

Cover Page

Order ID : P4258

Project ID : Perth Amboy

Client : Roman E&G Corp

Lab Sample Number

P4258-01
P4258-02
P4258-03
P4258-04

Client Sample Number

Chamberlain Ave
Chamberlain Ave
Chamberlain Ave
Chamberlain Ave

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

Signature : _____

Date: 10/21/2024

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012



284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

CASE NARRATIVE

Roman E&G Corp

Project Name: Perth Amboy

Project # N/A

Chemtech Project # P4258

Test Name: TCLP Mercury, TCLP Metals + Cu+Ni+Zn

A. Number of Samples and Date of Receipt:

4 Solid samples were received on 10/01/2024.

B. Parameters:

According to the Chain of Custody document, the following analyses were requested: Ammonia, Anions Group1, ASTM Ammonia, ASTM COD, ASTM Leach Extraction, ASTM Oil and Grease, ASTM TS, COD, Corrosivity, EPH, GROWS Concrete, GROWS Concrete ASTM, GROWS Soil, GROWS Soil-Waste Class, Herbicide, Hexavalent Chromium, Ignitability, Mercury, Metals Group1, Metals ICP-Group1, Metals ICP-TAL, METALS-TAL, Oil and Grease, Paint Filter, PCB, Pesticide-TCL, pH, Reactive Cyanide, Reactive Sulfide, SVOC-TCL BNA -20, TCLP BNA, TCLP Extraction, TCLP Herbicide, TCLP Mercury, TCLP Metals + Cu+Ni+Zn, TCLP Pesticide, TCLP VOA, TCLP ZHE Extraction, TCLP-FULL, TS, TVS and VOC-TCLVOA-10. This data package contains results for TCLP Mercury, TCLP Metals + Cu+Ni+Zn.

C. Analytical Techniques:

The analysis of TCLP Metals + Cu+Ni+Zn was based on method 6010D, digestion based on method 3010 (waters). The analysis and digestion of TCLP Mercury was based on method 7470A and TCLP extraction method was 1311.

D. QA/ QC Samples:

The Holding Times were met for all analysis.

The Blank Spike met requirements for all samples.

The Duplicate analysis met criteria for all samples.

The Matrix Spike analysis met criteria for all samples.

The Matrix Spike Duplicate analysis met criteria for all samples.

The Blank analysis did not indicate the presence of lab contamination.

The Calibration met the requirements.

The Serial Dilution met the acceptable requirements.

E. Additional Comments:

The temperature of the samples at the time of receipt was 22.1°C, Lab notified this issue to the client. See the communication in shipping Document section.



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. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature_____

DATA REPORTING QUALIFIERS- INORGANIC

For reporting results, the following “ Results Qualifiers” are used:

J	Indicates the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).
U	Indicates the analyte was analyzed for, but not detected.
ND	Indicates the analyte was analyzed for, but not detected
E	Indicates the reported value is estimated because of the presence of interference
M	Indicates Duplicate injection precision not met.
N	Indicates the spiked sample recovery is not within control limits.
S	Indicates the reported value was determined by the Method of Standard Addition (MSA).
*	Indicates that the duplicate analysis is not within control limits.
+	Indicates the correlation coefficient for the MSA is less than 0.995.
D	Indicates the reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.
M	Method qualifiers “P” for ICP instrument “PM” for ICP when Microwave Digestion is used “CV” for Manual Cold Vapor AA “AV” for automated Cold Vapor AA “CA” for MIDI-Distillation Spectrophotometric “AS” for Semi -Automated Spectrophotometric “C” for Manual Spectrophotometric “T” for Titrimetric “NR” for analyte not required to be analyzed
OR	Indicates the analyte’s concentration exceeds the calibrated range of the instrument for that specific analysis.
Q	Indicates the LCS did not meet the control limits requirements
H	Sample Analysis Out Of Hold Time

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: P4258

Completed

For thorough review, the report must have the following:

GENERAL:

Are all original paperwork present (chain of custody, record of communication,airbill, sample management lab chronicle, login page)

✓

Check chain-of-custody for proper relinquish/return of samples

✓

Is the chain of custody signed and complete

✓

Check internal chain-of-custody for proper relinquish/return of samples /sample extracts

✓

Collect information for each project id from server. Were all requirements followed

✓

COVER PAGE:

Do numbers of samples correspond to the number of samples in the Chain of Custody on login page

✓

Do lab numbers and client Ids on cover page agree with the Chain of Custody

✓

CHAIN OF CUSTODY:

Do requested analyses on Chain of Custody agree with form I results

✓

Do requested analyses on Chain of Custody agree with the log-in page

✓

Were the correct method log-in for analysis according to the Analytical Request and Chain of Custody

✓

Were the samples received within hold time

✓

Were any problems found with the samples at arrival recorded in the Sample Management Laboratory Chronicle

✓

ANALYTICAL:

Was method requirement followed?

✓

Was client requirement followed?

✓

Does the case narrative summarize all QC failure?

✓

All runlogs and manual integration are reviewed for requirements

✓

All manual calculations and /or hand notations verified

✓

QA Review Signature: KETAN PATEL

Date: 10/21/2024

LAB CHRONICLE

OrderID:	P4258	OrderDate:	10/1/2024 1:21:00 PM
Client:	Roman E&G Corp	Project:	Perth Amboy
Contact:	Mark Mattheiss	Location:	H11,H51,K11,K21

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
P4258-03	Chamberlain Ave	SOIL			10/01/24			10/01/24
			Mercury	7471B		10/14/24	10/14/24	
			Metals ICP-TAL	6010D		10/11/24	10/14/24	
P4258-04	Chamberlain Ave	TCLP			10/01/24			10/01/24
			TCLP Mercury	7470A		10/03/24	10/04/24	
			TCLP Metals + Cu+Ni+Zn	6010D		10/03/24	10/04/24	



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Hit Summary Sheet
SW-846

SDG No.: P4258

Order ID: P4258

Client: Roman E&G Corp

Project ID: Perth Amboy

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
Client ID : Chamberlain Ave								
P4258-04	Chamberlain Ave	TCLP	Barium	4420		62.8	500	ug/L
P4258-04	Chamberlain Ave	TCLP	Cadmium	2.16	J	0.94	30.0	ug/L
P4258-04	Chamberlain Ave	TCLP	Chromium	15.7	J	6.60	50.0	ug/L
P4258-04	Chamberlain Ave	TCLP	Copper	217		70.7	100	ug/L
P4258-04	Chamberlain Ave	TCLP	Lead	170		35.1	60.0	ug/L
P4258-04	Chamberlain Ave	TCLP	Mercury	1.68	J	0.81	2.00	ug/L
P4258-04	Chamberlain Ave	TCLP	Nickel	27.5	J	8.50	200	ug/L
P4258-04	Chamberlain Ave	TCLP	Zinc	2260		17.5	200	ug/L



SAMPLE DATA

Report of Analysis

Client:	Roman E&G Corp	Date Collected:	10/01/24
Project:	Perth Amboy	Date Received:	10/01/24
Client Sample ID:	Chamberlain Ave	SDG No.:	P4258
Lab Sample ID:	P4258-04	Matrix:	TCLP
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7440-38-2	Arsenic	34.8	U	1	34.8	100	ug/L	10/03/24 13:30	10/04/24 12:06	SW6010	SW3050
7440-39-3	Barium	4420		1	62.8	500	ug/L	10/03/24 13:30	10/04/24 12:06	SW6010	SW3050
7440-43-9	Cadmium	2.16	J	1	0.94	30.0	ug/L	10/03/24 13:30	10/04/24 12:06	SW6010	SW3050
7440-47-3	Chromium	15.7	J	1	6.60	50.0	ug/L	10/03/24 13:30	10/04/24 12:06	SW6010	SW3050
7440-50-8	Copper	217		1	70.7	100	ug/L	10/03/24 13:30	10/04/24 12:06	SW6010	SW3050
7439-92-1	Lead	170		1	35.1	60.0	ug/L	10/03/24 13:30	10/04/24 12:06	SW6010	SW3050
7439-97-6	Mercury	1.68	J	1	0.81	2.00	ug/L	10/03/24 12:20	10/04/24 11:28	SW7470A	
7440-02-0	Nickel	27.5	J	1	8.50	200	ug/L	10/03/24 13:30	10/04/24 12:06	SW6010	SW3050
7782-49-2	Selenium	58.8	U	1	58.8	100	ug/L	10/03/24 13:30	10/04/24 12:06	SW6010	SW3050
7440-22-4	Silver	5.80	U	1	5.80	50.0	ug/L	10/03/24 13:30	10/04/24 12:06	SW6010	SW3050
7440-66-6	Zinc	2260		1	17.5	200	ug/L	10/03/24 13:30	10/04/24 12:06	SW6010	SW3050

Color Before:	Colorless	Clarity Before:	Clear	Texture:
Color After:	Colorless	Clarity After:	Clear	Artifacts:
Comments:	GROWS Soil-Waste Class			

U = Not Detected
 LOQ = Limit of Quantitation
 MDL = Method Detection Limit
 LOD = Limit of Detection
 D = Dilution
 Q = indicates LCS control criteria did not meet requirements

J = Estimated Value
 B = Analyte Found in Associated Method Blank
 * = indicates the duplicate analysis is not within control limits.
 E = Indicates the reported value is estimated because of the presence of interference.
 OR = Over Range
 N = Spiked sample recovery not within control limits



METAL CALIBRATION DATA

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Roman E&G Corp **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258
Initial Calibration Source: EPA
Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV24	Mercury	4.01	4.0	100	90 - 110	CV	10/04/2024	10:55	LB132761

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Roman E&G Corp **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258
Initial Calibration Source: EPA
Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV71	Mercury	4.97	5.0	99	90 - 110	CV	10/04/2024	11:02	LB132761
CCV72	Mercury	5.36	5.0	107	90 - 110	CV	10/04/2024	11:35	LB132761
CCV73	Mercury	5.47	5.0	109	90 - 110	CV	10/04/2024	12:01	LB132761

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Roman E&G Corp **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV01	Arsenic	984	1000	98	90 - 110	P	10/04/2024	10:45	LB132811
	Barium	527	520	101	90 - 110	P	10/04/2024	10:45	LB132811
	Cadmium	498	510	98	90 - 110	P	10/04/2024	10:45	LB132811
	Chromium	531	520	102	90 - 110	P	10/04/2024	10:45	LB132811
	Copper	542	510	106	90 - 110	P	10/04/2024	10:45	LB132811
	Lead	996	1000	100	90 - 110	P	10/04/2024	10:45	LB132811
	Nickel	534	530	101	90 - 110	P	10/04/2024	10:45	LB132811
	Selenium	1020	1000	102	90 - 110	P	10/04/2024	10:45	LB132811
	Silver	259	250	103	90 - 110	P	10/04/2024	10:45	LB132811
	Zinc	1040	1000	104	90 - 110	P	10/04/2024	10:45	LB132811

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Roman E&G Corp **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV01	Arsenic	22.0	20.0	110	80 - 120	P	10/04/2024	10:59	LB132811
	Barium	108	100	108	80 - 120	P	10/04/2024	10:59	LB132811
	Cadmium	6.37	6.0	106	80 - 120	P	10/04/2024	10:59	LB132811
	Chromium	11.2	10.0	112	80 - 120	P	10/04/2024	10:59	LB132811
	Copper	22.9	20.0	114	80 - 120	P	10/04/2024	10:59	LB132811
	Lead	13.0	12.0	108	80 - 120	P	10/04/2024	10:59	LB132811
	Nickel	41.0	40.0	103	80 - 120	P	10/04/2024	10:59	LB132811
	Selenium	21.1	20.0	105	80 - 120	P	10/04/2024	10:59	LB132811
	Silver	11.9	10.0	119	80 - 120	P	10/04/2024	10:59	LB132811
	Zinc	45.1	40.0	113	80 - 120	P	10/04/2024	10:59	LB132811

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Roman E&G Corp **SDG No.:** P4258

Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Arsenic	5250	5000	105	90 - 110	P	10/04/2024	11:39	LB132811
	Barium	10300	10000	103	90 - 110	P	10/04/2024	11:39	LB132811
	Cadmium	2590	2500	103	90 - 110	P	10/04/2024	11:39	LB132811
	Chromium	1010	1000	101	90 - 110	P	10/04/2024	11:39	LB132811
	Copper	1310	1250	105	90 - 110	P	10/04/2024	11:39	LB132811
	Lead	5170	5000	103	90 - 110	P	10/04/2024	11:39	LB132811
	Nickel	2590	2500	104	90 - 110	P	10/04/2024	11:39	LB132811
	Selenium	5290	5000	106	90 - 110	P	10/04/2024	11:39	LB132811
	Silver	1270	1250	102	90 - 110	P	10/04/2024	11:39	LB132811
	Zinc	2570	2500	103	90 - 110	P	10/04/2024	11:39	LB132811
CCV02	Arsenic	5210	5000	104	90 - 110	P	10/04/2024	12:33	LB132811
	Barium	10200	10000	102	90 - 110	P	10/04/2024	12:33	LB132811
	Cadmium	2520	2500	101	90 - 110	P	10/04/2024	12:33	LB132811
	Chromium	992	1000	99	90 - 110	P	10/04/2024	12:33	LB132811
	Copper	1310	1250	105	90 - 110	P	10/04/2024	12:33	LB132811
	Lead	5060	5000	101	90 - 110	P	10/04/2024	12:33	LB132811
	Nickel	2540	2500	102	90 - 110	P	10/04/2024	12:33	LB132811
	Selenium	5290	5000	106	90 - 110	P	10/04/2024	12:33	LB132811
	Silver	1280	1250	103	90 - 110	P	10/04/2024	12:33	LB132811
	Zinc	2560	2500	102	90 - 110	P	10/04/2024	12:33	LB132811
CCV03	Arsenic	5070	5000	101	90 - 110	P	10/04/2024	13:47	LB132811
	Barium	10200	10000	102	90 - 110	P	10/04/2024	13:47	LB132811
	Cadmium	2470	2500	99	90 - 110	P	10/04/2024	13:47	LB132811
	Chromium	991	1000	99	90 - 110	P	10/04/2024	13:47	LB132811
	Copper	1270	1250	102	90 - 110	P	10/04/2024	13:47	LB132811
	Lead	4940	5000	99	90 - 110	P	10/04/2024	13:47	LB132811
	Nickel	2480	2500	99	90 - 110	P	10/04/2024	13:47	LB132811
	Selenium	5130	5000	103	90 - 110	P	10/04/2024	13:47	LB132811
	Silver	1260	1250	101	90 - 110	P	10/04/2024	13:47	LB132811
	Zinc	2550	2500	102	90 - 110	P	10/04/2024	13:47	LB132811
CCV04	Arsenic	5320	5000	106	90 - 110	P	10/04/2024	15:00	LB132811
	Barium	10800	10000	108	90 - 110	P	10/04/2024	15:00	LB132811
	Cadmium	2570	2500	103	90 - 110	P	10/04/2024	15:00	LB132811
	Chromium	1040	1000	104	90 - 110	P	10/04/2024	15:00	LB132811

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Roman E&G Corp **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV04	Copper	1340	1250	107	90 - 110	P	10/04/2024	15:00	LB132811
	Lead	5170	5000	103	90 - 110	P	10/04/2024	15:00	LB132811
	Nickel	2600	2500	104	90 - 110	P	10/04/2024	15:00	LB132811
	Selenium	5400	5000	108	90 - 110	P	10/04/2024	15:00	LB132811
	Silver	1340	1250	107	90 - 110	P	10/04/2024	15:00	LB132811
	Zinc	2690	2500	108	90 - 110	P	10/04/2024	15:00	LB132811
CCV05	Arsenic	5190	5000	104	90 - 110	P	10/04/2024	16:08	LB132811
	Barium	10300	10000	103	90 - 110	P	10/04/2024	16:08	LB132811
	Cadmium	2480	2500	99	90 - 110	P	10/04/2024	16:08	LB132811
	Chromium	990	1000	99	90 - 110	P	10/04/2024	16:08	LB132811
	Copper	1300	1250	104	90 - 110	P	10/04/2024	16:08	LB132811
	Lead	5000	5000	100	90 - 110	P	10/04/2024	16:08	LB132811
	Nickel	2510	2500	101	90 - 110	P	10/04/2024	16:08	LB132811
	Selenium	5350	5000	107	90 - 110	P	10/04/2024	16:08	LB132811
	Silver	1300	1250	104	90 - 110	P	10/04/2024	16:08	LB132811
	Zinc	2630	2500	105	90 - 110	P	10/04/2024	16:08	LB132811
CCV06	Arsenic	5000	5000	100	90 - 110	P	10/04/2024	16:27	LB132811
	Barium	9610	10000	96	90 - 110	P	10/04/2024	16:27	LB132811
	Cadmium	2380	2500	95	90 - 110	P	10/04/2024	16:27	LB132811
	Chromium	916	1000	92	90 - 110	P	10/04/2024	16:27	LB132811
	Copper	1250	1250	100	90 - 110	P	10/04/2024	16:27	LB132811
	Lead	4790	5000	96	90 - 110	P	10/04/2024	16:27	LB132811
	Nickel	2410	2500	96	90 - 110	P	10/04/2024	16:27	LB132811
	Selenium	5160	5000	103	90 - 110	P	10/04/2024	16:27	LB132811
	Silver	1200	1250	96	90 - 110	P	10/04/2024	16:27	LB132811
	Zinc	2440	2500	98	90 - 110	P	10/04/2024	16:27	LB132811



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Metals

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CRDL STANDARD FOR AA & ICP

Client: Roman E&G Corp **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258
Initial Calibration Source: _____
Continuing Calibration Source: _____

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CRA	Mercury	0.24	0.2	119	40 - 160	CV	10/04/2024	11:06	LB132761
CRI01	Arsenic	22.1	20.0	110	40 - 160	P	10/04/2024	11:21	LB132811
	Barium	106	100	106	40 - 160	P	10/04/2024	11:21	LB132811
	Cadmium	6.50	6.0	108	40 - 160	P	10/04/2024	11:21	LB132811
	Chromium	11.1	10.0	111	40 - 160	P	10/04/2024	11:21	LB132811
	Copper	22.9	20.0	115	40 - 160	P	10/04/2024	11:21	LB132811
	Lead	15.1	12.0	126	40 - 160	P	10/04/2024	11:21	LB132811
	Nickel	41.2	40.0	103	40 - 160	P	10/04/2024	11:21	LB132811
	Selenium	19.7	20.0	98	40 - 160	P	10/04/2024	11:21	LB132811
	Silver	12.8	10.0	128	40 - 160	P	10/04/2024	11:21	LB132811
	Zinc	44.6	40.0	112	40 - 160	P	10/04/2024	11:21	LB132811



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Fax : 908 789 8922

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client:	<u>Roman E&G Corp</u>				SDG No.:	<u>P4258</u>			
Contract:	<u>ROMA02</u>	Lab Code:	<u>CHEM</u>		Case No.:	<u>P4258</u>	SAS No.:	<u>P4258</u>	
Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB24	Mercury	0.20	+/-0.20	U	0.20	CV	10/04/2024	10:59	LB132761

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Roman E&G Corp **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB71	Mercury	0.20	+/-0.20	U	0.20	CV	10/04/2024	11:04	LB132761
CCB72	Mercury	0.20	+/-0.20	U	0.20	CV	10/04/2024	11:38	LB132761
CCB73	Mercury	0.20	+/-0.20	U	0.20	CV	10/04/2024	12:04	LB132761

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: <u>Roman E&G Corp</u>		SDG No.: <u>P4258</u>							
Contract: <u>ROMA02</u>		Lab Code: <u>CHEM</u>		Case No.: <u>P4258</u>		SAS No.: <u>P4258</u>			
Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB01	Arsenic	20.0	+/-20.0	U	20.0	P	10/04/2024	11:06	LB132811
	Barium	100	+/-100	U	100	P	10/04/2024	11:06	LB132811
	Cadmium	6.00	+/-6.00	U	6.00	P	10/04/2024	11:06	LB132811
	Chromium	10.0	+/-10.0	U	10.0	P	10/04/2024	11:06	LB132811
	Copper	20.0	+/-20.0	U	20.0	P	10/04/2024	11:06	LB132811
	Lead	12.0	+/-12.0	U	12.0	P	10/04/2024	11:06	LB132811
	Nickel	40.0	+/-40.0	U	40.0	P	10/04/2024	11:06	LB132811
	Selenium	20.0	+/-20.0	U	20.0	P	10/04/2024	11:06	LB132811
	Silver	10.0	+/-10.0	U	10.0	P	10/04/2024	11:06	LB132811
	Zinc	40.0	+/-40.0	U	40.0	P	10/04/2024	11:06	LB132811

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Roman E&G Corp		SDG No.: P4258							
Contract: ROMA02	Lab Code: CHEM	Case No.: P4258	SAS No.: P4258						
Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB01	Arsenic	20.0	+/-20.0	U	20.0	P	10/04/2024	11:43	LB132811
	Barium	100	+/-100	U	100	P	10/04/2024	11:43	LB132811
	Cadmium	6.00	+/-6.00	U	6.00	P	10/04/2024	11:43	LB132811
	Chromium	10.0	+/-10.0	U	10.0	P	10/04/2024	11:43	LB132811
	Copper	20.0	+/-20.0	U	20.0	P	10/04/2024	11:43	LB132811
	Lead	12.0	+/-12.0	U	12.0	P	10/04/2024	11:43	LB132811
	Nickel	40.0	+/-40.0	U	40.0	P	10/04/2024	11:43	LB132811
	Selenium	20.0	+/-20.0	U	20.0	P	10/04/2024	11:43	LB132811
	Silver	10.0	+/-10.0	U	10.0	P	10/04/2024	11:43	LB132811
	Zinc	40.0	+/-40.0	U	40.0	P	10/04/2024	11:43	LB132811
CCB02	Arsenic	20.0	+/-20.0	U	20.0	P	10/04/2024	12:37	LB132811
	Barium	100	+/-100	U	100	P	10/04/2024	12:37	LB132811
	Cadmium	6.00	+/-6.00	U	6.00	P	10/04/2024	12:37	LB132811
	Chromium	10.0	+/-10.0	U	10.0	P	10/04/2024	12:37	LB132811
	Copper	20.0	+/-20.0	U	20.0	P	10/04/2024	12:37	LB132811
	Lead	12.0	+/-12.0	U	12.0	P	10/04/2024	12:37	LB132811
	Nickel	40.0	+/-40.0	U	40.0	P	10/04/2024	12:37	LB132811
	Selenium	20.0	+/-20.0	U	20.0	P	10/04/2024	12:37	LB132811
	Silver	10.0	+/-10.0	U	10.0	P	10/04/2024	12:37	LB132811
	Zinc	40.0	+/-40.0	U	40.0	P	10/04/2024	12:37	LB132811
CCB03	Arsenic	20.0	+/-20.0	U	20.0	P	10/04/2024	13:51	LB132811
	Barium	100	+/-100	U	100	P	10/04/2024	13:51	LB132811
	Cadmium	6.00	+/-6.00	U	6.00	P	10/04/2024	13:51	LB132811
	Chromium	10.0	+/-10.0	U	10.0	P	10/04/2024	13:51	LB132811
	Copper	20.0	+/-20.0	U	20.0	P	10/04/2024	13:51	LB132811
	Lead	12.0	+/-12.0	U	12.0	P	10/04/2024	13:51	LB132811
	Nickel	40.0	+/-40.0	U	40.0	P	10/04/2024	13:51	LB132811
	Selenium	20.0	+/-20.0	U	20.0	P	10/04/2024	13:51	LB132811
	Silver	10.0	+/-10.0	U	10.0	P	10/04/2024	13:51	LB132811
	Zinc	40.0	+/-40.0	U	40.0	P	10/04/2024	13:51	LB132811
CCB04	Arsenic	20.0	+/-20.0	U	20.0	P	10/04/2024	15:05	LB132811
	Barium	100	+/-100	U	100	P	10/04/2024	15:05	LB132811
	Cadmium	6.00	+/-6.00	U	6.00	P	10/04/2024	15:05	LB132811
	Chromium	10.0	+/-10.0	U	10.0	P	10/04/2024	15:05	LB132811
	Copper	20.0	+/-20.0	U	20.0	P	10/04/2024	15:05	LB132811
	Lead	12.0	+/-12.0	U	12.0	P	10/04/2024	15:05	LB132811
	Nickel	40.0	+/-40.0	U	40.0	P	10/04/2024	15:05	LB132811
	Selenium	20.0	+/-20.0	U	20.0	P	10/04/2024	15:05	LB132811
	Silver	10.0	+/-10.0	U	10.0	P	10/04/2024	15:05	LB132811

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Roman E&G Corp		SDG No.: P4258							
Contract: ROMA02	Lab Code: CHEM	Case No.: P4258	SAS No.: P4258						
Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB04	Zinc	40.0	+/-40.0	U	40.0	P	10/04/2024	15:05	LB132811
CCB05	Arsenic	20.0	+/-20.0	U	20.0	P	10/04/2024	16:12	LB132811
	Barium	100	+/-100	U	100	P	10/04/2024	16:12	LB132811
	Cadmium	6.00	+/-6.00	U	6.00	P	10/04/2024	16:12	LB132811
	Chromium	10.0	+/-10.0	U	10.0	P	10/04/2024	16:12	LB132811
	Copper	20.0	+/-20.0	U	20.0	P	10/04/2024	16:12	LB132811
	Lead	12.0	+/-12.0	U	12.0	P	10/04/2024	16:12	LB132811
	Nickel	40.0	+/-40.0	U	40.0	P	10/04/2024	16:12	LB132811
	Selenium	20.0	+/-20.0	U	20.0	P	10/04/2024	16:12	LB132811
	Silver	10.0	+/-10.0	U	10.0	P	10/04/2024	16:12	LB132811
	Zinc	40.0	+/-40.0	U	40.0	P	10/04/2024	16:12	LB132811
CCB06	Arsenic	20.0	+/-20.0	U	20.0	P	10/04/2024	16:31	LB132811
	Barium	100	+/-100	U	100	P	10/04/2024	16:31	LB132811
	Cadmium	6.00	+/-6.00	U	6.00	P	10/04/2024	16:31	LB132811
	Chromium	10.0	+/-10.0	U	10.0	P	10/04/2024	16:31	LB132811
	Copper	20.0	+/-20.0	U	20.0	P	10/04/2024	16:31	LB132811
	Lead	12.0	+/-12.0	U	12.0	P	10/04/2024	16:31	LB132811
	Nickel	40.0	+/-40.0	U	40.0	P	10/04/2024	16:31	LB132811
	Selenium	20.0	+/-20.0	U	20.0	P	10/04/2024	16:31	LB132811
	Silver	10.0	+/-10.0	U	10.0	P	10/04/2024	16:31	LB132811
	Zinc	40.0	+/-40.0	U	40.0	P	10/04/2024	16:31	LB132811

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Roman E&G Corp

SDG No.: P4258

Instrument: CV1

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB163851TB		WATER		Batch Number:	PB163879		Prep Date:	10/03/2024	
	Mercury	2.00	<2.00	U	2.00	CV	10/04/2024	11:55	LB132761
Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB163879BL		WATER		Batch Number:	PB163879		Prep Date:	10/03/2024	
	Mercury	0.20	<0.20	U	0.20	CV	10/04/2024	11:13	LB132761

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Roman E&G Corp

SDG No.: P4258

Instrument: P4

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB163851TB		WATER		Batch Number:	PB163885		Prep Date:	10/03/2024	
	Arsenic	100	<100	U	100	P	10/04/2024	13:43	LB132811
	Barium	500	<500	U	500	P	10/04/2024	13:43	LB132811
	Cadmium	30.0	<30.0	U	30.0	P	10/04/2024	13:43	LB132811
	Chromium	12.6	<50.0	J	50.0	P	10/04/2024	13:43	LB132811
	Copper	100	<100	U	100	P	10/04/2024	13:43	LB132811
	Lead	60.0	<60.0	U	60.0	P	10/04/2024	13:43	LB132811
	Nickel	200	<200	U	200	P	10/04/2024	13:43	LB132811
	Selenium	100	<100	U	100	P	10/04/2024	13:43	LB132811
	Silver	50.0	<50.0	U	50.0	P	10/04/2024	13:43	LB132811
	Zinc	200	<200	U	200	P	10/04/2024	13:43	LB132811
Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB163885BL		WATER		Batch Number:	PB163885		Prep Date:	10/03/2024	
	Arsenic	100	<100	U	100	P	10/04/2024	13:32	LB132811
	Barium	500	<500	U	500	P	10/04/2024	13:32	LB132811
	Cadmium	30.0	<30.0	U	30.0	P	10/04/2024	13:32	LB132811
	Chromium	50.0	<50.0	U	50.0	P	10/04/2024	13:32	LB132811
	Copper	100	<100	U	100	P	10/04/2024	13:32	LB132811
	Lead	60.0	<60.0	U	60.0	P	10/04/2024	13:32	LB132811
	Nickel	200	<200	U	200	P	10/04/2024	13:32	LB132811
	Selenium	100	<100	U	100	P	10/04/2024	13:32	LB132811
	Silver	50.0	<50.0	U	50.0	P	10/04/2024	13:32	LB132811
	Zinc	200	<200	U	200	P	10/04/2024	13:32	LB132811

Metals
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INTERFERENCE CHECK SAMPLE

Client: Roman E&G Corp **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258
ICS Source: EPA **Instrument ID:** P4

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Low Limit (ug/L)	High Limit (ug/L)	Analysis Date	Analysis Time	Run Number
ICSA01	Arsenic	-2.14			-20	20	10/04/2024	11:28	LB132811
	Barium	4.37	6.0	73	-94	106	10/04/2024	11:28	LB132811
	Cadmium	3.58	1.0	358	-5	7	10/04/2024	11:28	LB132811
	Chromium	54.2	52.0	104	42	62	10/04/2024	11:28	LB132811
	Copper	-2.85	2.0	142	-18	22	10/04/2024	11:28	LB132811
	Lead	10.9			-12	12	10/04/2024	11:28	LB132811
	Nickel	3.33	2.0	166	-38	42	10/04/2024	11:28	LB132811
	Selenium	-9.22			-20	20	10/04/2024	11:28	LB132811
	Silver	-6.15			-10	10	10/04/2024	11:28	LB132811
	Zinc	3.70			-40	40	10/04/2024	11:28	LB132811
ICSAB01	Arsenic	103	104	99	88.4	120	10/04/2024	11:34	LB132811
	Barium	540	537	101	437	637	10/04/2024	11:34	LB132811
	Cadmium	977	972	100	826	1120	10/04/2024	11:34	LB132811
	Chromium	566	542	104	460	624	10/04/2024	11:34	LB132811
	Copper	509	511	100	434	588	10/04/2024	11:34	LB132811
	Lead	59.5	49.0	121	37	61	10/04/2024	11:34	LB132811
	Nickel	1030	954	108	810	1100	10/04/2024	11:34	LB132811
	Selenium	41.7	46.0	91	26	66	10/04/2024	11:34	LB132811
	Silver	221	201	110	170	232	10/04/2024	11:34	LB132811
	Zinc	885	952	93	809	1095	10/04/2024	11:34	LB132811



METAL QC DATA

metals
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MATRIX SPIKE SUMMARY

client: <u>Roman E&G Corp</u>	level: <u>low</u>	sdg no.: <u>P4258</u>
contract: <u>ROMA02</u>	lab code: <u>CHEM</u>	case no.: <u>P4258</u> sas no.: <u>P4258</u>
matrix: <u>Water</u>	sample id: <u>P4276-02</u>	client id: <u>VNJ-208MS</u>
Percent Solids for Sample: <u>NA</u>	Spiked ID: <u>P4276-02MS</u>	Percent Solids for Spike Sample: <u>NA</u>

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Arsenic	ug/L	75 - 125	4140		100	U	4000	104		P
Barium	ug/L	75 - 125	5600		4480		1000	112		P
Cadmium	ug/L	75 - 125	971		5.48	J	1000	97		P
Chromium	ug/L	75 - 125	2040		16.2	J	2000	101		P
Copper	ug/L	75 - 125	1650		125		1500	102		P
Lead	ug/L	75 - 125	4650		60.0	U	5000	93		P
Mercury	ug/L	75 - 125	44.4		2.00	U	40.0	111		CV
Nickel	ug/L	75 - 125	2580		22.9	J	2500	102		P
Selenium	ug/L	75 - 125	10500		100	U	10000	105		P
Silver	ug/L	75 - 125	415		50.0	U	380	109		P
Zinc	ug/L	75 - 125	2330		1230		1000	110		P

metals
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MATRIX SPIKE DUPLICATE SUMMARY

client:	<u>Roman E&G Corp</u>	level:	<u>low</u>	sdg no.:	<u>P4258</u>
contract:	<u>ROMA02</u>	lab code:	<u>CHEM</u>	case no.:	<u>P4258</u>
matrix:	<u>Water</u>	sample id:	<u>P4276-02</u>	client id:	<u>VNJ-208MSD</u>
Percent Solids for Sample:	NA	Spiked ID:	P4276-02MSD	Percent Solids for Spike Sample:	NA

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Arsenic	ug/L	75 - 125	4080		100	U	4000	102		P
Barium	ug/L	75 - 125	5500		4480		1000	102		P
Cadmium	ug/L	75 - 125	947		5.48	J	1000	94		P
Chromium	ug/L	75 - 125	2020		16.2	J	2000	100		P
Copper	ug/L	75 - 125	1600		125		1500	98		P
Lead	ug/L	75 - 125	4540		60.0	U	5000	91		P
Mercury	ug/L	75 - 125	43.7		2.00	U	40.0	109		CV
Nickel	ug/L	75 - 125	2520		22.9	J	2500	100		P
Selenium	ug/L	75 - 125	10400		100	U	10000	104		P
Silver	ug/L	75 - 125	418		50.0	U	380	110		P
Zinc	ug/L	75 - 125	2340		1230		1000	111		P

Metals
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Client: Roman E&G Corp **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258
Matrix: **Level:** LOW **Client ID:**
Sample ID: **Spiked ID:**

Analyte	Units	Acceptance Limit %R	C	Sample Result	C	Spike Added	% Recovery	Qual	M
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Metals

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DUPLICATE SAMPLE SUMMARY

Client: Roman E&G Corp **Level:** LOW **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258
Matrix: Water **Sample ID:** P4276-02 **Client ID:** VNJ-208DUP
Percent Solids for Sample: NA **Duplicate ID** P4276-02DUP **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Arsenic	ug/L	20	100	U	100	U			P
Barium	ug/L	20	4480		4430		1		P
Cadmium	ug/L	20	5.48	J	5.39	J	2		P
Chromium	ug/L	20	16.2	J	16.0	J	1		P
Copper	ug/L	20	125		121		3		P
Lead	ug/L	20	60.0	U	60.0	U			P
Mercury	ug/L	20	2.00	U	0.88	J	200.0		CV
Nickel	ug/L	20	22.9	J	22.2	J	3		P
Selenium	ug/L	20	100	U	100	U			P
Silver	ug/L	20	50.0	U	50.0	U			P
Zinc	ug/L	20	1230		1220		1		P

Metals

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DUPLICATE SAMPLE SUMMARY

Client: Roman E&G Corp **Level:** LOW **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258
Matrix: Water **Sample ID:** P4276-02MS **Client ID:** VNJ-208MSD
Percent Solids for Sample: NA **Duplicate ID** P4276-02MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Arsenic	ug/L	20	4140		4080		1		P
Barium	ug/L	20	5600		5500		2		P
Cadmium	ug/L	20	971		947		3		P
Chromium	ug/L	20	2040		2020		1		P
Copper	ug/L	20	1650		1600		3		P
Lead	ug/L	20	4650		4540		2		P
Mercury	ug/L	20	44.4		43.7		2		CV
Nickel	ug/L	20	2580		2520		2		P
Selenium	ug/L	20	10500		10400		1		P
Silver	ug/L	20	415		418		1		P
Zinc	ug/L	20	2330		2340		0		P

Metals

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Roman E&G Corp **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB163879BS Mercury	ug/L	4.0	4.07		102	80 - 120	CV

Metals

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Roman E&G Corp **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Case No.:** P4258 **SAS No.:** P4258

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB163885BS							
Arsenic	ug/L	4000	4020		100	80 - 120	P
Barium	ug/L	1000	1080		108	80 - 120	P
Cadmium	ug/L	1000	986		99	80 - 120	P
Chromium	ug/L	2000	2100		105	80 - 120	P
Copper	ug/L	1500	1680		112	80 - 120	P
Lead	ug/L	5000	5000		100	80 - 120	P
Nickel	ug/L	2500	2670		107	80 - 120	P
Selenium	ug/L	10000	10200		102	80 - 120	P
Silver	ug/L	380	405		107	80 - 120	P
Zinc	ug/L	1000	1110		111	80 - 120	P

Metals
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ICP SERIAL DILUTIONS

SAMPLE NO.

VNJ-208L

Lab Name: Chemtech Consulting Group

Contract: ROMA02

Lab Code: CHEM **Lb No.:** lb132811 **Lab Sample ID :** P4276-02L **SDG No.:** P4258

Matrix (soil/water): Water **Level (low/med):** LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)		Serial Dilution Result (S)		% Difference	Q	M
		C		C			
Arsenic	100	U	500	U			P
Barium	4480		4140		8		P
Cadmium	5.48	J	5.84	J	7		P
Chromium	16.2	J	250	U	100.0		P
Copper	125		500	U	100.0		P
Lead	60.0	U	300	U			P
Mercury	2.00	U	10.0	U			CV
Nickel	22.9	J	1000	U	100.0		P
Selenium	100	U	500	U			P
Silver	50.0	U	250	U			P
Zinc	1230		1140		7		P



METAL PREPARATION & INSTRUMENT DATA

Metals

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ICP INTERELEMENT CORRECTION FACTORS

Client: Roman E&G Corp

SDG No.: P4258

Contract: ROMA02

Lab Code: CHEM

Case No.: P4258

SAS No.: P4258

Instrument ID: _____

Date: _____

Interement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interement Correction Factors For:				
		Al	Ca	Fe	Mg	Ag
Arsenic	193.759	0.0000000	0.0000000	-0.0000440	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000930	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0007850	0.0000000	0.0000000
Lead	220.353	-0.0000920	0.0000000	0.0000380	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	-0.0001440	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	-0.0001490	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0001050	0.0000000	0.0000000

Metals

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ICP INTERELEMENT CORRECTION FACTORS

Client: Roman E&G Corp

SDG No.: P4258

Contract: ROMA02

Lab Code: CHEM

Case No.: P4258

SAS No.: P4258

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		As	Ba	Be	Cd	Co
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0002870
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0000000	0.0009530
Lead	220.353	0.0000000	0.0003170	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	-0.0003570
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Metals

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ICP INTERELEMENT CORRECTION FACTORS

Client: Roman E&G Corp

SDG No.: P4258

Contract: ROMA02

Lab Code: CHEM

Case No.: P4258

SAS No.: P4258

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Cr	Cu	K	Mn	Mo
Arsenic	193.759	-0.0029000	0.0000000	0.0000000	0.0000000	0.0004900
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000070	0.0002200	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0006510	0.0020500
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0001400	-0.0008600
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0007460	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	-0.0000120
Zinc	213.800	0.0000000	0.0009010	0.0000000	0.0000000	0.0000000

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Roman E&G Corp

SDG No.: P4258

Contract: ROMA02

Lab Code: CHEM

Case No.: P4258

SAS No.: P4258

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Na	Ni	Pb	Sb	Se
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	-0.0047000	0.0036100	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0006580	0.0000000	0.0000000	0.0001290
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0003330	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0067600	0.0000000	0.0000000	0.0000000

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Roman E&G Corp

SDG No.: P4258

Contract: ROMA02

Lab Code: CHEM

Case No.: P4258

SAS No.: P4258

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Sn	Ti	Tl	V	Zn
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000630	0.0001280	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0001110	0.0000000
Copper	224.700	0.0000000	0.0003840	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	-0.0003610	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	-0.0007420	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000



METAL PREPARATION & ANALYICAL SUMMARY

Metals

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SAMPLE PREPARATION SUMMARY

Client: Roman E&G Corp **SDG No.:** P4258
Contract: ROMA02 **Lab Code:** CHEM **Method:**
Case No.: P4258 **SAS No.:** P4258

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number: PB163879							
P4258-04	Chamberlain Ave	SAM	WATER	10/03/2024	3.0	30.0	
P4276-02DUP	VNJ-208DUP	DUP	WATER	10/03/2024	3.0	30.0	
P4276-02MS	VNJ-208MS	MS	WATER	10/03/2024	3.0	30.0	
P4276-02MSD	VNJ-208MSD	MSD	WATER	10/03/2024	3.0	30.0	
PB163851TB	PB163851TB	MB	WATER	10/03/2024	3.0	30.0	
PB163879BL	PB163879BL	MB	WATER	10/03/2024	30.0	30.0	
PB163879BS	PB163879BS	LCS	WATER	10/03/2024	30.0	30.0	

Metals

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SAMPLE PREPARATION SUMMARY

Client:	<u>Roman E&G Corp</u>	SDG No.:	<u>P4258</u>
Contract:	<u>ROMA02</u>	Lab Code:	<u>CHEM</u>
		Method:	<u></u>
		Case No.:	<u>P4258</u>
		SAS No.:	<u>P4258</u>

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number: PB163885							
P4258-04	Chamberlain Ave	SAM	WATER	10/03/2024	5.0	25.0	
P4276-02DUP	VNJ-208DUP	DUP	WATER	10/03/2024	5.0	25.0	
P4276-02MS	VNJ-208MS	MS	WATER	10/03/2024	5.0	25.0	
P4276-02MSD	VNJ-208MSD	MSD	WATER	10/03/2024	5.0	25.0	
PB163851TB	PB163851TB	MB	WATER	10/03/2024	5.0	25.0	
PB163885BL	PB163885BL	MB	WATER	10/03/2024	5.0	25.0	
PB163885BS	PB163885BS	LCS	WATER	10/03/2024	5.0	25.0	

metals
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ANALYSIS RUN LOG

Client: Roman E&G Corp **Contract:** ROMA02

Lab code: CHEM **Case no.:** P4258 **Sas no.:** P4258 **Sdg no.:** P4258

Instrument id number: **Method:** **Run number:** LB132761

Start date: 10/04/2024 **End date:** 10/04/2024

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1034	HG
S0.2	S0.2	1	1036	HG
S2.5	S2.5	1	1039	HG
S5	S5	1	1041	HG
S7.5	S7.5	1	1043	HG
S10	S10	1	1052	HG
ICV24	ICV24	1	1055	HG
ICB24	ICB24	1	1059	HG
CCV71	CCV71	1	1102	HG
CCB71	CCB71	1	1104	HG
CRA	CRA	1	1106	HG
PB163879BL	PB163879BL	1	1113	HG
PB163879BS	PB163879BS	1	1118	HG
P4258-04	Chamberlain Ave	1	1128	HG
CCV72	CCV72	1	1135	HG
CCB72	CCB72	1	1138	HG
P4276-02DUP	VNJ-208DUP	1	1146	HG
P4276-02MS	VNJ-208MS	1	1148	HG
P4276-02MSD	VNJ-208MSD	1	1150	HG
PB163851TB	PB163851TB	1	1155	HG
P4276-02L	VNJ-208L	5	1157	HG
CCV73	CCV73	1	1201	HG
CCB73	CCB73	1	1204	HG

metals
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ANALYSIS RUN LOG

Client: Roman E&G Corp **Contract:** ROMA02

Lab code: CHEM **Case no.:** P4258 **Sas no.:** P4258 **Sdg no.:** P4258

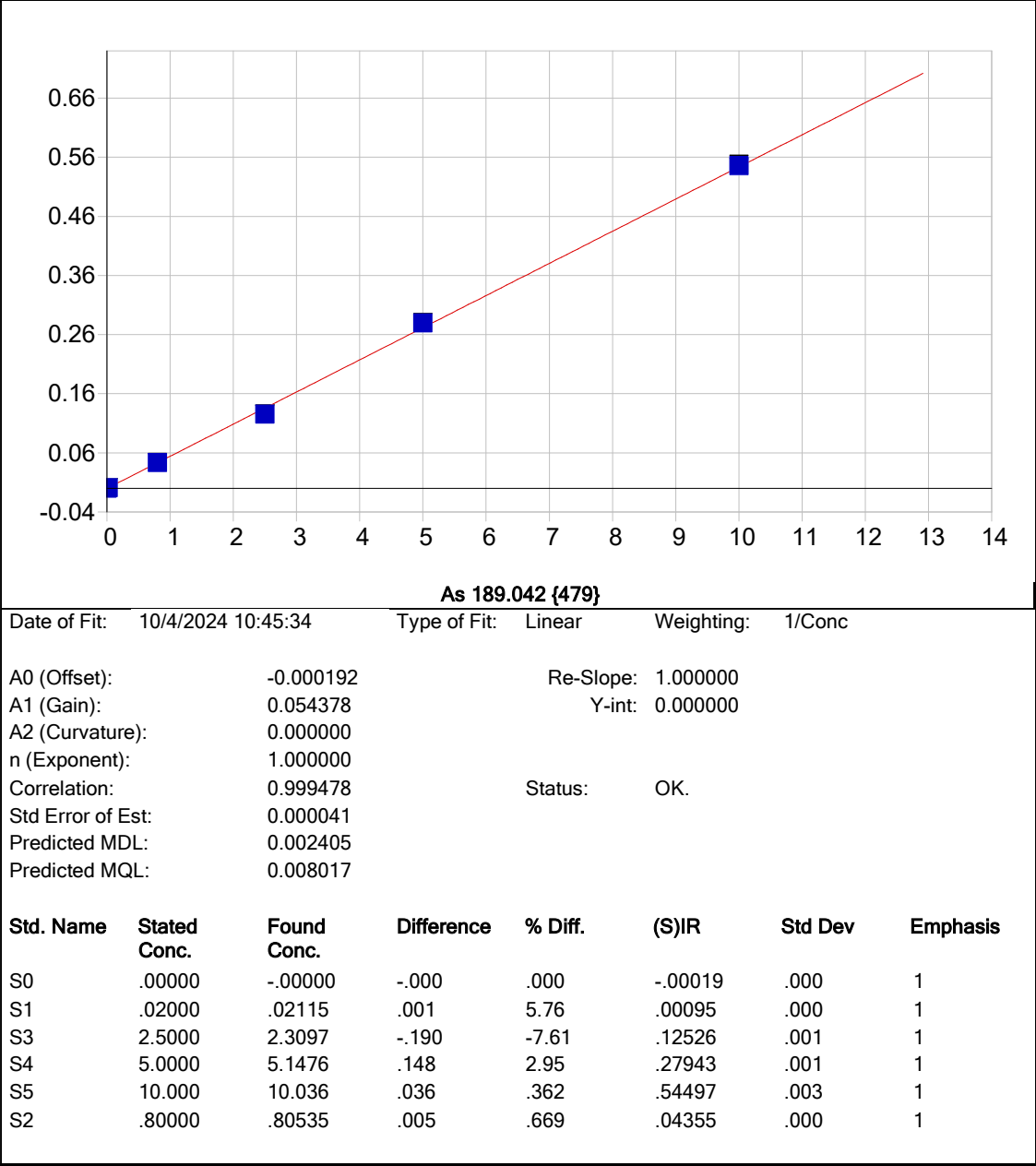
Instrument id number: **Method:** **Run number:** LB132811

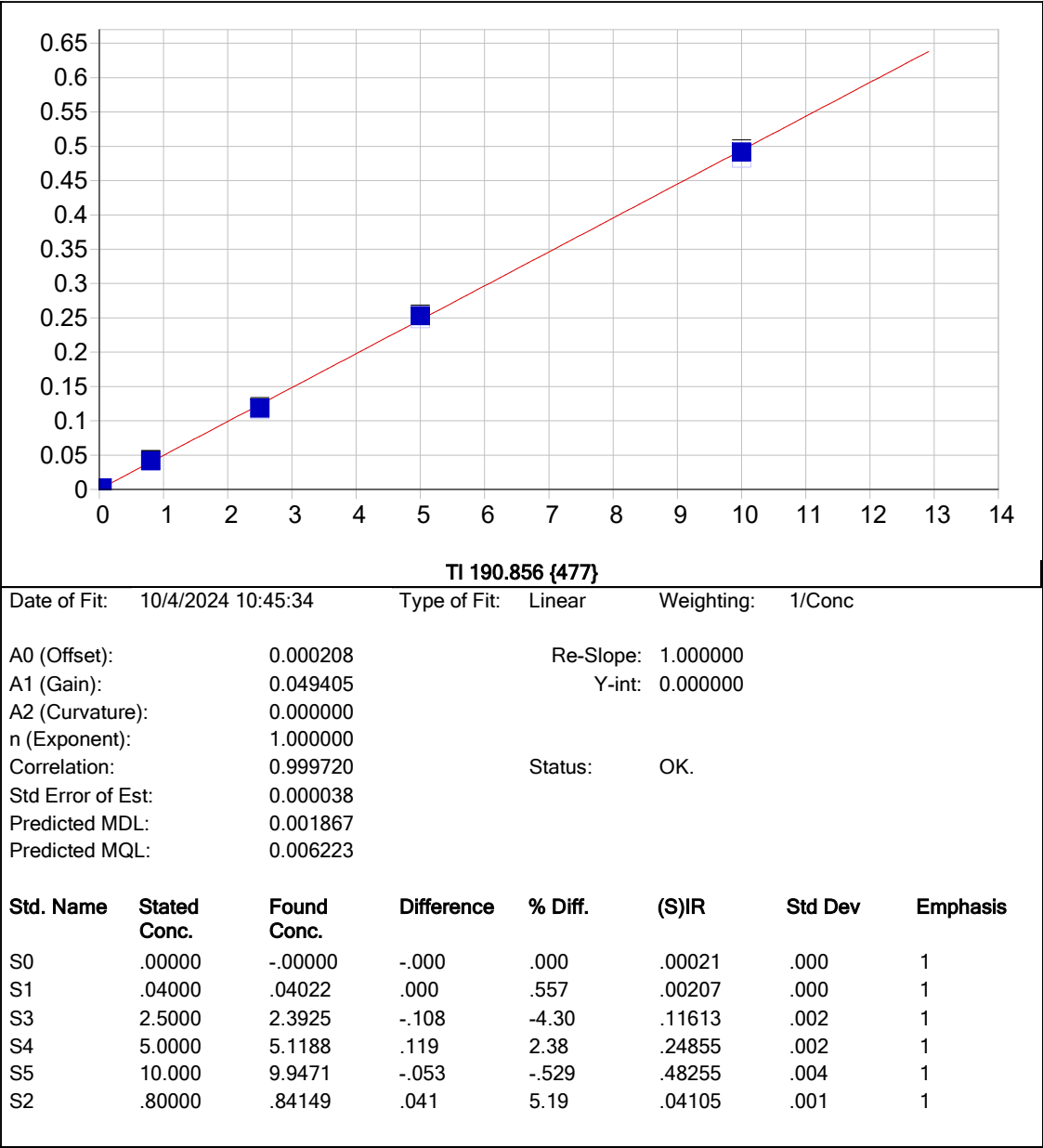
Start date: 10/04/2024 **End date:** 10/04/2024

