error of Est:	0.006212		
Predicted MDL:	0.001595		
Predicted MQL:	0.005316		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.20117	.002	1
S1	.20000	.20502	.005	2.51	.83666	.004	1
S2	2.5000	2.5100	.010	.398	7.9808	.003	1
S3	5.0000	5.0383	.038	.765	15.817	.086	1
S4	10.000	10.275	.275	2.75	32.049	.641	1
S5	20.000	19.672	-.328	-1.64	61.174	.513	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



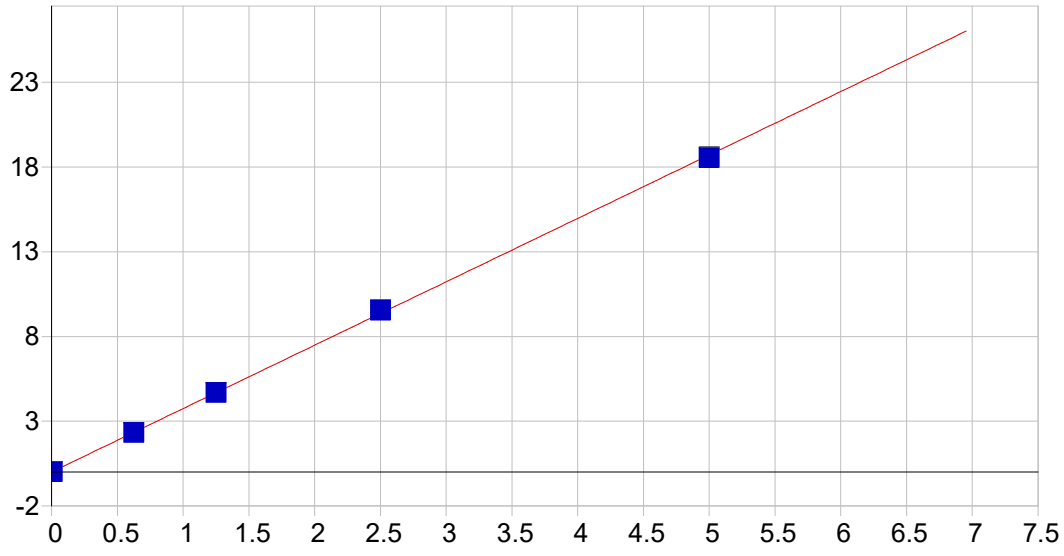
Be 234.861 {144}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002641	Re-Slope:	1.000000
A1 (Gain):	6.724453	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999437	Status:	OK.
Std Error of Est:	0.000843		
Predicted MDL:	0.000136		
Predicted MQL:	0.000453		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00264	.000	1
S1	.00500	.00542	.000	8.43	.03907	.000	1
S2	.12500	.13081	.006	4.65	.87843	.009	1
S3	.25000	.25916	.009	3.67	1.7377	.011	1
S4	.50000	.51567	.016	3.13	3.4548	.033	1
S5	1.0000	.96893	-.031	-3.11	6.4873	.044	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



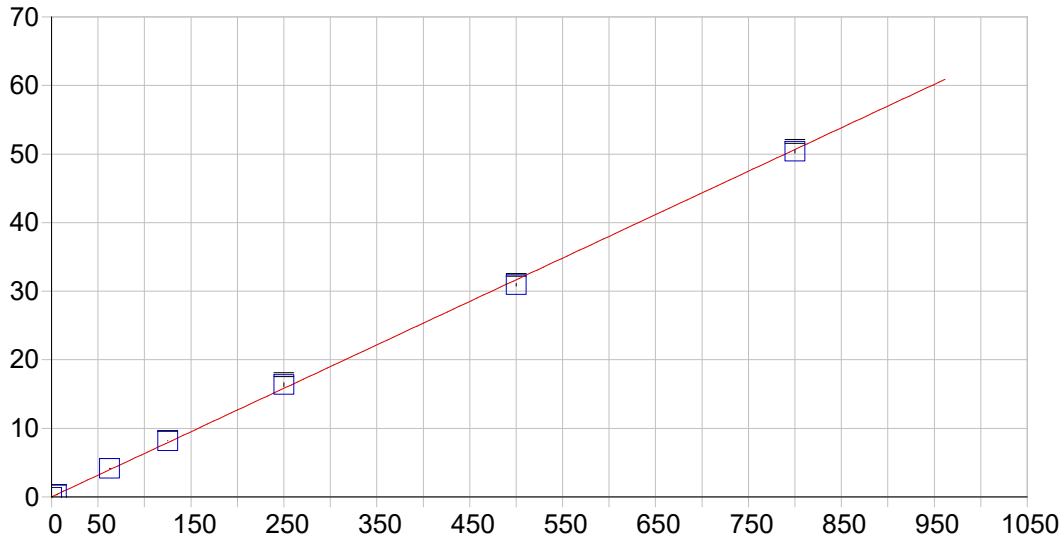
Cd 214.438 {457}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000174	Re-Slope:	1.000000
A1 (Gain):	3.742436	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999923	Status:	OK.
Std Error of Est:	0.000389		
Predicted MDL:	0.000079		
Predicted MQL:	0.000264		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00017	.000	1
S1	.00500	.00485	-.000	-3.08	.01838	.000	1
S2	.62500	.61910	-.006	-.944	2.3207	.004	1
S3	1.2500	1.2501	.000	.006	4.6857	.008	1
S4	2.5000	2.5499	.050	2.00	9.5575	.021	1
S5	5.0000	4.9560	-.044	-.879	18.577	.020	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



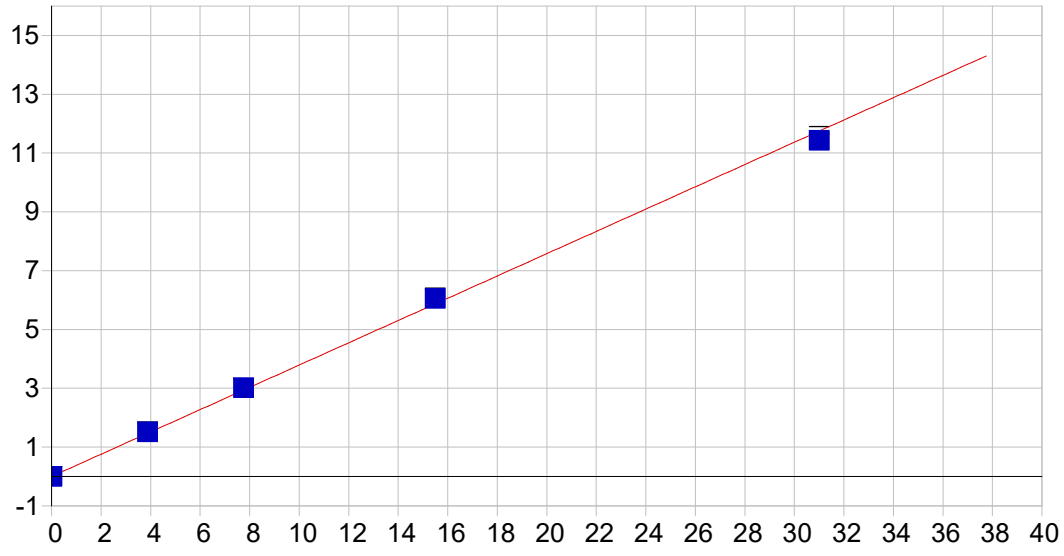
Ca 373.690 { 90}

Date of Fit: 02/07/2025 8:00:59 Type of Fit: Linear Weighting: 1/Conc

A0 (Offset):	0.003589	Re-Slope:	1.000000
A1 (Gain):	0.063327	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999750	Status:	OK.
Std Error of Est:	0.004939		
Predicted MDL:	0.023365		
Predicted MQL:	0.077883		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00074	-.001	.000	.00354	.002	1
S1	5.0000	5.3184	.318	6.37	.34039	.001	1
S2	62.500	65.362	2.86	4.58	4.1427	.005	1
S3	125.00	129.13	4.13	3.30	8.1810	.030	1
S4	250.00	258.50	8.50	3.40	16.374	.296	1
S5	500.00	488.36	-11.6	-2.33	30.930	.200	1
S6	800.00	795.83	-4.17	-.521	50.401	.291	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



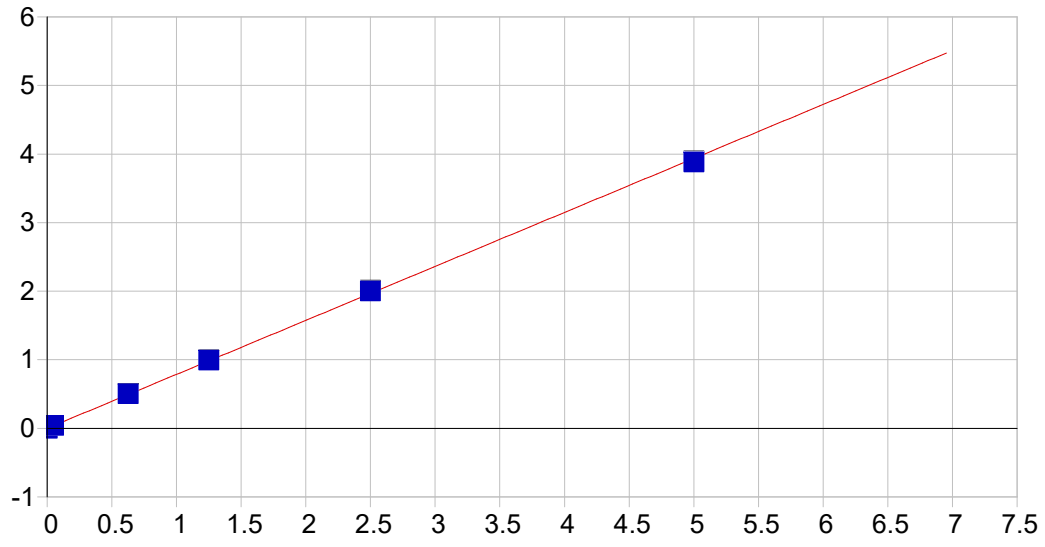
Cr 267.716 {126}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000039	Re-Slope:	1.000000
A1 (Gain):	0.378931	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999588	Status:	OK.
Std Error of Est:	0.000321		
Predicted MDL:	0.000692		
Predicted MQL:	0.002308		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00004	.000	1
S1	.01000	.01070	.001	6.95	.00410	.000	1
S2	3.8750	4.0021	.127	3.28	1.5177	.005	1
S3	7.7500	7.9691	.219	2.83	3.0221	.010	1
S4	15.500	15.985	.485	3.13	6.0620	.011	1
S5	31.000	30.168	-.832	-2.68	11.441	.128	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



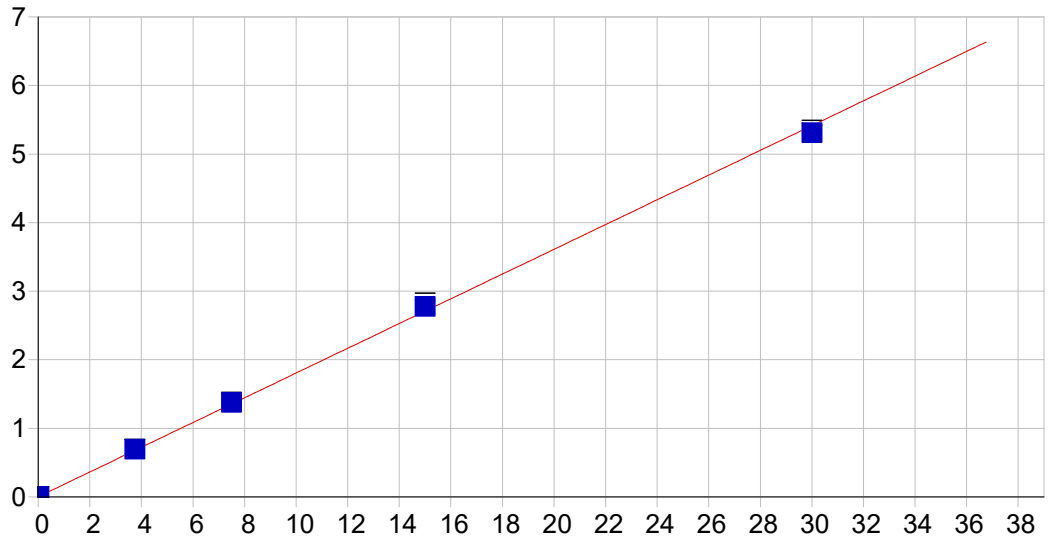
Co 228.616 {448}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000087	Re-Slope:	1.000000
A1 (Gain):	0.787132	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999898	Status:	OK.
Std Error of Est:	0.000300		
Predicted MDL:	0.000374		
Predicted MQL:	0.001247		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00008	.000	1
S1	.05000	.05129	.001	2.59	.04059	.001	1
S2	.62500	.63671	.012	1.87	.50285	.000	1
S3	1.2500	1.2611	.011	.891	.99594	.002	1
S4	2.5000	2.5422	.042	1.69	2.0075	.006	1
S5	5.0000	4.9337	-.066	-1.33	3.8962	.004	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



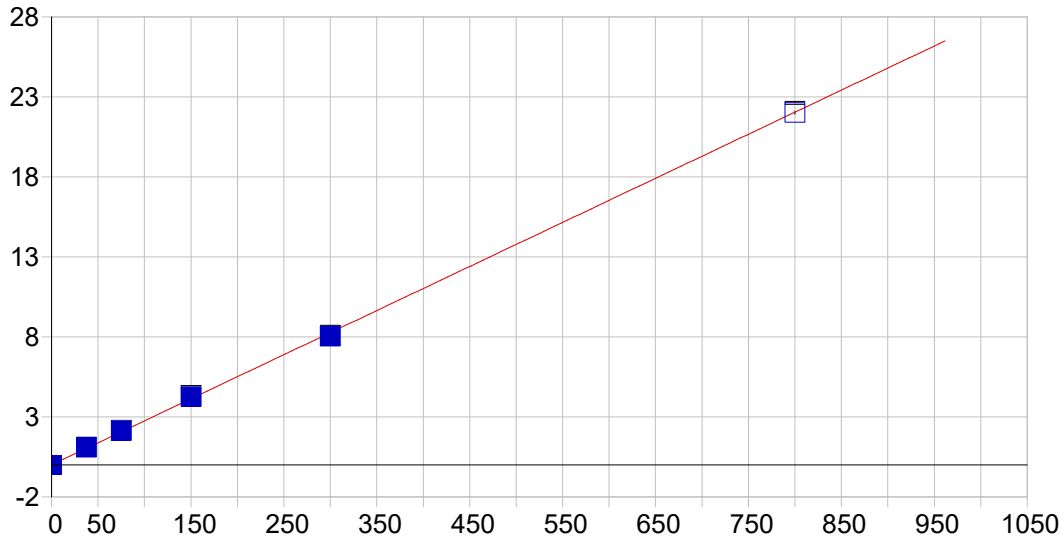
Cu 324.754 {104}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002629	Re-Slope:	1.000000
A1 (Gain):	0.180402	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999789	Status:	OK.
Std Error of Est:	0.000170		
Predicted MDL:	0.005836		
Predicted MQL:	0.019455		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00263	.001	1
S1	.02500	.02307	-.002	-7.72	.00678	.001	1
S2	3.7500	3.8272	.077	2.06	.69298	.002	1
S3	7.5000	7.6156	.116	1.54	1.3763	.007	1
S4	15.000	15.377	.377	2.51	2.7764	.052	1
S5	30.000	29.432	-.568	-1.89	5.3117	.036	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



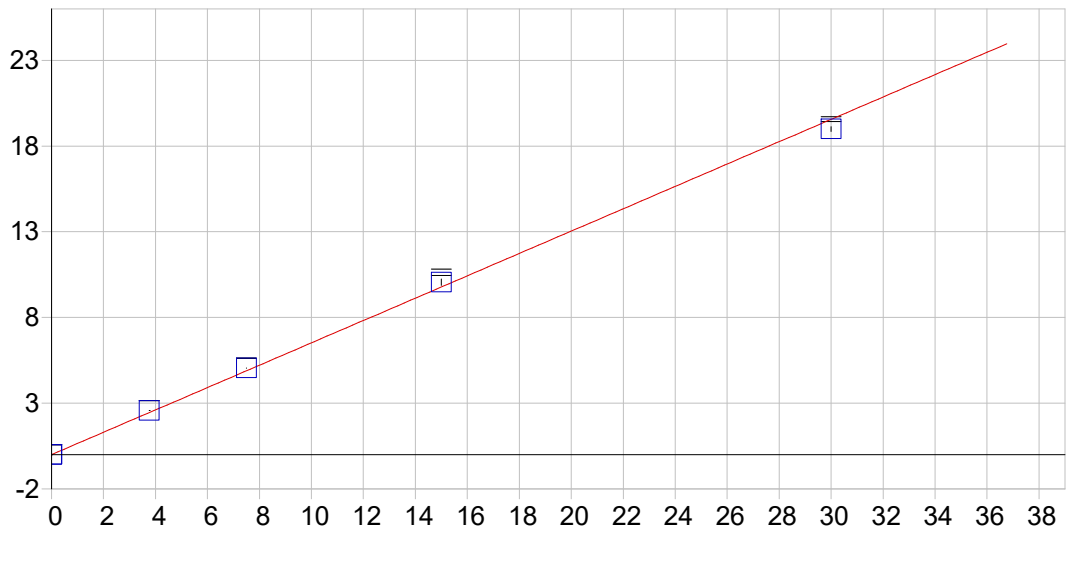
Fe 259.837 {130}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000248	Re-Slope:	1.000000
A1 (Gain):	0.027558	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999780	Status:	OK.
Std Error of Est:	0.000252		
Predicted MDL:	0.018766		
Predicted MQL:	0.062554		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00004	-.000	.000	-.00025	.000	1
S1	.10000	.12657	.027	26.6	.00324	.000	1
S2	37.500	39.673	2.17	5.79	1.0933	.004	1
S3	75.000	77.954	2.95	3.94	2.1485	.006	1
S4	150.00	154.31	4.31	2.87	4.2530	.080	1
S5	300.00	291.80	-8.20	-2.73	8.0431	.053	1
S6	800.00	798.74	-1.26	-.158	22.011	.085	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



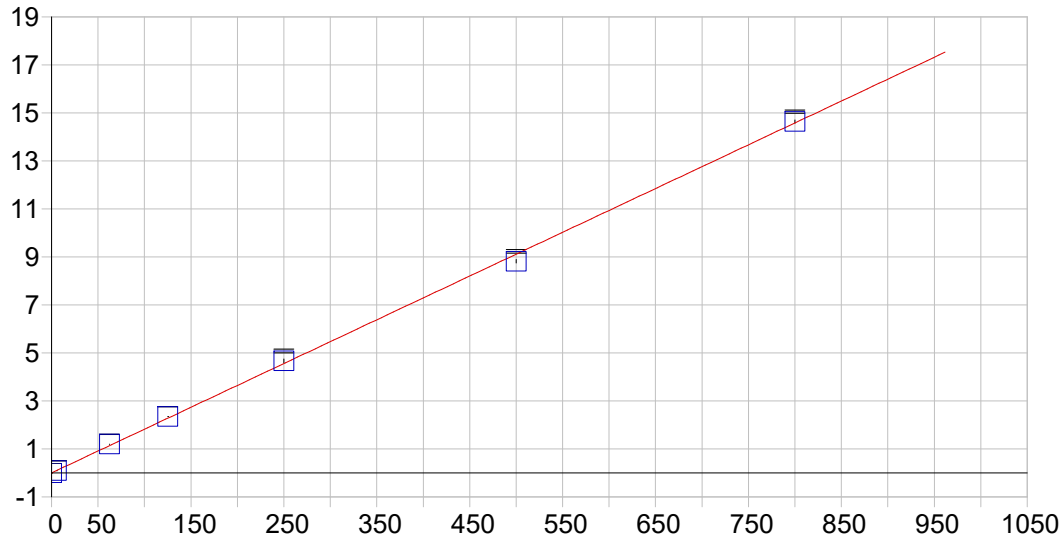
Mn 257.610 {131}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000023	Re-Slope:	1.000000
A1 (Gain):	0.651917	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999508	Status:	OK.
Std Error of Est:	0.000728		
Predicted MDL:	0.000856		
Predicted MQL:	0.002853		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00003	.000	1
S1	.01500	.01729	.002	15.3	.01125	.000	1
S2	3.7500	3.9429	.193	5.14	2.5704	.004	1
S3	7.5000	7.7456	.246	3.27	5.0495	.010	1
S4	15.000	15.426	.426	2.84	10.056	.185	1
S5	30.000	29.133	-.867	-2.89	18.992	.136	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



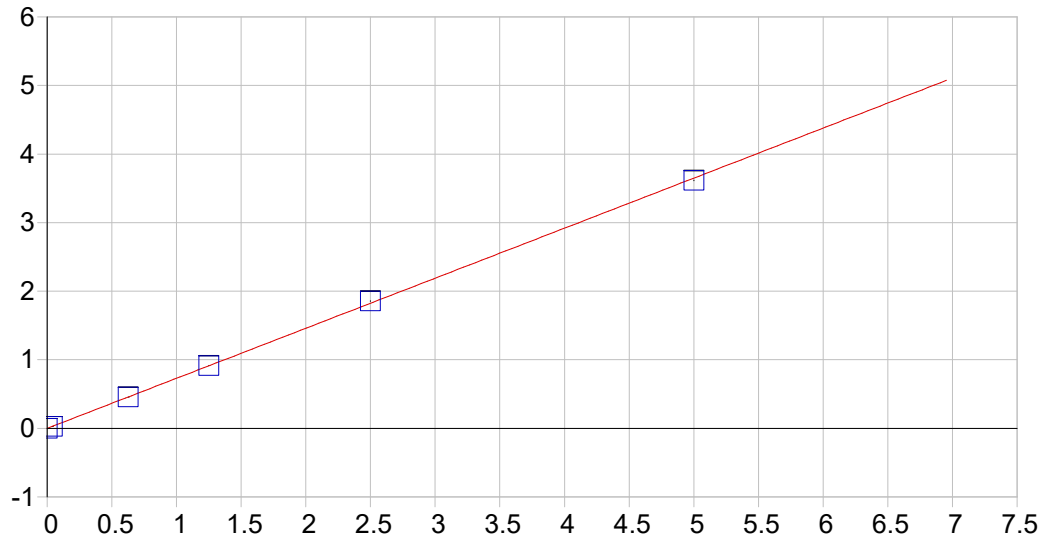
Mg 279.079 {121}

Date of Fit: 02/07/2025 8:00:59 Type of Fit: Linear Weighting: 1/Conc

A0 (Offset):	-0.000697	Re-Slope:	1.000000
A1 (Gain):	0.018229	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999725	Status:	OK.
Std Error of Est:	0.001493		
Predicted MDL:	0.037904		
Predicted MQL:	0.126347		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00064	-.001	.000	-.00071	.001	1
S1	5.0000	5.2631	.263	5.26	.09524	.001	1
S2	62.500	65.578	3.08	4.92	1.1947	.007	1
S3	125.00	128.78	3.78	3.02	2.3468	.004	1
S4	250.00	255.95	5.95	2.38	4.6650	.084	1
S5	500.00	483.78	-16.2	-3.24	8.8183	.072	1
S6	800.00	803.15	3.15	.394	14.640	.063	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



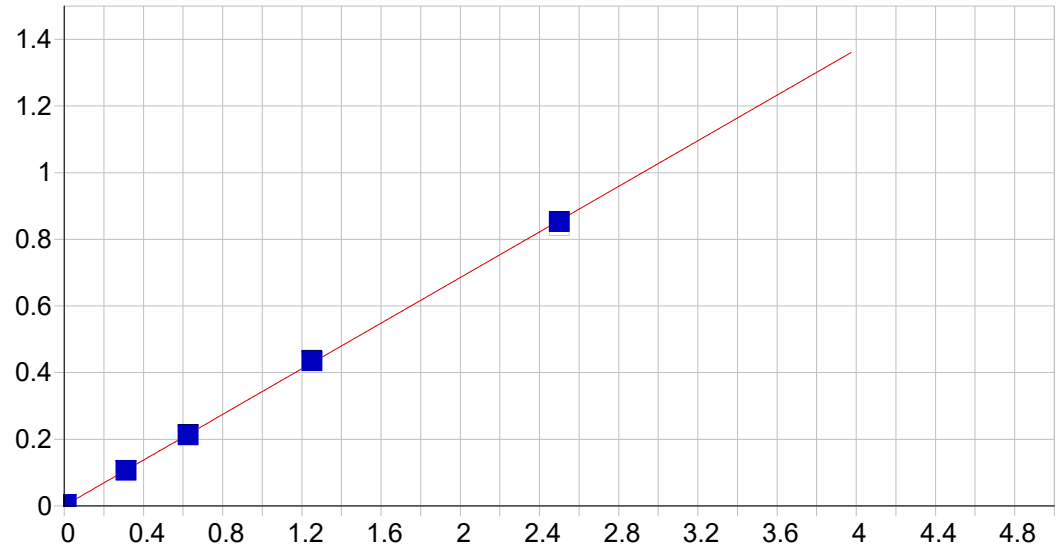
Ni 231.604 {446}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000087	Re-Slope:	1.000000
A1 (Gain):	0.729756	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999937	Status:	OK.
Std Error of Est:	0.000194		
Predicted MDL:	0.000471		
Predicted MQL:	0.001568		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00009	.000	1
S1	.04000	.03872	-.001	-3.21	.02817	.000	1
S2	.62500	.62373	-.001	-.203	.45508	.001	1
S3	1.2500	1.2531	.003	.251	.91440	.002	1
S4	2.5000	2.5432	.043	1.73	1.8558	.004	1
S5	5.0000	4.9562	-.044	-.875	3.6168	.005	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



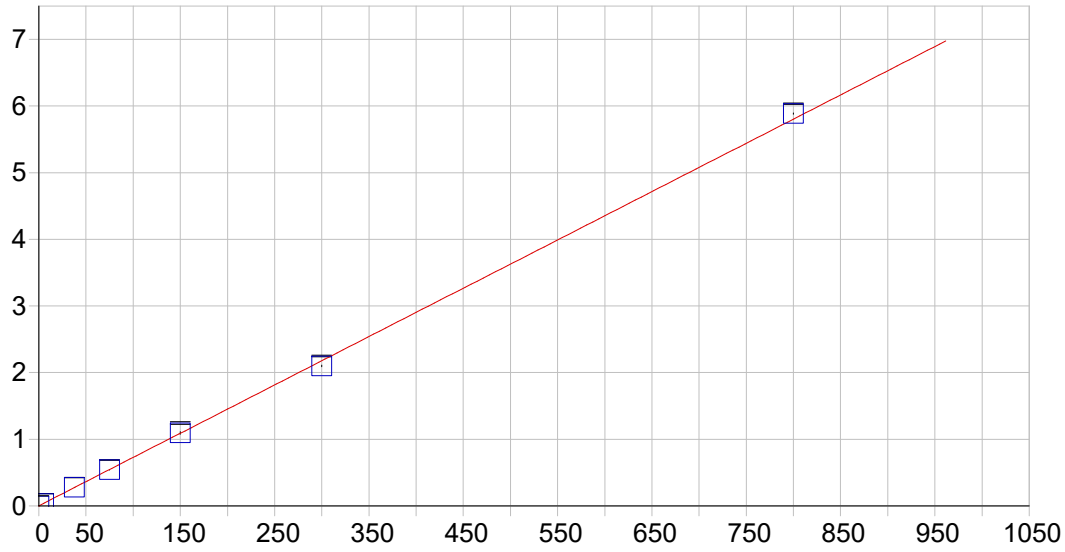
Ag 328.068 {103}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000849	Re-Slope:	1.000000
A1 (Gain):	0.342258	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999941	Status:	OK.
Std Error of Est:	0.000031		
Predicted MDL:	0.001127		
Predicted MQL:	0.003756		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00085	.000	1
S1	.01000	.01089	.001	8.85	.00457	.000	1
S2	.31250	.30777	-.005	-1.51	.10465	.000	1
S3	.62500	.62074	-.004	-.682	.21022	.000	1
S4	1.2500	1.2696	.020	1.57	.42922	.001	1
S5	2.5000	2.4885	-.012	-.460	.84024	.001	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



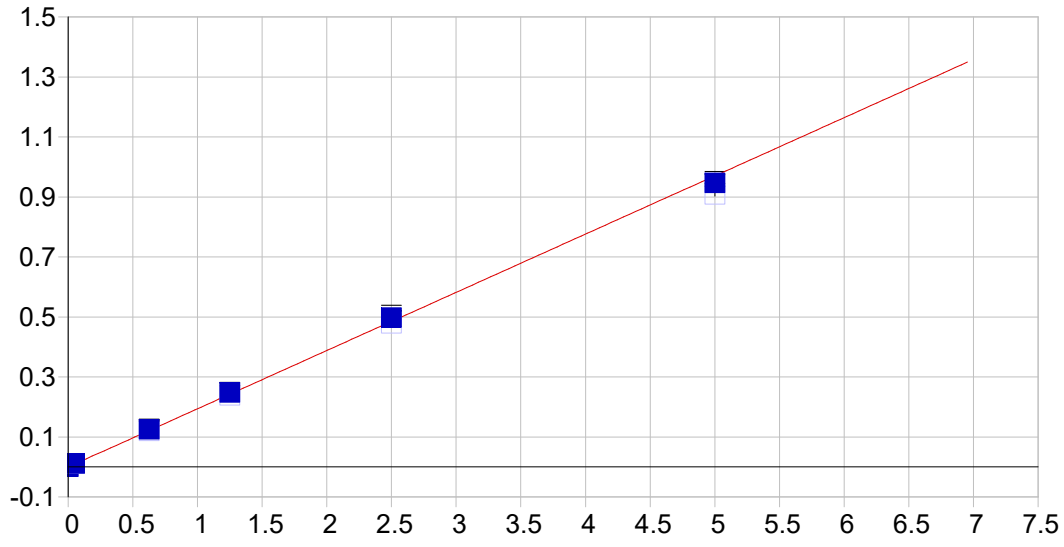
Na 818.326 { 41}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002374	Re-Slope:	1.000000
A1 (Gain):	0.007252	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999777	Status:	OK.
Std Error of Est:	0.000473		
Predicted MDL:	0.457709		
Predicted MQL:	1.525696		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00055	.001	.000	.00238	.002	1
S1	5.0000	4.5514	-.449	-8.97	.03538	.004	1
S2	37.500	37.826	.326	.870	.27669	.004	1
S3	75.000	74.245	-.755	-1.01	.54080	.002	1
S4	150.00	150.44	.439	.292	1.0934	.019	1
S5	300.00	289.09	-10.9	-3.64	2.0989	.011	1
S6	800.00	811.35	11.3	1.42	5.8863	.008	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



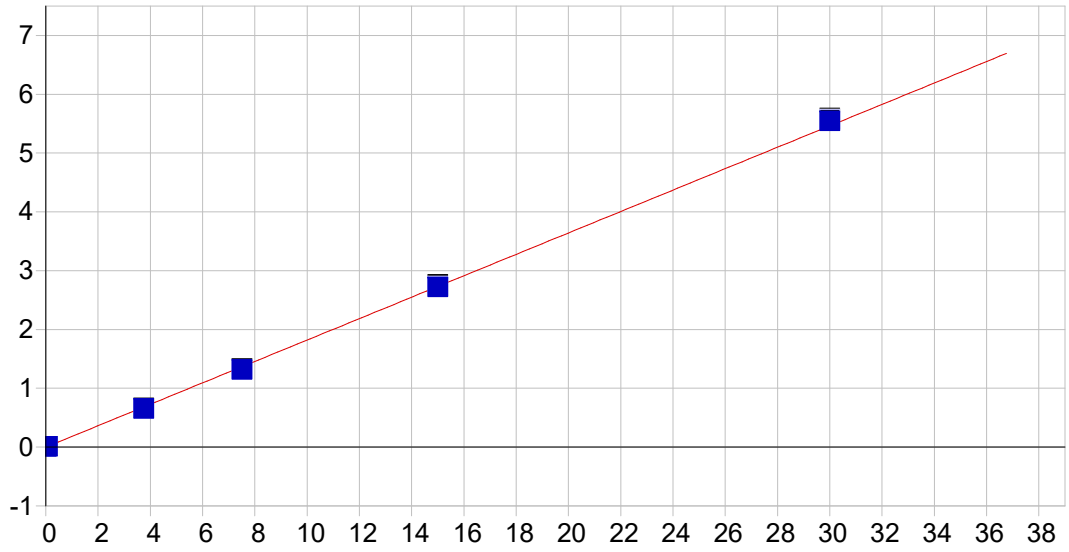
V 292.402 {115}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear
Weighting:	1/Conc		

A0 (Offset):	-0.000213	Re-Slope:	1.000000
A1 (Gain):	0.194053	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999565	Status:	OK.
Std Error of Est:	0.000146		
Predicted MDL:	0.004603		
Predicted MQL:	0.015344		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	-.00022	.000	1
S1	.05000	.05933	.009	18.7	.01127	.000	1
S2	.62500	.64529	.020	3.25	.12015	.001	1
S3	1.2500	1.2785	.029	2.28	.23817	.001	1
S4	2.5000	2.5627	.063	2.51	.47765	.009	1
S5	5.0000	4.8787	-.121	-2.43	.90763	.005	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



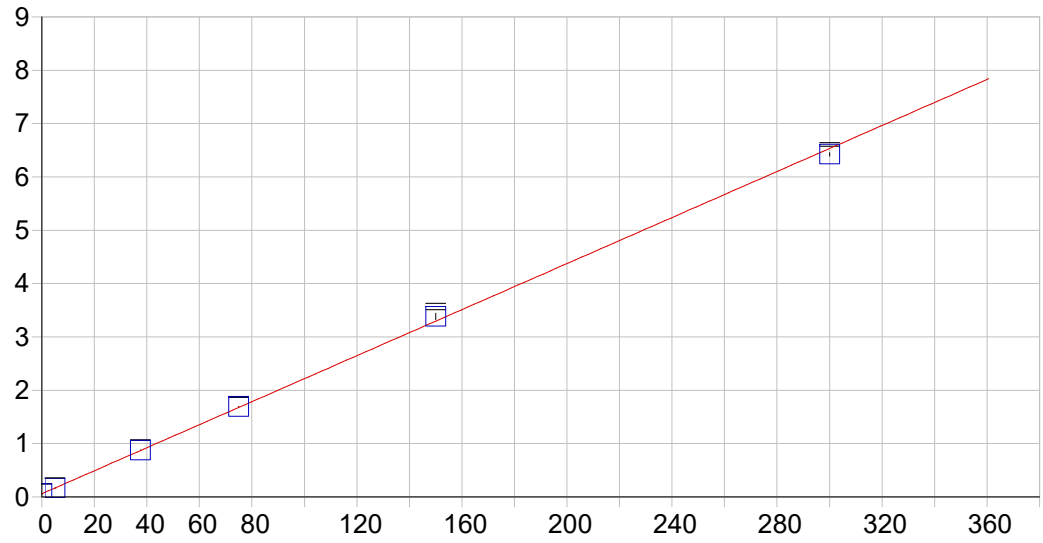
Zn 213.856 {158}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000392	Re-Slope:	1.000000
A1 (Gain):	0.182128	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999795	Status:	OK.
Std Error of Est:	0.000264		
Predicted MDL:	0.002656		
Predicted MQL:	0.008854		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00039	.000	1
S1	.06000	.06077	.001	1.29	.01071	.000	1
S2	3.7500	3.5928	-.157	-4.19	.65730	.006	1
S3	7.5000	7.2339	-.266	-3.55	1.3238	.012	1
S4	15.000	14.959	-.041	-.274	2.7374	.026	1
S5	30.000	30.464	.464	1.55	5.5746	.019	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



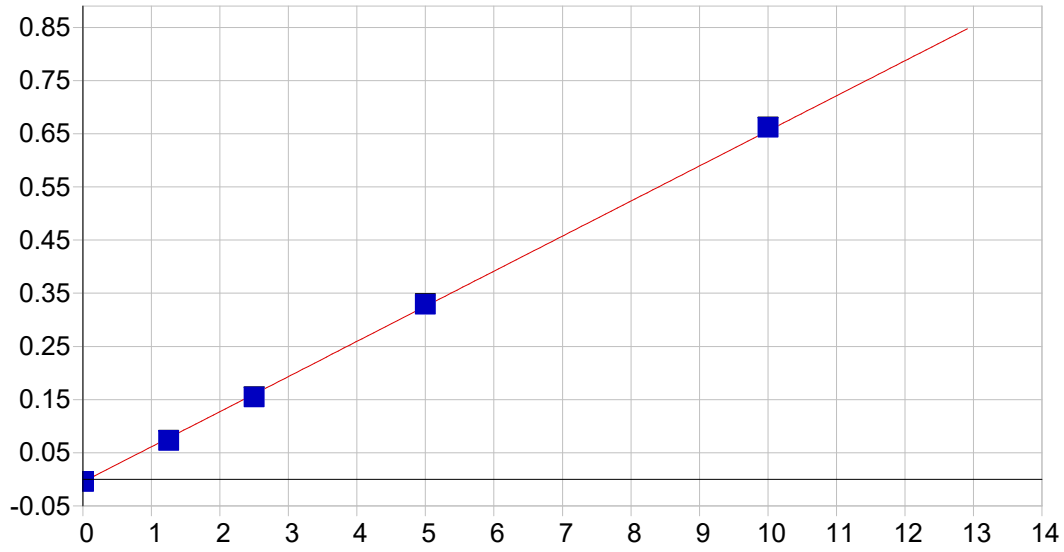
K 769.896 { 44}

Date of Fit: 02/07/2025 8:00:59 Type of Fit: Linear Weighting: 1/Conc

A0 (Offset):	0.059065	Re-Slope:	1.000000
A1 (Gain):	0.021578	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999819	Status:	OK.
Std Error of Est:	0.000846		
Predicted MDL:	0.142645		
Predicted MQL:	0.475483		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00015	-.000	.000	.05906	.000	1
S1	5.0000	5.0055	.006	.110	.16708	.000	1
S2	37.500	37.883	.383	1.02	.87651	.003	1
S3	75.000	75.564	.564	.752	1.6896	.010	1
S4	150.00	154.10	4.10	2.73	3.3843	.058	1
S5	300.00	294.95	-5.05	-1.68	6.4235	.033	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



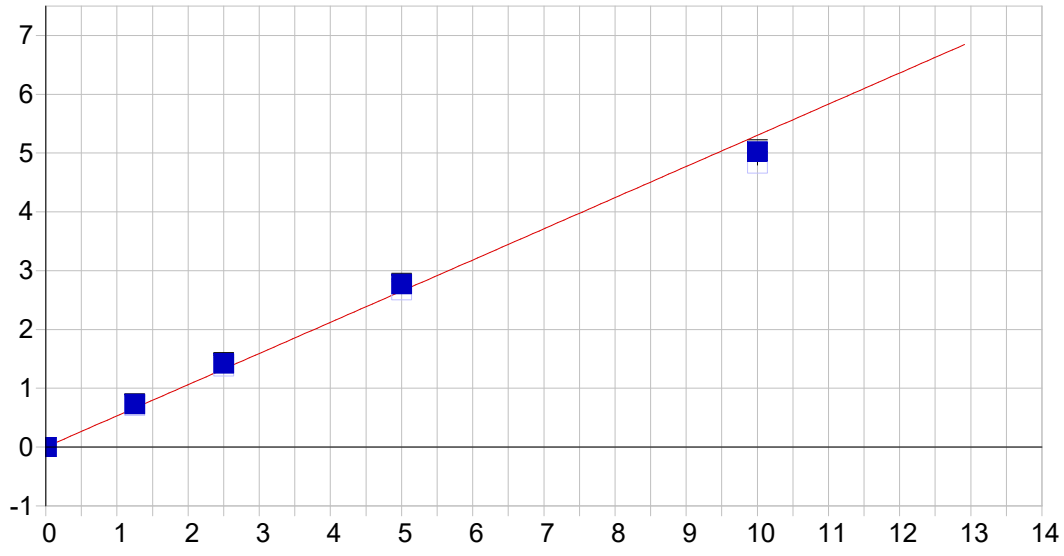
P 177.495 {490}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.004609	Re-Slope:	1.000000
A1 (Gain):	0.065983	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999754	Status:	OK.
Std Error of Est:	0.000025		
Predicted MDL:	0.002134		
Predicted MQL:	0.007114		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00461	.000	1
S1	.01000	.00925	-.001	-7.52	-.00400	.000	1
S2	1.2500	1.1738	-.076	-6.10	.07272	.000	1
S3	2.5000	2.4165	-.083	-3.34	.15460	.000	1
S4	5.0000	5.0542	.054	1.08	.32840	.001	1
S5	10.000	10.106	.106	1.06	.66127	.000	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



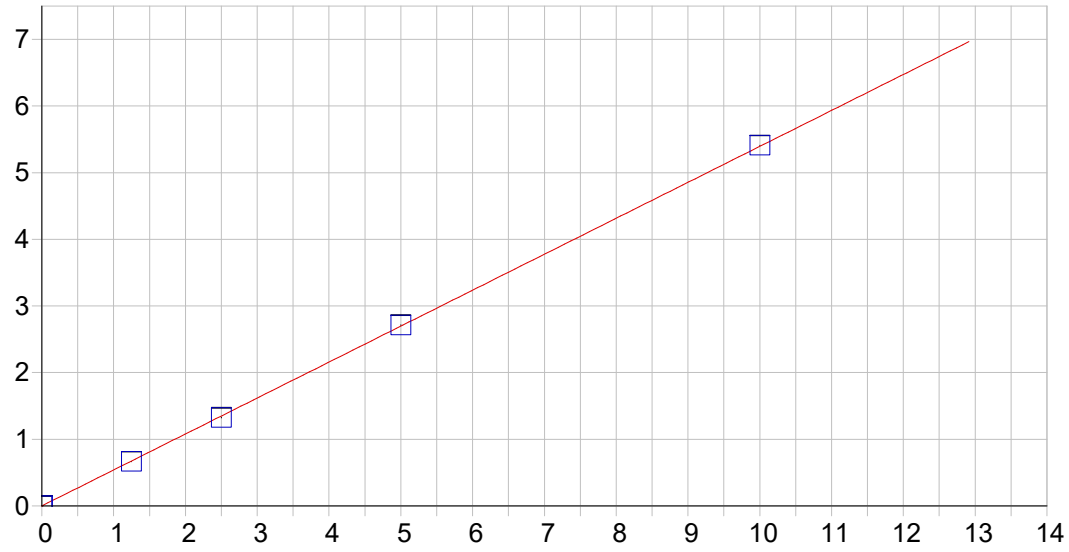
B 249.678 {135}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001203	Re-Slope:	1.000000
A1 (Gain):	0.530069	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.997888	Status:	OK.
Std Error of Est:	0.000557		
Predicted MDL:	0.002057		
Predicted MQL:	0.006856		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00121	.002	1
S1	.01000	-.00042	-.010	-104.	.00095	.001	1
S2	1.2500	1.3735	.123	9.88	.70404	.004	1
S3	2.5000	2.6840	.184	7.36	1.3735	.014	1
S4	5.0000	5.2231	.223	4.46	2.6690	.019	1
S5	10.000	9.4802	-.520	-5.20	4.8248	.029	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



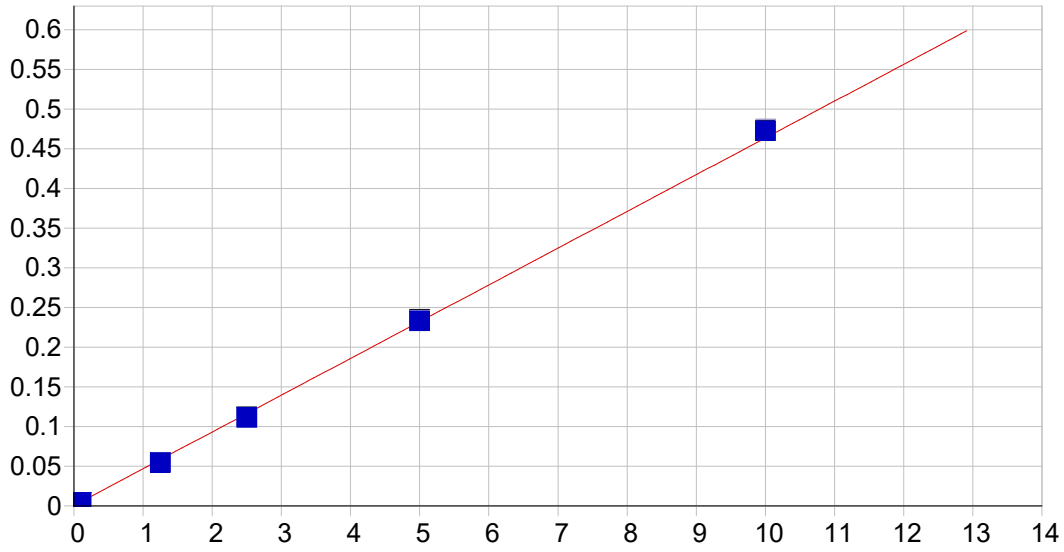
Mo 202.030 {467}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000242	Re-Slope:	1.000000
A1 (Gain):	0.539447	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999972	Status:	OK.
Std Error of Est:	0.000068		
Predicted MDL:	0.000496		
Predicted MQL:	0.001655		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00024	.000	1
S1	.01000	.01036	.000	3.64	.00583	.000	1
S2	1.2500	1.2348	-.015	-1.21	.66636	.002	1
S3	2.5000	2.4599	-.040	-1.60	1.3272	.005	1
S4	5.0000	5.0260	.026	.520	2.7115	.005	1
S5	10.000	10.029	.029	.289	5.4103	.003	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

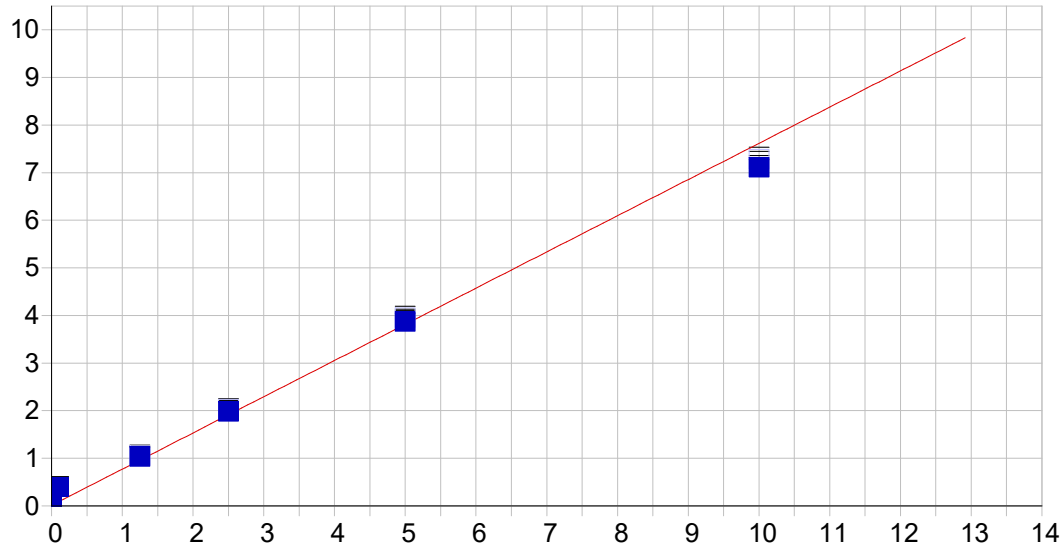


S 182.034 {485}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000586	Re-Slope:	1.000000
A1 (Gain):	0.046322	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999550	Status:	OK.
Std Error of Est:	0.000074		
Predicted MDL:	0.003285		
Predicted MQL:	0.010951		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00002	.000	.000	.00059	.000	1
S1	.10000	.08409	-.016	-15.9	.00448	.000	1
S2	1.2500	1.1620	-.088	-7.04	.05460	.000	1
S3	2.5000	2.3926	-.107	-4.30	.11179	.000	1
S4	5.0000	5.0205	.020	.409	.23389	.001	1
S5	10.000	10.191	.191	1.91	.47414	.000	1



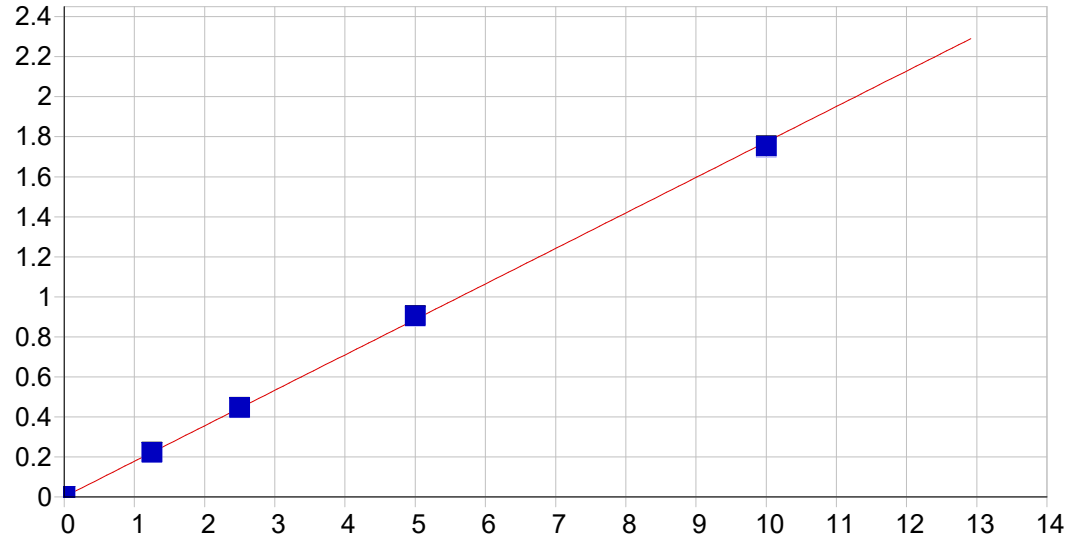
Si 251.611 {134}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.012064	Re-Slope:	1.000000
A1 (Gain):	0.760463	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.959050	Status:	OK.
Std Error of Est:	0.012205		
Predicted MDL:	0.001543		
Predicted MQL:	0.005144		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00041	-.000	.000	.01175	.001	1
S1	.10000	.50761	.408	408.	.39916	.003	1
S2	1.2500	1.3438	.094	7.51	1.0556	.011	1
S3	2.5000	2.5954	.095	3.82	2.0289	.016	1
S4	5.0000	5.0723	.072	1.45	3.9557	.031	1
S5	10.000	9.3342	-.666	-6.66	7.2830	.043	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



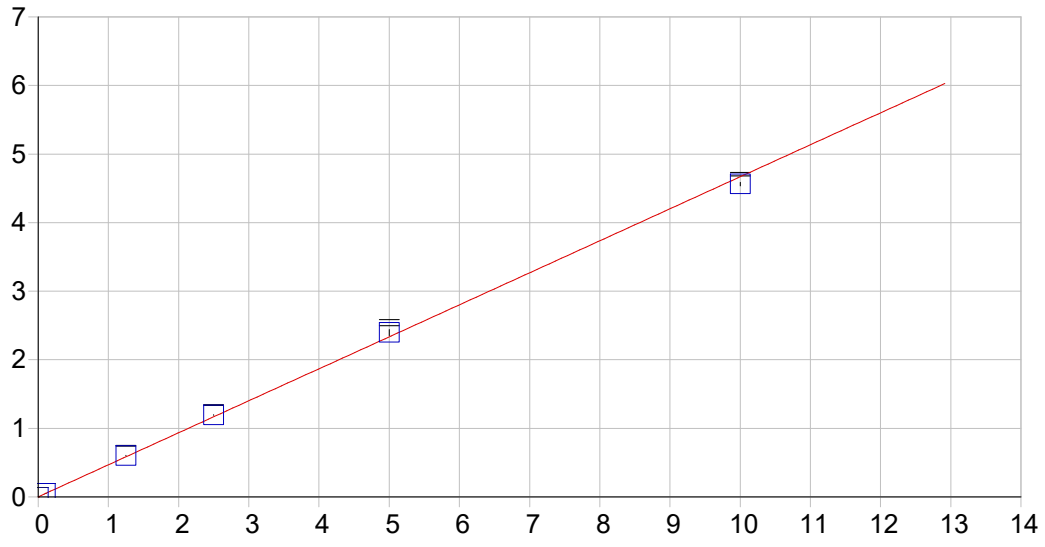
Sn 189.989 {478}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000682	Re-Slope:	1.000000
A1 (Gain):	0.177292	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999909	Status:	OK.
Std Error of Est:	0.000033		
Predicted MDL:	0.000851		
Predicted MQL:	0.002837		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00068	.000	1
S1	.00700	.00742	.000	6.03	.00195	.000	1
S2	1.2500	1.2518	.002	.147	.22151	.001	1
S3	2.5000	2.5147	.015	.587	.44429	.001	1
S4	5.0000	5.0984	.098	1.97	.90014	.001	1
S5	10.000	9.8847	-.115	-1.15	1.7443	.002	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



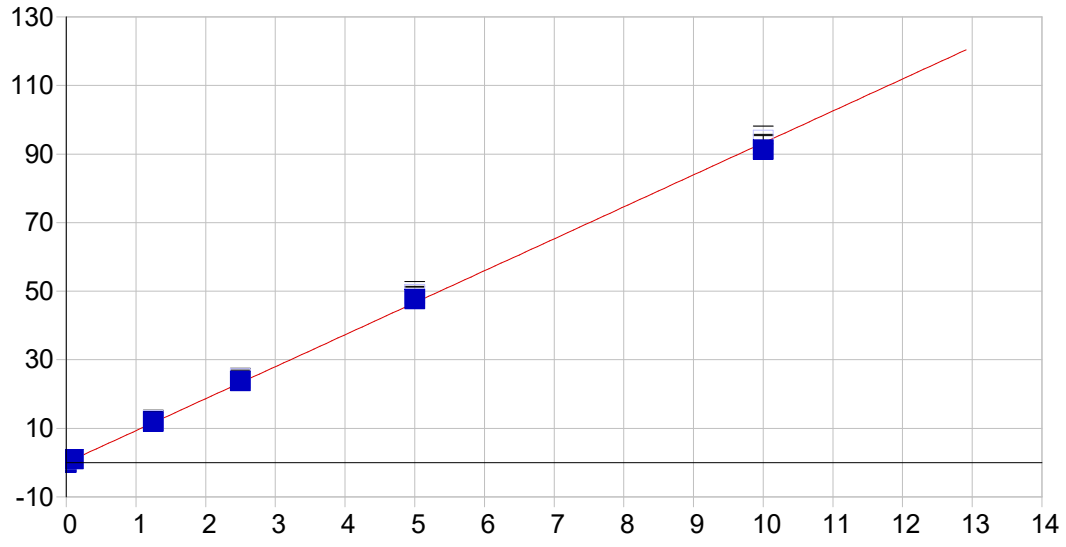
Ti 336.121 {100}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001471	Re-Slope:	1.000000
A1 (Gain):	0.466718	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999705	Status:	OK.
Std Error of Est:	0.000603		
Predicted MDL:	0.002499		
Predicted MQL:	0.008328		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.00147	.001	1
S1	.10000	.10316	.003	3.16	.04962	.000	1
S2	1.2500	1.2865	.037	2.92	.60193	.002	1
S3	2.5000	2.5555	.055	2.22	1.1942	.004	1
S4	5.0000	5.1328	.133	2.66	2.3970	.044	1
S5	10.000	9.7720	-.228	-2.28	4.5622	.026	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

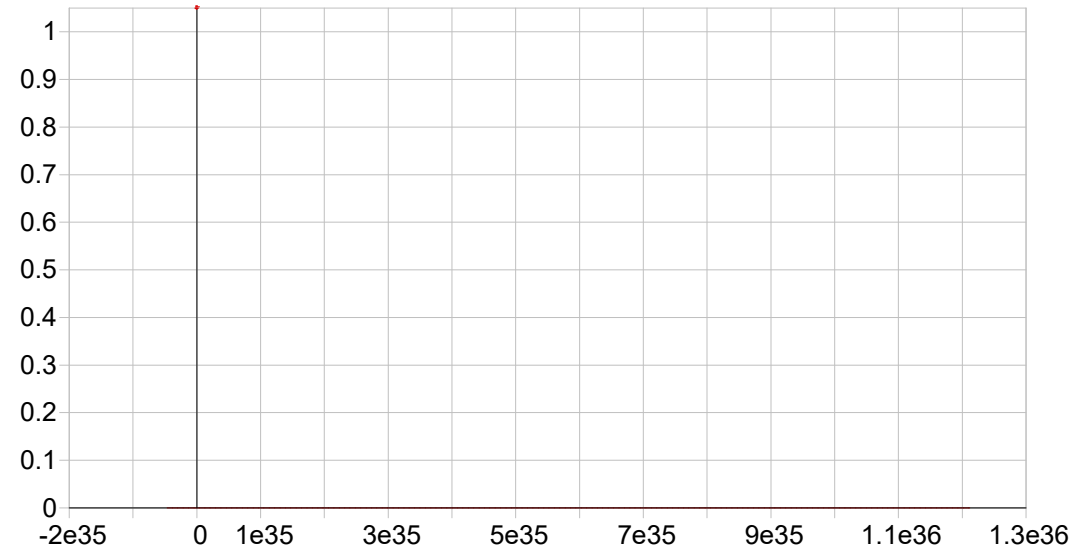


Sr 407.771 { 83}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.002118	Re-Slope:	1.000000
A1 (Gain):	9.324402	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999746	Status:	OK.
Std Error of Est:	0.011511		
Predicted MDL:	0.000195		
Predicted MQL:	0.000649		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	-.00224	.002	1
S1	.10000	.10843	.008	8.43	1.0099	.004	1
S2	1.2500	1.2841	.034	2.72	12.321	.036	1
S3	2.5000	2.5535	.053	2.14	24.507	.090	1
S4	5.0000	5.1184	.118	2.37	49.123	.770	1
S5	10.000	9.7859	-.214	-2.14	94.043	1.20	1

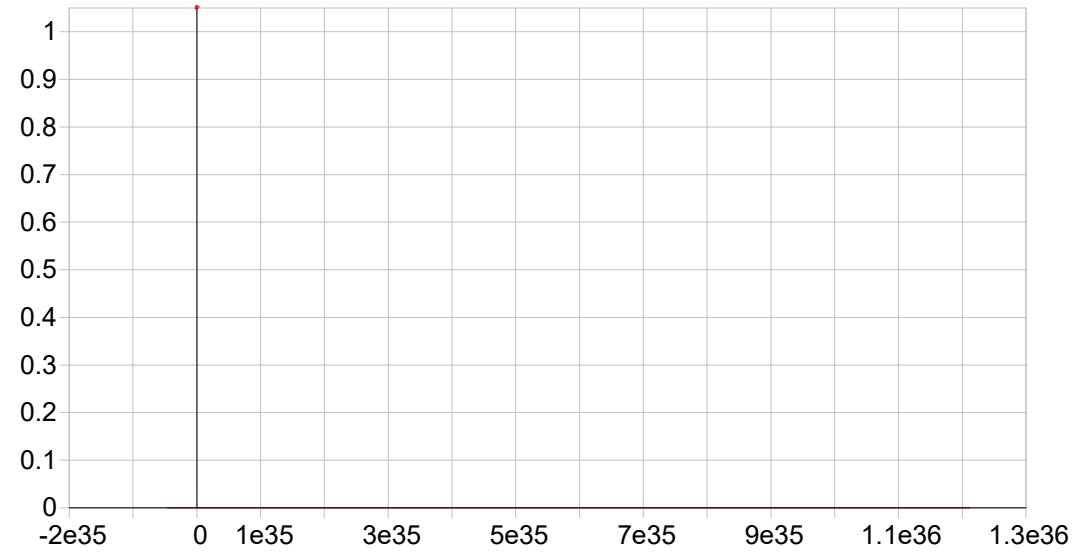


Y 224.306 {450}*

Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.000000	Status:	Warning Zero Gain
Std Error of Est:	0.000000		
Predicted MDL:	n/a		
Predicted MQL:	n/a		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



Y 360.073 { 94}*

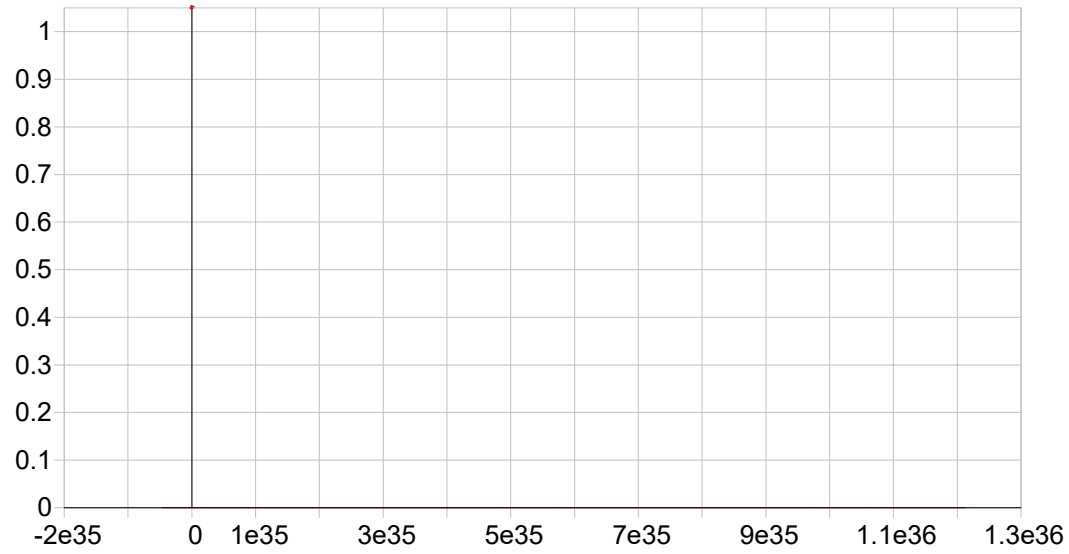
Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000

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A2 (Curvature):	0.000000				
n (Exponent):	1.000000				
Correlation:	0.000000	Status:	Warning	Zero Gain	
Std Error of Est:	0.000000				
Predicted MDL:	n/a				
Predicted MQL:	n/a				

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



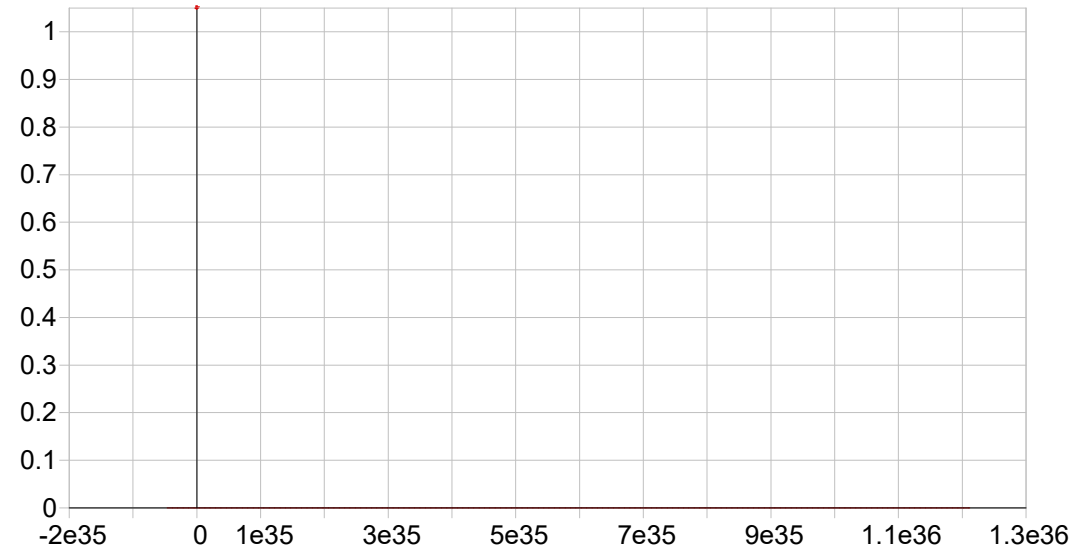
Y 371.030 { 91}*

Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.000000	Status:	Warning Zero Gain
Std Error of Est:	0.000000		
Predicted MDL:	n/a		
Predicted MQL:	n/a		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis

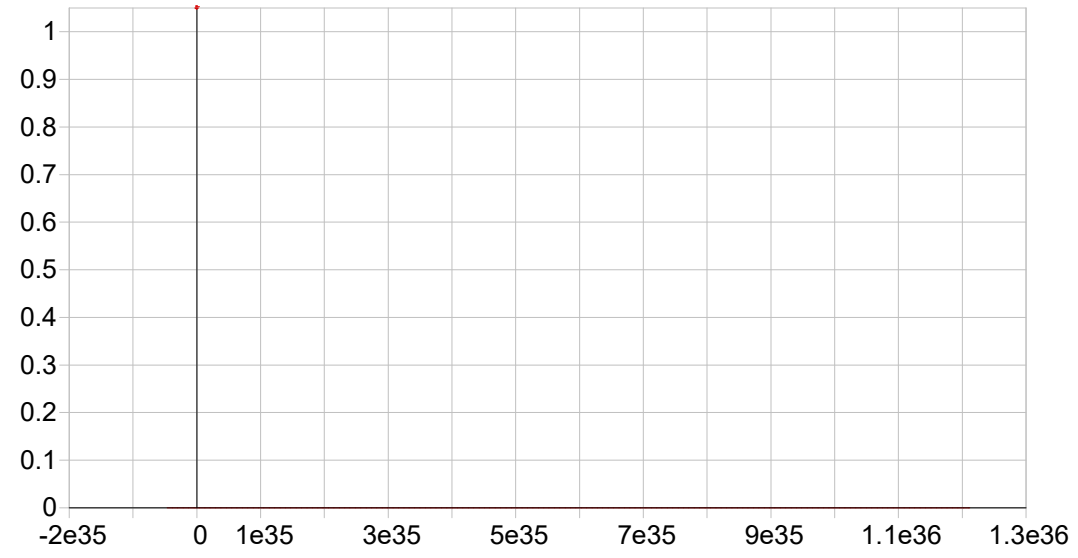
Reviewed By:Mohan
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Inst Id :P5



Y 224.306 {150}*

Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000		Re-Slope:	1.000000	
A1 (Gain):	0.000000		Y-int:	0.000000	
A2 (Curvature):	0.000000				
n (Exponent):	1.000000				
Correlation:	0.000000		Status:	Warning	Zero Gain
Std Error of Est:	0.000000				
Predicted MDL:	n/a				
Predicted MQL:	n/a				

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



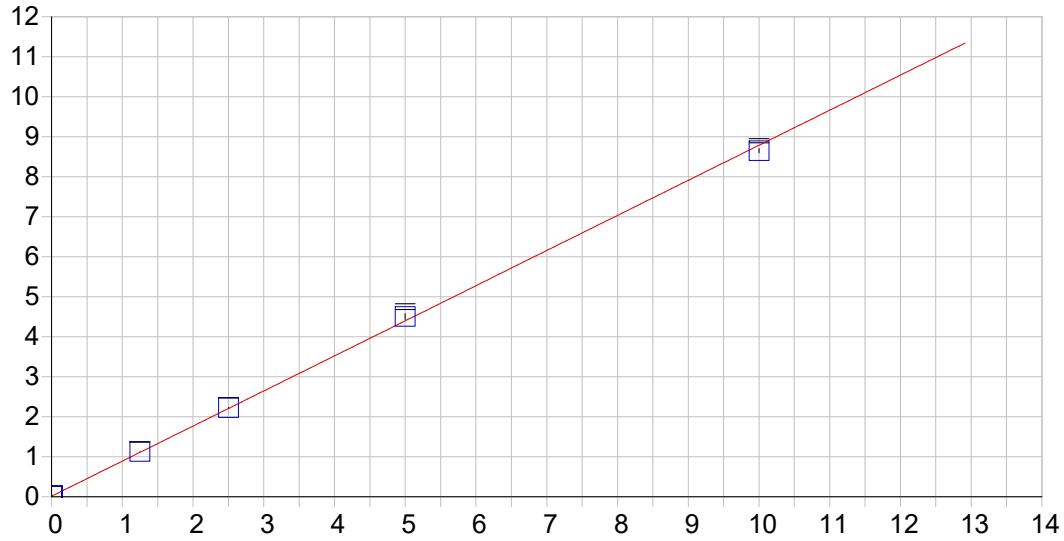
In 230.606 {446}*

Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000		Re-Slope:	1.000000	
A1 (Gain):	0.000000		Y-int:	0.000000	

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A2 (Curvature):	0.000000				
n (Exponent):	1.000000				
Correlation:	0.000000	Status:	Warning	Zero Gain	
Std Error of Est:	0.000000				
Predicted MDL:	n/a				
Predicted MQL:	n/a				

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



Li 670.784 { 50}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.012952	Re-Slope:	1.000000
A1 (Gain):	0.877410	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999799	Status:	OK.
Std Error of Est:	0.000362		
Predicted MDL:	0.004099		
Predicted MQL:	0.013662		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.01296	.003	1
S5	10.000	9.8436	-.156	-1.56	8.6498	.053	1
S4	5.0000	5.1182	.118	2.36	4.5037	.074	1
S3	2.5000	2.5241	.024	.963	2.2276	.007	1
S2	1.2500	1.2693	.019	1.55	1.1267	.004	1
S1	.01500	.00982	-.005	-34.5	.02157	.005	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S0 Acquired: 02/07/2025 13:18:33 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S0 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.35407	.00006	.00029	.00015	.00027	.00018	.20117	.00264
Stddev	.39977	.00010	.00021	.00013	.00014	.00047	.00166	.00024
%RSD	112.91	185.71	74.789	84.559	52.274	257.04	.82499	9.2015
#1	.80864	-.00005	.00004	.00012	.00035	.00067	.20066	.00290
#2	.05715	.00005	.00041	.00004	.00011	.00015	.19983	.00242
#3	.19643	.00016	.00040	.00029	.00035	-.00027	.20303	.00258

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00017	.00354	.00004	.00008	.00263	-.00025	-.00003	-.00071
Stddev	.00025	.00213	.00018	.00022	.00052	.00033	.00011	.00057
%RSD	144.78	59.998	477.54	264.77	19.627	131.87	436.25	80.488
#1	.00037	.00316	-.00017	-.00017	.00210	.00013	-.00003	-.00102
#2	-.00011	.00163	.00017	.00023	.00314	-.00046	.00009	-.00105
#3	.00026	.00583	.00012	.00020	.00265	-.00042	-.00013	-.00005

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00009	.00085	.00238	-.00022	-.00039	.05906	-.00461	.00121
Stddev	.00015	.00026	.00207	.00035	.00011	.00033	.00006	.00170
%RSD	178.34	30.353	86.910	162.11	27.761	.55432	1.2974	140.47
#1	-.00014	.00063	.00152	-.00057	-.00051	.05938	-.00461	.00009
#2	-.00021	.00113	.00474	.00013	-.00038	.05872	-.00455	.00316
#3	.00009	.00078	.00088	-.00020	-.00029	.05909	-.00467	.00037

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00024	.00059	.01175	.00068	.00147	-.00224	.01296
Stddev	.00022	.00014	.00073	.00007	.00085	.00164	.00287
%RSD	92.478	23.629	6.2380	10.451	57.892	73.184	22.137
#1	.00039	.00073	.01091	.00076	.00085	-.00255	.01275
#2	-.00002	.00045	.01207	.00062	.00111	-.00372	.01019
#3	.00035	.00058	.01227	.00067	.00244	-.00047	.01592

Reviewed By:Mohan
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Sample Name: S0 Acquired: 02/07/2025 13:18:33 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S0 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4320.9	28438.	4643.6	3011.2	5162.6
Stddev	10.8	703.	22.4	77.7	9.0
%RSD	.25081	2.4720	.48234	2.5817	.17368
#1	4314.9	27641.	4637.7	2921.9	5156.8
#2	4314.4	28970.	4668.3	3064.2	5158.1
#3	4333.4	28703.	4624.7	3047.4	5172.9

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S1 Acquired: 02/07/2025 13:22:38 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.1166	.00341	.00241	.00231	.00726	.01699	.83666	.03907
Stddev	.5971	.00017	.00051	.00029	.00042	.00141	.00378	.00047
%RSD	19.158	5.1081	21.098	12.375	5.7890	8.3019	.45202	1.2148
#1	3.8057	.00321	.00227	.00220	.00718	.01798	.83259	.03855
#2	2.7935	.00353	.00199	.00210	.00772	.01762	.83731	.03948
#3	2.7508	.00350	.00298	.00264	.00689	.01538	.84007	.03918

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.01838	.34039	.00410	.04059	.00678	.00324	.01125	.09524
Stddev	.00026	.00087	.00013	.00060	.00051	.00023	.00037	.00053
%RSD	1.3979	.25543	3.1916	1.4709	7.4841	7.1184	3.2556	.56000
#1	.01854	.34078	.00400	.03990	.00717	.00305	.01084	.09563
#2	.01808	.33939	.00424	.04088	.00698	.00350	.01156	.09546
#3	.01851	.34099	.00404	.04099	.00621	.00318	.01134	.09464

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02817	.00457	.03538	.01127	.01071	.16708	-.00400	.00095
Stddev	.00037	.00031	.00408	.00036	.00039	.00032	.00012	.00057
%RSD	1.3021	6.7549	11.521	3.2141	3.6121	.19079	3.0167	60.381
#1	.02803	.00445	.03069	.01089	.01028	.16731	-.00403	.00048
#2	.02788	.00492	.03742	.01161	.01082	.16671	-.00410	.00159
#3	.02858	.00434	.03803	.01133	.01103	.16720	-.00386	.00079

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00583	.00448	.39916	.00195	.04962	1.0099	.02157
Stddev	.00003	.00011	.00263	.00017	.00050	.0035	.00474
%RSD	.58816	2.3787	.65999	8.5911	.99886	.34672	21.952
#1	.00587	.00436	.40218	.00192	.05014	1.0060	.02177
#2	.00580	.00452	.39737	.00213	.04956	1.0128	.01674
#3	.00583	.00456	.39792	.00179	.04916	1.0109	.02621

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S1 Acquired: 02/07/2025 13:22:38 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S01 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4325.1	28404.	4738.8	3003.6	4966.8
Stddev	15.9	122.	4.2	17.2	13.6
%RSD	.36812	.43087	.08764	.57106	.27389
#1	4334.6	28420.	4734.0	2996.0	4978.5
#2	4334.0	28275.	4741.2	2991.6	4970.0
#3	4306.8	28518.	4741.2	3023.2	4951.9

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S2 Acquired: 02/07/2025 13:26:39 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	339.08	.16401	1.4797	.08337	.15644	3.3148	7.9808	.87843
Stddev	1.54	.00003	.0025	.00039	.00041	.0121	.0026	.00853
%RSD	.45323	.01973	.16923	.46903	.26118	.36578	.03241	.97146
#1	339.94	.16404	1.4807	.08306	.15654	3.3279	7.9837	.88823
#2	339.99	.16398	1.4769	.08325	.15600	3.3125	7.9803	.87444
#3	337.30	.16401	1.4816	.08381	.15680	3.3039	7.9786	.87262

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.3207	4.1427	1.5177	.50285	.69298	1.0933	2.5704	1.1947
Stddev	.0039	.0046	.0051	.00039	.00201	.0043	.0043	.0069
%RSD	.16769	.11190	.33762	.07659	.28951	.39083	.16901	.57344
#1	2.3197	4.1475	1.5206	.50253	.69515	1.0982	2.5754	1.2026
#2	2.3174	4.1423	1.5118	.50275	.69119	1.0912	2.5683	1.1910
#3	2.3250	4.1383	1.5207	.50328	.69261	1.0904	2.5676	1.1906

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.45508	.10465	.27669	.12015	.65730	.87651	.07272	.70404
Stddev	.00114	.00025	.00397	.00137	.00553	.00334	.00046	.00403
%RSD	.25013	.23465	1.4353	1.1406	.84118	.38113	.63256	.57253
#1	.45537	.10490	.27334	.12065	.65092	.87942	.07322	.70869
#2	.45383	.10441	.28108	.11859	.66037	.87725	.07232	.70152
#3	.45605	.10463	.27566	.12119	.66062	.87286	.07262	.70192

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.66636	.05460	1.0556	.22151	.60193	12.321	1.1267
Stddev	.00195	.00021	.0107	.00065	.00249	.036	.0038
%RSD	.29201	.37654	1.0113	.29527	.41317	.29155	.33958
#1	.66732	.05477	1.0678	.22091	.60465	12.360	1.1239
#2	.66413	.05437	1.0507	.22143	.60134	12.290	1.1250
#3	.66765	.05466	1.0482	.22221	.59978	12.311	1.1310

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S2 Acquired: 02/07/2025 13:26:39 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S02 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4035.4	26195.	4537.3	2809.8	4260.9
Stddev	11.9	98.	22.1	15.3	7.9
%RSD	.29415	.37551	.48779	.54335	.18605
#1	4031.8	26234.	4512.4	2822.5	4259.5
#2	4048.6	26267.	4554.9	2814.0	4269.4
#3	4025.7	26083.	4544.5	2792.8	4253.7

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S3 Acquired: 02/07/2025 13:30:25 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	666.39	.31919	2.9821	.16699	.31467	6.5979	15.817	1.7377
Stddev	1.15	.00021	.0042	.00045	.00089	.0180	.086	.0106
%RSD	.17217	.06634	.14062	.26964	.28418	.27342	.54217	.61052
#1	665.92	.31944	2.9865	.16727	.31523	6.6097	15.912	1.7375
#2	667.70	.31908	2.9781	.16647	.31364	6.6069	15.794	1.7271
#3	665.56	.31907	2.9818	.16723	.31514	6.5772	15.746	1.7483

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4.6857	8.1810	3.0221	.99594	1.3763	2.1485	5.0495	2.3468
Stddev	.0080	.0298	.0095	.00211	.0066	.0056	.0100	.0039
%RSD	.16992	.36399	.31455	.21166	.47632	.26250	.19758	.16760
#1	4.6939	8.2134	3.0135	.99700	1.3807	2.1483	5.0550	2.3441
#2	4.6780	8.1747	3.0323	.99351	1.3795	2.1542	5.0554	2.3513
#3	4.6852	8.1548	3.0204	.99731	1.3688	2.1429	5.0379	2.3450

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.91440	.21022	.54080	.23817	1.3238	1.6896	.15460	1.3735
Stddev	.00166	.00042	.00167	.00132	.0121	.0100	.00022	.0143
%RSD	.18121	.19807	.30795	.55505	.91424	.58863	.14241	1.0402
#1	.91585	.20974	.54215	.23672	1.3236	1.6996	.15485	1.3781
#2	.91259	.21049	.53894	.23931	1.3360	1.6895	.15445	1.3575
#3	.91475	.21043	.54131	.23848	1.3118	1.6797	.15450	1.3849

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.3272	.11179	2.0289	.44429	1.1942	24.507	2.2276
Stddev	.0050	.00020	.0155	.00113	.0040	.090	.0066
%RSD	.37917	.18269	.76405	.25346	.33712	.36537	.29687
#1	1.3316	.11202	2.0320	.44523	1.1978	24.558	2.2351
#2	1.3217	.11169	2.0121	.44304	1.1948	24.559	2.2251
#3	1.3285	.11165	2.0427	.44461	1.1899	24.403	2.2226

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S3 Acquired: 02/07/2025 13:30:25 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S03 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3930.0	25658.	4552.8	2752.6	4071.0
Stddev	14.0	107.	25.4	7.9	8.7
%RSD	.35660	.41719	.55701	.28692	.21340
#1	3917.6	25655.	4531.1	2744.1	4064.2
#2	3945.2	25553.	4580.7	2754.0	4080.8
#3	3927.1	25767.	4546.7	2759.7	4067.9

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S4 Acquired: 02/07/2025 13:34:08 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1298.8	.63131	6.0883	.34391	.65197	13.437	32.049	3.4548
Stddev	1.6	.00138	.0121	.00103	.00139	.225	.641	.0333
%RSD	.12492	.21827	.19956	.29892	.21300	1.6762	2.0007	.96314
#1	1296.9	.62986	6.0794	.34287	.65135	13.697	32.782	3.4903
#2	1299.8	.63147	6.0833	.34394	.65099	13.295	31.596	3.4499
#3	1299.6	.63260	6.1021	.34492	.65356	13.319	31.767	3.4243

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	9.5575	16.374	6.0620	2.0075	2.7764	4.2530	10.056	4.6650
Stddev	.0206	.296	.0109	.0062	.0515	.0796	.185	.0839
%RSD	.21562	1.8107	.17935	.31108	1.8551	1.8725	1.8392	1.7993
#1	9.5378	16.714	6.0496	2.0021	2.8354	4.3449	10.270	4.7619
#2	9.5559	16.167	6.0702	2.0059	2.7407	4.2036	9.9380	4.6163
#3	9.5789	16.240	6.0661	2.0143	2.7530	4.2106	9.9616	4.6168

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.8558	.42922	1.0934	.47765	2.7374	3.3843	.32840	2.6690
Stddev	.0040	.00139	.0192	.00927	.0264	.0576	.00127	.0191
%RSD	.21725	.32348	1.7513	1.9408	.96319	1.7022	.38768	.71451
#1	1.8514	.42896	1.1150	.48805	2.7596	3.4502	.32695	2.6886
#2	1.8566	.43071	1.0785	.47027	2.7083	3.3434	.32889	2.6680
#3	1.8594	.42797	1.0866	.47463	2.7444	3.3593	.32935	2.6505

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.7115	.23389	3.9557	.90014	2.3970	49.123	4.5037
Stddev	.0047	.00117	.0309	.00136	.0439	.770	.0744
%RSD	.17470	.50144	.78248	.15147	1.8325	1.5675	1.6521
#1	2.7085	.23254	3.9897	.89954	2.4477	49.698	4.5890
#2	2.7090	.23447	3.9481	.89918	2.3695	49.422	4.4519
#3	2.7170	.23466	3.9293	.90170	2.3739	48.248	4.4702

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S4 Acquired: 02/07/2025 13:34:08 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S04 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3676.6	24273.	4434.5	2564.0	3781.6
Stddev	5.8	51.	53.2	7.2	4.2
%RSD	.15669	.20872	1.1992	.28102	.11228
#1	3674.6	24214.	4373.8	2561.5	3782.9
#2	3683.1	24301.	4456.4	2572.1	3785.1
#3	3672.1	24303.	4473.2	2558.4	3776.9

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S5 Acquired: 02/07/2025 13:37:59 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S05 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2497.1	1.2031	11.846	.70343	1.3292	25.913	61.174	6.4873
Stddev	9.3	.0009	.010	.00099	.0023	.172	.513	.0439
%RSD	.37106	.07290	.08411	.14089	.17342	.66336	.83819	.67666
#1	2496.4	1.2033	11.846	.70244	1.3267	25.738	61.002	6.4379
#2	2488.3	1.2022	11.856	.70442	1.3298	25.918	60.770	6.5019
#3	2506.8	1.2039	11.836	.70342	1.3312	26.082	61.751	6.5220

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	18.577	30.930	11.441	3.8962	5.3117	8.0431	18.992	8.8183
Stddev	.020	.200	.128	.0039	.0356	.0530	.136	.0721
%RSD	.10918	.64508	1.1163	.10044	.67000	.65919	.71372	.81752
#1	18.590	30.762	11.564	3.8978	5.2776	7.9952	18.862	8.7495
#2	18.586	30.877	11.309	3.8991	5.3088	8.0338	18.984	8.8121
#3	18.553	31.150	11.449	3.8918	5.3486	8.1001	19.132	8.8933

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.6168	.84024	2.0989	.90763	5.5746	6.4235	.66127	4.8248
Stddev	.0048	.00085	.0115	.00494	.0193	.0325	.00025	.0289
%RSD	.13222	.10149	.54757	.54399	.34531	.50611	.03820	.59975
#1	3.6171	.83968	2.0920	.90257	5.5763	6.3939	.66133	4.7920
#2	3.6214	.83981	2.0925	.90791	5.5546	6.4183	.66149	4.8354
#3	3.6118	.84122	2.1121	.91243	5.5930	6.4583	.66099	4.8469

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5.4103	.47414	7.2830	1.7443	4.5622	94.043	8.6498
Stddev	.0032	.00039	.0433	.0019	.0265	1.202	.0532
%RSD	.05952	.08239	.59393	.10786	.58084	1.2784	.61476
#1	5.4070	.47435	7.2346	1.7433	4.5378	92.689	8.6118
#2	5.4134	.47437	7.2968	1.7464	4.5584	94.984	8.6270
#3	5.4105	.47368	7.3177	1.7431	4.5904	94.455	8.7106

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S5 Acquired: 02/07/2025 13:37:59 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S05 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3445.1	23784.	4525.2	2387.2	3594.7
Stddev	13.4	59.	26.7	8.4	14.4
%RSD	.39036	.24958	.58908	.35110	.40124
#1	3447.9	23740.	4548.3	2382.9	3594.6
#2	3430.5	23851.	4531.2	2396.9	3580.3
#3	3457.0	23759.	4496.0	2381.9	3609.1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S6 Acquired: 02/07/2025 13:42:08 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S06 Custom ID2: Custom ID3:
Comment:

Elem	Al3961	Ca3736	Fe2598	Mg2790	Na8183
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	69.169	50.401	22.011	14.640	5.8863
Stddev	.540	.291	.085	.063	.0081
%RSD	.78066	.57742	.38485	.42829	.13732
#1	68.656	50.065	21.915	14.573	5.8776
#2	69.119	50.566	22.047	14.651	5.8875
#3	69.732	50.572	22.073	14.696	5.8936

Int. Std.	Y_3710
Units	Cts/S
Avg	4358.7
Stddev	21.2
%RSD	.48591
#1	4377.0
#2	4363.6
#3	4335.5

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICV003 Acquired: 02/07/2025 13:46:20 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICV003 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.065028	1.075651	.9766701	.9964649	.9432871	2.445009
Stddev	.003845	.004081	.0007476	.0046007	.0028548	.005122
%RSD	.3610224	.3794138	.0765497	.4616997	.3026450	.2095026
#1	1.062637	1.078188	.9758921	.9940240	.9402235	2.439313
#2	1.062984	1.070943	.9767349	.9935991	.9458728	2.449238
#3	1.069464	1.077822	.9773832	1.001772	.9437650	2.446475

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5243432	.5347565	.4814368	10.45946	.5482398	.4994114
Stddev	.0034588	.0044784	.0005611	.04652	.0013683	.0003076
%RSD	.6596342	.8374600	.1165416	.4447540	.2495903	.0615967
#1	.5204252	.5326006	.4816414	10.43917	.5467596	.4994548
#2	.5269731	.5399050	.4808021	10.51268	.5485012	.4990844
#3	.5256312	.5317637	.4818669	10.42653	.5494586	.4996950

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5301219	10.49731	.5395235	6.141250	.4999154	.2430006
Stddev	.0087561	.08189	.0030808	.025038	.0004421	.0005396
%RSD	1.651717	.7801284	.5710235	.4076972	.0884348	.2220485
#1	.5237618	10.57565	.5408841	6.164269	.5000703	.2423790
#2	.5264952	10.50399	.5416897	6.144888	.5002591	.2433487
#3	.5401086	10.41228	.5359966	6.114592	.4994167	.2432740

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.10952	.5247018	.9121145	9.866545	F -.003190	F -.021554
Stddev	.19388	.0046219	.0135712	.185432	.001680	.000471
%RSD	1.917795	.8808577	1.487887	1.879398	52.65756	2.185000
#1	9.92787	.5295560	.9204256	10.03868	-.004755	-.021928
#2	10.08702	.5241954	.8964536	9.67020	-.003398	-.021025
#3	10.31367	.5203540	.9194642	9.89076	-.001416	-.021709

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICV003 Acquired: 02/07/2025 13:46:20 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICV003 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0009158	F .0030624	F .0005500	F .0104432	F -.002991	F -.009222
Stddev	.0003010	.0033916	.0015616	.0004725	.001280	.000286
%RSD	32.86718	110.7520	283.9596	4.524175	42.80426	3.097398
#1	.0011449	-.000460	.0003232	.0103655	-.003666	-.009550
#2	.0005749	.003340	-.000886	.0100145	-.001515	-.009029
#3	.0010276	.006306	.002213	.0109498	-.003793	-.009086

Elem	Li6707
Units	ppm
Avg	F .0034499
Stddev	.0054514
%RSD	158.0168
#1	-.002837
#2	.006313
#3	.006873

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4177.182	27179.42	4560.791	2913.968	4696.644
Stddev	9.082	45.95	24.838	17.376	8.155
%RSD	.2174162	.1690532	.5446093	.5963075	.1736394
#1	4173.062	27138.53	4560.836	2896.606	4690.334
#2	4170.889	27229.14	4535.930	2931.358	4693.745
#3	4187.593	27170.60	4585.607	2913.941	4705.852

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICB003 Acquired: 02/07/2025 13:51:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICB003 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001138	.0009591	-.001203	-.000313	-.002105	-.032198
Stddev	.002314	.0016348	.001795	.004295	.000760	.012150
%RSD	203.4069	170.4628	149.1684	1370.713	36.08985	37.73460
#1	-.001006	.0001699	-.003253	.003251	-.002687	-.028094
#2	.001108	-.000132	-.000441	.000890	-.001245	-.022632
#3	-.003515	.002839	.000085	-.005082	-.002382	-.045868

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.004352	.0000678	-.000007	-.014777	-.000449	.0001161
Stddev	.003158	.0001063	.000038	.025576	.000666	.0003096
%RSD	72.57293	156.6714	525.3629	173.0821	148.2415	266.6828
#1	-.000724	-.000011	-.000035	-.020691	.000162	-.000234
#2	-.006491	.000189	-.000023	.013238	-.001159	.000355
#3	-.005841	.000026	.000036	-.036877	-.000351	.000227

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000661	.0029995	-.000996	-.010782	-.000378	.0009334
Stddev	.003508	.0147065	.000181	.038223	.000195	.0008056
%RSD	530.4893	490.3030	18.21855	354.5044	51.59936	86.30651
#1	.002906	-.000876	-.000966	.000338	-.000182	.0017822
#2	-.000783	-.009381	-.000831	.020647	-.000380	.0001794
#3	-.004107	.019256	-.001190	-.053332	-.000573	.0008387

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.545860	-.000286	-.001471	.0154726	.0015244	.0134359
Stddev	.471063	.006127	.002598	.0889079	.0027737	.0011866
%RSD	86.29750	2139.706	176.6870	574.6159	181.9556	8.831219
#1	-.158104	.006426	-.000077	-.066355	.0007539	.0132845
#2	-1.07009	-.005580	-.004468	.002694	.0046019	.0146908
#3	-.40938	-.001705	.000134	.110078	-.000783	.0123323

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICB003 Acquired: 02/07/2025 13:51:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICB003 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000983	-.004876	-.003380	F .0104049	-.002726	.0001086
Stddev	.0001033	.001409	.002146	.0002957	.003153	.0001794
%RSD	105.1076	28.89293	63.48803	2.842323	115.6895	165.1619
#1	.0001006	-.005589	-.001749	.0102214	.000915	.0003064
#2	.0002005	-.003253	-.002581	.0102472	-.004570	.0000629
#3	-.000006	-.005786	-.005811	.0107460	-.004523	-.000043

Elem	Li6707
Units	ppm
Avg	-.004645
Stddev	.003056
%RSD	65.78871
#1	-.004518
#2	-.007762
#3	-.001654

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4290.190	27860.23	4589.708	2986.770	5143.727
Stddev	7.320	45.92	3.422	8.008	6.609
%RSD	.1706187	.1648403	.0745690	.2681072	.1284852
#1	4296.985	27822.47	4587.162	2977.543	5149.838
#2	4291.146	27911.35	4588.363	2990.858	5144.630
#3	4282.439	27846.86	4593.598	2991.908	5136.713

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICSA003 Acquired: 02/07/2025 13:55:05 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSA003 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000255	-.001671	-.000307	-.027525	.0158022	234.5271
Stddev	.002578	.001354	.001185	.004346	.0036735	1.0304
%RSD	1012.859	81.03435	386.2401	15.79071	23.24675	.4393356
#1	.002447	-.001564	-.001667	-.032541	.0190316	233.4396
#2	-.000522	-.000374	.000247	-.025152	.0165693	234.6531
#3	-.002689	-.003076	.000499	-.024882	.0118057	235.4887

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0028136	.0030356	.0022318	242.8842	.0531312	.0290559
Stddev	.0021317	.0003900	.0001954	.8461	.0009209	.0005877
%RSD	75.76427	12.84895	8.753425	.3483502	1.733327	2.022833
#1	.0035940	.0026503	.0023423	241.9745	.0524658	.0292434
#2	.0004017	.0030263	.0020062	243.6476	.0541823	.0295270
#3	.0044451	.0034302	.0023468	243.0306	.0527455	.0283973

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.014142	99.06711	.0061698	241.8792	.0045554	-.004934
Stddev	.005525	.33961	.0014223	.8335	.0002266	.001163
%RSD	39.06821	.3428115	23.05217	.3446100	4.974270	23.56039
#1	-.007763	98.83545	.0049040	240.9178	.0043273	-.003598
#2	-.017422	99.45696	.0058965	242.3998	.0045585	-.005493
#3	-.017240	98.90891	.0077089	242.3200	.0047804	-.005712

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.101012	.0034646	-.031409	-.196912	.0009404	F -.314578
Stddev	.434158	.0036221	.003255	.026728	.0019563	.011662
%RSD	429.8077	104.5468	10.36255	13.57365	208.0345	3.707170
#1	-.496868	-.000625	-.028786	-.178230	-.001209	-.303353
#2	-.169479	.004751	-.035051	-.184978	.002617	-.326632
#3	.363311	.006268	-.030389	-.227528	.001413	-.313749

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICSA003 Acquired: 02/07/2025 13:55:05 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSA003 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0037260	.0172162	-.008829	F .0189489	-.001324	.0037549
Stddev	.0003566	.0008669	.001007	.0017848	.001177	.0006643
%RSD	9.570802	5.035334	11.40013	9.419089	88.89225	17.69190
#1	.0040364	.0164995	-.009791	.0209351	-.002674	.0039653
#2	.0033365	.0169694	-.008913	.0174795	-.000506	.0030108
#3	.0038052	.0181798	-.007783	.0184321	-.000793	.0042885