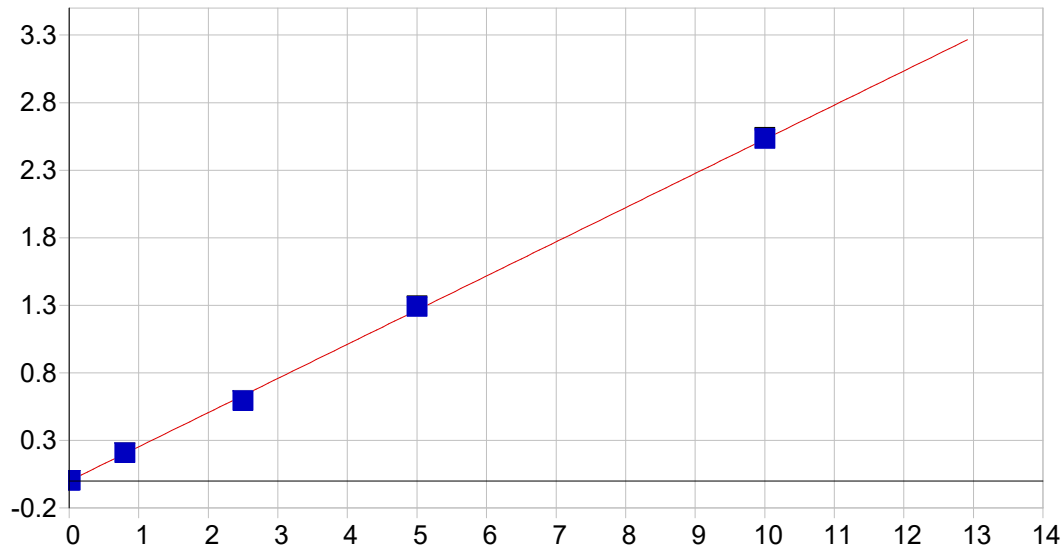
Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1020	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
S1	S1	1	1024	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
S2	S2	1	1028	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
S3	S3	1	1033	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
S4	S4	1	1037	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
S5	S5	1	1041	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
ICV01	ICV01	1	1045	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
LLICV01	LLICV01	1	1059	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
ICB01	ICB01	1	1106	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CRI01	CRI01	1	1121	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
ICSA01	ICSA01	1	1128	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
ICSAB01	ICSAB01	1	1134	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CCV01	CCV01	1	1139	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CCB01	CCB01	1	1143	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
P4258-04	Chamberlain Ave	1	1206	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
P4276-02DUP	VNJ-208DUP	1	1220	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CCV02	CCV02	1	1233	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CCB02	CCB02	1	1237	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
P4276-02L	VNJ-208L	5	1309	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
P4276-02MS	VNJ-208MS	1	1313	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
P4276-02MSD	VNJ-208MSD	1	1317	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
PB163885BL	PB163885BL	1	1332	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
PB163885BS	PB163885BS	1	1336	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
PB163851TB	PB163851TB	1	1343	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CCV03	CCV03	1	1347	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CCB03	CCB03	1	1351	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CCV04	CCV04	1	1500	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CCB04	CCB04	1	1505	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CCV05	CCV05	1	1608	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CCB05	CCB05	1	1612	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CCV06	CCV06	1	1627	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn
CCB06	CCB06	1	1631	Ag,As,Ba,Cd,Cr,Cu,Ni,Pb,Se,Zn



METAL RAW DATA





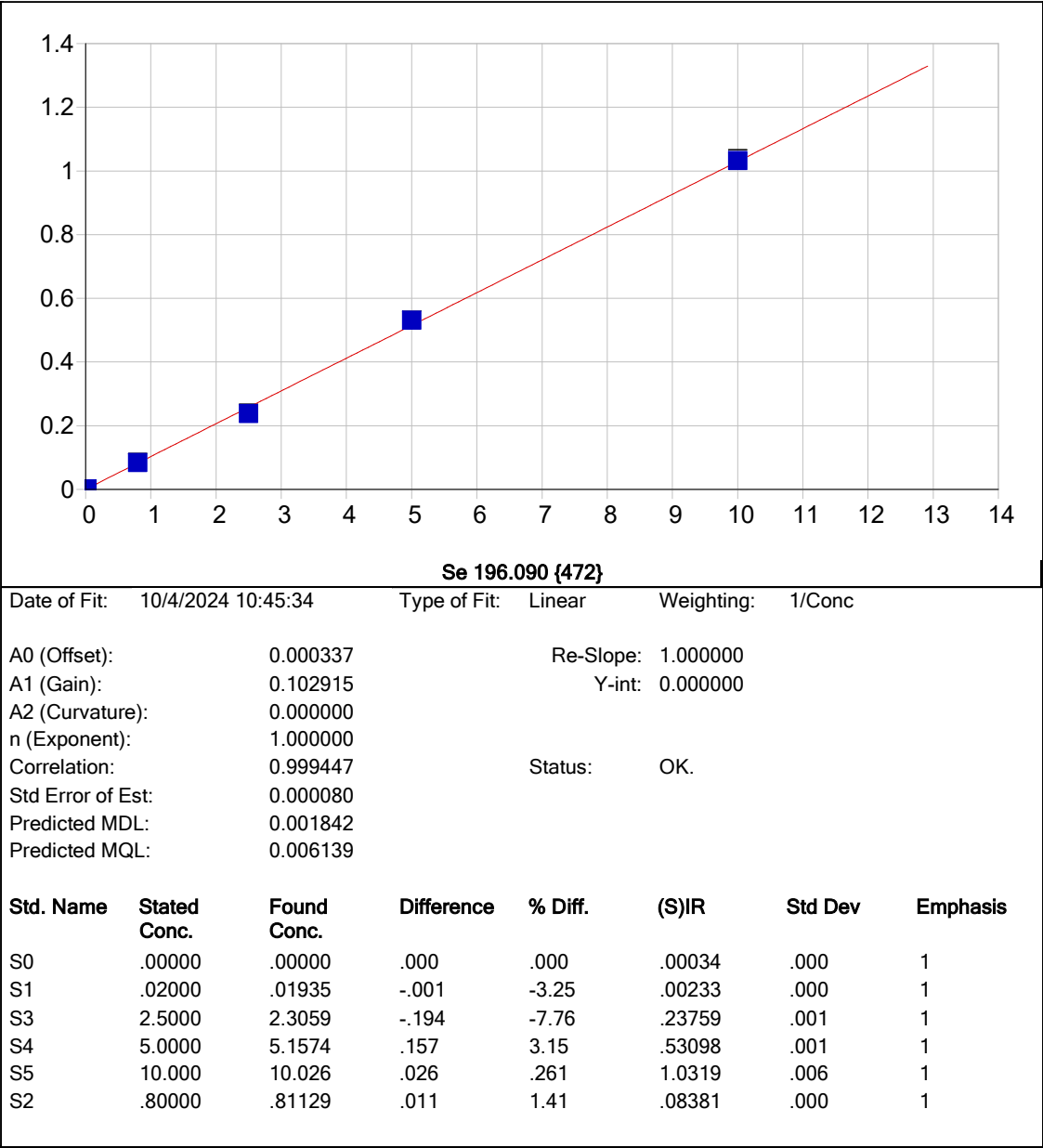


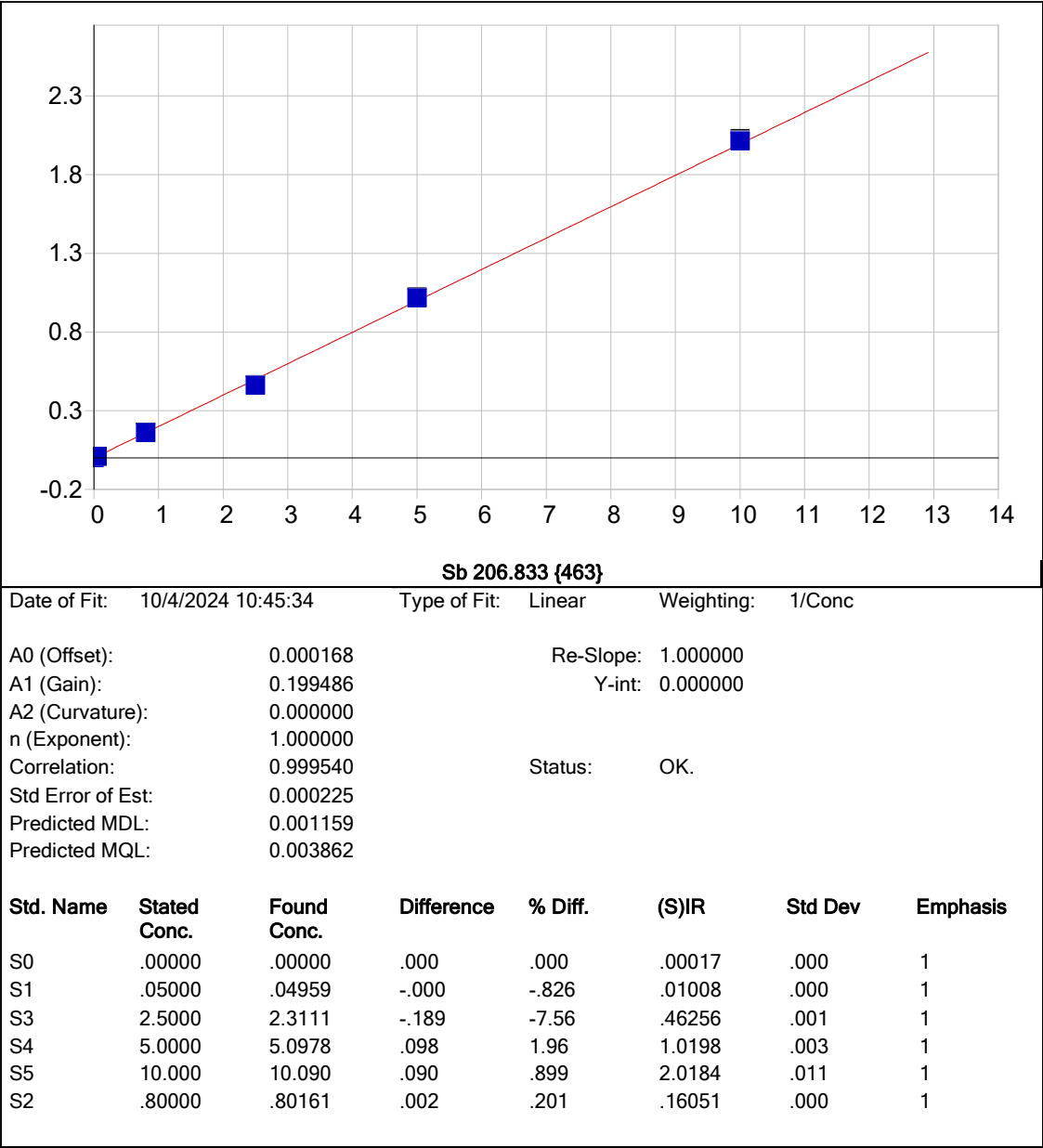
Pb 220.353 {453}

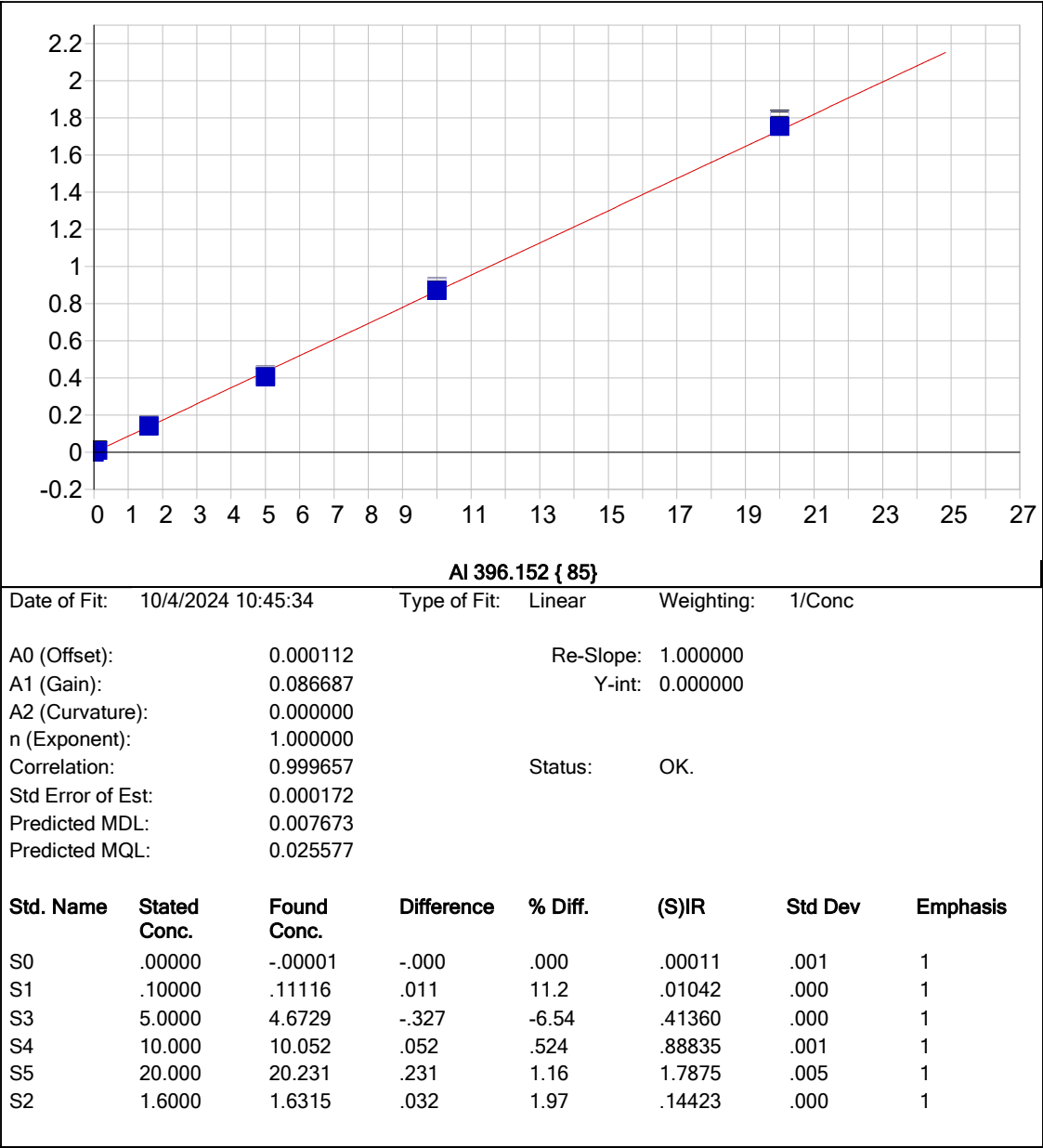
Date of Fit: 10/4/2024 10:45:34 Type of Fit: Linear Weighting: 1/Conc

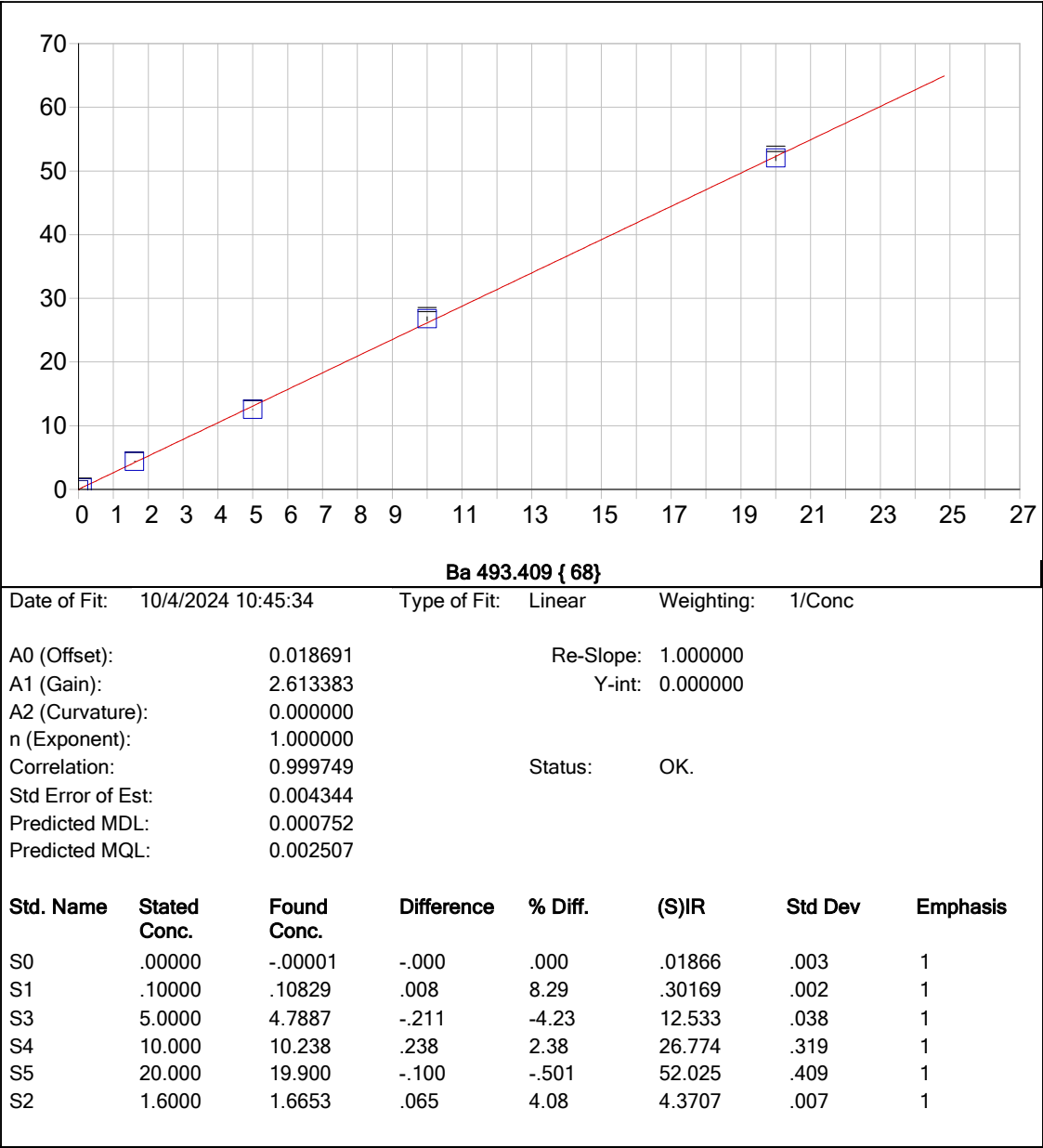
A0 (Offset): -0.000185 Re-Slope: 1.000000
A1 (Gain): 0.252863 Y-int: 0.000000
A2 (Curvature): 0.000000
n (Exponent): 1.000000
Correlation: 0.999662 Status: OK.
Std Error of Est: 0.000119
Predicted MDL: 0.000962
Predicted MQL: 0.003208

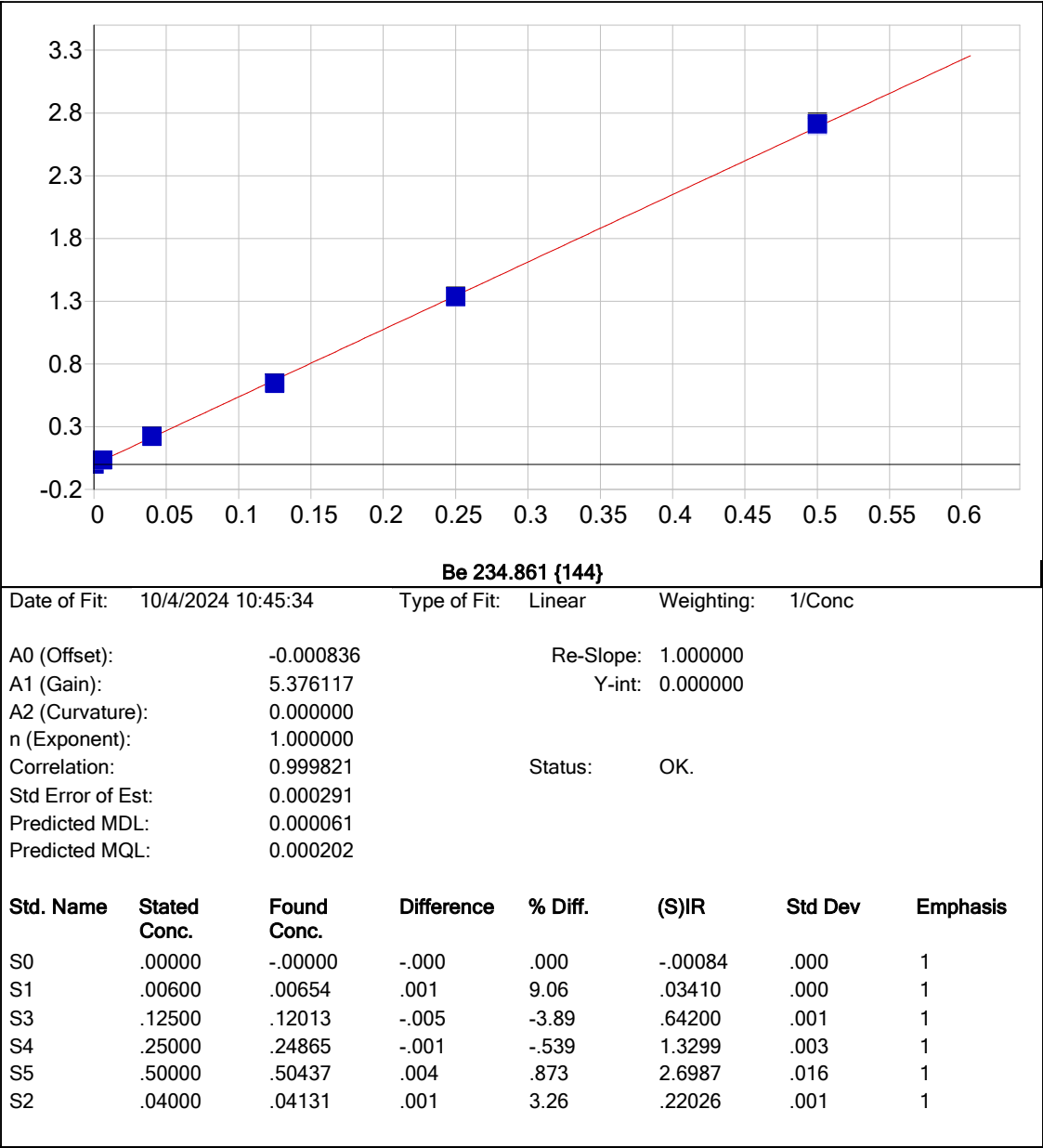
Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00019	.000	1
S1	.01200	.01413	.002	17.7	.00333	.000	1
S3	2.5000	2.3482	-.152	-6.07	.59288	.001	1
S4	5.0000	5.1061	.106	2.12	1.2895	.004	1
S5	10.000	10.025	.025	.247	2.5319	.007	1
S2	.80000	.81896	.019	2.37	.20667	.000	1