Elem	Li6707
Units	ppm
Avg	.0024840
Stddev	.0020014
%RSD	80.57380
#1	.0006448
#2	.0021915
#3	.0046155

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3925.771	24730.64	4501.871	2733.161	4034.315
Stddev	11.304	205.06	32.659	37.379	4.016
%RSD	.2879397	.8291697	.7254518	1.367618	.0995401
#1	3914.385	24503.37	4538.194	2695.791	4029.870
#2	3925.937	24901.80	4474.930	2770.549	4035.393
#3	3936.991	24786.75	4492.489	2733.143	4037.681

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICSAB003 Acquired: 02/07/2025 13:59:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSAB003 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0990756	.0972883	.0461726	.0191583	.5710064	237.6705
Stddev	.0021504	.0015606	.0030589	.0021954	.0008396	1.8524
%RSD	2.170420	1.604087	6.624899	11.45917	.1470431	.7794005
#1	.0971337	.0967888	.0492054	.0204166	.5706398	235.7461
#2	.1013866	.0960387	.0430883	.0204349	.5719669	237.8242
#3	.0987064	.0990375	.0462240	.0166233	.5704123	239.4413

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5156442	.5159490	.9867948	245.0479	.5830121	.5181167
Stddev	.0033791	.0008140	.0014584	1.4426	.0009714	.0009339
%RSD	.6553186	.1577722	.1477904	.5886821	.1666146	.1802513
#1	.5120071	.5151246	.9856701	243.5752	.5836298	.5173782
#2	.5162394	.5167522	.9862718	245.1102	.5835141	.5178055
#3	.5186863	.5159702	.9884426	246.4583	.5818925	.5191665

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4920596	100.4816	.5199974	244.7091	.9895467	.2002307
Stddev	.0068849	.9582	.0041778	1.6796	.0009407	.0005831
%RSD	1.399193	.9535592	.8034244	.6863819	.0950587	.2912084
#1	.4844345	99.4487	.5165396	242.8845	.9885775	.2000628
#2	.4978201	100.6549	.5188132	245.0519	.9896066	.2008793
#3	.4939243	101.3413	.5246395	246.1909	.9904559	.1997499

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.247576	.5100812	.9208782	-.508402	-.001657	F -.325322
Stddev	.238370	.0007839	.0029114	.042053	.000666	.004339
%RSD	96.28161	.1536830	.3161564	8.271516	40.20157	1.333763
#1	-.481115	.5106089	.9184634	-.533192	-.000936	-.322821
#2	-.004652	.5091804	.9200600	-.532168	-.001786	-.330333
#3	-.256961	.5104543	.9241111	-.459848	-.002250	-.322814

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICSAB003 Acquired: 02/07/2025 13:59:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSAB003 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0033658	.0232141	-.007640	F .0182073	-.002269	.0040700
Stddev	.0004040	.0044358	.001168	.0009350	.005466	.0003252
%RSD	12.00381	19.10825	15.28833	5.135383	240.9279	7.989266
#1	.0029234	.0283304	-.008070	.0171292	-.005654	.0042266
#2	.0037152	.0208659	-.006318	.0186952	-.005189	.0042872
#3	.0034587	.0204461	-.008532	.0187974	.004037	.0036962

Elem	Li6707
Units	ppm
Avg	-.002502
Stddev	.001914
%RSD	76.49743
#1	-.003497
#2	-.003713
#3	-.000295

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4012.201	25324.85	4599.240	2782.652	4132.315
Stddev	10.853	50.60	4.230	8.053	12.367
%RSD	.2704976	.1998110	.0919630	.2894086	.2992731
#1	4016.622	25284.75	4602.322	2775.239	4135.019
#2	4020.146	25381.71	4594.418	2791.221	4143.105
#3	3999.835	25308.10	4600.980	2781.496	4118.819

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCV005 Acquired: 02/07/2025 14:02:55 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV005 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.995217	4.912898	25.06902	4.938983	4.995066	400.0232
Stddev	.003851	.007353	.03774	.005613	.006978	1.4231
%RSD	.0770920	.1496629	.1505568	.1136571	.1397035	.3557570
#1	4.990968	4.904448	25.03092	4.941707	4.987197	398.7649
#2	4.996204	4.916408	25.06974	4.942714	4.997495	399.7370
#3	4.998478	4.917839	25.10640	4.932527	5.000504	401.5676

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.12206	.5028818	2.530498	402.6013	15.44823	2.513220
Stddev	.04086	.0015175	.002547	1.0720	.02249	.003194
%RSD	.4036461	.3017681	.1006643	.2662730	.1456058	.1270893
#1	10.08995	.5022018	2.527744	401.3792	15.43780	2.509564
#2	10.16805	.5046204	2.530978	403.3829	15.47404	2.515471
#3	10.10818	.5018232	2.532771	403.0418	15.43284	2.514623

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.08074	404.2519	14.96883	398.5638	2.517758	1.245563
Stddev	.05882	1.2758	.03819	1.2083	.000231	.001576
%RSD	.3900262	.3156016	.2551146	.3031627	.0091579	.1265536
#1	15.01370	403.0150	14.92773	397.5835	2.517865	1.245695
#2	15.12368	404.1774	14.97553	398.1942	2.517494	1.247069
#3	15.10485	405.5634	15.00322	399.9137	2.517916	1.243925

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	395.2435	2.515016	14.95905	152.8727	5.070078	F 4.111020
Stddev	1.1149	.009928	.03918	.4521	.005587	.009732
%RSD	.2820749	.3947465	.2618870	.2957365	.1101858	.2367238
#1	393.9563	2.506369	14.91555	152.5577	5.063846	4.101162
#2	395.9071	2.512820	14.97005	153.3907	5.074639	4.120620
#3	395.8670	2.525857	14.99156	152.6696	5.071748	4.111277

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCV005 Acquired: 02/07/2025 14:02:55 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV005 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.900635	5.142240	4.794641	5.070953	5.029347	4.751545
Stddev	.000945	.003539	.008239	.004225	.014044	.075422
%RSD	.0192829	.0688316	.1718400	.0833121	.2792381	1.587320
#1	4.900785	5.145906	4.788863	5.068614	5.013677	4.683884
#2	4.899623	5.141971	4.804076	5.068415	5.033569	4.832862
#3	4.901495	5.138843	4.790986	5.075829	5.040796	4.737888

Elem	Li6707
Units	ppm
Avg	5.026157
Stddev	.015346
%RSD	.3053278
#1	5.008740
#2	5.037693
#3	5.032039

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3621.731	23902.26	4492.615	2513.703	3658.594
Stddev	5.424	48.32	12.510	6.377	7.253
%RSD	.1497723	.2021638	.2784633	.2536926	.1982391
#1	3620.646	23950.82	4506.839	2520.934	3661.146
#2	3627.615	23901.77	4487.689	2508.883	3664.226
#3	3616.930	23854.18	4483.318	2511.292	3650.410

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCB005 Acquired: 02/07/2025 14:06:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB005 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001800	.0000705	.0004331	-.003936	-.000232	-.014844
Stddev	.001997	.0010260	.0009137	.001698	.001437	.023223
%RSD	110.9173	1455.233	210.9742	43.13854	617.9644	156.4429
#1	.000240	.0012482	.0009105	-.002241	.000780	-.009283
#2	-.001889	-.000406	-.000620	-.005637	.000399	-.040343
#3	-.003751	-.000631	.001009	-.003929	-.001877	.005093

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001621	.0000053	.0001043	.0019126	.0002165	-.000064
Stddev	.001020	.0001475	.0000587	.0107314	.0009476	.000215
%RSD	62.93335	2789.828	56.32364	561.0916	437.7844	337.1221
#1	-.000532	-.000044	.0001720	-.008644	.0012950	-.000311
#2	-.002555	-.000111	.0000677	.012810	-.000483	.000037
#3	-.001777	.000171	.0000730	.001572	-.000163	.000083

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003499	.0132798	-.000151	.0033498	-.000443	.0008481
Stddev	.004479	.0070111	.000730	.0316215	.000186	.0011025
%RSD	128.0329	52.79525	482.3965	943.9774	41.85398	129.9900
#1	-.007635	.0208658	-.000366	.0393110	-.000621	.0015781
#2	-.004120	.0119351	-.000750	-.009153	-.000250	.0013863
#3	.001259	.0070384	.000662	-.020109	-.000459	-.000420

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0220968	.0017760	-.002499	.1608757	-.000141	.0129461
Stddev	.4262672	.0022756	.002481	.0614718	.001813	.0009969
%RSD	1929.091	128.1298	99.27044	38.21074	1284.033	7.700494
#1	.0101368	-.000707	-.001905	.2234888	-.001534	.0118444
#2	-.398065	.002274	-.005222	.1585257	-.000798	.0132077
#3	.454218	.003761	-.000369	.1006126	.001909	.0137860

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCB005 Acquired: 02/07/2025 14:06:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB005 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007868	-.008288	-.002108	F .0101809	-.003121	.0001458
Stddev	.0005067	.000382	.001430	.0002286	.000376	.0001639
%RSD	64.40170	4.609803	67.86415	2.245454	12.03323	112.4116
#1	.0013683	-.007849	-.003684	.0103394	-.002930	.0000042
#2	.0005519	-.008548	-.001747	.0102844	-.002879	.0001078
#3	.0004402	-.008466	-.000892	.0099188	-.003553	.0003254

Elem	Li6707
Units	ppm
Avg	-.004056
Stddev	.001459
%RSD	35.97304
#1	-.004117
#2	-.005484
#3	-.002567

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4339.240	28468.22	4633.620	3039.629	5198.673
Stddev	14.483	231.82	20.860	26.204	16.544
%RSD	.3337680	.8143160	.4501855	.8620775	.3182261
#1	4329.026	28297.10	4641.398	3010.896	5183.497
#2	4355.815	28375.52	4609.989	3045.781	5216.309
#3	4332.878	28732.05	4649.474	3062.210	5196.213

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-01 Acquired: 02/07/2025 14:10:47 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA3 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0271316	-.021154	.0742309	-.019429	.0277783	29.15223	.2551129
Stddev	.0009960	.000887	.0020590	.001270	.0020844	.14660	.0004382
%RSD	3.671048	4.194058	2.773768	6.534245	7.503816	.5028926	.1717653
#1	.0263594	-.020241	.0760934	-.017966	.0275266	29.30947	.2554386
#2	.0267797	-.022014	.0720199	-.020237	.0258312	29.12792	.2552854
#3	.0282558	-.021207	.0745795	-.020084	.0299772	29.01930	.2546147

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0046481	.0002631	1.903217	.0553352	.0767861	.0540253	129.6663
Stddev	.0000763	.0001630	.011662	.0006115	.0000665	.0047427	.2561
%RSD	1.641858	61.96801	.6127570	1.105119	.0865620	8.778733	.1975028
#1	.0046551	.0004512	1.916633	.0549920	.0768403	.0591291	129.9545
#2	.0045685	.0001746	1.897509	.0560412	.0768061	.0531929	129.5795
#3	.0047206	.0001634	1.895508	.0549724	.0767119	.0497539	129.4648

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.088267	9.399822	.0480760	-.011533	.0093576	.0424644	.0478889
Stddev	.004016	.012205	.0001833	.000898	.2177420	.0019064	.0030744
%RSD	.3690196	.1298408	.3811617	7.790443	2326.908	4.489285	6.419909
#1	1.091377	9.409657	.0480185	-.010495	-.223832	.0403941	.0512050
#2	1.089691	9.386163	.0482811	-.012035	.044537	.0428520	.0473283
#3	1.083733	9.403646	.0479284	-.012068	.207368	.0441472	.0451333

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.43983	.6815093	-.473124	.0081062	.2915117	2.465461	.0176322
Stddev	.03777	.0013645	.000496	.0004142	.0023808	.007976	.0005711
%RSD	.2810278	.2002110	.1047893	5.108999	.8167095	.3234938	3.238896
#1	13.43420	.6812589	-.472776	.0076662	.2890300	2.463688	.0173546
#2	13.48010	.6802874	-.472905	.0081640	.2937769	2.458520	.0172530
#3	13.40519	.6829816	-.473692	.0084884	.2917282	2.474174	.0182891

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-01 Acquired: 02/07/2025 14:10:47 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA3 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.6341012	-.109544	.0268058
Stddev	.0034767	.000394	.0034398
%RSD	.5482899	.3597555	12.83244
#1	.6371237	-.109833	.0307686
#2	.6303017	-.109703	.0245909
#3	.6348780	-.109095	.0250578

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4563.383	29283.86	4940.273	3162.176	4861.227
Stddev	17.265	83.13	12.868	10.207	17.390
%RSD	.3783365	.2838848	.2604783	.3227778	.3577260
#1	4578.180	29278.12	4936.704	3150.443	4876.760
#2	4544.414	29203.75	4929.565	3167.072	4842.440
#3	4567.555	29369.71	4954.548	3169.012	4864.481

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-02 Acquired: 02/07/2025 14:14:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA4 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0386721	-.016417	.0597768	-.015143	.0187336	15.75199	.2493465
Stddev	.0001285	.001173	.0005666	.000190	.0004908	.05312	.0014487
%RSD	.3323921	7.147251	.9478222	1.251813	2.619816	.3372443	.5809926
#1	.0387857	-.017500	.0599893	-.015081	.0185137	15.79940	.2487065
#2	.0386981	-.016581	.0602065	-.014992	.0183912	15.76199	.2483281
#3	.0385326	-.015170	.0591347	-.015355	.0192959	15.69458	.2510050

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0033966	.0001171	1.693604	.1136959	.0168843	.0817308	87.95308
Stddev	.0001123	.0000529	.013610	.0007881	.0002815	.0022703	.22135
%RSD	3.306546	45.18950	.8035938	.6931510	1.667416	2.777769	.2516659
#1	.0032716	.0001556	1.697595	.1144943	.0171666	.0819896	87.69774
#2	.0034890	.0000568	1.678445	.1129186	.0168829	.0838606	88.09070
#3	.0034291	.0001390	1.704771	.1136747	.0166035	.0793422	88.07078

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2827872	2.622823	.0277914	-.010574	-.234438	.0276843	.0041935
Stddev	.0013361	.010694	.0002767	.000576	.165517	.0029017	.0010105
%RSD	.4724949	.4077308	.9957960	5.448119	70.60189	10.48122	24.09626
#1	.2842915	2.625814	.0277928	-.010992	-.375031	.0309921	.0030818
#2	.2817381	2.631703	.0280674	-.010813	-.276261	.0255686	.0044425
#3	.2823320	2.610952	.0275139	-.009917	-.052020	.0264921	.0050563

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.18657	1.190138	-.314818	.0250855	.3077347	2.300554	.0124616
Stddev	.15995	.000874	.004721	.0001771	.0005382	.037356	.0011067
%RSD	1.053238	.0734766	1.499618	.7059516	.1748771	1.623794	8.880866
#1	15.07117	1.189147	-.312918	.0252625	.3079698	2.289313	.0120884
#2	15.36915	1.190465	-.311343	.0250859	.3081153	2.270109	.0115897
#3	15.11938	1.190801	-.320193	.0249083	.3071190	2.342240	.0137066

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-02 Acquired: 02/07/2025 14:14:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA4 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.3488715	-.032748	-.002561
Stddev	.0011277	.000347	.003274
%RSD	.3232409	1.060570	127.8715
#1	.3477717	-.032359	.000010
#2	.3500252	-.033027	-.006247
#3	.3488174	-.032857	-.001445

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4577.369	29598.08	4942.535	3206.842	4933.453
Stddev	15.056	118.88	18.791	12.408	9.158
%RSD	.3289279	.4016342	.3801978	.3869300	.1856207
#1	4572.386	29466.51	4964.001	3212.487	4927.246
#2	4565.436	29697.75	4934.547	3192.615	4929.142
#3	4594.285	29629.99	4929.058	3215.424	4943.970

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-03 Acquired: 02/07/2025 14:18:41 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA5 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0151980	-.015649	.0661377	-.014001	.0207933	25.33466	.1979992
Stddev	.0035287	.000478	.0014286	.003043	.0029044	.13070	.0009949
%RSD	23.21834	3.053814	2.160060	21.73122	13.96814	.5159123	.5024916
#1	.0148794	-.016198	.0670749	-.013422	.0203500	25.40669	.1975933
#2	.0188752	-.015323	.0668448	-.011290	.0238939	25.18379	.1972713
#3	.0118394	-.015427	.0644935	-.017292	.0181360	25.41350	.1991329

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0032797	.0002038	2.211844	.0244966	.0309112	.0269891	94.93562
Stddev	.0001150	.0000952	.020504	.0002311	.0001106	.0068575	.26553
%RSD	3.505181	46.70694	.9270064	.9433114	.3577200	25.40830	.2796991
#1	.0034012	.0002131	2.194481	.0242810	.0309099	.0191392	95.22100
#2	.0031727	.0002940	2.206586	.0247405	.0310225	.0318135	94.69584
#3	.0032651	.0001043	2.234465	.0244684	.0308013	.0300147	94.89000

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4768037	9.299479	.0295322	-.008085	-.142303	.0218369	.0265931
Stddev	.0004863	.020420	.0003102	.000876	.296667	.0044217	.0005880
%RSD	.1019911	.2195824	1.050302	10.82902	208.4760	20.24867	2.210952
#1	.4764642	9.323055	.0292467	-.009095	-.484498	.0190565	.0267584
#2	.4765860	9.288017	.0294879	-.007629	.015069	.0269357	.0259402
#3	.4773608	9.287365	.0298622	-.007532	.042520	.0195186	.0270807

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.21654	.6239171	-.345126	.0055693	.2966865	2.156832	.0091829
Stddev	.10187	.0015532	.004804	.0002651	.0028770	.019032	.0009323
%RSD	.8338322	.2489399	1.391931	4.760526	.9697123	.8824001	10.15279
#1	12.29479	.6230466	-.350515	.0052634	.2965689	2.174883	.0088897
#2	12.10136	.6229944	-.341294	.0057320	.2938700	2.136951	.0084325
#3	12.25348	.6257103	-.343567	.0057126	.2996204	2.158662	.0102266

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-03 Acquired: 02/07/2025 14:18:41 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA5 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.3033220	-.062232	.0075495
Stddev	.0019481	.000154	.0032759
%RSD	.6422600	.2476637	43.39241
#1	.3014982	-.062107	.0113294
#2	.3030934	-.062185	.0057836
#3	.3053743	-.062404	.0055353

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4476.361	28783.52	4844.090	3113.498	4901.533
Stddev	5.952	148.09	27.342	20.446	4.804
%RSD	.1329680	.5144887	.5644380	.6566871	.0980111
#1	4480.856	28908.19	4812.614	3129.201	4904.263
#2	4478.616	28619.83	4857.703	3090.379	4904.351
#3	4469.611	28822.54	4861.953	3120.915	4895.986

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-04 Acquired: 02/07/2025 14:22:37 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA6 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0148384	-.016742	.0843315	-.014220	.0207575	21.25631	.3307908
Stddev	.0039853	.002142	.0007970	.002245	.0011007	.03644	.0016871
%RSD	26.85769	12.79289	.9450295	15.78639	5.302911	.1714120	.5100178
#1	.0169164	-.014359	.0837875	-.015419	.0215562	21.22334	.3291246
#2	.0173551	-.017363	.0852463	-.015612	.0212144	21.29543	.3324981
#3	.0102436	-.018505	.0839606	-.011631	.0195019	21.25015	.3307498

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0042440	.0001342	1.509511	.0250610	.0267005	.0109288	103.0916
Stddev	.0001631	.0000464	.015275	.0003623	.0003920	.0027709	.1960
%RSD	3.844001	34.56011	1.011949	1.445511	1.468266	25.35428	.1901297
#1	.0041080	.0001766	1.517783	.0247280	.0271481	.0109070	102.9824
#2	.0041991	.0001412	1.518867	.0250084	.0264183	.0137106	103.3179
#3	.0044249	.0000847	1.491884	.0254467	.0265350	.0081689	102.9746

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3438134	1.427041	.0103867	-.007113	-.158099	.0218829	-.017839
Stddev	.0008877	.010993	.0001187	.000803	.465645	.0011868	.001634
%RSD	.2582063	.7703412	1.143191	11.28778	294.5267	5.423251	9.157573
#1	.3440808	1.418755	.0102613	-.006187	.184286	.0225658	-.018738
#2	.3428227	1.439512	.0104975	-.007612	.029740	.0225704	-.018826
#3	.3445367	1.422856	.0104012	-.007540	-.688324	.0205125	-.015953

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	20.16380	.8289211	-.385749	.0041126	.0992272	2.352866	.0236518
Stddev	.13013	.0022964	.002661	.0006609	.0026247	.030165	.0007811
%RSD	.6453844	.2770317	.6898498	16.06954	2.645104	1.282056	3.302352
#1	20.31406	.8267209	-.382723	.0048269	.0985928	2.320305	.0228942
#2	20.08788	.8313029	-.386796	.0039882	.1021109	2.358435	.0236069
#3	20.08945	.8287396	-.387727	.0035228	.0969778	2.379859	.0244544

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-04 Acquired: 02/07/2025 14:22:37 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA6 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.1865326	-.091671	-.004806
Stddev	.0014970	.000177	.002703
%RSD	.8025640	.1931398	56.25363
#1	.1865288	-.091475	-.006016
#2	.1880316	-.091818	-.006692
#3	.1850375	-.091720	-.001709

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4454.001	28900.85	4787.818	3101.588	4906.445
Stddev	13.934	96.56	10.954	8.287	13.881
%RSD	.3128407	.3341080	.2287953	.2671966	.2829138
#1	4466.947	28921.44	4797.560	3094.177	4915.168
#2	4439.254	28795.65	4775.960	3100.050	4890.438
#3	4455.802	28985.45	4789.932	3110.536	4913.730

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-05 Acquired: 02/07/2025 14:26:34 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1285607	-.028339	.1398575	-.024091	.0426585	71.68147	.9028577
Stddev	.0043192	.001394	.0011934	.003907	.0024186	.21260	.0031444
%RSD	3.359629	4.917281	.8532747	16.21893	5.669571	.2965855	.3482677
#1	.1271514	-.026768	.1385657	-.027983	.0400534	71.92564	.9064590
#2	.1334085	-.028827	.1409189	-.024119	.0430897	71.53742	.9014575
#3	.1251221	-.029424	.1400877	-.020169	.0448325	71.58135	.9006567

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0096706	.0003953	7.487051	.1142704	.0531431	.0773583	189.1860
Stddev	.0000775	.0000119	.017617	.0004735	.0003268	.0006045	.9545
%RSD	.8014367	3.019571	.2353001	.4143498	.6148524	.7814116	.5045476
#1	.0096764	.0003847	7.480613	.1137252	.0530543	.0767172	190.2851
#2	.0097450	.0003931	7.473558	.1145074	.0535051	.0779179	188.5645
#3	.0095904	.0004082	7.506981	.1145785	.0528699	.0774399	188.7085

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9778153	5.683728	.0544004	-.012153	.2131720	.1175498	-.005992
Stddev	.0007910	.030167	.0007554	.002119	.8560151	.0034934	.002261
%RSD	.0808926	.5307692	1.388506	17.43915	401.5607	2.971836	37.72817
#1	.9785784	5.715441	.0552663	-.013059	1.168463	.1154968	-.007685
#2	.9778684	5.680353	.0538768	-.009731	-.484305	.1155692	-.003425
#3	.9769991	5.655390	.0540581	-.013669	-.044643	.1215834	-.006867

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	31.89778	2.458192	-.678870	.0078638	.4011219	2.710174	.0345762
Stddev	.06085	.002383	.006135	.0004584	.0038754	.035492	.0005682
%RSD	.1907805	.0969269	.9037635	5.829379	.9661388	1.309578	1.643384
#1	31.83447	2.459187	-.684040	.0077920	.3995731	2.750733	.0349042
#2	31.90304	2.459916	-.680479	.0083538	.4055321	2.694986	.0349043
#3	31.95584	2.455473	-.672090	.0074455	.3982604	2.684804	.0339201

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-05 Acquired: 02/07/2025 14:26:34 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.8403153	-.165796	.0326022
Stddev	.0021728	.000828	.0034608
%RSD	.2585741	.4996853	10.61532
#1	.8419202	-.166733	.0302349
#2	.8378427	-.165162	.0365740
#3	.8411830	-.165492	.0309976

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4544.041	29011.79	4924.943	3155.549	4700.110
Stddev	8.327	145.64	9.172	13.587	7.600
%RSD	.1832565	.5019946	.1862339	.4305614	.1617070
#1	4535.140	29179.65	4914.641	3171.237	4692.058
#2	4551.641	28919.07	4927.966	3147.806	4707.159
#3	4545.341	28936.65	4932.221	3147.605	4701.113

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-06 Acquired: 02/07/2025 14:30:24 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7D Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1261067	-.026883	.1364275	-.022660	.0419174	70.86302	.8955923
Stddev	.0035732	.000313	.0007853	.004746	.0015218	.23461	.0031531
%RSD	2.833489	1.165273	.5755865	20.94388	3.630413	.3310738	.3520721
#1	.1292583	-.026826	.1363227	-.027853	.0416040	70.59627	.8931803
#2	.1268370	-.026602	.1372599	-.018548	.0435715	70.95548	.8944364
#3	.1222247	-.027221	.1356999	-.021579	.0405767	71.03732	.8991603

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0096375	.0004164	7.376831	.1135146	.0530779	.0767375	186.4467
Stddev	.0001154	.0000612	.001544	.0003139	.0002281	.0015519	.5806
%RSD	1.197662	14.69855	.0209337	.2765454	.4298052	2.022320	.3114215
#1	.0095631	.0003639	7.377518	.1138682	.0528225	.0749678	185.8152
#2	.0097705	.0004018	7.377912	.1132686	.0531498	.0773784	186.5673
#3	.0095791	.0004836	7.375062	.1134071	.0532615	.0778662	186.9575

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9631619	5.629869	.0542610	-.012034	-.048686	.1167098	-.007765
Stddev	.0029832	.077484	.0001596	.000483	.335733	.0059871	.002026
%RSD	.3097281	1.376304	.2941088	4.015339	689.5896	5.129915	26.09269
#1	.9605086	5.587642	.0541092	-.011578	-.403329	.1099726	-.007649
#2	.9663910	5.719294	.0542463	-.011984	.264238	.1214214	-.009846
#3	.9625860	5.582671	.0544274	-.012541	-.006967	.1187352	-.005799

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	31.62619	2.429493	-.678397	.0080728	.3956634	2.732002	.0319481
Stddev	.04817	.006526	.011276	.0002104	.0039806	.016129	.0004599
%RSD	.1522949	.2686233	1.662208	2.606279	1.006069	.5903846	1.439596
#1	31.64652	2.424091	-.691308	.0080838	.3912084	2.742694	.0315763
#2	31.66085	2.436745	-.670482	.0078571	.3988708	2.713450	.0318056
#3	31.57119	2.427644	-.673400	.0082775	.3969111	2.739863	.0324624

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-06 Acquired: 02/07/2025 14:30:24 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7D Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.8297359	-.163263	.0290508
Stddev	.0053776	.000606	.0050137
%RSD	.6481081	.3712048	17.25832
#1	.8247503	-.162642	.0331599
#2	.8354343	-.163293	.0305282
#3	.8290231	-.163853	.0234645

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4514.630	29108.54	4906.033	3169.907	4680.063
Stddev	5.790	25.28	28.567	8.056	9.145
%RSD	.1282491	.0868410	.5822888	.2541450	.1954100
#1	4519.265	29133.59	4873.320	3174.241	4686.521
#2	4516.485	29083.04	4926.063	3174.869	4684.070
#3	4508.140	29108.97	4918.715	3160.612	4669.598

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-05LX5 Acquired: 02/07/2025 14:34:14 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7L Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0255942	-.005483	.0294089	-.007286	.0089094	15.17973	.1902876
Stddev	.0013998	.001222	.0006902	.002196	.0028756	.07339	.0010970
%RSD	5.469222	22.28559	2.346986	30.13833	32.27651	.4834483	.5765191
#1	.0267682	-.004168	.0288939	-.004845	.0103760	15.09986	.1890214
#2	.0259693	-.006584	.0301932	-.009100	.0055961	15.24418	.1908880
#3	.0240450	-.005698	.0291396	-.007913	.0107560	15.19516	.1909534

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0020285	.0001137	1.549518	.0239604	.0106002	.0079586	39.89252
Stddev	.0000901	.0000831	.026075	.0002781	.0003408	.0067961	.09353
%RSD	4.441318	73.12008	1.682755	1.160759	3.215232	85.39342	.2344649
#1	.0021231	.0000233	1.519450	.0241754	.0107553	.0045181	39.79399
#2	.0019438	.0001869	1.563204	.0240595	.0108360	.0035707	39.98009
#3	.0020185	.0001307	1.565901	.0236463	.0102095	.0157870	39.90349

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2078374	1.243715	.0107727	-.002761	-.188311	.0246377	-.001548
Stddev	.0014836	.022518	.0003617	.001506	.389193	.0001826	.000854
%RSD	.7138325	1.810532	3.357902	54.52940	206.6756	.7411431	55.19463
#1	.2065535	1.226002	.0108738	-.003537	-.615748	.0248485	-.001662
#2	.2074972	1.269057	.0110731	-.003720	-.094777	.0245349	-.000642
#3	.2094616	1.236087	.0103711	-.001026	.145592	.0245297	-.002339

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.800933	.4727251	-.148733	.0017289	.0694532	.6915199	.0148221
Stddev	.050612	.0013319	.003882	.0004889	.0015761	.0097923	.0000482
%RSD	.7441953	.2817579	2.610311	28.27820	2.269352	1.416049	.3251250
#1	6.750284	.4716639	-.145005	.0011932	.0694228	.6839737	.0147699
#2	6.851508	.4742197	-.152754	.0021509	.0678925	.7025854	.0148649
#3	6.801007	.4722916	-.148441	.0018425	.0710443	.6880005	.0148314

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-05LX5 Acquired: 02/07/2025 14:34:14 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7L Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.1742886	-.034853	.0024835
Stddev	.0009773	.000181	.0039945
%RSD	.5607281	.5187773	160.8433
#1	.1740626	-.034699	-.001058
#2	.1734441	-.035052	.006813
#3	.1753591	-.034808	.001695

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4372.071	28088.52	4675.530	3030.695	4917.848
Stddev	2.174	108.76	30.602	26.203	2.799
%RSD	.0497211	.3871990	.6545090	.8645761	.0569129
#1	4370.541	28008.60	4698.907	3007.459	4915.843
#2	4374.559	28212.37	4640.894	3059.096	4916.654
#3	4371.112	28044.59	4686.789	3025.531	4921.045

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-07 Acquired: 02/07/2025 14:38:12 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7S Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2215467	.0750351	.1784267	.1674316	.2280158	74.32757	5.084362
Stddev	.0045717	.0012080	.0016961	.0046088	.0010659	.40820	.020207
%RSD	2.063524	1.609963	.9505822	2.752634	.4674841	.5491934	.3974410
#1	.2247955	.0736964	.1782640	.1658095	.2267862	74.36517	5.062242
#2	.2163189	.0760440	.1768179	.1638532	.2286770	73.90187	5.088991
#3	.2235256	.0753650	.1801983	.1726321	.2285843	74.71567	5.101853

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1138368	.1035070	7.271680	.5579843	1.093517	.6024016	185.6138
Stddev	.0004973	.0003254	.056195	.0028876	.004008	.0043955	1.1575
%RSD	.4368441	.3143958	.7727957	.5175142	.3664863	.7296558	.6235977
#1	.1134514	.1031656	7.211617	.5579334	1.090593	.6064531	185.5390
#2	.1143982	.1035419	7.280446	.5551224	1.091873	.5977284	184.4956
#3	.1136610	.1038136	7.322977	.5608970	1.098085	.6030235	186.8069

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.001594	5.557371	1.107341	.0619573	.5059189	1.156014	.9118378
Stddev	.007236	.084105	.002764	.0010478	.4426904	.011845	.0070084
%RSD	.3615192	1.513401	.2495761	1.691093	87.50226	1.024679	.7685968
#1	2.002056	5.569050	1.105867	.0631670	1.013989	1.155590	.9149678
#2	1.994139	5.468037	1.105627	.0613353	.300605	1.144386	.9038099
#3	2.008589	5.635027	1.110529	.0613697	.203163	1.168066	.9167358

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	31.74344	2.412823	-.664459	.0070470	.3970277	4.575586	.0322259
Stddev	.18028	.010218	.003584	.0005379	.0080275	.033713	.0006037
%RSD	.5679300	.4234783	.5394600	7.632610	2.021904	.7367950	1.873346
#1	31.68002	2.406818	-.662400	.0070017	.3942235	4.536725	.0321056
#2	31.60344	2.407031	-.668598	.0076061	.3907785	4.596994	.0316915
#3	31.94686	2.424621	-.662379	.0065332	.4060812	4.593038	.0328808

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-07 Acquired: 02/07/2025 14:38:12 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7S Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.8193723	-.162700	.0275323
Stddev	.0042084	.001014	.0022665
%RSD	.5136087	.6234701	8.232218
#1	.8188667	-.162864	.0269656
#2	.8154395	-.161614	.0300284
#3	.8238106	-.163623	.0256029

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4583.719	29310.31	4979.011	3195.034	4748.105
Stddev	3.688	204.05	6.188	16.624	3.456
%RSD	.0804637	.6961835	.1242855	.5203174	.0727963
#1	4581.827	29231.39	4978.415	3187.484	4751.039
#2	4581.360	29542.04	4985.475	3214.093	4748.980
#3	4587.969	29157.51	4973.142	3183.524	4744.295

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: PB166600BL Acquired: 02/07/2025 14:42:01 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: PBS600 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001736	-.000042	-.002631	.0000130	-.000262	-.036189
Stddev	.002846	.000473	.001795	.0043915	.001044	.011760
%RSD	163.9429	1135.221	68.23104	33898.04	399.0881	32.49721
#1	.001474	-.000561	-.004364	-.002161	-.001398	-.025620
#2	-.003952	.000071	-.000780	.005067	.000655	-.048858
#3	-.002729	.000365	-.002748	-.002868	-.000042	-.034088

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001185	-.000102	.0000425	-.012066	.0001869	-.000220
Stddev	.001837	.000072	.0000303	.024011	.0004683	.000199
%RSD	155.1207	70.92282	71.21234	199.0024	250.5281	90.70508
#1	-.000971	-.000171	.0000713	-.026517	.0006877	-.000387
#2	.000537	-.000027	.0000109	-.025332	.0001133	.000001
#3	-.003119	-.000108	.0000455	.015652	-.000240	-.000273

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003383	.0074117	.0005165	-.000569	-.000601	.0010834
Stddev	.003336	.0089839	.0008104	.019445	.000084	.0009015
%RSD	98.60311	121.2125	156.9207	3416.806	14.00694	83.21476
#1	-.001326	.0152481	-.000412	-.018301	-.000652	.0004306
#2	-.001591	-.002393	.000879	.020226	-.000504	.0007075
#3	-.007232	.009380	.001082	-.003633	-.000648	.0021120

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.419535	.0003027	.0001275	.0338337	-.000508	.0014134
Stddev	.471027	.0010337	.0025378	.0959795	.001403	.0011948
%RSD	112.2736	341.4479	1990.215	283.6805	276.3633	84.53230
#1	.099633	-.000294	.0028484	-.054067	-.002009	.0019951
#2	-.819529	.001496	-.002175	.136241	-.000285	.0022060
#3	-.538710	-.000294	-.000291	.019327	.000771	.0000392

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: PB166600BL Acquired: 02/07/2025 14:42:01 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: PBS600 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001153	-.010441	-.002517	F .0105236	-.002162	-.000035
Stddev	.0006317	.000196	.001385	.0006517	.000259	.000089
%RSD	547.8035	1.874147	55.02547	6.192280	11.96380	253.7638
#1	-.000580	-.010215	-.002353	.0099238	-.002386	-.000138
#2	.000653	-.010555	-.003976	.0104300	-.002220	.000014
#3	.000273	-.010552	-.001221	.0112170	-.001879	.000018

Elem	Li6707
Units	ppm
Avg	-.007365
Stddev	.004639
%RSD	62.98040
#1	-.010448
#2	-.009617
#3	-.002031

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4321.135	28213.83	4621.216	2999.435	5155.000
Stddev	3.689	151.18	8.111	13.368	9.625
%RSD	.0853734	.5358253	.1755068	.4456703	.1867206
#1	4324.941	28146.65	4630.088	2987.302	5161.525
#2	4317.574	28386.96	4619.377	3013.765	5143.945
#3	4320.891	28107.90	4614.183	2997.237	5159.529

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: PB166600BS Acquired: 02/07/2025 14:46:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LCS600 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0201889	.0534189	.0169793	.0614773	.1113765	.3783045
Stddev	.0038077	.0004839	.0006643	.0062887	.0007702	.0163394
%RSD	18.86020	.9057663	3.912385	10.22937	.6915473	4.319121
#1	.0241606	.0531993	.0176858	.0564728	.1122657	.3788456
#2	.0198361	.0530838	.0168846	.0594227	.1109473	.3943666
#3	.0165699	.0539736	.0163674	.0685364	.1109165	.3617012

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4040777	.0106542	.0094924	10.37914	.0208670	.1014488
Stddev	.0014647	.0002560	.0001034	.08067	.0005256	.0001786
%RSD	.3624807	2.402928	1.089246	.7771839	2.518730	.1760367
#1	.4024386	.0105349	.0095530	10.29018	.0208406	.1012787
#2	.4045363	.0104796	.0095512	10.39971	.0214053	.1014328
#3	.4052582	.0109481	.0093730	10.44753	.0203551	.1016348

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0481180	.1971710	.0324369	10.11736	.0763213	.0206109
Stddev	.0046478	.0079699	.0009018	.00595	.0001198	.0005121
%RSD	9.659237	4.042111	2.780290	.0588229	.1569106	2.484632
#1	.0435941	.2048128	.0314714	10.11538	.0762856	.0212019
#2	.0528805	.1889092	.0332576	10.12405	.0762234	.0202980
#3	.0478795	.1977909	.0325816	10.11265	.0764548	.0203329

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.798991	.1101032	.1108565	10.06365	.0162263	F .0015688
Stddev	.524297	.0012480	.0022165	.17831	.0020622	.0023355
%RSD	5.350522	1.133490	1.999473	1.771815	12.70917	148.8694
#1	10.39466	.1113442	.1084538	10.03381	.0138523	.0006280
#2	9.59480	.1101171	.1128216	9.90214	.0172519	.0042280
#3	9.40751	.1088483	.1112940	10.25499	.0175746	-.000150

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: PB166600BS Acquired: 02/07/2025 14:46:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LCS600 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0209333	.1631354	F 1.007560	F .0250433	.2008029	.2113808
Stddev	.0003913	.0017523	.008206	.0010807	.0045035	.0014696
%RSD	1.869234	1.074125	.8144129	4.315141	2.242723	.6952354
#1	.0209922	.1649670	1.000577	.0262177	.1971090	.2096911
#2	.0205159	.1614750	1.005505	.0248213	.2058196	.2123615
#3	.0212918	.1629641	1.016598	.0240908	.1994801	.2120897

Elem	Li6707
Units	ppm
Avg	.0232507
Stddev	.0048249
%RSD	20.75153
#1	.0275922
#2	.0241036
#3	.0180562

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4253.039	27666.56	4628.675	2959.950	4804.293
Stddev	2.302	64.95	59.834	20.191	1.489
%RSD	.0541240	.2347511	1.292676	.6821515	.0310002
#1	4250.465	27721.99	4677.250	2973.664	4802.636
#2	4254.900	27682.59	4646.936	2969.421	4804.724
#3	4253.751	27595.10	4561.838	2936.764	4805.520

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-03 Acquired: 02/07/2025 14:49:56 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0032017	.0132503	.0231580	-.009441	-.008460	.0858077
Stddev	.0008990	.0016705	.0001502	.001046	.001019	.0237254
%RSD	28.07854	12.60695	.6484409	11.08306	12.04554	27.64944
#1	.0034178	.0136242	.0229900	-.010603	-.007316	.0951954
#2	.0022143	.0114246	.0232049	-.009147	-.008794	.0588250
#3	.0039729	.0147021	.0232792	-.008574	-.009271	.1034029

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.880753	.0001001	.0027674	191.7880	.0039923	.0331988
Stddev	.011302	.0001273	.0000644	1.1002	.0003814	.0001614
%RSD	.6009214	127.2638	2.326914	.5736349	9.552266	.4862026
#1	1.871218	-.000039	.0027008	190.6519	.0043645	.0332840
#2	1.877802	.000130	.0028293	191.8639	.0040099	.0332998
#3	1.893237	.000210	.0027722	192.8483	.0036024	.0330127

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0779727	.0457870	3.852871	30.89053	.0087434	.0010164
Stddev	.0068230	.0201939	.026450	.26764	.0002893	.0006633
%RSD	8.750469	44.10399	.6865054	.8664023	3.308279	65.25989
#1	.0828271	.0422054	3.824135	30.61046	.0084663	.0004318
#2	.0809194	.0276235	3.858277	30.91742	.0090435	.0008800
#3	.0701716	.0675320	3.876199	31.14370	.0087202	.0017372

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1300.276	.0022210	.4583836	11.39180	.0828349	.2732830
Stddev	8.848	.0073089	.0033934	.23137	.0039103	.0032514
%RSD	.6804358	329.0884	.7402983	2.031005	4.720647	1.189738
#1	1290.779	-.005984	.4546778	11.23890	.0823544	.2721805
#2	1301.764	.008035	.4613389	11.27852	.0791870	.2707263
#3	1308.286	.004612	.4591341	11.65798	.0869633	.2769423

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-03 Acquired: 02/07/2025 14:49:56 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0029794	1.723940	3.260505	-.000041	-.003068	1.361597
Stddev	.0001503	.004382	.030507	.000721	.001629	.011470
%RSD	5.045784	.2541658	.9356643	1754.092	53.09076	.8423825
#1	.0029915	1.724178	3.253654	-.000402	-.004575	1.350437
#2	.0031233	1.719445	3.234006	-.000510	-.001340	1.361002
#3	.0028234	1.728199	3.293855	.000789	-.003287	1.373353

Elem	Li6707
Units	ppm
Avg	.0008702
Stddev	.0035032
%RSD	402.5692
#1	.0009501
#2	.0043327
#3	-.002672

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4081.925	25457.27	4882.366	2858.934	4007.234
Stddev	5.341	81.60	59.298	1.947	2.842
%RSD	.1308330	.3205495	1.214525	.0681030	.0709238
#1	4075.775	25506.28	4903.246	2860.241	4004.171
#2	4085.398	25502.47	4928.399	2859.864	4009.786
#3	4084.601	25363.07	4815.453	2856.696	4007.743

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-04 Acquired: 02/07/2025 14:53:48 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2D Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0043164	.0141721	.0244583	-.009846	-.010127	.1047315
Stddev	.0017839	.0019054	.0000424	.001130	.000745	.0057458
%RSD	41.32793	13.44495	.1734956	11.47688	7.355623	5.486192
#1	.0032663	.0163313	.0244626	-.010538	-.010026	.1060688
#2	.0063761	.0134586	.0244138	-.008542	-.010917	.0984350
#3	.0033068	.0127264	.0244983	-.010459	-.009437	.1096906

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.892112	.0001296	.0028951	193.0027	.0030152	.0338609
Stddev	.009279	.0000059	.0000908	.4352	.0008783	.0003215
%RSD	.4904078	4.585640	3.137205	.2255147	29.13084	.9494468
#1	1.892696	.0001250	.0029645	192.9381	.0040263	.0336003
#2	1.882555	.0001363	.0029285	192.6034	.0024411	.0342201
#3	1.901085	.0001276	.0027923	193.4667	.0025781	.0337622

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0718358	.0534157	3.882492	31.25215	.0089089	.0020341
Stddev	.0050795	.0075844	.015944	.16339	.0002849	.0002674
%RSD	7.070949	14.19878	.4106588	.5228123	3.197709	13.14597
#1	.0774273	.0474914	3.887744	31.38051	.0086434	.0017465
#2	.0675064	.0619635	3.864584	31.06822	.0088735	.0020807
#3	.0705736	.0507921	3.895147	31.30771	.0092098	.0022752

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1309.889	.0001456	.4585954	11.85023	.0823514	.2783847
Stddev	4.604	.0007836	.0013753	.29162	.0008915	.0022750
%RSD	.3514809	538.2584	.2998900	2.460903	1.082538	.8172291
#1	1307.923	.0007680	.4571017	11.88071	.0815412	.2759514
#2	1306.594	.0004031	.4598093	11.54456	.0822065	.2787440
#3	1315.149	-.000734	.4588752	12.12541	.0833064	.2804588

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-04 Acquired: 02/07/2025 14:53:48 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2D Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0028082	1.749589	3.308002	-.000000	-.003961	1.375489
Stddev	.0003767	.006195	.021133	.000559	.000775	.005678
%RSD	13.41324	.3540694	.6388472	150395.8	19.55817	.4128260
#1	.0024255	1.743804	3.283824	.000524	-.003162	1.372976
#2	.0031785	1.748836	3.322949	-.000589	-.004011	1.371501
#3	.0028207	1.756125	3.317232	.000064	-.004709	1.381990

Elem	Li6707
Units	ppm
Avg	.0006149
Stddev	.0044383
%RSD	721.8361
#1	-.004251
#2	.004441
#3	.001655

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4062.773	25319.20	4854.429	2845.935	3983.243
Stddev	10.384	99.75	45.747	8.534	10.097
%RSD	.2555955	.3939580	.9423772	.2998602	.2534800
#1	4056.876	25355.36	4876.173	2854.869	3980.505
#2	4056.679	25395.82	4885.247	2837.868	3974.797
#3	4074.763	25206.42	4801.865	2845.067	3994.426

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-03LX5 Acquired: 02/07/2025 14:57:42 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2L Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000972	.0045381	.0016247	-.008204	-.004763	-.015458	.3854417
Stddev	.002057	.0004412	.0015079	.004125	.001262	.010655	.0017735
%RSD	211.5914	9.722385	92.81264	50.28489	26.48732	68.92743	.4601314
#1	.001335	.0049088	-.000060	-.007590	-.004517	-.003643	.3865274
#2	-.001638	.0040501	.002086	-.004420	-.006130	-.018395	.3833950
#3	-.002613	.0046554	.002848	-.012602	-.003643	-.024337	.3864026

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000751	.0005702	40.01546	.0006925	.0176068	.0128895	.0172184
Stddev	.0001148	.0000307	.04834	.0003760	.0003641	.0080039	.0057971
%RSD	152.8952	5.381107	.1208081	54.29896	2.067725	62.09619	33.66788
#1	.0000629	.0006039	40.03131	.0002994	.0178655	.0062718	.0217596
#2	.0001955	.0005628	39.96119	.0010488	.0177645	.0217856	.0192067
#3	-.000033	.0005438	40.05389	.0007292	.0171905	.0106112	.0106888