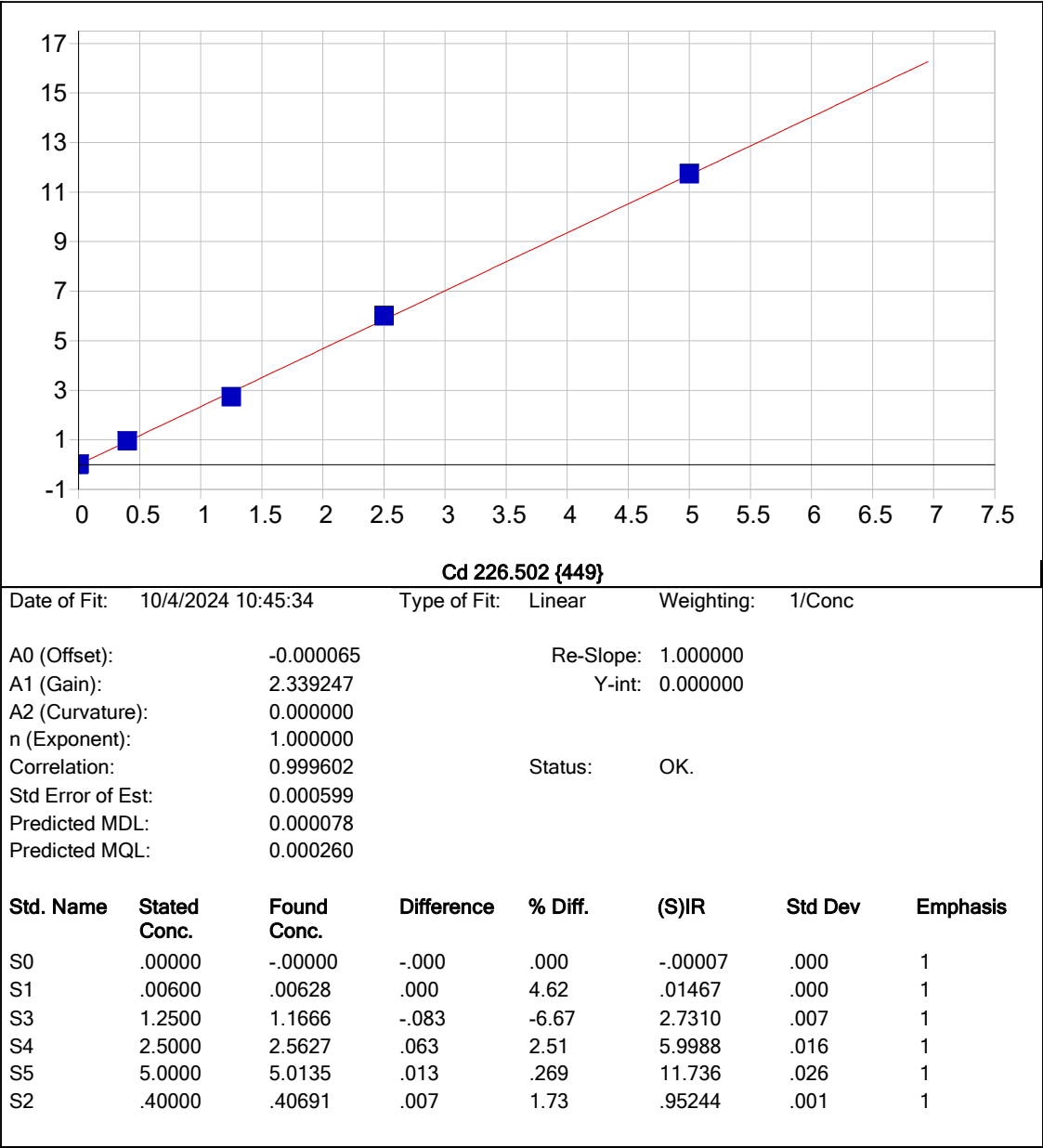


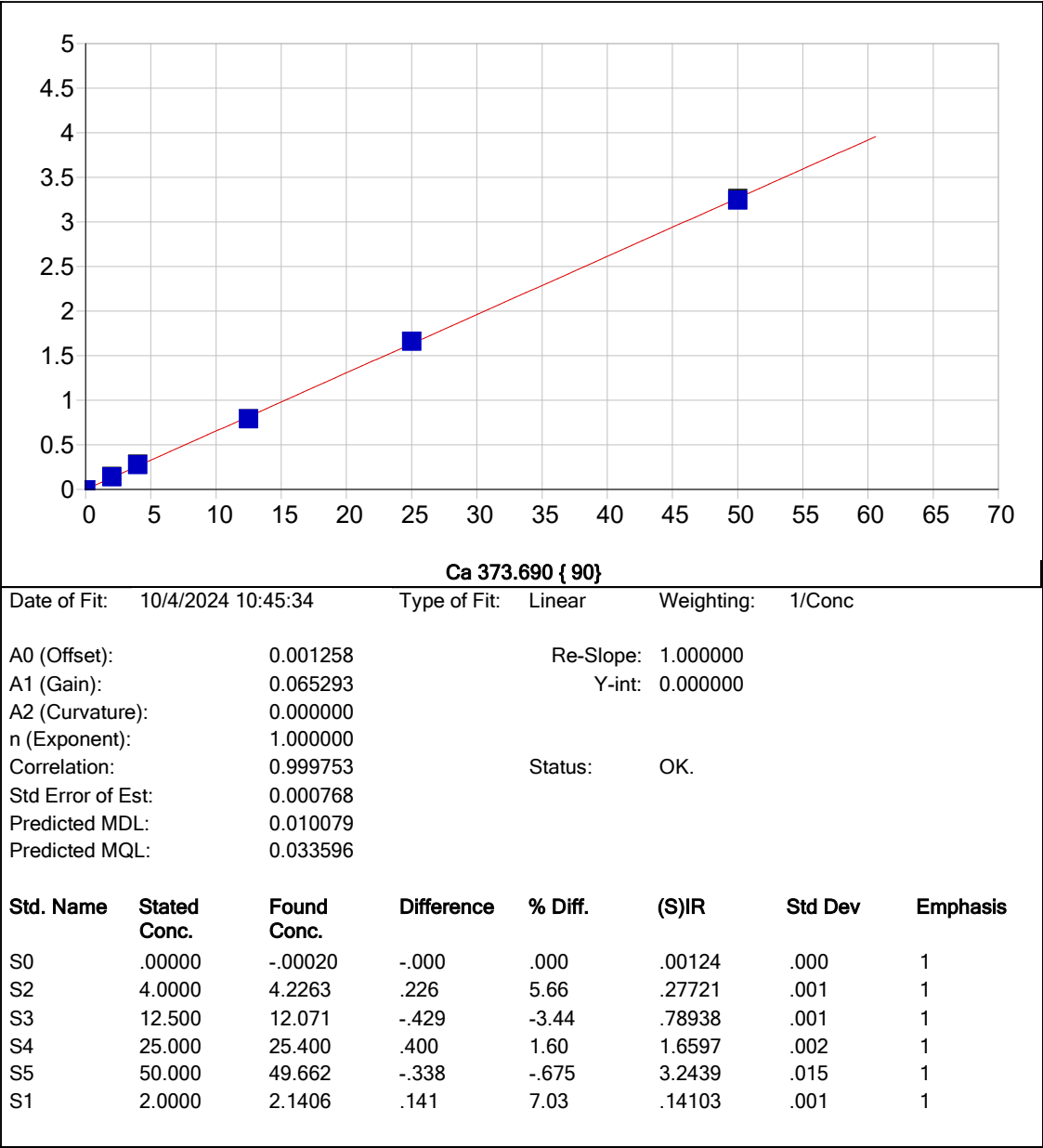


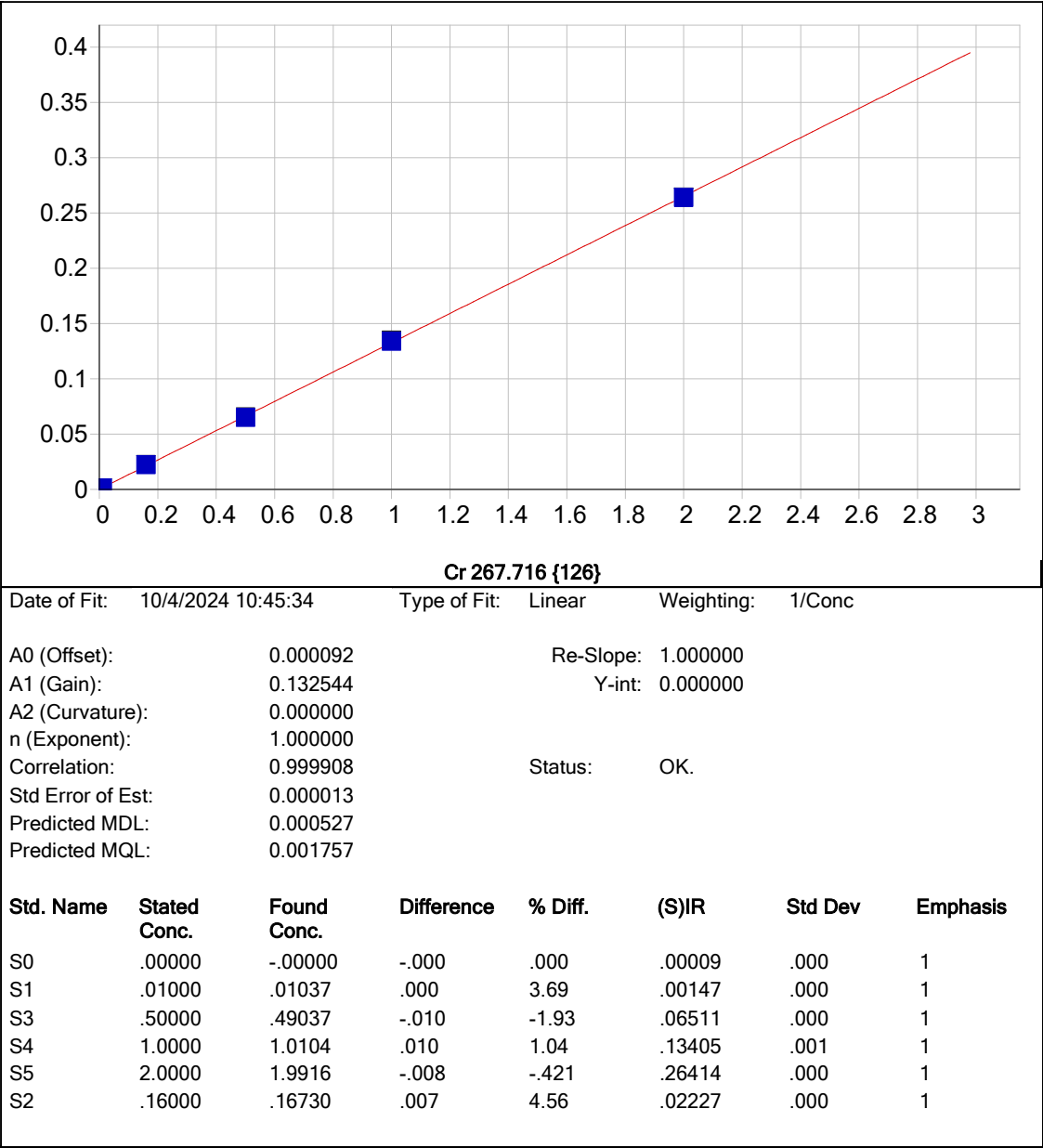


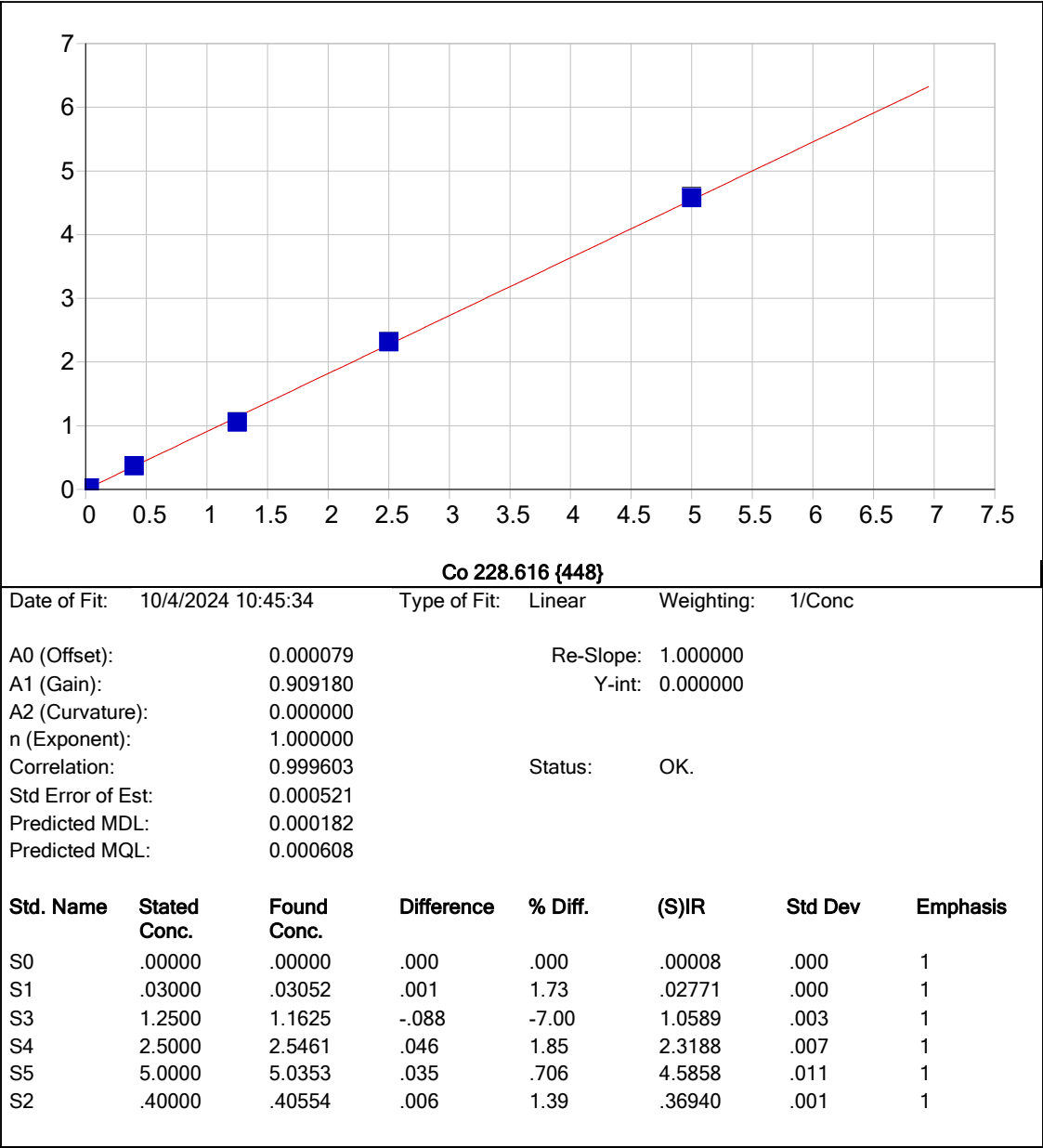


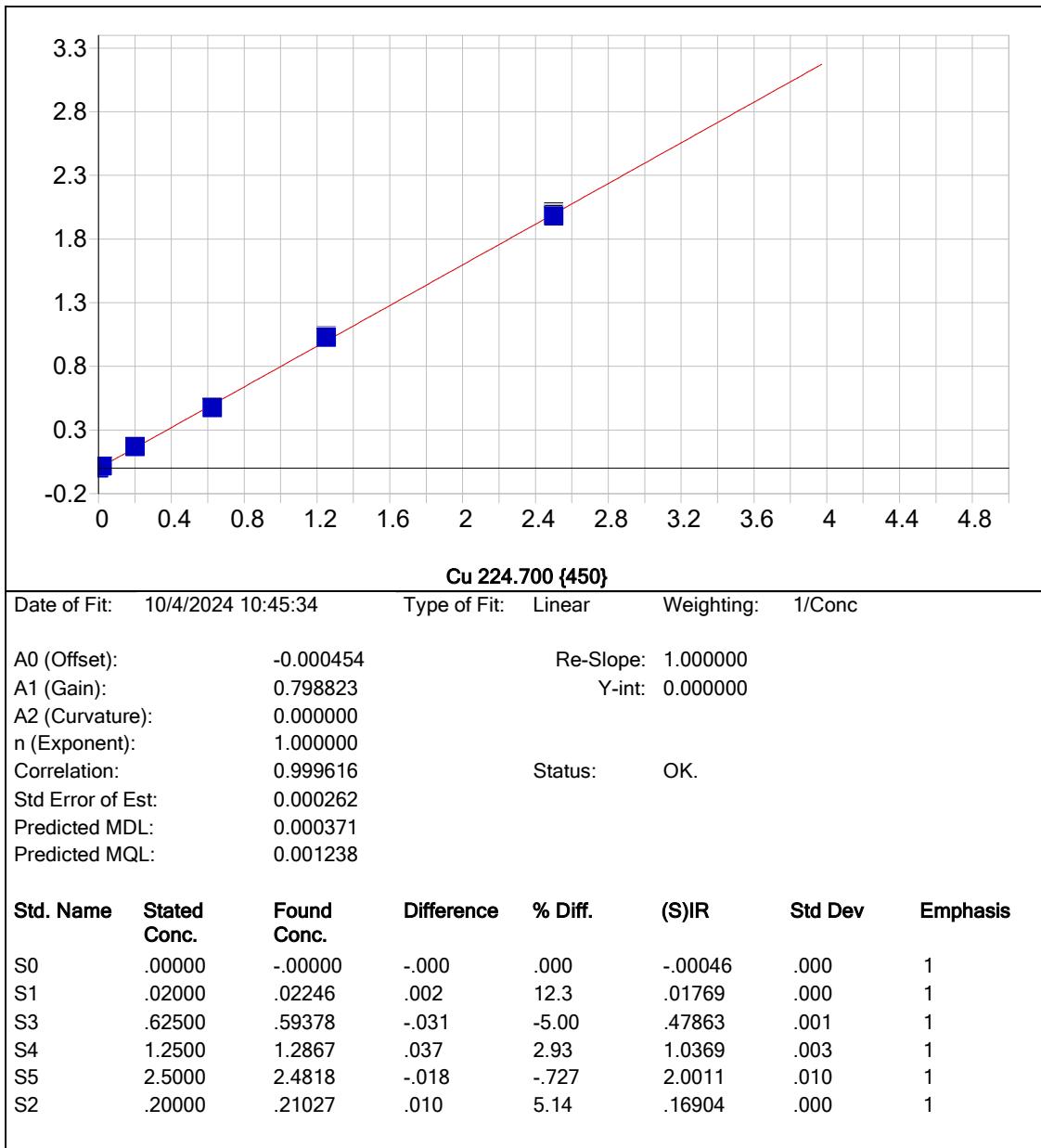


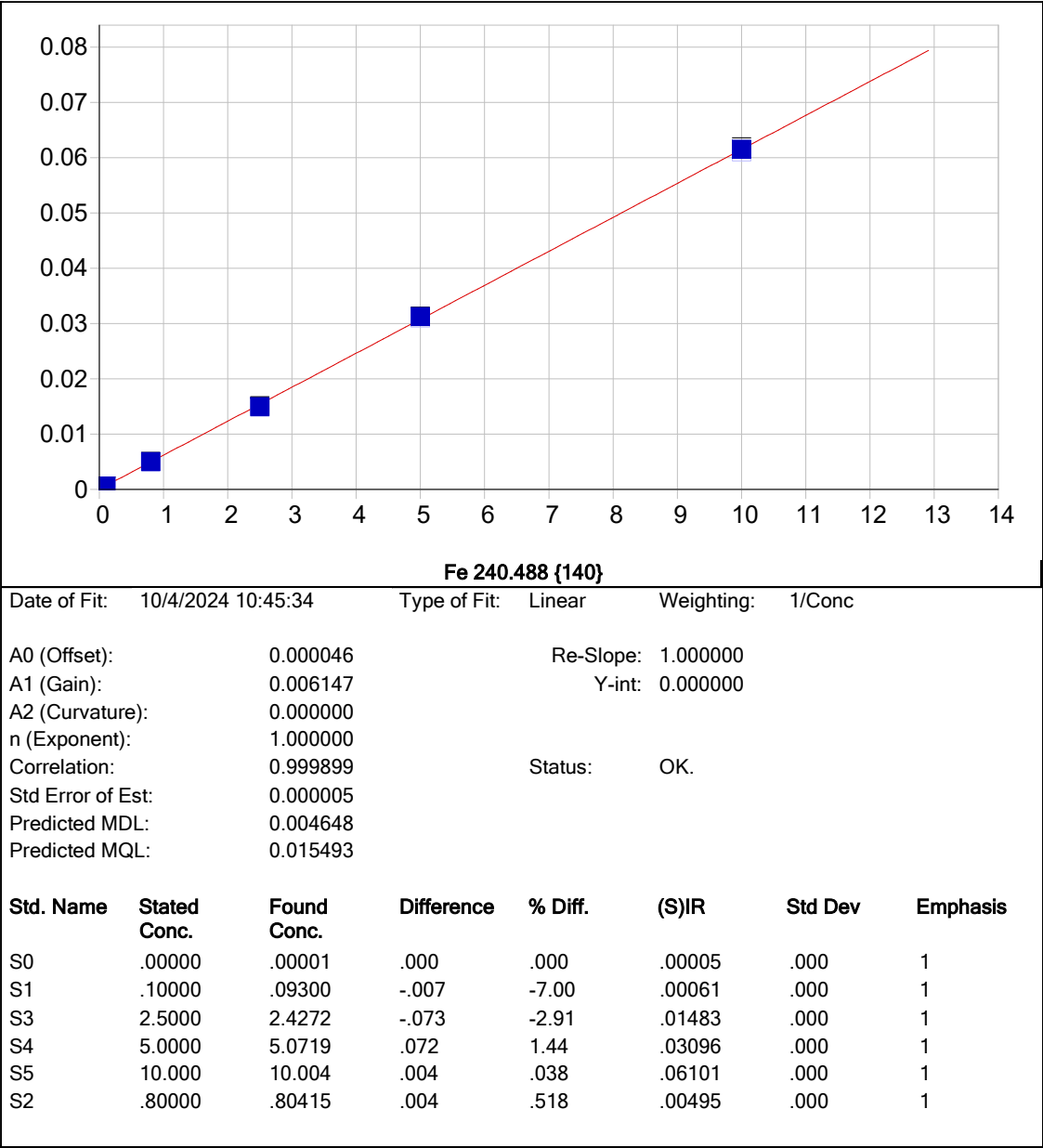


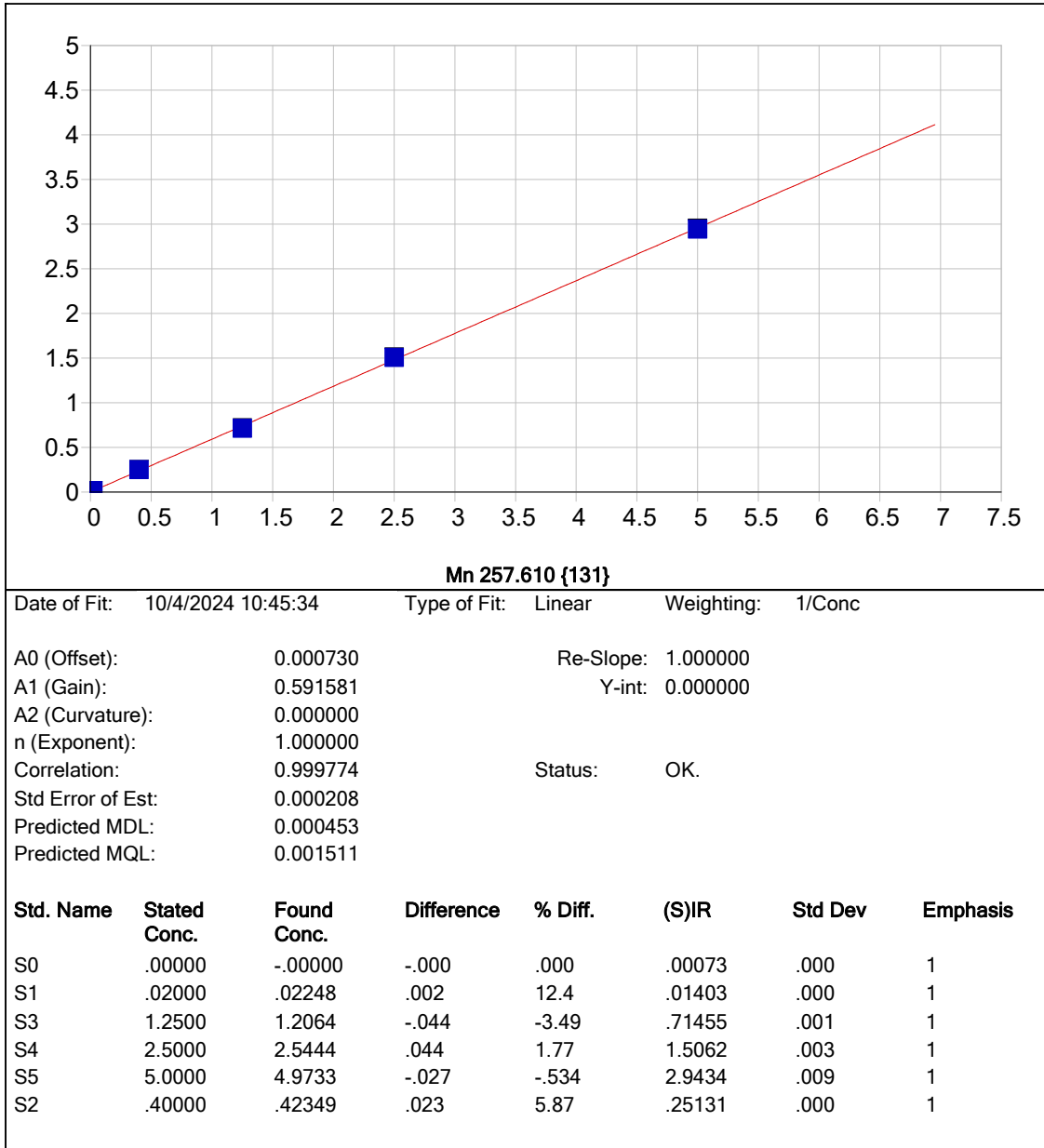


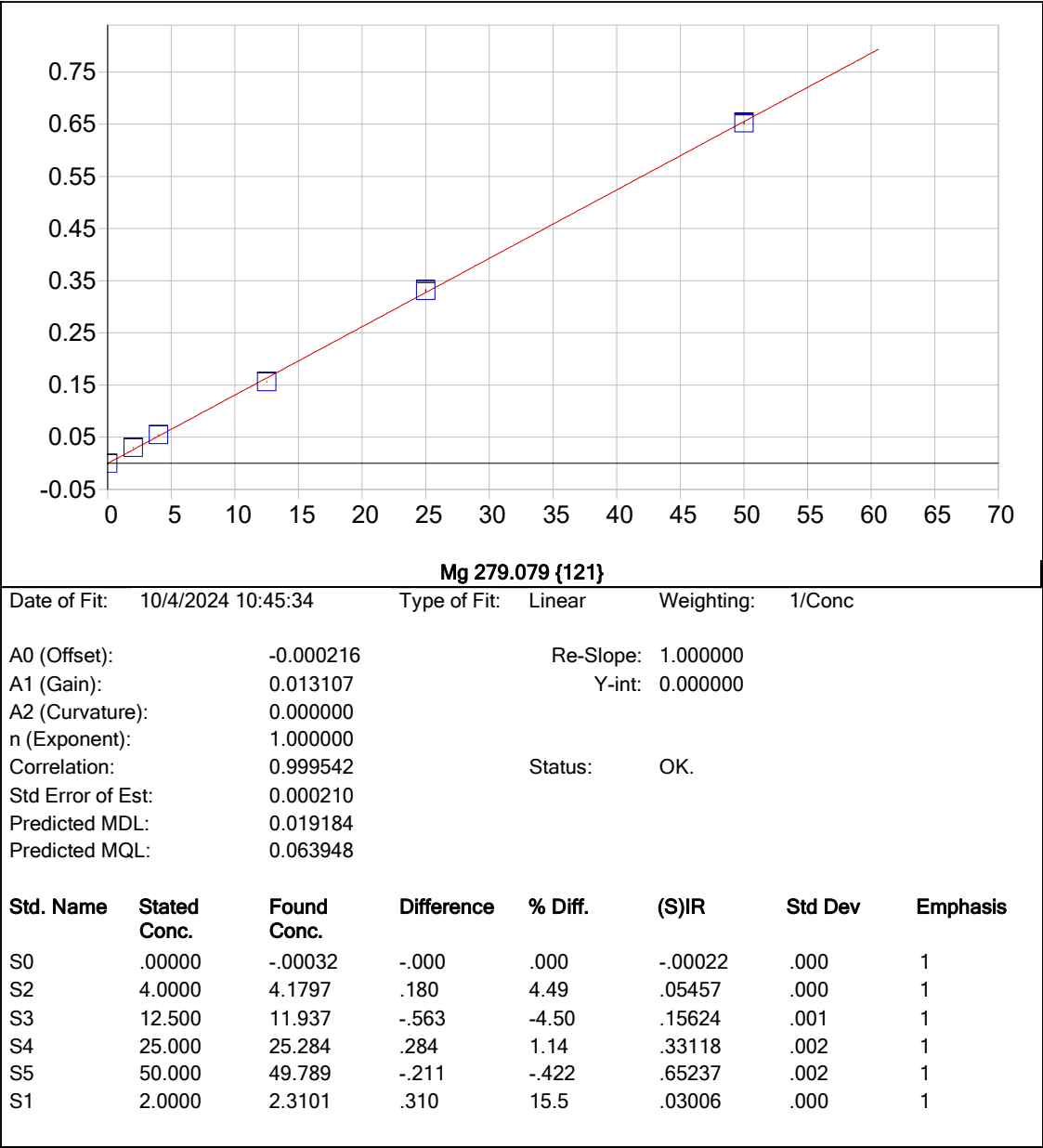


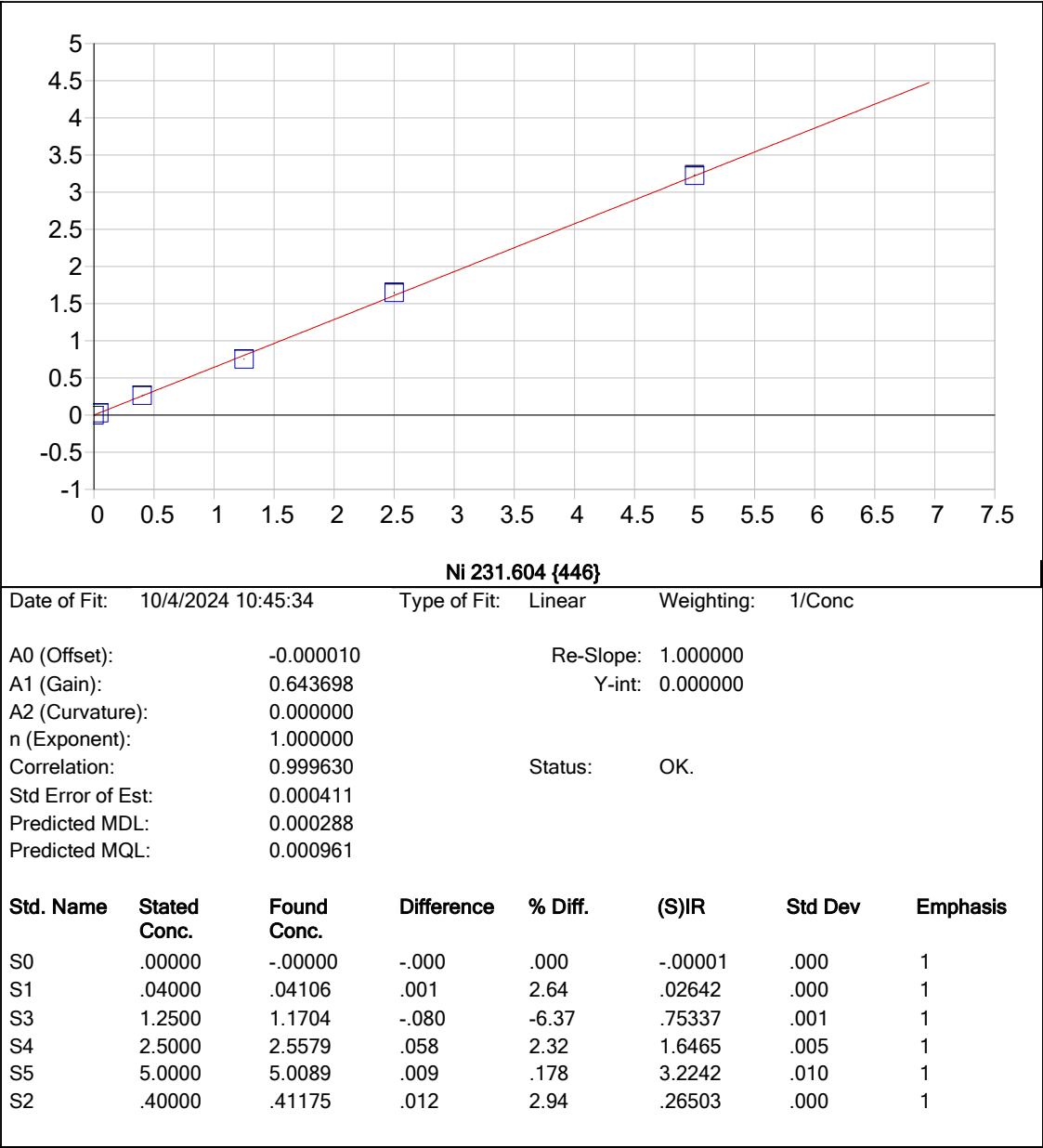


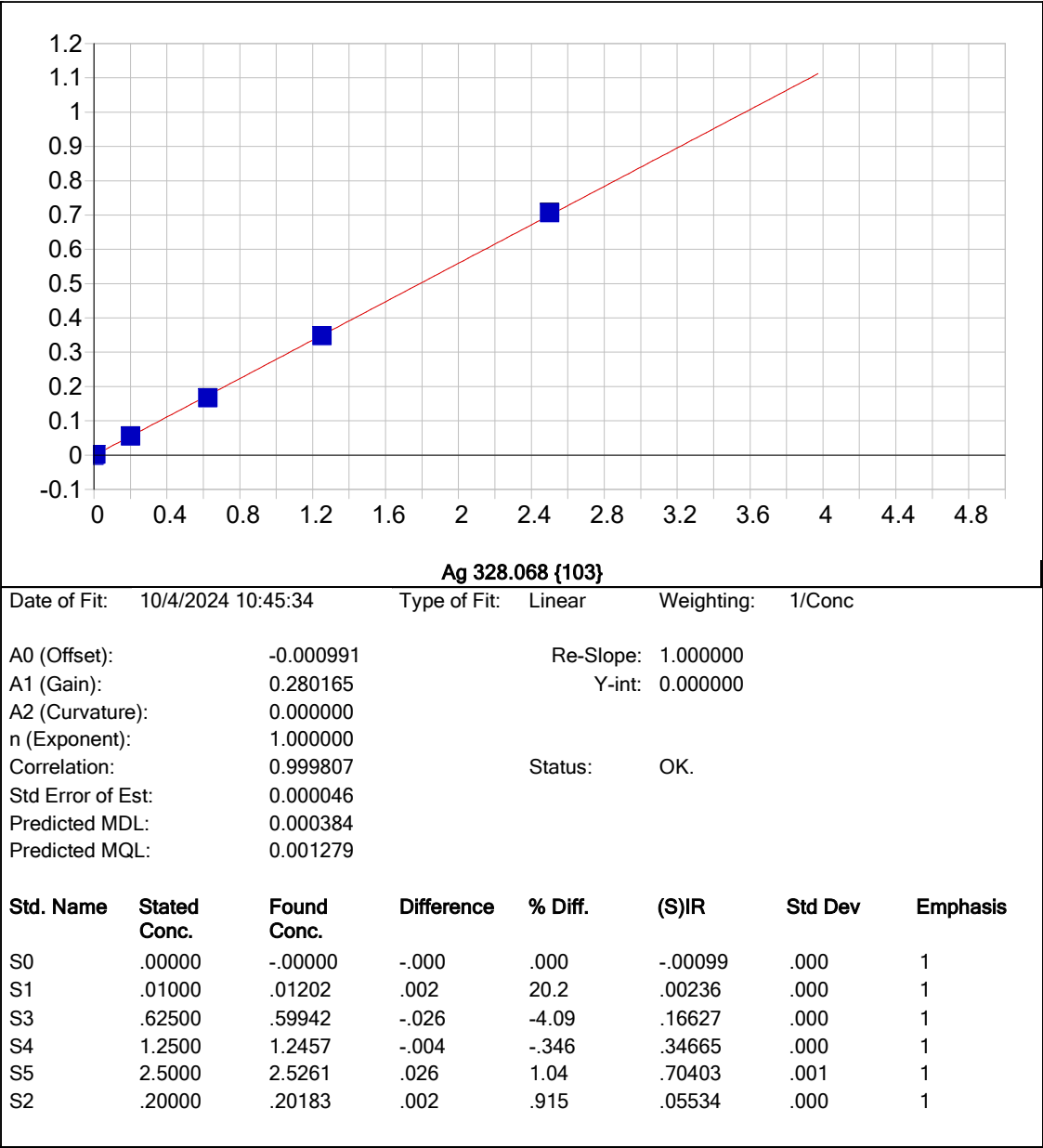


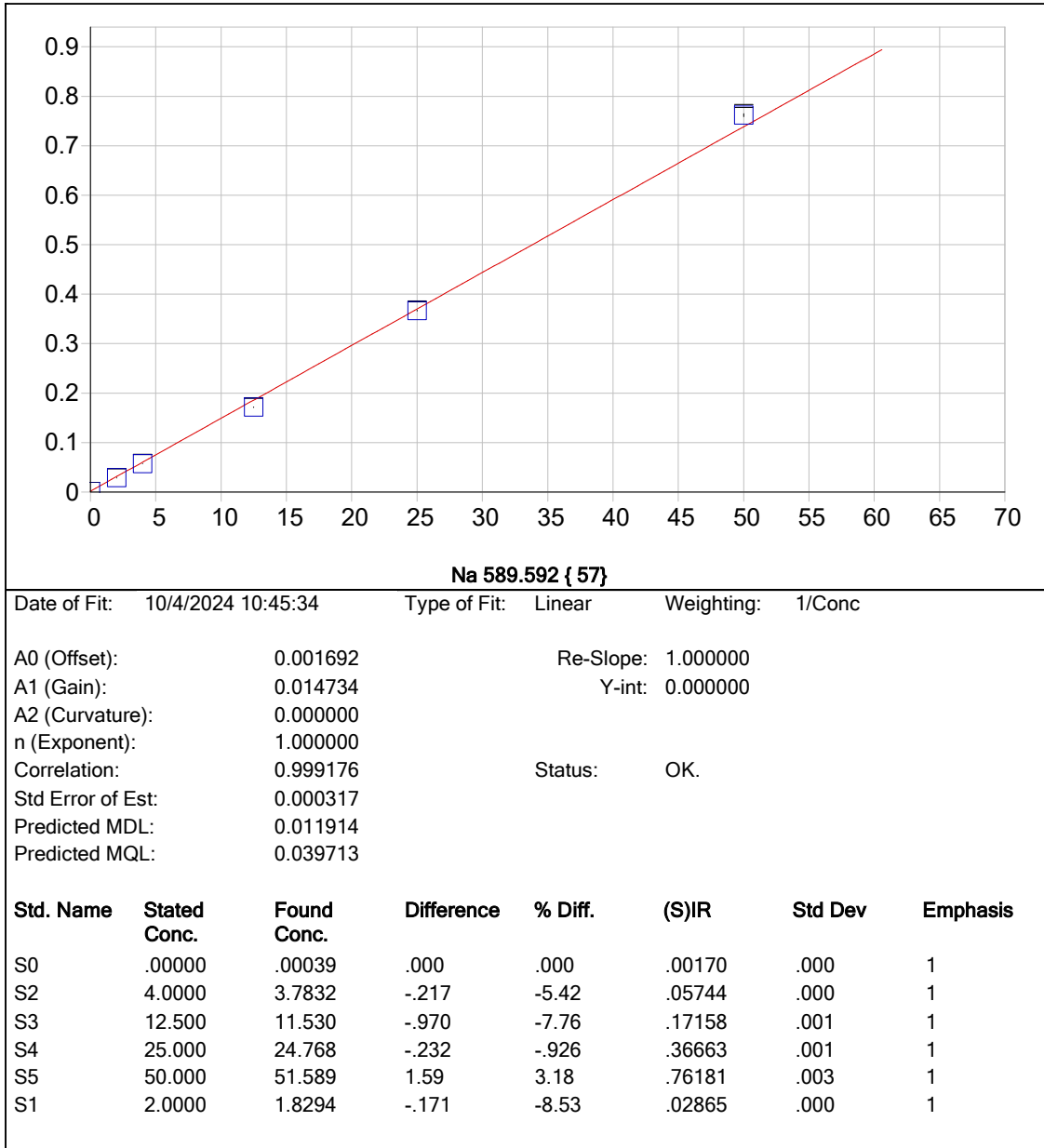


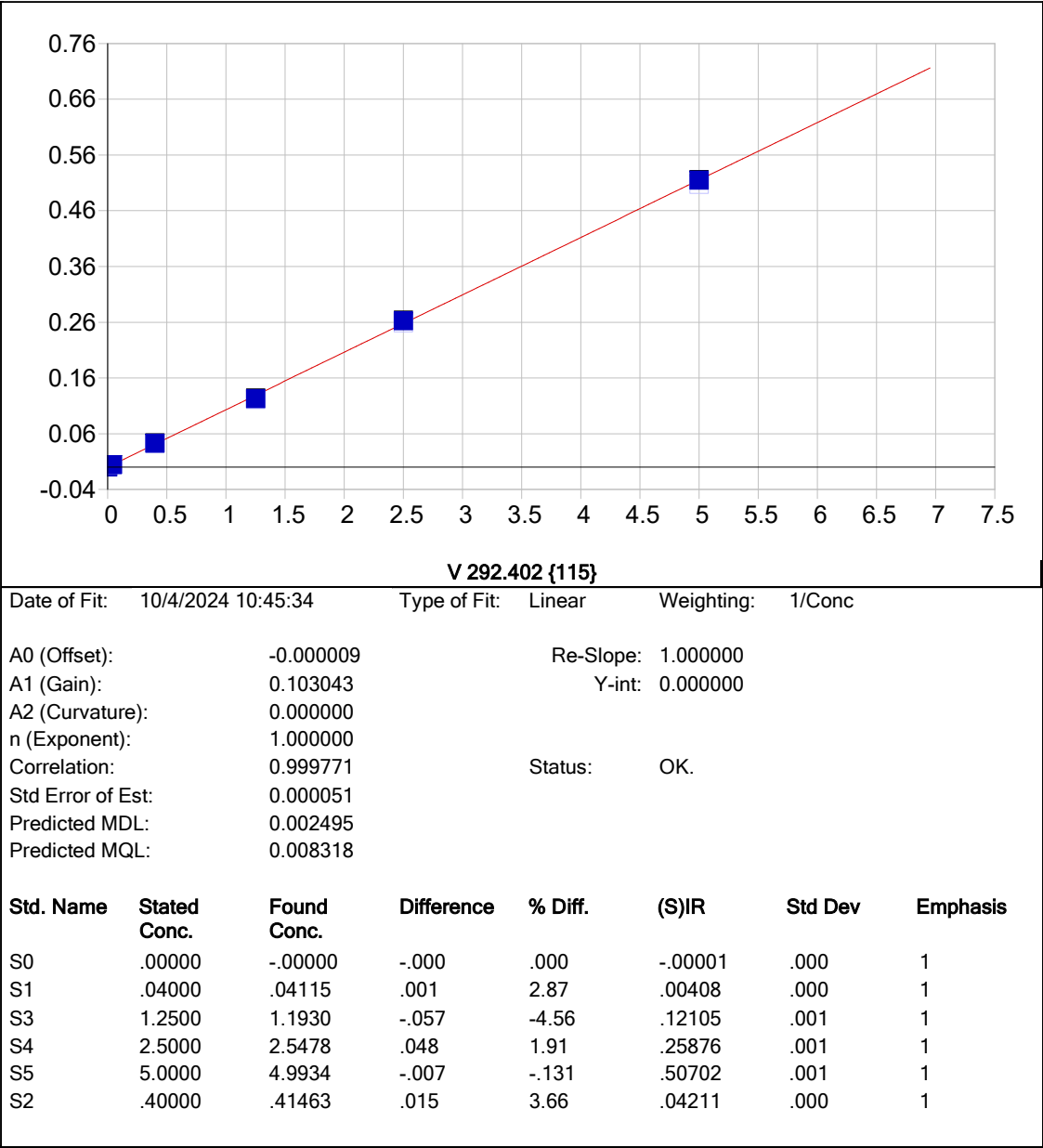


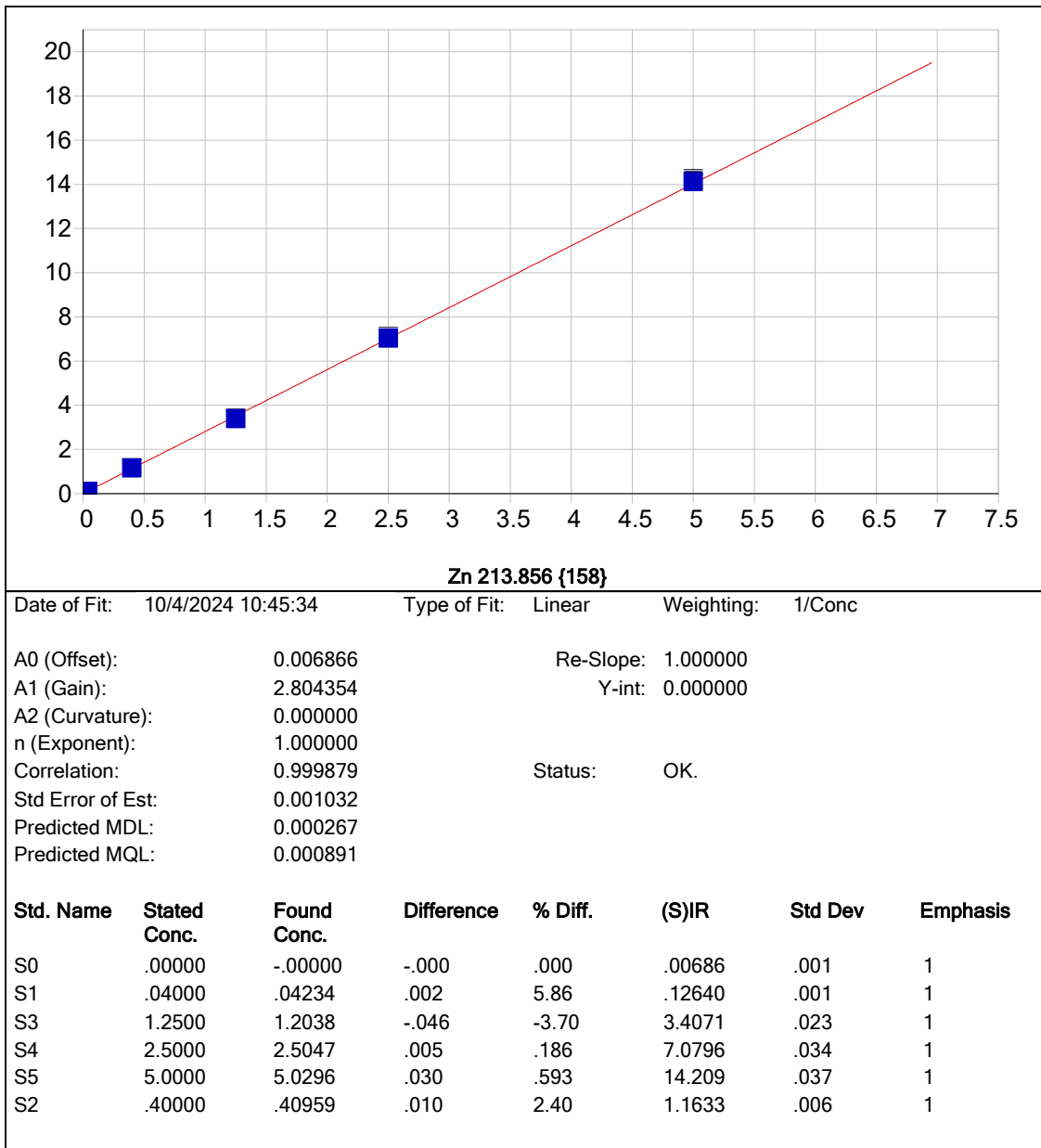


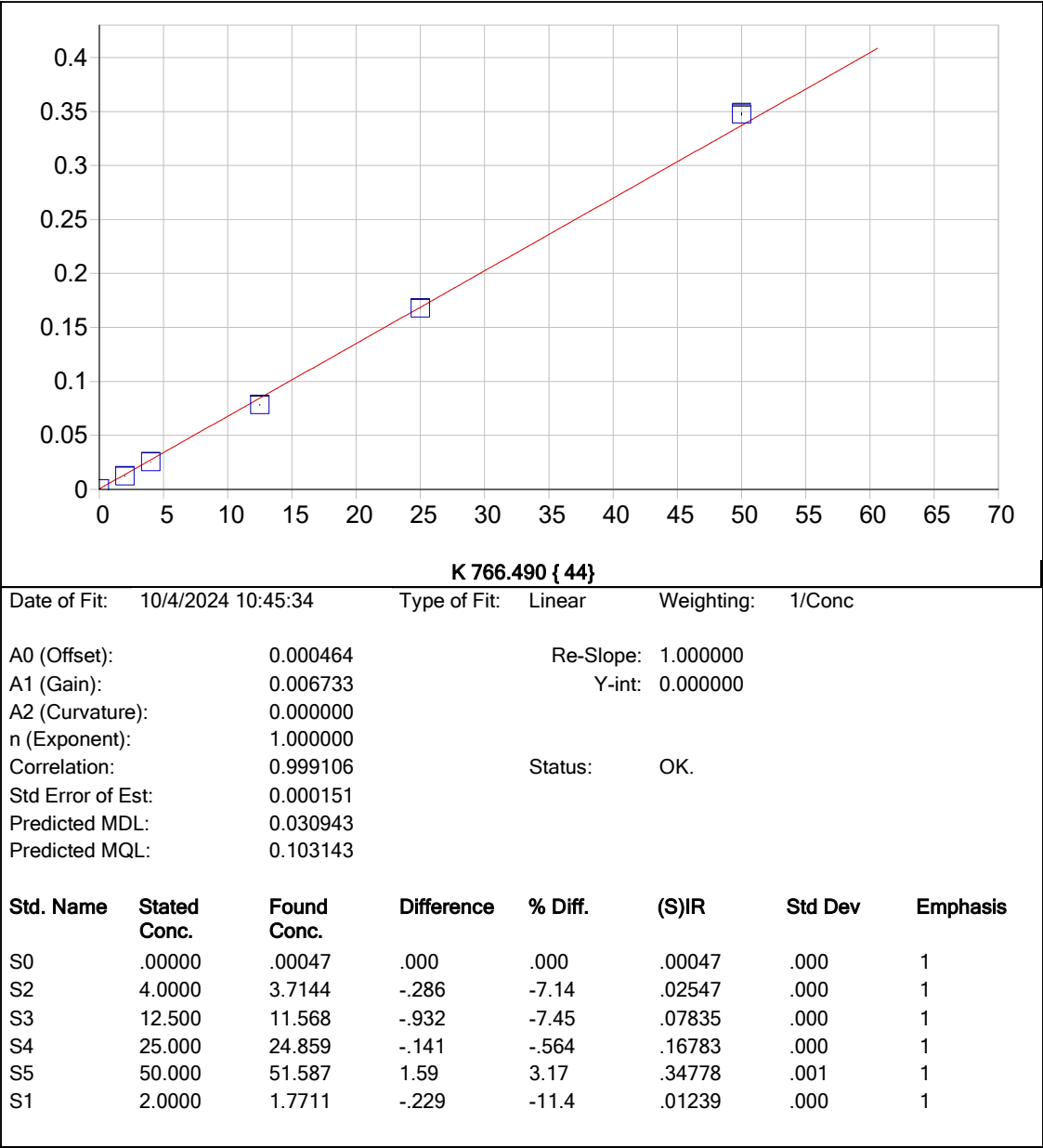


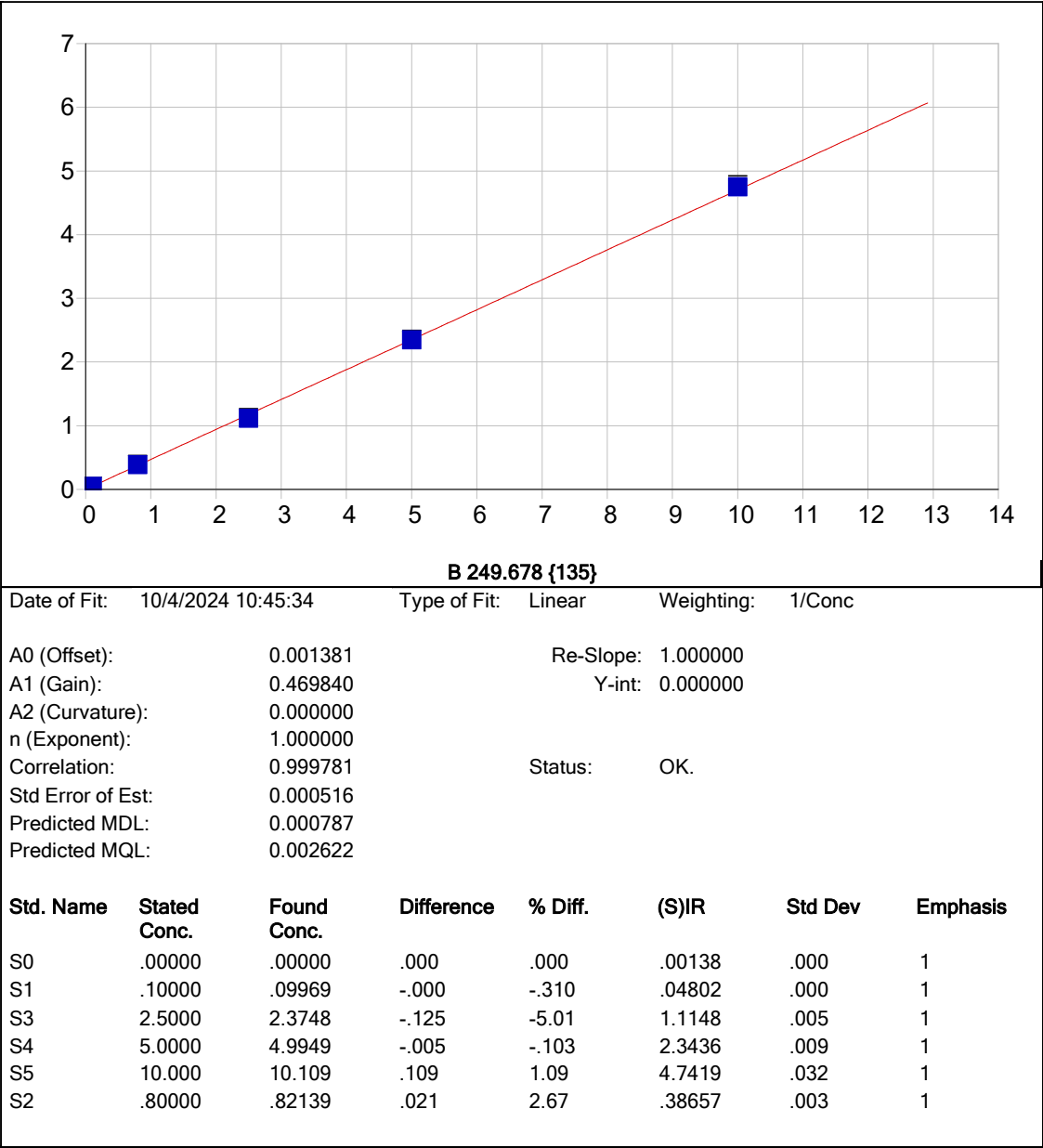


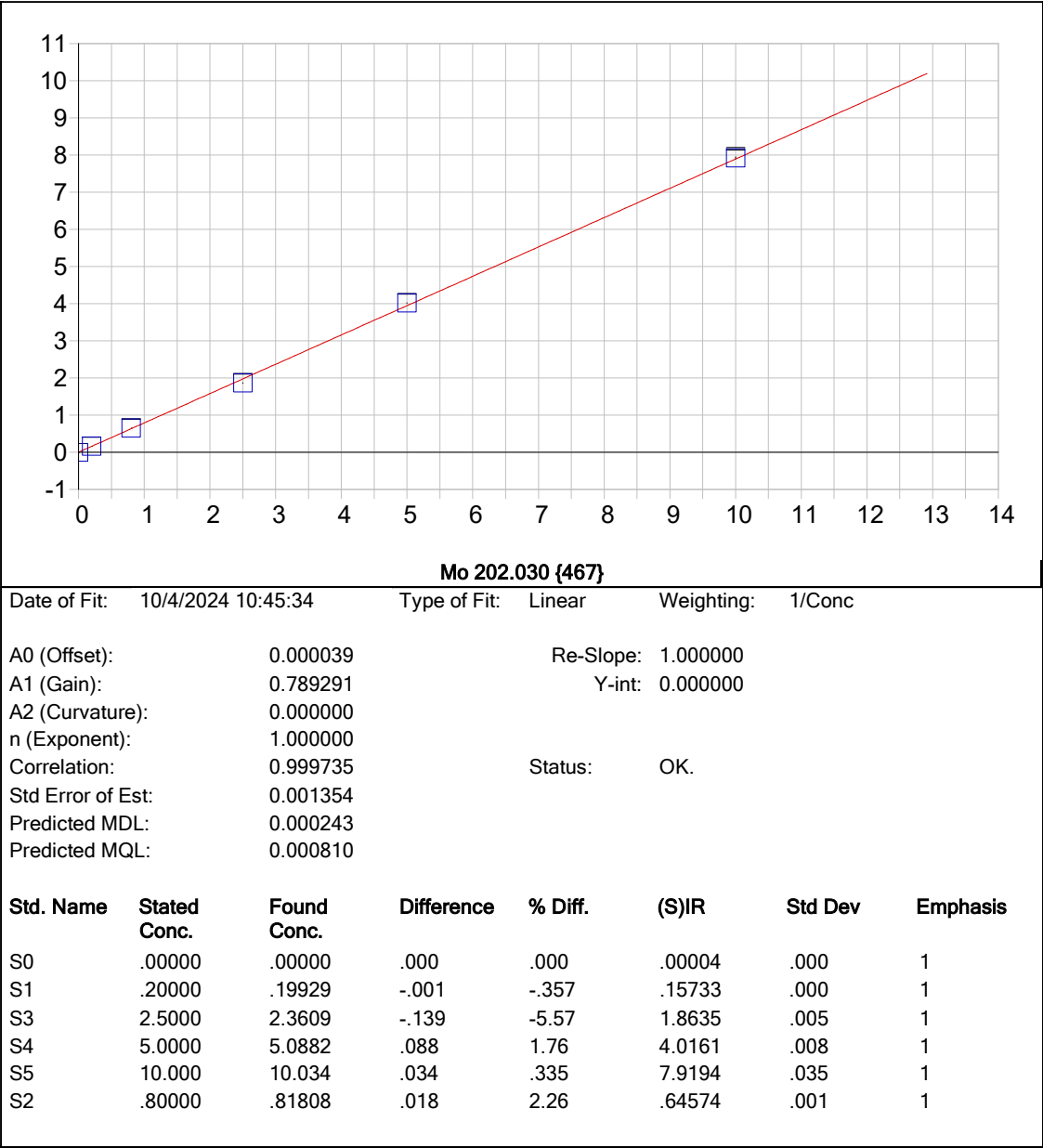


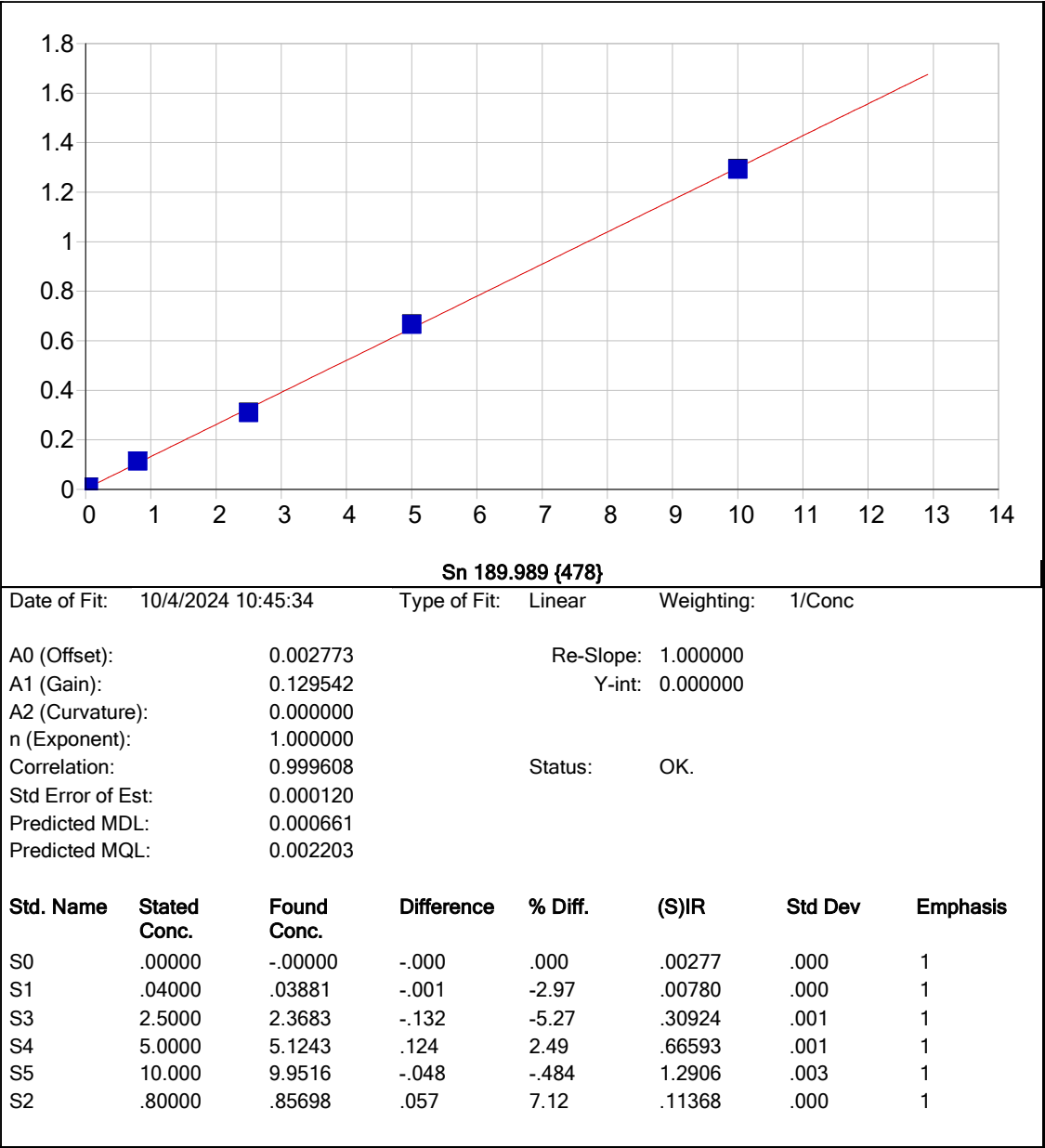


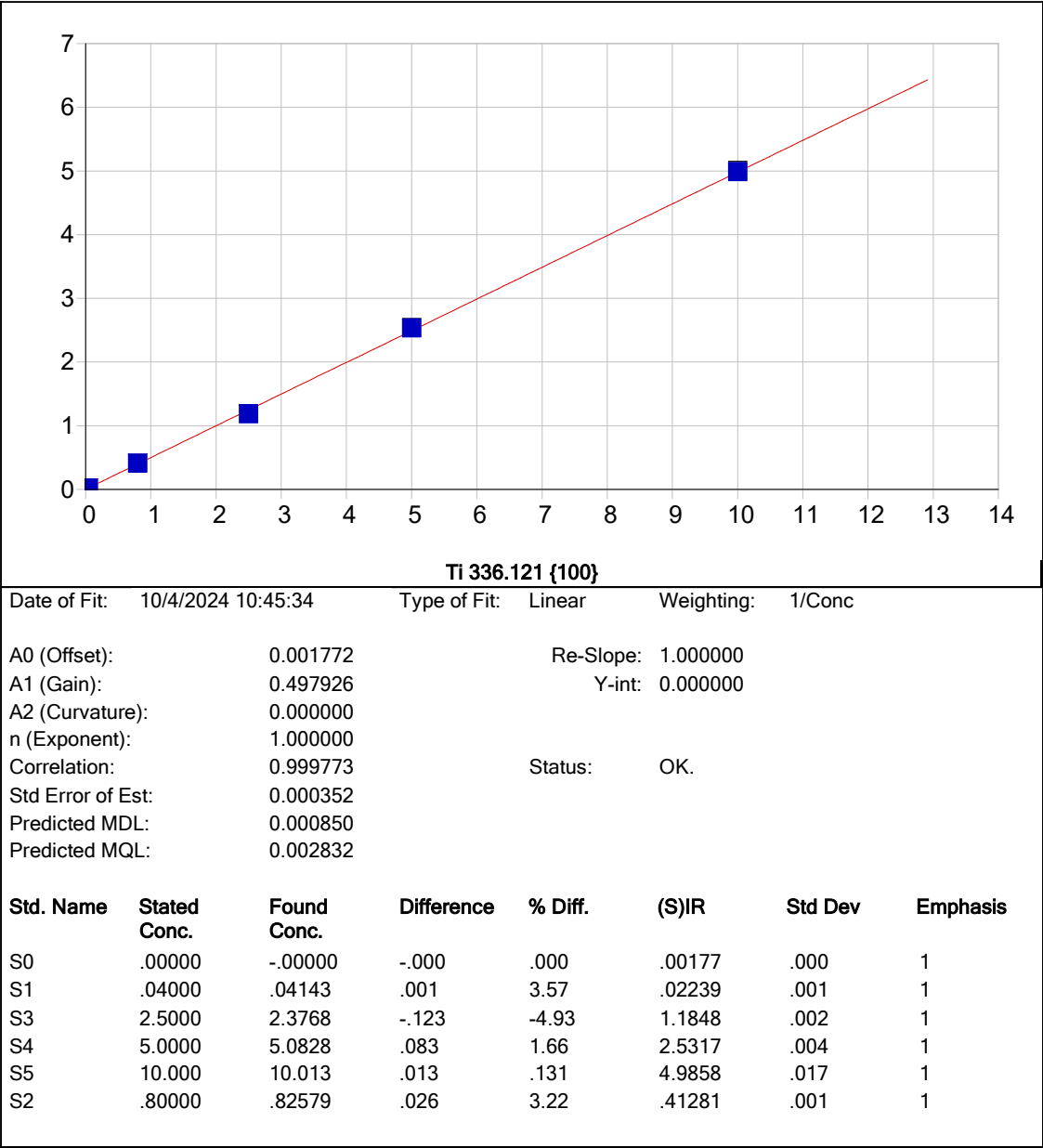


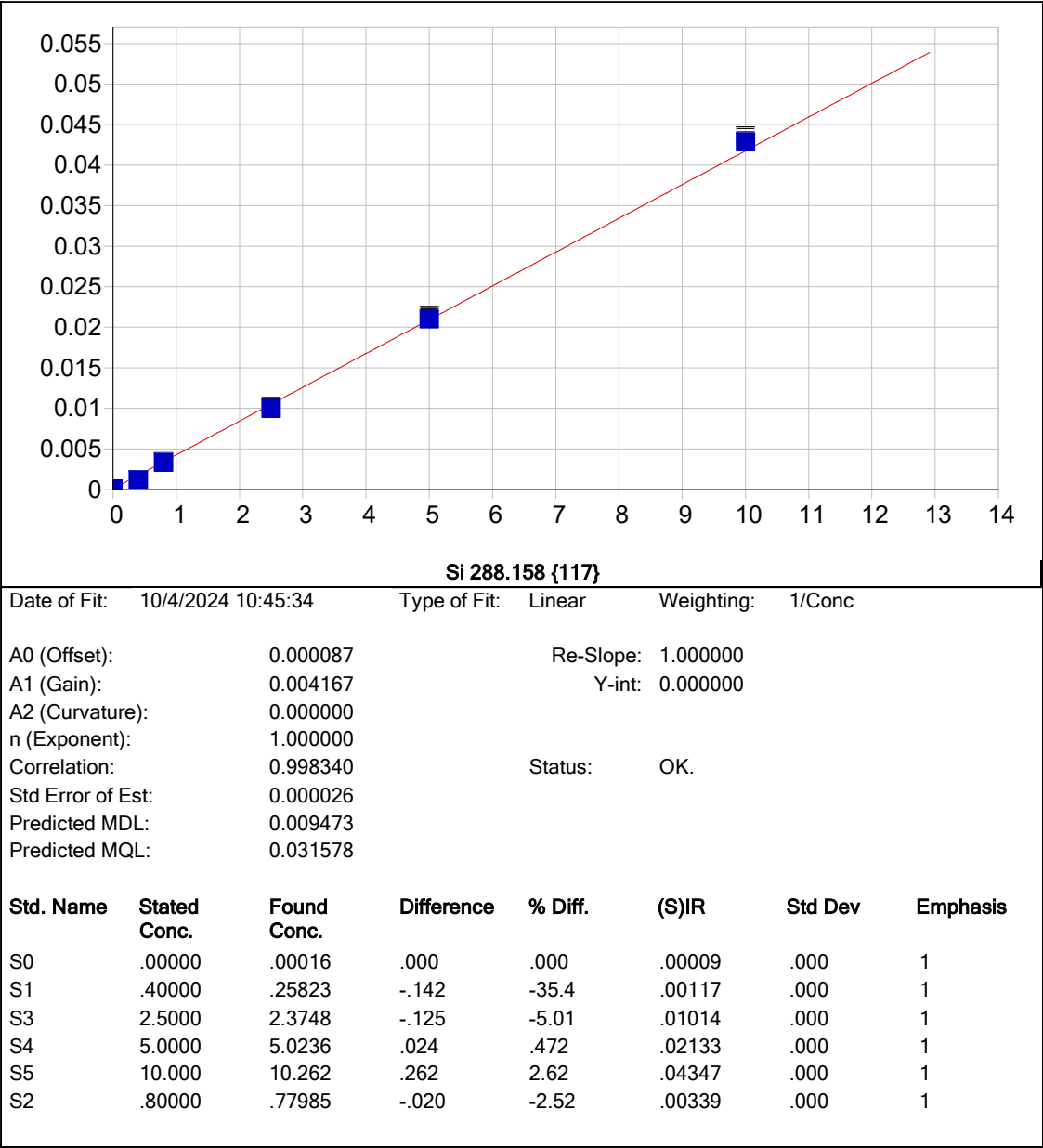


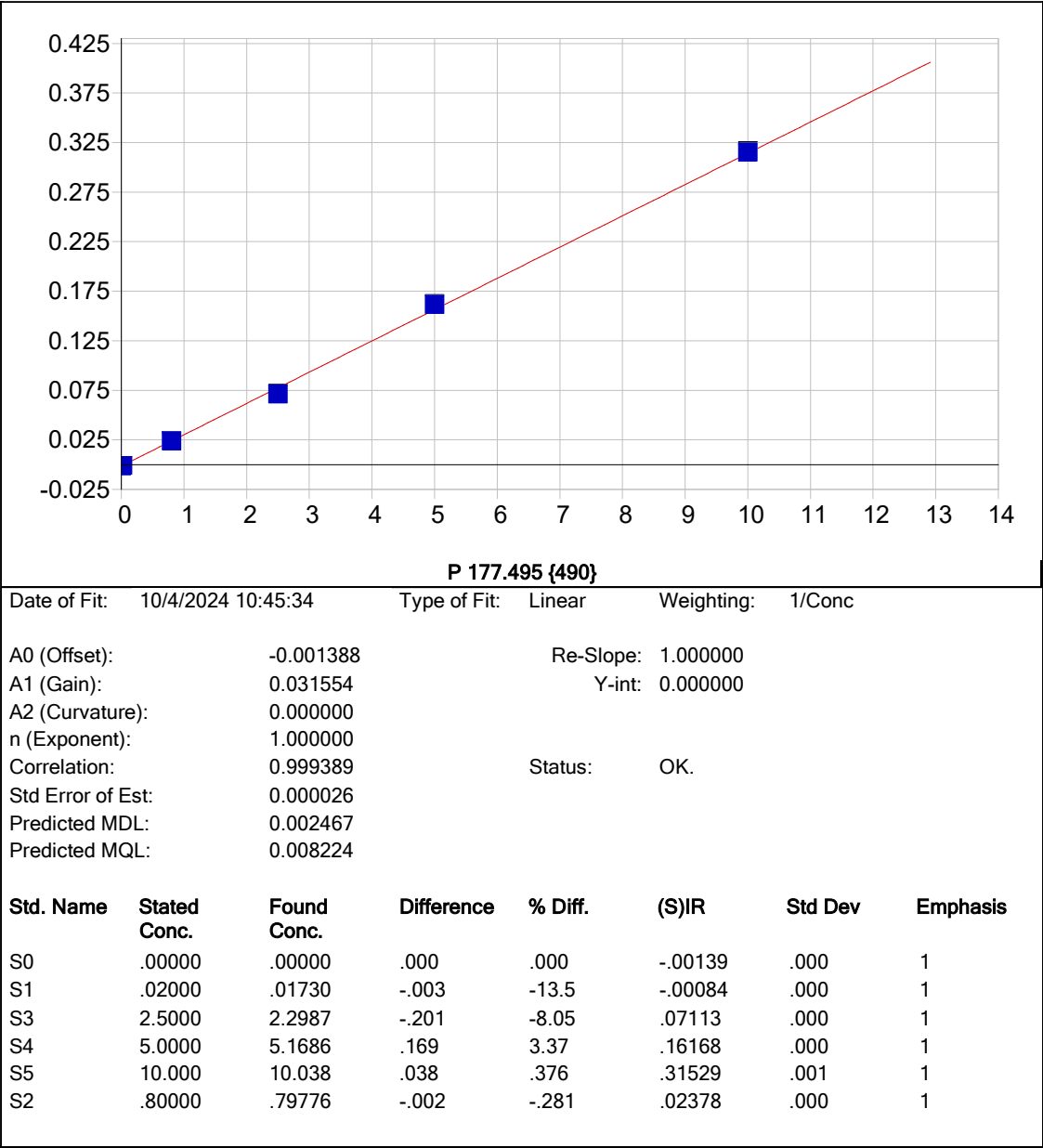


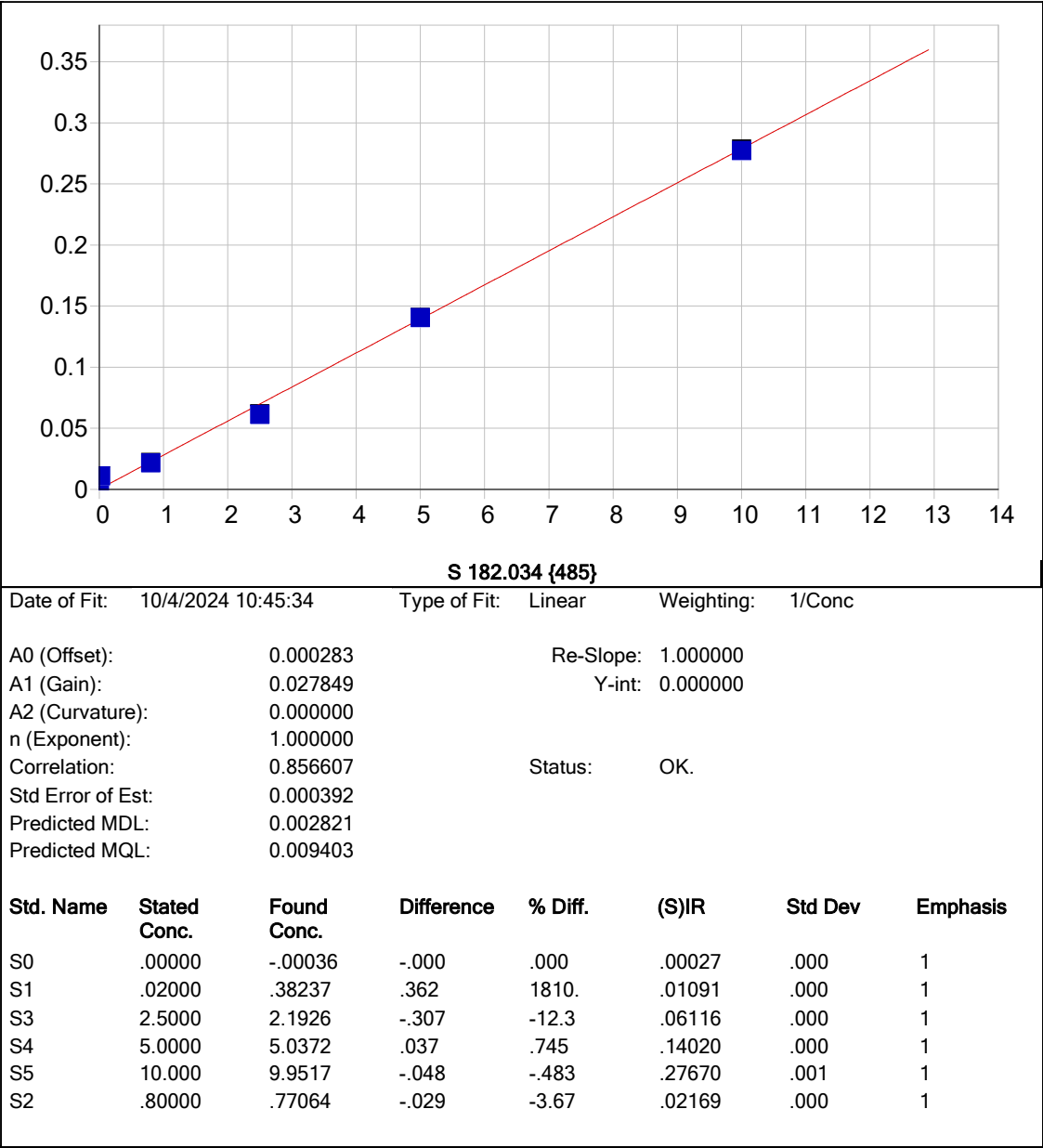


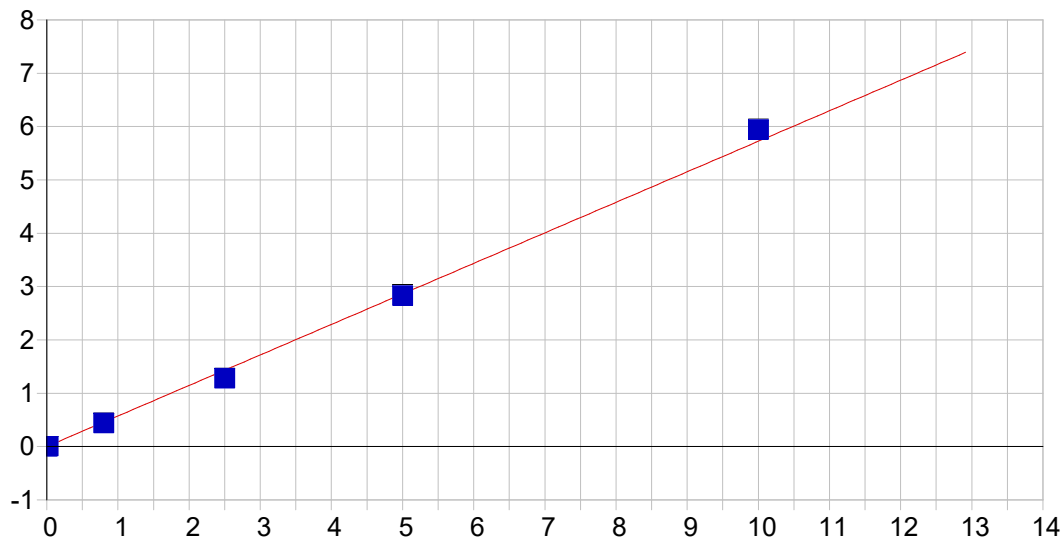










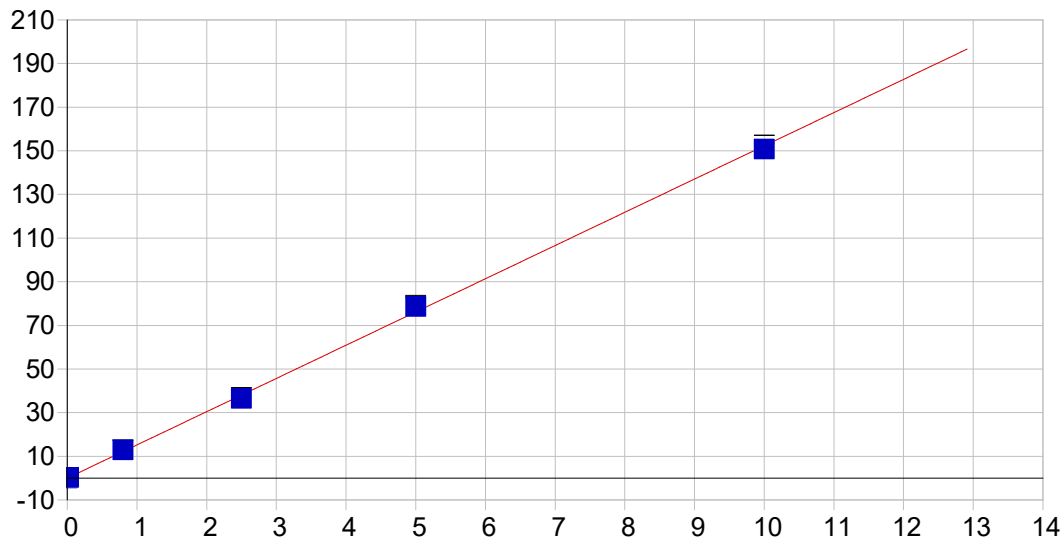


Li 670.784 { 50}

Date of Fit: 10/4/2024 10:45:34 Type of Fit: Linear Weighting: 1/Conc

A0 (Offset):	0.001483	Re-Slope:	1.000000
A1 (Gain):	0.572274	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.998507	Status:	OK.
Std Error of Est:	0.000734		
Predicted MDL:	0.002310		
Predicted MQL:	0.007700		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00002	.000	.000	.00149	.002	1
S5	10.000	10.379	.379	3.79	5.9460	.006	1
S4	5.0000	4.9441	-.056	-1.12	2.8334	.020	1
S3	2.5000	2.2297	-.270	-10.8	1.2787	.004	1
S1	.02000	.00668	-.013	-66.6	.00551	.001	1
S2	.80000	.76127	-.039	-4.84	.43755	.003	1