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8062381	6.528966	.0009696	.0004604	269.9415	.0059884	.0898450
Stddev	.0040665	.015345	.0003182	.0006043	1.2231	.0024777	.0019740
%RSD	.5043732	.2350341	32.81450	131.2481	.4531050	41.37535	2.197165
#1	.8061178	6.546020	.0012227	.0003247	270.1484	.0032750	.0884001
#2	.8022332	6.516274	.0010736	-.000064	268.6282	.0065596	.0890406
#3	.8103634	6.524602	.0006124	.001121	271.0480	.0081307	.0920942

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.794379	.0122388	.0640677	.0018981	.3296759	.7068316	.0097123
Stddev	.200706	.0031314	.0031428	.0003980	.0021424	.0012938	.0010967
%RSD	5.289572	25.58592	4.905493	20.96974	.6498420	.1830364	11.29223
#1	3.562825	.0133219	.0671242	.0023152	.3298151	.7055352	.0085492
#2	3.901772	.0087096	.0642339	.0015224	.3274673	.7081227	.0107277
#3	3.918538	.0146849	.0608451	.0018567	.3317453	.7068367	.0098601

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-03LX5 Acquired: 02/07/2025 14:57:42 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2L Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	-.000675	.2812286	.0213284
Stddev	.002323	.0010414	.0031113
%RSD	344.2396	.3703106	14.58758
#1	.001060	.2817969	.0188540
#2	-.003314	.2800266	.0203100
#3	.000230	.2818622	.0248213

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4156.235	26217.07	4668.680	2878.037	4305.341
Stddev	12.160	60.29	11.008	5.775	12.106
%RSD	.2925833	.2299610	.2357877	.2006616	.2811969
#1	4143.185	26241.50	4661.990	2875.907	4293.536
#2	4167.249	26148.40	4681.386	2884.575	4317.728
#3	4158.270	26261.30	4662.665	2873.630	4304.760

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-05 Acquired: 02/07/2025 15:01:38 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2S Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0458272	.0603824	.0459789	.0948483	.0849825	1.943884
Stddev	.0017461	.0023093	.0022142	.0042393	.0028823	.046053
%RSD	3.810102	3.824527	4.815599	4.469545	3.391684	2.369131
#1	.0447433	.0591739	.0450240	.0924743	.0818378	1.991511
#2	.0478414	.0589281	.0485103	.0923279	.0874989	1.899585
#3	.0448969	.0630452	.0444024	.0997427	.0856108	1.940558

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.874517	.0496108	.0554253	193.4447	.2143201	.5393790
Stddev	.006438	.0001557	.0001531	.8500	.0018655	.0006217
%RSD	.1661733	.3139116	.2761936	.4393825	.8704285	.1152637
#1	3.881881	.0496397	.0555367	194.2667	.2133086	.5400474
#2	3.871719	.0494426	.0552508	192.5693	.2164729	.5388179
#3	3.869950	.0497500	.0554885	193.4981	.2131788	.5392718

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3274842	1.063699	4.406678	31.21266	.5243305	.0375458
Stddev	.0021918	.020298	.031574	.26747	.0003553	.0005695
%RSD	.6692865	1.908260	.7164954	.8569278	.0677672	1.516769
#1	.3254084	1.072178	4.431701	31.45178	.5244917	.0374205
#2	.3272681	1.040537	4.371204	30.92382	.5239232	.0370494
#3	.3297760	1.078384	4.417129	31.26238	.5245767	.0381675

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1315.303	.5119580	.9499485	12.00391	.0784747	.2784328
Stddev	9.356	.0062138	.0078591	.15353	.0013685	.0056584
%RSD	.7113180	1.213738	.8273173	1.279024	1.743807	2.032213
#1	1325.128	.5158346	.9586770	11.94129	.0800202	.2842051
#2	1306.499	.5047909	.9477348	11.89159	.0779870	.2728957
#3	1314.282	.5152485	.9434336	12.17886	.0774169	.2781976

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-05 Acquired: 02/07/2025 15:01:38 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2S Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0028270	1.761497	3.348300	.0007344	-.005477	1.384795
Stddev	.0000980	.007371	.032305	.0007380	.003892	.007926
%RSD	3.467958	.4184227	.9648035	100.4904	71.07074	.5723423
#1	.0029297	1.764004	3.339243	.0001497	-.007476	1.391809
#2	.0027343	1.753200	3.321490	.0015637	-.007963	1.376196
#3	.0028171	1.767287	3.384166	.0004899	-.000991	1.386379

Elem	Li6707
Units	ppm
Avg	-.001038
Stddev	.001908
%RSD	183.8209
#1	-.003159
#2	-.000497
#3	.000541

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4154.398	26011.27	4949.774	2894.221	4059.947
Stddev	12.384	90.54	3.753	6.747	14.144
%RSD	.2980818	.3480888	.0758271	.2331210	.3483704
#1	4141.998	26067.86	4949.273	2896.087	4046.367
#2	4166.765	25906.84	4946.296	2886.737	4074.594
#3	4154.432	26059.10	4953.752	2899.838	4058.881

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCV006 Acquired: 02/07/2025 15:05:27 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV006 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.964078	4.972818	25.36618	5.010067	5.046429	407.0491
Stddev	.030201	.008705	.04889	.010175	.010523	.7949
%RSD	.6083821	.1750572	.1927508	.2030976	.2085179	.1952841
#1	4.941697	4.968855	25.34215	5.006387	5.038013	407.8302
#2	4.952108	4.966800	25.33396	5.002243	5.043047	406.2411
#3	4.998429	4.982800	25.42244	5.021570	5.058227	407.0760

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.30046	.5162081	2.559821	410.6985	15.66661	2.547194
Stddev	.02615	.0047569	.004188	.5258	.05098	.004675
%RSD	.2538864	.9215001	.1636149	.1280377	.3254228	.1835198
#1	10.28672	.5108099	2.559482	410.1416	15.69569	2.545283
#2	10.33061	.5180282	2.555812	411.1865	15.69639	2.543777
#3	10.28403	.5197861	2.564168	410.7675	15.60774	2.552521

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.34352	409.7326	15.14989	402.4145	2.549212	1.273208
Stddev	.01908	.4616	.01565	.9106	.004563	.003129
%RSD	.1243282	.1126621	.1032805	.2262736	.1790019	.2457818
#1	15.35219	410.2527	15.16311	403.1110	2.551463	1.275011
#2	15.35672	409.5735	15.15394	401.3841	2.543960	1.275019
#3	15.32165	409.3716	15.13261	402.7484	2.552211	1.269594

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	403.6171	2.553822	14.84094	155.3281	5.127145	F 4.157530
Stddev	.1788	.007923	.19629	.5258	.008322	.028982
%RSD	.0443050	.3102489	1.322616	.3385409	.1623097	.6971084
#1	403.5928	2.560962	15.06620	154.7523	5.120041	4.124353
#2	403.4516	2.545298	14.75008	155.4492	5.125093	4.170311
#3	403.8068	2.555207	14.70655	155.7829	5.136301	4.177924

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCV006 Acquired: 02/07/2025 15:05:27 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV006 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.974948	5.173315	4.895553	5.159666	5.128457	4.905608
Stddev	.011295	.014400	.032322	.012049	.007473	.063567
%RSD	.2270453	.2783475	.6602385	.2335240	.1457084	1.295796
#1	4.971321	5.167243	4.858555	5.161086	5.126894	4.837618
#2	4.965912	5.162946	4.909795	5.146970	5.121889	4.915649
#3	4.987612	5.189756	4.918308	5.170942	5.136587	4.963556

Elem	Li6707
Units	ppm
Avg	5.125686
Stddev	.026440
%RSD	.5158380
#1	5.095157
#2	5.141192
#3	5.140710

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3545.308	23309.50	4344.306	2465.211	3582.983
Stddev	10.316	138.00	24.830	20.768	10.109
%RSD	.2909764	.5920539	.5715621	.8424511	.2821351
#1	3533.930	23203.64	4372.921	2441.630	3572.355
#2	3547.942	23259.27	4328.432	2473.224	3584.118
#3	3554.051	23465.58	4331.565	2480.780	3592.477

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCB006 Acquired: 02/07/2025 15:09:12 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB006 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0012496	-.000128	-.000511	-.001776	.0015822	.0216795
Stddev	.0022363	.001104	.000811	.002077	.0032942	.0198552
%RSD	178.9683	862.7214	158.5870	116.9440	208.2044	91.58517
#1	-.000903	.000480	.000378	.000595	.0048599	.0444580
#2	.001091	.000538	-.001210	-.002649	.0016149	.0125452
#3	.003561	-.001402	-.000702	-.003274	-.001728	.0080353

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.005465	.0001675	.0000735	.0249755	.0003839	.0000224
Stddev	.002095	.0000913	.0000414	.0175091	.0002467	.0001370
%RSD	38.33906	54.51310	56.23714	70.10498	64.25834	612.5581
#1	-.007796	.0000653	.0000694	.0438634	.0006172	.0001323
#2	-.003739	.0001959	.0000344	.0217766	.0001257	-.000131
#3	-.004860	.0002411	.0001168	.0092864	.0004088	.000066

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003276	.0161856	.0003303	.0602724	-.000151	.0007694
Stddev	.003163	.0096140	.0010033	.0421034	.000265	.0005368
%RSD	96.55060	59.39847	303.6971	69.85524	175.4459	69.76746
#1	.000188	.0272394	.0014468	.0689902	-.000014	.0009116
#2	-.004006	.0115464	.0000399	.0144925	.000018	.0001758
#3	-.006010	.0097709	-.000496	.0973344	-.000456	.0012207

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.432256	.0030841	.0016453	.5934012	-.000645	.0113160
Stddev	.133434	.0044365	.0029229	.0408207	.001560	.0018970
%RSD	30.86932	143.8503	177.6519	6.879111	241.8900	16.76360
#1	-.586113	.0063534	.0009243	.5836851	-.002430	.0093568
#2	-.362437	-.001966	.0048613	.6382033	.000034	.0131440
#3	-.348216	.004865	-.000850	.5583151	.000461	.0114473

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCB006 Acquired: 02/07/2025 15:09:12 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB006 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005854	-.009047	-.002351	F .0103783	-.001429	.0001618
Stddev	.0006300	.003238	.001134	.0002637	.003223	.0001745
%RSD	107.6105	35.79097	48.24446	2.540584	225.5781	107.8041
#1	.0011859	-.005497	-.003532	.0106287	.002047	.0001199
#2	.0006407	-.011839	-.002252	.0101031	-.002016	.0003535
#3	-.000070	-.009804	-.001270	.0104030	-.004318	.0000121

Elem	Li6707
Units	ppm
Avg	.0086427
Stddev	.0027563
%RSD	31.89115
#1	.0058499
#2	.0087173
#3	.0113610

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4339.252	28229.87	4624.037	3022.877	5187.649
Stddev	100.528	172.59	22.557	18.732	128.267
%RSD	2.316709	.6113747	.4878278	.6196846	2.472545
#1	4331.501	28374.03	4612.959	3044.423	5173.344
#2	4443.431	28276.96	4609.161	3013.753	5322.469
#3	4242.824	28038.62	4649.992	3010.455	5067.134

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Prep Standard - Chemical Standard Summary

Order ID : Q1273

Test : TCLP ICP Metals

Prepbatch ID : PB166571,

Sequence ID/Qc Batch ID: LB134617,LB134644,

Standard ID :
MP83500,MP84041,MP84063,MP84070,MP84204,MP84218,MP84219,MP84297,MP84381,MP84382,MP84383,MP84384,MP84385,MP84386,MP84387,MP84388,MP84389,MP84390,MP84391,MP84392,

Chemical ID :
M4884,M5218,M5289,M5298,M5393,M5429,M5467,M5472,M5476,M5496,M5497,M5498,M5513,M5519,M5565,M5658,M5697,M5798,M5799,M5800,M5801,M5802,M5806,M5811,M5815,M5817,M5819,M5875,M5942,M5959,M5961,M5962,M5976,M5977,M5978,M5985,M5990,M6021,M6023,M6025,M6028,M6030,M6032,M6077,M6121,M6126,M6127,M6128,M6144,M6145,M6146,M6147,M6148,M6149,W3112,

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
902	ICP AES CAL BLK (SO/ICB/CCB)	MP83500	12/06/2024	01/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/09/2024

FROM 125.00000ml of M6121 + 2350.00000ml of W3112 + 25.00000ml of M6126 = Final Quantity: 2500.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
169	1:1HNO3	MP84041	01/14/2025	07/14/2025	Eman Mughal	None	None	Sarabjit Jaswal 01/16/2025

FROM 1250.00000ml of M6126 + 1250.00000ml of W3112 = Final Quantity: 2500.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
994	ICPAES ISM01.2 S1 (CONC.)	MP84063	01/14/2025	02/14/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 01/16/2025

FROM 0.02000ml of M5815 + 0.03000ml of M5429 + 0.10000ml of M5798 + 0.10000ml of M6028 + 0.14000ml of M5799 + 0.20000ml of M5298 + 0.20000ml of M5476 + 0.20000ml of M5658 + 0.20000ml of M5801 + 0.20000ml of M5817 + 0.20000ml of M5976 + 0.20000ml of M6025 + 0.20000ml of M6030 + 0.30000ml of M6128 + 0.40000ml of M5496 + 0.50000ml of M5697 + 0.50000ml of M6023 + 0.70000ml of M5962 + 0.80000ml of M5961 + 1.00000ml of M5800 + 1.00000ml of M6021 + 1.20000ml of M5802 + 1.20000ml of M5819 + 10.00000ml of M5497 + 10.00000ml of M5519 + 10.00000ml of M5806 + 10.00000ml of M6127 + 2.00000ml of M5942 + 4.00000ml of M6032 + 34.24000ml of MP83500 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
921	ICPAES SPIKE SOL#6	MP84070	01/14/2025	02/14/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 01/16/2025

FROM 2.50000ml of M5962 + 50.00000ml of M5565 + 50.00000ml of M5990 + 147.50000ml of MP83500 = Final Quantity: 250.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
902	ICP AES CAL BLK (SO/ICB/CCB)	MP84204	01/24/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 01/27/2025

FROM 125.00000ml of M6121 + 2350.00000ml of W3112 + 25.00000ml of M6126 = Final Quantity: 2500.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
919	ICP AES INTERNAL STD	MP84218	01/24/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 01/27/2025

FROM 1.00000ml of M5959 + 10.00000ml of M5985 + 1969.00000ml of W3112 + 20.00000ml of M6126 = Final Quantity: 2000.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
903	ICP AES RINSE SOLN	MP84219	01/24/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 01/27/2025

FROM 200.00000ml of M6126 + 9800.00000ml of W3112 = Final Quantity: 10000.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
170	1:1HCL	MP84297	01/31/2025	02/28/2025	Eman Mughal	None	None	Sarabjit Jaswal 01/31/2025

FROM 1250.00000ml of M6121 + 1250.00000ml of W3112 = Final Quantity: 2500.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
2480	ICP AES STD 6 ISM01.3	MP84381	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 4.00000ml of M5289 + 4.00000ml of M5497 + 4.00000ml of M5811 + 4.00000ml of M6127 + 4.00000ml of M6144 + 30.00000ml of MP84204 = Final Quantity: 50.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1004	ICPAES ISM01.2 (S5)	MP84382	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 0.25000ml of M5798 + 0.50000ml of M5429 + 0.50000ml of M5476 + 0.50000ml of M5815 + 0.50000ml of M5817 + 12.50000ml of M5519 + 12.50000ml of M6128 + 12.50000ml of M6144 + 13.75000ml of M5697 + 14.50000ml of M5496 + 14.50000ml of M5658 + 14.50000ml of M5811 + 2.00000ml of M5513 + 22.50000ml of M5497 + 22.50000ml of M6127 + 5.00000ml of M4884 + 5.00000ml of M5393 + 5.00000ml of M5875 + 5.00000ml of M6077 + 5.00000ml of M6146 + 303.50000ml of MP84204 = Final Quantity: 500.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1004	ICPAES ISM01.2 (S5)	MP84383	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 0.25000ml of M5798 + 0.50000ml of M5429 + 0.50000ml of M5476 + 0.50000ml of M5815 + 0.50000ml of M5817 + 12.50000ml of M5519 + 12.50000ml of M6128 + 12.50000ml of M6144 + 12.50000ml of M6145 + 13.75000ml of M5697 + 14.50000ml of M5496 + 14.50000ml of M5658 + 14.50000ml of M5811 + 2.00000ml of M5513 + 22.50000ml of M5497 + 22.50000ml of M6127 + 5.00000ml of M4884 + 5.00000ml of M5393 + 5.00000ml of M5875 + 5.00000ml of M6077 + 5.00000ml of M6146 + 303.50000ml of MP84204 = Final Quantity: 500.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1005	ICPAES ISM01.2(S4)	MP84384	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 250.00000ml of MP84204 + 250.00000ml of MP84382 = Final Quantity: 500.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1007	ICPAES ISM01.2(S3)	MP84385	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 25.00000ml of MP84382 + 75.00000ml of MP84204 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1008	ICPAES ISM01.2(S2)	MP84386	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 12.50000ml of MP84382 + 87.50000ml of MP84204 = Final Quantity: 100.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
994	ICPAES ISM01.2 S1 (CONC.)	MP84387	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 0.02000ml of M5815 + 0.03000ml of M5429 + 0.10000ml of M5798 + 0.10000ml of M6028 + 0.14000ml of M5799 + 0.20000ml of M5476 + 0.20000ml of M5658 + 0.20000ml of M5801 + 0.20000ml of M5811 + 0.20000ml of M5817 + 0.20000ml of M5977 + 0.20000ml of M6025 + 0.20000ml of M6030 + 0.30000ml of M6128 + 0.40000ml of M5496 + 0.50000ml of M5697 + 0.50000ml of M6023 + 0.70000ml of M5962 + 0.80000ml of M5961 + 1.00000ml of M5800 + 1.00000ml of M6021 + 1.20000ml of M6145 + 1.20000ml of M6146 + 10.00000ml of M4884 + 10.00000ml of M5498 + 10.00000ml of M5519 + 10.00000ml of M6127 + 10.00000ml of M6144 + 2.00000ml of M5978 + 4.00000ml of M6032 + 34.24000ml of MP84204 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1003	ICPAES ISM01.2 S1	MP84388	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 0.50000ml of MP84387 + 99.50000ml of MP84204 = Final Quantity: 100.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
912	ICP AES ICV SOLN	MP84389	01/27/2025	02/08/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 0.02500ml of M5429 + 0.02500ml of M5815 + 0.02500ml of M5817 + 0.10000ml of M5467 + 0.25000ml of M5218 + 0.25000ml of M5472 + 10.00000ml of M6147 + 89.77500ml of MP84204 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
904	ICP AES ICSA SOLN	MP84390	01/27/2025	02/08/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 25.00000ml of M6148 + 225.00000ml of MP84204 = Final Quantity: 250.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
905	ICP AES ICSAB SOLN	MP84391	01/27/2025	02/08/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 25.00000ml of M6148 + 25.00000ml of M6149 + 200.00000ml of MP84204 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1119	ICPAES ISM01.2(CCV)	MP84392	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 0.75000ml of M5498 + 0.75000ml of M6127 + 1.22500ml of M5496 + 1.25000ml of M5811 + 1.25000ml of M6144 + 19.77500ml of MP84204 + 25.00000ml of MP84382 = Final Quantity: 50.000 ml

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57014 / Si, 1000 PPM, 125 ml	030921	03/09/2025	08/06/2021 / jaswal	08/05/2021 / jaswal	M4884

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CHEM-QC-4 / CHEM-QC-4, Second Source, 1000 ug/ml, B, Mo, Si, Sn, Ti	S2-MEB711674	11/02/2026	07/01/2022 / bin	09/10/2021 / bin	M5218

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58113 / Aluminum (Al) 10,000PPM	070622	07/06/2025	09/02/2022 / jaswal	07/12/2022 / jaswal	M5289

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58126 / Fe, 10000 PPM, 500 ml	020422	02/04/2025	05/02/2023 / jaswal	06/15/2022 / jaswal	M5298

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CLPP-CAL-3 / CLP CAL SOLUTION #3, 125mL	T2-MEB714159	01/13/2027	10/12/2022 / bin	09/19/2022 / bin	M5393

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57103 / Li, 10000 PPM, 125 ml	070622	07/06/2025	01/30/2023 / bin	01/26/2023 / bin	M5429

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57058 / Cerium, 1000PPM, 100ML	020623	02/06/2026	03/06/2023 / bin	03/01/2023 / bin	M5467

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57038 / Sr, 1000 PPM, 125 ml	082922	08/29/2025	01/14/2025 / Jaswal	03/16/2023 / jaswal	M5472

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57138 / Sr, 10000 PPM, 125 ml	082922	08/29/2025	07/29/2024 / jaswal	03/16/2023 / jaswal	M5476

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58113 / Al, 10000 PPM, 500 ml	011623	01/16/2026	08/15/2023 / jaswal	03/17/2023 / bin	M5496

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58120 / Ca, 10000 PPM, 500 ml	031523	03/15/2026	03/18/2023 / bin	03/17/2023 / bin	M5497

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58120 / Ca, 10000 PPM, 500 ml	031523	03/15/2026	08/15/2023 / jaswal	03/17/2023 / bin	M5498

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57182 / Pb, 10000 PPM, 125 ml	061522	06/15/2025	03/19/2023 / bin	03/17/2023 / bin	M5513

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57119 / Potassium (K) 10,000PPM	120822	12/08/2025	01/08/2024 / bin	03/17/2023 / bin	M5519

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CLPP-SPK-1 / SOIL/WATER SPIKE SOLN 1, 125mL	T2-MEB721963	07/27/2027	05/30/2023 / jaswal	05/26/2023 / jaswal	M5565

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58024 / Chromium, Cr, 500 ml, 1000 PPM	060523	06/05/2026	08/28/2023 / jaswal	08/25/2023 / jaswal	M5658

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58029 / Cu, 1000 PPM, 500 ml	102523	10/25/2026	04/03/2024 / jaswal	10/27/2023 / jaswal	M5697

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57004 / Be, 1000 PPM, 125 ml	102523	10/25/2026	02/09/2024 / bin	02/09/2024 / bin	M5798

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57050 / Sn, 1000 PPM, 125 ml	071123	07/11/2026	02/09/2024 / bin	02/09/2024 / bin	M5799

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57027 / CO, 1000 PPM, 125 ml	091923	09/19/2026	05/31/2024 / bin	02/09/2024 / bin	M5800

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57033 / As, 1000 PPM, 125 ml	111323	11/13/2026	02/09/2024 / bin	02/09/2024 / bin	M5801

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57051 / Sb, 1000 PPM, 125 ml	120523	12/05/2026	08/07/2024 / jaswal	01/03/2024 / jaswal	M5802

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58111 / Na, 10000 PPM, 500 ml	122223	12/22/2026	08/01/2024 / Jaswal	01/03/2024 / jaswal	M5806

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58126 / Fe, 10000 PPM, 500 ml	051523	05/15/2026	02/06/2025 / kareem	01/03/2024 / jaswal	M5811

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57115 / P, 10000 PPM, 125 ml	041723	04/17/2026	05/21/2024 / Jaswal	02/09/2024 / jaswal	M5815

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57116 / S, 10000 PPM, 125 ml	071123	07/11/2026	03/01/2024 / jaswal	02/09/2024 / jaswal	M5817

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58030 / Zinc, Zn, 500 ml, 1000 PPM	111623	11/16/2026	03/20/2024 / jaswal	02/09/2024 / jaswal	M5819

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CLPP-CAL-1 / CLP CAL SOLUTION #1, 125mL	T2-MEB714417	01/27/2027	04/19/2024 / jaswal	02/22/2024 / jaswal	M5875

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGTI1-1 / TITANIUM 125mL 1000ug/mL	T2-TI719972	06/17/2027	06/18/2024 / Jaswal	02/22/2024 / Jaswal	M5942

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGY10-1 / YTTRIUM 125mL 10,000ug/mL	V2-Y740548	02/20/2029	07/01/2024 / Jaswal	06/14/2024 / Jaswal	M5959

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57028 / Ni, 1000 PPM, 125 ml	041124	04/11/2027	07/02/2024 / Jaswal	06/11/2024 / Jaswal	M5961

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57034 / Se, 1000 PPM, 125 ml	060624	06/06/2027	07/02/2024 / Jaswal	06/14/2024 / Jaswal	M5962

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGMO1-1 / MOLYBDENUM 125mL 1000ug/mL	T2-MO720876	07/17/2027	08/07/2024 / jaswal	02/22/2024 / Jaswal	M5976

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGMO1-1 / MOLYBDENUM 125mL 1000ug/mL	T2-MO720876	07/17/2027	01/16/2025 / JANVI	02/22/2024 / Jaswal	M5977

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGTI1-1 / TITANIUM 125mL 1000ug/mL	T2-TI719972	06/17/2027	08/07/2024 / jaswal	02/22/2024 / Jaswal	M5978

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGIN10-5 / INDIUM 1 x 500 ml	U2-IN729349	02/21/2028	10/08/2024 / Jaswal	06/14/2024 / Jaswal	M5985

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CLPP-SPK-5 / CLP Spike Standard 5	V2-MEB742037	03/12/2029	10/04/2024 / Jaswal	02/22/2024 / Jaswal	M5990

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57023 / V, 1000 PPM, 125 ml	062424	06/24/2027	09/28/2024 / jaswal	08/05/2024 / Jaswal	M6021

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57081 / Tl, 1000 PPM, 125 ml	0624724	06/27/2027	08/05/2024 / kareem	08/05/2024 / Jaswal	M6023

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57082 / Pb, 1000 PPM, 125 ml	061224	11/09/2026	08/05/2024 / Jaswal	08/05/2024 / Jaswal	M6025

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57048 / Cd, 1000 PPM, 125 ml	070124	07/01/2027	08/05/2024 / kareem	08/05/2024 / Jaswal	M6028

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57047 / Ag, 1000 PPM, 125 ml	122823	12/28/2026	08/05/2024 / kareem	08/05/2024 / Jaswal	M6030

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57056 / Ba, 1000 PPM, 125 ml	010924	01/09/2027	01/14/2025 / Jaswal	08/05/2024 / Jaswal	M6032

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	Z9651Q / CHEM-CLP-4/.25L	V2-MEB746762	09/06/2029	01/23/2025 / kareem	09/19/2024 / kareem	M6077

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9530-33 / Hydrochloric Acid, Instra-Analyzed (cs/6x2.5L)	0000275677	05/13/2025	11/13/2024 / Eman	10/13/2024 / Eman	M6121

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24D1062002	06/03/2025	12/03/2024 / Janvi	11/12/2024 / Janvi	M6126

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58112 / Mg, 10000 PPM, 500 ml	112124	11/21/2027	01/13/2025 / kareem	01/13/2025 / kareem	M6127

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58025 / Mn, 1000 PPM, 500 ml	101124	10/11/2027	01/13/2025 / kareem	01/13/2025 / kareem	M6128

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58111 / Na, 10000 PPM, 500 ml	072424	07/24/2027	01/23/2025 / kareem	01/13/2025 / Jaswal	M6144

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58030 / Zinc, Zn, 500 ml, 1000 PPM	121724	12/17/2027	02/04/2025 / jaswal	01/13/2025 / Jaswal	M6145

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57051 / Sb, 1000 PPM, 125 ml	071724	07/17/2027	01/31/2025 / kareem	10/18/2024 / kareem	M6146

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	ICV-1 / ICV (ICP/ICPMS) STOCK SOLN	ICV1-1014	02/08/2025	02/06/2025 / kareem	02/20/2020 / kareem	M6147

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	PART A / ICSA (ICP) STOCK SOLN	ICSA-1211	02/08/2025	02/06/2025 / kareem	04/20/2021 / kareem	M6148

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	PART B / ICSAB (ICP) STOCK SOLN	ICSB-0710	02/08/2025	02/06/2025 / kareem	04/20/2021 / kareem	M6149

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	DIW / DI Water	Daily Lab-Certified	07/03/2029	07/03/2024 / Iwona	07/03/2024 / Iwona	W3112

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R: 02/22/24 M5986 M5987, M5988, M5989-M5990

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CLPP-SPK-5
Lot Number:	V2-MEB742037
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	100 µg/mL ea: Antimony,
	50 µg/mL ea: Selenium, Cadmium, Thallium,
	40 µg/mL ea: Arsenic,
	20 µg/mL ea: Lead

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	100.0 ± 0.7 µg/mL	Arsenic, As	40.00 ± 0.26 µg/mL
Cadmium, Cd	49.99 ± 0.22 µg/mL	Lead, Pb	19.99 ± 0.09 µg/mL
Selenium, Se	50.00 ± 0.23 µg/mL	Thallium, Tl	50.00 ± 0.22 µg/mL

Density: 1.025 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
As	ICP Assay	3103a	100818
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Cd	Calculated		See Sec. 4.2
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Pb	Calculated		See Sec. 4.2
Sb	ICP Assay	3102a	140911
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Tl	ICP Assay	3158	151215
Tl	Calculated		See Sec. 4.2

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2 (u_{char\ i})^2)]^{1/2}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 12, 2024

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- March 12, 2029

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

M6032

R: 8/5/24

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

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CERTIFIED WEIGHT REPORT:

Part Number:	**57056**		**Lot #**		
Lot Number:	**010924**	**Solvent:**	24002546	Nitric Acid	
Description:	**Barium (Ba)**				
		2%	40.0 (mL)	Nitric Acid	
Expiration Date:	010927				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty		

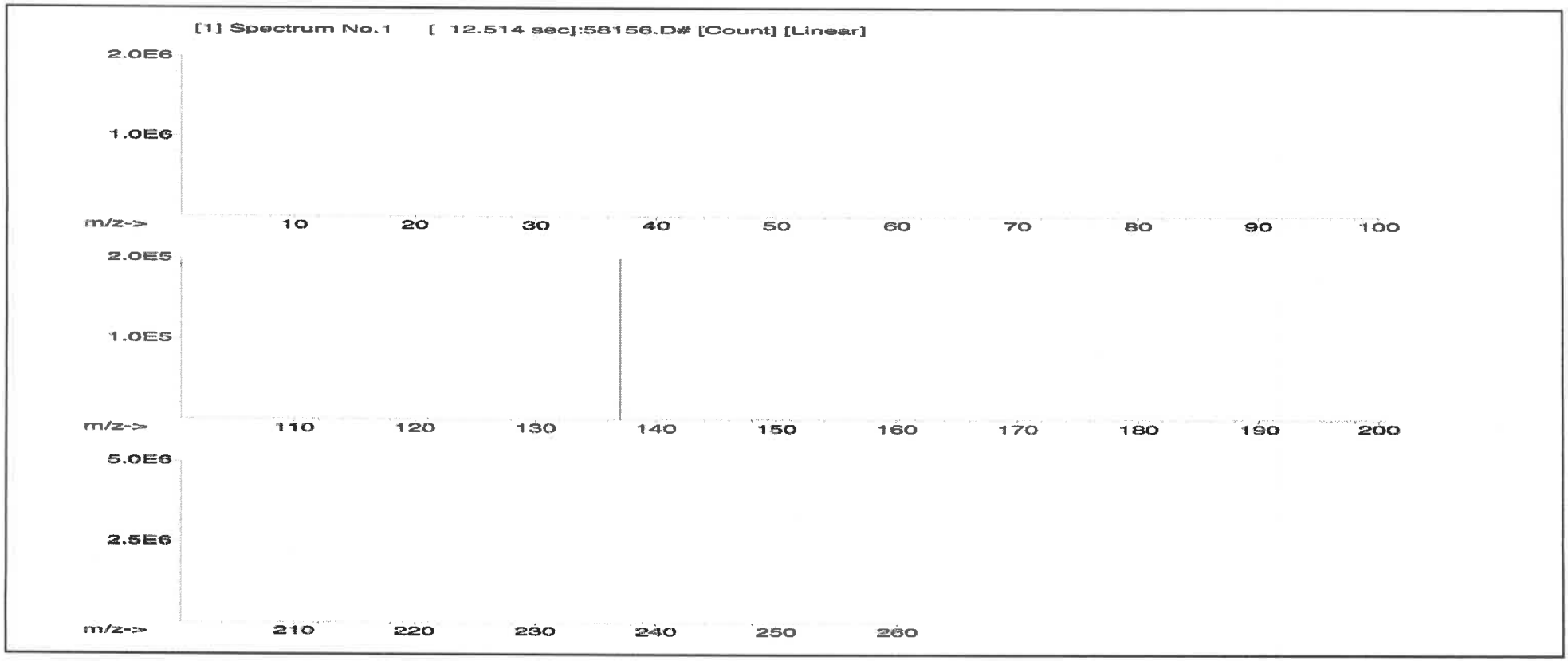
Giovanni Esposito

Formulated By:	Giovanni Esposito	010924

Pedro Rentas

Reviewed By:	Pedro L. Rentas	010924

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Barium nitrate (Ba)	IN023	BAD022019A1	1000	99.999	0.10	52.3	3.82417	3.82441	**1000.1**	**2.0**	10022-31-8	0.5 mg/m3	orl-rat 355 mg/kg	3104a



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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	T	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certified Reference Material CRM

M6028

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

R 8/5/24

224

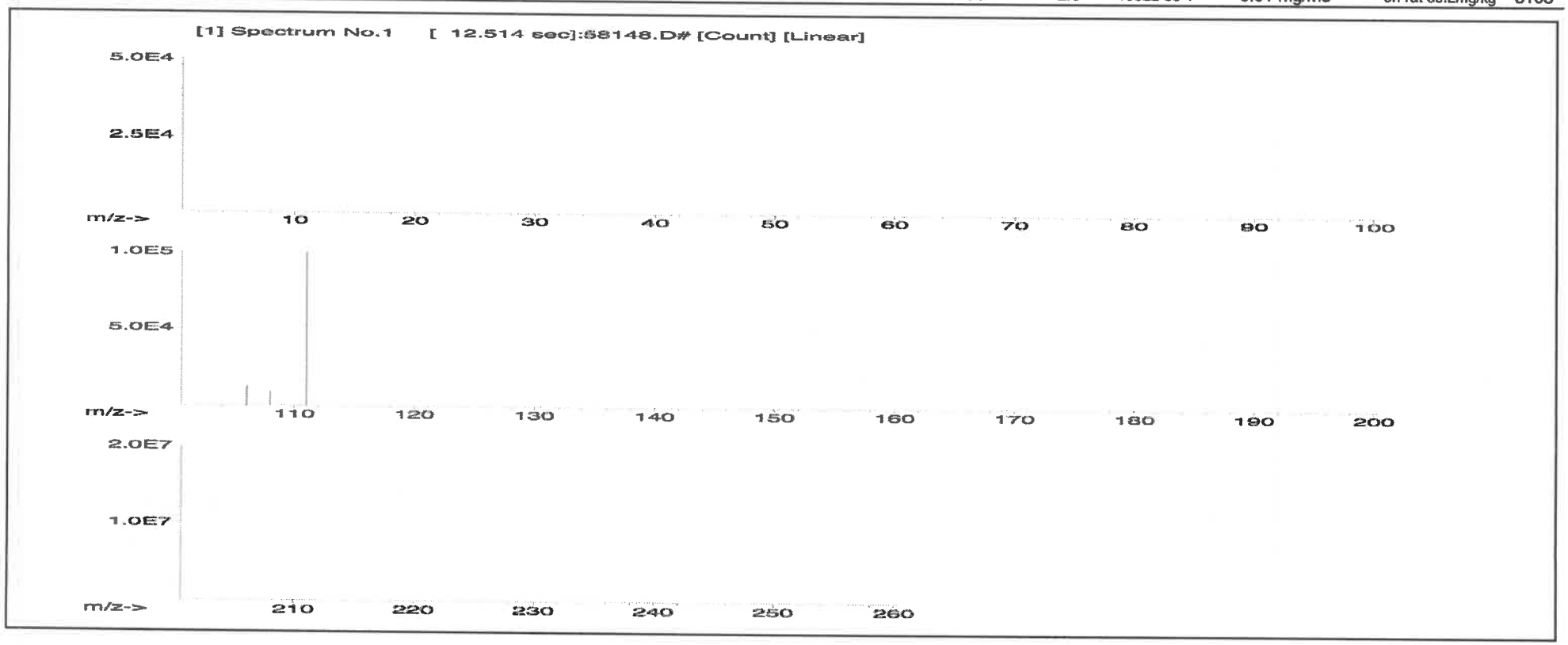
CERTIFIED WEIGHT REPORT:

Part Number:	**57048**		**Lot #**		
Lot Number:	**070124**	**Solvent:**	24002546	Nitric Acid	
Description:	**Cadmium (Cd)**	2%	40.0 (mL)	Nitric Acid	
Expiration Date:	070127				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.07	0.100	Flask Uncertainty		

Aleah O'Brady

Formulated By:	Aleah O'Brady	070124
Reviewed By:	Pedro L. Rentas	070124

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Cadmium nitrate tetrahydrate (Cd)	IN024	CDM092021A1	1000	99.999	0.10	36.5	5.4797	5.4804	**1000.1**	**2.0**	10022-68-1	0.01 mg/m3	orl-rat 60.2mg/kg	3108



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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	T	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certificate of Analysis

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CLPP-CAL-1
Lot Number:	T2-MEB714417
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	5 000 µg/mL ea: Calcium, Potassium, Magnesium, Sodium, 2 000 µg/mL ea: Aluminum, Barium, 1 000 µg/mL ea: Iron, 500 µg/mL ea: Nickel, Vanadium, Zinc, Cobalt, Manganese, 250 µg/mL ea: Silver, Copper, 200 µg/mL ea: Chromium, 50 µg/mL ea: Beryllium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	**2 000 ± 7 µg/mL**	**Barium, Ba**	**2 000 ± 9 µg/mL**
Beryllium, Be	**50.00 ± 0.26 µg/mL**	**Calcium, Ca**	**5 000 ± 22 µg/mL**
Chromium, Cr	**200.0 ± 1.0 µg/mL**	**Cobalt, Co**	**500.0 ± 2.4 µg/mL**
Copper, Cu	**250.0 ± 1.0 µg/mL**	**Iron, Fe**	**1 000 ± 4 µg/mL**
Magnesium, Mg	**5 000 ± 20 µg/mL**	**Manganese, Mn**	**500.0 ± 2.0 µg/mL**
Nickel, Ni	**500.0 ± 2.2 µg/mL**	**Potassium, K**	**5 000 ± 19 µg/mL**
Silver, Ag	**250.0 ± 1.1 µg/mL**	**Sodium, Na**	**5 000 ± 18 µg/mL**
Vanadium, V	**499.7 ± 2.2 µg/mL**	**Zinc, Zn**	**500.0 ± 2.2 µg/mL**

Density: 1.118 g/mL (measured at 20 ± 4 ºC)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Be	Calculated		See Sec. 4.2
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cr	Calculated		See Sec. 4.2
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
V	IC Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

$CRM/RM\ Expanded\ Uncertainty\ (\pm) = U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

$CRM/RM\ Expanded\ Uncertainty\ (\pm) = U_{CRM/RM} = k\ (u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Note: This solution contains Silver (Ag), please refer to our Sample Preparation Guide for more information.

https://www.inorganicventures.com/sample-preparation-guide/samples-containing-silver

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 27, 2022

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **January 27, 2027**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

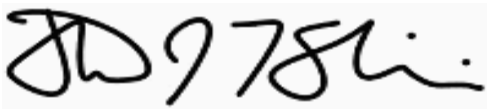
- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CLPP-CAL-3
Lot Number:	T2-MEB714159
Matrix:	7% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Arsenic, Lead, Selenium, Thallium, 500 µg/mL ea: Cadmium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Arsenic, As	**1 000 ± 8 µg/mL**	**Cadmium, Cd**	**500.0 ± 2.1 µg/mL**
Lead, Pb	**1 000 ± 5 µg/mL**	**Selenium, Se**	**1 000 ± 8 µg/mL**
Thallium, Tl	**1 000 ± 7 µg/mL**		

Density: 1.043 g/mL (measured at 20 ± 4 ºC)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
As	ICP Assay	3103a	100818
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Tl	ICP Assay	3158	151215

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 13, 2022

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **January 13, 2027**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

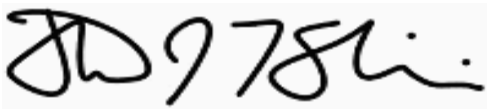
- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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www.absolutestandards.com

Certified Reference Material CRM

R : 01/03/24. M5810, M5811

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AR-1539 Certificate Number
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CERTIFIED WEIGHT REPORT:

Part Number: 58126
Lot Number: 051523
Description: Iron (Fe)

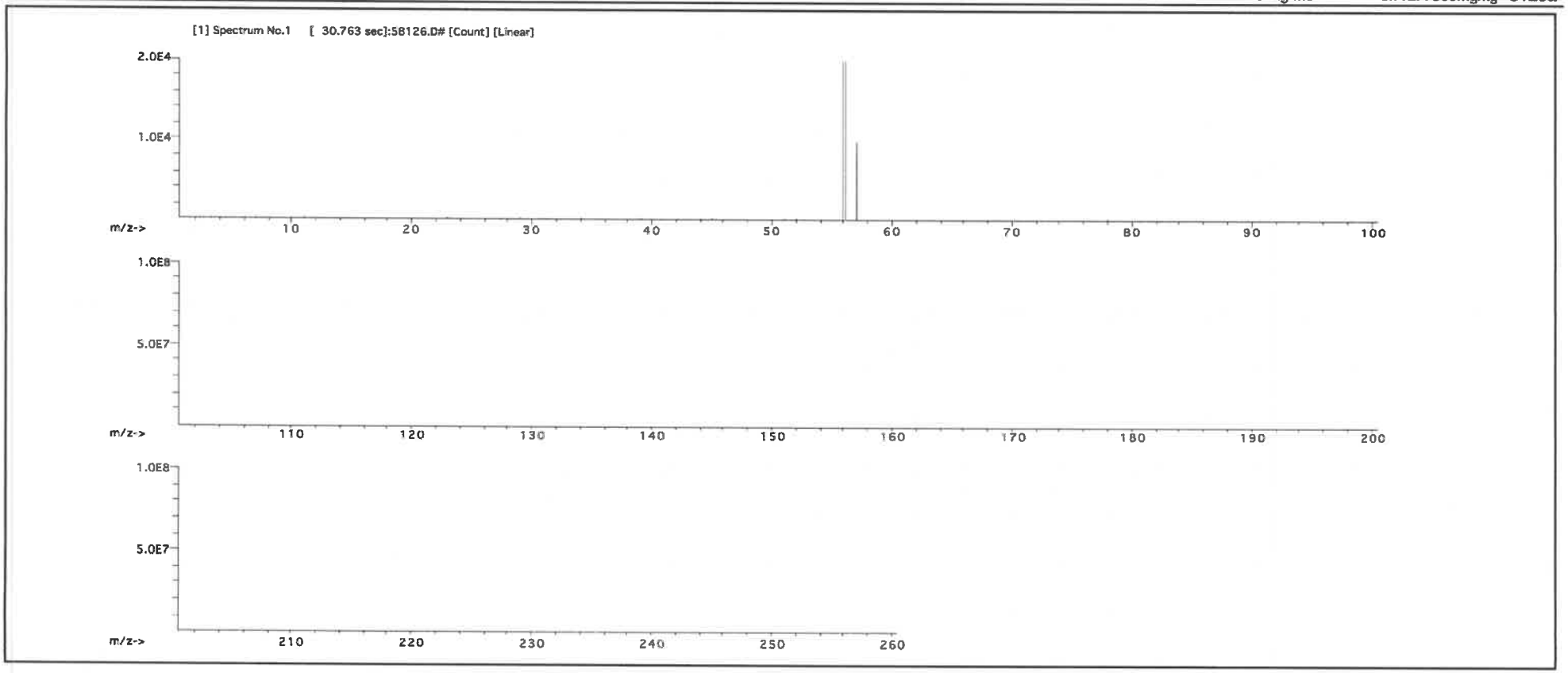
Expiration Date: 051526
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 5000.1 ± 0.12 Flask Uncertainty

		Lot #		
Solvent:	21110221	Nitric Acid		
	5.0%	250.0 (mL)	Nitric Acid	
	5E-05	Balance Uncertainty		

Giovanni Esposito
Formulated By: Giovanni Esposito 051523

Pedro Rentas
Reviewed By: Pedro L. Rentas 051523

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Iron (Fe)	IN346	2302010-500	10000	99.995	0.10	100.0	50.0034	50.0111	**10001.5**	**20.0**	7439-89-6	5 mg/m3	orl-rat 7500mg/kg	3126a



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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.10	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.10	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.05	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.10	Ge	<0.10	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.10
B	<0.02	Cu	<0.10	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:



* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
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* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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R: 8/5/24 M6025

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CERTIFIED WEIGHT REPORT:

Part Number: 57182
Lot Number: 110923
Description: Lead (Pb)

Expiration Date: 110926
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB

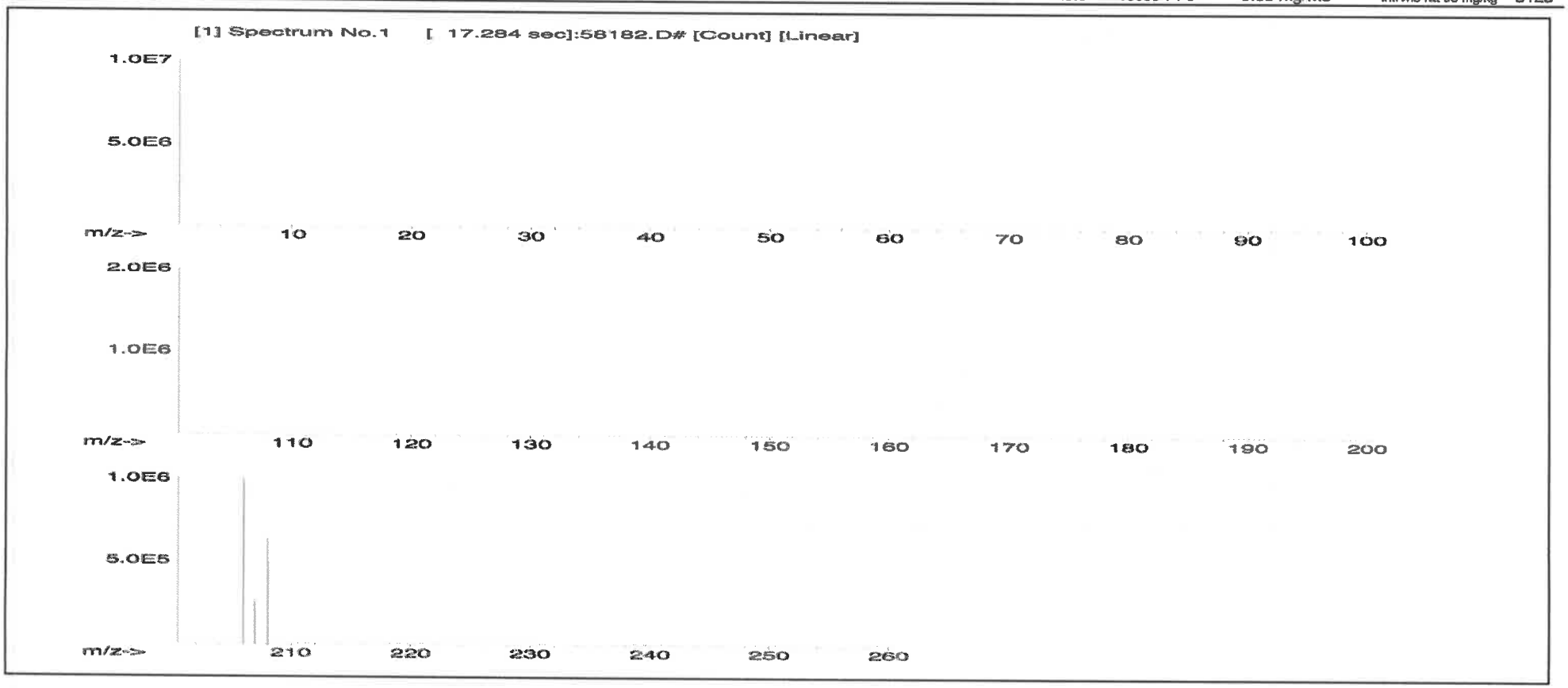
Weight shown below was diluted to (mL): 2000.02 0.058 Flask Uncertainty

	Lot #		
Solvent:	24002546	Nitric Acid	
2%	40.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty

Formulated By:	Lawence Barry	110923
Reviewed By:	Pedro L. Rentas	110923

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Lead(II) nitrate (Pb)	IN029	PBD122016A1	10000	99.999	0.10	62.5	32.0006	32.0040	**10001.1**	**20.0**	10099-74-8	0.05 mg/m3	intrvns-rat 93 mg/kg	3128



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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	T	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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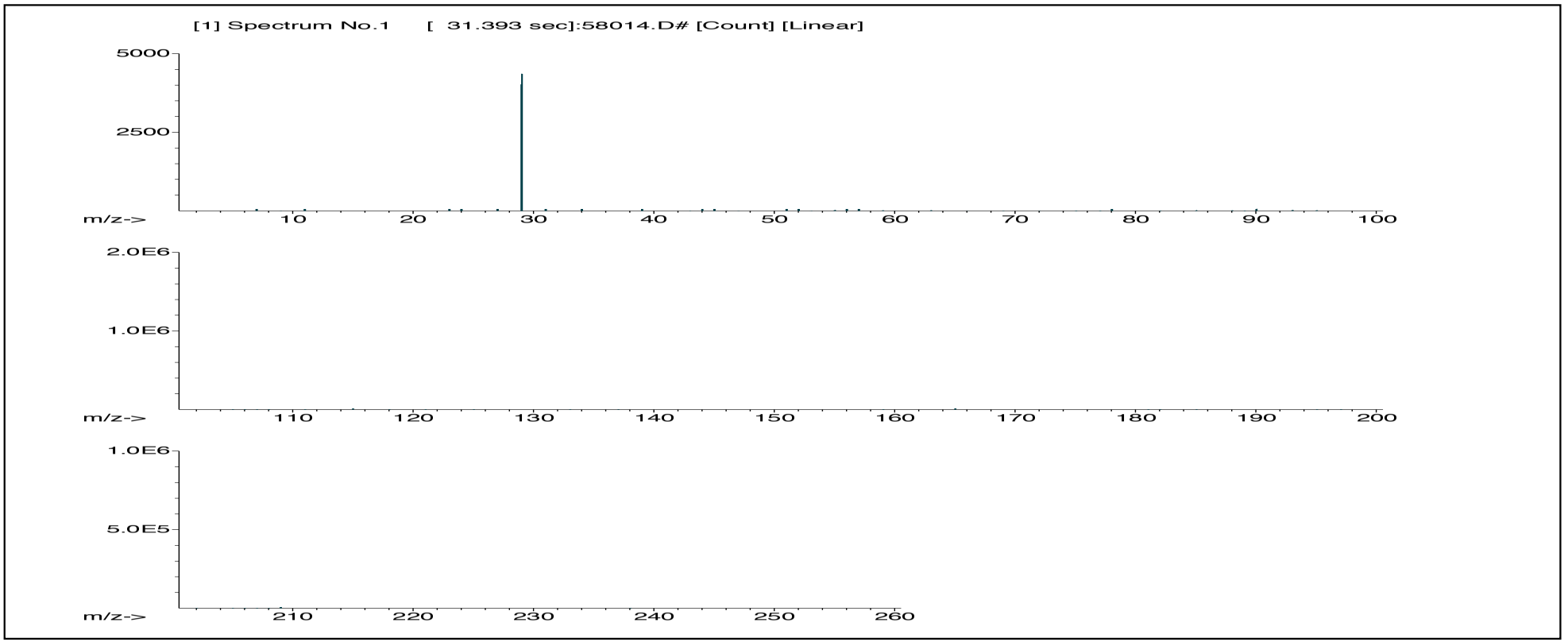
237

CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57014**	19410105	Nitric Acid	
Lot Number:	**030921**			
Description:	**Silicon (Si)**			
		2.0%	60.0	Nitric Acid
Expiration Date:	030924		(mL)	
Recommended Storage:	Ambient (20 ºC)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	3000.41	0.058	Flask Uncertainty	

Formulated By:	Lawrence Barry	030921
Reviewed By:	Pedro L. Rentas	030921

	Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	**Final Conc. (µg/mL)**	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1.	Ammonium hexafluorosilicate (Si)	58114	070120	0.1000	300.0	0.084	1000	10000.0	**1000.0**	**2.1**	16919-19-0	2.50 mg/m3	orl-rat 70 mg/kg	NA



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Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	T	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
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* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CHEM-QC-4
Lot Number:	S2-MEB711674
Matrix:	3% (v/v) HNO3 3% (v/v) HF
Value / Analyte(s):	1 000 µg/mL ea: Boron, Molybdenum, Silicon, Tin, Titanium

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Boron, B	**1 000 ± 7 µg/mL**	**Molybdenum, Mo**	**1 000 ± 5 µg/mL**
Silicon, Si	**1 000 ± 7 µg/mL**	**Tin, Sn**	**1 000 ± 5 µg/mL**
Titanium, Ti	**1 001 ± 6 µg/mL**		

Density: 1.032 g/mL (measured at 20 ± 4 ºC)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
B	ICP Assay	3107	110830
Mo	ICP Assay	3134	130418
Si	ICP Assay	3150	130912
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	3162a	130925

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

$CRM/RM\ Expanded\ Uncertainty\ (\pm) = U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

$CRM/RM\ Expanded\ Uncertainty\ (\pm) = U_{CRM/RM} = k\ (u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

November 02, 2021

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **November 02, 2026**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Director, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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M5289 R: 07/12/22 BH

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CERTIFIED WEIGHT REPORT:

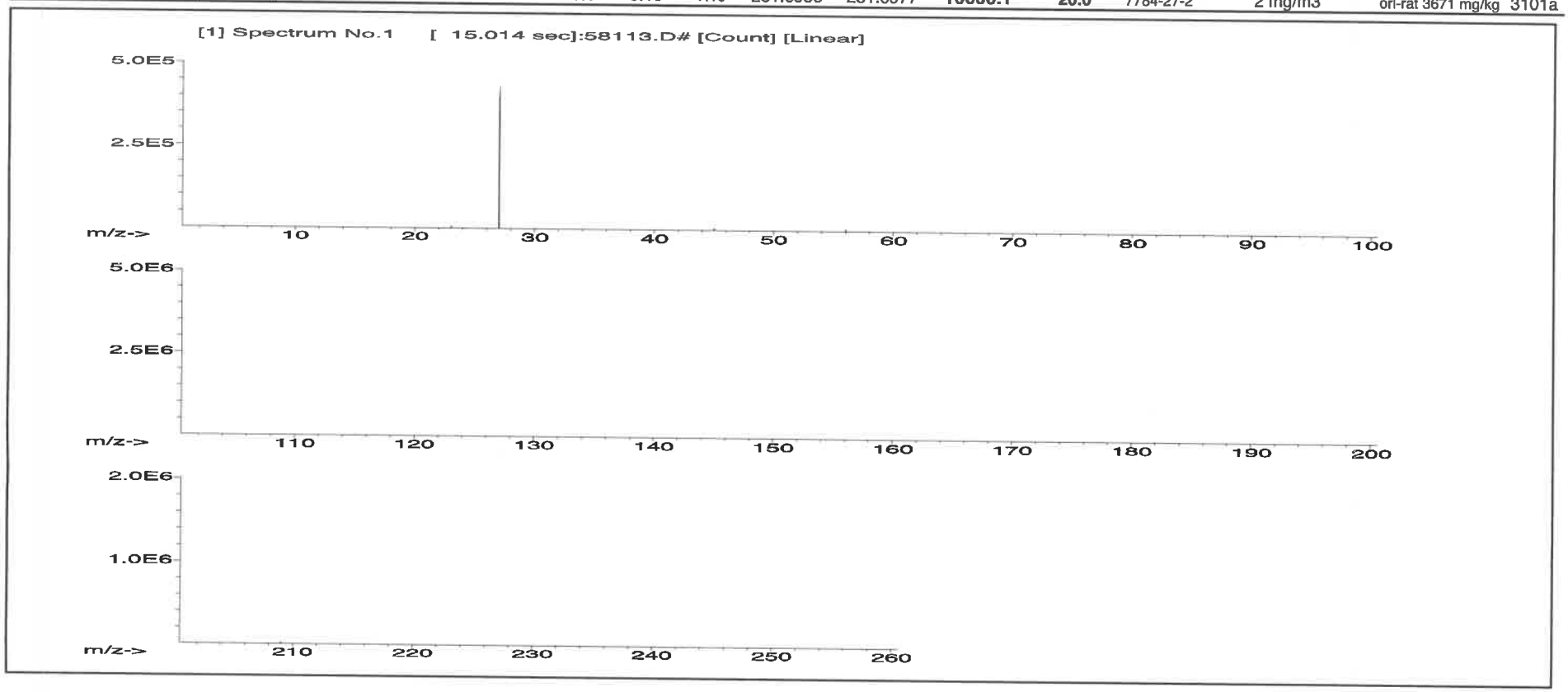
Part Number: 58113
Lot Number: 070622
Description: Aluminum (Al)

Expiration Date: 070625
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 2000.02

	Lot #		
Solvent:	20370011	Nitric Acid	
2%	40.0 (mL)	Nitric Acid	
	5E-05	Balance Uncertainty	
	0.058	Flask Uncertainty	

Formulated By:	Lawrence Barry	070622
Reviewed By:	Pedro L. Rentas	070622

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Aluminum nitrate nonahydrate (Al)	IN022	ALD012021A1	10000	99.999	0.10	7.10	281.6956	281.6977	**10000.1**	**20.0**	7784-27-2	2 mg/m3	orl-rat 3671 mg/kg	3101a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	T	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

SJ 6/15/22

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CERTIFIED WEIGHT REPORT:

Part Number: 58126
Lot Number: 020422
Description: Iron (Fe)

M5298

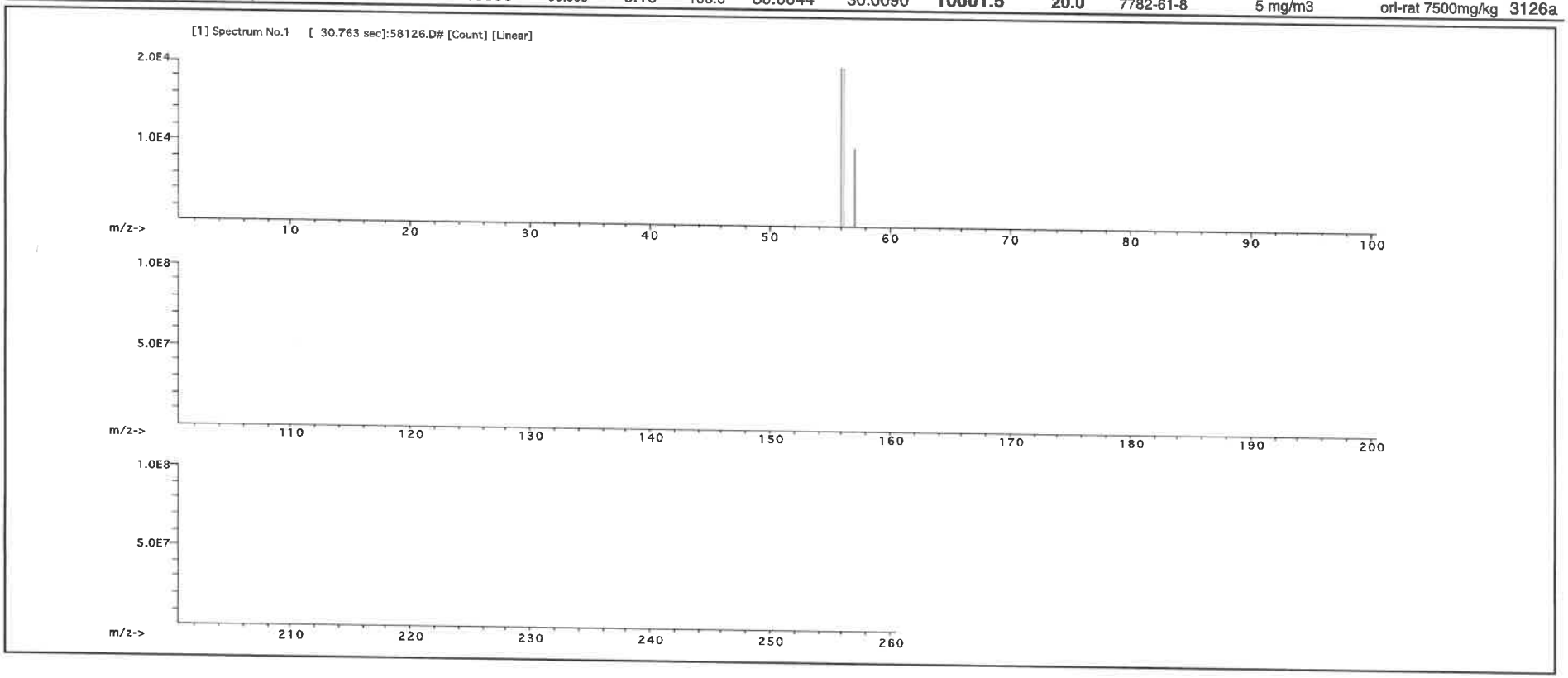
Expiration Date: 020425
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.41

	Lot #		
Solvent:	20370011	Nitric Acid	
5.0%	150.0 (mL)	Nitric Acid	
	5E-05	Balance Uncertainty	
	0.058	Flask Uncertainty	

Giovanni Esposito

Formulated By:	Giovanni Esposito	020422
Reviewed By:	Pedro L. Rentas	020422

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Iron(III) nitrate nonahydrate (Fe)	IN346	221035107	10000	99.999	0.10	100.0	30.0044	30.0090	**10001.5**	**20.0**	7782-61-8	5 mg/m3	orl-rat 7500mg/kg	3126a



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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.10	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.10	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.5	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.10	Ge	<0.10	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.10	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
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* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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M5429 R1 01/26/23 BH

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CERTIFIED WEIGHT REPORT:

Part Number: 57103
Lot Number: 070622
Description: Lithium (Li)

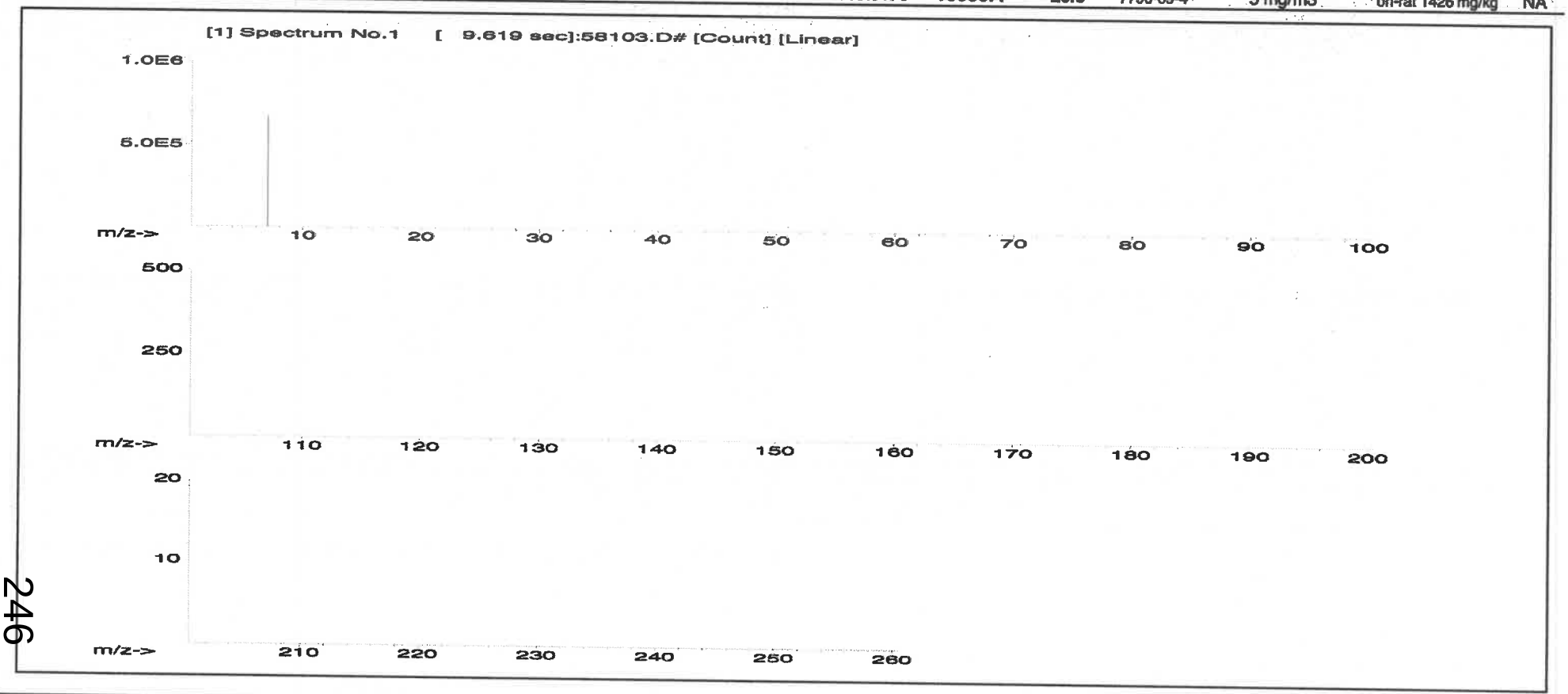
Expiration Date: 070625
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 1000.12

	Lot #		
Solvent:	20510011	Nitric Acid	
2%	20.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By:	Lawrence Barry	070622
Reviewed By:	Pedro L. Rentas	070622

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Lithium nitrate (Li)	IN019	LIZ042018A1	10000	99.999	0.10	10.0	100.0134	100.0173	**10000.4**	**20.0**	7790-69-4	5 mg/m3	orl-rat 1426 mg/kg	NA



246

Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	T	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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CERTIFIED WEIGHT REPORT:

Part Number: 57058
Lot Number: 020623
Description: Cerium (Ce)

Expiration Date: 020626
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

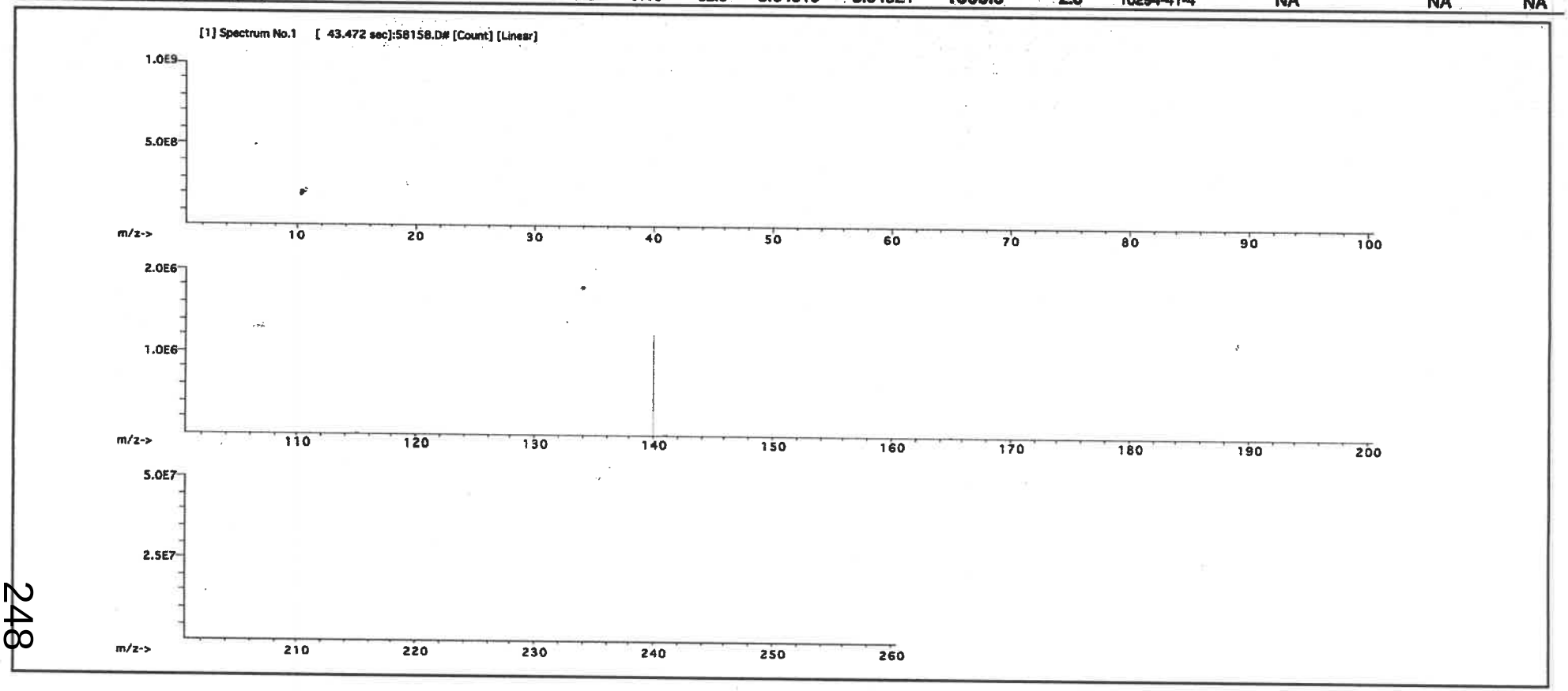
Weight shown below was diluted to (mL): 1000.12 0.058 Flask Uncertainty

		Lot #	
Solvent:	21110221	Nitric Acid	
2%	20.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty

Formulated By:	Lawrence Barry	020623
Reviewed By:	Pedro L. Rentas	020623

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Cerium nitrate hexahydrate (Ce)	IN146	Z512CEB1	1000	99.999	0.10	32.8	3.04919	3.04921	**1000.0**	**2.0**	10294-41-4	NA	NA	NA



248

Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	T	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
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* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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M5496 R 7/20/23

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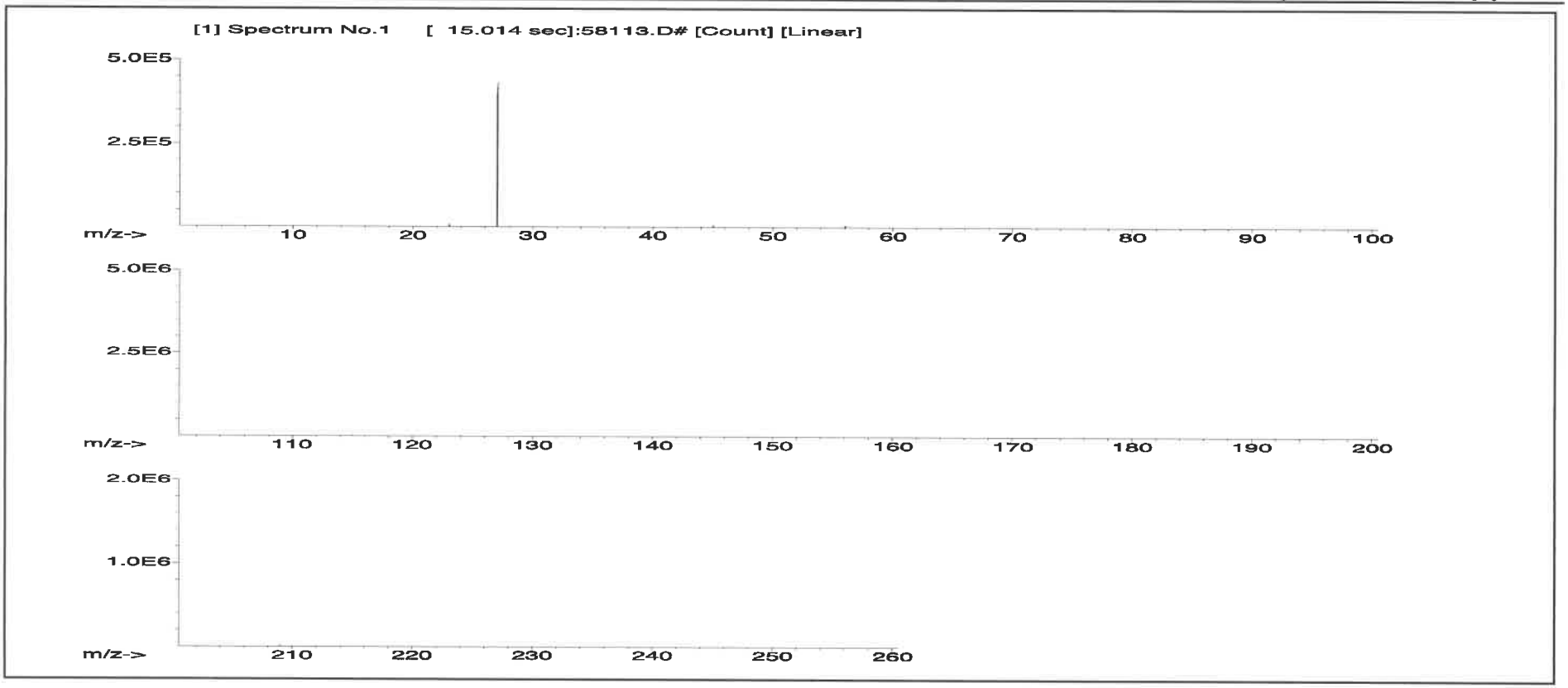
CERTIFIED WEIGHT REPORT:

Part Number:	**58113**		**Lot #**		
Lot Number:	**011623**	**Solvent:**	20510011	Nitric Acid	
Description:	**Aluminum (Al)**	2%	40.0 (mL)	Nitric Acid	
Expiration Date:	011626				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**10000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty		

Giovanni Esposito

Formulated By:	Giovanni Esposito	011623
Reviewed By:	Pedro L. Rentas	011623

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Aluminum nitrate nonahydrate (Al)	IN022	ALM112021A1	10000	99.999	0.10	7.30	273.9779	274.0078	**10001.1**	**20.0**	7784-27-2	2 mg/m3	orl-rat 3671 mg/kg	3101a



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IN5497 - IN5498 R: 03/17/23 BH

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CERTIFIED WEIGHT REPORT:

Part Number: 58120
Lot Number: 031523
Description: Calcium (Ca)

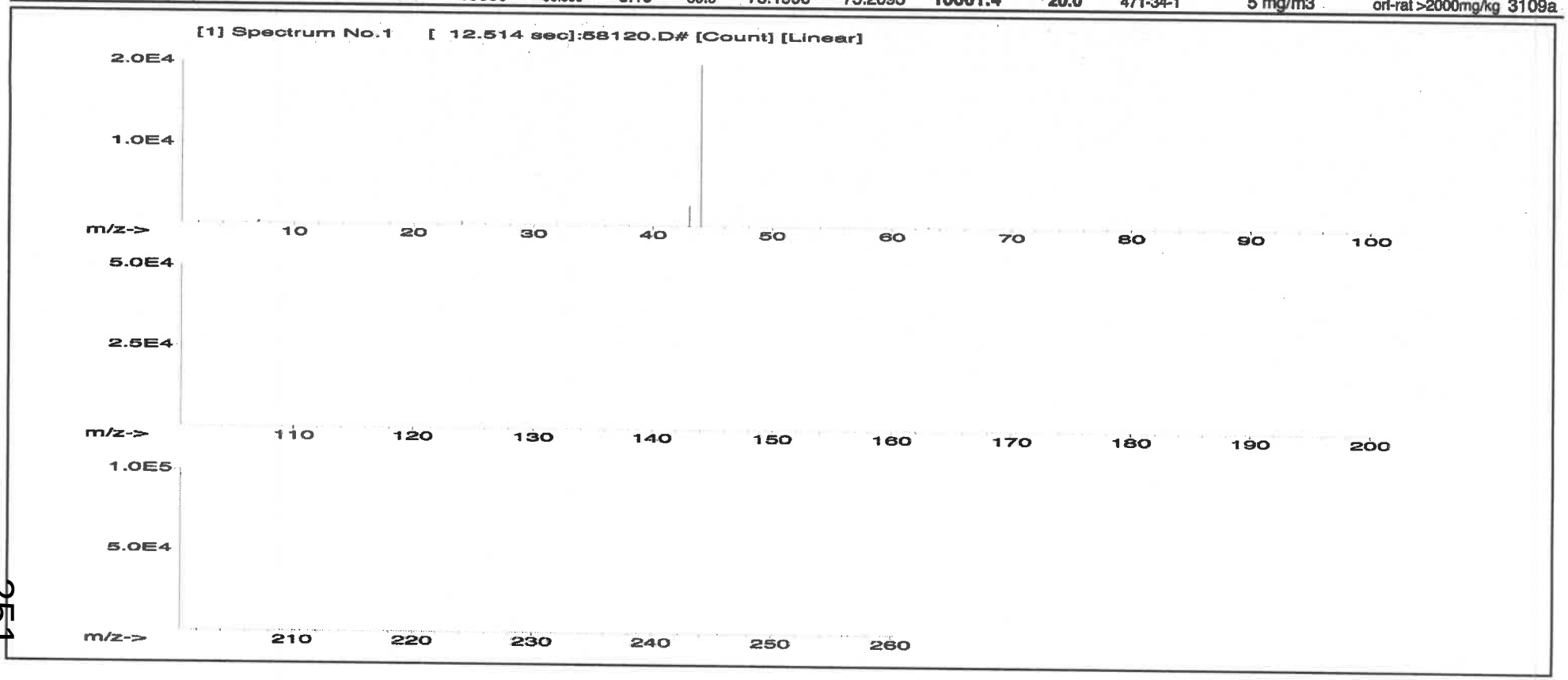
Expiration Date: 031526
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.41 ± 0.058 Flask Uncertainty

		Lot #	
Solvent:	21110221	Nitric Acid	
2%	60.0 (mL)	Nitric Acid	
	5E-05	Balance Uncertainty	

Giovanni Esposito
Formulated By: Giovanni Esposito 031523

Pedro Rentas
Reviewed By: Pedro L. Rentas 031523

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Calcium carbonate (Ca)	IN014	CAD072022A1	10000	99.999	0.10	39.9	75.1990	75.2093	**10001.4**	**20.0**	471-34-1	5 mg/m3	orl-rat >2000mg/kg	3109a



251

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	T	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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CERTIFIED WEIGHT REPORT:

Part Number: 58120
Lot Number: 031523
Description: Calcium (Ca)

Expiration Date: 031526
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.41 ± 0.058 Flask Uncertainty

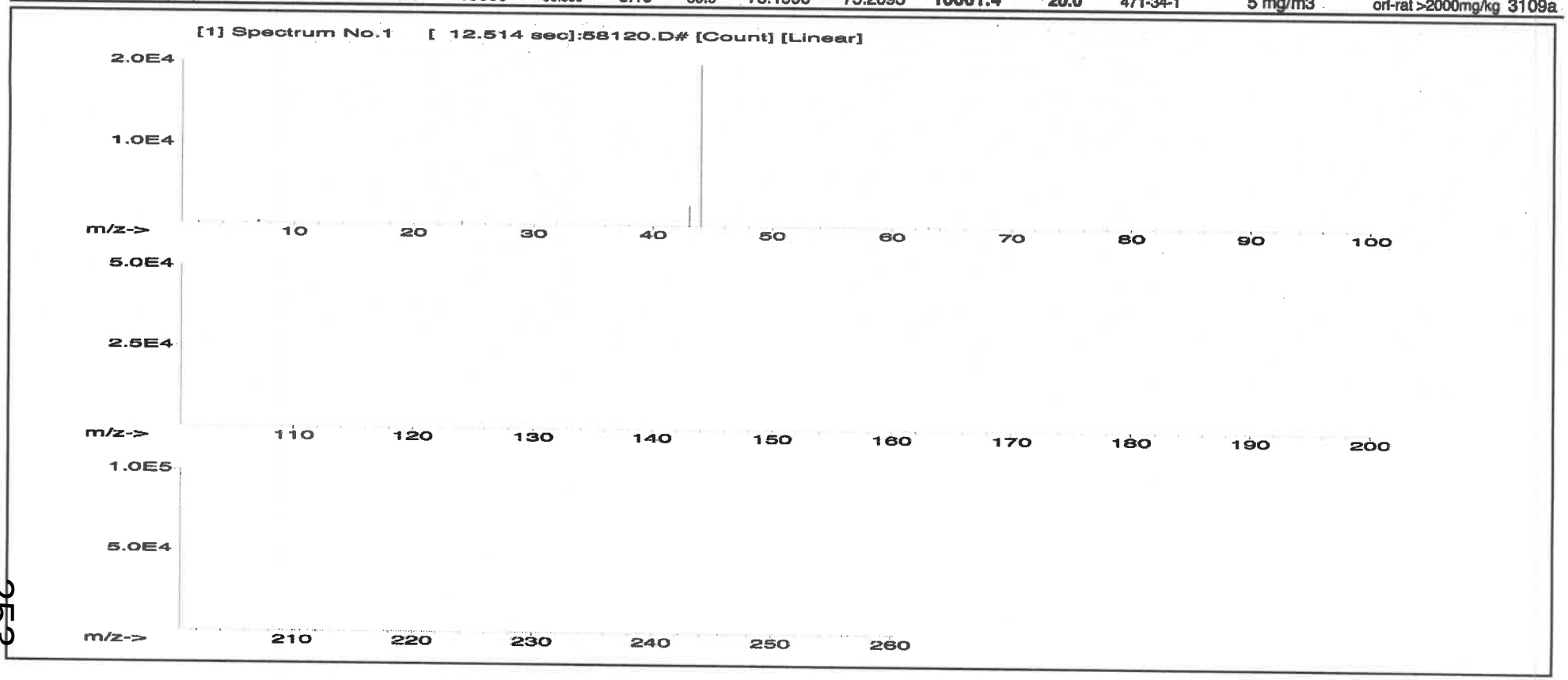
	Lot #	
Solvent:	21110221	Nitric Acid
2%	60.0 (mL)	Nitric Acid

5E-05 Balance Uncertainty

Giovanni Esposito

Formulated By:	Giovanni Esposito	031523
Reviewed By:	Pedro L. Rentas	031523

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Calcium carbonate (Ca)	IN014	CAD072022A1	10000	99.999	0.10	39.9	75.1990	75.2093	**10001.4**	**20.0**	471-34-1	5 mg/m3	orl-rat >2000mg/kg	3109a



253

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	T	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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MA513 R:03/17/23 BF

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CERTIFIED WEIGHT REPORT:

Part Number: 57182
Lot Number: 061522
Description: Lead (Pb)

Expiration Date: 061525
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 2000.02

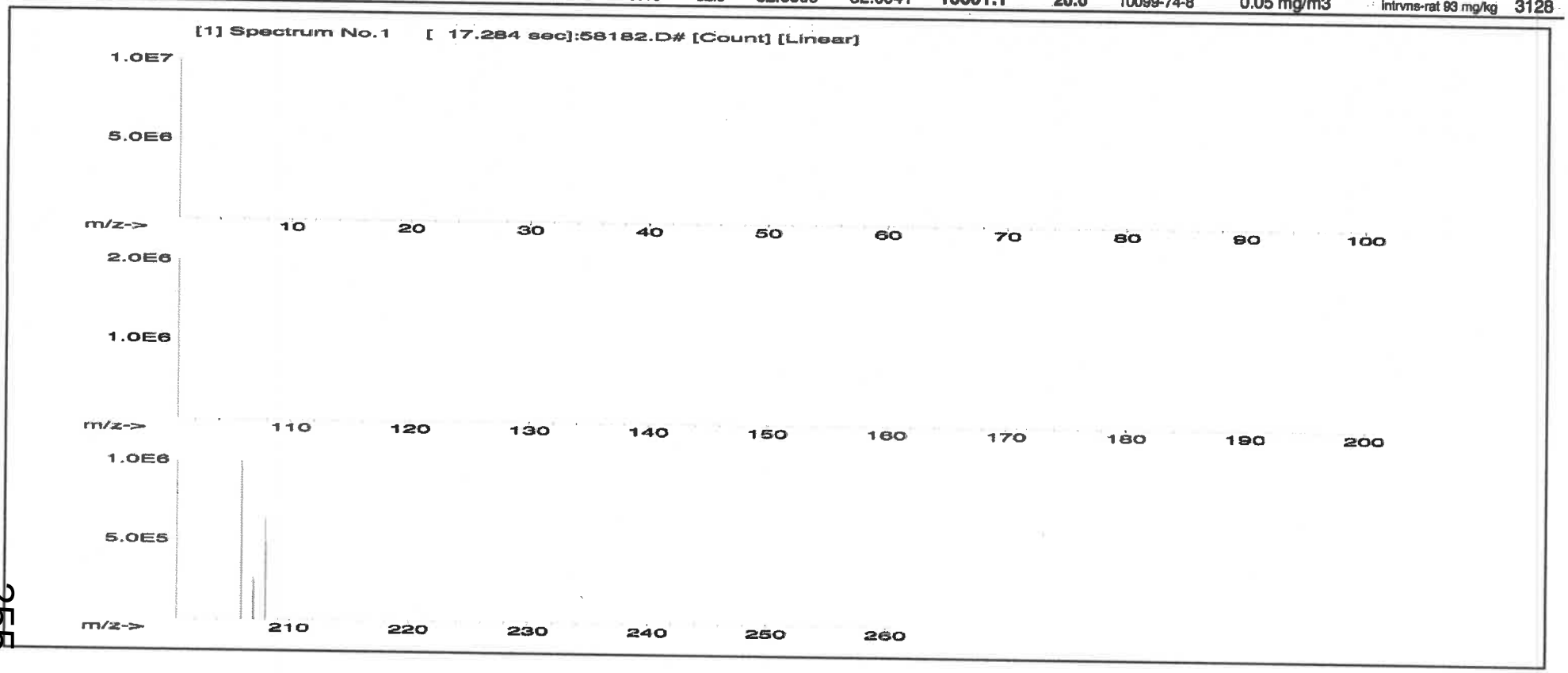
	Lot #		
Solvent:	20510011	Nitric Acid	
2%	40.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Giovanni Esposito

Formulated By:	Giovanni Esposito	061522
Reviewed By:	Pedro L. Rentas	061522

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Lead(II) nitrate (Pb)	IN029	PBD122016A1	10000	99.999	0.10	62.5	32.0006	32.0041	**10001.1**	**20.0**	10099-74-8	0.05 mg/m3	Intrvns-rat 93 mg/kg	3128



255

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	T	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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Certified Reference Material CRM

M5519. M5520 (BH) R:03/17/23

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

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CERTIFIED WEIGHT REPORT:

Part Number: 58119
Lot Number: 120822
Description: Potassium (K)

Expiration Date: 120825
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.4

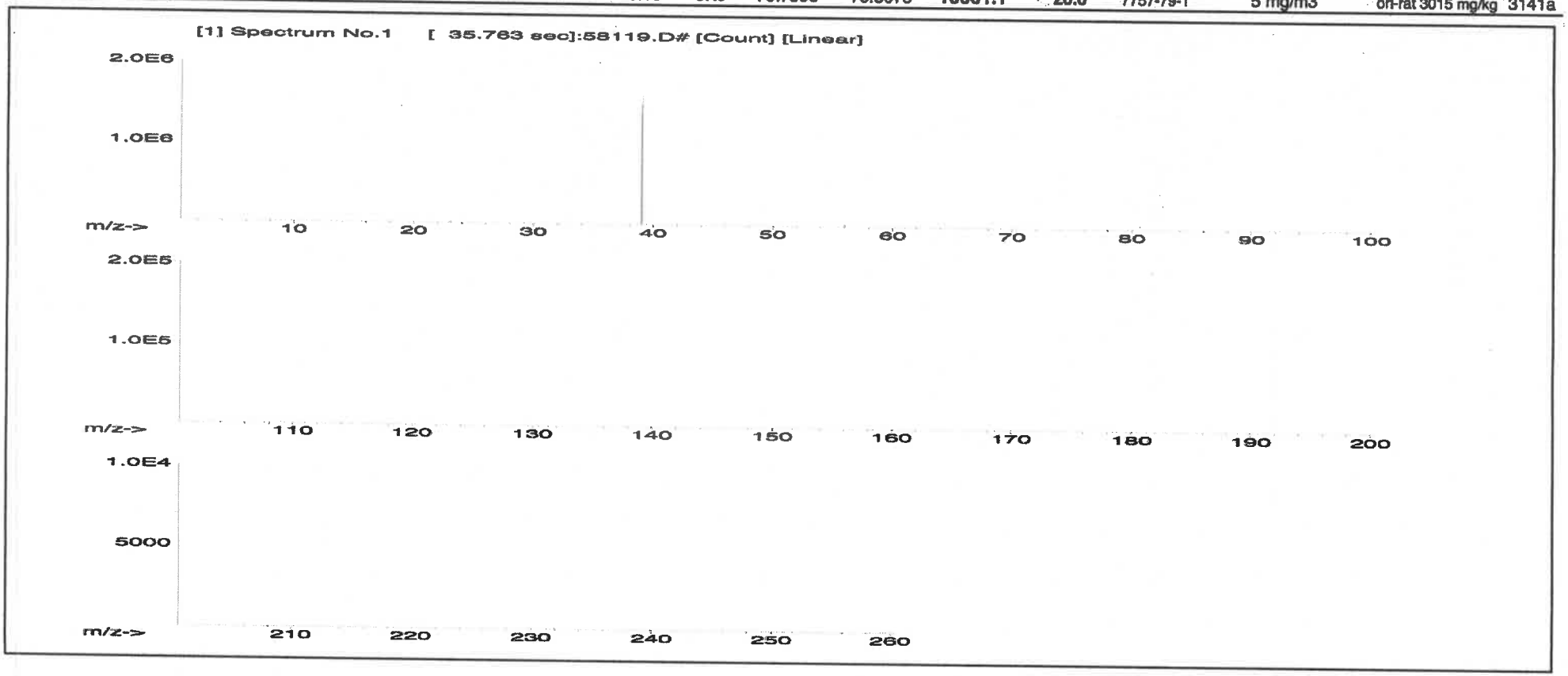
	Lot #		
Solvent:	20510011	Nitric Acid	
2%	60.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty
0.06 Flask Uncertainty

Giovanni Esposito
Formulated By: Giovanni Esposito 120822

Pedro Rentas
Reviewed By: Pedro L. Rentas 120822

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Potassium nitrate (K)	IN034	KD022021A1	10000	99.999	0.10	37.6	79.7990	79.8075	**10001.1**	**20.0**	7757-79-1	5 mg/m3	orl-rat 3015 mg/kg	3141a



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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	T	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:



* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certificate of Analysis

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Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CLPP-SPK-1
Lot Number:	T2-MEB721963
Matrix:	7% (v/v) HNO3
Value / Analyte(s):	2 000 µg/mL ea: Aluminum, Barium,
	1 000 µg/mL ea: Iron,
	500 µg/mL ea: Manganese, Nickel, Vanadium, Zinc, Cobalt,
	250 µg/mL ea: Copper,
	200 µg/mL ea: Chromium,
	50 µg/mL ea: Beryllium, Silver

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	2 000 ± 7 µg/mL	Barium, Ba	2 000 ± 9 µg/mL
Beryllium, Be	50.00 ± 0.26 µg/mL	Chromium, Cr	200.0 ± 1.1 µg/mL
Cobalt, Co	500.0 ± 2.4 µg/mL	Copper, Cu	250.0 ± 1.0 µg/mL
Iron, Fe	1 000 ± 4 µg/mL	Manganese, Mn	500.0 ± 2.0 µg/mL
Nickel, Ni	500.0 ± 2.2 µg/mL	Silver, Ag	50.00 ± 0.22 µg/mL
Vanadium, V	500.0 ± 2.2 µg/mL	Zinc, Zn	500.0 ± 2.2 µg/mL

Density: 1.070 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Ag	Calculated		See Sec. 4.2
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Be	Calculated		See Sec. 4.2
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
V	IC Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method I with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (t) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{1/2}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (t) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Note: This solution contains Silver (Ag), please refer to our Sample Preparation Guide for more information.

https://www.inorganicventures.com/sample-preparation-guide/samples-containing-silver

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 27, 2022

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- July 27, 2027

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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M5658 R! 8/25/23

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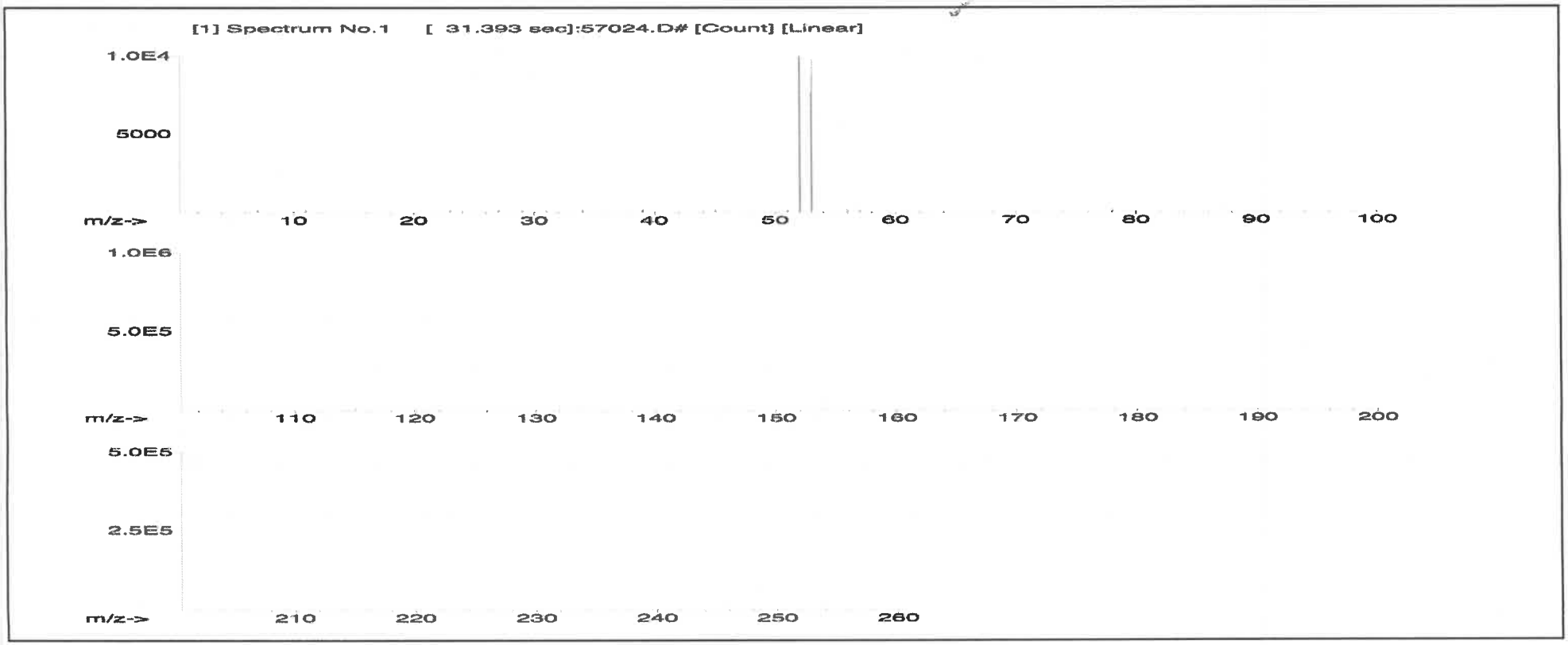
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CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**58024**	21110221	Nitric Acid	
Lot Number:	**060523**			
Description:	**Chromium (Cr)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	060526			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty	