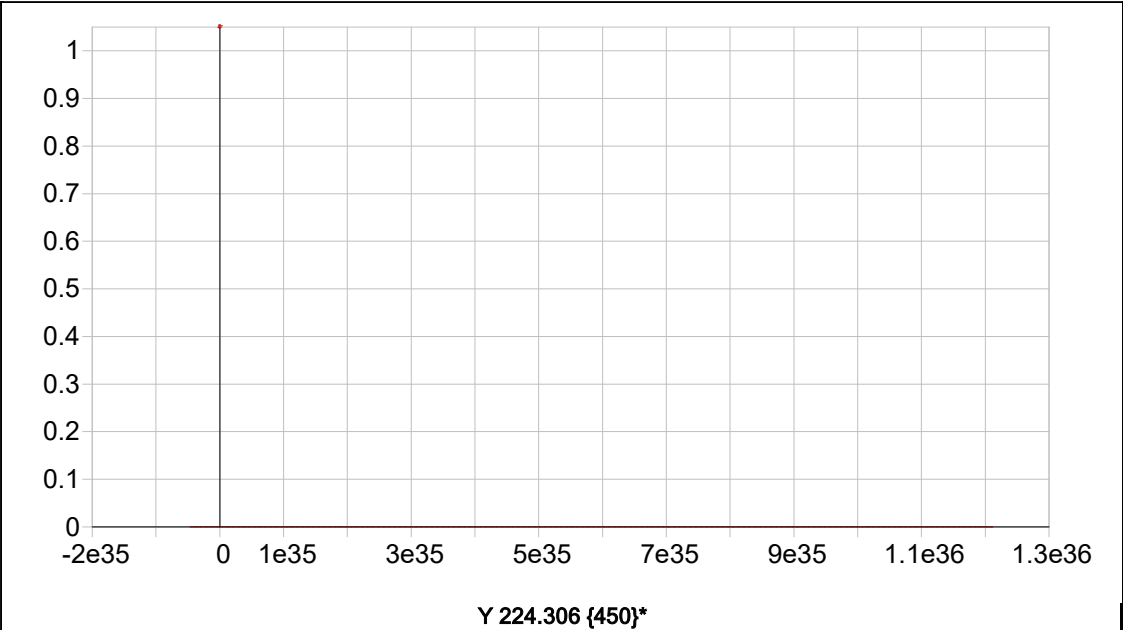


Sr 407.771 { 83}

Date of Fit: 10/4/2024 10:45:34 Type of Fit: Linear Weighting: 1/Conc

A0 (Offset): -0.001548 Re-Slope: 1.000000
A1 (Gain): 15.229514 Y-int: 0.000000
A2 (Curvature): 0.000000
n (Exponent): 1.000000
Correlation: 0.999651 Status: OK.
Std Error of Est: 0.009434
Predicted MDL: 0.000049
Predicted MQL: 0.000165

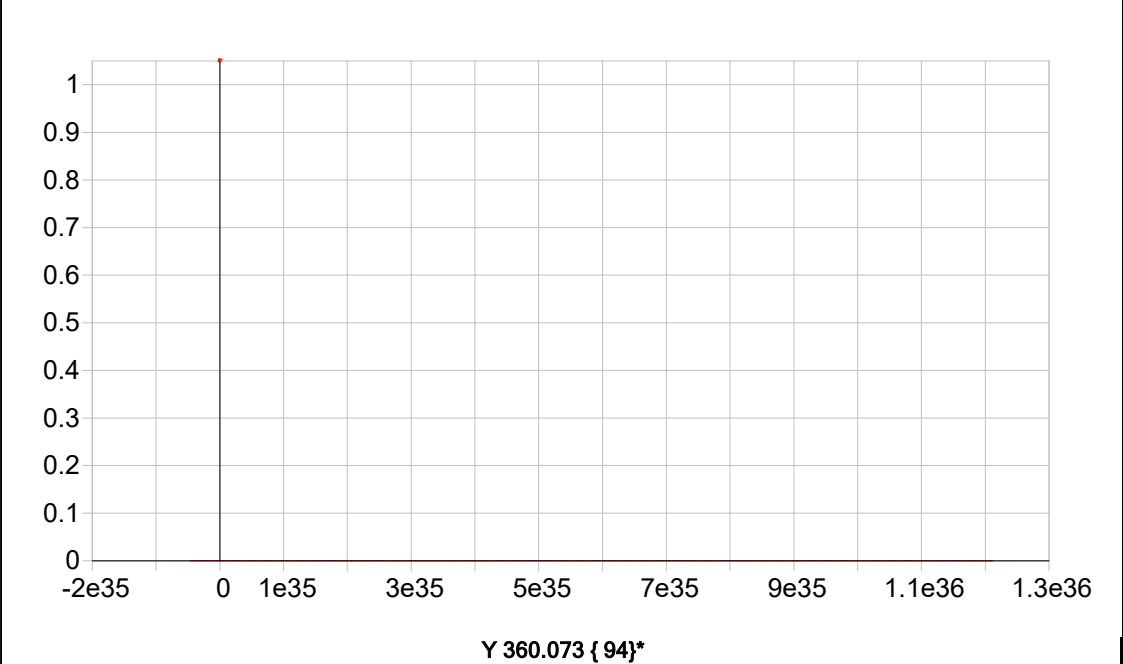
Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00158	.000	1
S1	.02000	.02129	.001	6.44	.32418	.001	1
S3	2.5000	2.3977	-.102	-4.09	36.553	.326	1
S4	5.0000	5.1608	.161	3.22	78.671	.508	1
S5	10.000	9.8972	-.103	-1.03	150.88	1.78	1
S2	.80000	.84298	.043	5.37	12.849	.021	1



Date of Fit: 10/3/2024 12:12:40 Type of Fit: Linear Weighting: 1/Conc

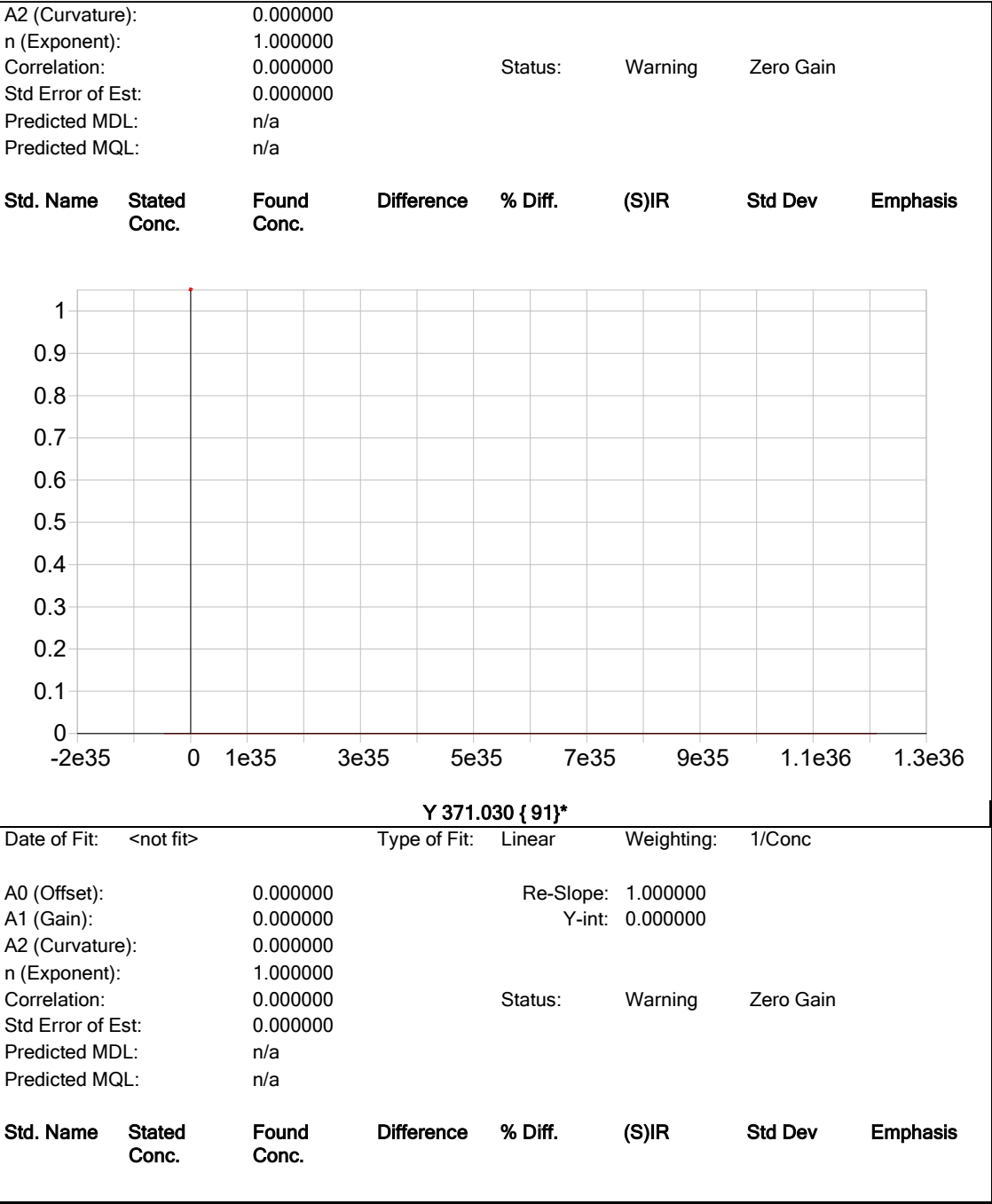
A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.000000	Status:	Warning Zero Gain
Std Error of Est:	0.000000		
Predicted MDL:	n/a		
Predicted MQL:	n/a		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
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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		Status:	Warning	Zero Gain	
n (Exponent):		1.000000					
Correlation:		0.000000					
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

Sample Name: S0 Acquired: 10/4/2024 10:20:10 Type: Cal
Method: NON EPA-6010-200.7(v2424) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	-.00019	.00021	-.00019	.00034	.00017	.00011	.01866	-.00084
Stddev	.00006	.00003	.00027	.00012	.00017	.00076	.00254	.00027
%RSD	31.840	15.551	143.11	36.825	102.42	683.31	13.588	31.877
#1	-.00012	.00023	-.00034	.00047	.00036	-.00046	.01629	-.00068
#2	-.00023	.00023	-.00034	.00023	.00010	-.00017	.02133	-.00115
#3	-.00023	.00017	.00012	.00030	.00004	.00097	.01838	-.00069
Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00007	.00124	.00009	.00008	-.00046	.00005	.00073	-.00022
Stddev	.00008	.00039	.00000	.00007	.00011	.00001	.00031	.00025
%RSD	120.93	31.731	4.3621	83.730	23.185	30.918	42.336	113.09
#1	-.00014	.00099	.00009	.00001	-.00042	.00003	.00104	-.00026
#2	-.00007	.00170	.00009	.00009	-.00038	.00005	.00072	-.00045
#3	.00001	.00104	.00010	.00014	-.00058	.00006	.00043	.00005
Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00001	-.00099	.00170	-.00001	.00686	.00047	.00138	.00004
Stddev	.00008	.00008	.00022	.00011	.00069	.00020	.00038	.00011
%RSD	763.42	7.6436	13.189	1125.7	9.9997	42.389	27.574	263.06
#1	.00008	-.00105	.00164	.00009	.00650	.00057	.00103	-.00005
#2	-.00005	-.00091	.00151	-.00000	.00643	.00024	.00178	.00001
#3	-.00007	-.00102	.00194	-.00012	.00765	.00059	.00134	.00016
Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	.00277	.00177	.00009	-.00139	.00027	.00149	-.00158	
Stddev	.00005	.00024	.00002	.00007	.00009	.00175	.00039	
%RSD	1.8649	13.553	25.896	5.3406	34.417	117.43	25.009	
#1	.00283	.00173	.00007	-.00147	.00030	.00055	-.00134	
#2	.00275	.00203	.00008	-.00132	.00035	.00352	-.00203	
#3	.00274	.00155	.00011	-.00138	.00017	.00042	-.00136	

Sample Name: S0 Acquired: 10/4/2024 10:20:10 Type: Cal
Method: NON EPA-6010-200.7(v2424) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	3090.2	59535.	8542.9	2321.5	5203.0
Stddev	3.3	73.	34.1	13.0	4.7
%RSD	.10674	.12316	.39955	.55904	.09071
#1	3087.1	59592.	8512.9	2333.0	5201.8
#2	3093.6	59452.	8535.6	2324.2	5208.2
#3	3090.0	59562.	8580.0	2307.4	5198.9

Sample Name: S1 Acquired: 10/4/2024 10:24:36 Type: Cal
Method: NON EPA-6010-200.7(v2424) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	.00095	.00207	.00333	.00233	.01008	.01042	.30169	.03410
Stddev	.00003	.00008	.00035	.00017	.00017	.00045	.00227	.00022
%RSD	3.3492	3.8361	10.653	7.4244	1.6738	4.2927	.75325	.65151
#1	.00099	.00202	.00373	.00252	.01001	.00994	.29930	.03386
#2	.00093	.00216	.00315	.00229	.00996	.01050	.30383	.03429
#3	.00094	.00202	.00309	.00218	.01027	.01082	.30195	.03415
Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.01467	.14103	.00147	.02771	.01769	.00061	.01403	.03006
Stddev	.00019	.00081	.00002	.00018	.00009	.00002	.00006	.00014
%RSD	1.3291	.57724	1.3186	.65685	.51137	2.5570	.40107	.45130
#1	.01464	.14022	.00146	.02750	.01773	.00059	.01398	.02998
#2	.01449	.14185	.00145	.02781	.01759	.00062	.01409	.02999
#3	.01487	.14100	.00149	.02782	.01775	.00062	.01403	.03022
Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02642	.00236	.02865	.00408	.12640	.01239	.04802	.15733
Stddev	.00012	.00007	.00033	.00002	.00071	.00018	.00043	.00042
%RSD	.45674	3.0719	1.1581	.57655	.55942	1.4862	.89197	.26889
#1	.02644	.00235	.02864	.00410	.12568	.01219	.04847	.15736
#2	.02629	.00229	.02832	.00408	.12643	.01256	.04797	.15690
#3	.02653	.00244	.02898	.00405	.12709	.01242	.04762	.15774
Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	.00780	.02239	.00117	-.00084	.01091	.00551	.32418	
Stddev	.00004	.00058	.00002	.00005	.00008	.00080	.00137	
%RSD	.54507	2.5970	1.3983	6.0986	.74969	14.467	.42151	
#1	.00783	.02303	.00115	-.00081	.01085	.00469	.32282	
#2	.00780	.02189	.00118	-.00090	.01087	.00628	.32556	
#3	.00775	.02225	.00117	-.00081	.01100	.00558	.32417	

Sample Name: S1 Acquired: 10/4/2024 10:24:36 Type: Cal
Method: NON EPA-6010-200.7(v2424) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	3003.5	62654.	8265.3	2401.9	4849.3
Stddev	3.9	146.	16.7	11.2	9.0
%RSD	.13042	.23287	.20208	.46431	.18530
#1	3003.6	62538.	8246.6	2400.1	4840.7
#2	3007.4	62818.	8270.7	2391.8	4858.6
#3	2999.6	62606.	8278.7	2413.9	4848.4

Sample Name: S2 Acquired: 10/4/2024 10:28:56 Type: Cal
Method: NON EPA-6010-200.7(v2424) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	.04355	.04105	.20667	.08381	.16051	.14423	4.3707	.22026
Stddev	.00007	.00134	.00043	.00015	.00006	.00006	.0068	.00140
%RSD	.15504	3.2598	.20921	.18455	.03534	.04011	.15472	.63576
#1	.04355	.04228	.20622	.08393	.16057	.14423	4.3784	.21931
#2	.04349	.04125	.20672	.08387	.16046	.14418	4.3677	.21961
#3	.04362	.03963	.20708	.08363	.16051	.14430	4.3660	.22187
Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.95244	.27721	.02227	.36940	.16904	.00495	.25131	.05457
Stddev	.00073	.00138	.00009	.00060	.00026	.00001	.00011	.00037
%RSD	.07627	.49905	.41074	.16282	.15320	.11845	.04455	.67092
#1	.95249	.27563	.02217	.36872	.16897	.00495	.25118	.05435
#2	.95313	.27823	.02229	.36966	.16882	.00495	.25135	.05436
#3	.95168	.27776	.02236	.36984	.16933	.00494	.25139	.05499
Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.26503	.05534	.05744	.04211	1.1633	.02547	.38657	.64574
Stddev	.00044	.00009	.00016	.00027	.0056	.00009	.00264	.00128
%RSD	.16758	.16920	.27330	.65062	.47815	.34745	.68262	.19835
#1	.26458	.05526	.05756	.04243	1.1665	.02556	.38467	.64695
#2	.26546	.05531	.05748	.04198	1.1666	.02547	.38545	.64586
#3	.26506	.05544	.05726	.04193	1.1569	.02538	.38958	.64440
Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	.11368	.41281	.00339	.02378	.02169	.43755	12.849	
Stddev	.00045	.00125	.00004	.00005	.00013	.00271	.021	
%RSD	.39243	.30346	1.1325	.20928	.58959	.61911	.16360	
#1	.11404	.41232	.00343	.02382	.02175	.43950	12.860	
#2	.11383	.41187	.00335	.02380	.02177	.43446	12.825	
#3	.11318	.41423	.00338	.02372	.02154	.43869	12.861	

Sample Name: S2 Acquired: 10/4/2024 10:28:56 Type: Cal
Method: NON EPA-6010-200.7(v2424) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	2989.5	61519.	8523.7	2367.9	4793.7
Stddev	5.5	70.	45.3	14.0	6.3
%RSD	.18441	.11434	.53108	.59321	.13181
#1	2986.2	61447.	8563.0	2356.5	4786.7
#2	2995.8	61521.	8533.9	2363.6	4798.9
#3	2986.3	61588.	8474.2	2383.6	4795.6

Sample Name: S3 Acquired: 10/4/2024 10:33:00 Type: Cal
Method: NON EPA-6010-200.7(v2424) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	.12526	.11613	.59288	.23759	.46256	.41360	12.533	.64200
Stddev	.00085	.00214	.00135	.00124	.00134	.00036	.038	.00117
%RSD	.67617	1.8449	.22798	.52065	.28884	.08692	.30629	.18244
#1	.12498	.11486	.59202	.23638	.46118	.41321	12.576	.64118
#2	.12458	.11493	.59219	.23752	.46264	.41392	12.501	.64334
#3	.12621	.11861	.59444	.23885	.46385	.41367	12.523	.64147

Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.7310	.78938	.06511	1.0589	.47863	.01483	.71455	.15624
Stddev	.0072	.00107	.00019	.0026	.00071	.00014	.00084	.00056
%RSD	.26315	.13612	.29856	.24111	.14891	.92428	.11736	.36013
#1	2.7248	.78841	.06488	1.0569	.47781	.01479	.71391	.15566
#2	2.7293	.78921	.06522	1.0581	.47896	.01472	.71424	.15678
#3	2.7388	.79053	.06522	1.0618	.47911	.01499	.71550	.15628

Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.75337	.16627	.17158	.12105	3.4071	.07835	1.1148	1.8635
Stddev	.00131	.00016	.00058	.00078	.0233	.00034	.0055	.0048
%RSD	.17443	.09919	.33830	.64625	.68363	.43075	.49075	.25545
#1	.75193	.16621	.17161	.12023	3.3937	.07818	1.1118	1.8591
#2	.75369	.16646	.17099	.12111	3.3935	.07813	1.1212	1.8627
#3	.75450	.16614	.17215	.12179	3.4340	.07874	1.1116	1.8686

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	.30924	1.1848	.01014	.07113	.06116	1.2787	36.553	
Stddev	.00102	.0016	.00007	.00032	.00034	.0040	.326	
%RSD	.33011	.13848	.71008	.45414	.56242	.31444	.89243	
#1	.30836	1.1867	.01009	.07095	.06089	1.2828	36.796	
#2	.30899	1.1839	.01010	.07094	.06105	1.2786	36.679	
#3	.31036	1.1838	.01022	.07151	.06155	1.2748	36.182	

Sample Name: S3 Acquired: 10/4/2024 10:33:00 Type: Cal
Method: NON EPA-6010-200.7(v2424) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	2998.8	57933.	8497.1	2269.7	4795.9
Stddev	1.0	83.	36.3	8.0	7.5
%RSD	.03428	.14353	.42676	.35293	.15591
#1	2999.7	58004.	8497.5	2273.6	4802.8
#2	2997.7	57841.	8460.7	2275.0	4796.9
#3	2998.9	57953.	8533.2	2260.5	4787.9

Sample Name: S4 Acquired: 10/4/2024 10:37:08 Type: Cal
Method: NON EPA-6010-200.7(v2424) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	.27943	.24855	1.2895	.53098	1.0198	.88835	26.774	1.3299
Stddev	.00080	.00208	.0043	.00104	.0027	.00103	.319	.0033
%RSD	.28622	.83607	.33012	.19672	.26374	.11586	1.1898	.25026
#1	.27862	.24998	1.2861	.53065	1.0202	.88938	26.930	1.3338
#2	.27946	.24950	1.2883	.53014	1.0170	.88732	26.985	1.3277
#3	.28021	.24617	1.2943	.53215	1.0223	.88835	26.408	1.3284
Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5.9988	1.6597	.13405	2.3188	1.0369	.03096	1.5062	.33118
Stddev	.0162	.0018	.00082	.0067	.0028	.00009	.0031	.00242
%RSD	.26993	.10646	.60979	.29108	.26650	.29621	.20719	.73160
#1	5.9833	1.6608	.13449	2.3144	1.0363	.03085	1.5098	.33378
#2	5.9973	1.6577	.13456	2.3155	1.0344	.03103	1.5044	.33078
#3	6.0156	1.6606	.13311	2.3266	1.0399	.03100	1.5044	.32899
Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.6465	.34665	.36663	.25876	7.0796	.16783	2.3436	4.0161
Stddev	.0051	.00029	.00086	.00096	.0337	.00022	.0088	.0082
%RSD	.30860	.08445	.23373	.37068	.47659	.13252	.37354	.20465
#1	1.6420	.34634	.36727	.25888	7.0814	.16760	2.3536	4.0150
#2	1.6455	.34692	.36698	.25966	7.0450	.16804	2.3375	4.0086
#3	1.6520	.34670	.36566	.25775	7.1124	.16786	2.3396	4.0249
Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	.66593	2.5317	.02133	.16168	.14020	2.8334	78.671	
Stddev	.00093	.0043	.00011	.00046	.00011	.0197	.508	
%RSD	.13982	.16962	.51776	.28286	.07647	.69419	.64589	
#1	.66488	2.5362	.02122	.16130	.14011	2.8521	78.499	
#2	.66666	2.5314	.02144	.16155	.14032	2.8352	78.271	
#3	.66624	2.5276	.02134	.16219	.14017	2.8129	79.243	

Sample Name: S4 Acquired: 10/4/2024 10:37:08 Type: Cal
Method: NON EPA-6010-200.7(v2424) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	2821.0	58824.	8506.7	2219.5	4419.6
Stddev	5.4	128.	37.1	13.2	4.7
%RSD	.19224	.21715	.43667	.59527	.10724
#1	2818.5	58762.	8469.8	2224.4	4419.9
#2	2827.2	58739.	8506.4	2229.5	4424.2
#3	2817.2	58971.	8544.1	2204.5	4414.7

Sample Name: S5 Acquired: 10/4/2024 10:41:21 Type: Cal
Method: NON EPA-6010-200.7(v2424) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	.54497	.48255	2.5319	1.0319	2.0184	1.7875	52.025	2.6987
Stddev	.00256	.00419	.0072	.0060	.0108	.0046	.409	.0157
%RSD	.47061	.86836	.28582	.57889	.53385	.25561	.78645	.58052
#1	.54398	.48479	2.5286	1.0293	2.0126	1.7825	51.566	2.6917
#2	.54305	.47771	2.5268	1.0277	2.0117	1.7913	52.156	2.6877
#3	.54788	.48514	2.5402	1.0388	2.0308	1.7889	52.352	2.7166

Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	11.736	3.2439	.26414	4.5858	2.0011	.06101	2.9434	.65237
Stddev	.026	.0148	.00020	.0113	.0102	.00040	.0092	.00204
%RSD	.21895	.45652	.07384	.24706	.50989	.64819	.31162	.31290
#1	11.723	3.2286	.26402	4.5800	1.9951	.06106	2.9336	.65008
#2	11.719	3.2450	.26437	4.5786	1.9953	.06138	2.9449	.65302
#3	11.765	3.2581	.26404	4.5989	2.0129	.06060	2.9518	.65400

Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.2242	.70403	.76181	.50702	14.209	.34778	4.7419	7.9194
Stddev	.0099	.00123	.00301	.00143	.037	.00118	.0318	.0346
%RSD	.30810	.17521	.39462	.28290	.26318	.34035	.67041	.43702
#1	3.2205	.70540	.76357	.50539	14.244	.34778	4.7215	7.9074
#2	3.2167	.70302	.76351	.50755	14.215	.34897	4.7258	7.8924
#3	3.2355	.70365	.75834	.50811	14.169	.34660	4.7786	7.9584

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	1.2906	4.9858	.04347	.31529	.27670	5.9460	150.88	
Stddev	.0027	.0167	.00011	.00134	.00108	.0056	1.78	
%RSD	.20682	.33471	.25345	.42457	.39176	.09336	1.1792	
#1	1.2897	4.9709	.04334	.31601	.27648	5.9415	150.65	
#2	1.2885	4.9826	.04355	.31375	.27575	5.9443	149.23	
#3	1.2936	5.0038	.04352	.31612	.27788	5.9522	152.76	

Sample Name: S5 Acquired: 10/4/2024 10:41:21 Type: Cal
Method: NON EPA-6010-200.7(v2424) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	2755.8	55165.	8083.4	2058.8	4270.6
Stddev	12.5	152.	30.0	12.8	12.2
%RSD	.45438	.27496	.37171	.62344	.28481
#1	2759.2	55017.	8090.3	2050.9	4272.9
#2	2766.2	55158.	8109.4	2052.0	4281.5
#3	2741.9	55320.	8050.5	2073.6	4257.5

Sample Name: ICV01 Acquired: 10/4/2024 10:45:35 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9835372	1.041101	.9959104	1.018082	1.038753	2.660789
Stddev	.0029948	.019495	.0007980	.002966	.000487	.009030
%RSD	.3044884	1.872505	.0801276	.2912842	.0469186	.3393860

#1	.9822243	1.028308	.9965916	1.014973	1.038313	2.663178
#2	.9814231	1.031456	.9950324	1.018391	1.038669	2.668385
#3	.9869641	1.063538	.9961071	1.020880	1.039277	2.650805

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5266952	.5477079	.4975140	10.64857	.5314194	.5307785
Stddev	.0016216	.0005203	.0005137	.03306	.0019521	.0001545
%RSD	.3078833	.0949976	.1032456	.3104179	.3673406	.0291077

#1	.5254843	.5471464	.4975072	10.63957	.5311918	.5309352
#2	.5285376	.5478035	.4970038	10.68519	.5295910	.5306263
#3	.5260639	.5481737	.4980311	10.62094	.5334753	.5307740

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5422095	9.742203	.5414422	6.198085	.5340148	.2585463
Stddev	.0002594	.010654	.0017963	.040914	.0001113	.0002432
%RSD	.0478431	.1093592	.3317691	.6600997	.0208482	.0940533

#1	.5422365	9.747388	.5395124	6.157466	.5338939	.2582710
#2	.5419377	9.749272	.5417485	6.197501	.5341131	.2586363
#3	.5424544	9.729949	.5430656	6.239287	.5340374	.2587317

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.294223	.5263520	1.039557	9.515036	F .0162700	F .0002584
Stddev	.013244	.0008142	.004605	.022430	.0002170	.0001056
%RSD	.1425016	.1546842	.4429902	.2357287	1.333713	40.85395

#1	9.278968	.5256215	1.037415	9.540115	.0165175	.0002743
#2	9.302777	.5272297	1.044843	9.508101	.0161125	.0001458
#3	9.300926	.5262048	1.036412	9.496894	.0161799	.0003552

Sample Name: ICV01 Acquired: 10/4/2024 10:45:35 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICV01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -.002278	F -.000138	F -.006397	F .0058631	F -.002798	F .0069096
Stddev	.000246	.000529	.005621	.0011072	.001992	.0006843
%RSD	10.77976	383.2089	87.86348	18.88341	71.20014	9.903604
#1	-.002030	.000304	-.012876	.0071273	-.000747	.0067152
#2	-.002521	-.000724	-.003488	.0050665	-.002920	.0076700
#3	-.002283	.000006	-.002828	.0053955	-.004726	.0063434

Elem	Sr4077
Units	ppm
Avg	F -.008261
Stddev	.000079
%RSD	.9560020
#1	-.008338
#2	-.008264
#3	-.008180

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2916.188	60441.61	8250.747	2278.140	4697.773
Stddev	5.224	99.69	7.559	11.510	5.629
%RSD	.1791218	.1649420	.0916152	.5052507	.1198239
#1	2913.502	60331.72	8246.935	2276.673	4696.853
#2	2922.208	60466.88	8245.852	2267.434	4703.805
#3	2912.854	60526.25	8259.452	2290.314	4692.660

Sample Name: LLICV01 Acquired: 10/4/2024 10:59:58 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0220466	.0381386	.0129529	.0210518	.0503720	.1093865
Stddev	.0015935	.0005203	.0001694	.0019834	.0007849	.0041765
%RSD	7.227825	1.364256	1.307574	9.421476	1.558264	3.818146

#1	.0203636	.0382590	.0128422	.0210958	.0494867	.1062675
#2	.0222438	.0385881	.0131479	.0190468	.0506467	.1077606
#3	.0235322	.0375686	.0128687	.0230129	.0509827	.1141315

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1077409	.0063661	.0063739	2.178416	.0111536	.0305279
Stddev	.0006961	.0000770	.0000255	.008531	.0002953	.0002178
%RSD	.6460557	1.210180	.4007279	.3916248	2.647696	.7135446

#1	.1074949	.0064004	.0063993	2.169558	.0109980	.0305126
#2	.1072012	.0064200	.0063742	2.179113	.0114942	.0303182
#3	.1085265	.0062779	.0063482	2.186578	.0109687	.0307530

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0228720	.1044126	.0211992	2.220413	.0410327	.0119094
Stddev	.0002817	.0015572	.0000927	.029006	.0002527	.0000771
%RSD	1.231448	1.491419	.4370466	1.306326	.6158658	.6470877

#1	.0226734	.1061268	.0211770	2.192108	.0408001	.0118590
#2	.0227483	.1040256	.0213009	2.219058	.0409964	.0118712
#3	.0231944	.1030853	.0211196	2.250072	.0413016	.0119981

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.928632	.0393077	.0450579	1.934968	.1009189	.2059949
Stddev	.019177	.0020901	.0005900	.023128	.0008618	.0006017
%RSD	.9943235	5.317192	1.309484	1.195247	.8539446	.2920783

#1	1.923163	.0374059	.0455600	1.952966	.1015280	.2057926
#2	1.912784	.0389719	.0452056	1.908883	.1012957	.2055204
#3	1.949950	.0415454	.0444080	1.943056	.0999328	.2066716

Sample Name: LLICV01 Acquired: 10/4/2024 10:59:58 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0750463	.0415034	F .2805366	.0205328	F .3605693	F .0041627
Stddev	.0010003	.0011386	.0055226	.0007533	.0016695	.0012013
%RSD	1.332877	2.743461	1.968591	3.668999	.4630187	28.85874
#1	.0747613	.0419005	.2794151	.0207970	.3618449	.0039398
#2	.0761581	.0423902	.2756608	.0196830	.3611832	.0054599
#3	.0742194	.0402193	.2865338	.0211185	.3586797	.0030885

Elem	Sr4077
Units	ppm
Avg	.0220184
Stddev	.0000483
%RSD	.2192977
#1	.0219704
#2	.0220179
#3	.0220669

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2992.015	59493.04	8552.493	2250.382	4998.198
Stddev	10.271	77.17	26.291	2.149	17.494
%RSD	.3432645	.1297202	.3074046	.0955012	.3500048
#1	2995.645	59547.56	8529.720	2251.793	5012.360
#2	2999.977	59526.82	8546.494	2251.444	5003.592
#3	2980.422	59404.73	8581.265	2247.908	4978.642

Sample Name: ICB01 Acquired: 10/4/2024 11:06:12 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICB01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001147	.0016481	-.000472	.0003479	-.000265	.0062596	-.000602
Stddev	.000651	.0012895	.000453	.0000476	.000718	.0050247	.001132
%RSD	56.73091	78.23883	95.88451	13.67279	270.8231	80.27237	188.0245
#1	-.000921	.0030383	-.000147	.0003574	-.001046	.0043653	-.001903
#2	-.001881	.0014149	-.000280	.0002963	.000366	.0024573	-.000051
#3	-.000640	.0004912	-.000989	.0003900	-.000115	.0119561	.000149
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000251	-.000036	.0146370	.0000512	-.000066	-.000013	-.003641
Stddev	.0000513	.000008	.0083282	.0003134	.000044	.000468	.001690
%RSD	204.2612	22.18779	56.89803	612.7951	66.72544	3479.010	46.41756
#1	.0000184	-.000042	.0234155	-.000241	-.000065	.000175	-.003966
#2	.0000794	-.000039	.0136480	.000382	-.000110	-.000546	-.005144
#3	-.000023	-.000027	.0068475	.000013	-.000022	.000331	-.001812
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000134	.0002476	.0000244	.0006738	-.050765	-.001308	-.000432
Stddev	.000160	.0084233	.0001262	.0000803	.008169	.001215	.000208
%RSD	118.9332	3402.749	517.5117	11.92136	16.09122	92.86521	48.24049
#1	-.000306	-.009197	-.000072	.0006461	-.042932	-.002389	-.000272
#2	-.000107	.006982	-.000022	.0006110	-.050131	.000007	-.000356
#3	.000010	.002958	.000167	.0007643	-.059233	-.001543	-.000668
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.081752	.0026278	.0001704	-.000255	.0005715	.0035619	-.000733
Stddev	.005525	.0005043	.0001757	.000423	.0002453	.0107312	.001895
%RSD	6.757896	19.19150	103.1208	165.4966	42.92002	301.2784	258.5869
#1	-.087422	.0031520	.0000601	.000007	.0007183	.0148949	.001201
#2	-.076385	.0025853	.0000780	-.000030	.0007079	.0022348	-.000812
#3	-.081450	.0021460	.0003730	-.000743	.0002883	-.006444	-.002586

Sample Name: ICB01 Acquired: 10/4/2024 11:06:12 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICB01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.003238	.0039113	.0000393
Stddev	.000940	.0009556	.0000259
%RSD	29.02444	24.43140	65.80994
#1	-.002194	.0040566	.0000245
#2	-.004018	.0047859	.0000243
#3	-.003502	.0028914	.0000692

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2980.736	59435.91	8583.713	2248.974	4985.519
Stddev	5.002	207.44	8.638	17.573	7.192
%RSD	.1678266	.3490169	.1006318	.7813920	.1442560
#1	2976.367	59262.00	8579.258	2231.412	4979.257
#2	2979.648	59380.22	8593.669	2248.952	4993.374
#3	2986.193	59665.51	8578.212	2266.559	4983.927

Sample Name: CRI01 Acquired: 10/4/2024 11:21:54 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0220631	.0417625	.0151459	.0196584	.0500954	.1092633
Stddev	.0019324	.0014623	.0001738	.0007537	.0007303	.0047150
%RSD	8.758299	3.501405	1.147343	3.834180	1.457727	4.315229

#1	.0231054	.0434508	.0149502	.0197626	.0493336	.1141837
#2	.0198334	.0408984	.0152822	.0188580	.0501633	.1088212
#3	.0232506	.0409383	.0152052	.0203546	.0507893	.1047850

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1056896	.0064198	.0065029	2.155214	.0111170	.0307258
Stddev	.0000719	.0001651	.0000048	.008808	.0002391	.0000943
%RSD	.0680000	2.572222	.0730409	.4086755	2.150510	.3069783

#1	.1056714	.0062697	.0064994	2.148700	.0108501	.0306279
#2	.1057689	.0063930	.0065083	2.151707	.0113116	.0307335
#3	.1056286	.0065967	.0065009	2.165235	.0111893	.0308161

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0229407	.1059893	.0205377	2.190802	.0411968	.0128477
Stddev	.0002844	.0044735	.0005727	.028231	.0002669	.0001889
%RSD	1.239821	4.220698	2.788531	1.288625	.6478242	1.470421

#1	.0227573	.1062303	.0208147	2.177052	.0410998	.0130659
#2	.0227964	.1014003	.0198792	2.172080	.0414986	.0127384
#3	.0232683	.1103375	.0209192	2.223274	.0409919	.0127389

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.883099	.0403224	.0445902	1.870791	.0974887	.2054238
Stddev	.005743	.0019756	.0002750	.021343	.0007197	.0006591
%RSD	.3049777	4.899516	.6167355	1.140847	.7382239	.3208417

#1	1.888718	.0382131	.0448290	1.890072	.0967267	.2061838
#2	1.883340	.0421295	.0442895	1.874443	.0975825	.2050091
#3	1.877239	.0406245	.0446521	1.847858	.0981569	.2050787

Sample Name: CRI01 Acquired: 10/4/2024 11:21:54 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0771022	.0408896	F .2712430	.0202406	F .3775387	F .0043370
Stddev	.0001436	.0006263	.0053036	.0013038	.0028766	.0013719
%RSD	.1862583	1.531762	1.955289	6.441232	.7619334	31.63171
#1	.0772630	.0407218	.2728910	.0212925	.3800817	.0054375
#2	.0769868	.0403642	.2755269	.0206473	.3781177	.0028000
#3	.0770567	.0415827	.2653110	.0187820	.3744166	.0047736

Elem	Sr4077
Units	ppm
Avg	.0216053
Stddev	.0000535
%RSD	.2476824
#1	.0216280
#2	.0215442
#3	.0216437

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2978.190	59563.44	8541.051	2241.360	4907.942
Stddev	6.462	199.27	52.208	7.372	8.052
%RSD	.2169787	.3345518	.6112627	.3289258	.1640611
#1	2974.963	59333.34	8560.939	2235.259	4907.709
#2	2985.630	59679.21	8580.393	2249.552	4916.108
#3	2973.977	59677.76	8481.822	2239.268	4900.009

Sample Name: ICSA01 Acquired: 10/4/2024 11:28:55 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICSA01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002136	.0050506	.0108930	-.009218	-.001350	261.0276
Stddev	.004914	.0011863	.0013708	.001892	.002722	.6145
%RSD	230.0571	23.48890	12.58456	20.52585	201.6411	.2354059

#1	-.007372	.0044053	.0121460	-.011285	-.002810	260.5256
#2	.002376	.0043269	.0111043	-.008800	.001791	261.7129
#3	-.001412	.0064198	.0094288	-.007570	-.003030	260.8444

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0043704	.0022294	.0035843	245.6264	.0542345	.0019821
Stddev	.0001325	.0000559	.0000726	.1816	.0000352	.0001697
%RSD	3.032518	2.506487	2.024251	.0739292	.0648971	8.560224

#1	.0045202	.0022612	.0036680	245.4243	.0542728	.0018341
#2	.0043222	.0021649	.0035469	245.6793	.0542036	.0019450
#3	.0042686	.0022621	.0035381	245.7758	.0542270	.0021673

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002846	97.79631	.0000326	266.6389	.0033253	-.006154
Stddev	.000733	.18753	.0004008	.3770	.0001079	.000372
%RSD	25.77374	.1917551	1227.899	.1414027	3.245072	6.052496

#1	-.002545	97.88524	-.000131	266.2035	.0033616	-.005986
#2	-.003682	97.92283	.000489	266.8577	.0032039	-.005896
#3	-.002311	97.58086	-.000261	266.8553	.0034103	-.006581

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0054411	.0061178	.0037008	-.114968	-.048577	.0009558
Stddev	.0052824	.0033971	.0003431	.006439	.001449	.0005012
%RSD	97.08423	55.52894	9.272225	5.600907	2.982979	52.43853

#1	-.000338	.0064521	.0039353	-.117751	-.047655	.0007666
#2	.006641	.0093354	.0038601	-.119548	-.047830	.0005767
#3	.010020	.0025659	.0033069	-.107605	-.050248	.0015241

Sample Name: ICSA01 Acquired: 10/4/2024 11:28:55 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICSA01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003217	-.004575	.0144906	.0025922	-.019732	F .0264650
Stddev	.000248	.000260	.0087122	.0043783	.003026	.0032389
%RSD	7.716459	5.688755	60.12343	168.8998	15.33700	12.23840
#1	-.002930	-.004875	.0245127	-.001121	-.023144	.0267922
#2	-.003370	-.004405	.0087238	.007420	-.018676	.0230749
#3	-.003350	-.004445	.0102354	.001478	-.017375	.0295278

Elem	Sr4077
Units	ppm
Avg	.0027394
Stddev	.0003831
%RSD	13.98332
#1	.0024749
#2	.0025646
#3	.0031786

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2625.760	54071.84	8086.959	2001.614	4028.253
Stddev	1.340	91.31	10.700	7.355	1.118
%RSD	.0510179	.1688740	.1323153	.3674540	.0277416
#1	2624.250	54015.34	8095.656	2005.378	4029.164
#2	2626.806	54023.00	8090.211	1993.139	4028.589
#3	2626.225	54177.19	8075.010	2006.325	4027.006

Sample Name: ICSAB01 Acquired: 10/4/2024 11:34:54 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICSAB01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1026695	.0977864	.0594915	.0417042	.6500266	264.2977
Stddev	.0019287	.0027475	.0005548	.0051654	.0004835	1.4421
%RSD	1.878528	2.809738	.9326344	12.38567	.0743870	.5456433

#1	.1045986	.0946741	.0594493	.0402601	.6495588	265.6177
#2	.1026687	.0998756	.0600662	.0474379	.6505245	262.7585
#3	.1007413	.0988096	.0589589	.0374146	.6499966	264.5169

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5395210	.5131459	.9773496	251.0566	.5663446	.5240986
Stddev	.0024329	.0021646	.0006849	.0969	.0017522	.0003147
%RSD	.4509422	.4218236	.0700748	.0386050	.3093823	.0600548

#1	.5408152	.5150842	.9777099	251.1685	.5644157	.5237607
#2	.5410333	.5108102	.9765597	251.0012	.5667802	.5243834
#3	.5367145	.5135434	.9777790	251.0001	.5678379	.5241517

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5091303	104.7396	.5148576	268.3192	1.031168	.2213343
Stddev	.0003966	.6697	.0010527	.8027	.001559	.0009362
%RSD	.0778936	.6394030	.2044613	.2991404	.1511505	.4229822

#1	.5095856	104.0180	.5149276	268.8360	1.030636	.2202833
#2	.5088602	105.3412	.5158736	268.7271	1.029945	.2220789
#3	.5089452	104.8596	.5137717	267.3945	1.032923	.2216408

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0019411	.5125281	.8847780	-.131559	F -.037015	F .0007282
Stddev	.0090033	.0001883	.0043856	.011025	.002100	.0002927
%RSD	463.8211	.0367348	.4956782	8.380567	5.673470	40.19812

#1	-.008370	.5123272	.8799175	-.144266	-.039019	.0009648
#2	.005945	.5125567	.8859775	-.124535	-.034830	.0004009
#3	.008248	.5127005	.8884392	-.125875	-.037195	.0008190

Sample Name: ICSAB01 Acquired: 10/4/2024 11:34:54 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICSAB01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -.004446	F -.005915	F .0009450	F .0099511	F -.020103	F .0234972
Stddev	.001080	.001201	.0120042	.0034667	.001384	.0022212
%RSD	24.29981	20.30242	1270.241	34.83697	6.882332	9.453100
#1	-.004762	-.006421	-.009028	.0130392	-.018925	.0209350
#2	-.005333	-.004544	.014268	.0062013	-.019756	.0246765
#3	-.003243	-.006779	-.002405	.0106128	-.021627	.0248800

Elem	Sr4077
Units	ppm
Avg	F -.000771
Stddev	.000986
%RSD	127.8312
#1	.000357
#2	-.001207
#3	-.001464

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2518.043	51889.82	8184.812	1928.416	3895.171
Stddev	1.530	173.67	34.550	6.609	4.192
%RSD	.0607536	.3346889	.4221173	.3427419	.1076313
#1	2516.931	52077.98	8144.930	1935.979	3894.545
#2	2519.787	51735.67	8205.614	1925.519	3899.641
#3	2517.410	51855.82	8203.892	1923.749	3891.326

Sample Name: CCV01 Acquired: 10/4/2024 11:39:41 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.248885	5.272968	5.167938	5.290033	5.220731	10.32262	10.33000
Stddev	.010545	.096052	.021020	.005105	.012152	.03622	.10967
%RSD	.2008991	1.821594	.4067318	.0964974	.2327687	.3509235	1.061703
#1	5.253933	5.327430	5.167400	5.284500	5.208077	10.30107	10.39523
#2	5.236765	5.329412	5.147192	5.291040	5.221806	10.36444	10.39140
#3	5.255957	5.162063	5.189221	5.294560	5.232310	10.30235	10.20338
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.569545	2.585026	25.60790	1.008956	2.579658	1.314560	5.034801
Stddev	.0010497	.009182	.07615	.001794	.010018	.004247	.015724
%RSD	.4085168	.3552113	.2973764	.1778289	.3883590	.3230930	.3123044
#1	2.574527	2.584494	25.55947	1.009433	2.577150	1.311588	5.018492
#2	2.576623	2.576121	25.69568	1.010464	2.571132	1.312667	5.036045
#3	2.557485	2.594462	25.56855	1.006972	2.590692	1.319424	5.049866
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.557954	25.31655	2.589816	1.273899	24.97341	2.545175	2.572413
Stddev	.007035	.11615	.009556	.003788	.05675	.008205	.013738
%RSD	.2750332	.4587995	.3689862	.2973620	.2272422	.3223817	.5340690
#1	2.555916	25.21591	2.586011	1.276144	25.00809	2.549511	2.569417
#2	2.565783	25.44365	2.582748	1.276028	25.00422	2.550304	2.587402
#3	2.552163	25.29009	2.600688	1.269525	24.90792	2.535712	2.560419
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.16816	5.140455	5.197658	5.159773	5.144907	5.001362	5.354010
Stddev	.06745	.017720	.005200	.014378	.016095	.022686	.004936
%RSD	.2680110	.3447164	.1000420	.2786467	.3128323	.4535962	.0921903
#1	25.11813	5.151048	5.197303	5.162115	5.149240	4.977589	5.359645
#2	25.24487	5.150318	5.192644	5.144368	5.158392	5.003720	5.350452
#3	25.14147	5.119998	5.203026	5.172836	5.127089	5.022777	5.351933

Sample Name: CCV01 Acquired: 10/4/2024 11:39:41 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	5.155604	5.065932	5.164991
Stddev	.007415	.025984	.033342
%RSD	.1438300	.5129224	.6455457
#1	5.159836	5.079724	5.184248
#2	5.159935	5.082113	5.184235
#3	5.147042	5.035960	5.126491

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2745.612	57103.94	8187.731	2126.289	4320.764
Stddev	5.942	136.06	34.487	9.884	9.572
%RSD	.2164076	.2382738	.4211996	.4648480	.2215346
#1	2751.998	57102.32	8177.865	2131.810	4329.663
#2	2744.590	56968.69	8159.252	2114.878	4321.992
#3	2740.246	57240.80	8226.075	2132.180	4310.638