Formulated By:	Lawrence Barry	060523
Reviewed By:	Pedro L. Rentas	060523

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Chromium(III) nitrate nonahydrate (Cr)	58124	071122	0.1000	200.0	0.084	1000	10000.1	**1000.0**	**2.2**	7789-02-8	0.5 mg(Cr)/m3	orl-rat 3250 mg/kg	3112a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	T	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
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* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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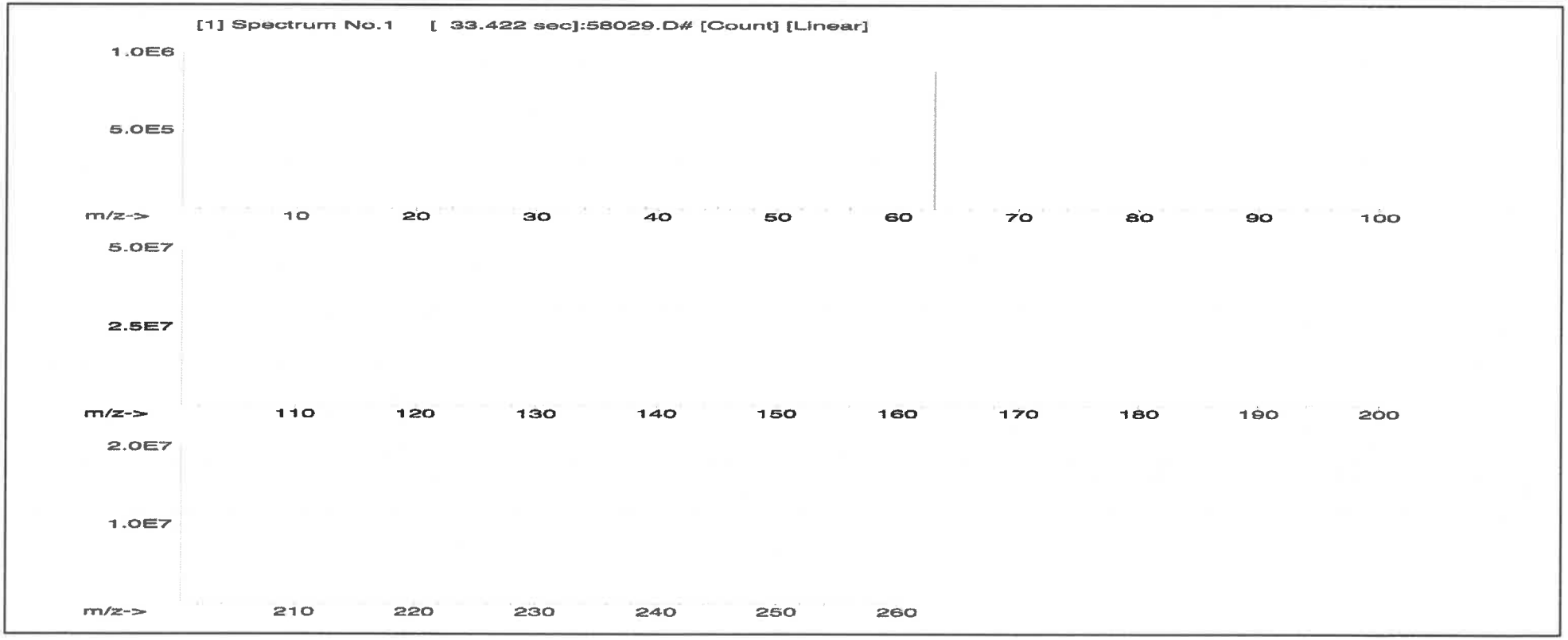
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CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**58029**	24002546	Nitric Acid	
Lot Number:	**102523**			
Description:	**Copper (Cu)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	102526			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty	

Formulated By:	Benson Chan	102523
Reviewed By:	Pedro L. Rentas	102523

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Copper(II) nitrate trihydrate (Cu)	58129	100223	0.1000	200.0	0.084	1000	10000.1	**1000.0**	**2.2**	10031-43-3	1 mg/m3	orl-rat 794 mg/kg	3114



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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	T	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
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* All Standards should be stored with caps tight and under appropriate laboratory conditions.
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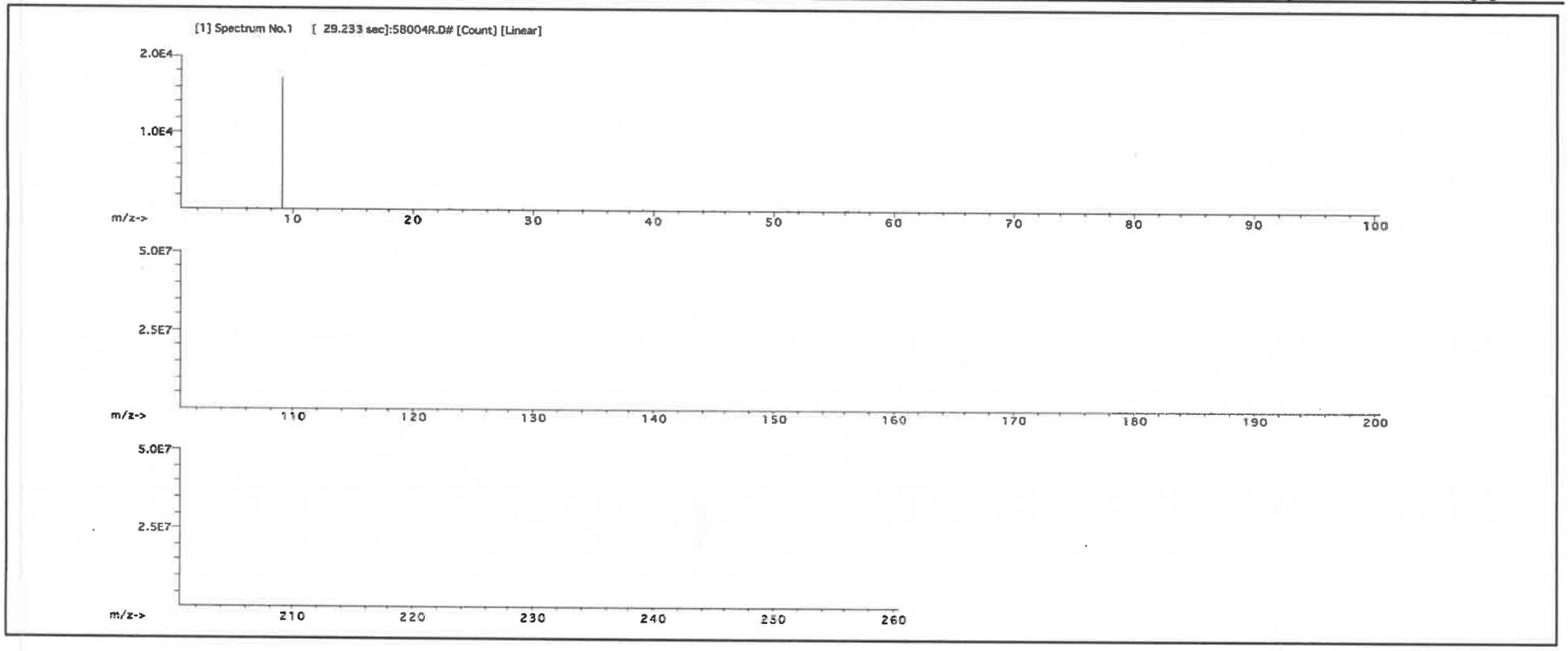
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CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57004**	24002546	Nitric Acid	
Lot Number:	**102523**			
Description:	**Beryllium (Be)**	2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	102526			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty	

Formulated By:	Benson Chan	102523
Reviewed By:	Pedro L. Rentas	102523

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Beryllium nitrate (Be)	58104	091423	0.1000	200.0	0.084	1000	10001.5	**1000.0**	**2.2**	13597-99-4	0.2ug/m3	intrvns-rat 3.16mg/kg	NA



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	T	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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269

CERTIFIED WEIGHT REPORT:

Part Number: 57050
Lot Number: 071123
Description: Tin (Sn)

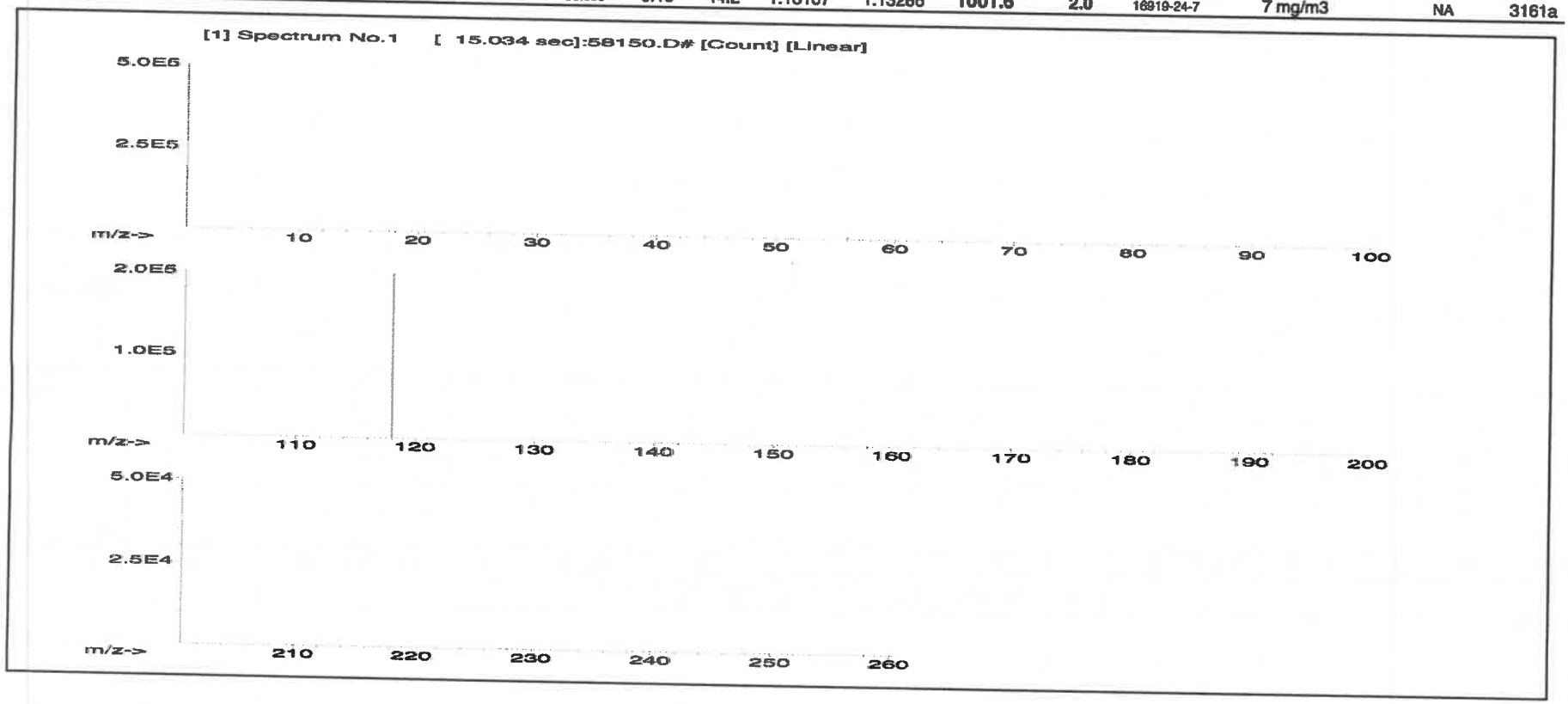
Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 499.93

	Lot #	
Solvents:	21110221	Nitric Acid
	22D0562008	Hydrochloric acid
2%	10.0	Nitric Acid
6%	30.0	Hydrochloric acid
	(mL)	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By:	Benson Chan	071123
Reviewed By:	Pedro L. Rentas	071123

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium hexafluorostannate(IV) (Sn)	IN010	SND042023A1	1000	99.999	0.10	44.2	1.13107	1.13286	**1001.6**	**2.0**	16919-24-7	7 mg/m3	NA	3161a



270

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<500	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	T	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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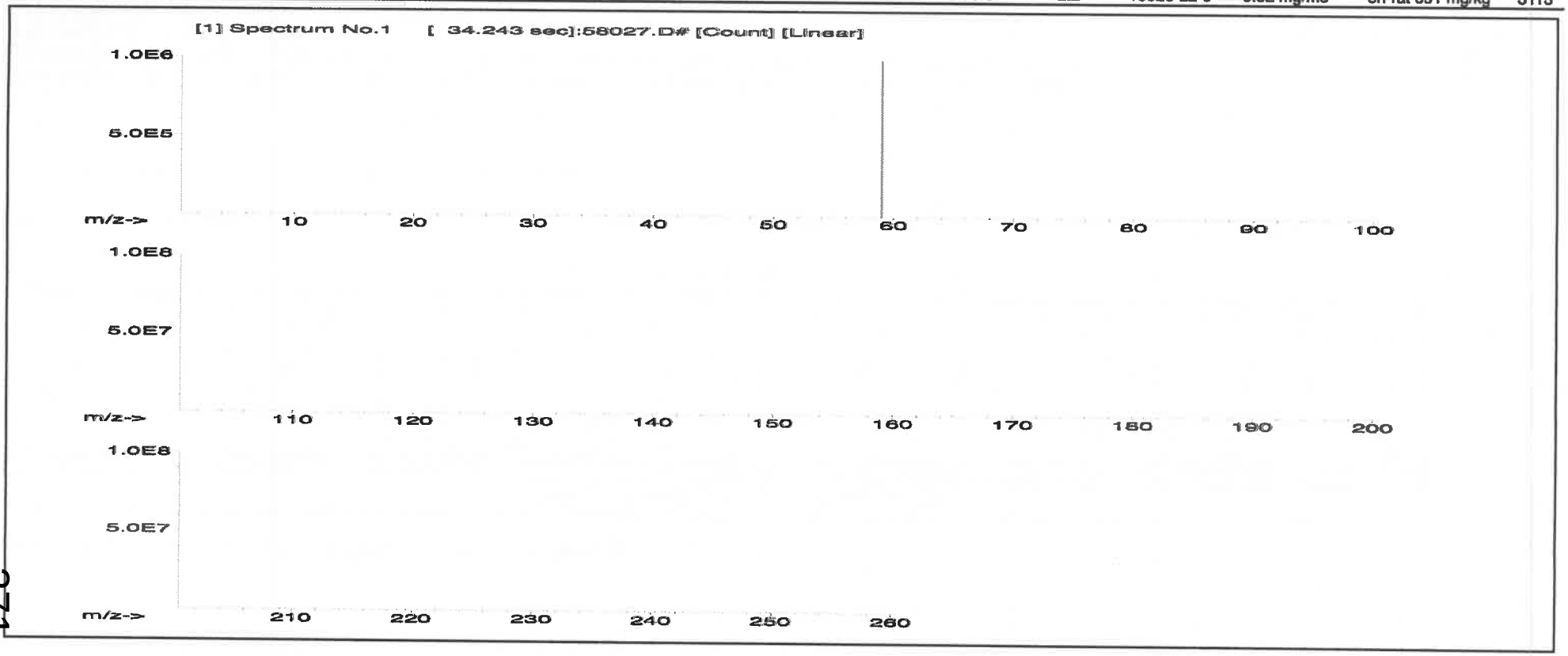
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CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:		
Part Number:	**57027**	24002546	Nitric Acid		
Lot Number:	**091923**				
Description:	**Cobalt (Co)**	2.0%	40.0 (mL)	Nitric Acid	
Expiration Date:	091926				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty		

Formulated By:	Lawrence Barry	091923
Reviewed By:	Pedro L. Rentas	091923

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Cobalt(II) nitrate hexahydrate (Co)	58127	050923	0.1000	200.0	0.084	1000	10000.0	**1000.0**	**2.2**	10026-22-9	0.02 mg/m3	orl-rat 691 mg/kg	3113



271

Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	T	Gé	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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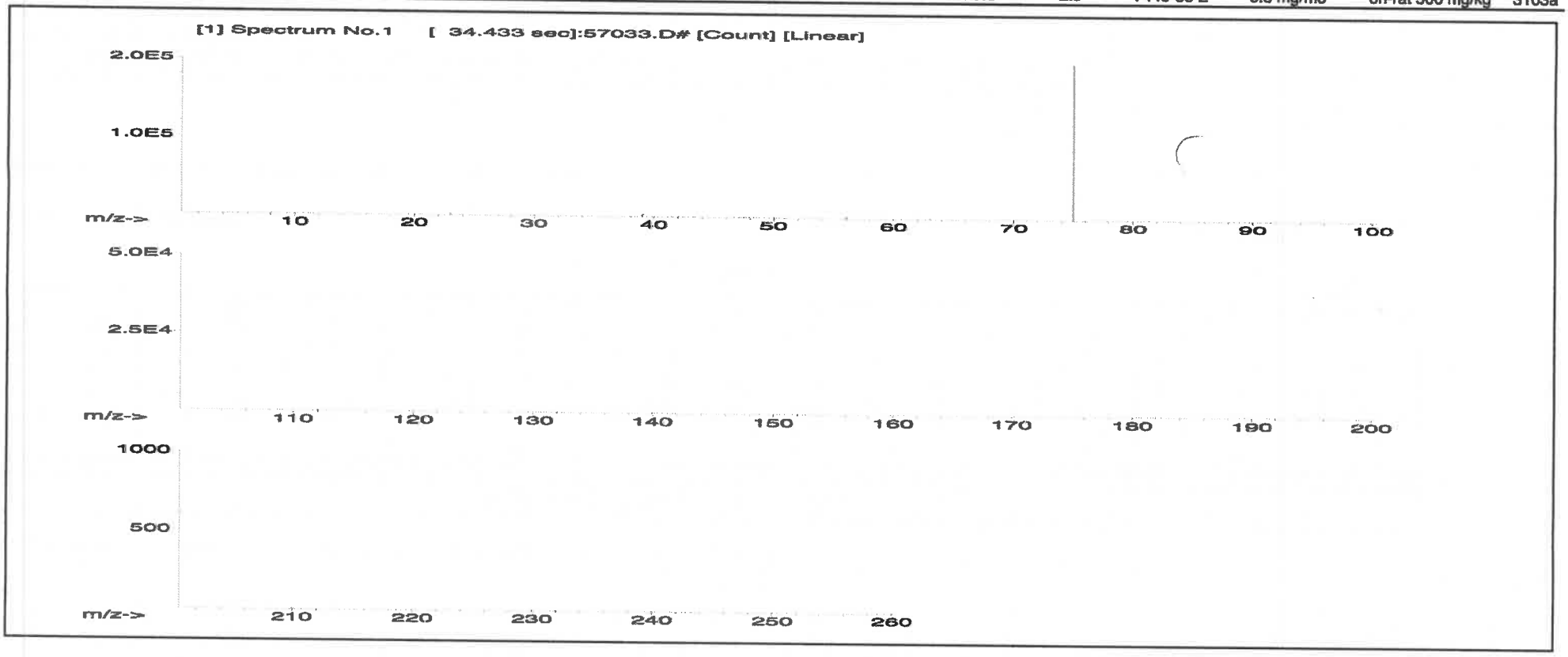
273

CERTIFIED **WEIGHT** REPORT:

		Lot #	Solvent:		
Part Number:	**57033**				
Lot Number:	**111323**	24002546	Nitric Acid		
Description:	**Arsenic (As)**				
		2.0%	80.0 (mL)	Nitric Acid	
Expiration Date:	111326				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Volume shown below was diluted to (mL):	4000.0	0.06	Flask Uncertainty		

Formulated By:	Lawrence Barry	111323
Reviewed By:	Pedro L. Rentas	111323

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Arsenic (As)	58133	020522	0.1000	400.0	0.084	1000	10001.0	**1000.0**	**2.0**	7440-38-2	0.5 mg/m3	orl-rat 500 mg/kg	3103a



274

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	T	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge*	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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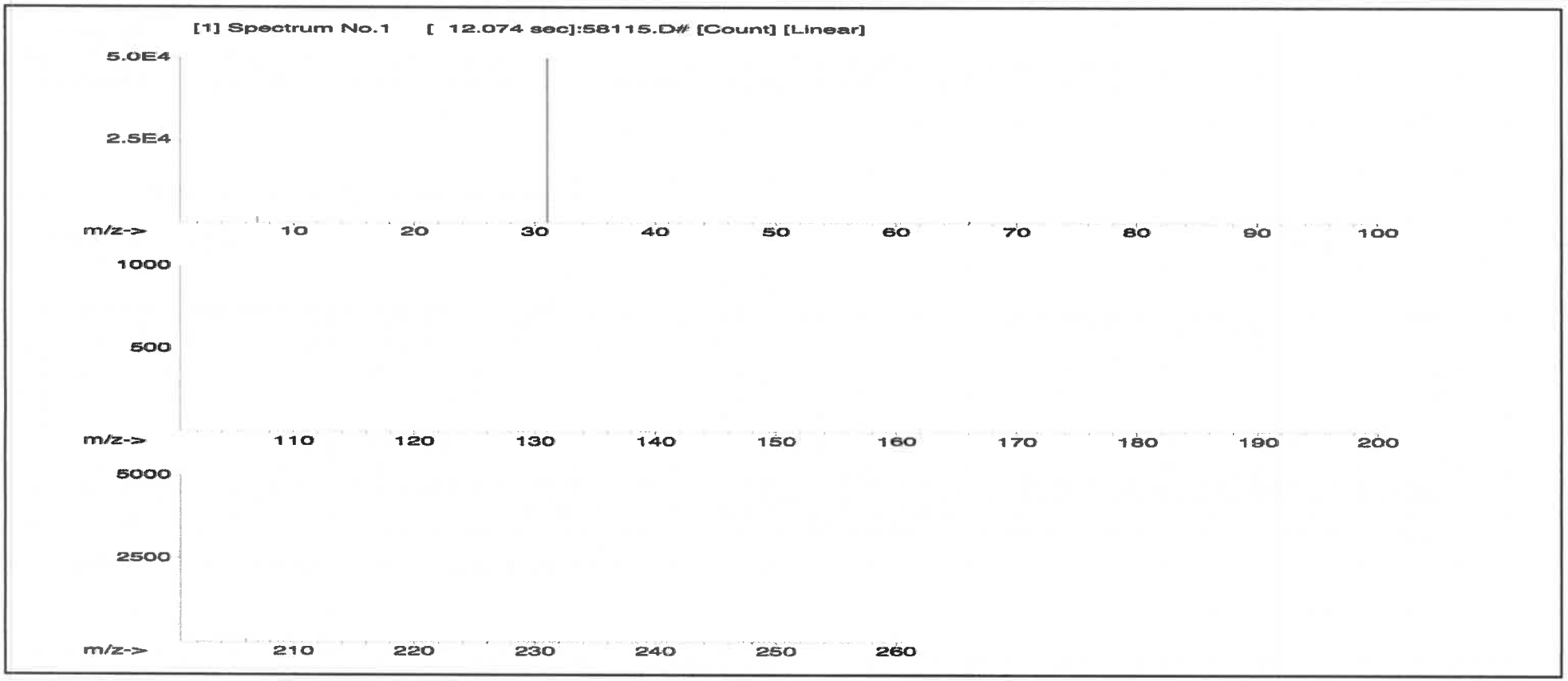
275

CERTIFIED WEIGHT REPORT:

			Lot #	
Part Number:	**57115**	**Solvent:**	21110221	Nitric Acid
Lot Number:	**041723**			
Description:	**Phosphorous (P)**	2%	40.0 (mL)	Nitric Acid
Expiration Date:	041726			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**10000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Weight shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty	

Formulated By:	Lawrence Barry	041723
Reviewed By:	Pedro L. Rentas	041723

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium dihydrogen phosphate (P)	IN008	PV082019A1	10000	99.999	0.10	27.5	72.7287	72.7289	**10000.0**	**20.0**	7722-76-1	5 mg/m3	orl-rat >2000mg/kg	3186



Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	T	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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CERTIFIED WEIGHT REPORT:

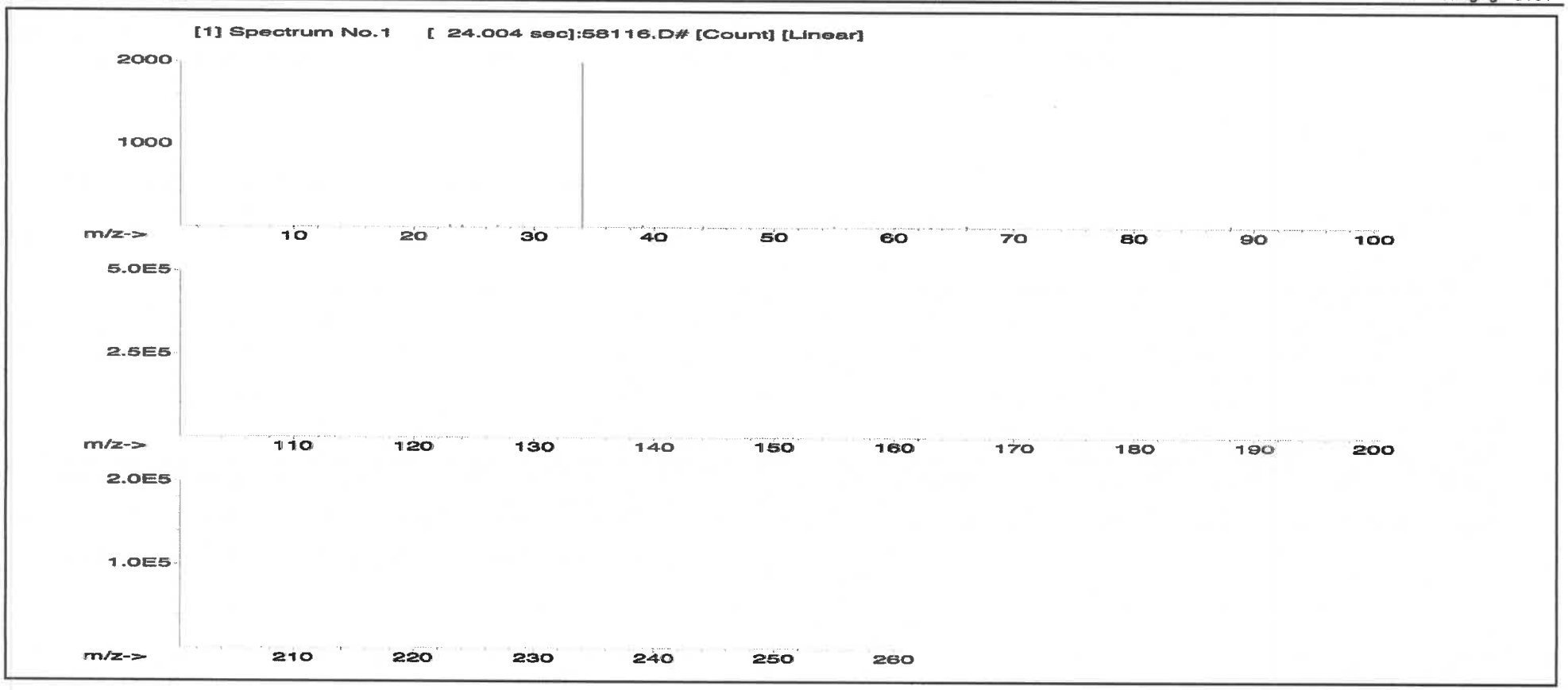
Part Number: 57116
Lot Number: 071123
Description: Sulfur (S)

Lot #
Solvent: 071123 ASTM Type 1 Water

Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB 5E-05 Balance Uncertainty
Weight shown below was diluted to (mL): 1999.48 0.058 Flask Uncertainty

Formulated By:	Lawrence Barry	071123
Reviewed By:	Pedro L. Rentas	071123

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium sulfate (S)	IN117	SLBR7225V	10000	99.9	0.10	24.3	82.4675	82.4682	**10000.1**	**20.0**	7783-20-2	NA	orl-rat 4250mg/kg	3181



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	T	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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CERTIFIED WEIGHT REPORT:

Part Number: 58030
Lot Number: 111623
Description: Zinc (Zn)

Expiration Date: 111626
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

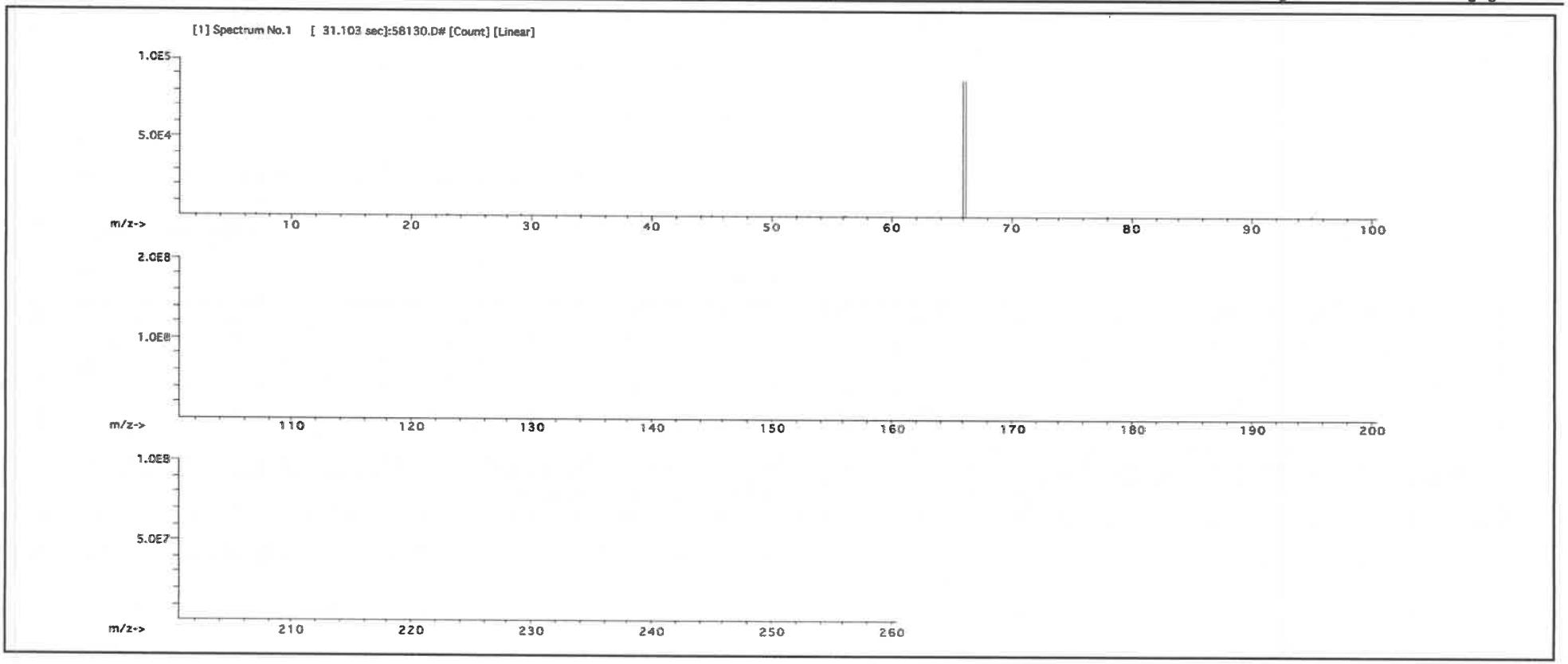
Weight shown below was diluted to (mL): 3000.4 0.06 Flask Uncertainty

	Lot #		
Solvent:	24002546	Nitric Acid	
2%	60.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty

Formulated By:	Benson Chan	111623
Reviewed By:	Pedro L. Rentas	111623

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Zinc nitrate hexahydrate (Zn)	IN016	ZNE032021A1	1000	99.999	0.10	24.3	12.3475	12.3502	**1000.2**	**2.0**	10196-18-6	1 mg/m3	orl-rat 1190mg/kg	3168



280

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	T
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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R: 02/22/24 M5942

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGTI1
Lot Number:	T2-TI719972
Matrix:	2% (v/v) HNO3 tr. HF
Value / Analyte(s):	1 000 µg/mL ea: Titanium
Starting Material:	Ti Metal
Starting Material Lot#:	2094
Starting Material Purity:	99.9975%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 5 µg/mL

Density: 1.012 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1002 ± 4 µg/mL**
ICP Assay NIST SRM 3162a Lot Number: 130925

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000536	M	Eu	<	0.000268	O	Na	<	0.032670	M	Se		0.001204	O	Zn	<	0.003267
O	Al		0.000872	O	Fe		0.003225	O	Nb	<	0.043560	O	Si		0.004735	O	Zr	<	0.043560
M	As	<	0.008586	M	Ga	<	0.000268	M	Nd	<	0.000268	M	Sm	<	0.000268				
M	Au	<	0.004577	M	Gd	<	0.000268	O	Ni	<	0.010890	M	Sn		0.000096				
O	B	<	0.008929	M	Ge	<	0.002146	M	Os	<	0.000269	O	Sr		0.000096				
M	Ba	<	0.002683	M	Hf		0.002161	O	P	<	0.054450	M	Ta		0.010560				
M	Be	<	0.005366	M	Hg	<	0.003231	M	Pb	<	0.001073	M	Tb	<	0.000268				
M	Bi	<	0.001609	M	Ho	<	0.000268	M	Pd	<	0.000268	M	Te	<	0.001341				
O	Ca		0.000676	M	In	<	0.002683	M	Pr	<	0.000268	M	Th	<	0.053663				
M	Cd	<	0.000268	M	Ir	<	0.000269	M	Pt	<	0.000536	s	Ti	<					
M	Ce	<	0.000268	M	K		0.001172	M	Rb	<	0.000268	M	Tl	<	0.000268				
M	Co	<	0.004293	M	La	<	0.000268	M	Re	<	0.000268	M	Tm	<	0.000268				
M	Cr		0.000752	O	Li	<	0.027225	M	Rh	<	0.000268	M	U	<	0.000268				
M	Cs	<	0.000268	M	Lu	<	0.000268	M	Ru	<	0.000269	M	V	<	0.019855				
O	Cu	<	0.010890	O	Mg	<	0.005445	i	S	<		M	W		0.000473				
M	Dy	<	0.000268	O	Mn	<	0.003267	M	Sb	<	0.006976	M	Y	<	0.002146				
M	Er	<	0.000268	M	Mo		0.000774	O	Sc	<	0.004900	M	Yb	<	0.000536				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 47.87 +4 6 Ti(F)6-2

Chemical Compatibility - Soluble in concentrated HCl, HF, H3PO4 H2SO4 and HNO3. Avoid neutral to basic media. Unstable at ppm levels with metals that would pull F- away (i.e. Do not mix with Alkaline or Rare Earths or high levels of transition elements unless they are fluorinated). Stable with most inorganic anions with a tendency to hydrolyze forming the hydrated oxide in all dilute acids except HF.

Stability - 2-100 ppb levels stable (Alone or mixed with all other metals) as the Ti(F)6-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the Ti(F)6-2 chemically stable for years in 2-5% HNO3 / trace HF in an LDPE container.

Ti Containing Samples (Preparation and Solution) - Metal (Soluble in H2O / HF caution -powder reacts violently); Oxide - low temperature history anatase or rutile (Dissolved by heating in 1:1:1 H2O / HF / H2SO4); Oxide - high temperature history (~800EC) brookite (fuse in Pt0 with K2S2O7); Ores (fuse in Pt0 with KF + K2S2O7 - no KF if silica not present); Organic Matrices (Dry ash at 450EC in Pt0 and dissolve by heating with 1:1:1 H2O / HF / H2SO4 or fuse ash with pyrosulfate if oxide is as plastic pigment and likely in brookite crystalline form).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 48 amu	14 ppt	N/A	32S16O, 32S14N, 14N16O18O, 14N17N2, 36Ar12C, 48Ca, [96X=2 (where X = Zr, Mo, Ru)]
ICP-OES 323.452 nm	0.0054 / 0.00092 µg/mL	1	Ce, Ar, Ni
ICP-OES 334.941 nm	0.0038 / 0.000028 µg/mL	1	Nb, Ta, Cr, U
ICP-OES 336.121 nm	0.0053 / 0.000034 µg/mL	1	W, Mo, Co

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

June 17, 2022

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **June 17, 2027**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 863.01
ACCREDITED Reference Material Producer Certificate 863.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGY10
Lot Number:	V2-Y740548
Matrix:	2% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Yttrium
Starting Material:	Yttrium Oxide
Starting Material Lot#:	2661 and 06230520YL
Starting Material Purity:	99.9984%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10000 ± 30 µg/mL

Density: 1.032 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	**10011 ± 25 µg/mL** EDTA NIST SRM 928 Lot Number: 928
Assay Method #2	**9997 ± 50 µg/mL** ICP Assay NIST SRM 3167a Lot Number: 190730
Assay Method #3	**9984 ± 31 µg/mL** Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{1/2}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.004600	M	Eu		0.009037	M	Na		0.086360	M	Se	<	0.005200	M	Zn		0.030125
M	Al		0.014862	O	Fe		0.002410	M	Nb	<	0.000570	O	Si		0.024100	O	Zr	<	0.002600
M	As	<	0.003500	M	Ga	<	0.000570	M	Nd		0.000923	M	Sm		0.000461				
M	Au	<	0.001700	M	Gd	<	0.003500	M	Ni	<	0.005700	M	Sn	<	0.002300				
O	B		0.002209	M	Ge	<	0.005200	M	Os	<	0.001200	M	Sr	<	0.004600				
O	Ba	<	0.002500	M	Hf	<	0.000570	n	P	<		M	Ta	<	0.000570				
O	Be	<	0.001400	M	Hg	<	0.000570	M	Pb		0.005020	M	Tb		0.001044				
M	Bi	<	0.003500	M	Ho		0.009037	M	Pd	<	0.005100	M	Te	<	0.002300				
O	Ca		0.009841	M	In	<	0.002300	M	Pr	<	0.002300	M	Th	<	0.000570				
M	Cd	<	0.000570	M	Ir	<	0.000570	M	Pt	<	0.000570	M	Ti	<	0.003500				
M	Ce	<	0.002300	O	K		0.018677	M	Rb	<	0.000570	M	Tl	<	0.000570				
M	Co	<	0.000570	M	La		0.000461	M	Re	<	0.000570	M	Tm	<	0.003500				
M	Cr	<	0.004000	O	Li	<	0.009300	M	Rh	<	0.008000	M	U	<	0.000570				
M	Cs	<	0.000570	M	Lu		0.000582	M	Ru	<	0.000570	M	V		0.001265				
M	Cu		0.002610	O	Mg		0.001486	n	S	<		M	W	<	0.002300				
M	Dy		0.003815	M	Mn		0.000582	M	Sb		0.005422	s	Y	<					
M	Er		0.003615	M	Mo	<	0.005700	M	Sc	<	0.001200	M	Yb		0.001827				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 88.91 +3 6 Y(OH)(H2O)x+2

Chemical Compatibility -Soluble in HCl, H2SO4 and HNO3. Avoid HF, H3PO4 and neutral to basic media. Stable with most metals and inorganic anions forming an insoluble carbonate, oxide, oxalate, and fluoride. Avoid mixing with elements / solutions containing moderate amounts of fluoride.

Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO3 / LDPE container.

Y Containing Samples (Preparation and Solution) - Metal (Soluble in acids); Oxide (Dissolve by heating in H2O/ HNO3); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (Dry ash and dissolve in 1:1 H2O / HCl or HNO3).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 89 amu	0.8 ppt	N/A	73Ge16O, 178Hf+2
ICP-OES 360.073 nm	0.005 / 0.000036 µg/mL	1	Ce, Th
ICP-OES 371.030 nm	0.004 / 0.00007 µg/mL	1	Ce
ICP-OES 377.433 nm	0.005 / 0.0009 µg/mL	1	Ta, Th

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 20, 2024

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- February 20, 2029

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Muzzammil Khan
Stock Laboratory Supervisor



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

M5961 R: 6/11/24

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

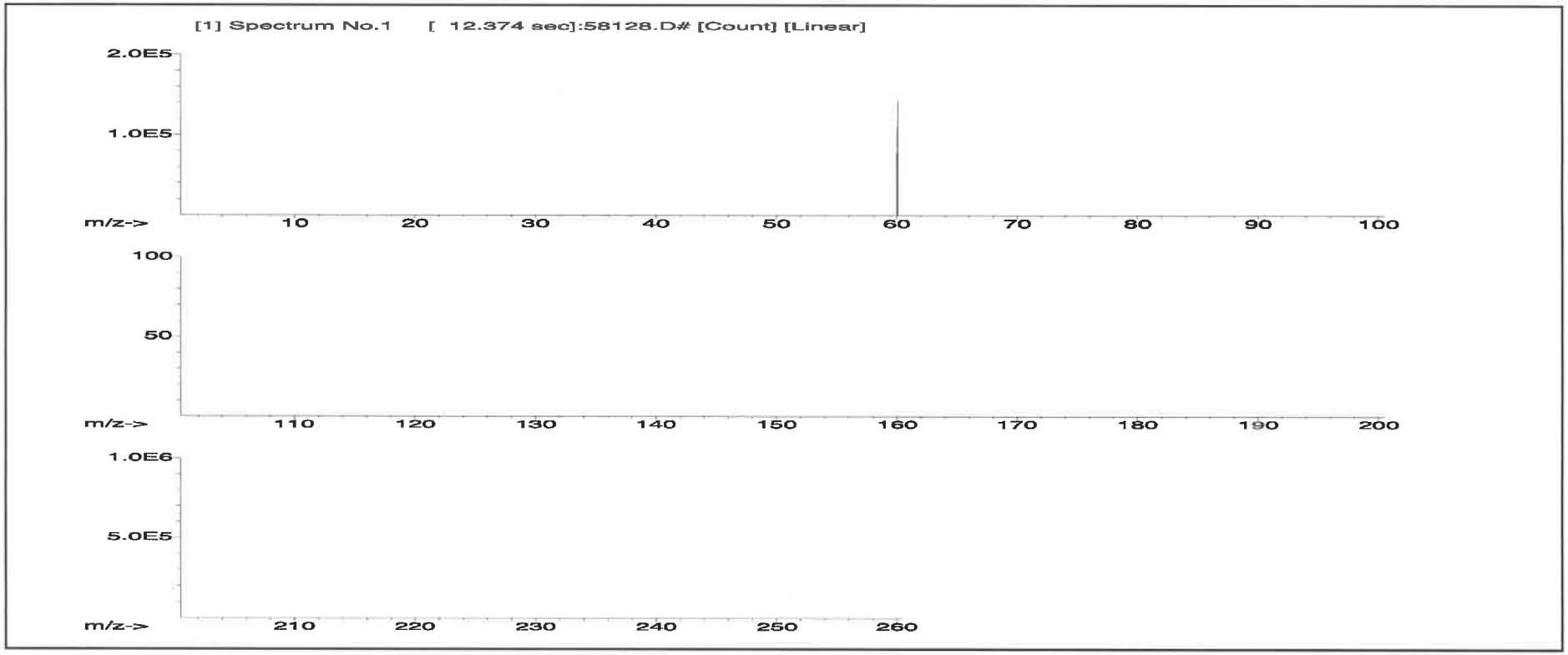
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CERTIFIED WEIGHT REPORT:

			Lot #	
Part Number:	**57028**	**Solvent:**	24002546	Nitric Acid
Lot Number:	**041124**			
Description:	**Nickel (Ni)**			
		2%	5.0 (mL)	Nitric Acid
Expiration Date:	041127			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Weight shown below was diluted to (mL):	249.85	0.002	Flask Uncertainty	

Formulated By:	Brian Geddes	041124
Reviewed By:	Pedro L. Rentas	041124

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Nickel(II) nitrate hexahydrate (Ni)	IN033	NIM052023A1	1000	99.999	0.10	20.2	1.2369	1.2369	**1000.0**	**2.0**	13478-00-7	1 mg/m3	orl-rat 1620 mg/kg	3136



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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	T	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

M5962 R! 06/14/24.

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

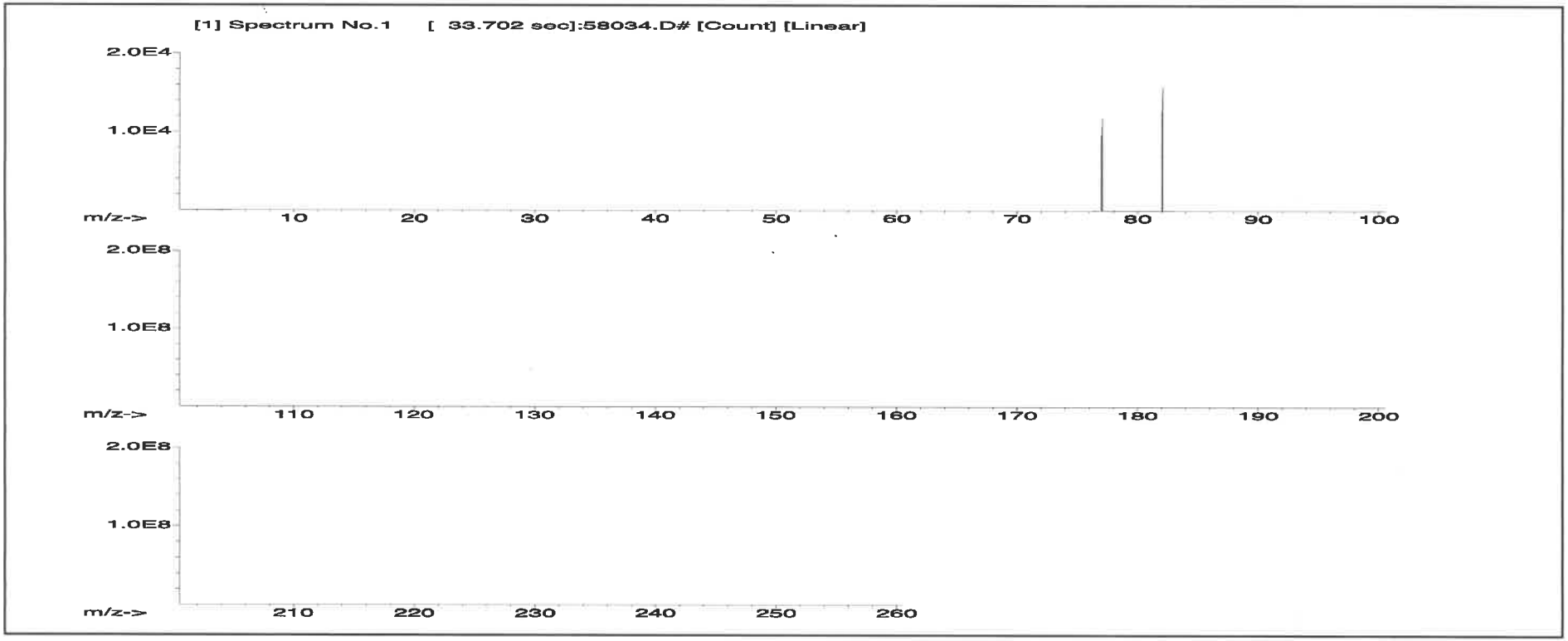
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CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57034**	24002546	Nitric Acid	
Lot Number:	**060624**			
Description:	**Selenium (Se)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	060627			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.07	0.100	Flask Uncertainty	

Formulated By:	Benson Chan	060624
Reviewed By:	Pedro L. Rentas	060624

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Selenium (Se)	58134	071223	0.1000	200.0	0.084	1000	10002.5	**1000.0**	**2.2**	7782-49-2	0.2 mg/m3	orl-rat 6700 mg/kg	3149



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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																		
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	T	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:



* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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F: 540-585-3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGMO1
Lot Number:	T2-MO720876
Matrix:	H2O tr. NH4OH
Value / Analyte(s):	1 000 µg/mL ea: Molybdenum
Starting Material:	Ammonium Molybdate
Starting Material Lot#:	2361
Starting Material Purity:	99.9893%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 998 ± 7 µg/mL

Density: 1.000 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **998 ± 4 µg/mL**
ICP Assay NIST SRM 3134 Lot Number: 130418

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance.

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2 (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000590	M	Eu	<	0.000300	M	Na		0.000879	M	Se	<	0.008000	M	Zn		0.000598
M	Al		0.000563	M	Fe	<	0.006500	M	Nb	<	0.029000	i	Si	<		M	Zr	<	0.001800
M	As	<	0.002100	M	Ga	<	0.000300	i	Nd	<		M	Sm	<	0.000300				
M	Au	<	0.000300	M	Gd	<	0.000300	M	Ni	<	0.008000	M	Sn	<	0.008900				
M	B	<	0.003300	M	Ge	<	0.000300	M	Os	<	0.000590	M	Sr		0.000175				
M	Ba		0.001689	M	Hf	<	0.001800	i	P	<		M	Ta	<	0.004200				
M	Be	<	0.000890	M	Hg	<	0.003300	M	Pb	<	0.000300	M	Tb	<	0.000300				
M	Bi	<	0.000890	M	Ho	<	0.000300	M	Pd	<	0.001800	M	Te	<	0.021000				
O	Ca		0.006334	M	In	<	0.032000	M	Pr	<	0.013000	M	Th	<	0.000300				
O	Cd	<	0.026000	M	Ir	<	0.000300	M	Pt	<	0.000300	O	Tl	<	0.032000				
M	Ce	<	0.008300	M	K		0.130213	M	Rb		0.004575	M	Tl		0.001266				
M	Co		0.000598	M	La	<	0.000300	M	Re	<	0.000300	M	Tm	<	0.000300				
M	Cr		0.000527	O	Li		0.000059	M	Rh	<	0.000300	M	U	<	0.005300				
M	Cs		0.000527	M	Lu	<	0.000300	M	Ru	<	0.079000	M	V	<	0.000890				
M	Cu		0.002252	M	Mg		0.000563	i	S	<		M	W		0.087982				
M	Dy	<	0.000300	M	Mn	<	0.005900	M	Sb		0.001513	M	Y	<	0.000300				
M	Er	<	0.000300	s	Mo	<		M	Sc	<	0.001200	M	Yb	<	0.000300				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 95.94 +6 6,7,8,9 [MoO4]-2(chemical form as received)

Chemical Compatibility -Mo is received in a NH4OH matrix giving the operator the option of using HCl or HF to stabilize acidic solutions. The [MoO4]-2 is soluble in concentrated HCl [MoOCl5]-2, dilute HF / HNO3 [MoOF5]-2 and basic media [MoO4]-2. Stable at ppm levels with some metals provided it is fluorinated. Do not mix with Alkaline or Rare Earths when HF is present. Stable with most inorganic anions provided it is in the [MoO4]-2 chemical form.

Stability - 2-100 ppb levels stable (alone or mixed with all other metals that are at comparable levels) as the [MoOF5]-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the [MoO4]-2 chemically stable for years in 1% NH4OH in a LDPE container.

Mo Containing Samples (Preparation and Solution) -Metal (Soluble in HF / HNO3 or hot dilute HCl); Oxide (soluble in HF or NH4OH) ; Organic Matrices (Dry ash at 450EC in Pt0 and dissolve oxide with HF or HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 95 amu	3 ppt	n/a	40Ar39K16O,79Br1 6O,190Os2+,190Pt 2+
ICP-OES 202.030 nm	0.008 / 0.0002 µg/mL	1	Os, Hf
ICP-OES 203.844 nm	0.012 / 0.002 µg/mL	1	
ICP-OES 204.598 nm	0.012 / 0.001 µg/mL	1	Ir, Ta

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 17, 2022

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- July 17, 2027

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Supervisor, Product Documentation



Certificate Approved By:

Michael Booth
Director, Technical



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGMO1
Lot Number:	T2-MO720876
Matrix:	H2O tr. NH4OH
Value / Analyte(s):	1 000 µg/mL ea: Molybdenum
Starting Material:	Ammonium Molybdate
Starting Material Lot#:	2361
Starting Material Purity:	99.9893%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 998 ± 7 µg/mL

Density: 1.000 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **998 ± 4 µg/mL**
ICP Assay NIST SRM 3134 Lot Number: 130418

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance.

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2 (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000590	M	Eu	<	0.000300	M	Na		0.000879	M	Se	<	0.008000	M	Zn		0.000598
M	Al		0.000563	M	Fe	<	0.006500	M	Nb	<	0.029000	i	Si	<		M	Zr	<	0.001800
M	As	<	0.002100	M	Ga	<	0.000300	i	Nd	<		M	Sm	<	0.000300				
M	Au	<	0.000300	M	Gd	<	0.000300	M	Ni	<	0.008000	M	Sn	<	0.008900				
M	B	<	0.003300	M	Ge	<	0.000300	M	Os	<	0.000590	M	Sr		0.000175				
M	Ba		0.001689	M	Hf	<	0.001800	i	P	<		M	Ta	<	0.004200				
M	Be	<	0.000890	M	Hg	<	0.003300	M	Pb	<	0.000300	M	Tb	<	0.000300				
M	Bi	<	0.000890	M	Ho	<	0.000300	M	Pd	<	0.001800	M	Te	<	0.021000				
O	Ca		0.006334	M	In	<	0.032000	M	Pr	<	0.013000	M	Th	<	0.000300				
O	Cd	<	0.026000	M	Ir	<	0.000300	M	Pt	<	0.000300	O	Tl	<	0.032000				
M	Ce	<	0.008300	M	K		0.130213	M	Rb		0.004575	M	Tl		0.001266				
M	Co		0.000598	M	La	<	0.000300	M	Re	<	0.000300	M	Tm	<	0.000300				
M	Cr		0.000527	O	Li		0.000059	M	Rh	<	0.000300	M	U	<	0.005300				
M	Cs		0.000527	M	Lu	<	0.000300	M	Ru	<	0.079000	M	V	<	0.000890				
M	Cu		0.002252	M	Mg		0.000563	i	S	<		M	W		0.087982				
M	Dy	<	0.000300	M	Mn	<	0.005900	M	Sb		0.001513	M	Y	<	0.000300				
M	Er	<	0.000300	s	Mo	<		M	Sc	<	0.001200	M	Yb	<	0.000300				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 95.94 +6 6,7,8,9 [MoO4]-2(chemical form as received)

Chemical Compatibility -Mo is received in a NH4OH matrix giving the operator the option of using HCl or HF to stabilize acidic solutions. The [MoO4]-2 is soluble in concentrated HCl [MoOCl5]-2, dilute HF / HNO3 [MoOF5]-2 and basic media [MoO4]-2. Stable at ppm levels with some metals provided it is fluorinated. Do not mix with Alkaline or Rare Earths when HF is present. Stable with most inorganic anions provided it is in the [MoO4]-2 chemical form.

Stability - 2-100 ppb levels stable (alone or mixed with all other metals that are at comparable levels) as the [MoOF5]-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the [MoO4]-2 chemically stable for years in 1% NH4OH in a LDPE container.

Mo Containing Samples (Preparation and Solution) -Metal (Soluble in HF / HNO3 or hot dilute HCl); Oxide (soluble in HF or NH4OH) ; Organic Matrices (Dry ash at 450EC in Pt0 and dissolve oxide with HF or HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 95 amu	3 ppt	n/a	40Ar39K16O,79Br1 6O,190Os2+,190Pt 2+
ICP-OES 202.030 nm	0.008 / 0.0002 µg/mL	1	Os, Hf
ICP-OES 203.844 nm	0.012 / 0.002 µg/mL	1	
ICP-OES 204.598 nm	0.012 / 0.001 µg/mL	1	Ir, Ta

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 17, 2022

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- July 17, 2027

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Supervisor, Product Documentation



Certificate Approved By:

Michael Booth
Director, Technical



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



301

M5978, M5979

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01 — ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGTI1
Lot Number:	T2-TI719972
Matrix:	2% (v/v) HNO3 tr. HF
Value / Analyte(s):	1 000 µg/mL ea: Titanium
Starting Material:	Ti Metal
Starting Material Lot#:	2094
Starting Material Purity:	99.9975%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 5 µg/mL

Density: 1.012 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1002 ± 4 µg/mL**
ICP Assay NIST SRM 3162a Lot Number: 130925

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance

$w_i = (1/u_{char\ i}^2) / (\Sigma(1/u_{char\ i}^2))$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma(w_i)^2\ (u_{char\ i})^2]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000536	M	Eu	<	0.000268	O	Na	<	0.032670	M	Se		0.001204	O	Zn	<	0.003267
O	Al		0.000872	O	Fe		0.003225	O	Nb	<	0.043560	O	Si		0.004735	O	Zr	<	0.043560
M	As	<	0.008586	M	Ga	<	0.000268	M	Nd	<	0.000268	M	Sm	<	0.000268				
M	Au	<	0.004577	M	Gd	<	0.000268	O	Ni	<	0.010890	M	Sn		0.000096				
O	B	<	0.008929	M	Ge	<	0.002146	M	Os	<	0.000269	O	Sr		0.000096				
M	Ba	<	0.002683	M	Hf		0.002161	O	P	<	0.054450	M	Ta		0.010560				
M	Be	<	0.005366	M	Hg	<	0.003231	M	Pb	<	0.001073	M	Tb	<	0.000268				
M	Bi	<	0.001609	M	Ho	<	0.000268	M	Pd	<	0.000268	M	Te	<	0.001341				
O	Ca		0.000676	M	In	<	0.002683	M	Pr	<	0.000268	M	Th	<	0.053663				
M	Cd	<	0.000268	M	Ir	<	0.000269	M	Pt	<	0.000536	s	Ti	<					
M	Ce	<	0.000268	M	K		0.001172	M	Rb	<	0.000268	M	Tl	<	0.000268				
M	Co	<	0.004293	M	La	<	0.000268	M	Re	<	0.000268	M	Tm	<	0.000268				
M	Cr		0.000752	O	Li	<	0.027225	M	Rh	<	0.000268	M	U	<	0.000268				
M	Cs	<	0.000268	M	Lu	<	0.000268	M	Ru	<	0.000269	M	V	<	0.019855				
O	Cu	<	0.010890	O	Mg	<	0.005445	i	S	<		M	W		0.000473				
M	Dy	<	0.000268	O	Mn	<	0.003267	M	Sb	<	0.006976	M	Y	<	0.002146				
M	Er	<	0.000268	M	Mo		0.000774	O	Sc	<	0.004900	M	Yb	<	0.000536				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 47.87 +4 6 Ti(F)6-2

Chemical Compatibility - Soluble in concentrated HCl, HF, H3PO4 H2SO4 and HNO3. Avoid neutral to basic media. Unstable at ppm levels with metals that would pull F- away (i.e. Do not mix with Alkaline or Rare Earths or high levels of transition elements unless they are fluorinated). Stable with most inorganic anions with a tendency to hydrolyze forming the hydrated oxide in all dilute acids except HF.

Stability - 2-100 ppb levels stable (Alone or mixed with all other metals) as the Ti(F)6-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the Ti(F)6-2 chemically stable for years in 2-5% HNO3 / trace HF in an LDPE container.

Ti Containing Samples (Preparation and Solution) - Metal (Soluble in H2O / HF caution -powder reacts violently); Oxide - low temperature history anatase or rutile (Dissolved by heating in 1:1:1 H2O / HF / H2SO4); Oxide - high temperature history (~800EC) brookite (fuse in Pt0 with K2S2O7); Ores (fuse in Pt0 with KF + K2S2O7 - no KF if silica not present); Organic Matrices (Dry ash at 450EC in Pt0 and dissolve by heating with 1:1:1 H2O / HF / H2SO4 or fuse ash with pyrosulfate if oxide is as plastic pigment and likely in brookite crystalline form).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 48 amu	14 ppt	N/A	32S16O, 32S14N, 14N16O18O, 14N17N2, 36Ar12C, 48Ca, [96X=2 (where X = Zr, Mo, Ru)]
ICP-OES 323.452 nm	0.0054 / 0.00092 µg/mL	1	Ce, Ar, Ni
ICP-OES 334.941 nm	0.0038 / 0.000028 µg/mL	1	Nb, Ta, Cr, U
ICP-OES 336.121 nm	0.0053 / 0.000034 µg/mL	1	W, Mo, Co

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

June 17, 2022

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- June 17, 2027

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

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R: 6/14/24

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 863.01
ACCREDITED Reference Material Producer Certificate 863.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGIN10
Lot Number:	U2-IN729349
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Indium
Starting Material:	Indium Metal
Starting Material Lot#:	2511
Starting Material Purity:	99.9995%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10022 ± 30 µg/mL

Density: 1.044 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	**10021 ± 56 µg/mL** ICP Assay NIST SRM 3124a Lot Number: 110516
Assay Method #2	**10035 ± 25 µg/mL** EDTA NIST SRM 928 Lot Number: 928
Assay Method #3	**10001 ± 33 µg/mL** Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000760	M	Eu	<	0.000760	O	Na		0.012771	M	Se	<	0.023000	M	Zn	<	0.006100
M	Al		0.003385	O	Fe		0.004462	M	Nb	<	0.000760	O	Si		0.024619	M	Zr	<	0.000760
M	As	<	0.004600	M	Ga	<	0.000760	M	Nd	<	0.000760	M	Sm	<	0.000760				
M	Au	<	0.002300	M	Gd	<	0.000760	O	Ni	<	0.005100	M	Sn	<	0.000760				
O	B		0.003692	M	Ge	<	0.001600	M	Os	<	0.000760	O	Sr	<	0.000610				
M	Ba	<	0.001600	M	Hf	<	0.000760	n	P	<		M	Ta	<	0.000760				
O	Be	<	0.000130	M	Hg	<	0.003100	M	Pb		0.001400	M	Tb	<	0.000760				
M	Bi	<	0.000760	M	Ho	<	0.000760	M	Pd	<	0.001600	M	Te	<	0.000760				
O	Ca		0.004616	s	In	<		M	Pr	<	0.000760	M	Th	<	0.000760				
M	Cd	<	0.000760	M	Ir	<	0.000760	M	Pt	<	0.000760	O	Ti	<	0.001100				
M	Ce	<	0.000760	O	K		0.007078	M	Rb	<	0.000760	M	Tl	<	0.000760				
M	Co	<	0.000760	M	La	<	0.000760	M	Re	<	0.000760	M	Tm	<	0.000760				
O	Cr	<	0.001300	O	Li	<	0.000130	M	Rh	<	0.000760	M	U	<	0.000760				
M	Cs	<	0.000760	M	Lu	<	0.000760	M	Ru	<	0.000760	M	V	<	0.001600				
M	Cu	<	0.003800	O	Mg		0.000707	n	S	<		M	W	<	0.001600				
M	Dy	<	0.000760	O	Mn		0.000149	M	Sb	<	0.000760	M	Y	<	0.000760				
M	Er	<	0.000760	M	Mo	<	0.002300	M	Sc	<	0.000760	M	Yb	<	0.000760				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 114.82 +3 6 In(H2O)6+3

Chemical Compatibility -Soluble in HCl, HNO3, and H2SO4. Avoid neutral and basic media. Stable with most metals and inorganic anions. The oxalate, sulfide, carbonate, hydroxide and phosphate are insoluble in water.

Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO3 / LDPE container.

In Containing Samples (Preparation and Solution) -Metal (Best dissolved in HCl / HNO3); Oxide (Soluble in mineral acids); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (Sulfuric/peroxide digestion or dry ash and dissolution in dilute HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 115 amu	1 ppt	n/a	115Sn, 99Ru16O
ICP-OES 158.583 nm	0.05 / 0.002 µg/mL	1	
ICP-OES 230.606 nm	0.1 / 0.03 µg/mL	1	Ni, Os
ICP-OES 325.609 nm	0.2 / 0.05 µg/mL	1	Mn, Mo, Th

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 21, 2023

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- February 21, 2028

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



INORGANIC VENTURES
Refine your results. Redefine your industry.

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

Certificate of Analysis

M6074
M6075
M6076
M6077

EXP.: 9/6/2029

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CHEM-CLP-4
Lot Number:	V2-MEB746762
Matrix:	3% (v/v) HNO3 3% (v/v) HF
Value / Analyte(s):	1 000 µg/mL ea: Boron, Molybdenum, Silicon, Tin, Titanium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Boron, B	**1 000 ± 5 µg/mL**	**Molybdenum, Mo**	**1 000 ± 5 µg/mL**
Silicon, Si	**1 000 ± 7 µg/mL**	**Tin, Sn**	**1 000 ± 5 µg/mL**
Titanium, Ti	**1 000 ± 6 µg/mL**		

Density: 1.033 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
B	ICP Assay	3107	190605
B	Calculated		See Sec. 4.2
Mo	ICP Assay	traceable to 3134	U2-MO739068
Si	ICP Assay	Traceable to 3150	S2-SI702546
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	traceable to 3162a	T2-TI725816

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 06, 2024

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- September 06, 2029

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



Hydrochloric Acid, 36.5-38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

avantor™ | J.T.Baker®

R → 10/13/24
Met dig

M 6121

Material No.: 9530-33
Batch No.: 0000275677
Manufactured Date: 2020/12/16
Retest Date: 2025/12/15
Revision No: 1

Certificate of Analysis

Test	Specification	Result
ACS - Assay (as HCl) (by acid-base titrn)	36.5 - 38.0 %	37.6
ACS - Color (APHA)	<= 10	5
ACS - Residue after Ignition	<= 3 ppm	1
ACS - Specific Gravity at 60°/60°F	1.185 - 1.192	1.190
ACS - Bromide (Br)	<= 0.005 %	< 0.005
ACS - Extractable Organic Substances	<= 5 ppm	1
ACS - Free Chlorine (as Cl_2)	<= 0.5 ppm	< 0.5
Phosphate (PO_4)	<= 0.05 ppm	< 0.03
Sulfate (SO_4)	<= 0.5 ppm	< 0.3
Sulfite (SO_3)	<= 0.8 ppm	0.3
Ammonium (NH_4)	<= 3 ppm	< 1
Trace Impurities - Arsenic (As)	<= 0.010 ppm	< 0.003
Trace Impurities - Aluminum (Al)	<= 10.0 ppb	< 0.2
Arsenic and Antimony (as As)	<= 5 ppb	< 3
Trace Impurities - Barium (Ba)	<= 1.0 ppb	< 0.2
Trace Impurities - Beryllium (Be)	<= 1.0 ppb	< 0.2
Trace Impurities - Bismuth (Bi)	<= 10.0 ppb	< 1.0
Trace Impurities - Boron (B)	<= 20.0 ppb	< 5.0
Trace Impurities - Cadmium (Cd)	<= 1.0 ppb	< 0.3
Trace Impurities - Calcium (Ca)	<= 50.0 ppb	29.7
Trace Impurities - Chromium (Cr)	<= 1.0 ppb	< 0.4
Trace Impurities - Cobalt (Co)	<= 1.0 ppb	< 0.3
Trace Impurities - Copper (Cu)	<= 1.0 ppb	< 0.1
Trace Impurities - Gallium (Ga)	<= 1.0 ppb	< 0.2

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

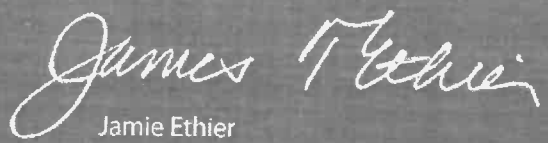
313

Material No.: 9530-33
Batch No.: 0000275677

Test	Specification	Result
Trace Impurities - Germanium (Ge)	<= 3.0 ppb	< 2.0
Trace Impurities - Gold (Au)	<= 4.0 ppb	< 0.2
Heavy Metals (as Pb)	<= 100 ppb	< 50
Trace Impurities - Iron (Fe)	<= 15.0 ppb	<1
Trace Impurities - Lead (Pb)	<= 1.0 ppb	< 0.5
Trace Impurities - Lithium (Li)	<= 1.0 ppb	0.2
Trace Impurities - Magnesium (Mg)	<= 10.0 ppb	0.4
Trace Impurities - Manganese (Mn)	<= 1.0 ppb	< 0.4
Trace Impurities - Mercury (Hg)	<= 0.5 ppb	0.1
Trace Impurities - Molybdenum (Mo)	<= 10.0 ppb	< 5.0
Trace Impurities - Nickel (Ni)	<= 4.0 ppb	< 0.3
Trace Impurities - Niobium (Nb)	<= 1.0 ppb	< 0.2
Trace Impurities - Potassium (K)	<= 9.0 ppb	< 2.0
Trace Impurities - Selenium (Se), For Information Only	ppb	1.0
Trace Impurities - Silicon (Si)	<= 100.0 ppb	< 10.0
Trace Impurities - Silver (Ag)	<= 1.0 ppb	< 0.3
Trace Impurities - Sodium (Na)	<= 100.0 ppb	< 5.0
Trace Impurities - Strontium (Sr)	<= 1.0 ppb	< 0.2
Trace Impurities - Tantalum (Ta)	<= 1.0 ppb	< 0.9
Trace Impurities - Thallium (Tl)	<= 5.0 ppb	< 2.0
Trace Impurities - Tin (Sn)	<= 5.0 ppb	< 0.8
Trace Impurities - Titanium (Ti)	<= 1.0 ppb	0.2
Trace Impurities - Vanadium (V)	<= 1.0 ppb	< 0.2
Trace Impurities - Zinc (Zn)	<= 5.0 ppb	0.3
Trace Impurities - Zirconium (Zr)	<= 1.0 ppb	< 0.1

For Laboratory, Research or Manufacturing Use
Product Information (not specifications):
Appearance (clear, fuming liquid)
Meets ACS Specifications

Country of Origin: US
Packaging Site: Phillipsburg Mfg Ctr & DC



Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

R -> 11/12/24

M6126

Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO_3)	69.0 - 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	1 ppm
Chloride (Cl)	≤ 0.08 ppm	< 0.03 ppm
Phosphate (PO_4)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO_4)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities - Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities - Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Bismuth (Bi)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Boron (B)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities - Calcium (Ca)	≤ 50.0 ppb	2.3 ppb
Trace Impurities - Chromium (Cr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities - Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Germanium (Ge)	≤ 20 ppb	< 10 ppb
Trace Impurities - Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 100 ppb	100 ppb
Trace Impurities - Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities - Lead (Pb)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities - Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result

For Microelectronic Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Jamie Croak
Director Quality Operations, Bioscience Production

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

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CERTIFIED WEIGHT REPORT:

R -> 1/13/25

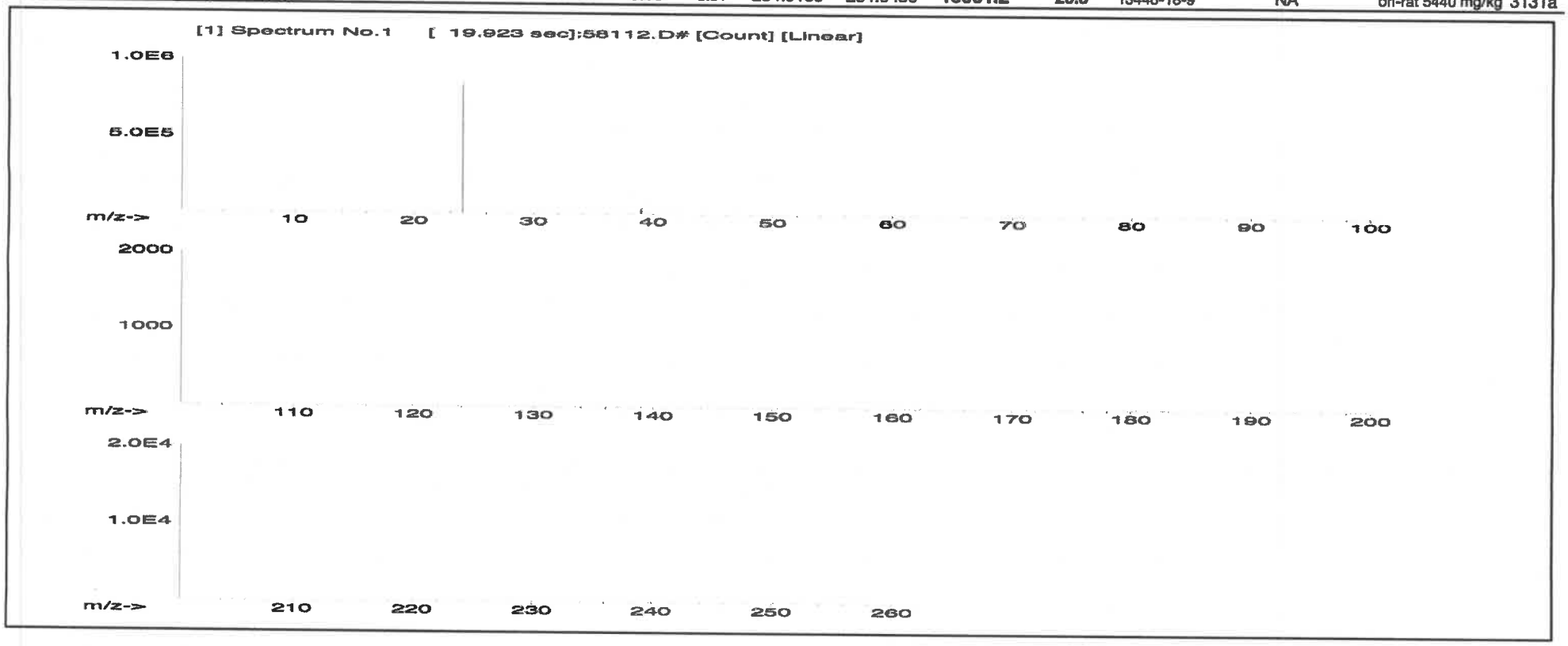
M 6127

			Lot #	
Part Number:	**58112**	**Solvent:**	24012496	Nitric Acid
Lot Number:	**112124**			
Description:	**Magnesium (Mg)**	2%	40.0 (mL)	Nitric Acid
Expiration Date:	112127			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**10000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Weight shown below was diluted to (mL):	2000.07	0.100	Flask Uncertainty	

Giovanni Esposito

Formulated By:	Giovanni Esposito	112124
Reviewed By:	Pedro L. Rentas	112124

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Magnesium nitrate hexahydrate (Mg)	IN030	MGD052023A1	10000	99.999	0.10	8.51	234.9183	234.9459	**10001.2**	**20.0**	13446-18-9	NA	orl-rat 5440 mg/kg	3131a



318

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	T	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

319

CERTIFIED WEIGHT REPORT:

R->1/13/28

M6128

Part Number:	**58025**	**Solvent:**	**Lot #** 24002546	Nitric Acid
Lot Number:	**101124**			
Description:	**Manganese (Mn)**	2%	80.0 (mL)	Nitric Acid
Expiration Date:	101127			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Weight shown below was diluted to (mL):	4000.2	0.10	Flask Uncertainty	

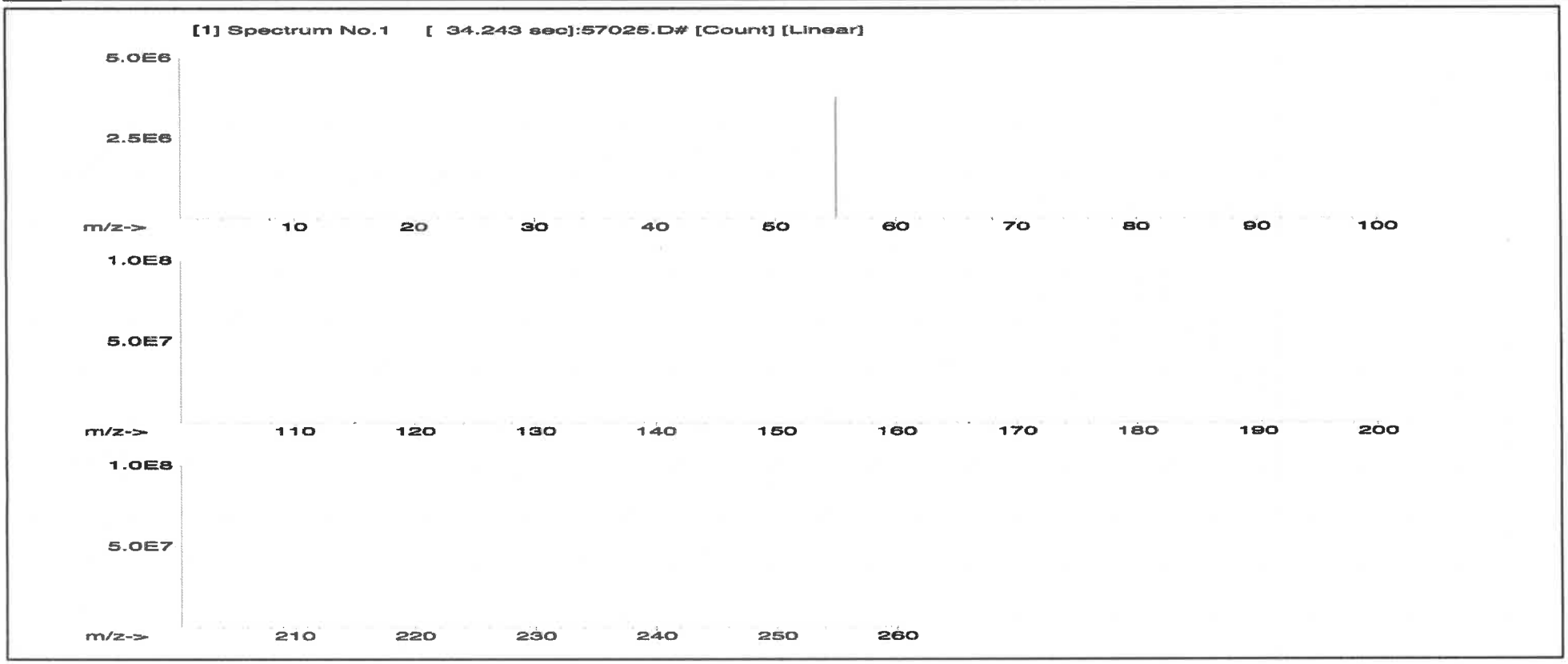
Giovanni Esposito

Formulated By:	Giovanni Esposito	101124

Pedro Rentas

Reviewed By:	Pedro L. Rentas	101124

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	**Actual Conc. (µg/mL)**	Expanded Uncertainty +/- (µg/mL)	**SDS Information** (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Manganese(II) nitrate hydrate (Mn)	IN031	MNM092020A1	1000	99.999	0.10	20.8	19.2322	19.2344	**1000.1**	**2.0**	15710-66-4	5 mg/m3	orl-rat >300mg/kg	3132



320

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	T	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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321

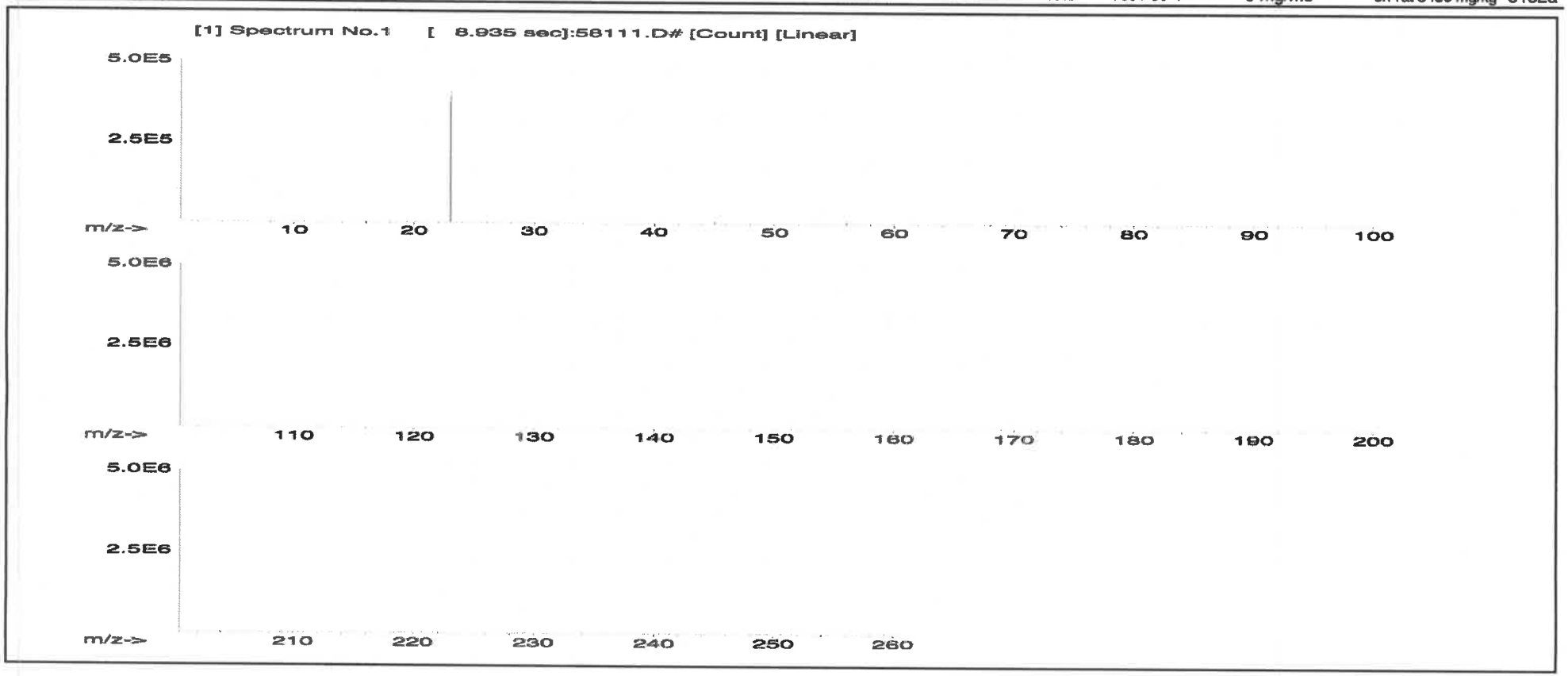
CERTIFIED WEIGHT REPORT:

R->1/13/25

Part Number:	**58111**		**Lot #**		
Lot Number:	**072424**	**Solvent:**	24002546	Nitric Acid	
Description:	**Sodium (Na)**				
		MG144 2%	80.0 (mL)	Nitric Acid	
Expiration Date:	072427				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**10000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	4000.2	0.10	Flask Uncertainty		

Formulated By:	Benson Chan	072424
Reviewed By:	Pedro L. Rentas	072424

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Sodium nitrate (Na)	IN036	NAV012015I1	10000	99.999	0.10	26.9	148.7096	######	**10000.0**	**20.0**	7631-99-4	5 mg/m3	orl-rat 3430 mg/kg	3152a



322

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Sc	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	T	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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CERTIFIED WEIGHT REPORT:

Part Number: 58030
Lot Number: 121724
Description: Zinc (Zn)

R → 1/13/25

M6145

Expiration Date: 121727
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 2000.1

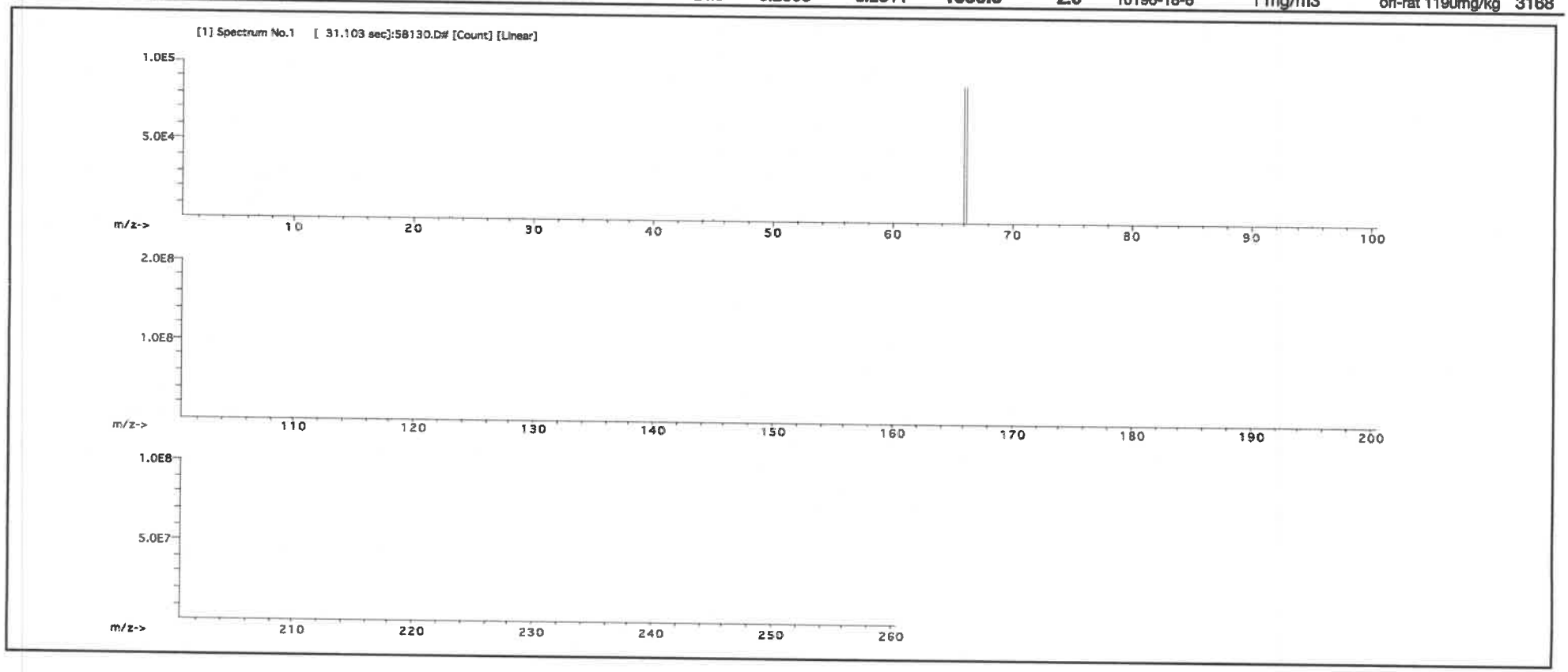
	Lot #	
Solvent:	24012496	Nitric Acid
2%	40.0 (mL)	Nitric Acid

5E-05 Balance Uncertainty
0.10 Flask Uncertainty

Aleah O'Brady
Formulated By: Aleah O'Brady 121724

Pedro Rentas
Reviewed By: Pedro L. Rentas 121724

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Zinc nitrate hexahydrate (Zn)	IN016	ZNE032021A1	1000	99.999	0.10	24.3	8.2308	8.2311	1000.0	2.0	10196-18-6	1 mg/m3	ori-rat 1190mg/kg	3168



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	T
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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R: 01/03/24 M5806, M5807

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325

CERTIFIED WEIGHT REPORT:

Part Number: 58111
Lot Number: 122223
Description: Sodium (Na)

Expiration Date: 122226
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB

Weight shown below was diluted to (mL): 3000.4 | 0.06 Flask Uncertainty

	Lot #	
Solvent:	24002546	Nitric Acid
2%	60.0 (mL)	Nitric Acid

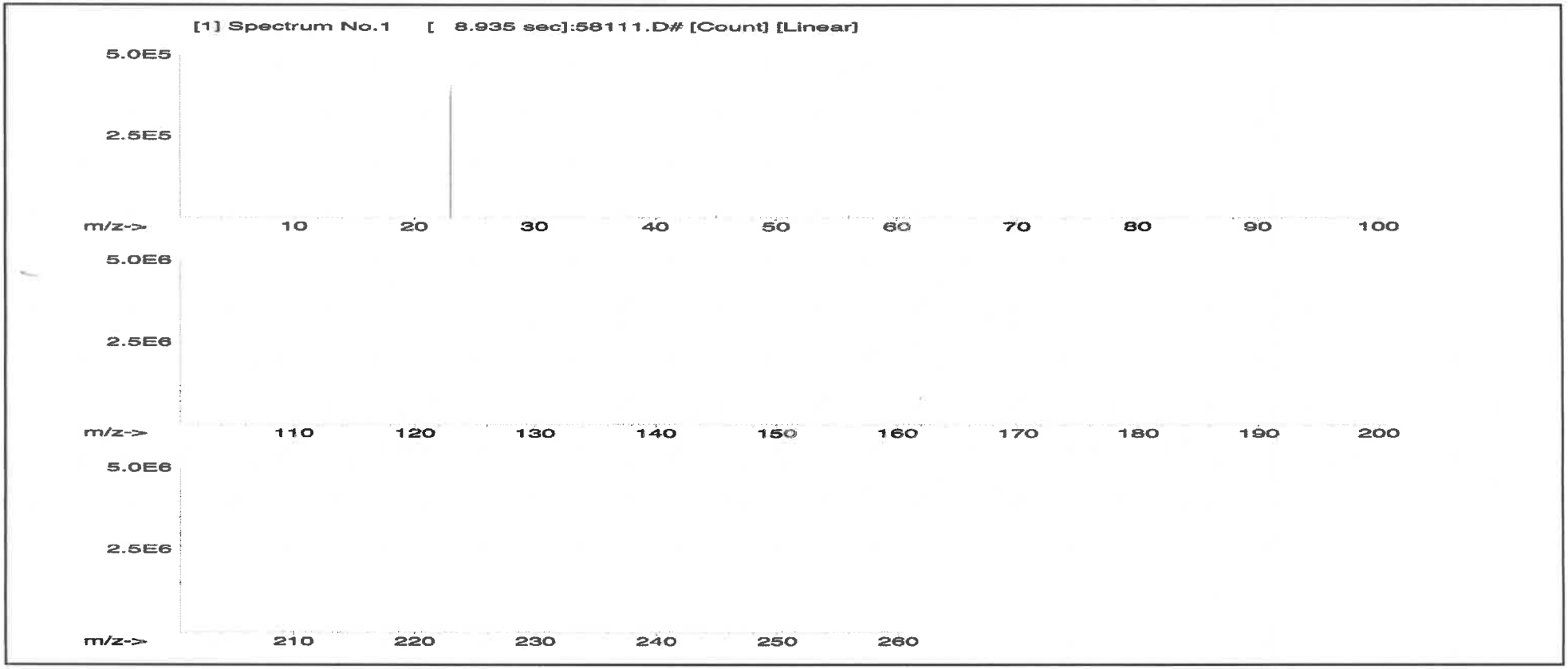
5E-05 Balance Uncertainty

Aleah O'Brady

Formulated By: Aleah O'Brady 122223

Reviewed By: Pedro L. Rentas 122223

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Sodium nitrate (Na)	IN036	NAV012015I1	10000	99.999	0.10	26.9	111.5406	111.5479	**10000.7**	**20.0**	7631-99-4	5 mg/m3	orl-rat 3430 mg/kg	3152a



326

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	T	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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R: 01/03/24 M5802, M5803

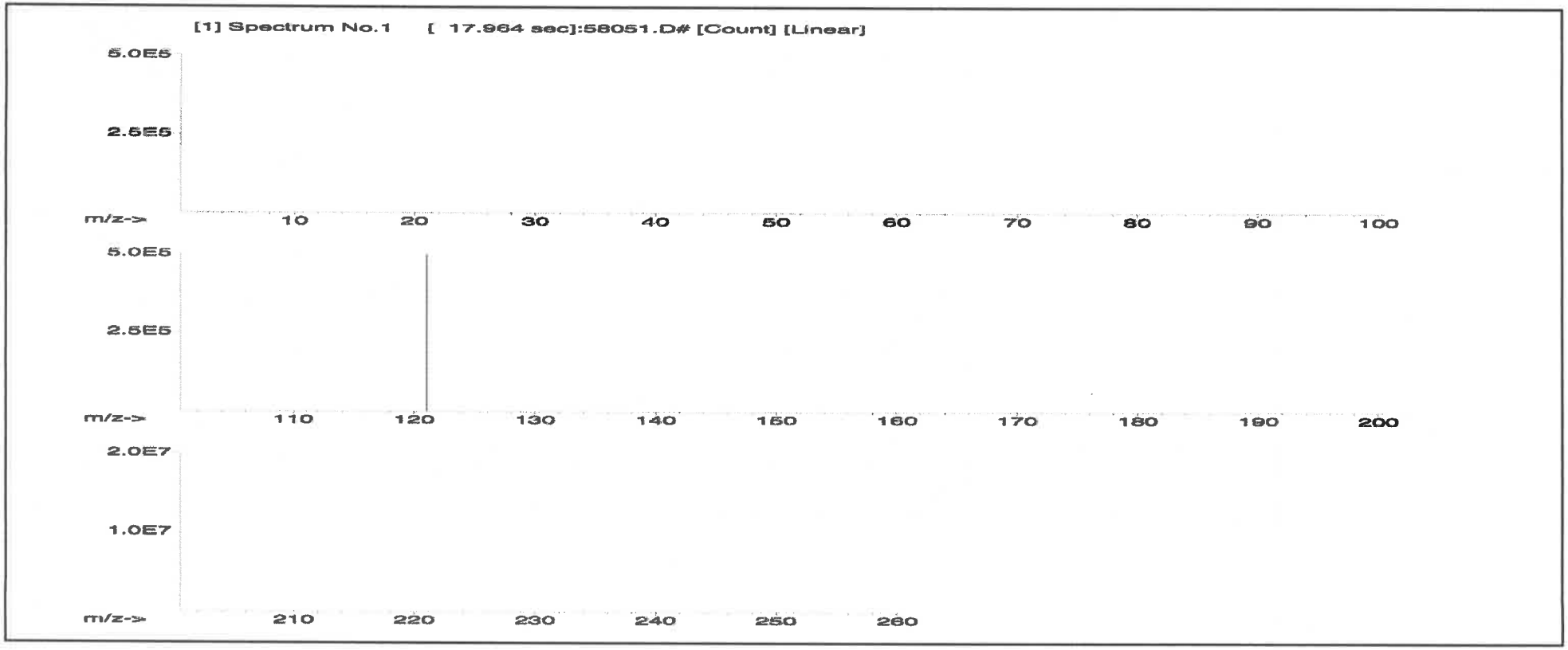
327

CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:		
Part Number:	**57051**	24002546	Nitric Acid		
Lot Number:	**120523**				
Description:	**Antimony (Sb)**				
		2.0%	60.0 (mL)	Nitric Acid	
Expiration Date:	120526				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Volume shown below was diluted to (mL):	3000.41	0.058	Flask Uncertainty		