Sample Name: CCB01 Acquired: 10/4/2024 11:43:53 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0003751	-.000562	.0002025	.0015810	-.000194	.0096217	.0006949
Stddev	.0020266	.002049	.0010227	.0019655	.000874	.0034801	.0006428
%RSD	540.2193	364.4603	504.9520	124.3192	451.5868	36.16882	92.50411
#1	-.001487	-.002312	-.000181	.0013991	-.001195	.0093839	-.000028
#2	.000079	.001692	-.000573	.0036312	.000196	.0062666	.001202
#3	.002534	-.001066	.001362	-.000287	.000419	.0132145	.000911
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000012	.0000571	.0135574	-.000344	.0000293	-.000104	-.002109
Stddev	.000014	.0000421	.0130609	.000233	.0000607	.000188	.002764
%RSD	122.0143	73.82299	96.33746	67.84591	207.3698	181.3359	131.0434
#1	-.000008	.0001041	.0196379	-.000409	.0000106	.000108	-.002216
#2	-.000027	.0000229	.0224695	-.000085	.0000972	-.000168	-.004818
#3	.000000	.0000442	-.001435	-.000537	-.000020	-.000252	.000707
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000200	.0125137	.0000717	-.000017	-.061614	-.001510	-.000303
Stddev	.000291	.0122144	.0000839	.000187	.002155	.001700	.000169
%RSD	145.3029	97.60843	116.9511	1099.141	3.498376	112.5819	55.87581
#1	.000062	.0031068	.0000495	-.000085	-.062661	-.002804	-.000252
#2	-.000149	.0263180	.0000012	-.000161	-.059135	-.002140	-.000165
#3	-.000512	.0081163	.0001644	.000195	-.063047	.000415	-.000491
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.128126	.0068845	.0003158	.0001875	.0006537	.0041069	-.002114
Stddev	.025428	.0008921	.0001757	.0001354	.0001334	.0034215	.002701
%RSD	19.84598	12.95777	55.64720	72.24280	20.41397	83.31125	127.7485
#1	-.155274	.0073267	.0004546	.0002894	.0004999	.0008068	-.002099
#2	-.124237	.0058577	.0003746	.0002391	.0007396	.0038757	-.004823
#3	-.104866	.0074692	.0001182	.0000338	.0007214	.0076381	.000579

Sample Name: CCB01 Acquired: 10/4/2024 11:43:53 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.003674	.0029946	.0000805
Stddev	.001269	.0010765	.0000186
%RSD	34.52287	35.94657	23.05884
#1	-.005026	.0019793	.0000802
#2	-.002510	.0028813	.0000992
#3	-.003487	.0041233	.0000621

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2919.524	60361.70	8136.293	2255.163	4847.760
Stddev	5.031	112.05	44.741	7.814	10.709
%RSD	.1723358	.1856312	.5498960	.3465070	.2209041
#1	2916.244	60295.12	8091.633	2246.489	4836.170
#2	2925.316	60298.90	8136.130	2257.346	4857.287
#3	2917.011	60491.06	8181.115	2261.653	4849.822

Sample Name: LR1 Acquired: 10/4/2024 11:48:08 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0012046	.0039200	.0366632	-.147808	-.000503	1847.041	.0157738
Stddev	.0121140	.0156089	.0030509	.011518	.006087	8.460	.0014826
%RSD	1005.610	398.1924	8.321385	7.792718	1210.197	.4580385	9.399063
#1	.0038514	-.008996	.0384470	-.157071	-.006986	1856.796	.0165833
#2	-.012014	.021265	.0331405	-.134911	.000386	1842.615	.0166755
#3	.011776	-.000509	.0384022	-.151441	.005091	1841.713	.0140627
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0170908	.0759037	1737.817	.0002311	.0402024	-.376205	1088.556
Stddev	.0000961	.0003912	10.155	.0005048	.0001395	.004984	4.173
%RSD	.5619788	.5153544	.5843253	218.4236	.3470685	1.324690	.3833080
#1	.0170042	.0762996	1748.338	.0004859	.0403016	-.381896	1093.268
#2	.0171941	.0758941	1737.039	-.000350	.0400429	-.374101	1085.328
#3	.0170740	.0755174	1728.074	.000558	.0402628	-.372619	1087.073
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.151720	1798.388	.0348844	-.077142	1884.114	.0435393	.1715502
Stddev	.000726	8.240	.0009102	.000673	14.414	.0032869	.0013470
%RSD	.4782267	.4581692	2.609290	.8727361	.7650276	7.549395	.7852174
#1	-.152556	1807.707	.0338353	-.076411	1900.756	.0399982	.1710730
#2	-.151251	1792.070	.0354650	-.077737	1875.976	.0464929	.1705067
#3	-.151354	1795.386	.0353528	-.077278	1875.609	.0441267	.1730709
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1481.174	-.469672	-.004118	-.005827	-.060459	.1393682	.0954180
Stddev	8.806	.004451	.001839	.001941	.001863	.0164659	.0055886
%RSD	.5945250	.9477149	44.65470	33.31688	3.081260	11.81464	5.856998
#1	1490.166	-.464682	-.006184	-.007364	-.060175	.1205710	.1012553
#2	1472.567	-.473235	-.002661	-.003645	-.062448	.1512414	.0901166
#3	1480.787	-.471100	-.003508	-.006472	-.058754	.1462922	.0948822

Sample Name: LR1 Acquired: 10/4/2024 11:48:08 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.262531	.2937458	-1.07684
Stddev	.012579	.0021202	.00416
%RSD	4.791346	.7217707	.3860042
#1	-.270973	.2912989	-1.08154
#2	-.268546	.2949020	-1.07365
#3	-.248074	.2950365	-1.07532

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1775.026	37237.77	6664.251	1307.215	2562.336
Stddev	2.498	75.75	12.935	5.826	1.978
%RSD	.1407535	.2034241	.1941016	.4457123	.0772016
#1	1777.565	37246.13	6671.581	1304.948	2560.053
#2	1774.943	37309.00	6671.856	1313.834	2563.439
#3	1772.570	37158.19	6649.315	1302.863	2563.517

Sample Name: LR2 Acquired: 10/4/2024 11:53:04 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0120423	.0250794	270.7787	.0075154	-.004842	.0258770	97.08060
Stddev	.0042174	.0044112	1.9562	.0009076	.001525	.0067735	1.28738
%RSD	35.02182	17.58881	.7224276	12.07580	31.50522	26.17578	1.326094
#1	.0166537	.0230586	270.8453	.0079794	-.003081	.0192212	98.38062
#2	.0110921	.0220406	268.7901	.0080972	-.005766	.0256473	97.05494
#3	.0083810	.0301389	272.7008	.0064697	-.005678	.0327624	95.80625
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003408	-.005602	.2540963	.0146552	-.038219	228.7380	-.022428
Stddev	.000021	.000087	.0048578	.0003426	.000330	2.1479	.004509
%RSD	.6242332	1.560127	1.911788	2.337510	.8643416	.9390419	20.10617
#1	-.003390	-.005695	.2531008	.0149371	-.038589	228.2888	-.023071
#2	-.003431	-.005589	.2593747	.0142739	-.038114	226.8501	-.026582
#3	-.003401	-.005521	.2498134	.0147545	-.037954	231.0750	-.017632
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	44.57950	-.104334	46.28948	.0010609	.1207859	-.016219	32.13877
Stddev	.33249	.021418	.24595	.0006209	.0096098	.000974	.17407
%RSD	.7458378	20.52787	.5313258	58.52748	7.956062	6.007248	.5416290
#1	44.94128	-.125685	46.41481	.0007366	.1301878	-.016134	32.22882
#2	44.28732	-.104467	46.00611	.0006693	.1211890	-.015290	31.93811
#3	44.50989	-.082850	46.44751	.0017768	.1109809	-.017233	32.24936
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1612604	.0023506	-.004417	-.019608	-.055718	-.014451	1.363998
Stddev	.0397561	.0006498	.000149	.000593	.000669	.004328	.017120
%RSD	24.65334	27.64471	3.370015	3.025892	1.200509	29.94703	1.255164
#1	.2051382	.0030682	-.004288	-.020098	-.055281	-.011743	1.360627
#2	.1276339	.0021815	-.004580	-.018948	-.055385	-.012167	1.348815
#3	.1510091	.0018020	-.004383	-.019779	-.056488	-.019442	1.382554

Sample Name: LR2 Acquired: 10/4/2024 11:53:04 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.051727	.0040903	.0021333
Stddev	.003842	.0011090	.0000412
%RSD	7.427001	27.11279	1.932900
#1	-.053521	.0039630	.0021779
#2	-.054343	.0030504	.0021253
#3	-.047316	.0052574	.0020966

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2559.594	58212.43	8517.549	1999.089	4694.965
Stddev	20.658	169.82	29.846	5.319	28.064
%RSD	.8070845	.2917212	.3504009	.2660863	.5977518
#1	2557.143	58121.09	8490.158	1992.974	4690.378
#2	2581.369	58408.38	8549.357	2001.645	4725.040
#3	2540.271	58107.84	8513.132	2002.647	4669.477

Sample Name: P4242-04 Acquired: 10/4/2024 11:58:07 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.011218	-.006300	.0077375	.0077367	.0016315	.4157004	.5960758
Stddev	.001138	.001835	.0008537	.0027715	.0003193	.0034250	.0013884
%RSD	10.14823	29.12090	11.03300	35.82308	19.57044	.8239081	.2329240
#1	-.012434	-.004606	.0085054	.0095107	.0018990	.4126934	.5946669
#2	-.010178	-.006044	.0078889	.0091564	.0017174	.4194285	.5961178
#3	-.011042	-.008249	.0068183	.0045430	.0012780	.4149794	.5974428
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000024	.0003912	7.632079	.0004068	-.000234	.0273783	.1934822
Stddev	.000068	.0000330	.007722	.0001070	.000034	.0004973	.0028687
%RSD	287.1423	8.437631	.1011846	26.28778	14.51965	1.816307	1.482691
#1	-.000089	.0003531	7.637271	.0005265	-.000202	.0279303	.1959140
#2	.000046	.0004089	7.635761	.0003207	-.000231	.0272393	.1942142
#3	-.000027	.0004117	7.623204	.0003733	-.000270	.0269653	.1903184
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3274710	.5897357	.0025853	-.000507	564.6162	.0009005	.1816988
Stddev	.0007464	.0182935	.0003602	.000114	2.8680	.0009598	.0012133
%RSD	.2279152	3.101976	13.93174	22.54037	.5079480	106.5824	.6677308
#1	.3281588	.5807940	.0024649	-.000637	562.2933	.0012435	.1827025
#2	.3275768	.6107802	.0023007	-.000419	567.8217	.0016417	.1820434
#3	.3266774	.5776330	.0029902	-.000466	563.7335	-.000184	.1803505
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.778439	.0744295	.0004837	-.019181	.0076327	.8083075	.0497976
Stddev	.018319	.0006491	.0001023	.000493	.0003727	.0139959	.0036040
%RSD	1.030068	.8721247	21.15299	2.568044	4.883410	1.731511	7.237226
#1	1.784883	.0742092	.0003890	-.018968	.0073193	.7925167	.0505973
#2	1.792665	.0739192	.0005922	-.018830	.0080448	.8191817	.0458609
#3	1.757768	.0751601	.0004699	-.019744	.0075339	.8132243	.0529345

Sample Name: P4242-04 Acquired: 10/4/2024 11:58:07 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.7369951	.0061446	.0547278
Stddev	.0030781	.0015971	.0002239
%RSD	.4176576	25.99209	.4090589
#1	.7351050	.0062447	.0545401
#2	.7353333	.0076892	.0546677
#3	.7405470	.0044997	.0549756

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2582.174	53297.41	7971.296	1981.190	4091.921
Stddev	7.471	308.13	3.807	21.885	5.690
%RSD	.2893437	.5781414	.0477594	1.104644	.1390615
#1	2573.652	53154.48	7972.910	1966.235	4091.745
#2	2585.271	53086.70	7974.030	1971.025	4097.697
#3	2587.598	53651.06	7966.948	2006.309	4086.320

Sample Name: P4254-04 Acquired: 10/4/2024 12:02:32 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.015556	-.010130	.0024865	.0031921	.0033121	.0411991	.7183034
Stddev	.000945	.001313	.0013271	.0014780	.0012930	.0064881	.0032501
%RSD	6.071652	12.95738	53.37293	46.30146	39.03908	15.74812	.4524693
#1	-.015016	-.008737	.0022281	.0037053	.0022032	.0486332	.7215885
#2	-.015005	-.011344	.0013077	.0043451	.0030007	.0366786	.7150894
#3	-.016646	-.010309	.0039239	.0015259	.0047323	.0382854	.7182324
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005509	.0003715	79.33376	.0011222	.0152466	-.001259	46.94062
Stddev	.0000880	.0000539	.48330	.0007401	.0004274	.000913	.27622
%RSD	15.98217	14.51439	.6092002	65.94845	2.802915	72.51629	.5884512
#1	.0005063	.0004259	79.76789	.0011659	.0151229	-.001245	47.02266
#2	.0006523	.0003181	78.81300	.0018394	.0148948	-.002178	47.16653
#3	.0004940	.0003705	79.42039	.0003612	.0157222	-.000353	46.63267
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.394308	8.722649	.0183385	-.001977	688.2460	.0025951	.4904104
Stddev	.010342	.062400	.0001776	.000243	1.7505	.0012618	.0007613
%RSD	.4319591	.7153824	.9681909	12.28868	.2543373	48.62275	.1552348
#1	2.405766	8.792763	.0185321	-.002123	688.9628	.0019868	.4900746
#2	2.385663	8.701970	.0181832	-.001697	689.5242	.0017527	.4912818
#3	2.391495	8.673212	.0183004	-.002112	686.2509	.0040458	.4898747
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.321535	.1658907	.0015624	-.021893	-.000950	1.344983	4.008582
Stddev	.031405	.0004959	.0003093	.000592	.000605	.012092	.085042
%RSD	1.352781	.2989245	19.79536	2.702385	63.69226	.8990268	2.121497
#1	2.320006	.1654758	.0014871	-.021215	-.000676	1.356441	3.963351
#2	2.353677	.1657564	.0012977	-.022304	-.000530	1.346164	3.955714
#3	2.290922	.1664399	.0019024	-.022160	-.001643	1.332345	4.106681

Sample Name: P4254-04 Acquired: 10/4/2024 12:02:32 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	3.340473	.0115942	.2474389
Stddev	.066117	.0011219	.0011114
%RSD	1.979266	9.676212	.4491779
#1	3.303930	.0115008	.2484526
#2	3.300693	.0105219	.2462504
#3	3.416795	.0127598	.2476136

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2438.025	51036.89	8158.054	1860.261	3847.702
Stddev	51.599	245.86	53.236	10.734	76.828
%RSD	2.116411	.4817316	.6525596	.5770375	1.996718
#1	2459.609	50896.98	8104.466	1856.989	3885.608
#2	2475.327	50892.90	8210.931	1851.544	3898.209
#3	2379.139	51320.77	8158.765	1872.251	3759.287

Sample Name: P4258-04 Acquired: 10/4/2024 12:06:53 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.012371	-.004315	.0339172	.0073911	.0012993	3.373989	.8836017
Stddev	.002780	.001981	.0005000	.0003973	.0008253	.014058	.0046864
%RSD	22.47566	45.91305	1.474095	5.374848	63.51938	.4166536	.5303772
#1	-.015471	-.002665	.0338123	.0069476	.0019718	3.389274	.8794503
#2	-.011542	-.006512	.0334779	.0075114	.0015476	3.371081	.8886835
#3	-.010099	-.003768	.0344612	.0077143	.0003783	3.361613	.8826711
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000968	.0004320	32.47476	.0031485	.0004295	.0433559	2.450944
Stddev	.0000272	.0000450	.16671	.0002151	.0001220	.0003500	.018450
%RSD	28.12360	10.40699	.5133523	6.832078	28.39471	.8073343	.7527586
#1	.0001264	.0004617	32.49366	.0029003	.0004383	.0437601	2.433537
#2	.0000912	.0003803	32.63121	.0032648	.0005468	.0431495	2.449009
#3	.0000729	.0004540	32.29940	.0032803	.0003034	.0431583	2.470285
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1254420	10.26174	.0054954	-.000010	562.7180	.0050065	.4515974
Stddev	.0005774	.07278	.0003559	.000260	5.5328	.0021009	.0020210
%RSD	.4602829	.7091907	6.475563	2643.140	.9832294	41.96479	.4475340
#1	.1257217	10.24367	.0056343	.000034	557.1331	.0063869	.4497481
#2	.1258263	10.34185	.0050911	.000225	568.1972	.0025886	.4512893
#3	.1247781	10.19971	.0057609	-.000289	562.8236	.0060438	.4537548
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.230900	.1481945	.0006623	-.020476	.0872113	4.552879	.1016448
Stddev	.031081	.0021624	.0000426	.000709	.0006319	.048745	.0016247
%RSD	1.393197	1.459196	6.429887	3.461141	.7245696	1.070637	1.598358
#1	2.207601	.1498238	.0006856	-.019841	.0867681	4.499489	.1026586
#2	2.218910	.1490185	.0006131	-.021240	.0879349	4.564142	.1025048
#3	2.266190	.1457412	.0006880	-.020346	.0869309	4.595007	.0997709

Sample Name: P4258-04 Acquired: 10/4/2024 12:06:53 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	1.968085	.0100316	.1448706
Stddev	.011496	.0021007	.0004398
%RSD	.5841247	20.94121	.3035900
#1	1.981339	.0114262	.1447298
#2	1.960816	.0110531	.1453635
#3	1.962100	.0076154	.1445183

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2543.757	50309.86	7650.735	1852.959	4037.361
Stddev	32.334	141.33	91.187	12.025	45.965
%RSD	1.271115	.2809176	1.191877	.6489537	1.138485
#1	2509.420	50454.75	7592.092	1863.358	3986.896
#2	2548.228	50172.38	7604.320	1855.727	4048.355
#3	2573.622	50302.44	7755.792	1839.791	4076.831

Sample Name: P4270-04 Acquired: 10/4/2024 12:11:18 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.012091	-.004372	.5998556	.0070353	.0031446	.1016808	.3791046
Stddev	.001824	.001427	.0014031	.0008234	.0014207	.0036786	.0042838
%RSD	15.08399	32.63530	.2339048	11.70394	45.18006	3.617766	1.129977
#1	-.012438	-.003708	.5995628	.0078920	.0045468	.1040062	.3828031
#2	-.013717	-.006010	.6013820	.0069643	.0017060	.1035966	.3800999
#3	-.010119	-.003399	.5986221	.0062497	.0031810	.0974398	.3744108
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000266	.0008165	109.4615	.0012962	.0125667	.4233358	.1898473
Stddev	.000029	.0000453	.4066	.0002521	.0001031	.0013068	.0040947
%RSD	11.06153	5.542713	.3714578	19.45118	.8203795	.3086831	2.156861
#1	-.000247	.0007741	109.8866	.0013587	.0126266	.4246147	.1851273
#2	-.000251	.0008642	109.4215	.0015111	.0126259	.4220028	.1924490
#3	-.000300	.0008111	109.0763	.0010187	.0124476	.4233898	.1919655
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.129770	2.672480	.0281186	-.000495	629.3378	-.000020	1.637978
Stddev	.010710	.029087	.0001324	.000183	5.6391	.001940	.004655
%RSD	.5028921	1.088378	.4707090	36.86308	.8960431	9527.152	.2841982
#1	2.138222	2.668792	.0279958	-.000307	627.9120	.001919	1.642578
#2	2.133363	2.703234	.0281011	-.000508	635.5530	-.001962	1.638087
#3	2.117725	2.645412	.0282588	-.000671	624.5484	-.000018	1.633270
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.055407	.0324408	.0008687	-.021415	-.000265	.9465043	.0508390
Stddev	.006982	.0002981	.0001921	.000217	.000049	.0126226	.0018698
%RSD	.1721639	.9190262	22.11828	1.013329	18.45938	1.333606	3.677874
#1	4.052568	.0322427	.0010905	-.021314	-.000210	.9363628	.0519343
#2	4.063361	.0322961	.0007566	-.021664	-.000281	.9606411	.0519027
#3	4.050292	.0327837	.0007589	-.021268	-.000303	.9425090	.0486801

Sample Name: P4270-04 Acquired: 10/4/2024 12:11:18 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.610328	.0189922	.4390764
Stddev	.015276	.0015505	.0045153
%RSD	.3313450	8.163669	1.028373
#1	4.625719	.0193919	.4431793
#2	4.610098	.0203037	.4398110
#3	4.595169	.0172810	.4342387

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2486.248	52202.73	8218.057	1904.346	3883.336
Stddev	8.055	131.32	76.490	14.016	8.659
%RSD	.3239723	.2515609	.9307511	.7360162	.2229716
#1	2479.885	52054.97	8136.139	1894.198	3873.370
#2	2495.304	52247.08	8230.420	1898.501	3889.014
#3	2483.555	52306.13	8287.612	1920.339	3887.625

Sample Name: P4276-02 Acquired: 10/4/2024 12:15:41 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.015191	-.007963	.0020698	.0058448	.0019089	.3541369	.8961910
Stddev	.004826	.003191	.0011924	.0032422	.0007936	.0152699	.0146942
%RSD	31.76561	40.06846	57.60572	55.47122	41.57410	4.311874	1.639624
#1	-.020741	-.006712	.0026684	.0084887	.0021193	.3430962	.8796906
#2	-.011985	-.011590	.0028443	.0068183	.0010313	.3477514	.9010175
#3	-.012848	-.005588	.0006968	.0022274	.0025762	.3715630	.9078648
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000319	.0010954	322.2513	.0032466	-.000363	.0250139	.3456143
Stddev	.000020	.0000073	5.8896	.0002811	.000072	.0005249	.0031344
%RSD	6.320373	.6690036	1.827654	8.657331	19.96272	2.098341	.9069143
#1	-.000301	.0011039	315.7421	.0034059	-.000434	.0254105	.3462068
#2	-.000341	.0010907	323.8000	.0034119	-.000289	.0244187	.3484102
#3	-.000315	.0010918	327.2119	.0029221	-.000366	.0252123	.3422260
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.363834	22.09038	.0045849	-.000809	652.6619	.0006178	.2458931
Stddev	.026409	.40878	.0003553	.000227	1.8560	.0028271	.0010482
%RSD	1.936394	1.850511	7.750346	28.05924	.2843735	457.6160	.4262911
#1	1.334930	21.63941	.0048573	-.000631	650.6306	-.000050	.2466385
#2	1.369868	22.19513	.0041830	-.001065	653.0858	-.001816	.2446945
#3	1.386704	22.43659	.0047144	-.000732	654.2693	.003719	.2463462
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.208567	.0848453	.0014938	-.023145	.0093765	2.326318	.0681018
Stddev	.042076	.0013345	.0005156	.000432	.0008339	.023892	.0052115
%RSD	.6777104	1.572881	34.51420	1.867436	8.893764	1.027013	7.652597
#1	6.160689	.0834633	.0013157	-.023104	.0084397	2.300558	.0702005
#2	6.239663	.0849460	.0020749	-.022734	.0100377	2.330647	.0719367
#3	6.225348	.0861267	.0010910	-.023596	.0096522	2.347749	.0621681

Sample Name: P4276-02 Acquired: 10/4/2024 12:15:41 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	3.421360	.0387619	1.362716
Stddev	.015775	.0015995	.017841
%RSD	.4610874	4.126357	1.309216

#1	3.436754	.0372471	1.342135
#2	3.422096	.0386041	1.373804
#3	3.405229	.0404344	1.372207

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2341.360	49463.90	7845.276	1774.972	3655.851
Stddev	7.044	36.39	89.551	5.946	15.053
%RSD	.3008695	.0735707	1.141468	.3349801	.4117438

#1	2338.847	49458.49	7943.929	1769.995	3645.908
#2	2335.917	49502.69	7822.785	1773.364	3648.477
#3	2349.317	49430.52	7769.114	1781.556	3673.169

Sample Name: P4276-02DUP Acquired: 10/4/2024 12:20:06 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.010831	-.008546	.0025746	.0041807	.0030255	.3564548	.8861717
Stddev	.001694	.001710	.0003273	.0013896	.0009325	.0083158	.0074536
%RSD	15.64291	20.00988	12.71427	33.23750	30.82188	2.332908	.8411057
#1	-.012784	-.010490	.0022846	.0051744	.0032386	.3558354	.8947472
#2	-.009951	-.007874	.0029295	.0047748	.0020049	.3650630	.8812490
#3	-.009757	-.007274	.0025096	.0025928	.0038331	.3484661	.8825191
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000328	.0010773	318.1150	.0032099	-.000256	.0242814	.3444689
Stddev	.000038	.0000616	1.1735	.0001747	.000112	.0002102	.0032247
%RSD	11.74203	5.712669	.3688809	5.443282	43.89032	.8656326	.9361291
#1	-.000372	.0011460	319.3597	.0033569	-.000132	.0241286	.3430069
#2	-.000301	.0010591	317.0289	.0032561	-.000285	.0241945	.3481656
#3	-.000309	.0010270	317.9563	.0030167	-.000350	.0245211	.3422342
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.344384	21.75984	.0044376	-.000327	652.6311	.0005409	.2442436
Stddev	.007548	.16572	.0002592	.000672	5.2346	.0026316	.0003503
%RSD	.5614742	.7616088	5.840195	205.5820	.8020800	486.5542	.1434295
#1	1.352806	21.95120	.0044771	-.001089	658.0120	-.002450	.2446475
#2	1.338231	21.66262	.0046748	.000182	652.3253	.002503	.2440618
#3	1.342113	21.66572	.0041610	-.000074	647.5561	.001570	.2440217
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.203177	.0833925	.0014716	-.022104	.0105672	2.337466	.0657950
Stddev	.006652	.0024712	.0002171	.001188	.0014201	.008495	.0022628
%RSD	.1072312	2.963354	14.75081	5.375572	13.43877	.3634445	3.439227
#1	6.209066	.0856804	.0015533	-.021119	.0119530	2.333339	.0666381
#2	6.204504	.0837252	.0016361	-.023424	.0106334	2.347237	.0632317
#3	6.195962	.0807717	.0012256	-.021769	.0091151	2.331823	.0675153

Sample Name: P4276-02DUP Acquired: 10/4/2024 12:20:06 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	3.316311	.0363801	1.347328
Stddev	.021693	.0016235	.008096
%RSD	.6541180	4.462617	.6008628

#1	3.336124	.0364413	1.356623
#2	3.319677	.0379722	1.343535
#3	3.293133	.0347269	1.341825

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2411.854	49501.63	8045.362	1790.803	3763.578
Stddev	19.306	45.32	67.947	3.645	30.222
%RSD	.8004480	.0915584	.8445477	.2035309	.8030097

#1	2395.811	49457.12	7966.911	1787.948	3742.094
#2	2406.473	49500.05	8083.625	1789.551	3750.503
#3	2433.280	49547.73	8085.549	1794.908	3798.135

Sample Name: CCV02 Acquired: 10/4/2024 12:33:32 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.206889	5.150140	5.057028	5.289091	5.237961	10.16900	10.17977
Stddev	.016254	.062651	.005181	.015286	.010213	.01882	.02924
%RSD	.3121601	1.216495	.1024610	.2890085	.1949761	.1850918	.2872174

#1	5.198665	5.090347	5.057622	5.277065	5.226973	10.16329	10.20669
#2	5.196391	5.144769	5.061887	5.283915	5.247163	10.15369	10.18396
#3	5.225611	5.215304	5.051575	5.306293	5.239746	10.19002	10.14866

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.431617	2.519184	24.93924	99.24015	2.533810	1.308131	5.190948
Stddev	.0009633	.002090	.06146	.0012875	.002991	.002437	.024741
%RSD	.3961422	.0829736	.2464277	.1297336	.1180513	.1862889	.4766148

#1	2.440304	2.517492	24.97254	99.14217	2.530745	1.305592	5.170946
#2	2.433290	2.521521	24.86832	99.19231	2.536721	1.310451	5.183285
#3	2.421257	2.518539	24.97687	99.38597	2.533963	1.308350	5.218614

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.479575	23.93745	2.540111	1.284302	26.13392	2.467648	2.560446
Stddev	.010285	.10760	.004300	.002584	.18199	.006914	.006201
%RSD	.4147782	.4495090	.1692908	.2011650	.6963826	.2801949	.2421930

#1	2.486296	24.01714	2.535622	1.283517	25.99944	2.462099	2.559864
#2	2.467735	23.81505	2.544194	1.282202	26.06131	2.465452	2.554556
#3	2.484693	23.98016	2.540518	1.287187	26.34101	2.475394	2.566917

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	26.46580	4.883353	5.190046	5.013471	5.067198	5.108879	5.348521
Stddev	.16935	.009748	.010080	.008613	.011333	.056608	.013049
%RSD	.6398919	.1996073	.1942122	.1717959	.2236615	1.108024	.2439786

#1	26.33411	4.893434	5.179232	5.004410	5.058993	5.077206	5.333459
#2	26.40645	4.882648	5.191726	5.021552	5.062471	5.075199	5.356429
#3	26.65684	4.873977	5.199180	5.014449	5.080130	5.174234	5.355674

Sample Name: CCV02 Acquired: 10/4/2024 12:33:32 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV02 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	5.021099	4.841346	5.086942
Stddev	.020305	.018364	.029615
%RSD	.4043897	.3793260	.5821743

#1	5.004032	4.833953	5.120855
#2	5.015709	4.827830	5.066183
#3	5.043555	4.862254	5.073787

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2728.746	56127.60	8609.909	2048.946	4359.494
Stddev	1.869	146.71	20.014	1.664	4.795
%RSD	.0684991	.2613880	.2324564	.0812239	.1099969

#1	2730.877	56130.50	8586.875	2047.441	4358.294
#2	2727.383	56272.84	8623.057	2050.733	4355.413
#3	2727.979	55979.46	8619.794	2048.664	4364.776

Sample Name: CCB02 Acquired: 10/4/2024 12:37:42 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0014473	.0002215	.0008197	.0012533	-.000711	.0014949	-.003270
Stddev	.0015412	.0005600	.0009958	.0005659	.000690	.0077221	.000402
%RSD	106.4878	252.8535	121.4857	45.15481	97.06640	516.5642	12.29652
#1	.0001458	.0008547	.0014677	.0006466	-.000489	.0058013	-.003727
#2	.0031493	-.000208	-.000327	.0017668	-.001485	.0061035	-.003115
#3	.0010469	.000018	.001318	.0013464	-.000159	-.007420	-.002969
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000059	.0000321	.0247260	.0001814	-.000059	.0001987	-.004168
Stddev	.0000620	.0000683	.0069222	.0002288	.000139	.0001872	.002116
%RSD	1056.153	213.2032	27.99573	126.1359	236.5031	94.21310	50.76296
#1	-.000036	.0000057	.0167412	.0003559	-.000169	.0000656	-.002164
#2	-.000023	-.000019	.0284038	-.000078	.000097	.0004127	-.006380
#3	.000077	.000110	.0290331	.000266	-.000104	.0001177	-.003959
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002891	.0018866	.0001256	.0001667	.1605363	.0008649	.0004820
Stddev	.0001886	.0141847	.0000846	.0002976	.0156966	.0017127	.0000657
%RSD	65.22448	751.8534	67.37870	178.4918	9.777571	198.0243	13.62666
#1	.0003730	-.001967	.0000298	.0005102	.1426422	.0025846	.0004806
#2	.0004211	.017600	.0001567	.0000030	.1669866	-.000841	.0005485
#3	.0000732	-.009973	.0001903	-.000013	.1719800	.000851	.0004171
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0850081	.0048003	.0003857	.0000082	.0002748	.0024896	.0003248
Stddev	.0054989	.0002424	.0001870	.0006204	.0003185	.0069661	.0018594
%RSD	6.468697	5.048686	48.49597	7560.280	115.8640	279.8034	572.4382
#1	.0844559	.0049809	.0005784	-.000703	.0001370	-.005526	-.000053
#2	.0798061	.0048952	.0002049	.000439	.0000486	.007075	-.001317
#3	.0907622	.0045249	.0003736	.000288	.0006390	.005920	.002344

Sample Name: CCB02 Acquired: 10/4/2024 12:37:42 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.003378	.0033838	.0000596
Stddev	.001671	.0007631	.0000284
%RSD	49.45917	22.55064	47.67421

#1	-.002815	.0029888	.0000631
#2	-.002062	.0028991	.0000862
#3	-.005258	.0042633	.0000296

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2926.648	59390.14	8593.183	2176.573	4983.472
Stddev	6.478	10.58	31.533	4.989	9.909
%RSD	.2213441	.0178077	.3669571	.2292256	.1988390

#1	2921.373	59402.30	8568.881	2174.526	4972.630
#2	2924.694	59383.06	8581.851	2182.260	4985.727
#3	2933.879	59385.06	8628.816	2172.933	4992.060

Sample Name: P4276-02DLX5 Acquired: 10/4/2024 13:09:20 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002471	-.000949	.0002427	.0013374	-.000375	.0556518	.1656578
Stddev	.000537	.001265	.0000544	.0006995	.000458	.0074160	.0013261
%RSD	21.72232	133.3287	22.41360	52.30259	122.0294	13.32571	.8005254
#1	-.002542	.000196	.0002290	.0006232	.000068	.0632388	.1641863
#2	-.002970	-.002307	.0003026	.0013679	-.000847	.0552969	.1660265
#3	-.001903	-.000735	.0001965	.0020212	-.000348	.0484196	.1667605
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000054	.0002334	61.39527	.0001111	-.000151	.0050338	.0645144
Stddev	.000008	.0000475	.13971	.0000424	.000101	.0002198	.0021816
%RSD	14.05123	20.37579	.2275554	38.19216	66.58897	4.365804	3.381540
#1	-.000060	.0001825	61.24654	.0001358	-.000234	.0052782	.0646697
#2	-.000056	.0002767	61.41551	.0000621	-.000039	.0048526	.0622593
#3	-.000045	.0002408	61.52375	.0001354	-.000179	.0049704	.0666141
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2612770	4.172132	.0010450	-.000193	122.4449	.0011736	.0457571
Stddev	.0009620	.022248	.0001289	.000397	.5804	.0011073	.0003244
%RSD	.3681933	.5332605	12.33278	205.6800	.4739785	94.35016	.7089651
#1	.2606217	4.146478	.0011543	-.000592	121.7910	.0024521	.0458199
#2	.2608278	4.183770	.0010777	.000202	122.6449	.0005196	.0460456
#3	.2623814	4.186147	.0009029	-.000188	122.8988	.0005491	.0454059
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.022705	.0180262	.0004764	-.006658	.0023496	.4240436	.0113877
Stddev	.016383	.0005607	.0002125	.000195	.0013018	.0050572	.0021112
%RSD	1.601916	3.110340	44.61102	2.928051	55.40640	1.192616	18.53946
#1	1.022688	.0173858	.0004692	-.006825	.0014525	.4275762	.0129399
#2	1.006331	.0182637	.0002676	-.006444	.0017536	.4182504	.0089836
#3	1.039097	.0184290	.0006925	-.006705	.0038428	.4263041	.0122396

Sample Name: P4276-02DLX5 Acquired: 10/4/2024 13:09:20 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.6273519	.0101087	.2546734
Stddev	.0037635	.0018620	.0006438
%RSD	.5999009	18.42017	.2527794
#1	.6230077	.0087699	.2542600
#2	.6294244	.0122351	.2543451
#3	.6296235	.0093211	.2554152

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2850.065	58107.60	9033.640	2123.890	4576.549
Stddev	8.158	82.28	12.347	8.404	13.518
%RSD	.2862377	.1415921	.1366804	.3956709	.2953711
#1	2848.545	58027.04	9022.204	2118.650	4579.346
#2	2858.876	58104.27	9046.731	2119.436	4588.450
#3	2842.774	58191.49	9031.986	2133.583	4561.852

Sample Name: P4276-02MS Acquired: 10/4/2024 13:13:40 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8279773	1.787302	.9292921	2.106708	.8755498	2.556613	1.120899
Stddev	.0032055	.019562	.0031950	.007925	.0022349	.011861	.001775
%RSD	.3871493	1.094497	.3438089	.3761991	.2552591	.4639294	.1583517
#1	.8247837	1.805070	.9266970	2.113058	.8765054	2.568437	1.118899
#2	.8279537	1.766339	.9283187	2.097826	.8729960	2.544715	1.121512
#3	.8311946	1.790496	.9328606	2.109240	.8771481	2.556686	1.122286
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2014321	.1941767	327.5585	.4073588	.2077040	.3303224	3.594384
Stddev	.0006980	.0005586	.9416	.0006451	.0002902	.0011860	.020863
%RSD	.3465158	.2876705	.2874598	.1583540	.1397090	.3590284	.5804210
#1	.2013510	.1939467	326.7684	.4072639	.2075589	.3301583	3.615758
#2	.2007782	.1937698	327.3068	.4067665	.2075150	.3292270	3.593320
#3	.2021671	.1948135	328.6004	.4080461	.2080381	.3315818	3.574073
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.577327	24.15726	.5167297	.0830669	644.1353	.3186309	.4666230
Stddev	.000673	.09008	.0008099	.0001168	2.1887	.0029866	.0009988
%RSD	.0426767	.3728767	.1567411	.1405574	.3397847	.9373295	.2140585
#1	1.576560	24.06373	.5164905	.0830226	645.3192	.3152895	.4670533
#2	1.577818	24.24343	.5160663	.0831993	641.6097	.3195625	.4654811
#3	1.577604	24.16464	.5176323	.0829788	645.4770	.3210406	.4673346
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.64912	.3385690	.4341394	.6666498	.2190685	2.957518	7.030318
Stddev	.04596	.0019161	.0017792	.0012932	.0005042	.017504	.026208
%RSD	.2464483	.5659314	.4098248	.1939822	.2301751	.5918412	.3727895
#1	18.61024	.3364162	.4344313	.6681220	.2194516	2.964063	7.019313
#2	18.63727	.3392033	.4322323	.6661300	.2184972	2.937685	7.011407
#3	18.69984	.3400875	.4357546	.6656974	.2192567	2.970807	7.060235

Sample Name: P4276-02MS Acquired: 10/4/2024 13:13:40 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	3.330152	.2549257	1.574358
Stddev	.005936	.0017152	.012937
%RSD	.1782501	.6728094	.8217199
#1	3.324544	.2529493	1.562149
#2	3.336369	.2560245	1.587917
#3	3.329544	.2558033	1.573008

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2360.317	49402.70	7659.513	1761.794	3664.247
Stddev	6.770	96.97	18.714	8.912	7.747
%RSD	.2868084	.1962921	.2443235	.5058557	.2114316
#1	2358.488	49304.30	7669.128	1753.172	3666.852
#2	2367.813	49405.63	7671.466	1770.970	3670.357
#3	2354.650	49498.18	7637.947	1761.241	3655.533

Sample Name: P4276-02MSD Acquired: 10/4/2024 13:17:53 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8151361	1.780622	.9070031	2.072243	.8700717	2.550474	1.100276
Stddev	.0037473	.021503	.0009062	.013950	.0033938	.007100	.002862
%RSD	.4597110	1.207624	.0999117	.6731631	.3900554	.2783877	.2600777
#1	.8114718	1.786169	.9059609	2.063518	.8691121	2.558549	1.103230
#2	.8149752	1.756888	.9076048	2.064879	.8672611	2.547660	1.100081
#3	.8189612	1.798807	.9074437	2.088331	.8738420	2.545211	1.097517
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2058112	.1894020	325.0079	.4049841	.2032043	.3199447	3.532502
Stddev	.0014675	.0007175	.7687	.0012593	.0004242	.0014692	.004129
%RSD	.7130211	.3788007	.2365086	.3109506	.2087821	.4592049	.1168860
#1	.2067437	.1889357	324.7587	.4044967	.2028938	.3185514	3.527755
#2	.2065702	.1890420	325.8703	.4064142	.2030313	.3198030	3.534483
#3	.2041197	.1902281	324.3948	.4040413	.2036877	.3214796	3.535266
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.566662	24.13025	.5047292	.0836844	636.5179	.3119974	.4681423
Stddev	.007726	.11828	.0017892	.0003203	3.3310	.0020207	.0032967
%RSD	.4931381	.4901819	.3544848	.3827092	.5233137	.6476696	.7042157
#1	1.569928	24.14484	.5036987	.0840482	637.7302	.3142985	.4714077
#2	1.572219	24.24056	.5036937	.0834450	639.0730	.3111817	.4682041
#3	1.557840	24.00535	.5067951	.0835600	632.7505	.3105121	.4648151
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.56083	.3449387	.4328628	.6519943	.2183057	2.926305	6.840003
Stddev	.06653	.0027580	.0017551	.0030964	.0028993	.020259	.018119
%RSD	.3584197	.7995519	.4054615	.4749170	1.328099	.6923146	.2648954
#1	18.55905	.3468442	.4312458	.6507214	.2173534	2.935043	6.834828
#2	18.49522	.3461957	.4326133	.6497371	.2215614	2.903144	6.825035
#3	18.62823	.3417761	.4347293	.6555243	.2160023	2.940729	6.860147

Sample Name: P4276-02MSD Acquired: 10/4/2024 13:17:53 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	3.233939	.2573615	1.556792
Stddev	.024895	.0029778	.008276
%RSD	.7697948	1.157067	.5315903
#1	3.226419	.2575909	1.555459
#2	3.213672	.2602180	1.565654
#3	3.261727	.2542756	1.549264

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2392.462	48912.65	7555.719	1759.208	3743.867
Stddev	10.021	115.61	52.196	7.093	11.799
%RSD	.4188555	.2363639	.6908188	.4031712	.3151560
#1	2399.397	48871.43	7535.493	1753.169	3750.609
#2	2397.015	48823.30	7516.663	1767.018	3750.750
#3	2380.972	49043.22	7615.002	1757.437	3730.243

Sample Name: P4276-02A Acquired: 10/4/2024 13:22:08 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7974294	1.764436	.8960982	2.041144	.8566810	2.542490	1.122934
Stddev	.0056487	.009133	.0022397	.007330	.0024265	.016575	.005924
%RSD	.7083608	.5176423	.2499431	.3591191	.2832476	.6519178	.5275180
#1	.7984333	1.753963	.8973294	2.048803	.8594828	2.560983	1.129773
#2	.8025088	1.768593	.8935129	2.040434	.8553001	2.537514	1.119632
#3	.7913461	1.770752	.8974521	2.034194	.8552601	2.528972	1.119398
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1974352	.1879148	326.0389	.4036003	.2010988	.3153238	3.605105
Stddev	.0008718	.0005119	.8971	.0019145	.0001198	.0011486	.005450
%RSD	.4415863	.2723859	.2751642	.4743467	.0595849	.3642608	.1511639
#1	.1981120	.1878624	327.0243	.4056616	.2012003	.3161878	3.603324
#2	.1964514	.1884508	325.2694	.4032614	.2011296	.3157632	3.611222
#3	.1977423	.1874311	325.8230	.4018779	.2009666	.3140204	3.600769
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.569542	23.97515	.4988556	.0825174	643.3621	.3142934	.4667057
Stddev	.004057	.10477	.0014559	.0003173	2.4687	.0024733	.0016487
%RSD	.2584787	.4370029	.2918545	.3845416	.3837120	.7869468	.3532590
#1	1.573912	23.98740	.5004593	.0822600	641.1426	.3168028	.4685605
#2	1.565895	23.86480	.4984907	.0824203	642.9227	.3118578	.4654070
#3	1.568820	24.07327	.4976169	.0828719	646.0209	.3142197	.4661494
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.92306	.3324029	.4296330	.6422621	.2215870	2.987751	6.754771
Stddev	.07325	.0013936	.0009116	.0015247	.0045245	.019495	.015828
%RSD	.3870946	.4192568	.2121854	.2373962	2.041878	.6525049	.2343187
#1	19.00692	.3334114	.4306726	.6405354	.2264993	2.978400	6.772261
#2	18.87156	.3308127	.4292561	.6428278	.2206712	2.974692	6.750618
#3	18.89071	.3329847	.4289703	.6434232	.2175903	3.010160	6.741433

Sample Name: P4276-02A Acquired: 10/4/2024 13:22:08 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	3.194072	.2527746	1.576661
Stddev	.004508	.0019018	.016702
%RSD	.1411343	.7523663	1.059358

#1	3.193692	.2549686	1.587109
#2	3.189766	.2515961	1.557397
#3	3.198758	.2517592	1.585476

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2414.691	49433.68	7787.165	1771.115	3772.656
Stddev	12.154	105.30	31.192	6.264	13.331
%RSD	.5033320	.2130083	.4005506	.3536934	.3533693

#1	2401.318	49322.36	7754.199	1763.958	3757.686
#2	2425.065	49531.69	7816.212	1775.604	3783.246
#3	2417.689	49447.00	7791.085	1773.782	3777.036

Sample Name: PB163885BL Acquired: 10/4/2024 13:32:04 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0008230	.0013374	-.000356	.0003135	-.000048	.0024191	-.003251
Stddev	.0018230	.0009736	.000121	.0010592	.000752	.0060102	.000824
%RSD	221.4929	72.79795	34.07970	337.8649	1552.211	248.4513	25.33038
#1	-.000189	.0017919	-.000275	.0006512	.000804	-.002882	-.002304
#2	.002928	.0020005	-.000496	.0011627	-.000620	.008949	-.003647
#3	-.000270	.0002197	-.000298	-.000873	-.000330	.001190	-.003801
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000675	-.000008	.0216888	-.000108	.0000422	-.000223	-.002951
Stddev	.0000181	.000086	.0028360	.000568	.0002619	.000167	.003573
%RSD	26.84600	1113.768	13.07590	527.4674	620.1380	74.84073	121.1023
#1	.0000777	.000090	.0249620	-.000336	.0003251	-.000229	-.004727
#2	.0000466	-.000041	.0201403	-.000526	-.000006	-.000053	.001163
#3	.0000782	-.000072	.0199642	.000539	-.000192	-.000386	-.005288
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005172	.0052700	-.000053	-.000312	.4191250	-.001170	.0004250
Stddev	.0003115	.0048269	.000242	.000229	.0443080	.001543	.0001635
%RSD	60.23127	91.59111	459.9512	73.55662	10.57154	131.9462	38.46874
#1	.0008199	.0078477	-.000230	-.000384	.3707601	-.000598	.0002683
#2	.0001976	.0082608	.000223	-.000496	.4288566	.000006	.0004121
#3	.0005341	-.000298	-.000152	-.000055	.4577582	-.002917	.0005945
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1981356	.0004861	.0000364	.0009444	-.000603	.0080161	-.001014
Stddev	.0075337	.0006164	.0002347	.0001430	.000504	.0027323	.000521
%RSD	3.802273	126.7997	643.9202	15.13540	83.61604	34.08518	51.42126
#1	.2006817	.0006950	-.000078	.0007842	-.000022	.0079269	-.000425
#2	.1896588	-.000208	-.000119	.0010588	-.000868	.0107918	-.001416
#3	.2040662	.000971	.000306	.0009904	-.000920	.0053294	-.001201

Sample Name: PB163885BL Acquired: 10/4/2024 13:32:04 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.003700	.0028766	.0000236
Stddev	.001474	.0010460	.0000557
%RSD	39.83824	36.36080	236.1521
#1	-.004118	.0031907	.0000005
#2	-.002062	.0037296	.0000871
#3	-.004920	.0017096	-.000017

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2845.228	60249.31	8815.976	2237.930	4782.003
Stddev	4.458	805.31	21.585	25.265	8.848
%RSD	.1566824	1.336624	.2448363	1.128955	.1850276
#1	2842.063	60593.78	8802.268	2240.563	4774.876
#2	2850.327	60825.10	8804.803	2261.776	4791.906
#3	2843.295	59329.07	8840.857	2211.452	4779.228

Sample Name: PB163885BS Acquired: 10/4/2024 13:36:25 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8033864	2.097228	.9998739	2.046529	.8490911	2.175266
Stddev	.0015143	.028068	.0019493	.002571	.0031083	.005857
%RSD	.1884829	1.338319	.1949536	.1256193	.3660775	.2692560

#1	.8037916	2.065237	.9976385	2.043678	.8456201	2.180968
#2	.8017107	2.108726	1.001219	2.048671	.8500358	2.169265
#3	.8046568	2.117720	1.000764	2.047237	.8516176	2.175565

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2167168	.2127035	.1972097	1.177820	.4202830	.2123746
Stddev	.0010021	.0009953	.0002304	.003249	.0016320	.0002521
%RSD	.4624150	.4679185	.1168160	.2758335	.3883025	.1187086

#1	.2174068	.2137807	.1969646	1.180738	.4184147	.2121093
#2	.2155673	.2118180	.1974218	1.178402	.4210044	.2124036
#3	.2171763	.2125118	.1972426	1.174320	.4214301	.2126110

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3353935	3.211015	.2195223	2.062059	.5332216	.0809329
Stddev	.0003327	.002638	.0014455	.004579	.0003668	.0002010
%RSD	.0991945	.0821518	.6584646	.2220424	.0687848	.2483369

#1	.3352081	3.210714	.2208942	2.066248	.5331310	.0807632
#2	.3351948	3.208540	.2180130	2.057171	.5329087	.0811549
#3	.3357776	3.213790	.2196595	2.062758	.5336252	.0808806

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.256641	.3193758	.2224620	10.59103	.2942231	.4251420
Stddev	.015804	.0020837	.0011880	.03504	.0009372	.0006318
%RSD	.4852739	.6524158	.5340360	.3308648	.3185405	.1486166

#1	3.240954	.3179287	.2211516	10.55964	.2941148	.4244761
#2	3.256412	.3217640	.2227657	10.62884	.2933447	.4252170
#3	3.272559	.3184347	.2234687	10.58463	.2952097	.4257330

Sample Name: PB163885BS Acquired: 10/4/2024 13:36:25 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7052027	.2113550	F .6277862	6.298239	F -.011955	.2018830
Stddev	.0011698	.0008751	.0041223	.019681	.003667	.0006648
%RSD	.1658777	.4140233	.6566372	.3124829	30.67398	.3292795
#1	.7045070	.2119717	.6231846	6.278819	-.014996	.2026426
#2	.7045478	.2103535	.6311416	6.297726	-.012986	.2014074
#3	.7065532	.2117398	.6290325	6.318171	-.007883	.2015989

Elem	Sr4077
Units	ppm
Avg	.2129323
Stddev	.0005609
%RSD	.2634409
#1	.2135800
#2	.2126126
#3	.2126042

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2806.132	57467.75	8354.009	2127.373	4633.100
Stddev	5.705	108.29	20.159	9.675	10.129
%RSD	.2032954	.1884426	.2413052	.4547936	.2186277
#1	2800.270	57580.71	8331.309	2138.534	4624.356
#2	2806.461	57364.82	8369.819	2122.205	4630.744
#3	2811.665	57457.72	8360.901	2121.379	4644.199

Sample Name: PB163851TB Acquired: 10/4/2024 13:43:07 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.008740	-.005336	-.001661	.0058454	.0001046	.0048976
Stddev	.002033	.000227	.001114	.0014903	.0002680	.0067884
%RSD	23.25715	4.254398	67.08307	25.49465	256.1645	138.6051

#1	-.007784	-.005573	-.002121	.0043456	-.000091	-.000103
#2	-.007361	-.005120	-.000390	.0058646	-.000005	.002170
#3	-.011074	-.005315	-.002470	.0073260	.000410	.012625

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.005774	-.000271	-.000259	-.003576	.0025237	-.000275
Stddev	.000463	.000037	.000014	.006038	.0004006	.000088
%RSD	8.022798	13.71406	5.534389	168.8761	15.87157	31.93847

#1	-.006002	-.000309	-.000244	-.000154	.0022829	-.000370
#2	-.006080	-.000269	-.000261	-.010547	.0023021	-.000196
#3	-.005241	-.000234	-.000273	-.000025	.0029861	-.000259

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0021422	.0065449	.0039322	.0167977	.0015339	-.000134
Stddev	.0003403	.0035660	.0003431	.0052904	.0001653	.000083
%RSD	15.88327	54.48561	8.726165	31.49501	10.77462	61.67721

#1	.0023868	.0083655	.0036167	.0126925	.0013560	-.000085
#2	.0017536	.0088332	.0042975	.0149325	.0015631	-.000229
#3	.0022861	.0024361	.0038824	.0227681	.0016827	-.000087

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 318.5677	-.000767	.0017344	-.036145	.0003717	.0004244
Stddev	.7200	.002191	.0001903	.032036	.0003567	.0002073
%RSD	.2260127	285.7432	10.97420	88.63184	95.95435	48.84633

#1	318.0270	.000951	.0016679	-.012324	.0007831	.0003743
#2	319.3850	-.000017	.0015862	-.023546	.0001494	.0002467
#3	318.2910	-.003235	.0019490	-.072564	.0001826	.0006521

Sample Name: PB163851TB Acquired: 10/4/2024 13:43:07 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.019250	.0000264	.0098757	.0061035	F .0132774	.0023992
Stddev	.000334	.0010022	.0045414	.0028373	.0036596	.0009277
%RSD	1.732594	3797.822	45.98497	46.48677	27.56286	38.66852
#1	-.018940	-.000142	.0146711	.0091469	.0174666	.0031985
#2	-.019603	.001102	.0056403	.0035313	.0116634	.0026171
#3	-.019207	-.000881	.0093159	.0056324	.0107022	.0013819

Elem	Sr4077
Units	ppm
Avg	-.000017
Stddev	.000012
%RSD	71.30053
#1	-.000027
#2	-.000004
#3	-.000021

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2638.282	54238.56	8522.276	1999.991	4245.577
Stddev	17.852	119.18	35.803	11.468	22.909
%RSD	.6766642	.2197343	.4201050	.5733952	.5395975
#1	2650.473	54357.39	8533.049	2004.656	4264.348
#2	2646.582	54119.04	8551.456	1986.926	4252.332
#3	2617.791	54239.24	8482.325	2008.391	4220.049

Sample Name: CCV03 Acquired: 10/4/2024 13:47:36 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.066587	5.186548	4.944208	5.134445	5.116158	10.15036	10.23675
Stddev	.010039	.076809	.015822	.024986	.014017	.02865	.12659
%RSD	.1981349	1.480932	.3200060	.4866440	.2739664	.2822121	1.236585
#1	5.073330	5.275096	4.962145	5.162209	5.131174	10.11788	10.34277
#2	5.071380	5.137914	4.938243	5.127360	5.113879	10.17200	10.09660
#3	5.055050	5.146632	4.932236	5.113766	5.103421	10.16121	10.27089
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.456842	2.467113	24.98315	.9911439	2.479164	1.272688	5.071387
Stddev	.0016174	.005478	.05659	.0009712	.006650	.005235	.026010
%RSD	.6583134	.2220392	.2265217	.0979852	.2682195	.4113437	.5128778
#1	.2453465	2.472787	25.00178	.9900311	2.485985	1.278153	5.073380
#2	.2442623	2.466698	24.91960	.9918203	2.478804	1.272193	5.096343
#3	.2474437	2.461854	25.02808	.9915804	2.472701	1.267717	5.044438
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.492372	24.41151	2.479406	1.264217	25.38908	2.492810	2.545053
Stddev	.008747	.11901	.005040	.001087	.15732	.012056	.004976
%RSD	.3509571	.4875179	.2032876	.0859464	.6196382	.4836233	.1955216
#1	2.500979	24.52964	2.483827	1.264500	25.38769	2.505124	2.542750
#2	2.483491	24.29164	2.480472	1.265134	25.54710	2.481030	2.550763
#3	2.492646	24.41325	2.473917	1.263017	25.23246	2.492276	2.541646
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.52458	4.952716	5.113829	4.923087	5.069385	5.014426	5.142141
Stddev	.17629	.026103	.023397	.011665	.003938	.011152	.025715
%RSD	.6906737	.5270383	.4575186	.2369393	.0776724	.2223982	.5000824
#1	25.50361	4.955425	5.138452	4.935399	5.065969	5.026708	5.171717
#2	25.71042	4.925365	5.111142	4.921660	5.073692	5.004933	5.129638
#3	25.35972	4.977359	5.091891	4.912201	5.068495	5.011636	5.125069

Sample Name: CCV03 Acquired: 10/4/2024 13:47:36 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV03 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.881289	4.918402	5.115893
Stddev	.011040	.012485	.044585
%RSD	.2261610	.2538428	.8715034
#1	4.894035	4.923145	5.142558
#2	4.875114	4.927820	5.064422
#3	4.874719	4.904241	5.140700

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2806.178	57297.43	8499.036	2105.638	4476.316
Stddev	15.897	215.57	28.079	14.492	22.906
%RSD	.5665152	.3762235	.3303802	.6882630	.5117251
#1	2791.768	57188.39	8475.264	2096.563	4454.594
#2	2803.534	57158.18	8530.017	2098.001	4474.108
#3	2823.231	57545.74	8491.828	2122.352	4500.247

Sample Name: CCB02 Acquired: 10/4/2024 13:51:47 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0010496	.0000611	-.000100	.0013076	-.000446	-.002358	-.003890
Stddev	.0023337	.0010996	.000726	.0005954	.000687	.006969	.000393
%RSD	222.3505	1800.465	724.7451	45.53411	154.0838	295.5661	10.11541
#1	-.001595	-.000344	-.000806	.0019946	-.000339	-.007563	-.003714
#2	.001923	.001306	.000645	.0009423	-.001179	.005560	-.004341
#3	.002820	-.000779	-.000139	.0009858	.000182	-.005071	-.003615
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000001	.0000419	.0175881	.0003875	.0001753	-.000092	-.003224
Stddev	.0000053	.0000912	.0055630	.0003718	.0000880	.000230	.007087
%RSD	6021.012	217.6084	31.62952	95.96481	50.19959	250.4749	219.7861
#1	-.000006	.0000538	.0140381	.0007871	.0000843	.000084	-.002544
#2	.000004	-.000055	.0147268	.0003237	.0002600	-.000352	.003498
#3	.000002	.000127	.0239994	.0000517	.0001817	-.000008	-.010627
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0006241	-.004028	.0000339	.0000283	.1024025	-.000561	.0010056
Stddev	.0000912	.005314	.0003793	.0003259	.0158740	.000832	.0001146
%RSD	14.61156	131.9285	1119.940	1153.495	15.50161	148.2919	11.39215
#1	.0007128	-.002870	.0002426	-.000249	.0843740	.000327	.0009166
#2	.0006289	-.009826	-.000404	.000387	.1085504	-.000688	.0009653
#3	.0005306	.000611	.000263	-.000054	.1142830	-.001323	.0011348
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0268079	.0049922	.0001896	.0012918	.0004714	.0094453	.0012933
Stddev	.0434067	.0005689	.0002579	.0007468	.0002587	.0087878	.0038449
%RSD	161.9177	11.39643	136.0396	57.80740	54.86893	93.03805	297.2813
#1	.0116457	.0053014	.0004857	.0010269	.0006864	.0193453	.0000610
#2	-.006984	.0053396	.0000682	.0021349	.0005435	.0025671	-.001784
#3	.075762	.0043356	.0000147	.0007136	.0001844	.0064236	.005603

Sample Name: CCB02 Acquired: 10/4/2024 13:51:47 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.002787	.0039324	.0000631
Stddev	.002556	.0021601	.0000404
%RSD	91.71483	54.93067	64.12375

#1	-.004847	.0058275	.0000968
#2	.000073	.0043893	.0000182
#3	-.003587	.0015804	.0000742

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2791.895	55900.05	8380.391	2090.075	4694.092
Stddev	1.519	39.47	12.180	3.194	6.010
%RSD	.0544026	.0706152	.1453336	.1528141	.1280261

#1	2790.585	55859.71	8366.409	2093.053	4690.139
#2	2793.560	55938.60	8386.071	2090.469	4691.131
#3	2791.540	55901.85	8388.692	2086.702	4701.008

Sample Name: P4149-01 Acquired: 10/4/2024 14:40:22 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0517284	-.039401	.1377920	-.038297	.0052590	196.3710	.4352942
Stddev	.0028333	.002493	.0027297	.001343	.0005361	.4287	.0008640
%RSD	5.477223	6.326211	1.981060	3.507668	10.19459	.2183228	.1984888
#1	.0546822	-.040153	.1349991	-.039845	.0046659	195.8760	.4350127
#2	.0490334	-.041431	.1404539	-.037446	.0057092	196.6166	.4362639
#3	.0514696	-.036619	.1379228	-.037599	.0054018	196.6204	.4346062
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0172069	.0166924	21.65910	.3029594	.1490661	.1640851	315.6253
Stddev	.0001010	.0000957	.05359	.0007823	.0005472	.0006962	1.1047
%RSD	.5871960	.5732289	.2474444	.2582294	.3671015	.4242744	.3500043
#1	.0173152	.0166589	21.59850	.3021647	.1484790	.1645138	314.3799
#2	.0171904	.0166180	21.67855	.3037287	.1495621	.1632818	316.4869
#3	.0171151	.0168004	21.70026	.3029848	.1491571	.1644596	316.0091
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.353632	40.62826	.2865674	-.013226	.6636451	.4407795	.6557004
Stddev	.005791	.11546	.0007988	.000319	.0099767	.0009985	.0048204
%RSD	.1726841	.2841873	.2787601	2.411882	1.503313	.2265327	.7351463
#1	3.351836	40.51764	.2859997	-.013285	.6521525	.4419074	.6501453
#2	3.360109	40.74802	.2862215	-.012881	.6700790	.4404227	.6587803
#3	3.348952	40.61910	.2874808	-.013511	.6687040	.4400084	.6581756
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	19.14108	-.142105	.0049303	-.009026	9.320551	5.419427	7.348383
Stddev	.07864	.000992	.0003508	.000632	.024436	.083157	.026788
%RSD	.4108390	.6983122	7.114622	7.005984	.2621692	1.534419	.3645471
#1	19.05501	-.140988	.0049323	-.008699	9.295319	5.360951	7.373209
#2	19.15905	-.142884	.0052801	-.008624	9.344103	5.382708	7.351951
#3	19.20918	-.142443	.0045786	-.009755	9.322231	5.514623	7.319990

Sample Name: P4149-01 Acquired: 10/4/2024 14:40:22 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.3064850	.1759488	-.098013
Stddev	.0034150	.0009753	.001237
%RSD	1.114258	.5543321	1.261592

#1	.3091208	.1757744	-.096599
#2	.3026271	.1750724	-.098547
#3	.3077073	.1769996	-.098893

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3116.656	63197.61	9346.640	2322.096	4121.287
Stddev	2.190	143.73	8.408	13.056	4.482
%RSD	.0702738	.2274230	.0899575	.5622606	.1087504

#1	3114.610	63346.63	9347.807	2336.370	4123.936
#2	3116.392	63186.37	9337.710	2319.162	4116.113
#3	3118.966	63059.83	9354.404	2310.756	4123.814

Sample Name: P4149-02 Acquired: 10/4/2024 14:44:28 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0510034	-.043981	.1329385	-.033427	.0076124	150.0801	.3709317
Stddev	.0025571	.005630	.0005883	.001466	.0012107	.2909	.0007708
%RSD	5.013686	12.80031	.4425672	4.385536	15.90466	.1938107	.2078014

#1	.0481774	-.037741	.1323179	-.031963	.0076510	149.9210	.3716324
#2	.0531575	-.045522	.1334882	-.033423	.0063828	150.4158	.3710566
#3	.0516753	-.048679	.1330093	-.034895	.0088033	149.9035	.3701060

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0147452	.0181182	17.31703	.2382704	.1326109	.1520322	276.8711
Stddev	.0001143	.0002591	.01135	.0005981	.0003169	.0007340	.6431
%RSD	.7748827	1.430258	.0655172	.2510173	.2389921	.4827961	.2322576

#1	.0147098	.0178465	17.31679	.2386961	.1326126	.1514311	276.6397
#2	.0146529	.0183626	17.30581	.2375866	.1322931	.1528502	276.3757
#3	.0148730	.0181454	17.32850	.2385285	.1329270	.1518152	277.5978

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.463283	31.95608	.2612473	-.011090	.5939869	.3629926	.5721647
Stddev	.010892	.12608	.0007264	.000181	.0088386	.0005809	.0006039
%RSD	.2440439	.3945449	.2780341	1.629643	1.488008	.1600182	.1055541

#1	4.452641	31.81188	.2606278	-.010895	.6006737	.3635752	.5728083
#2	4.474410	32.04550	.2620467	-.011122	.5839663	.3624135	.5716104
#3	4.462799	32.01088	.2610675	-.011253	.5973207	.3629890	.5720753

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.62966	-.114199	.0036714	-.009683	6.048502	4.304637	7.925404
Stddev	.08749	.002353	.0003082	.001459	.013381	.009833	.009095
%RSD	.5980490	2.060797	8.395139	15.06599	.2212286	.2284377	.1147596

#1	14.72531	-.111939	.0034307	-.008312	6.047982	4.295045	7.932678
#2	14.55367	-.116636	.0035646	-.009521	6.062136	4.304170	7.928327
#3	14.61000	-.114024	.0040188	-.011216	6.035389	4.314695	7.915207

Sample Name: P4149-02 Acquired: 10/4/2024 14:44:28 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.3472420	.1466991	-.103202
Stddev	.0019850	.0003794	.001330
%RSD	.5716499	.2586193	1.288504

#1	.3486166	.1471371	-.102486
#2	.3481431	.1464758	-.102384
#3	.3449663	.1464843	-.104736

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3337.793	71503.61	10674.90	2572.670	4051.108
Stddev	2.735	165.54	21.71	4.655	2.416
%RSD	.0819312	.2315152	.2033571	.1809549	.0596317

#1	3340.829	71362.17	10682.70	2567.304	4049.077
#2	3337.029	71685.69	10650.37	2575.085	4053.779
#3	3335.523	71462.97	10691.62	2575.622	4050.468

Sample Name: P4149-03 Acquired: 10/4/2024 14:48:33 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0466691	-.035612	.1559513	-.036627	.0018924	180.8202
Stddev	.0013279	.002789	.0009902	.001661	.0009749	.1194
%RSD	2.845309	7.832571	.6349137	4.536101	51.51763	.0660304

#1	.0462955	-.038087	.1551353	-.038545	.0020930	180.6932
#2	.0455681	-.036160	.1556658	-.035713	.0008328	180.8372
#3	.0481438	-.032589	.1570528	-.035623	.0027514	180.9301

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5638515	.0152952	.0183554	19.46150	.2800295	.1874869
Stddev	.0030232	.0002401	.0000502	.00688	.0010699	.0004577
%RSD	.5361781	1.569707	.2732442	.0353367	.3820564	.2441419

#1	.5670704	.0155162	.0183985	19.45624	.2800986	.1874818
#2	.5634120	.0153295	.0183674	19.46928	.2810632	.1879472
#3	.5610720	.0150398	.0183004	19.45897	.2789268	.1870318

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1816996	280.0860	6.649388	45.24401	.3060319	-.012454
Stddev	.0013990	1.1711	.018351	.19020	.0006190	.000072
%RSD	.7699532	.4181073	.2759737	.4203846	.2022628	.5744637

#1	.1827512	279.8699	6.669334	45.46294	.3064385	-.012419
#2	.1801118	281.3501	6.645611	45.11943	.3063377	-.012536
#3	.1822358	279.0381	6.633221	45.14965	.3053195	-.012407

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7289920	.4511778	.7441685	22.01469	-.137641	.0083557
Stddev	.0046678	.0026318	.0020171	.06708	.000770	.0002792
%RSD	.6403143	.5833124	.2710557	.3047025	.5593474	3.341099

#1	.7244886	.4541113	.7433285	22.00769	-.137666	.0086705
#2	.7338085	.4490241	.7464698	22.08499	-.138399	.0082586
#3	.7286790	.4503978	.7427071	21.95138	-.136859	.0081381

Sample Name: P4149-03 Acquired: 10/4/2024 14:48:33 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.010380	F 10.44251	6.159395	6.446307	.3284158	.2005618
Stddev	.000077	.02116	.044648	.085630	.0092813	.0026389
%RSD	.7438657	.2026404	.7248814	1.328362	2.826077	1.315758
#1	-.010411	10.46694	6.152063	6.518188	.3294396	.2035102
#2	-.010292	10.43061	6.207256	6.469164	.3371428	.1997542
#3	-.010437	10.42996	6.118867	6.351567	.3186651	.1984211

Elem	Sr4077
Units	ppm
Avg	-.128162
Stddev	.001038
%RSD	.8097124
#1	-.127304
#2	-.129315
#3	-.127866

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3307.832	67070.10	9799.783	2470.272	4113.137
Stddev	11.174	206.62	30.611	2.601	5.861
%RSD	.3378014	.3080595	.3123682	.1053000	.1425017
#1	3298.931	67032.94	9765.497	2472.525	4106.636
#2	3320.372	66884.59	9809.482	2470.867	4114.760
#3	3304.193	67292.78	9824.370	2467.425	4118.017

Sample Name: P4149-04 Acquired: 10/4/2024 14:52:39 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0590785	-.032966	.1394973	-.034215	.0038433	156.2413	.3949154
Stddev	.0006331	.004427	.0006061	.003604	.0006126	.7313	.0005630
%RSD	1.071642	13.43041	.4344500	10.53278	15.93812	.4680284	.1425640
#1	.0596719	-.037993	.1401966	-.031714	.0042489	157.0082	.3953514
#2	.0591516	-.029649	.1391238	-.038345	.0031387	156.1639	.3942798
#3	.0584121	-.031255	.1391716	-.032584	.0041423	155.5518	.3951151
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0151273	.0142649	18.54178	.2602617	.1314092	.1590736	302.7749
Stddev	.0002026	.0003233	.10177	.0003955	.0004824	.0014547	2.2044
%RSD	1.339351	2.266264	.5488462	.1519732	.3671146	.9144899	.7280820
#1	.0153298	.0146364	18.63671	.2599122	.1308695	.1607533	300.4693
#2	.0151276	.0141114	18.55430	.2601817	.1315594	.1582268	302.9936
#3	.0149246	.0140471	18.43434	.2606910	.1317986	.1582406	304.8619
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.407347	32.82909	.2597477	-.012528	.5751940	.4027203	.6146279
Stddev	.023005	.14758	.0014595	.000598	.0175347	.0015068	.0014934
%RSD	.5219728	.4495316	.5618852	4.775246	3.048482	.3741506	.2429755
#1	4.432664	32.97290	.2580705	-.013171	.5580116	.4042701	.6129282
#2	4.401655	32.83636	.2604437	-.012426	.5930609	.4026301	.6157299
#3	4.387722	32.67801	.2607290	-.011987	.5745094	.4012606	.6152255
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.76053	-.092321	.0057855	-.010007	7.305019	4.618225	7.708309
Stddev	.15252	.008069	.0001131	.000471	.032581	.057298	.047911
%RSD	.9677183	8.740511	1.954567	4.710912	.4460116	1.240698	.6215465
#1	15.63496	-.100551	.0056720	-.009718	7.341805	4.578318	7.763624
#2	15.71638	-.091989	.0057862	-.009752	7.293453	4.592477	7.679854
#3	15.93025	-.084423	.0058981	-.010551	7.279798	4.683880	7.681450

Sample Name: P4149-04 Acquired: 10/4/2024 14:52:39 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.2932125	.1403809	-.128884
Stddev	.0034578	.0025465	.002913
%RSD	1.179268	1.814022	2.260523
#1	.2961776	.1392384	-.125718
#2	.2940457	.1386056	-.129482
#3	.2894143	.1432986	-.131452

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3397.749	69789.81	10792.10	2551.530	4477.256
Stddev	4.492	56.30	125.22	14.660	12.461
%RSD	.1321984	.0806772	1.160316	.5745428	.2783121
#1	3402.867	69850.12	10669.92	2561.988	4490.461
#2	3395.917	69738.63	10786.22	2534.773	4475.603
#3	3394.461	69780.69	10920.16	2557.827	4465.705

Sample Name: P4285-01 Acquired: 10/4/2024 14:56:44 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0088448	-.063175	.1335267	-.009592	-.002229	61.00522
Stddev	.0007383	.004769	.0025789	.000438	.000670	.51279
%RSD	8.347215	7.549277	1.931334	4.561653	30.06931	.8405692

#1	.0080973	-.064768	.1351916	-.009963	-.001875	61.37571
#2	.0088638	-.066943	.1305562	-.009704	-.003002	61.21998
#3	.0095735	-.057812	.1348324	-.009109	-.001810	60.41996

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2987301	.0185850	.0323847	27.90341	.1893313	.8730060
Stddev	.0001341	.0000238	.0003492	.03493	.0011722	.0003209
%RSD	.0448821	.1281485	1.078207	.1251872	.6191278	.0367534

#1	.2985876	.0186051	.0327771	27.90920	.1883150	.8728702
#2	.2988538	.0185587	.0322686	27.93509	.1890651	.8733724
#3	.2987490	.0185912	.0321084	27.86595	.1906137	.8727753

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0441658	71.07599	.9948855	47.37870	.4708257	-.004678
Stddev	.0005058	.32356	.0009432	.05992	.0009851	.000135
%RSD	1.145338	.4552363	.0947998	.1264718	.2092385	2.887143

#1	.0444078	70.83493	.9938562	47.43638	.4697549	-.004737
#2	.0445052	70.94931	.9950918	47.38295	.4710284	-.004523
#3	.0435844	71.44373	.9957084	47.31676	.4716937	-.004774

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.402649	.2677411	.4922979	13.98648	-.015956	.0007553
Stddev	.037929	.0008998	.0004966	.08601	.001160	.0000718
%RSD	.5123770	.3360734	.1008747	.6149818	7.272271	9.503134

#1	7.377008	.2687786	.4917650	13.91854	-.017127	.0007097
#2	7.384720	.2672708	.4923809	13.95772	-.015935	.0008381
#3	7.446219	.2671739	.4927478	14.08319	-.014807	.0007182

Sample Name: P4285-01 Acquired: 10/4/2024 14:56:44 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.006165	.4132885	1.477422	F 22.23712	F 12.77761	.0444356
Stddev	.000452	.0007193	.003423	.24007	.05119	.0004796
%RSD	7.330966	.1740398	.2316859	1.079579	.4005875	1.079290
#1	-.006323	.4135700	1.473594	22.47596	12.83404	.0449740
#2	-.005655	.4138246	1.478486	22.23956	12.76464	.0442784
#3	-.006517	.4124711	1.480187	21.99584	12.73416	.0440543

Elem	Sr4077
Units	ppm
Avg	.0721328
Stddev	.0002035
%RSD	.2821322
#1	.0722979
#2	.0721952
#3	.0719054

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	9671.108	204560.3	32064.63	7315.395	3801.876
Stddev	11.805	544.1	145.62	13.460	3.791
%RSD	.1220651	.2659758	.4541493	.1840000	.0997207
#1	9663.207	204982.5	31943.54	7304.987	3799.036
#2	9665.438	204752.0	32024.14	7310.603	3800.411
#3	9684.678	203946.3	32226.21	7330.596	3806.181

Sample Name: CCV04 Acquired: 10/4/2024 15:00:59 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.321483	5.400131	5.165535	5.402085	5.405547	10.77370	10.81493
Stddev	.022346	.079605	.012219	.035214	.030297	.02922	.12417
%RSD	.4199209	1.474140	.2365453	.6518612	.5604723	.2712559	1.148118
#1	5.345688	5.492051	5.179083	5.442710	5.439647	10.80545	10.68211
#2	5.301638	5.353962	5.162171	5.383250	5.395260	10.74793	10.83455
#3	5.317123	5.354380	5.155350	5.380293	5.381733	10.76771	10.92811
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2568818	2.574587	26.18045	1.043803	2.599712	1.339790	5.486323
Stddev	.0009671	.005137	.05774	.003857	.007109	.005861	.058365
%RSD	.3764758	.1995167	.2205541	.3695039	.2734513	.4374594	1.063834
#1	.2567233	2.580504	26.11461	1.044372	2.607906	1.346021	5.545770
#2	.2560037	2.571981	26.20424	1.047344	2.595180	1.338962	5.484094
#3	.2579184	2.571275	26.22249	1.039693	2.596051	1.334386	5.429103
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.618589	25.37232	2.595803	1.335734	27.09601	2.625025	2.694359
Stddev	.016191	.14845	.006075	.003611	.06912	.024532	.006310
%RSD	.6183200	.5850762	.2340480	.2703393	.2551018	.9345622	.2341754
#1	2.606318	25.23546	2.602551	1.339824	27.09446	2.605715	2.701521
#2	2.612508	25.35139	2.594087	1.334387	27.02768	2.616731	2.691931
#3	2.636940	25.53013	2.590769	1.332989	27.16590	2.652630	2.689623
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	27.46296	5.189297	5.407466	5.138285	5.355094	5.356093	5.481560
Stddev	.03571	.025153	.028523	.012475	.024111	.033673	.046828
%RSD	.1300117	.4847032	.5274762	.2427873	.4502436	.6286777	.8542827
#1	27.49077	5.184512	5.440048	5.152029	5.335584	5.319516	5.535399
#2	27.42270	5.166880	5.395344	5.135149	5.347648	5.362963	5.458991
#3	27.47541	5.216498	5.387006	5.127677	5.382050	5.385802	5.450291

Sample Name: CCV04 Acquired: 10/4/2024 15:00:59 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	5.081519	5.212275	5.439446
Stddev	.041531	.057144	.007413
%RSD	.8172969	1.096338	.1362771
#1	5.129413	5.175726	5.433856
#2	5.055467	5.182972	5.447854
#3	5.059677	5.278126	5.436627

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2670.161	54125.48	8150.642	1979.201	4289.094
Stddev	12.595	248.19	12.048	5.637	15.502
%RSD	.4716925	.4585518	.1478158	.2848158	.3614313
#1	2656.486	53881.37	8153.554	1972.731	4271.703
#2	2672.712	54117.50	8160.968	1981.826	4294.117
#3	2681.285	54377.57	8137.405	1983.048	4301.462

Sample Name: CCB04 Acquired: 10/4/2024 15:05:10 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000694	.0001187	.0013734	.0013423	-.000393	.0281324	-.005809
Stddev	.001133	.0011701	.0004090	.0005701	.000290	.0253697	.000262
%RSD	163.1830	985.7785	29.77860	42.46958	73.70029	90.17973	4.517214

#1	-.001907	-.001183	.0012713	.0019874	-.000134	.0542718	-.005549
#2	-.000516	.000456	.0018238	.0011332	-.000340	.0265156	-.006074
#3	.000339	.001083	.0010252	.0009064	-.000705	.0036097	-.005804

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000000	.0001180	.0316283	-.000110	.0000369	-.000153	.0407039
Stddev	.000033	.0000935	.0087148	.000093	.0000537	.000208	.0387258
%RSD	7044.444	79.19969	27.55377	84.24603	145.2677	136.0949	95.14025

#1	-.000033	.0000305	.0289865	-.000029	.0000268	.000047	.0844510
#2	-.000001	.0001071	.0413583	-.000091	.0000950	-.000369	.0268510
#3	.000033	.0002165	.0245401	-.000212	-.000011	-.000138	.0108097

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0013512	.0147804	.0000643	.0003792	-.003051	.0002081	.0009074
Stddev	.0002235	.0301037	.0000797	.0002768	.006618	.0005381	.0001319
%RSD	16.53902	203.6726	124.0259	72.98704	216.9234	258.6111	14.53800

#1	.0015906	.0493412	.0001278	.0005805	-.001260	.0001784	.0010564
#2	.0011480	.0007246	-.000025	.0004936	-.010380	-.000315	.0008602
#3	.0013150	-.005724	.000090	.0000636	.002487	.000760	.0008055

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0502799	.0055964	.0006214	.0009242	.0017891	.0107279	.0021839
Stddev	.0218755	.0008969	.0003934	.0005850	.0008467	.0054410	.0013376
%RSD	43.50736	16.02688	63.30976	63.30267	47.32739	50.71857	61.24789

#1	.0559627	.0065044	.0003649	.0014151	.0026992	.0080997	.0007377
#2	.0687531	.0047110	.0004249	.0010806	.0016436	.0169841	.0033767
#3	.0261238	.0055737	.0010743	.0002768	.0010245	.0070999	.0024375

Sample Name: CCB04 Acquired: 10/4/2024 15:05:10 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.002236	-.000167	.0003819
Stddev	.001933	.001808	.0001359
%RSD	86.42121	1081.268	35.57136
#1	-.000184	-.000898	.0005280
#2	-.004021	-.001496	.0003584
#3	-.002503	.001892	.0002594

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2817.034	57040.03	8350.076	2095.265	4817.334
Stddev	9.795	86.51	42.921	12.566	12.962
%RSD	.3477227	.1516571	.5140248	.5997423	.2690624
#1	2814.048	56978.27	8327.365	2081.287	4809.946
#2	2809.079	57138.89	8323.280	2105.628	4809.756
#3	2827.975	57002.91	8399.581	2098.880	4832.301

Sample Name: P4288-01 Acquired: 10/4/2024 15:09:31 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0432553	-.030509	1.096513	-.031205	.0055240	160.3417
Stddev	.0016706	.002079	.000330	.000934	.0012665	.1549
%RSD	3.862193	6.813609	.0300913	2.993082	22.92733	.0965870

#1	.0421576	-.032866	1.096596	-.031079	.0053965	160.4280
#2	.0424304	-.029724	1.096149	-.032196	.0043261	160.4343
#3	.0451779	-.028936	1.096793	-.030341	.0068495	160.1630

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.089327	.0127786	.0150166	203.7234	.2243187	.1270776
Stddev	.005922	.0001830	.0000588	.1692	.0003867	.0004082
%RSD	.5436079	1.431882	.3917133	.0830578	.1723823	.3212443

#1	1.092672	.0129844	.0149670	203.8953	.2244862	.1270271
#2	1.092819	.0126343	.0150816	203.7180	.2245933	.1266970
#3	1.082490	.0127171	.0150012	203.5570	.2238765	.1275087

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7026078	255.9778	5.696465	45.92871	.2359422	-.010916
Stddev	.0010173	.8310	.011914	.14828	.0004832	.000314
%RSD	.1447933	.3246507	.2091558	.3228571	.2047835	2.880456

#1	.7016023	256.8064	5.708239	46.03561	.2356669	-.010553
#2	.7036365	255.1444	5.696742	45.99109	.2356596	-.011100
#3	.7025847	255.9824	5.684414	45.75942	.2365001	-.011096

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.13113	.4012480	1.275519	16.51621	-.027491	.0064763
Stddev	.06271	.0034618	.002774	.06717	.002550	.0001416
%RSD	.4775394	.8627714	.2174678	.4067124	9.275353	2.185920

#1	13.20187	.3978966	1.278717	16.58846	-.028672	.0064181
#2	13.10917	.4048106	1.273775	16.50455	-.029236	.0066377
#3	13.08236	.4010369	1.274064	16.45564	-.024565	.0063731

Sample Name: P4288-01 Acquired: 10/4/2024 15:09:31 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0471306	4.589109	F 14.39555	7.595081	5.293714	.2028599
Stddev	.0000801	.020716	.11377	.024598	.014634	.0009684
%RSD	.1699006	.4514126	.7903408	.3238697	.2764386	.4773624
#1	.0470925	4.597928	14.52136	7.622454	5.304942	.2034954
#2	.0470767	4.603956	14.36541	7.587960	5.299035	.2033389
#3	.0472226	4.565443	14.29988	7.574829	5.277164	.2017453

Elem	Sr4077
Units	ppm
Avg	.8110690
Stddev	.0042003
%RSD	.5178684
#1	.8112679
#2	.8151662
#3	.8067728

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2864.524	59055.34	8926.263	2131.068	3845.071
Stddev	2.658	215.70	24.053	11.972	6.103
%RSD	.0927739	.3652436	.2694675	.5618001	.1587103
#1	2865.323	58812.69	8905.976	2117.276	3844.194
#2	2861.559	59225.29	8919.979	2138.792	3851.565
#3	2866.690	59128.05	8952.835	2137.135	3839.455

Sample Name: P4288-03 Acquired: 10/4/2024 15:13:35 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0344493	-.020353	.7706978	-.021122	.0037273	107.5845
Stddev	.0007219	.002224	.0020040	.001947	.0007644	.1099
%RSD	2.095641	10.92954	.2600303	9.220348	20.50914	.1021405

#1	.0339689	-.017840	.7701195	-.019817	.0042483	107.6558
#2	.0352795	-.021147	.7690466	-.020187	.0040840	107.6397
#3	.0340996	-.022071	.7729275	-.023360	.0028497	107.4579

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5581649	.0092404	.0107345	67.76063	.1708782	.0870057
Stddev	.0015783	.0000649	.0002185	.02270	.0006010	.0000640
%RSD	.2827615	.7018642	2.035140	.0335005	.3516911	.0736021

#1	.5591240	.0093146	.0109006	67.78601	.1703044	.0869918
#2	.5590274	.0092124	.0108159	67.75361	.1708271	.0870755
#3	.5563433	.0091943	.0104871	67.74227	.1715031	.0869497

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4021334	194.7471	3.709887	29.23796	.1927315	-.008344
Stddev	.0021369	1.0132	.006168	.06534	.0002674	.000580
%RSD	.5313922	.5202462	.1662540	.2234837	.1387430	6.945514

#1	.4043843	193.6324	3.715963	29.28937	.1930226	-.008944
#2	.4018834	194.9968	3.710066	29.26008	.1926750	-.008302
#3	.4001325	195.6120	3.703631	29.16443	.1924968	-.007787

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.028756	.3212655	.8691854	11.39929	-.014491	.0047387
Stddev	.029623	.0020911	.0020428	.06578	.000974	.0002470
%RSD	.5890739	.6508797	.2350258	.5770681	6.720320	5.212018

#1	4.994605	.3236748	.8672893	11.33227	-.015004	.0049598
#2	5.047504	.3201977	.8713487	11.46376	-.015101	.0047842
#3	5.044159	.3199238	.8689183	11.40184	-.013368	.0044721

Sample Name: P4288-03 Acquired: 10/4/2024 15:13:35 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002632	3.549228	F 10.66289	6.222594	3.046873	.1049477
Stddev	.000834	.017318	.03827	.029718	.011009	.0020380
%RSD	31.68941	.4879391	.3588892	.4775812	.3613290	1.941947
#1	-.002548	3.542608	10.68835	6.256848	3.042913	.1067100
#2	-.003505	3.568880	10.68144	6.203695	3.038391	.1054171
#3	-.001844	3.536197	10.61888	6.207238	3.059314	.1027159

Elem	Sr4077
Units	ppm
Avg	.0894623
Stddev	.0012001
%RSD	1.341483
#1	.0906977
#2	.0893884
#3	.0883009

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3037.252	62214.26	9343.060	2269.162	4174.077
Stddev	10.582	37.27	46.261	3.760	8.686
%RSD	.3484208	.0599076	.4951355	.1656799	.2080820
#1	3032.555	62255.66	9293.867	2270.255	4174.976
#2	3029.831	62203.72	9349.625	2264.977	4164.977
#3	3049.370	62183.39	9385.687	2272.254	4182.278

Sample Name: P4290-01 Acquired: 10/4/2024 15:17:39 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0229353	-.056963	.3111008	-.050885	.0033567	170.1583
Stddev	.0001894	.002245	.0013179	.000968	.0006076	.2604
%RSD	.8259341	3.941626	.4236075	1.902326	18.10226	.1530379
#1	.0230673	-.055491	.3123548	-.051619	.0026899	170.0017
#2	.0227183	-.059547	.3112203	-.051249	.0035009	170.0143
#3	.0230205	-.055850	.3097273	-.049788	.0038792	170.4589
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.698729	.0174145	.0242956	173.4802	.2783740	.1876686
Stddev	.001357	.0000352	.0001782	.6547	.0010276	.0005888
%RSD	.0798540	.2019024	.7335269	.3773886	.3691358	.3137530
#1	1.698030	.0173740	.0244337	172.9488	.2775647	.1883479
#2	1.697864	.0174370	.0243588	173.2803	.2780273	.1873555
#3	1.700292	.0174325	.0240945	174.2116	.2795301	.1873026
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1989576	338.2474	7.567790	85.63255	.3931983	-.018503
Stddev	.0015058	.8884	.023225	.38709	.0014372	.000122
%RSD	.7568251	.2626516	.3068961	.4520348	.3655055	.6587241
#1	.2003693	337.7732	7.546829	85.38755	.3948385	-.018371
#2	.1973727	337.6967	7.563783	85.43130	.3925964	-.018612
#3	.1991307	339.2723	7.592758	86.07881	.3921599	-.018524
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.823161	.4229173	.8651827	35.84828	-.055755	.0008087
Stddev	.022415	.0007307	.0023119	.04757	.000657	.0002638
%RSD	.3849359	.1727862	.2672109	.1326901	1.178913	32.61546
#1	5.840564	.4226409	.8672740	35.89242	-.055467	.0008619
#2	5.831053	.4237459	.8655738	35.85450	-.056507	.0010418
#3	5.797868	.4223650	.8627002	35.79790	-.055290	.0005224

Sample Name: P4290-01 Acquired: 10/4/2024 15:17:39 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0581448	4.930042	F 38.06316	9.251080	.7837986	.3677466
Stddev	.0008157	.026361	.29891	.058590	.0040383	.0007760
%RSD	1.402831	.5347014	.7853104	.6333359	.5152172	.2110133
#1	.0573308	4.907130	38.36014	9.304846	.7884087	.3672143
#2	.0581414	4.958853	38.06699	9.259759	.7820999	.3686370
#3	.0589621	4.924142	37.76235	9.188634	.7808872	.3673887

Elem	Sr4077
Units	ppm
Avg	.0234436
Stddev	.0013870
%RSD	5.916290
#1	.0231430
#2	.0249562
#3	.0222316

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3101.467	64068.79	9584.785	2291.692	3840.083
Stddev	1.484	131.47	20.274	9.541	2.833
%RSD	.0478510	.2052025	.2115257	.4163380	.0737632
#1	3101.336	63971.37	9580.150	2281.343	3841.412
#2	3100.053	64218.33	9606.975	2293.591	3836.831
#3	3103.013	64016.67	9567.229	2300.140	3842.008

Sample Name: P4290-01DUP Acquired: 10/4/2024 15:29:09 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0231538	-.056580	.3143801	-.049778	.0033832	170.1524
Stddev	.0012748	.002585	.0008546	.003456	.0010493	.1141
%RSD	5.506015	4.569154	.2718245	6.942528	31.01528	.0670805

#1	.0228070	-.059564	.3135006	-.053441	.0038588	170.2678
#2	.0220883	-.055047	.3152074	-.049316	.0021803	170.1499
#3	.0245662	-.055127	.3144324	-.046576	.0041104	170.0396

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.714300	.0166932	.0234808	171.3667	.2773504	.1892831
Stddev	.003355	.0000834	.0001560	.3684	.0006337	.0003699
%RSD	.1956978	.4993786	.6642758	.2149690	.2284641	.1954130

#1	1.718031	.0167563	.0236172	171.1353	.2778969	.1893965
#2	1.711533	.0167245	.0235143	171.1734	.2774984	.1895831
#3	1.713337	.0165986	.0233107	171.7915	.2766558	.1888699

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2001733	344.0677	7.464794	83.77169	.3956215	-.017812
Stddev	.0013426	1.1825	.014536	.23391	.0007686	.000094
%RSD	.6707039	.3436960	.1947326	.2792173	.1942695	.5270305

#1	.1995973	344.2774	7.460832	83.74287	.3953407	-.017729
#2	.2017078	342.7943	7.452649	83.55354	.3964910	-.017793
#3	.1992149	345.1314	7.480900	84.01868	.3950329	-.017914

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.099762	.4208246	.7882676	37.69142	-.022671	.0006239
Stddev	.055638	.0009333	.0027008	.14774	.003616	.0001145
%RSD	.9121373	.2217826	.3426256	.3919686	15.94925	18.34716

#1	6.155867	.4214963	.7855895	37.84112	-.018643	.0007546
#2	6.098817	.4212186	.7909906	37.54573	-.025637	.0005752
#3	6.044602	.4197589	.7882226	37.68741	-.023731	.0005418

Sample Name: P4290-01DUP Acquired: 10/4/2024 15:29:09 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0584945	5.035615	F 44.22596	9.564945	.7586257	.3473907
Stddev	.0007887	.028686	.59827	.022076	.0009771	.0007009
%RSD	1.348425	.5696664	1.352769	.2308055	.1288045	.2017477
#1	.0583346	5.059794	44.88728	9.582289	.7576428	.3473820
#2	.0593509	5.043132	44.06826	9.572452	.7586373	.3466942
#3	.0577979	5.003918	43.72232	9.540094	.7595969	.3480958

Elem	Sr4077
Units	ppm
Avg	.0197831
Stddev	.0012942
%RSD	6.541675
#1	.0203979
#2	.0206552
#3	.0182962

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3065.037	64555.98	9994.868	2291.620	3796.824
Stddev	4.598	171.24	14.986	6.910	3.010
%RSD	.1500178	.2652521	.1499364	.3015362	.0792836
#1	3059.986	64533.10	10009.95	2284.951	3793.442
#2	3068.979	64737.51	9994.68	2298.748	3797.822
#3	3066.146	64397.34	9979.98	2291.160	3799.209

Sample Name: P4290-01DLX5 Acquired: 10/4/2024 15:33:13 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0030895	-.010723	.0680941	-.010213	.0002683	39.12190	.3962680
Stddev	.0011006	.000735	.0014590	.001468	.0014011	.12918	.0026744
%RSD	35.62212	6.853396	2.142681	14.37002	522.2328	.3301936	.6749004

#1	.0030830	-.009880	.0665025	-.009244	-.001269	38.97278	.3931907
#2	.0019922	-.011065	.0684112	-.009493	.000599	39.19934	.3975832
#3	.0041933	-.011225	.0693684	-.011902	.001474	39.19359	.3980302

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0043375	.0021240	43.09980	.0698473	.0391925	.0551841	86.63811
Stddev	.0000417	.0000976	.17160	.0003787	.0001040	.0003111	.04004
%RSD	.9611575	4.596636	.3981549	.5421174	.2652857	.5637897	.0462133

#1	.0043013	.0021786	42.90310	.0696952	.0391171	.0555431	86.67374
#2	.0043281	.0021822	43.17741	.0702783	.0391492	.0550159	86.64582
#3	.0043831	.0020113	43.21890	.0695683	.0393111	.0549932	86.59478

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.893937	20.54189	.0841447	-.004377	1.132470	.1036122	.2048537
Stddev	.011904	.17188	.0006063	.000217	.007243	.0005111	.0010464
%RSD	.6285149	.8367364	.7205974	4.955894	.6395656	.4932995	.5107883

#1	1.880492	20.35417	.0847413	-.004131	1.125877	.1033352	.2038345
#2	1.898181	20.57997	.0835291	-.004461	1.140223	.1042020	.2059253
#3	1.903136	20.69154	.0841635	-.004540	1.131310	.1032994	.2048012

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.821537	-.006539	.0001659	.0119524	1.095319	5.094692	1.910446
Stddev	.006125	.001949	.0002787	.0004650	.008288	.043628	.004757
%RSD	.0783121	29.79787	167.9674	3.890581	.7566956	.8563383	.2490086

#1	7.821435	-.004393	.0000872	.0119699	1.104095	5.099651	1.907815
#2	7.827712	-.007028	-.000065	.0114789	1.087624	5.135628	1.915938
#3	7.815463	-.008197	.000476	.0124085	1.094239	5.048796	1.907586

Sample Name: P4290-01DLX5 Acquired: 10/4/2024 15:33:13 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.1521827	.0765730	.0009073
Stddev	.0029133	.0027168	.0005562
%RSD	1.914362	3.547981	61.30058

#1	.1523722	.0737230	.0002775
#2	.1549967	.0791334	.0013311
#3	.1491793	.0768625	.0011132

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2750.750	56679.26	8584.173	2070.589	4231.666
Stddev	2.122	49.18	47.801	8.333	4.038
%RSD	.0771433	.0867695	.5568454	.4024581	.0954347

#1	2748.815	56632.33	8636.298	2067.814	4229.412
#2	2750.416	56730.42	8573.831	2063.996	4229.258
#3	2753.019	56675.03	8542.390	2079.955	4236.329

Sample Name: P4290-01MS Acquired: 10/4/2024 15:37:25 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6972780	2.049751	1.270299	1.613960	.7223340	171.6157
Stddev	.0019570	.011981	.003224	.002121	.0035909	.4432
%RSD	.2806654	.5845339	.2538261	.1314284	.4971237	.2582308

#1	.6995233	2.036942	1.273581	1.613373	.7184121	171.4790
#2	.6963765	2.051625	1.267135	1.612194	.7231294	171.2569
#3	.6959343	2.060684	1.270182	1.616313	.7254605	172.1111

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.908709	.1803939	.2172954	172.2502	.5962067	.4005188
Stddev	.004253	.0000626	.0003844	.4847	.0046377	.0006312
%RSD	.2228351	.0347019	.1769141	.2814003	.7778686	.1575909

#1	1.907337	.1804536	.2171284	171.7616	.6012933	.3998214
#2	1.913479	.1803288	.2170228	172.2581	.5951137	.4010508
#3	1.905311	.1803992	.2177351	172.7310	.5922132	.4006844

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4486565	344.3721	7.657900	85.14434	.9138024	.0505084
Stddev	.0017984	.4324	.017087	.21487	.0022263	.0003677
%RSD	.4008434	.1255574	.2231332	.2523652	.2436310	.7280317

#1	.4472345	344.8531	7.639804	84.89730	.9123941	.0508996
#2	.4480569	344.2476	7.660138	85.28783	.9126440	.0504556
#3	.4506781	344.0157	7.673758	85.24790	.9163691	.0501699

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.766279	.6752421	.9552311	46.82749	.1964622	.3555922
Stddev	.039687	.0022335	.0036696	.15761	.0020437	.0007504
%RSD	.4527181	.3307683	.3841554	.3365656	1.040232	.2110288

#1	8.806300	.6766688	.9551736	46.98669	.1977793	.3548054
#2	8.765601	.6726681	.9515906	46.82426	.1974994	.3556715
#3	8.726936	.6763894	.9589290	46.67153	.1941079	.3562999

Sample Name: P4290-01MS Acquired: 10/4/2024 15:37:25 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7638358	5.195921	F 42.92446	F 15.48175	.7066674	.5255984
Stddev	.0045591	.012834	.35361	.00438	.0067981	.0013403
%RSD	.5968702	.2470077	.8237916	.0282787	.9619950	.2550011
#1	.7619619	5.188414	43.28115	15.47995	.7018049	.5242160
#2	.7605123	5.210740	42.91820	15.47857	.7037618	.5268922
#3	.7690333	5.188608	42.57402	15.48674	.7144354	.5256871

Elem	Sr4077
Units	ppm
Avg	.2037417
Stddev	.0010910
%RSD	.5354868
#1	.2025570
#2	.2047052
#3	.2039629

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3047.927	64003.91	9819.766	2255.379	3804.915
Stddev	8.417	189.63	36.135	12.794	9.088
%RSD	.2761534	.2962816	.3679777	.5672729	.2388381
#1	3057.396	63839.80	9836.608	2256.631	3814.665
#2	3045.089	64211.51	9844.406	2267.501	3803.400
#3	3041.296	63960.42	9778.285	2242.005	3796.680

Sample Name: P4290-01MSD Acquired: 10/4/2024 15:41:22 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6944076	2.018464	1.270353	1.614686	.7217431	166.0948
Stddev	.0053833	.018788	.000505	.002667	.0028935	.2524
%RSD	.7752377	.9308031	.0397794	.1651764	.4008969	.1519892

#1	.6913698	2.031677	1.270631	1.612829	.7249835	166.3327
#2	.6912298	1.996956	1.270659	1.613487	.7194181	165.8299
#3	.7006232	2.026759	1.269770	1.617742	.7208276	166.1219

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.891737	.1779000	.2155865	173.0292	.5962082	.4009106
Stddev	.003940	.0011198	.0009967	.2982	.0035478	.0004289
%RSD	.2082569	.6294301	.4623400	.1723160	.5950606	.1069940

#1	1.892729	.1777043	.2165980	172.7965	.5938969	.4004638
#2	1.895086	.1768910	.2146052	172.9257	.5944346	.4013192
#3	1.887396	.1791047	.2155563	173.3653	.6002930	.4009487

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4447314	354.6478	7.694640	84.90279	.9138367	.0509179
Stddev	.0034049	2.0499	.006375	.01806	.0019434	.0000964
%RSD	.7656089	.5780122	.0828523	.0212709	.2126634	.1892513

#1	.4472348	352.7700	7.698019	84.89474	.9150542	.0508667
#2	.4408542	356.8347	7.687286	84.92347	.9148605	.0508581
#3	.4461052	354.3387	7.698614	84.89015	.9115954	.0510291

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.156664	.6729890	.9726125	45.35084	.2035888	.3521787
Stddev	.088356	.0041315	.0035872	.23925	.0033488	.0005992
%RSD	1.083237	.6139051	.3688234	.5275519	1.644873	.1701504

#1	8.171373	.6745120	.9744974	45.28666	.2028403	.3524967
#2	8.236742	.6761428	.9748643	45.61563	.2072484	.3514875
#3	8.061877	.6683122	.9684757	45.15023	.2006776	.3525519

Sample Name: P4290-01MSD Acquired: 10/4/2024 15:41:22 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7612587	4.778850	F 28.28637	F 15.46393	.7232778	.5210215
Stddev	.0024400	.061328	.94030	.00498	.0017365	.0032655
%RSD	.3205192	1.283328	3.324221	.0322094	.2400897	.6267404
#1	.7635817	4.849340	28.98352	15.46914	.7216717	.5221672
#2	.7587165	4.737732	28.65866	15.45921	.7230412	.5235597
#3	.7614779	4.749478	27.21692	15.46343	.7251205	.5173376

Elem	Sr4077
Units	ppm
Avg	.1906652
Stddev	.0018323
%RSD	.9609965
#1	.1925599
#2	.1889025
#3	.1905333

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3016.484	62620.35	9881.880	2219.358	3770.094
Stddev	6.277	74.28	42.747	18.850	9.694
%RSD	.2080983	.1186273	.4325813	.8493305	.2571304
#1	3009.256	62662.72	9838.876	2208.541	3760.685
#2	3020.574	62534.57	9924.366	2208.408	3769.546
#3	3019.621	62663.75	9882.399	2241.123	3780.050