Formulated By:	Lawrence Barry	120523
Reviewed By:	Pedro L. Rentas	120523

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Antimony (Sb)	58151	100923	0.1000	300.0	0.084	1000	10001.4	**1000.0**	2.1	7440-36-0	0.5 mg/m3	orl-rat 7000 mg/kg	3102a



328

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	T	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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M6030

R: 8/5/24

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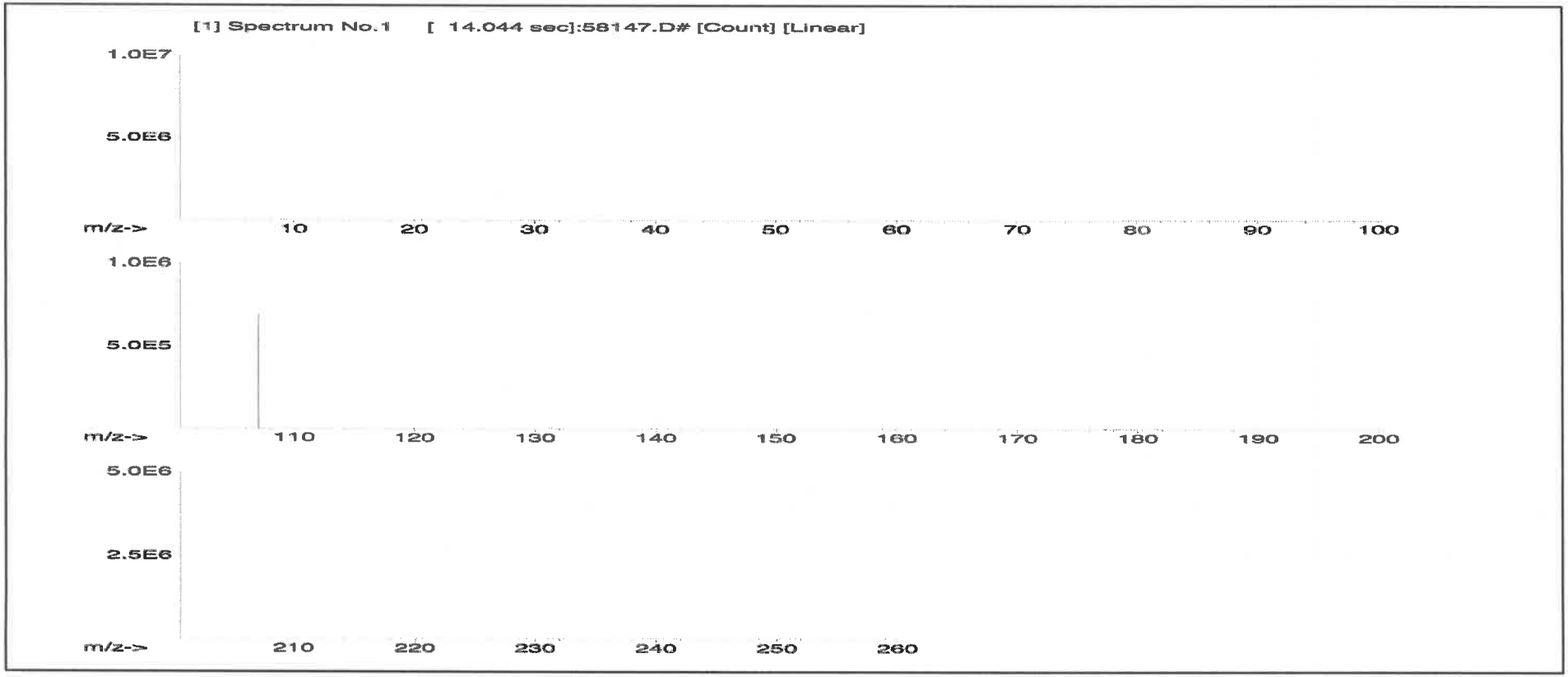
329

CERTIFIED WEIGHT REPORT:

Part Number:	**57047**		**Lot #**		
Lot Number:	**122823**	**Solvent:**	24002546	Nitric Acid	
Description:	**Silver (Ag)**				
		2%	80.0 (mL)	Nitric Acid	
Expiration Date:	122826				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	4000.30	0.058	Flask Uncertainty		

Formulated By:	Benson Chan	122823
Reviewed By:	Pedro L. Rentas	122823

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Silver nitrate (Ag)	IN035	J0612AGA1	1000.0	99.9999	0.10	63.7	6.27992	6.27998	**1000.0**	**2.0**	7761-88-8	10 ug/m3	NA	3151



330

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	T	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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R: 10/18/24

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331

CERTIFIED WEIGHT REPORT:

MG146

		Lot #	Solvent:		
Part Number:	**57051**	24002546	Nitric Acid		
Lot Number:	**071724**				
Description:	**Antimony (Sb)**				
		2.0%	40.0 (mL)	Nitric Acid	
Expiration Date:	071727				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Volume shown below was diluted to (mL):	2000.26	0.058	Flask Uncertainty		

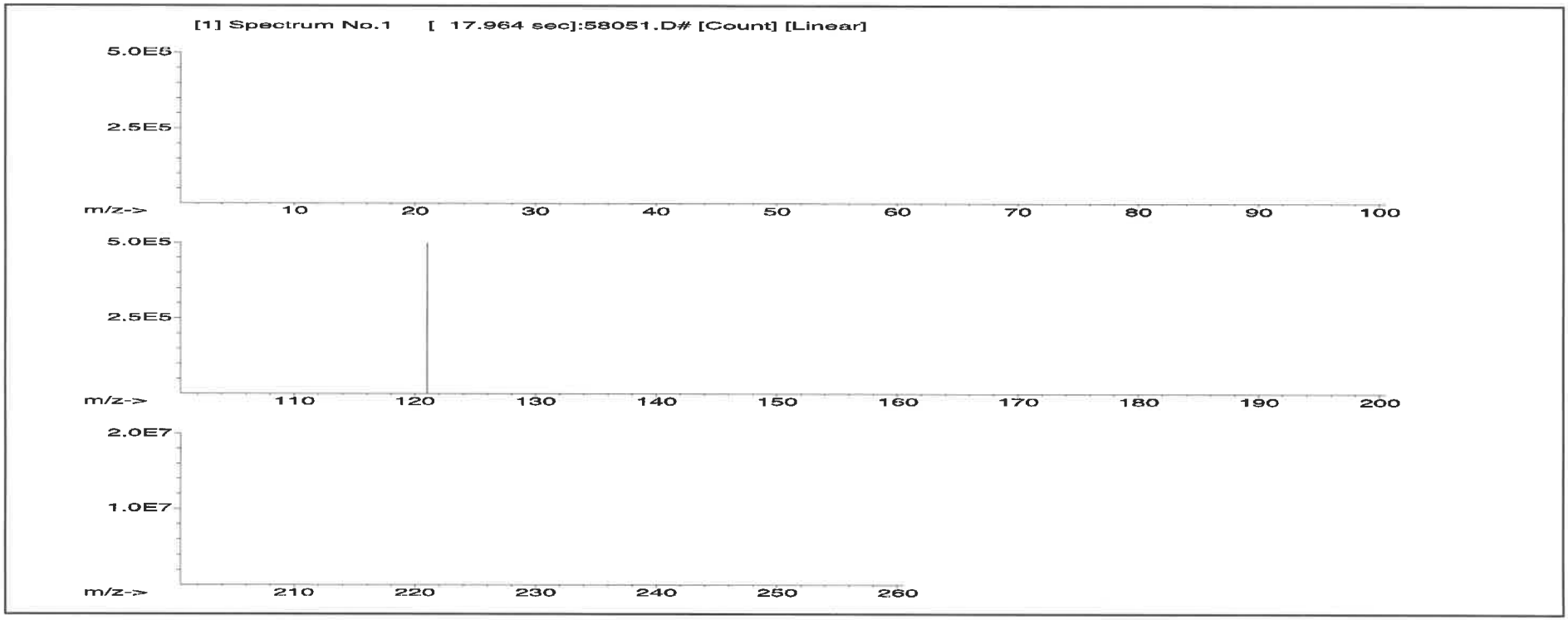
Giovanni Esposito

Formulated By:	Giovanni Esposito	071724

Pedro Rentas

Reviewed By:	Pedro L. Rentas	071724

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	**Final Conc. (µg/mL)**	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Antimony (Sb)	58151	060324	0.1000	200.0	0.084	1000	10001.4	**1000.0**	**2.2**	7440-36-0	0.5 mg/m3	orl-rat 7000 mg/kg	3102a



332

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	T	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

QATS LABORATORY INORGANIC REFERENCE MATERIAL INITIAL CALIBRATION VERIFICATION SOLUTIONS (ICV1, ICV5, AND ICV6)

M6147

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.

Contains Metals in Dilute Acidic or Cyanide in Basic Aqueous Solutions
HAZARDOUS MATERIAL

Safety Data Sheets Available Upon Request

(A) *SAMPLE DESCRIPTION*

Enclosed is a set of one (1) or more Aqueous Inorganic Reference Materials containing various analyte concentrations. ICV1 and ICV5 are in a matrix of dilute nitric acid. ICV6 is in a matrix of dilute basic solution. **For the reference material source in reporting ICVs use "USEPA". For the reference material lot number for the ICV1, ICV5, and ICV6 solutions use "ICV1-1014", "ICV5-0415", and "ICV6-0400", respectively.**

(B) *BREAKAGE OR MISSING ITEMS*

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) *ANALYSIS OF SAMPLES*

The Initial Calibration Verification Solutions (ICVs) are to be used to evaluate the accuracy of the initial calibrations of ICP, AA, and Cyanide colorimetric instruments, and are to be used with the CLP SOWs and revisions. The values for each element in the ICVs are listed below in µg/L (ppb) for the resulting solution(s) after the dilution of the concentrate(s) according to the following instructions. Use Class 'A' glassware to prepare the solution(s).

ICV1-1014 For ICP-AES analysis, use a 10-fold dilution by pipetting 10 mL of the ICV1 concentrate into a 100 mL volumetric flask and dilute to volume with 2% (v/v) nitric acid.

The Quality Assurance Technical Support (QATS) contract is operated by APTIM Federal Services, LLC.

ICV1-1014 For ICP-MS analysis, use a 50-fold dilution by pipetting 2 mL of the ICV1 concentrate into a 100 mL volumetric flask and dilute to volume with 1% (v/v) nitric acid.

ICV5-0415 For the cold vapor analysis of mercury by AA, use a 100-fold dilution by pipetting 1 mL of the ICV5 concentrate into a 100 mL volumetric flask and dilute to volume with 2% (v/v) nitric acid. The ICV5 concentrate is prepared in 0.05% (w/v) $K_2Cr_2O_7$ and 5% (v/v) nitric acid.

ICV6-0400 For the analysis of cyanide, use a 100-fold dilution by pipetting 1 mL of the ICV6 concentrate into a 100 mL volumetric flask and dilute to volume with Type II water. Distill this solution along with the samples before analysis. The cyanide concentrate is prepared from $K_3Fe(CN)_6$, Type II water, and 0.1 % sodium hydroxide, and will decompose rapidly if exposed to light.

NOTE: USE TYPE II WATER AND HIGH-PURITY ACIDS FOR ALL DILUTIONS.

(D) *CERTIFIED CONCENTRATIONS OF QATS ICV1, ICV5, AND ICV6 SOLUTIONS*

ICV1-1014		
Element	**Concentration (µg/L) (after 10-fold dilution)**	**Concentration (µg/L) (after 50-fold dilution)**
Al	2500	500
Sb	1000	200
As	1000	200
Ba	520	100
Be	510	100
Cd	510	100
Ca	10000	2000
Cr	520	100
Co	520	100
Cu	510	100
Fe	10000	2000
Pb	1000	200
Mg	6000	1200
Mn	520	100
Ni	530	110
K	9900	2000
Se	1000	200
Ag	250	50
Na	10000	2000
Tl	1000	210
V	500	100
Zn	1000	200

ICV5-0415		ICV6-0400	
Element	**Concentration (µg/L) (after 100-fold dilution)**	**Analyte**	**Concentration (µg/L) (after 100-fold dilution)**
Hg	4.0	**CN^-**	99

335

R : 04/20/21

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
"An ISO 9001:2015 Certified Program"

M6148

APTIM

Instructions for QATS Reference Material: *ICP-AES ICS*

QATS LABORATORY INORGANIC REFERENCE MATERIAL INTERFERENCE CHECK SAMPLE SET FOR ICP-AES (ICSA WITH ICSB)

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.

Contains Heavy Metals
HAZARDOUS MATERIAL

Safety Data Sheets
Available Upon Request

(A) *SAMPLE DESCRIPTION*

Enclosed is a set of one (1) or more bottles of Aqueous Reference Material, each composed of metals at various concentrations and prepared with nitrate salts and oxy-acids of the respective elements in a 5% nitric acid matrix. **For the reference material source in reporting ICSA and ICSAB mixture use "USEPA". For the reference material lot number for the ICSA use "ICSA-1211" and for the ICSAB mixture use "ICSA-1211+ICSB-0710".**

CAUTION: The bottle(s) should be protected from light during storage to ensure the stability of silver which is contained in the ICSB solution. The bottle(s) should be stored at room temperature. **Do not allow the solution(s) to freeze.**

(B) *BREAKAGE OR MISSING ITEMS*

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) *ANALYSIS OF SAMPLES*

The interference check sample set is to be used to verify inter-element and background correction factors of inductively-coupled plasma (ICP) spectrometers. This reference material set consists of two (2) concentrated solutions. The ICSA solution contains the four (4) interferent elements: Al, Ca, Fe, and Mg. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be,

The Quality Assurance Technical Support (QATS) contract is operated by APTIM Federal Services, LLC.

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSAB solution by ICP-AES.

(D) *"CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)*

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.

QATS LABORATORY INORGANIC REFERENCE MATERIAL INTERFERENCE CHECK SAMPLE SET FOR ICP-AES (ICSA WITH ICSB)

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.

Contains Heavy Metals
HAZARDOUS MATERIAL

Safety Data Sheets
Available Upon Request

(A) *SAMPLE DESCRIPTION*

Enclosed is a set of one (1) or more bottles of Aqueous Reference Material, each composed of metals at various concentrations and prepared with nitrate salts and oxy-acids of the respective elements in a 5% nitric acid matrix. **For the reference material source in reporting ICSA and ICSAB mixture use "USEPA". For the reference material lot number for the ICSA use "ICSA-1211" and for the ICSAB mixture use "ICSA-1211+ICSB-0710".**

CAUTION: The bottle(s) should be protected from light during storage to ensure the stability of silver which is contained in the ICSB solution. The bottle(s) should be stored at room temperature. **Do not allow the solution(s) to freeze.**

(B) *BREAKAGE OR MISSING ITEMS*

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) *ANALYSIS OF SAMPLES*

The interference check sample set is to be used to verify inter-element and background correction factors of inductively-coupled plasma (ICP) spectrometers. This reference material set consists of two (2) concentrated solutions. The ICSA solution contains the four (4) interferent elements: Al, Ca, Fe, and Mg. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be,

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSAB solution by ICP-AES.

(D) *"CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)*

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.

INORGANIC VENTURES™
Refine your results. Redefine your industry.

Certificate of Analysis

R: 8/5/24 M6019

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).



2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGSR1
Lot Number:	U2-SR730227
Matrix:	0.1% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Strontium
Starting Material:	SrCO3
Starting Material Lot#:	M2-2192
Starting Material Purity:	99.9993%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1001 ± 3 µg/mL

Density: 1.000 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	**998 ± 4 µg/mL** ICP Assay NIST SRM Traceable to 3153a Lot Number: K2-SR650985
Assay Method #2	**1001 ± 3 µg/mL** EDTA NIST SRM 928 Lot Number: 928
Assay Method #3	**1001 ± 2 µg/mL** Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.001980	M	Eu	<	0.000495	O	Na		0.000200	M	Se	<	0.013862	O	Zn		0.000143
O	Al		0.000370	O	Fe		0.000410	M	Nb	<	0.000495	i	Si	<		M	Zr	<	0.000495
M	As	<	0.000495	M	Ga	<	0.000495	M	Nd	<	0.000495	M	Sm	<	0.000495				
M	Au	<	0.000989	M	Gd	<	0.000495	O	Ni	<	0.007631	M	Sn	<	0.000990				
M	B	<	0.039606	M	Ge	<	0.000495	M	Os	<	0.000494	s	Sr	<					
M	Ba		0.006486	M	Hf	<	0.000495	i	P	<		M	Ta	<	0.000495				
M	Be	<	0.000990	M	Hg	<	0.000989	M	Pb	<	0.002970	M	Tb	<	0.000495				
M	Bi	<	0.000495	M	Ho	<	0.000495	M	Pd	<	0.003957	M	Te	<	0.027724				
O	Ca		0.004255	M	In	<	0.000495	M	Pr	<	0.000495	M	Th	<	0.000990				
M	Cd		0.001339	M	Ir	<	0.000494	M	Pt	<	0.002970	M	Ti	<	0.005940				
M	Ce	<	0.004950	O	K	<	0.008184	M	Rb	<	0.002970	M	Tl	<	0.000495				
M	Co	<	0.000495	M	La	<	0.000495	M	Re	<	0.000495	M	Tm	<	0.000495				
O	Cr	<	0.003207	O	Li	<	0.000884	O	Rh	<	0.012829	M	U	<	0.001485				
M	Cs	<	0.000990	M	Lu	<	0.002970	M	Ru	<	0.000989	M	V	<	0.001980				
M	Cu		0.000099	O	Mg		0.000064	i	S	<		M	W	<	0.003960				
M	Dy	<	0.000495	O	Mn		0.000066	M	Sb	<	0.014852	O	Y	<	0.000995				
M	Er	<	0.000495	M	Mo	<	0.001980	M	Sc	<	0.001980	M	Yb	<	0.000495				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 87.62 +2 6 $Sr(H_2O)_6^{+2}$

Chemical Compatibility - Soluble in HCl, and HNO_3. Avoid H_2SO_4, HF and neutral to basic media. Stable with most metals and inorganic anions forming insoluble silicate, carbonate, hydroxide, oxide, fluoride, sulfate, oxalate, chromate, arsenate and tungstate in neutral aqueous media.

Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1 - 3.5% HNO_3 / LDPE container.

Sr Containing Samples (Preparation and Solution) -Metal (Best dissolved in diluted HNO_3); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (Dry ash and dissolution in dilute HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 88 amu	1200 ppt	N/A	72Ge16O, 176Yb+2, 176Lu+2 , 176Hf+2
ICP-OES 407.771 nm	0.0004 / 0.00006 µg/mL	1	U, Ce
ICP-OES 421.552 nm	0.0008 / 0.00004 µg/mL	1	Rb
ICP-OES 460.733 nm	0.07 / 0.003 µg/mL	1	Ce

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 03, 2023

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **March 03, 2028**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

R: 03/16/23 M5473, M5474, M5475, M5476

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

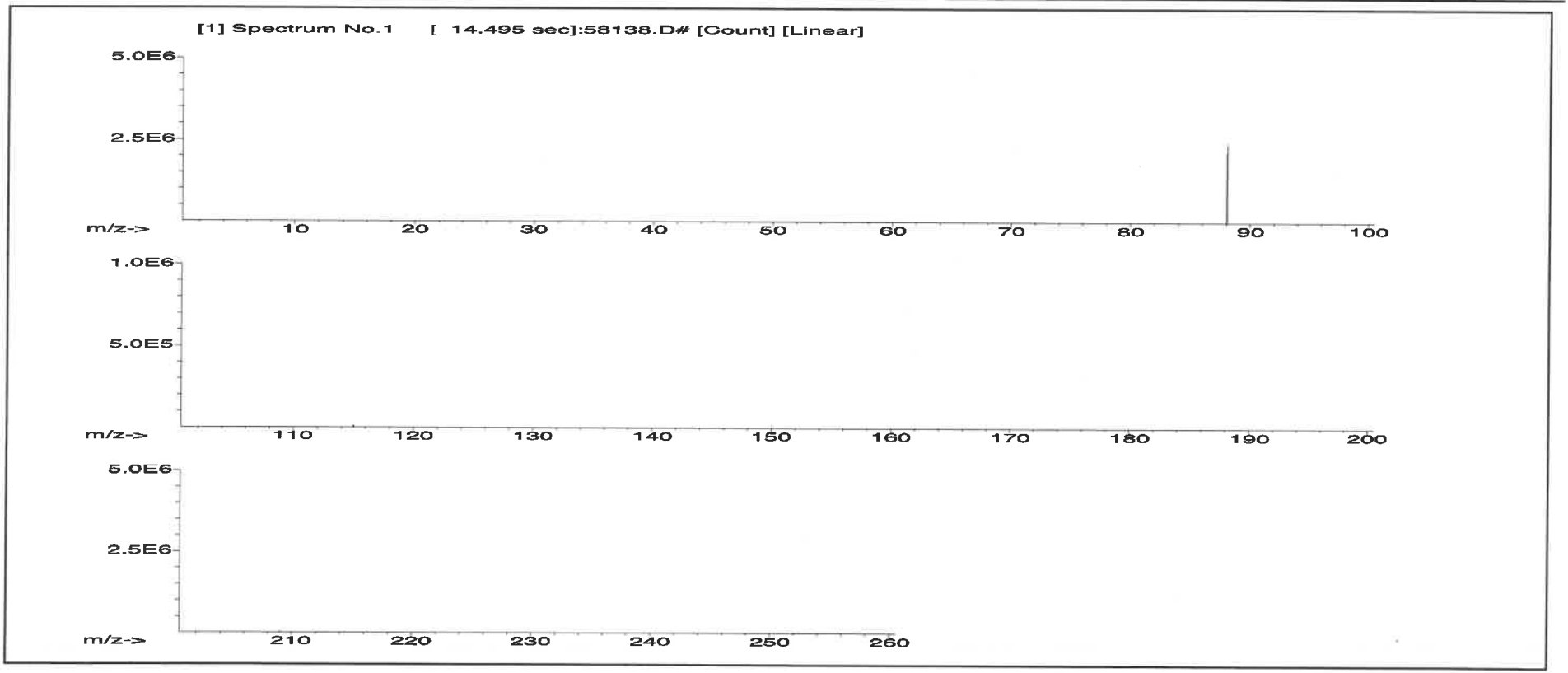
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CERTIFIED WEIGHT REPORT:

Part Number:	**56138**		**Lot #**		
Lot Number:	**082922**	**Solvent:**	20510011	Nitric Acid	
Description:	**Strontium (Sr)**	2%	20.0 (mL)	Nitric Acid	
Expiration Date:	082925				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**10000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	1000.12	0.058	Flask Uncertainty		

Formulated By:	Lawrence Barry	082922
Reviewed By:	Pedro L. Rentas	082922

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	**Actual Conc. (µg/mL)**	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Strontium nitrate (Sr)	IN017	SRZ022018A1	10000	99.997	0.10	41.2	24.2756	24.2758	**10000.1**	**20.0**	10042-76-9	NA	orl-rat >2000mg/kg	3153a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	T	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certified Reference Material CRM

R ! 8/5/24

M6023

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

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CERTIFIED WEIGHT REPORT:

Part Number:	**57081**		**Lot #**		
Lot Number:	**062724**	**Solvent:**	24002546	Nitric Acid	
Description:	**Thallium (Tl)**				
		2%	40.0 (mL)	Nitric Acid	
Expiration Date:	062727				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.1	0.10	Flask Uncertainty		

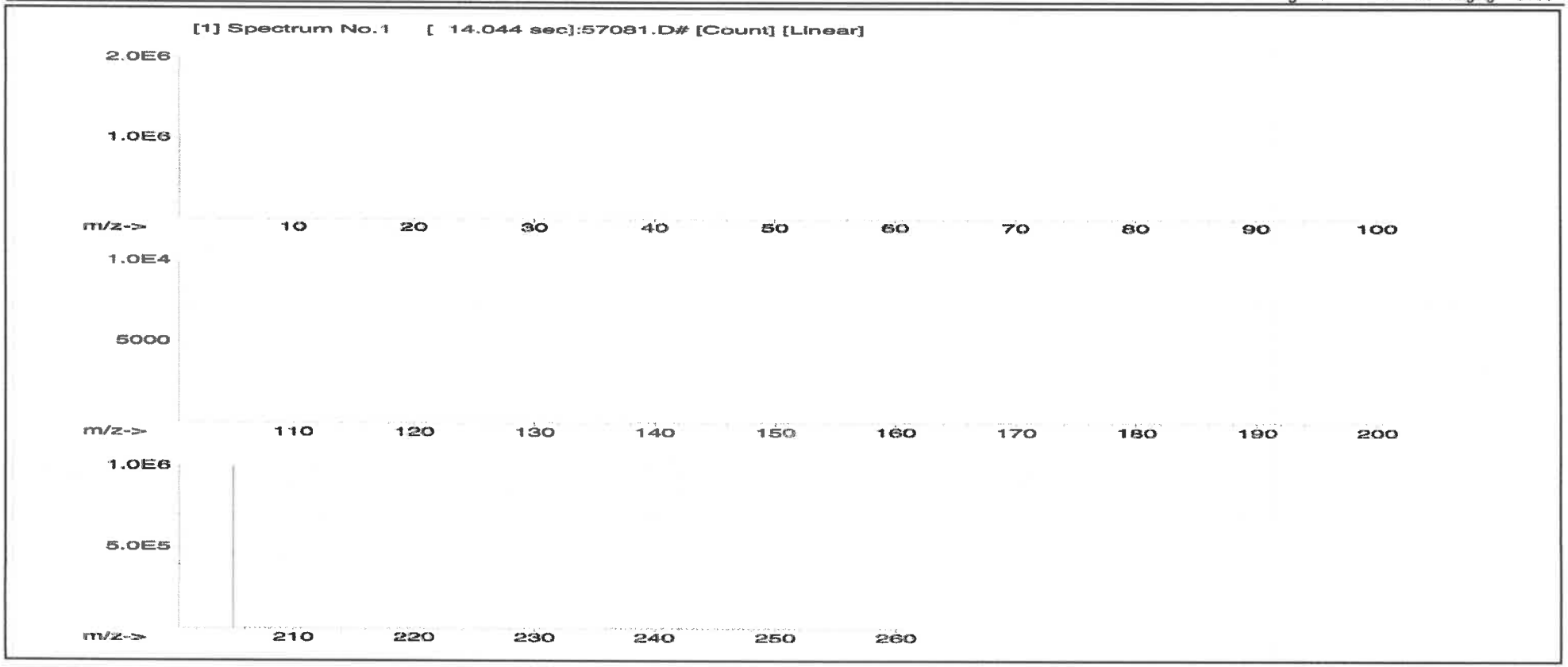
Aleah O'Brady

Formulated By:	Aleah O'Brady	062724

Pedro Rentas

Reviewed By:	Pedro L. Rentas	062724

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Thallium nitrate (Tl)	IN037	BCCF4399	1000	99.999	0.10	77.0	2.5975	2.5977	**1000.1**	**2.0**	10102-45-1	0.1 mg/m3	orl-mus 15mg/kg	3158



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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	T	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:



* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certified Reference Material CRM

M6021

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
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Rc. 8/5/24

347

CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57023**	24002546	Nitric Acid	
Lot Number:	**062424**			
Description:	**Vanadium (V)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	062427			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.3	0.06	Flask Uncertainty	

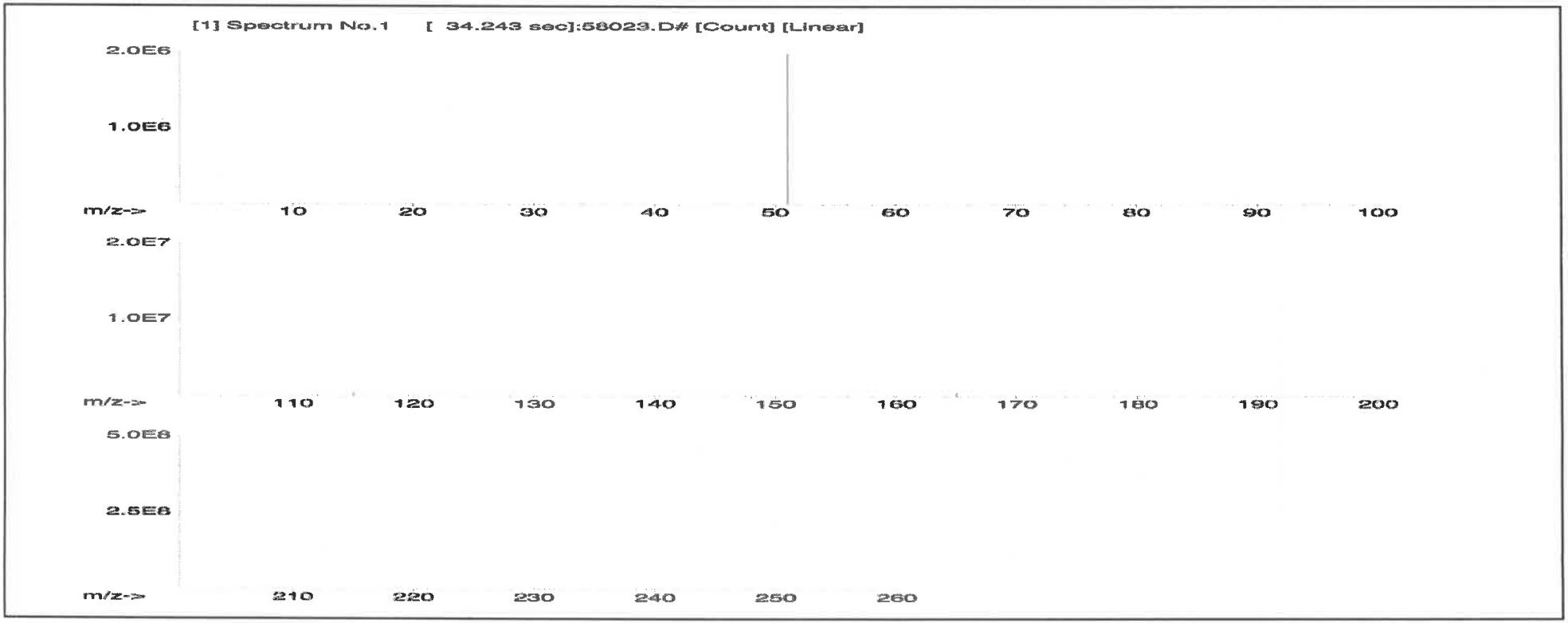
Aleah O'Brady

Formulated By:	Aleah O'Brady	062424

Pedro Rentas

Reviewed By:	Pedro L. Rentas	062424

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium metavanadate (V)	58123	021224	0.1000	200.0	0.084	1000	10000.3	**1000.0**	**2.2**	7803-55-6	0.05 mg/m3	orl-rat 58.1mg/kg	3165



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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	T
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

Alliance TECHNICAL GROUP

Water Metals Preparation Sheet

PB166571

SOP ID : M3050B-Digestion-20, MSFAM01.1-Trace Metals-2

SDG No : MBHHA1

Matrix : WATER

Pippete ID: ICP A

Balance ID : N/A

Filter paper ID : N/A

pH Strip ID : N/A

Hood ID : #3

Block ID: 1. HOT BLOCK #1 2. N/A

Start Digest Date: 02/05/2025 **Time :** 12:30 **Temp :** 96 °C

End Digest Date: 02/05/2025 **Time :** 14:35 **Temp :** 96 °C

Digestion tube ID: M5595

Block thermometer ID: MET-DIG. #1

Dig Technician Signature: [signature]

Supervisor Signature: [signature]

Temp : 1. 96°C 2. N/A

Standared Name	MLS USED	STD REF. # FROM LOG
LCSW	050	MP84063
Spike Sol 6	0.25	MP84070
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Chemical Used	ML/SAMPLE USED	Lot Number
1:1 HNO3	1.00	MP84041
1:1 HCL	0.50	MP84297
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Extraction Conformance/Non-Conformance Comments:

HOT BLOCK #1 CELL #55 : 96 C

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
02/05/25 15:35	SIGN. met. dige.	[signature] Metals Lab
	Preparation Group	Analysis Group

Alliance TECHNICAL GROUP

Water Metals Preparation Sheet

PB166571

Lab Sample ID	Client Sample ID	pH	Initial Vol (ml)	Final Vol (ml)	Color Before	Color After	Clarity Before	Clarity After	Comment	Prep Pos
PB166494TB	PB166494TB	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	1
PB166571BL	PBW571	<2	50	50	Colorless	Colorless	Clear	Clear	MP84063	2
PB166571BS	LCS571	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	3
Q1273-01	MBHHA0	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	4
Q1273-02	MBHHA1	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	5
Q1273-03	MBHHA2	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	6
Q1273-04	MBHHA2D	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	7
Q1273-05	MBHHA2S	<2	50	50	Colorless	Colorless	Clear	Clear	MP84070	8

284 Sheffield Street, Mountainside, New Jersey 07092, Phone : 908 789 8900,
Fax : 908 789 8922

Instrument ID: P5

Daily Analysis Runlog For Sequence/QCBatch ID # LB134617

Review By	Kareem Khairalla	Review On	2/7/2025 3:55:23 PM
Supervise By	Janvi Patel	Supervise On	2/10/2025 1:38:43 PM

STD. NAME	STD REF.#
ICAL Standard	MP84204,MP84388,MP84386,MP84385,MP84384,MP84383,MP84381
ICV Standard	MP84389
CCV Standard	MP84392
ICSA Standard	MP84390,MP84391
CRI Standard	
LCS Standard	MP84063
Chk Standard	MP84218,MP84219

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	02/06/25 12:47		Kareem	OK
2	S1	S01	CAL2	02/06/25 12:51		Kareem	OK
3	S2	S02	CAL3	02/06/25 12:55		Kareem	OK
4	S3	S03	CAL4	02/06/25 12:59		Kareem	OK
5	S4	S04	CAL5	02/06/25 13:03		Kareem	OK
6	S5	S05	CAL6	02/06/25 13:07		Kareem	OK
7	S6	S06	CAL7	02/06/25 13:11		Kareem	OK
8	ICV002	ICV002	ICV	02/06/25 14:09	Inst. paused for calibration review	Kareem	OK
9	ICB002	ICB002	ICB	02/06/25 14:14		Kareem	OK
10	ICSA002	ICSA002	ICSA	02/06/25 14:18		Kareem	OK
11	ICSAB002	ICSAB002	ICSAB	02/06/25 14:25	Inst. paused for review	Kareem	OK
12	CCV003	CCV003	CCV	02/06/25 14:29		Kareem	OK
13	CCB003	CCB003	CCB	02/06/25 14:32		Kareem	OK
14	Q1151-13	MC0B02	SAM	02/06/25 14:36		Kareem	OK
15	Q1251-10	E1498	SAM	02/06/25 14:41		Kareem	OK
16	PB166571BL	PBW571	MB	02/06/25 14:45		Kareem	OK
17	PB166571BS	LCS571	LCS	02/06/25 14:49		Kareem	OK
18	PB166568BL	PBW568	MB	02/06/25 14:53		Kareem	OK

284 Sheffield Street, Mountainside, New Jersey 07092, Phone : 908 789 8900,
Fax : 908 789 8922

Instrument ID: P5

Daily Analysis Runlog For Sequence/QCBatch ID # LB134617

Review By	Kareem Khairalla	Review On	2/7/2025 3:55:23 PM
Supervise By	Janvi Patel	Supervise On	2/10/2025 1:38:43 PM

STD. NAME	STD REF.#
ICAL Standard	MP84204,MP84388,MP84386,MP84385,MP84384,MP84383,MP84381
ICV Standard	MP84389
CCV Standard	MP84392
ICSA Standard	MP84390,MP84391
CRI Standard	
LCS Standard	MP84063
Chk Standard	MP84218,MP84219

19	PB166568BS	LCS568	LCS	02/06/25 14:57		Kareem	OK
20	PB166494TB	LEB494	MB	02/06/25 15:01		Kareem	OK
21	Q1272-03A	MBHHA2A	PS	02/06/25 15:05	NOT USE	Kareem	Not Ok
22	Q1273-01	MBHHA0	SAM	02/06/25 15:08		Kareem	OK
23	Q1273-02	MBHHA1	SAM	02/06/25 15:12		Kareem	OK
24	Q1273-03	MBHHA2	SAM	02/06/25 15:16	NOT USE	Kareem	Not Ok
25	Q1273-04	MBHHA2D	DUP	02/06/25 15:20	NOT USE	Kareem	Not Ok
26	Q1273-03L	MBHHA2L	SD	02/06/25 15:24	NOT USE	Kareem	Not Ok
27	Q1273-05	MBHHA2S	MS	02/06/25 15:28	NOT USE	Kareem	Not Ok
28	CCV004	CCV004	CCV	02/06/25 15:31		Kareem	OK
29	CCB004	CCB004	CCB	02/06/25 15:35		Kareem	OK

284 Sheffield Street, Mountainside, New Jersey 07092, Phone : 908 789 8900,
Fax : 908 789 8922

Instrument ID: P5

Daily Analysis Runlog For Sequence/QCBatch ID # LB134644

Review By	Kareem Khairalla	Review On	2/10/2025 3:29:53 PM
Supervise By	Mohan Bera	Supervise On	2/10/2025 5:27:03 PM

STD. NAME	STD REF.#
ICAL Standard	MP84204,MP84388,MP84386,MP84385,MP84384,MP84383,MP84381
ICV Standard	MP84389
CCV Standard	MP84392
ICSA Standard	MP84390,MP84391
CRI Standard	
LCS Standard	
Chk Standard	MP84218,MP84219

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	02/07/25 13:18		Kareem	OK
2	S1	S01	CAL2	02/07/25 13:22		Kareem	OK
3	S2	S02	CAL3	02/07/25 13:26		Kareem	OK
4	S3	S03	CAL4	02/07/25 13:30		Kareem	OK
5	S4	S04	CAL5	02/07/25 13:34		Kareem	OK
6	S5	S05	CAL6	02/07/25 13:37		Kareem	OK
7	S6	S06	CAL7	02/07/25 13:42		Kareem	OK
8	ICV003	ICV003	ICV	02/07/25 13:46		Kareem	OK
9	ICB003	ICB003	ICB	02/07/25 13:51		Kareem	OK
10	ICSA003	ICSA003	ICSA	02/07/25 13:55		Kareem	OK
11	ICSAB003	ICSAB003	ICSAB	02/07/25 13:59		Kareem	OK
12	CCV005	CCV005	CCV	02/07/25 14:02		Kareem	OK
13	CCB005	CCB005	CCB	02/07/25 14:06		Kareem	OK
14	Q1314-01	MBHHA3	SAM	02/07/25 14:10		Kareem	OK
15	Q1314-02	MBHHA4	SAM	02/07/25 14:14		Kareem	OK
16	Q1314-03	MBHHA5	SAM	02/07/25 14:18		Kareem	OK
17	Q1314-04	MBHHA6	SAM	02/07/25 14:22		Kareem	OK
18	Q1314-05	MBHHA7	SAM	02/07/25 14:26		Kareem	OK

284 Sheffield Street, Mountainside, New Jersey 07092, Phone : 908 789 8900,
Fax : 908 789 8922

Instrument ID: P5

Daily Analysis Runlog For Sequence/QCBatch ID # LB134644

Review By	Kareem Khairalla	Review On	2/10/2025 3:29:53 PM
Supervise By	Mohan Bera	Supervise On	2/10/2025 5:27:03 PM

STD. NAME	STD REF.#
ICAL Standard	MP84204,MP84388,MP84386,MP84385,MP84384,MP84383,MP84381
ICV Standard	MP84389
CCV Standard	MP84392
ICSA Standard	MP84390,MP84391
CRI Standard	
LCS Standard	
Chk Standard	MP84218,MP84219

19	Q1314-06	MBHHA7D	DUP	02/07/25 14:30		Kareem	OK
20	Q1314-05L	MBHHA7L	SD	02/07/25 14:34		Kareem	OK
21	Q1314-07	MBHHA7S	MS	02/07/25 14:38		Kareem	OK
22	PB166600BL	PBS600	MB	02/07/25 14:42		Kareem	OK
23	PB166600BS	LCS600	LCS	02/07/25 14:46		Kareem	OK
24	Q1273-03	MBHHA2	SAM	02/07/25 14:49		Kareem	OK
25	Q1273-04	MBHHA2D	DUP	02/07/25 14:53		Kareem	OK
26	Q1273-03L	MBHHA2L	SD	02/07/25 14:57		Kareem	OK
27	Q1273-05	MBHHA2S	MS	02/07/25 15:01		Kareem	OK
28	CCV006	CCV006	CCV	02/07/25 15:05		Kareem	OK
29	CCB006	CCB006	CCB	02/07/25 15:09		Kareem	OK

Alliance TECHNICAL GROUP

TCLP EXTRACTION LOGPAGE

PB166494

SOP ID : M1311-TCLP-15

SDG No : MBHHA1

Start Prep Date : 02/03/2025 **Time :** 14:30

Weigh By : JP

End Prep Date : 02/04/2025 **Time :** 07:37

Balance ID : WC SC-7

Combination Ratio : 20

pH Meter ID : WC PH METER-1

ZHE Cleaning Batch : ~~N/A~~ 78

Extraction By : JP

Initial Room Temperature: 23 °C

Filter By : JP

Final Room Temperature: 22 °C

Pippete ID : WC

TCLP Technician Signature : JP

Tumbler ID : T-2

Supervisor By : 12

TCLP Filter ID : 114771

Standared Name	MLS USED	STD REF. # FROM LOG
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Chemical Used	ML/SAMPLE U	Lot Number
TCLP-FLUID-1	N/A	WP110801
HCL-TCLP,1N	N/A	WP110803
HNO3-TCLP,1N	N/A	WP110804
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
40ml VOA Vials	N/A	405130101
1:1 HNO3	N/A	MP84041

Extraction Conformance/Non-Conformance Comments:

Matrix spikes are added after fiftration and before preservation. Tumbler T-2 checked,30 rpm.

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
02/04/25 10:00	JP TCLP Room	S123. Mandy
	Preparation Group	**Analysis Group**

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TCLP EXTRACTION LOGPAGE

PB166494

Sample ID	ClientID	TCLP Vessel ID	Sample Wt (g)	Volume Extraction Fluid #1 (mL)	Multi phasic	Phase Miscible	Phases Combined	Final Leachate PH	Metals Leachate Adj. PH	Prep Pos
PB166494TB	LEB494	14	N/A	2000	N/A	N/A	N/A	4.93	1.05	T-2
Q1273-01	MBHHA0	11	100.02	2000	N/A	N/A	N/A	4.82	1.49	T-2
Q1273-02	MBHHA1	12	100.03	2000	N/A	N/A	N/A	4.84	1.40	T-2
Q1273-03	MBHHA2	13	100.02	2000	N/A	N/A	N/A	5.00	1.36	T-2
Q1273-04	MBHHA2D	13	100.02	2000	N/A	N/A	N/A	5.00	1.36	T-2
Q1273-05	MBHHA2S	13	100.02	2000	N/A	N/A	N/A	5.00	1.36	T-2

SampleID	ClientID	Sample Weight (g)	Filter Weight (g)	Filtrate (mL)	Filter + Solid (After 100°C)	% solids	% Dry Solids
PB166494TB	LEB494	N/A	N/A	N/A	N/A	N/A	N/A
Q1273-01	MBHHA0	N/A	N/A	N/A	N/A	100	N/A
Q1273-02	MBHHA1	N/A	N/A	N/A	N/A	100	N/A
Q1273-03	MBHHA2	N/A	N/A	N/A	N/A	100	N/A
Q1273-04	MBHHA2D	N/A	N/A	N/A	N/A	100	N/A
Q1273-05	MBHHA2S	N/A	N/A	N/A	N/A	100	N/A

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TCLP Fluid Determination

PB166494

Hot Block ID : WC S-1 /WC S-2

Thermometer ID : FLASHPOINT

SampleID	ClientID	Sample Weight (g)	Volume DI Water (mL)	PH after 5 min stir	PH after 10 min stir	Extraction Fluid 1 or 2	pH Extraction Fluid
PB166494TB	LEB494	N/A	N/A	N/A	N/A	#1	4.93
Q1273-01	MBHHA0	5.02	96.5	6.09	3.39	#1	4.93
Q1273-02	MBHHA1	5.03	96.5	7.51	4.43	#1	4.93
Q1273-03	MBHHA2	5.04	96.5	7.45	4.36	#1	4.93
Q1273-04	MBHHA2D	5.04	96.5	7.45	4.36	#1	4.93
Q1273-05	MBHHA2S	5.04	96.5	7.45	4.36	#1	4.93

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Login Summary Report

Order ID :	Q1273	Order Date :	2/1/2025 9:25:00 AM	Project Mgr :	Deepak
Client :	USEPA CLP SMO	Project :	51988	Report Type :	USEPA CLP
Contact :	Anita Kapadia	Receive Date :	2/1/2025 9:25:00 AM	EDD Type :	EPA CLP
Date Sign Off :	2/3/2025 11:59:30 AM				

Sample ID	Client ID	Matrix	Sampling Date	Test	Test Group	Method	TAT Days	Fax Due Date	HC Due Date
Q1273-01	MBHHA0	Solid	01/30/2025						
				TCLP ICP Metals		SFAM_AES	10	02/17/2025	02/17/2025
Q1273-02	MBHHA1	Solid	01/30/2025						
				TCLP ICP Metals		SFAM_AES	10	02/17/2025	02/17/2025
Q1273-03	MBHHA2	Solid	01/30/2025						
				TCLP ICP Metals		SFAM_AES	10	02/17/2025	02/17/2025
Q1273-04	MBHHA2D	Solid	01/30/2025						
				TCLP ICP Metals		SFAM_AES	10	02/17/2025	02/17/2025
Q1273-05	MBHHA2S	Solid	01/30/2025						
				TCLP ICP Metals		SFAM_AES	10	02/17/2025	02/17/2025

WORKLIST(Hardcopy Internal Chain)

WorkList Name : TCLP Q1273 **WorkList ID :** 187413 **Department :** TCLP Extraction **Date :** 02-03-2025 12:19:44

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q1273-01	MBHHA0	Solid	TCLP Extraction	Cool 4 deg C	USEP01	C21	01/30/2025	1311
Q1273-02	MBHHA1	Solid	TCLP Extraction	Cool 4 deg C	USEP01	C21	01/30/2025	1311
Q1273-03	MBHHA2	Solid	TCLP Extraction	Cool 4 deg C	USEP01	C21	01/30/2025	1311
Q1273-04	MBHHA2D	Solid	TCLP Extraction	Cool 4 deg C	USEP01	C21	01/30/2025	1311
Q1273-05	MBHHA2S	Solid	TCLP Extraction	Cool 4 deg C	USEP01	C21	01/30/2025	1311

361

Date/Time 02/03/25 12:30

Raw Sample Received by: JB WSC

Raw Sample Relinquished by:

Date/Time 02/03/25 15:00

Raw Sample Received by:

Raw Sample Relinquished by: JB WSC