Sample Name: P4290-01A Acquired: 10/4/2024 15:45:19 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6815596	2.017338	1.254347	1.588821	.7157815	161.4528
Stddev	.0045916	.014292	.001985	.001098	.0019713	.1550
%RSD	.6736889	.7084724	.1582268	.0691121	.2754109	.0959809

#1	.6867528	2.033802	1.255684	1.587553	.7179822	161.2741
#2	.6798878	2.010084	1.252066	1.589438	.7151851	161.5338
#3	.6780381	2.008127	1.255289	1.589471	.7141772	161.5505

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.814413	.1802420	.2125613	172.9427	.5787978	.3960617
Stddev	.004365	.0009353	.0005276	.3865	.0010628	.0003431
%RSD	.2405897	.5189215	.2482289	.2234616	.1836221	.0866301

#1	1.809518	.1795083	.2129752	172.6162	.5799651	.3963706
#2	1.817903	.1812952	.2119671	173.3694	.5785421	.3956924
#3	1.815817	.1799226	.2127415	172.8425	.5778862	.3961220

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4528175	342.7757	7.673614	84.85337	.9042098	.0474695
Stddev	.0015614	.6365	.020574	.27444	.0015434	.0004400
%RSD	.3448116	.1856897	.2681101	.3234246	.1706851	.9269202

#1	.4527862	343.2675	7.664515	84.71042	.9039379	.0478370
#2	.4512720	343.0028	7.697168	85.16977	.9028204	.0475897
#3	.4543943	342.0568	7.659158	84.67991	.9058710	.0469819

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.930677	.6545677	.9633456	40.82984	.1698482	.3493883
Stddev	.011631	.0004450	.0021977	.05803	.0006863	.0003588
%RSD	.1678122	.0679829	.2281338	.1421315	.4040748	.1026968

#1	6.927768	.6548566	.9658434	40.86797	.1706393	.3497011
#2	6.920778	.6547913	.9617087	40.85849	.1694118	.3494674
#3	6.943487	.6540553	.9624847	40.76305	.1694935	.3489966

Sample Name: P4290-01A Acquired: 10/4/2024 15:45:19 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7550791	4.253149	F 10.85938	F 15.51383	.7258592	.5240971
Stddev	.0037125	.008653	.15841	.02875	.0069832	.0004105
%RSD	.4916761	.2034539	1.458763	.1853224	.9620624	.0783224
#1	.7557471	4.246102	11.02689	15.52821	.7299575	.5236555
#2	.7510780	4.262807	10.71199	15.53254	.7177961	.5244670
#3	.7584124	4.250538	10.83926	15.48072	.7298241	.5241687

Elem	Sr4077
Units	ppm
Avg	.1850130
Stddev	.0015929
%RSD	.8609436
#1	.1832204
#2	.1862658
#3	.1855529

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3003.598	62538.46	9533.639	2206.710	3758.675
Stddev	3.350	204.17	8.294	13.561	3.197
%RSD	.1115245	.3264650	.0869990	.6145316	.0850668
#1	3003.176	62304.78	9524.275	2193.845	3756.136
#2	3000.480	62682.30	9536.580	2220.873	3757.623
#3	3007.139	62628.30	9540.062	2205.411	3762.266

Sample Name: PB163906BS Acquired: 10/4/2024 15:49:17 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7999311	2.238668	.9839659	2.071284	.8593415	2.209774
Stddev	.0019197	.008287	.0024392	.005182	.0029385	.005146
%RSD	.2399791	.3701569	.2478904	.2501644	.3419438	.2328714
#1	.8021036	2.229121	.9838822	2.076707	.8564719	2.204786
#2	.7984635	2.243991	.9864459	2.066384	.8623443	2.209473
#3	.7992263	2.242892	.9815698	2.070762	.8592084	2.215064
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2128913	.2124855	.1918443	1.177304	.4172585	.2092904
Stddev	.0011075	.0003586	.0002236	.008587	.0005586	.0002815
%RSD	.5202275	.1687456	.1165425	.7293353	.1338845	.1345144
#1	.2116344	.2120737	.1920491	1.169465	.4176499	.2095791
#2	.2133157	.2126543	.1918780	1.175967	.4175068	.2092754
#3	.2137239	.2127285	.1916058	1.186481	.4166187	.2090167
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3362755	3.271362	.2199287	2.015994	.5240856	.0822598
Stddev	.0003450	.014127	.0004065	.025698	.0005008	.0005126
%RSD	.1025967	.4318465	.1848381	1.274720	.0955629	.6231191
#1	.3359595	3.286944	.2194830	2.043564	.5245323	.0822318
#2	.3362234	3.259390	.2202791	2.011713	.5241805	.0827858
#3	.3366436	3.267752	.2200238	1.992706	.5235442	.0817618
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.084137	.3150518	.2261654	10.86118	.2964410	.4349704
Stddev	.018871	.0015446	.0011472	.01935	.0007907	.0007554
%RSD	.6118828	.4902640	.5072241	.1781220	.2667174	.1736569
#1	3.105126	.3168330	.2249389	10.88126	.2957112	.4357859
#2	3.068570	.3142401	.2263451	10.84267	.2963308	.4342947
#3	3.078714	.3140823	.2272120	10.85960	.2972809	.4348307

Sample Name: PB163906BS Acquired: 10/4/2024 15:49:17 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6936399	.2118560	F .6473775	6.037453	F -.013563	.1907972
Stddev	.0025103	.0003416	.0120106	.015132	.003234	.0006507
%RSD	.3619058	.1612210	1.855278	.2506374	23.84722	.3410527
#1	.6951079	.2116134	.6609846	6.021874	-.012519	.1903109
#2	.6950705	.2122466	.6428962	6.038391	-.010979	.1905443
#3	.6907413	.2117081	.6382519	6.052095	-.017190	.1915364

Elem	Sr4077
Units	ppm
Avg	.2150820
Stddev	.0003644
%RSD	.1694057
#1	.2152744
#2	.2146618
#3	.2153100

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2752.858	55089.74	8176.835	2012.714	4649.264
Stddev	3.903	143.37	4.164	1.721	8.776
%RSD	.1417744	.2602518	.0509279	.0855266	.1887717
#1	2751.832	54927.40	8181.213	2013.187	4648.385
#2	2749.570	55199.02	8172.923	2010.806	4640.960
#3	2757.171	55142.79	8176.368	2014.150	4658.447

Sample Name: PB163906BL Acquired: 10/4/2024 15:53:17 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001469	-.002205	-.000341	.0009762	.0002947	.0067820	-.006489
Stddev	.0020540	.000703	.000825	.0003364	.0002250	.0035403	.000379
%RSD	1397.912	31.88911	242.3936	34.46484	76.33529	52.20206	5.834172
#1	.0006075	-.002252	-.000945	.0013618	.0003336	.0029370	-.006491
#2	.0019315	-.002883	-.000676	.0008242	.0004976	.0099070	-.006867
#3	-.002098	-.001479	.000600	.0007426	.0000528	.0075020	-.006110
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000315	.0000372	.0228134	-.000076	-.000022	.0001856	.0012131
Stddev	.0000570	.0001169	.0063383	.000273	.000048	.0003678	.0015765
%RSD	181.1038	313.8535	27.78296	360.4015	222.3081	198.2188	129.9601
#1	.0000926	.0000223	.0229192	-.000124	-.000072	.0005302	.0015685
#2	-.000020	.0001609	.0164230	.000218	.000024	.0002282	.0025814
#3	.000022	-.000071	.0290982	-.000321	-.000017	-.000202	-.000511
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005568	.0034558	.0000742	.0000152	-.024311	.0000252	.0006959
Stddev	.0000547	.0244801	.0003282	.0001709	.007260	.0003511	.0001285
%RSD	9.828996	708.3715	442.3836	1121.819	29.86192	1392.420	18.46930
#1	.0005641	.0273945	-.000240	-.000073	-.029740	-.000164	.0005895
#2	.0004988	.0045051	.000047	-.000093	-.016065	.000430	.0008386
#3	.0006075	-.021532	.000415	.000212	-.027128	-.000191	.0006595
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0564042	-.000290	.0001118	.0011782	.0001782	.0005856	.0007678
Stddev	.0097454	.000839	.0000276	.0001772	.0003521	.0046892	.0014687
%RSD	17.27777	289.0361	24.71809	15.04374	197.5495	800.8126	191.2832
#1	.0597399	-.000688	.0001398	.0013667	-.000038	.0027031	.0006053
#2	.0640438	.000673	.0000845	.0010149	-.000012	-.004789	-.000613
#3	.0454290	-.000856	.0001111	.0011530	.000584	.003843	.002311

Sample Name: PB163906BL Acquired: 10/4/2024 15:53:17 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.001681	-.006075	.0000256
Stddev	.002007	.001662	.0000681
%RSD	119.4056	27.35893	266.2559
#1	-.003881	-.005899	-.000040
#2	.000051	-.007818	.000021
#3	-.001212	-.004508	.000096

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2731.818	57537.90	8586.962	2074.080	4630.631
Stddev	3.879	117.54	34.119	3.334	1.906
%RSD	.1419878	.2042882	.3973305	.1607441	.0411569
#1	2730.012	57492.53	8553.418	2070.369	4632.430
#2	2729.172	57449.80	8585.839	2076.821	4628.634
#3	2736.271	57671.36	8621.628	2075.050	4630.831

Sample Name: CCV05 Acquired: 10/4/2024 16:08:13 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV05 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.194892	4.657527	4.997251	5.346934	5.312453	10.41047	10.31490
Stddev	.024839	.046805	.022167	.024256	.008471	.02853	.04202
%RSD	.4781506	1.004933	.4435755	.4536392	.1594534	.2740288	.4074106

#1	5.196494	4.691392	4.986044	5.350501	5.310226	10.43646	10.28382
#2	5.169290	4.604117	4.982925	5.321092	5.305318	10.37994	10.29816
#3	5.218892	4.677072	5.022783	5.369209	5.321815	10.41500	10.36271

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2476109	2.481723	25.23781	.9901932	2.519042	1.304601	5.164308
Stddev	.0009403	.013562	.05350	.0052033	.013408	.004968	.018069
%RSD	.3797512	.5464902	.2119644	.5254818	.5322799	.3808254	.3498848

#1	.2481606	2.473154	25.25592	.9841855	2.510978	1.303873	5.147707
#2	.2465252	2.474655	25.27989	.9932682	2.511628	1.300038	5.183554
#3	.2481469	2.497359	25.17760	.9931259	2.534520	1.309894	5.161663

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.491540	23.88367	2.514121	1.295890	25.52829	2.463041	2.630689
Stddev	.001455	.02661	.012549	.002569	.09251	.007088	.006038
%RSD	.0583972	.1114180	.4991521	.1982263	.3623866	.2877642	.2295209

#1	2.490543	23.88385	2.504059	1.295012	25.45053	2.458570	2.628996
#2	2.490867	23.85697	2.510121	1.293875	25.50375	2.459341	2.637393
#3	2.493210	23.91019	2.528182	1.298783	25.63060	2.471213	2.625679

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	26.53082	5.010868	5.329520	4.997779	5.130604	5.153618	5.084279
Stddev	.04328	.010816	.021957	.030700	.009367	.045760	.023093
%RSD	.1631190	.2158522	.4119894	.6142728	.1825801	.8879180	.4542106

#1	26.48129	5.009717	5.328836	4.990527	5.132640	5.102429	5.087559
#2	26.54986	5.000674	5.307913	4.971354	5.120386	5.167867	5.059721
#3	26.56132	5.022214	5.351812	5.031455	5.138787	5.190558	5.105557

Sample Name: CCV05 Acquired: 10/4/2024 16:08:13 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV05 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.916769	4.853501	5.184586
Stddev	.016766	.036362	.017515
%RSD	.3410059	.7491992	.3378376
#1	4.906058	4.833136	5.188088
#2	4.908157	4.831886	5.165584
#3	4.936091	4.895483	5.200086

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2723.724	55343.01	8375.502	1993.410	4397.831
Stddev	9.385	123.74	13.017	4.926	20.573
%RSD	.3445494	.2235847	.1554214	.2470949	.4677890
#1	2727.775	55467.15	8382.788	1990.147	4411.637
#2	2730.403	55219.67	8383.245	1991.007	4407.670
#3	2712.995	55342.20	8360.473	1999.076	4374.186

Sample Name: CCB05 Acquired: 10/4/2024 16:12:24 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB05 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000269	-.001922	-.000844	-.000539	-.000355	.0010086	-.005841
Stddev	.002916	.001607	.001193	.000516	.000536	.0041005	.000997
%RSD	1084.410	83.59495	141.3469	95.68998	151.0265	406.5672	17.06930
#1	-.003517	-.003158	.000068	-.000182	-.000822	.0044445	-.005195
#2	.002123	-.002503	-.000407	-.000306	.000230	.0021121	-.005339
#3	.000587	-.000106	-.002194	-.001131	-.000473	-.003531	-.006990
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000090	.0000367	.0209729	.0002540	-.000052	.0001557	-.006931
Stddev	.0000250	.0000389	.0113378	.0002095	.000092	.0001679	.004738
%RSD	279.8703	105.9121	54.05949	82.49047	176.6392	107.8676	68.36142
#1	.0000041	.0000394	.0319229	.0000665	.000054	.0000064	-.002502
#2	.0000361	.0000742	.0217122	.0004801	-.000101	.0003375	-.006363
#3	-.000013	-.000003	.0092835	.0002154	-.000110	.0001232	-.011927
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002405	.0090923	.0000329	.0000994	-.039832	-.000343	.0006966
Stddev	.0001075	.0109598	.0000699	.0000610	.002270	.001063	.0002533
%RSD	44.70069	120.5392	212.4366	61.33168	5.699743	310.3506	36.36514
#1	.0003529	.0164894	-.000034	.0001027	-.042410	.000431	.0004939
#2	.0002300	-.003499	.000106	.0000369	-.038957	-.001555	.0006153
#3	.0001387	.014286	.000027	.0001587	-.038130	.000096	.0009805
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0469256	.0101254	.0005110	.0006461	.0003817	.0062828	.0023345
Stddev	.0399489	.0009453	.0002181	.0004264	.0000625	.0055633	.0032086
%RSD	85.13225	9.336151	42.68298	65.98610	16.38233	88.54779	137.4421
#1	.0185000	.0091523	.0005119	.0004360	.0004228	-.000076	-.001337
#2	.0296758	.0110402	.0002924	.0011368	.0004126	.008674	.003738
#3	.0926011	.0101838	.0007286	.0003656	.0003098	.010251	.004602

Sample Name: CCB05 Acquired: 10/4/2024 16:12:24 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB05 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.003449	-.005165	.0001390
Stddev	.001012	.001376	.0000286
%RSD	29.34489	26.63380	20.56260
#1	-.002899	-.006680	.0001334
#2	-.004617	-.003994	.0001136
#3	-.002831	-.004821	.0001699

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2848.392	57000.64	8643.469	2091.836	4881.444
Stddev	7.864	114.82	27.876	1.375	7.372
%RSD	.2760941	.2014355	.3225095	.0657360	.1510137
#1	2855.976	57028.99	8622.006	2092.814	4884.924
#2	2848.925	56874.30	8674.975	2090.264	4886.431
#3	2840.275	57098.63	8633.426	2092.430	4872.976

Sample Name: P4269-02 Acquired: 10/4/2024 16:18:34 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.010143	-.005081	.0438674	.0049440	.0307814	1.714233
Stddev	.001171	.003479	.0007433	.0006319	.0007165	.005905
%RSD	11.54281	68.46329	1.694334	12.78186	2.327747	.3444437

#1	-.009370	-.008657	.0445055	.0054337	.0299688	1.710057
#2	-.009569	-.004878	.0440454	.0051677	.0313223	1.720989
#3	-.011490	-.001709	.0430513	.0042307	.0310531	1.711653

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1114526	.0002568	.0031031	12.47245	.0317908	.0053506
Stddev	.0006695	.0000354	.0000462	.00828	.0004525	.0000802
%RSD	.6007314	13.79829	1.489823	.0663536	1.423244	1.498501

#1	.1117826	.0002159	.0031510	12.46758	.0321174	.0052598
#2	.1106822	.0002770	.0030996	12.48200	.0312744	.0053806
#3	.1118932	.0002774	.0030588	12.46776	.0319807	.0054115

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2288805	13.69195	.1876175	3.429067	.0395648	.0008358
Stddev	.0006973	.09079	.0006727	.014645	.0001264	.0002916
%RSD	.3046515	.6631079	.3585255	.4270939	.3195839	34.88815

#1	.2280805	13.74423	.1879887	3.437591	.0396474	.0005871
#2	.2292014	13.58711	.1880227	3.412157	.0396278	.0007636
#3	.2293595	13.74451	.1868410	3.437455	.0394193	.0011567

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	657.6821	.0038473	.9437185	31.09302	.1705941	.0510338
Stddev	2.3709	.0015088	.0028860	.10180	.0010537	.0003458
%RSD	.3604891	39.21668	.3058082	.3274007	.6176763	.6775126

#1	660.3000	.0025199	.9434060	31.06648	.1709753	.0510335
#2	657.0665	.0054882	.9410014	31.00713	.1714042	.0506882
#3	655.6797	.0035337	.9467479	31.20547	.1694028	.0513798

Sample Name: P4269-02 Acquired: 10/4/2024 16:18:34 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.006457	.0262600	F 20.74801	8.712496	F 109.9988	.0760476
Stddev	.000914	.0008563	.05043	.012730	.1843	.0028141
%RSD	14.15093	3.261016	.2430356	.1461078	.1675298	3.700389
#1	-.006796	.0252746	20.71654	8.721380	110.0984	.0776558
#2	-.005422	.0268233	20.72131	8.718195	110.1118	.0727983
#3	-.007152	.0266822	20.80617	8.697912	109.7861	.0776888

Elem	Sr4077
Units	ppm
Avg	.1049327
Stddev	.0006666
%RSD	.6352729
#1	.1043209
#2	.1056431
#3	.1048341

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2432.001	50381.17	8364.612	1806.188	3840.835
Stddev	1.645	144.65	21.926	6.185	2.289
%RSD	.0676530	.2871151	.2621317	.3424361	.0595974
#1	2430.299	50299.65	8372.360	1808.415	3838.250
#2	2432.122	50548.19	8339.863	1810.951	3842.606
#3	2433.583	50295.69	8381.612	1799.198	3841.648

Sample Name: P4286-01 Acquired: 10/4/2024 16:22:51 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.005457	-.002540	.0001741	.0047364	.0018504	14.81981
Stddev	.003267	.000277	.0001506	.0011340	.0007680	.07804
%RSD	59.87037	10.89732	86.50649	23.94169	41.50458	.5266131

#1	-.009185	-.002243	.0003399	.0056536	.0014783	14.74759
#2	-.003090	-.002587	.0000457	.0050871	.0013393	14.80923
#3	-.004096	-.002790	.0001367	.0034685	.0027336	14.90260

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0444958	-.000083	.0001244	51.94684	.0885298	.0006195
Stddev	.0010813	.000029	.0000338	.26706	.0010856	.0002013
%RSD	2.430080	35.61273	27.21159	.5140943	1.226230	32.50348

#1	.0433012	-.000114	.0001593	51.66374	.0892919	.0008261
#2	.0447787	-.000056	.0000918	51.98253	.0872868	.0006085
#3	.0454076	-.000078	.0001220	52.19426	.0890107	.0004238

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0474186	.3995007	.0155881	17.42002	.0393791	.0001811
Stddev	.0004160	.0050062	.0001997	.09068	.0004992	.0001371
%RSD	.8771786	1.253108	1.281139	.5205218	1.267564	75.73140

#1	.0478942	.3939721	.0156890	17.35970	.0399505	.0003096
#2	.0472392	.4008029	.0153581	17.37607	.0390281	.0000367
#3	.0471225	.4037271	.0157172	17.52430	.0391587	.0001970

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	477.4136	.0002948	1.322216	46.41996	1.922485	.0076143
Stddev	1.9501	.0014020	.003240	.25870	.013870	.0000411
%RSD	.4084815	475.5267	.2450420	.5572943	.7214584	.5394088

#1	475.1702	.0016709	1.323827	46.12500	1.927566	.0075775
#2	478.3665	-.001132	1.324335	46.60833	1.906791	.0076070
#3	478.7041	.000345	1.318487	46.52655	1.933098	.0076586

Sample Name: P4286-01 Acquired: 10/4/2024 16:22:51 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.007747	-.000140	4.066837	5.653763	F 244.5110	.0067213
Stddev	.000417	.000733	.029434	.007107	.5885	.0008396
%RSD	5.388120	522.8207	.7237463	.1257080	.2406925	12.49125
#1	-.007619	-.000979	4.033011	5.660321	244.8710	.0074659
#2	-.007408	.000182	4.086616	5.646211	243.8319	.0068867
#3	-.008213	.000376	4.080882	5.654755	244.8302	.0058114

Elem	Sr4077
Units	ppm
Avg	.2573154
Stddev	.0017128
%RSD	.6656512
#1	.2558475
#2	.2569016
#3	.2591973

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2443.594	50123.28	7706.985	1777.995	3871.621
Stddev	2.590	139.58	26.483	10.900	4.787
%RSD	.1059991	.2784833	.3436297	.6130226	.1236323
#1	2444.965	50187.70	7685.327	1779.988	3875.975
#2	2440.607	49963.11	7736.511	1766.236	3866.495
#3	2445.211	50219.01	7699.118	1787.760	3872.392

Sample Name: CCV06 Acquired: 10/4/2024 16:27:11 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV06 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.001920	5.376993	4.792502	5.158313	5.050574	9.792760
Stddev	.015779	.013153	.000819	.006704	.009186	.025625
%RSD	.3154570	.2446199	.0170793	.1299588	.1818833	.2616751

#1	4.991210	5.381273	4.793442	5.154873	5.043961	9.763209
#2	4.994509	5.362232	4.792122	5.154028	5.046698	9.808844
#3	5.020040	5.387472	4.791944	5.166039	5.061063	9.806227

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.612537	.2314766	2.384247	23.74296	.9162492	2.408331
Stddev	.063406	.0012289	.001839	.11999	.0044394	.002477
%RSD	.6596174	.5309160	.0771128	.5053742	.4845220	.1028618

#1	9.539378	.2322517	2.382135	23.62286	.9187272	2.406326
#2	9.646638	.2321186	2.385488	23.74317	.9188964	2.407566
#3	9.651595	.2300596	2.385120	23.86284	.9111239	2.411100

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.250158	4.761680	2.332185	25.74301	2.410186	1.203335
Stddev	.003594	.010334	.007997	.15484	.002691	.004739
%RSD	.2874952	.2170210	.3428932	.6014979	.1116440	.3938381

#1	1.246763	4.750095	2.323026	25.56464	2.407090	1.205775
#2	1.249789	4.764997	2.337781	25.84288	2.411513	1.206357
#3	1.253923	4.769949	2.335747	25.82151	2.411956	1.197873

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	23.30827	2.291836	2.444797	24.45701	4.667923	5.000058
Stddev	.02427	.007590	.014274	.02185	.026342	.003195
%RSD	.1041343	.3311845	.5838448	.0893250	.5643153	.0638921

#1	23.31144	2.283145	2.456374	24.43199	4.672400	4.997041
#2	23.33081	2.297163	2.449168	24.47230	4.691740	4.999729
#3	23.28257	2.295201	2.428849	24.46673	4.639630	5.003405

Sample Name: CCV06 Acquired: 10/4/2024 16:27:11 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV06 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.785774	4.797895	4.647342	5.062035	4.860541	F 4.468029
Stddev	.003245	.016299	.018965	.027843	.023426	.007976
%RSD	.0678081	.3397083	.4080792	.5500320	.4819668	.1785215
#1	4.784281	4.779076	4.631716	5.044450	4.868614	4.461869
#2	4.789497	4.807487	4.641869	5.047518	4.834146	4.477039
#3	4.783544	4.807122	4.668442	5.094136	4.878863	4.465180

Elem	Sr4077
Units	ppm
Avg	4.882492
Stddev	.037326
%RSD	.7644872
#1	4.839921
#2	4.897947
#3	4.909609

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2757.564	58460.29	8690.368	2075.241	4417.000
Stddev	5.137	194.16	34.678	6.292	5.926
%RSD	.1862754	.3321189	.3990377	.3031958	.1341690
#1	2757.719	58275.59	8672.180	2068.075	4418.297
#2	2762.622	58442.57	8668.568	2077.788	4422.170
#3	2752.352	58662.70	8730.356	2079.861	4410.532

Sample Name: CCB06 Acquired: 10/4/2024 16:31:23 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB06 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0012348	.0003500	-.000006	.0006436	.0001086	-.002843	-.005954
Stddev	.0010786	.0005760	.000477	.0008875	.0009756	.003890	.000165
%RSD	87.34826	164.5740	7880.844	137.9007	898.5722	136.8016	2.770257
#1	.0024625	.0005403	.000514	.0015865	-.000977	-.005258	-.005783
#2	.0004396	.0008069	-.000110	.0005198	.000392	-.004916	-.006112
#3	.0008023	-.000297	-.000423	-.000176	.000911	.001644	-.005967
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000125	.0000556	.0242630	.0001309	.0001522	-.000256	-.005754
Stddev	.0000121	.0000476	.0029842	.0002452	.0000938	.000497	.005498
%RSD	96.86624	85.69925	12.29932	187.2700	61.63350	194.1365	95.54431
#1	.0000096	.0000104	.0232128	.0002247	.0000471	.000021	.000572
#2	.0000022	.0000510	.0219460	.0003154	.0001822	-.000830	-.008458
#3	.0000259	.0001054	.0276304	-.000147	.0002274	.000040	-.009377
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0003651	.0069472	.0000124	.0002251	.0263992	-.001400	.0008714
Stddev	.0002093	.0084370	.0000251	.0000071	.0056570	.001738	.0002153
%RSD	57.33917	121.4449	202.0895	3.150301	21.42863	124.1042	24.70724
#1	.0003969	-.000845	-.000017	.0002172	.0316450	-.003308	.0009110
#2	.0005567	.005779	.000028	.0002310	.0204054	-.000985	.0010641
#3	.0001417	.015907	.000026	.0002270	.0271470	.000093	.0006390
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1760200	.0107446	.0004267	.0003022	.0010404	.0058182	.0027638
Stddev	.0341323	.0003255	.0000756	.0007245	.0009946	.0022572	.0014211
%RSD	19.39115	3.029116	17.71095	239.7130	95.60352	38.79569	51.41620
#1	.1367589	.0104710	.0004092	-.000240	.0001091	.0032937	.0013177
#2	.1926607	.0106582	.0003614	.001125	.0009239	.0065189	.0028155
#3	.1986405	.0111045	.0005094	.000022	.0020880	.0076419	.0041584

Sample Name: CCB06 Acquired: 10/4/2024 16:31:23 Type: Unk
Method: NON EPA-6010-200.7(v2424) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB06 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0023865	-.004130	.0001583
Stddev	.0020752	.001389	.0000399
%RSD	86.95535	33.62047	25.18628

#1	.0004560	-.003899	.0001920
#2	.0021225	-.002872	.0001143
#3	.0045811	-.005621	.0001685

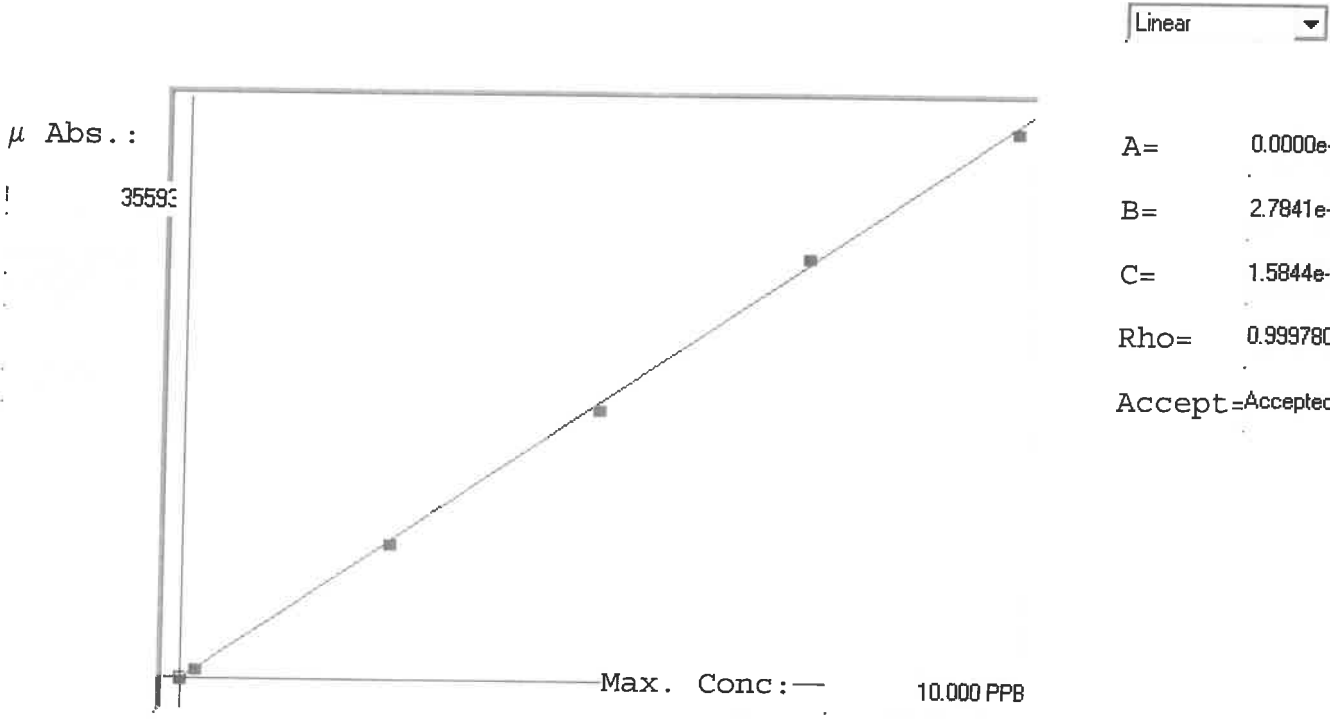
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2853.087	57069.87	8069.205	2067.015	4894.139
Stddev	1.794	111.03	24.349	7.862	9.776
%RSD	.0628744	.1945427	.3017511	.3803710	.1997519

#1	2851.336	57065.39	8042.066	2063.049	4884.124
#2	2853.005	56961.15	8089.136	2061.926	4894.634
#3	2854.921	57183.07	8076.414	2076.071	4903.658

LB132761

7470A

INSTRUMENT ID:CV1



Std ID	Conc.	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	o/w
0.0	0.000	0.003	0.003	-45	0.000	-45	0				1
0.2	0.200	0.220	0.020	732	0.0 %	732					1b
2.5	2.500	2.474	-0.026	8828	0.0 %	8828					1
5.0	5.000	4.925	-0.075	17633	0.0 %	17633					2
7.5	7.500	7.653	0.153	27433	0.0 %	27433					2
10.0	10.000	9.925	-0.075	35593	0.0 %	35593					1

LB132761 INSTRUMENT ID : CV1

Method: 7470A

Operator: Admin

Date of Analysis: 04 Oct 2024 10:09:31

Sample ID	Extended ID	μ Abs.	Conc.	Std Conc	Method	Units	Date	Type	Type
0.0 - 1	80	-45	-	0.0000	7470A	PPB	04 Oct 2024 10:34:32	S	Std
0.2 - 1	50.2	732	-	0.2000	7470A	PPB	04 Oct 2024 10:36:49	S	Std
2.5 - 1	52.5	8828	-	2.5000	7470A	PPB	04 Oct 2024 10:39:06	S	Std
5.0 - 1	55	17633	-	5.0000	7470A	PPB	04 Oct 2024 10:41:23	S	Std
7.5 - 1	57.5	27433	-	7.5000	7470A	PPB	04 Oct 2024 10:43:39	S	Std
10.0 - 1	510	35593	-	10.0000	7470A	PPB	04 Oct 2024 10:52:18	S	Std
ICV24 - 1	ICV24	14350	4.0110	-	7470A	PPB	04 Oct 2024 10:55:10	U	SMPL
ICB24 - 1	ICB24	-197	-0.0390	-	7470A	PPB	04 Oct 2024 10:59:59	U	SMPL
CCV71 - 1	CCV71	17798	4.9709	-	7470A	PPB	04 Oct 2024 11:02:14	U	SMPL
CCB71 - 1	CCB71	-127	-0.0195	-	7470A	PPB	04 Oct 2024 11:04:29	U	SMPL
CRA - 1	CRA	798	0.2380	-	7470A	PPB	04 Oct 2024 11:06:46	U	SMPL
HighStd - 1	HighStd	35611	9.9301	-	7470A	PPB	04 Oct 2024 11:09:01	U	SMPL
ChkStd - 1	ChkStd	24960	6.9648	-	7470A	PPB	04 Oct 2024 11:11:16	U	SMPL
PB163879BL - 1	PBW	-138	-0.0226	-	7470A	PPB	04 Oct 2024 11:13:34	U	SMPL
PB163879BS - 1	LCSW	14578	4.0744	-	7470A	PPB	04 Oct 2024 11:18:35	U	SMPL
P4242-04 - 1	TP-Q	2832	0.8043	-	7470A	PPB	04 Oct 2024 11:20:52	U	SMPL
P4254-04 - 1	MH-147-SLUDGE	1267	0.3686	-	7470A	PPB	04 Oct 2024 11:26:37	U	SMPL
P4258-04 - 1	Chamberlain Ave	545	0.1676	-	7470A	PPB	04 Oct 2024 11:28:54	U	SMPL
P4270-04 - 1	IB-2	6	0.0175	-	7470A	PPB	04 Oct 2024 11:31:13	U	SMPL
P4276-02 - 1	VNJ-208	213	0.0751	-	7470A	PPB	04 Oct 2024 11:33:29	U	SMPL
CCV72 - 1	CCV72	19203	5.3621	-	7470A	PPB	04 Oct 2024 11:35:44	U	SMPL
CCB72 - 1	CCB72	-178	-0.0337	-	7470A	PPB	04 Oct 2024 11:38:00	U	SMPL
P4276-02DUP - 1	VNJ-208DUP	260	0.0882	-	7470A	PPB	04 Oct 2024 11:46:02	U	SMPL
P4276-02MS - 1	VNJ-208MS	15894	4.4408	-	7470A	PPB	04 Oct 2024 11:48:17	U	SMPL
P4276-02MSD - 1	VNJ-208MSD	15636	4.3690	-	7470A	PPB	04 Oct 2024 11:50:33	U	SMPL
PB163851TB - 1	PB163851TB	41	0.0273	-	7470A	PPB	04 Oct 2024 11:55:08	U	SMPL
P4276-02LX5 - 1		67	0.0345	-	7470A	PPB	04 Oct 2024 11:57:23	U	SMPL
P4276-02A - 1		15993	4.4684	-	7470A	PPB	04 Oct 2024 11:59:39	U	SMPL
CCV73 - 1	CCV73	19581	5.4673	-	7470A	PPB	04 Oct 2024 12:01:55	U	SMPL
CCB73 - 1	CCB73	-52	0.0014	-	7470A	PPB	04 Oct 2024 12:04:14	U	SMPL

SOP ID : M3010A-Digestion-17

SDG No : N/A

Matrix : WATER

Pipette ID: ICP A

Balance ID : N/A

Filter paper ID : N/A

pH Strip ID : M6069

Hood ID : #3

Block ID: 1. HOT BLOCK #1 2. N/A

Start Digest Date: 10/03/2024 Time : 13:30 Temp : 96 °C

End Digest Date: 10/03/2024 Time : 15:40 Temp : 96 °C

Digestion tube ID: M6054

Block thermometer ID: MET-DIG. #1

Dig Technician Signature: *JGP*

Supervisor Signature: *[Signature]*

Temp : 1. 96°C 2. N/A

Standard Name	MLS USED	STD REF. # FROM LOG
LFS-1	0.25	M6000
LFS-2	0.25	M6009
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
Conc. HNO3	3.00	M6037
1:1 HCL	5.00	MP82127
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 #34 : 96 C

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
10/3/24 15:45	<i>JGP / Met digestion</i>	<i>SG (m lads lab)</i>
	Preparation Group	Analysis Group

Lab Sample ID	Client Sample ID	pH	Initial Vol (ml)	Final Vol (ml)	Color Before	Color After	Clarity Before	Clarity After	Comment	Prep Pos
P4242-04	TP-Q	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	1
P4254-04	MH-147-SLUDGE	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	2
P4258-04	CHAMBERLAIN AVE	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	3
P4270-04	IB-2	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	4
P4276-02	VNJ-208	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	5
P4276-02DUP	VNJ-208DUP	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	6
P4276-02MS	VNJ-208MS	<2	5	25	Colorless	Colorless	Clear	Clear	M6000,M6009	7
P4276-02MSD	VNJ-208MSD	<2	5	25	Colorless	Colorless	Clear	Clear	M6000,M6009	8
PB163851TB	PB163851TB	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	9
PB163885BL	PBW885	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	10
PB163885BS	LCS885	<2	5	25	Colorless	Colorless	Clear	Clear	M6000,M6009	11

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
P4242-04	TP-Q	01	100.02	2000	N/A	N/A	N/A	5.6	1.5	T-1
P4254-04	MH-147-SLUDGE	02	100.03	2000	N/A	N/A	N/A	4.0	1.0	T-1
P4258-04	Chamberlain Ave	03	100.04	2000	N/A	N/A	N/A	5.6	1.5	T-1
P4270-04	IB-2	04	100.02	2000	N/A	N/A	N/A	5.8	1.0	T-1
P4276-02	VNJ-208	05	100.03	2000	N/A	N/A	N/A	7.2	1.5	T-1
PB163851TB	LEB851	06	N/A	2000	N/A	N/A	N/A	4.94	1.0	T-1

SOP ID : M7470A-Mercury-19

SDG No : NA

Matrix : WATER

Pipette ID: HG A

Balance ID : N/A

Filter paper ID : NA

pH Strip ID : M4909

Hood ID : #1

Block ID: 1. HG HOT BLOCK#3 2. N/A

Start Digest Date: 10/03/2024 Time : 12:20 Temp : 94 °C

End Digest Date: 10/03/2024 Time : 14:20 Temp : 95 °C

Digestion tube ID: M5595

Block thermometer ID: HG-DIG#3

Dig Technician Signature:

Supervisor Signature:

Temp : 1. 94°C 2. N/A

Standardized Name	MLS USED	STD REF. # FROM LOG
ICV	30mL	MP82662
CCV	30mL	MP82665
CRA	30mL	MP82673
Blank Spike	0.48mL	MP82655
Matrix Spike	0.48mL	MP82655

Chemical Used	ML/SAMPLE USED	Lot Number
HNO3/H2SO4(1:2)	2.5mL	MP82651
KMnO4 (5%)	4.5mL	MP82652
K2S2O8 (5%)	2.5mL	MP82653
HNO3/H2SO4(1:2)	2.0mL	MP82654
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

LAB SAMPLE ID	CLIENT SAMPLE ID	Wt(g)/Vol(ml)	Comment
0.0 ppb	S0	30mL	MP82656
0.05 ppb	S0.05	N/A	N/A
0.2 ppb	S0.2	30mL	MP82657
2.5 ppb	S2.5	30mL	MP82658
5.0 ppb	S5.0	30mL	MP82659
7.5 ppb	S7.5	30mL	MP82660
10.0 ppb	S10.0	30mL	MP82661
ICV	ICV	30mL	MP82662
ICB	ICB	30mL	MP82663
CCV	CCV	30mL	MP82665
CCB	CCB	30mL	MP82666
CRI	CRI	30mL	MP82673
CHK STD	CHK STD	30mL	MP82674

Extraction Conformance/Non-Conformance Comments:

N/A		
Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
10/3/24 @ 15:10	mg - Dr. L. S.	mg - Dr. L. S.
	Preparation Group	Analysis Group

Lab Sample ID	Client Sample ID	Initial Vol (ml)	Final Vol (ml)	pH	Comment	Prep Pos
P4242-04	TP-Q	3	30	<2	N/A	3-1
P4254-04	MH-147-SLUDGE	3	30	<2	N/A	2
P4258-04	CHAMBERLAIN AVE	3	30	<2	N/A	3
P4270-04	IB-2	3	30	<2	N/A	4
P4276-02	VNJ-208	3	30	<2	N/A	5
P4276-02DUP	VNJ-208DUP	3	30	<2	N/A	6
P4276-02MS	VNJ-208MS	3	30	<2	MP82655	7
P4276-02MSD	VNJ-208MSD	3	30	<2	MP82655	8
PB163851TB	PB163851TB	3	30	<2	N/A	9
PB163879BL	PBW879	30	30	<2	N/A	10
PB163879BS	LCS879	30	30	<2	MP82655	11

SOP ID : M1311-TCLP-14
SDG No : N/A
Weigh By : JP
Balance ID : WC SC-4
pH Meter ID : WC PH METER-1
Extraction By : JP
Filter By : JP
Pipette ID : WC
Tumbler ID : T-1
TCLP Filter ID : 114771

Start Prep Date : 10/02/2024 Time : 17:35
End Prep Date : 10/03/2024 Time : 10:25
Combination Ratio : 20
ZHE Cleaning Batch : N/A
Initial Room Temperature: 23 °C
Final Room Temperature: 22 °C
TCLP Technician Signature : *[Signature]*
Supervisor By : *[Signature]*

Standard 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	WP108622
HCL-TCLP,1N	N/A	WP108584
HNO3-TCLP,1N	N/A	WP108585
pH Strips	N/A	W1931,W1934,W2350,W2755
pH Strips	N/A	W1937,W1938,W1939,W1940,W1941,W1942
1 Liter Amber	N/A	23091
120ml Plastic bottle	N/A	21029
1:1 HNO3	MP81119	N/A

Extraction Conformance/Non-Conformance Comments:

Matrix spikes are added after filtration and before preservation. TUMBLER T-1 checked,30 rpm. p4276-02 is used for MS-MSD Particle size reduction is not required.

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
10/03/24 11:00	<i>[Signature]</i> / TCLP Room	<i>[Signature]</i> 1541
	Preparation Group	Analysis Group <i>[Signature]</i>

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QC Batch ID # LB132761

Review By	jaswal	Review On	10/4/2024 9:37:00 PM
Supervise By	mohan	Supervise On	10/4/2024 9:37:52 PM

STD. NAME	STD REF.#
ICAL Standard	MP82656,MP82657,MP82658,MP82659,MP82660,MP82661
ICV Standard	MP82662
CCV Standard	MP82665
ICSA Standard	
CRI Standard	MP82693
LCS Standard	
Chk Standard	MP82663,MP82666,MP82674,MP82691

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	10/04/24 10:34		Mohan	OK
2	S0.2	S0.2	CAL2	10/04/24 10:36		Mohan	OK
3	S2.5	S2.5	CAL3	10/04/24 10:39		Mohan	OK
4	S5	S5	CAL4	10/04/24 10:41		Mohan	OK
5	S7.5	S7.5	CAL5	10/04/24 10:43		Mohan	OK
6	S10	S10	CAL6	10/04/24 10:52		Mohan	OK
7	ICV24	ICV24	ICV	10/04/24 10:55		Mohan	OK
8	ICB24	ICB24	ICB	10/04/24 10:59		Mohan	OK
9	CCV71	CCV71	CCV	10/04/24 11:02		Mohan	OK
10	CCB71	CCB71	CCB	10/04/24 11:04		Mohan	OK
11	CRA	CRA	CRDL	10/04/24 11:06		Mohan	OK
12	HighStd	HighStd	HIGH STD	10/04/24 11:09		Mohan	OK
13	ChkStd	ChkStd	SAM	10/04/24 11:11		Mohan	OK
14	PB163879BL	PB163879BL	MB	10/04/24 11:13		Mohan	OK
15	PB163879BS	PB163879BS	LCS	10/04/24 11:18		Mohan	OK
16	P4242-04	TP-Q	SAM	10/04/24 11:20		Mohan	OK
17	P4254-04	MH-147-SLUDGE	SAM	10/04/24 11:26		Mohan	OK
18	P4258-04	Chamberlain Ave	SAM	10/04/24 11:28		Mohan	OK

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QC Batch ID # LB132761

Review By	jaswal	Review On	10/4/2024 9:37:00 PM
Supervise By	mohan	Supervise On	10/4/2024 9:37:52 PM
STD. NAME	STD REF.#		
ICAL Standard	MP82656,MP82657,MP82658,MP82659,MP82660,MP82661		
ICV Standard	MP82662		
CCV Standard	MP82665		
ICSA Standard			
CRI Standard	MP82693		
LCS Standard			
Chk Standard	MP82663,MP82666,MP82674,MP82691		

19	P4270-04	IB-2	SAM	10/04/24 11:31		Mohan	OK
20	P4276-02	VNJ-208	SAM	10/04/24 11:33		Mohan	OK
21	CCV72	CCV72	CCV	10/04/24 11:35		Mohan	OK
22	CCB72	CCB72	CCB	10/04/24 11:38		Mohan	OK
23	P4276-02DUP	VNJ-208DUP	DUP	10/04/24 11:46		Mohan	OK
24	P4276-02MS	VNJ-208MS	MS	10/04/24 11:48		Mohan	OK
25	P4276-02MSD	VNJ-208MSD	MSD	10/04/24 11:50		Mohan	OK
26	PB163851TB	PB163851TB	MB	10/04/24 11:55		Mohan	OK
27	P4276-02L	VNJ-208L	SD	10/04/24 11:57		Mohan	OK
28	P4276-02A	VNJ-208A	PS	10/04/24 11:59		Mohan	OK
29	CCV73	CCV73	CCV	10/04/24 12:01		Mohan	OK
30	CCB73	CCB73	CCB	10/04/24 12:04		Mohan	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB132811

Review By	kareem	Review On	10/7/2024 6:28:26 PM
Supervise By	jaswal	Supervise On	10/7/2024 11:32:57 PM
STD. NAME	STD REF.#		
ICAL Standard	MP82441,MP82476,MP82477,MP82478,MP82479,MP82712		
ICV Standard	MP82485		
CCV Standard	MP82488		
ICSA Standard	MP82486,MP82487		
CRI Standard	MP82712		
LCS Standard			
Chk Standard	MP82491,MP82492		

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	10/04/24 10:20		Kareem	OK
2	S1	S1	CAL2	10/04/24 10:24		Kareem	OK
3	S2	S2	CAL3	10/04/24 10:28		Kareem	OK
4	S3	S3	CAL4	10/04/24 10:33		Kareem	OK
5	S4	S4	CAL5	10/04/24 10:37		Kareem	OK
6	S5	S5	CAL6	10/04/24 10:41		Kareem	OK
7	ICV01	ICV01	ICV	10/04/24 10:45		Kareem	OK
8	LLICV01	LLICV01	LLICV	10/04/24 10:59		Kareem	OK
9	ICB01	ICB01	ICB	10/04/24 11:06		Kareem	OK
10	CRI01	CRI01	CRDL	10/04/24 11:21		Kareem	OK
11	ICSA01	ICSA01	ICSA	10/04/24 11:28		Kareem	OK
12	ICSAB01	ICSAB01	ICSAB	10/04/24 11:34		Kareem	OK
13	CCV01	CCV01	CCV	10/04/24 11:39		Kareem	OK
14	CCB01	CCB01	CCB	10/04/24 11:43		Kareem	OK
15	LR1	LR1	HIGH STD	10/04/24 11:48		Kareem	OK
16	LR2	LR2	HIGH STD	10/04/24 11:53		Kareem	OK
17	P4242-04	TP-Q	SAM	10/04/24 11:58	Confirm	Kareem	OK
18	P4254-04	MH-147-SLUDGE	SAM	10/04/24 12:02		Kareem	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB132811

Review By	kareem	Review On	10/7/2024 6:28:26 PM
Supervise By	jaswal	Supervise On	10/7/2024 11:32:57 PM

STD. NAME	STD REF.#
ICAL Standard	MP82441,MP82476,MP82477,MP82478,MP82479,MP82712
ICV Standard	MP82485
CCV Standard	MP82488
ICSA Standard	MP82486,MP82487
CRI Standard	MP82712
LCS Standard	
Chk Standard	MP82491,MP82492

19	P4258-04	Chamberlain Ave	SAM	10/04/24 12:06		Kareem	OK
20	P4270-04	IB-2	SAM	10/04/24 12:11		Kareem	OK
21	P4276-02	VNJ-208	SAM	10/04/24 12:15		Kareem	OK
22	P4276-02DUP	VNJ-208DUP	DUP	10/04/24 12:20		Kareem	OK
23	CCV02	CCV02	CCV	10/04/24 12:33		Kareem	OK
24	CCB02	CCB02	CCB	10/04/24 12:37		Kareem	OK
25	P4276-02L	VNJ-208L	SD	10/04/24 13:09		Kareem	OK
26	P4276-02MS	VNJ-208MS	MS	10/04/24 13:13	0.1ML OF M6010 AND M6001 WERE ADDED TO 10ML OF SAMPLE	Kareem	OK
27	P4276-02MSD	VNJ-208MSD	MSD	10/04/24 13:17	0.1ML OF M6010 AND M6001 WERE ADDED TO 10ML OF SAMPLE	Kareem	OK
28	P4276-02A	VNJ-208A	PS	10/04/24 13:22	0.1ML OF M6010 AND M6001 WERE ADDED TO 10ML OF SAMPLE	Kareem	OK
29	PB163885BL	PB163885BL	MB	10/04/24 13:32		Kareem	OK
30	PB163885BS	PB163885BS	LCS	10/04/24 13:36	0.1ML OF M6010 AND M6001 WERE ADDED TO 10ML OF SAMPLE	Kareem	OK
31	PB163851TB	PB163851TB	MB	10/04/24 13:43		Kareem	OK
32	CCV03	CCV03	CCV	10/04/24 13:47		Kareem	OK
33	CCB03	CCB03	CCB	10/04/24 13:51		Kareem	OK
34	P4149-01	S2-1	SAM	10/04/24 14:40		Kareem	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB132811

Review By	kareem	Review On	10/7/2024 6:28:26 PM
Supervise By	jaswal	Supervise On	10/7/2024 11:32:57 PM
STD. NAME	STD REF.#		
ICAL Standard	MP82441,MP82476,MP82477,MP82478,MP82479,MP82712		
ICV Standard	MP82485		
CCV Standard	MP82488		
ICSA Standard	MP82486,MP82487		
CRI Standard	MP82712		
LCS Standard			
Chk Standard	MP82491,MP82492		

35	P4149-02	S2-2	SAM	10/04/24 14:44		Kareem	OK
36	P4149-03	S2-3	SAM	10/04/24 14:48		Kareem	OK
37	P4149-04	S2-4	SAM	10/04/24 14:52		Kareem	OK
38	P4285-01	OILY-DEBRIS-DRUM	SAM	10/04/24 14:56		Kareem	OK
39	CCV04	CCV04	CCV	10/04/24 15:00		Kareem	OK
40	CCB04	CCB04	CCB	10/04/24 15:05		Kareem	OK
41	P4288-01	HR-02-100324	SAM	10/04/24 15:09		Kareem	OK
42	P4288-03	HR-03-100324	SAM	10/04/24 15:13		Kareem	OK
43	P4290-01	IB-4	SAM	10/04/24 15:17		Kareem	OK
44	P4290-01DUP	IB-4DUP	DUP	10/04/24 15:29		Kareem	OK
45	P4290-01L	IB-4L	SD	10/04/24 15:33		Kareem	OK
46	P4290-01MS	IB-4MS	MS	10/04/24 15:37	0.1ML OF M6010 AND M6001 WERE ADDED TO 10ML OF SAMPLE	Kareem	OK
47	P4290-01MSD	IB-4MSD	MSD	10/04/24 15:41	0.1ML OF M6010 AND M6001 WERE ADDED TO 10ML OF SAMPLE	Kareem	OK
48	P4290-01A	IB-4A	PS	10/04/24 15:45	0.1ML OF M6010 AND M6001 WERE ADDED TO 10ML OF SAMPLE	Kareem	OK
49	PB163906BS	PB163906BS	LCS	10/04/24 15:49	0.1ML OF M6010 AND M6001 WERE ADDED TO 10ML OF SAMPLE	Kareem	OK
50	PB163906BL	PB163906BL	MB	10/04/24 15:53		Kareem	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB132811

Review By	kareem	Review On	10/7/2024 6:28:26 PM
Supervise By	jaswal	Supervise On	10/7/2024 11:32:57 PM
STD. NAME	STD REF.#		
ICAL Standard	MP82441,MP82476,MP82477,MP82478,MP82479,MP82712		
ICV Standard	MP82485		
CCV Standard	MP82488		
ICSA Standard	MP82486,MP82487		
CRI Standard	MP82712		
LCS Standard			
Chk Standard	MP82491,MP82492		

51	CCV05	CCV05	CCV	10/04/24 16:08		Kareem	OK
52	CCB05	CCB05	CCB	10/04/24 16:12		Kareem	OK
53	P4269-02	COMP	SAM	10/04/24 16:18		Kareem	OK
54	P4286-01	Water Treatment Disc	SAM	10/04/24 16:22		Kareem	OK
55	CCV06	CCV06	CCV	10/04/24 16:27		Kareem	OK
56	CCB06	CCB06	CCB	10/04/24 16:31		Kareem	OK

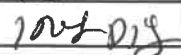
SOP ID :	M1311-TCLP-14	
SDG No :	N/A	Start Prep Date : 10/02/2024 Time : 17:35
Weigh By :	JP	End Prep Date : 10/03/2024 Time : 10:25
Balance ID :	WC SC-4	Combination Ratio : 20
pH Meter ID :	WC PH METER-1	ZHE Cleaning Batch : N/A
Extraction By :	JP	Initial Room Temperature: 23 °C
Filter By :	JP	Final Room Temperature: 22 °C
Pipette ID :	WC	TCLP Technician Signature : 
Tumbler ID :	T-1	Supervisor By : 
TCLP Filter ID :	114771	

Standardized 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	WP108622
HCL-TCLP,1N	N/A	WP108584
HNO3-TCLP,1N	N/A	WP108585
pH Strips	N/A	W1931,W1934,W2350,W2755
pH Strips	N/A	W1937,W1938,W1939,W1940,W1941,W1942
1 Liter Amber	N/A	23091
120ml Plastic bottle	N/A	21029
1:1 HNO3	MP81119	N/A

Extraction Conformance/Non-Conformance Comments:

Matrix spikes are added after fiftation and before preservation. TUMBLER T-1 checked,30 rpm. p4276-02 is used for MS-MSD Particle size reduction is not required.

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
10/03/24 11:00	 / TCLP Room	 1541
	Preparation Group	Analysis Group 

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
P4242-04	TP-Q	01	100.02	2000	N/A	N/A	N/A	5.6	1.5	T-1
P4254-04	MH-147-SLUDGE	02	100.03	2000	N/A	N/A	N/A	4.0	1.0	T-1
P4258-04	Chamberlain Ave	03	100.04	2000	N/A	N/A	N/A	5.6	1.5	T-1
P4270-04	IB-2	04	100.02	2000	N/A	N/A	N/A	5.8	1.0	T-1
P4276-02	VNJ-208	05	100.03	2000	N/A	N/A	N/A	7.2	1.5	T-1
PB163851TB	LEB851	06	N/A	2000	N/A	N/A	N/A	4.94	1.0	T-1

SampleID	ClientID	Sample Weight (g)	Filter Weight (g)	Filtrate (mL)	Filter + Solid (After 100°C)	% solids	% Dry Solids
P4242-04	TP-Q	N/A	N/A	N/A	N/A	100	N/A
P4254-04	MH-147-SLUDGE	N/A	N/A	N/A	N/A	100	N/A
P4258-04	Chamberlain Ave	N/A	N/A	N/A	N/A	100	N/A
P4270-04	IB-2	N/A	N/A	N/A	N/A	100	N/A
P4276-02	VNJ-208	N/A	N/A	N/A	N/A	100	N/A
PB163851TB	LEB851	N/A	N/A	N/A	N/A	N/A	N/A

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
P4242-04	TP-Q	5.02	96.5	7.6	2.0	#1	4.93
P4254-04	MH-147-SLUDGE	5.01	96.5	6.6	1.5	#1	4.93
P4258-04	Chamberlain Ave	5.03	96.5	7.6	2.0	#1	4.93
P4270-04	IB-2	5.02	96.5	8.4	3.0	#1	4.93
P4276-02	VNJ-208	5.02	96.5	9.0	4.0	#1	4.93
PB163851TB	LEB851	N/A	N/A	N/A	N/A	#1	4.93

Prep Standard - Chemical Standard Summary

Order ID : P4258

Test : TCLP Mercury, TCLP Metals + Cu+Ni+Zn

Prepbatch ID : PB163879, PB163885,

Sequence ID/Qc Batch ID: LB132761, LB132811, LB132811,

Standard ID :

MP82127, MP82441, MP82476, MP82477, MP82478, MP82479, MP82485, MP82486, MP82487, MP82488, MP82491, MP82492, MP82655, MP82656, MP82657, MP82658, MP82659, MP82660, MP82661, MP82662, MP82663, MP82665, MP82666, MP82674, MP82691, MP82693, MP82711, MP82712,

Chemical ID :

M4960, M5062, M5130, M5192, M5218, M5223, M5288, M5289, M5295, M5296, M5390, M5394, M5429, M5467, M5476, M5497, M5498, M5515, M5519, M5658, M5697, M5698, M5747, M5748, M5751, M5769, M5776, M5798, M5799, M5800, M5801, M5802, M5806, M5814, M5815, M5816, M5817, M5818, M5819, M5820, M5875, M5953, M5961, M5962, M5963, M5970, M5976, M5978, M5981, M5982, M5983, M5984, M6000, M6009, M6021, M6023, M6025, M6028, M6030, M6033, M6034, M6037, M6040, M6080, M6081, M6082, W3112,

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
170	1:1HCL	MP82127	09/03/2024	02/08/2025	Janvi Patel	None	None	Sarabjit Jaswal
								09/03/2024

FROM 1250.00000ml of M6040 + 1250.00000ml of W3112 = Final Quantity: 2500.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
902	ICP AES CAL BLK (SO/ICB/CCB)	MP82441	09/23/2024	10/23/2024	Kareem Khairalla	None	None	Sarabjit Jaswal
								09/24/2024

FROM 125.00000ml of M6040 + 2350.00000ml of W3112 + 25.00000ml of M6037 = Final Quantity: 2500.000 ml



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
907	ICP AES STD S (S5)	MP82476	09/24/2024	10/23/2024	Kareem Khairalla	None	None	Sarabjit Jaswal 09/24/2024

FROM	5.00000ml of M5296 + 5.00000ml of M5394 + 5.00000ml of M5802 + 5.00000ml of M5816 + 5.00000ml of M5820 + 5.00000ml of M5875 + 5.00000ml of M5970 + 5.00000ml of M5982 + 460.00000ml of MP82441 = Final Quantity: 500.000 ml
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<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
910	ICP AES STD S4	MP82477	09/24/2024	10/23/2024	Kareem Khairalla	None	None	Sarabjit Jaswal 09/24/2024

FROM	50.00000ml of MP82441 + 50.00000ml of MP82476 = Final Quantity: 100.000 ml
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Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
909	ICP AES STD S3	MP82478	09/24/2024	10/23/2024	Kareem Khairalla	None	None	Sarabjit Jaswal
								09/24/2024

FROM 25.00000ml of MP82476 + 75.00000ml of MP82441 = Final Quantity: 100.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3913	ICP AES STD S2	MP82479	09/24/2024	10/23/2024	Kareem Khairalla	None	None	Sarabjit Jaswal
								09/24/2024

FROM 16.00000ml of MP82476 + 184.00000ml of MP82441 = Final Quantity: 200.000 ml



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
912	ICP AES ICV SOLN	MP82485	09/24/2024	10/23/2024	Kareem Khairalla	None	None	Sarabjit Jaswal 09/24/2024

FROM	0.02500ml of M5429 + 0.02500ml of M5815 + 0.02500ml of M5817 + 0.02500ml of M5982 + 0.25000ml of M5218 + 10.00000ml of M5295 + 89.77500ml of MP82441 = Final Quantity: 100.000 ml
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<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
904	ICP AES ICSA SOLN	MP82486	09/24/2024	10/23/2024	Kareem Khairalla	None	None	Sarabjit Jaswal 09/24/2024

<u>FROM</u>	25.00000ml of M5130 + 225.00000ml of MP82441 = Final Quantity: 250.000 ml
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[illegible]

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
911	ICP AES CCV SOLN	MP82488	09/24/2024	10/23/2024	Kareem Khairalla	None	None	Sarabjit Jaswal 09/24/2024
<u>FROM</u> 50.00000ml of MP82441 + 50.00000ml of MP82476 = Final Quantity: 100.000 ml								

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
919	ICP AES INTERNAL STD	MP82491	09/24/2024	10/11/2024	Kareem Khairalla	None	None	Sarabjit Jaswal
								09/24/2024

FROM 1.00000ml of M5984 + 10.00000ml of M4960 + 1969.00000ml of W3112 + 20.00000ml of M5963 = Final Quantity: 2000.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
903	ICP AES RINSE SOLN	MP82492	09/24/2024	10/24/2024	Kareem Khairalla	None	None	Sarabjit Jaswal
								09/24/2024

FROM 200.00000ml of M6034 + 9800.00000ml of W3112 = Final Quantity: 10000.000 ml



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
871	MERCURY INTERMEDIATE B 250PPB WORKING STD.	MP82655	10/03/2024	10/04/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 10/04/2024
<u>FROM</u>	1.00000ml of M6080 + 2.50000ml of M5062 + 96.50000ml of W3112 = Final Quantity: 100.000 ml							

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1340	Hg 0.00 PPB STD	MP82656	10/03/2024	10/04/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 10/04/2024
<u>FROM</u>	2.50000ml of M6080 + 247.50000ml of W3112 = Final Quantity: 250.000 ml							



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1341	Hg 0.2 PPB STD	MP82657	10/03/2024	10/04/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 10/04/2024
<u>FROM</u>	2.50000ml of M6080 + 247.30000ml of W3112 + 0.20000ml of MP82655 = Final Quantity: 250.000 ml							

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1342	Hg 2.5 PPB STD	MP82658	10/03/2024	10/04/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG)	Sarabjit Jaswal 10/04/2024
FROM 2.50000ml of M6080 + 245.00000ml of W3112 + 2.50000ml of MP82655 = Final Quantity: 250.000 ml 								



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1343	Hg 5.0 PPB STD	MP82659	10/03/2024	10/04/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG)	Sarabjit Jaswal
FROM 2.50000ml of M6080 + 242.50000ml of W3112 + 5.00000ml of MP82655 = Final Quantity: 250.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1344	Hg 7.5 PPB STD	MP82660	10/03/2024	10/04/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 10/04/2024
<u>FROM</u>	2.50000ml of M6080 + 240.00000ml of W3112 + 7.50000ml of MP82655 = Final Quantity: 250.000 ml							



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1345	Hg 10.0 PPB STD	MP82661	10/03/2024	10/04/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG)	Sarabjit Jaswal 10/04/2024
FROM 2.50000ml of M6080 + 237.50000ml of W3112 + 10.00000ml of MP82655 = Final Quantity: 250.000 ml 								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1346	Hg ICV SOLUTION	MP82662	10/03/2024	10/04/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 10/04/2024
<u>FROM</u>	2.50000ml of M5953 + 2.50000ml of M6081 + 245.00000ml of W3112 = Final Quantity: 250.000 ml							



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1351	ICB (Hg 0.00 PPB SOLUTION)	MP82663	10/03/2024	10/04/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 10/04/2024
<u>FROM</u>	2.50000ml of M6081 + 247.50000ml of W3112 = Final Quantity: 250.000 ml							

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1358	CCV (Hg 5.0 PPB SOLUTION)	MP82665	10/03/2024	10/04/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 10/04/2024
<u>FROM</u>	485.00000ml of W3112 + 5.00000ml of M6081 + 10.00000ml of MP82655 = Final Quantity: 500.000 ml							



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1352	CCB (Hg 0.00 PPB SOLUTION)	MP82666	10/03/2024	10/04/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 10/04/2024
<u>FROM</u> 495.00000ml of W3112 + 5.00000ml of M6081 = Final Quantity: 500.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1350	CHK STD (Hg 7.0 PPB SOLUTION)	MP82674	10/03/2024	10/04/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 10/04/2024
<u>FROM</u>	2.50000ml of M6081 + 240.50000ml of W3112 + 7.00000ml of MP82655 = Final Quantity: 250.000 ml							

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
68	STANNOUS CHLORIDE SOLUTION	MP82691	10/04/2024	10/05/2024	Mohan Bera	None	None	Sarabjit Jaswal
								10/04/2024

FROM 450.00000ml of W3112 + 50.00000gram of M5776 + 50.00000ml of M6040 = Final Quantity: 500.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3964	CONC.LCSS SPIKE	MP82693	10/04/2024	10/22/2024	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Mohan Bera
								10/07/2024

FROM 0.25000ml of M5698 + 0.25000ml of M5798 + 0.25000ml of M5800 + 0.25000ml of M5801 + 0.25000ml of M5961 + 0.25000ml of M5981 + 0.25000ml of M5983 + 0.25000ml of M6023 + 0.25000ml of M6025 + 0.25000ml of M6028 + 0.25000ml of M6030 + 0.50000ml of M5289 + 0.50000ml of M5658 + 0.50000ml of M5751 + 0.50000ml of M5802 + 1.25000ml of M5799 + 1.25000ml of M5819 + 1.25000ml of M5962 + 1.25000ml of M6021 + 12.50000ml of M5497 + 12.50000ml of M5519 + 12.50000ml of M5769 + 12.50000ml of M5806 + 152.95000ml of W3112 + 2.50000ml of M5390 + 2.50000ml of M5818 + 2.50000ml of M5976 + 2.50000ml of M6040 + 4.80000ml of M5476 + 5.00000ml of M5515 + 5.00000ml of M6082 + 6.25000ml of M5816 + 6.25000ml of M5820 = Final Quantity: 250.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
2950	ICP AES S1/CRI STOCK STD	MP82711	10/07/2024	10/23/2024	Kareem Khairalla	None	None	Sarabjit Jaswal 10/07/2024

FROM 0.00300ml of M6028 + 0.03000ml of M5798 + 0.05000ml of M5515 + 0.05000ml of M5658 + 0.05000ml of M6030 + 0.05000ml of M6033 + 0.06000ml of M5747 + 0.10000ml of M5697 + 0.10000ml of M5698 + 0.10000ml of M5801 + 0.10000ml of M5820 + 0.10000ml of M5962 + 0.10000ml of M5970 + 0.10000ml of M5982 + 0.15000ml of M5800 + 0.20000ml of M5748 + 0.20000ml of M5799 + 0.20000ml of M5819 + 0.20000ml of M6021 + 0.20000ml of M6023 + 0.25000ml of M5467 + 0.25000ml of M5802 + 0.50000ml of M5390 + 0.50000ml of M5814 + 1.00000ml of M5192 + 1.00000ml of M5288 + 1.00000ml of M5498 + 1.00000ml of M5769 + 1.00000ml of M5806 + 1.00000ml of M5978 + 2.00000ml of M5816 + 2.00000ml of M5818 + 77.68000ml of MP82441 = Final Quantity: 100.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
2951	ICP AES S1/CRI WORK STD	MP82712	10/07/2024	10/23/2024	Kareem Khairalla	None	None	Sarabjit Jaswal 10/07/2024

FROM 2.00000ml of MP82711 + 98.00000ml of MP82441 = Final Quantity: 100.000 ml

CHEMICAL RECEIPT LOG BOOK

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	100721	10/07/2024	10/09/2021 / jaswal	10/08/2021 / jaswal	M4960

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	MSHG-10PPM / MERCURY HCI 125mL 10ug/mL	S2-HG709270	09/22/2026	05/28/2022 / mohan	01/27/2022 / mohan	M5062

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	11/19/2024	05/20/2024 /	04/20/2021 / bin	M5130

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57042 / Mo, 1000 PPM, 125 ml	051722	05/17/2025	07/01/2022 / bin	06/17/2022 / jaswal	M5192

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 #
EPA	PART B / ICSAB (ICP) STOCK SOLN	ICSB-0710	11/19/2024	05/20/2024 /	04/20/2021 / bin	M5223

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58119 / K, 10000 PPM, 500 ml	071122	07/11/2025	09/01/2022 / jaswal	07/21/2022 / jaswal	M5288

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 #
EPA	ICV-1 / ICV (ICP/ICPMS) STOCK SOLN	ICV-1014	02/05/2025	08/07/2024 / jaswal	02/20/2020 / bin	M5295

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	Z9651Q / CHEM-CLP-4/.25L	S2-MEB711673	11/02/2026	09/19/2022 / jaswal	08/20/2022 / jaswal	M5296

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	072122	07/21/2025	08/07/2024 / jaswal	09/18/2022 / bin	M5390

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	11/28/2022 / bin	09/19/2022 / bin	M5394

CHEMICAL RECEIPT LOG BOOK

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

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.	57138 / Sr, 10000 PPM, 125 ml	082922	08/09/2025	07/29/2024 /	03/16/2023 / jaswal	M5476

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

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	092122	09/21/2025	08/01/2024 / Jaswal	03/17/2023 / bin	M5515

CHEMICAL RECEIPT LOG BOOK

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 #
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.	58025 / Mn, 1000 PPM, 500 ml	102623	10/26/2026	04/18/2024 / jaswal	10/27/2023 / jaswal	M5698

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	/ Lead (Pb) 1000PPM	100923	10/09/2026	05/20/2024 / Jaswal	12/20/2023 / jaswal	M5747

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	/ Nickel (Ni) 1000PPM	091223	09/12/2026	01/02/2024 / bin	12/20/2023 / jaswal	M5748

CHEMICAL RECEIPT LOG BOOK

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	071723	07/17/2026	10/01/2024 / Jaswal	08/25/2023 / jaswal	M5751

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	091823	09/18/2026	05/24/2024 / Jaswal	01/03/2024 / bin	M5769

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-3980-01 / Stannous Chloride (cs/4x500g)	0000281938	07/06/2026	06/26/2023 / mohan	07/18/2023 / mohan	M5776

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

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

CHEMICAL RECEIPT LOG BOOK

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.	57005 / B, 1000 PPM, 125 ml	071123	07/11/2026	03/26/2024 / Sohil	01/03/2024 / jaswal	M5814

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.	57016 / S, 1000 PPM, 125 ml	122923	12/29/2026	05/20/2024 / Jaswal	02/09/2024 / jaswal	M5816

CHEMICAL RECEIPT LOG BOOK

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.	57014 / Si, 1000 PPM, 125 ml	122023	12/20/2026	03/06/2024 / jaswal	02/09/2024 / jaswal	M5818

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 #
Absolute Standards, Inc.	57015 / P, 1000 PPM, 125 ml	091123	09/11/2026	05/01/2024 / jaswal	02/09/2024 / jaswal	M5820

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 #
EPA	ICV-5 / ICV (HG) STOCK SOLN	ICV5-0415	01/01/2025	07/01/2024 / mohan	03/30/2023 / mohan	M5953

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 #
Seidler Chemical	BA-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24B1362001	01/04/2025	07/09/2024 / Al-Terek	07/03/2024 / Al-Terek	M5963

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57003 / Li, 1000 PPM, 125 ml	061224	06/21/2027	07/01/2024 / Jaswal	07/01/2024 / Jaswal	M5970

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	CGTI1-1 / TITANIUM 125mL 1000ug/mL	T2-TI719972	06/17/2027	08/07/2024 / jaswal	02/22/2024 / Jaswal	M5978

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57092 / U, 1000 PPM, 125 ml	060724	06/07/2027	07/29/2024 / Jaswal	06/11/2024 / Jaswal	M5981

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	031524	03/15/2027	07/01/2024 / Jaswal	06/11/2024 / Jaswal	M5982

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57040 / Zr, 1000 PPM, 125 ml	071423	07/14/2026	07/29/2024 / Jaswal	06/11/2024 / Jaswal	M5983

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	08/05/2024 / kareem	06/14/2024 / Jaswal	M5984

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	WW-LFS-1 / Laboratory Fortified Stock Solution 1, 125 ml	T2-MEB723367	08/30/2026	08/13/2024 / Jaswal	05/14/2024 / Jaswal	M6000

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	WW-LFS-2 / Laboratory Fortified Stock Solution 2, 125 ml	U2-MEB731108	03/17/2028	08/13/2024 / Jaswal	05/14/2024 / Jaswal	M6009

CHEMICAL RECEIPT LOG BOOK

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 / TI, 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	06/12/2027	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	01/25/2019 / 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

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	08/07/2024 / Jaswal	01/03/2024 / Jaswal	M6033

CHEMICAL RECEIPT LOG BOOK

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	02/01/2025	08/06/2024 / Janvi	08/01/2024 / Janvi	M6034

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	02/02/2025	08/24/2024 / Janvi	08/01/2024 / Janvi	M6037

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)	24D1562005	02/08/2025	08/09/2024 /	08/01/2024 / Janvi	M6040

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	03/25/2025	10/02/2024 / Janvi	09/02/2024 / Janvi	M6080

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	03/25/2029	10/03/2024 / jignesh	09/02/2024 / Janvi	M6081

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	03/25/2029	10/04/2024 / Janvi	09/02/2024 / Janvi	M6082

CHEMICAL RECEIPT LOG BOOK

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 / lwona	07/03/2024 / lwona	W3112



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57048
070124
Cadmium (Cd)

Lot #
Solvent: 24002546 Nitric Acid

2% 40.0 Nitric Acid (mL)

Expiration Date: 070127

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test Number: 6UTB

SE-05 Balance Uncertainty

Weight shown below was diluted to (mL): 2000.07 0.100 Flask Uncertainty

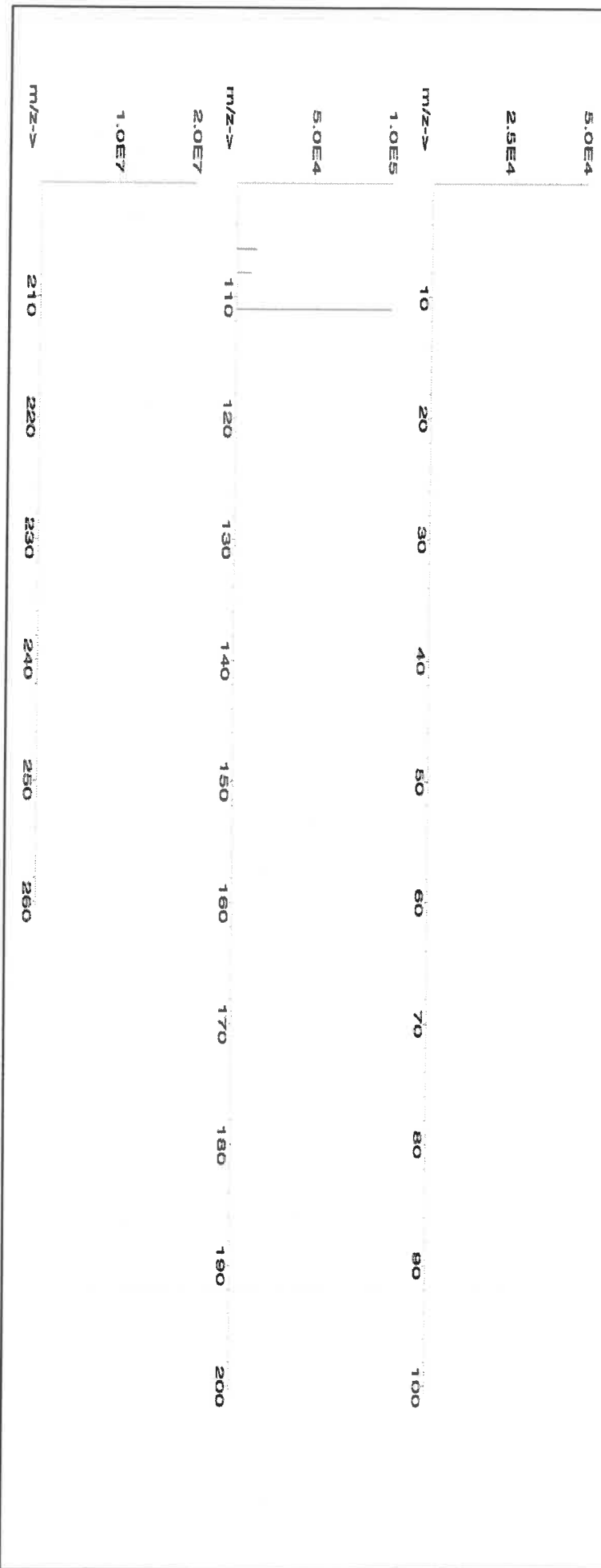
Aleah O'Brady	
Formulated By:	Aleah O'Brady
	070124
Pedro L. Rentas	
Reviewed By:	Pedro L. Rentas
	070124

SDS Information

Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
----------	------------	-----------------------	------------	-----------------	-----------	-------------------	-------------------	----------------------	----------------------------------	------	----------------	------	----------

1. Cadmium nitrate tetrahydrate (Cd) IN024 CDM09221A1 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

[1] Spectrum No.1 [12.514 sec]:\$8148.D# [Count] [Linear]





Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.2	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<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	Ba	<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	Cd	<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	Pr	<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 certified (+/-) 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).



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: CHEM-CLP-4
Lot Number: S2-MEB711673
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 ± 6 µg/mL	Molybdenum, Mo	1 000 ± 6 µg/mL
Silicon, Si	1 000 ± 7 µg/mL	Tin, Sn	1 000 ± 6 µg/mL
Titanium, Ti	1 000 ± 7 µg/mL		

Density: 1.030 g/mL (measured at 20 ± 4 °C)

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, $X_{\text{CRM/RM}}$, where two or more methods of characterization are used is the weighted mean of the results:

$$X_{\text{CRM/RM}} = \sum(w_i)(X_i)$$

X_i = mean of Assay Method i with standard uncertainty $u_{\text{char } i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$$w_i = (1/u_{\text{char } i}^2) / (\sum(1/u_{\text{char } i}^2))$$

$$\text{CRM/RM Expanded Uncertainty } (\pm) = U_{\text{CRM/RM}} = k (u_{\text{char}}^2 + u_{\text{bb}}^2 + u_{\text{Its}}^2 + u_{\text{ts}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char}} = [\sum(w_i)^2 (u_{\text{char } i})^2]^{1/2}$ where $u_{\text{char } i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{Its} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{\text{CRM/RM}}$, where one method of characterization is used is the mean of individual results:

$$X_{\text{CRM/RM}} = (X_a)(u_{\text{char } a})$$

X_a = mean of Assay Method A with

$u_{\text{char } a}$ = the standard uncertainty of characterization Method A

$$\text{CRM/RM Expanded Uncertainty } (\pm) = U_{\text{CRM/RM}} = k (u_{\text{char } a}^2 + u_{\text{bb}}^2 + u_{\text{Its}}^2 + u_{\text{ts}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char } a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{Its} = 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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Certificate of Analysis

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Christiansburg, VA 24073 USA
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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).



2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution	
Catalog Number:	CLPP-CAL-1	
Lot Number:	T2-MEB714417	
Matrix:	5% (v/v) HNO ₃	
Value / Analyte(s):	5 000 µg/mL ea:	Potassium, Sodium,
	Calcium, Magnesium,	
	2 000 µg/mL ea:	Barium,
	Aluminum,	
	1 000 µg/mL ea:	
	Iron,	
	500 µg/mL ea:	Vanadium, Cobalt,
	Nickel,	
	Zinc,	
	Manganese,	
	250 µg/mL ea:	Copper,
	Silver,	
	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 °C)

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, $X_{\text{CRM/RM}}$, where two or more methods of characterization are used is the weighted mean of the results:

$$X_{\text{CRM/RM}} = \sum(w_i)(X_i)$$

X_i = mean of Assay Method i with standard uncertainty $u_{\text{char } i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$$w_i = (1/u_{\text{char } i}^2) / (\sum(1/u_{\text{char } i}^2))$$

$$\text{CRM/RM Expanded Uncertainty } (\pm) = U_{\text{CRM/RM}} = k(u_{\text{char}}^2 + u_{\text{bb}}^2 + u_{\text{Its}}^2 + u_{\text{ts}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char}} = [\sum(w_i)^2(u_{\text{char } i}^2)]^{1/2}$ where $u_{\text{char } i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{Its} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{\text{CRM/RM}}$, where one method of characterization is used is the mean of individual results:

$$X_{\text{CRM/RM}} = (X_a)(u_{\text{char } a})$$

X_a = mean of Assay Method A with

$u_{\text{char } a}$ = the standard uncertainty of characterization Method A

$$\text{CRM/RM Expanded Uncertainty } (\pm) = U_{\text{CRM/RM}} = k(u_{\text{char } a}^2 + u_{\text{bb}}^2 + u_{\text{Its}}^2 + u_{\text{ts}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char } a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{Its} = 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

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

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





Refine your results. Redefine your industry.

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).



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 °C)

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, $X_{\text{CRM/RM}}$, where two or more methods of characterization are used is the weighted mean of the results:

$$X_{\text{CRM/RM}} = \sum(w_i)(X_i)$$

X_i = mean of Assay Method i with standard uncertainty $u_{\text{char } i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$$w_i = (1/u_{\text{char } i}^2) / (\sum(1/u_{\text{char } i}^2))$$

$$\text{CRM/RM Expanded Uncertainty } (\pm) = U_{\text{CRM/RM}} = k (u_{\text{char}}^2 + u_{\text{bb}}^2 + u_{\text{Its}}^2 + u_{\text{ts}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char}} = [\sum(w_i)^2 (u_{\text{char } i}^2)]^{1/2}$ where $u_{\text{char } i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{Its} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{\text{CRM/RM}}$, where one method of characterization is used is the mean of individual results:

$$X_{\text{CRM/RM}} = (X_a)(u_{\text{char } a})$$

X_a = mean of Assay Method A with

$u_{\text{char } a}$ = the standard uncertainty of characterization Method A

$$\text{CRM/RM Expanded Uncertainty } (\pm) = U_{\text{CRM/RM}} = k (u_{\text{char } a}^2 + u_{\text{bb}}^2 + u_{\text{Its}}^2 + u_{\text{ts}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char } a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{Its} = 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 ($\mu\text{g/mL}$)

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° $\pm$ 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

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





CERTIFIED WEIGHT REPORT:

Part Number: 57182 **Lot #**
Lot Number: 110923
Description: Lead (Pb) **Solvent:** 24002546 Nitric Acid

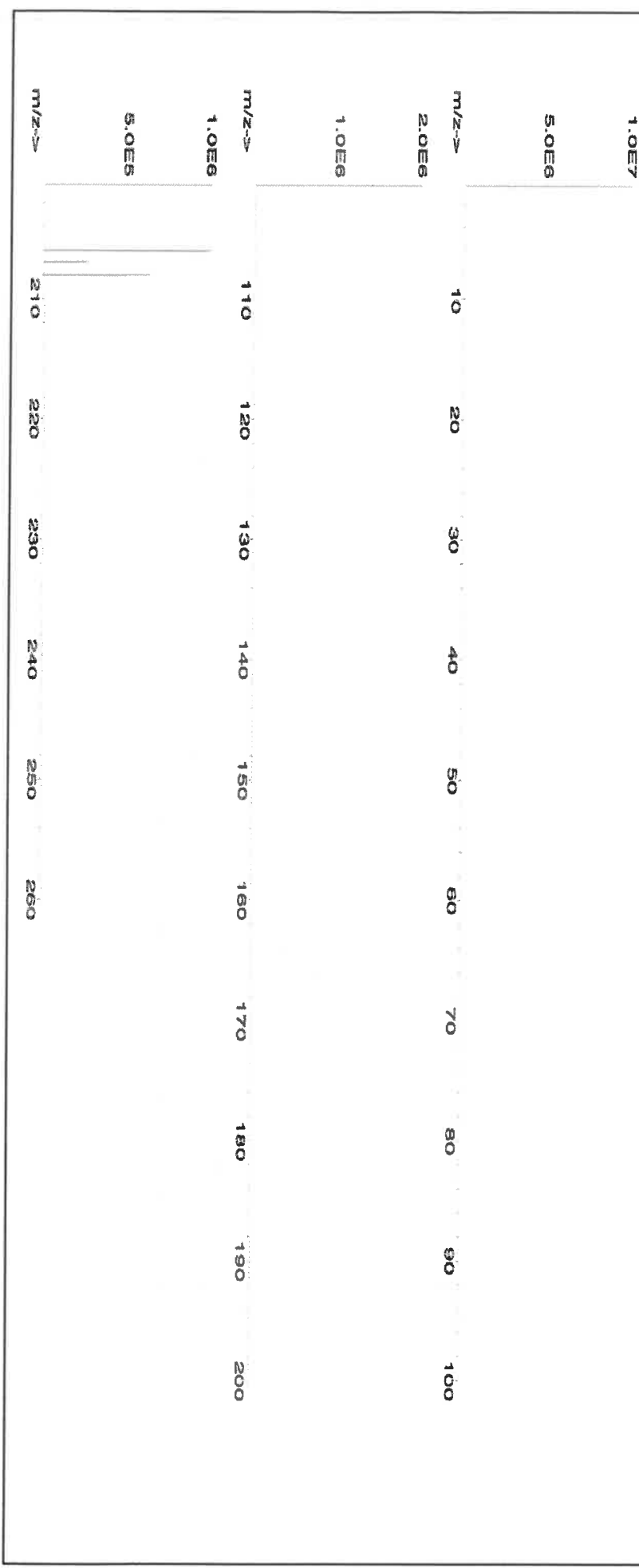
Expiration Date: 110926 **2%** 40.0 Nitric Acid (mL)
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB 5E-05 Balance Uncertainty
Weight shown below was diluted to (mL): 2000.02 0.058 Flask Uncertainty

Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas
110923	

Compound	SDS Information									
	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)

1. Lead(II) nitrate (Pb) IN029 PED122016A1 10000 99.999 0.10 62.5 32.0006 32.0040 10001.1 20.0 10099-74-8 0.05 mg/m3 Inverse rat 83 mg/kg 3128

[1] Spectrum No.1 [17.284 sec]:58182.D# [Count] [Linear]





Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS ($\mu\text{g/mL}$)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<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:

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 certified (+/-) 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).



Refine your results. Redefine your industry. RD:05/14/2024

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).



2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	WW-LFS-1
Lot Number:	T2-MEB723367
Matrix:	5% (v/v) HNO ₃

Value / Analyte(s):	1 000 µg/mL ea:	
	Potassium,	
	600 µg/mL ea:	
	Phosphorus,	
	300 µg/mL ea:	
	Sodium,	Iron,
	200 µg/mL ea:	
	Magnesium,	Aluminum,
	Cerium,	Selenium,
	Thallium,	
	100 µg/mL ea:	
	Lead,	Calcium,
	80 µg/mL ea:	
	Arsenic,	
	70 µg/mL ea:	
	Mercury,	
	50 µg/mL ea:	
	Nickel,	
	40 µg/mL ea:	
	Chromium,	
	30 µg/mL ea:	
	Copper,	Boron,
	Vanadium,	
	20 µg/mL ea:	
	Zinc,	Strontium,
	Barium,	Beryllium,
	Cadmium,	Cobalt,
	Manganese,	Lithium,
	7.5 µg/mL ea:	
	Silver	

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	200.0 ± 0.7 µg/mL	Arsenic, As	80.0 ± 0.7 µg/mL
Barium, Ba	20.00 ± 0.09 µg/mL	Beryllium, Be	20.00 ± 0.13 µg/mL
Boron, B	30.00 ± 0.18 µg/mL	Cadmium, Cd	20.00 ± 0.09 µg/mL
Calcium, Ca	100.0 ± 0.4 µg/mL	Cerium, Ce	200.0 ± 0.8 µg/mL
Chromium, Cr	40.00 ± 0.30 µg/mL	Cobalt, Co	20.00 ± 0.10 µg/mL
Copper, Cu	30.00 ± 0.13 µg/mL	Iron, Fe	300.0 ± 1.3 µg/mL
Lead, Pb	100.0 ± 0.4 µg/mL	Lithium, Li	20.00 ± 0.08 µg/mL
Magnesium, Mg	200.0 ± 0.8 µg/mL	Manganese, Mn	20.00 ± 0.08 µg/mL
Mercury, Hg	70.0 ± 0.3 µg/mL	Nickel, Ni	50.00 ± 0.22 µg/mL
Phosphorus, P	600.0 ± 2.7 µg/mL	Potassium, K	1 000 ± 4 µg/mL
Selenium, Se	200.0 ± 1.3 µg/mL	Silver, Ag	7.50 ± 0.03 µg/mL
Sodium, Na	300.0 ± 1.4 µg/mL	Strontium, Sr	20.01 ± 0.08 µg/mL
Thallium, Tl	200.0 ± 1.4 µg/mL	Vanadium, V	30.00 ± 0.13 µg/mL
Zinc, Zn	20.00 ± 0.09 µg/mL		

Density: 1.034 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
As	ICP Assay	3103a	100818
B	ICP Assay	3107	190605
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Ce	ICP Assay	3110	090504
Ce	EDTA	928	928
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
Hg	ICP Assay	3133	160921
Hg	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Li	ICP Assay	3129a	100714
Li	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	Traceable to 3152A	S2-NA700842
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Sr	EDTA	928	928
Sr	ICP Assay	Traceable to 3153a	K2-SR650985
Tl	ICP Assay	3158	151215
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, $X_{\text{CRM/RM}}$, where two or more methods of characterization are used is the weighted mean of the results:

$$X_{\text{CRM/RM}} = \sum (w_i) (X_i)$$

X_i = mean of Assay Method i with standard uncertainty $u_{\text{char } i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$$w_i = (1/u_{\text{char } i}^2) / (\sum (1/u_{\text{char } i}^2))$$

$$\text{CRM/RM Expanded Uncertainty (z)} = U_{\text{CRM/RM}} = k (u_{\text{char}}^2 + u_{\text{bb}}^2 + u_{\text{ts}}^2 + u_{\text{ts}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char}} = [\sum ((w_i)^2 (u_{\text{char } i}^2))]^{1/2}$ where $u_{\text{char } i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{ts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{\text{CRM/RM}}$, where one method of characterization is used is the mean of individual results:

$$X_{\text{CRM/RM}} = (X_a) (u_{\text{char } a})$$

X_a = mean of Assay Method A with

$u_{\text{char } a}$ = the standard uncertainty of characterization Method A

$$\text{CRM/RM Expanded Uncertainty (z)} = U_{\text{CRM/RM}} = k (u_{\text{char } a}^2 + u_{\text{bb}}^2 + u_{\text{ts}}^2 + u_{\text{ts}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char } a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{ts} = 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

Low Silver Note: This solution contains "LOW" levels of Silver. Please store this entire bottle inside a sealed glass jar.

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"

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

August 30, 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

- August 30, 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:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





Refine your results. Redefine your industry.

RD:05/14/2024

Certificate of Analysis

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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).



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: WW-LFS-2
Lot Number: U2-MEB731108
Matrix: 5% (v/v) HNO₃
tr. HF
Value / Analyte(s):
200 µg/mL ea:
Silica,
80 µg/mL ea:
Antimony,
70 µg/mL ea:
Tin,
40 µg/mL ea:
Molybdenum,
20 µg/mL ea:
Titanium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	80.1 ± 0.6 µg/mL	Molybdenum, Mo	40.03 ± 0.18 µg/mL
Silica, SiO ₂	200.2 ± 1.3 µg/mL	Tin, Sn	70.0 ± 0.4 µg/mL
Titanium, Ti	20.01 ± 0.13 µg/mL		

Density: 1.025 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Mo	Calculated		See Sec. 4.2
Sb	ICP Assay	3102a	140911
SiO ₂	ICP Assay	3150	130912
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	3162a	130925
Ti	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, $X_{\text{CRM/RM}}$, where two or more methods of characterization are used is the weighted mean of the results:

$$X_{\text{CRM/RM}} = \sum (w_i) (X_i)$$

X_i = mean of Assay Method i with standard uncertainty $u_{\text{char } i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$$w_i = (1/u_{\text{char } i}^2) / (\sum (1/u_{\text{char } i}^2))$$

$$\text{CRM/RM Expanded Uncertainty } (z) = U_{\text{CRM/RM}} = k (u_{\text{char}}^2 + u_{\text{bb}}^2 + u_{\text{ITS}}^2 + u_{\text{TS}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char}} = [\sum (w_i)^2 (u_{\text{char } i}^2)]^{1/2}$ where $u_{\text{char } i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{ITS} = long term stability standard uncertainty (storage)

u_{TS} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{\text{CRM/RM}}$, where one method of characterization is used is the mean of individual results:

$$X_{\text{CRM/RM}} = (X_a) (u_{\text{char } a})$$

X_a = mean of Assay Method A with

$u_{\text{char } a}$ = the standard uncertainty of characterization Method A

$$\text{CRM/RM Expanded Uncertainty } (z) = U_{\text{CRM/RM}} = k (u_{\text{char } a}^2 + u_{\text{bb}}^2 + u_{\text{ITS}}^2 + u_{\text{TS}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char } a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{ITS} = 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; info@inorganicventures.com;

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 17, 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 17, 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



Sodium Chloride, Crystal
BAKER ANALYZED® A.C.S. Reagent



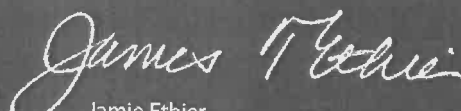
M 5776-83
MS

Material No.: 3624-01
Batch No.: 0000281938
Manufactured Date: 2021-06-07
Retest Date: 2026-06-07
Revision No.: 1

Certificate of Analysis

Test	Specification	Result
Assay (NaCl) (by Ag titrn)	≥ 99.0 %	100.0 %
pH of 5% Solution at 25°C	5.0 - 9.0	6.3
Insoluble Matter	≤ 0.005 %	0.003 %
Iodide (I)	≤ 0.002 %	< 0.002 %
Bromide (Br)	≤ 0.01 %	< 0.01 %
Chlorate and Nitrate (as NO ₃)	≤ 0.003 %	< 0.001 %
ACS - Phosphate (PO ₄)	≤ 5 ppm	< 5 ppm
Sulfate (SO ₄)	≤ 0.004 %	< 0.004 %
Barium (Ba)	Passes Test	Passes Test
ACS - Heavy Metals (as Pb)	≤ 5 ppm	< 5 ppm
Iron (Fe)	≤ 2 ppm	< 1 ppm
Calcium (Ca)	≤ 0.002 %	< 0.001 %
Magnesium (Mg)	≤ 0.001 %	< 0.001 %
Potassium (K)	≤ 0.005 %	0.001 %

For Laboratory, Research, or Manufacturing Use
Meets Reagent Specifications for testing USP/NF monographs
Country of Origin: USA
Packaging Site: Paris 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 Mansford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone 610.386.1700



CERTIFIED WEIGHT REPORT:

Lot #

Part Number:

58149

Solvent: 20370011

Nitric Acid

Lot Number:

100721

Description:

Indium (In)

5% 25.0 Nitric Acid
(mL)

Expiration Date:

100724

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

10000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL):

500.06

SE-05 Balance Uncertainty
0.058 Flask Uncertainty

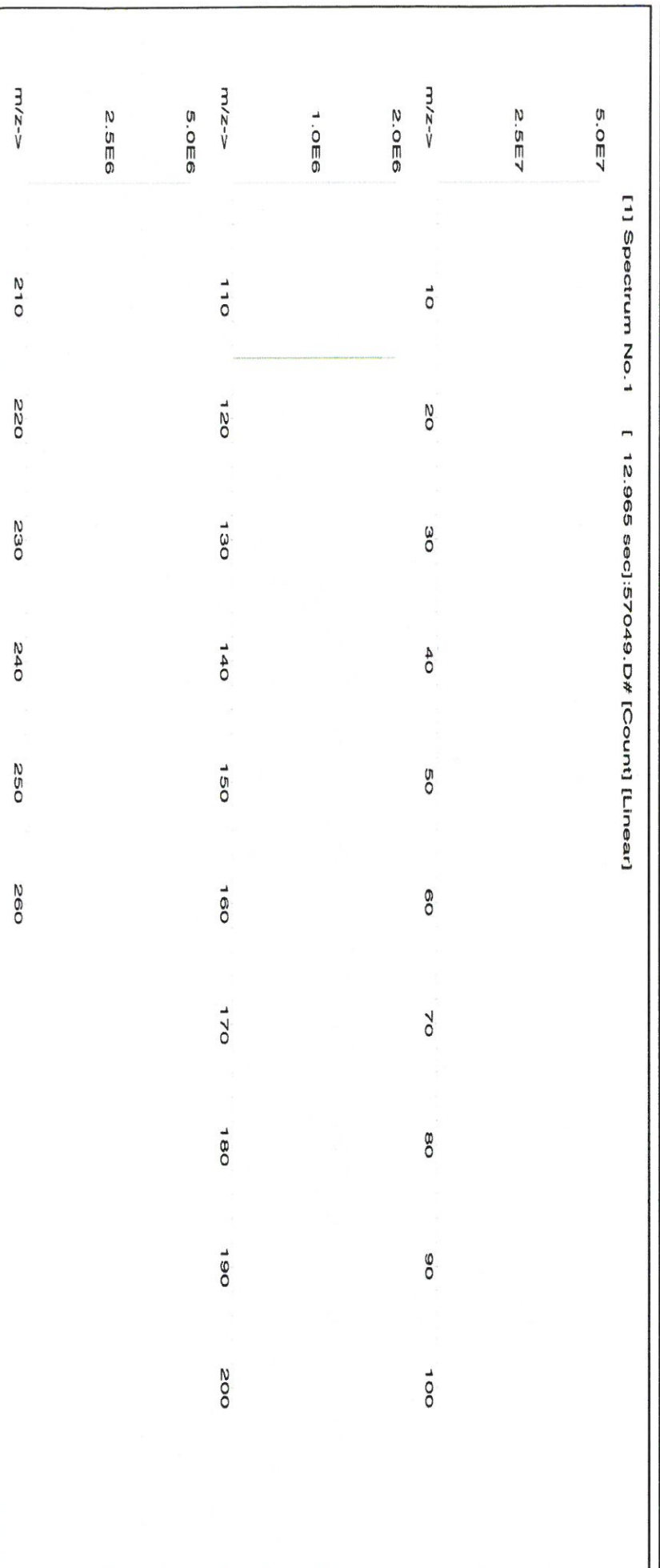
Giovanni Caporaso	
Formulated By:	Giovanni Esposito
	100721
Reviewed By:	Pedro L. Renteria
	100721

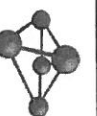
SDS Information

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
----------	-----	------------	-----------------------	------------	-----------------	-----------	-------------------	-------------------	----------------------	----------------------------------	------	----------------	------	----------

1. Indium Oxide (In)	IN086	W1096A	10000	99.999	0.10	82.6	6.05408	6.05441	10000.6	20.1	1312-43-2	NA	NA	3124a
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[1] Spectrum No. 1 [12.965 sec]:57049.D# [Count] [Linear]





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	Pt	<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:

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 certified (+/-) 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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1.0 ACCREDITATION / REGISTRATION

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2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Mass Spec Solution
 Catalog Number: MSHG-10PPM
 Lot Number: S2-HG709270
 Matrix: 10% (v/v) HCl
 Value / Analyte(s): 10 µg/mL ea:
 Mercury
 Starting Material: Hg metal
 Starting Material Lot#: 1959
 Starting Material Purity: 99.9994%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10.001 ± 0.053 µg/mL
Density: 1.020 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Hg	ICP Assay	3133	160921
Hg	EDTA	928	928
Hg	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:

$$X_{CRM/RM} = \sum (w_i) (X_i)$$

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.
 $w_i = (1/u_{char i}^2) / (\sum (1/u_{char i}^2))$

$$CRM/RM \text{ Expanded Uncertainty } (\pm) = U_{CRM/RM} = k (u_{char}^2 + u_{bb}^2 + u_{lts}^2 + u_{ts}^2)^{1/2}$$

k = coverage factor = 2

$u_{char} = [\sum ((w_i)^2 (u_{char i})^2)]^{1/2}$ 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

$$CRM/RM \text{ Expanded Uncertainty } (\pm) = U_{CRM/RM} = k (u_{char a}^2 + u_{bb}^2 + u_{lts}^2 + u_{ts}^2)^{1/2}$$

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.

O	Ag	0.000011	M	Eu	<	0.000201	O	Na	0.000004	M	Se	<	0.015915	O	Zn	<	0.001510
O	Al	0.000001	O	Fe	0.000001	M	Nb	<	0.000201	O	Si	0.000005	M	Zr	<	0.000201	
M	As	<	0.000402	M	Ga	<	0.000201	M	Nd	<	0.000201	M	Sm	<	0.000201		
M	Au	<	0.003631	M	Gd	<	0.000201	M	Ni	<	0.000402	M	Sn	<	0.001007		
M	B	<	0.001208	M	Ge	<	0.000201	M	Os	<	0.000605	M	Sr	<	0.000201		
M	Ba	<	0.000201	M	Hf	<	0.000201	O	P	<	0.032370	M	Ta	<	0.000201		
M	Be	<	0.000201	s	Hg	<		M	Pb	<	0.000201	M	Tb	<	0.000201		
M	Bi	<	0.000201	M	Ho	<	0.000201	M	Pd	<	0.000403	M	Te	<	0.002216		
O	Ca	0.000007	M	In	<	0.000201	M	Pr	<	0.000201	M	Th	<	0.000201			
M	Cd	<	0.000201	M	Ir	<	0.000201	M	Pt	<	0.000402	M	Ti	<	0.000402		
M	Ce	<	0.000201	O	K	0.000020	M	Rb	<	0.000201	O	Tl	<	0.016508			
M	Co	<	0.000201	M	La	<	0.000201	M	Re	<	0.000201	M	Tm	<	0.000201		
O	Cr	<	0.003021	O	Li	<	0.000107	M	Rh	<	0.000201	M	U	<	0.008058		
M	Cs	<	0.001208	M	Lu	<	0.000201	M	Ru	<	0.000201	M	V	<	0.000201		
M	Cu	<	0.000402	O	Mg	0.000001	O	S	<	0.053950	M	W	<	0.000604			
M	Dy	<	0.000201	M	Mn	<	0.000604	M	Sb	<	0.001208	M	Y	<	0.000201		
M	Er	<	0.000201	M	Mo	0.000009	M	Sc	<	0.000201	M	Yb	<	0.000201			

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 - 200.59 +2 4 Hg(OH)(aq) 1+

Chemical Compatibility - Stable in HNO₃. Avoid basic media forming insoluble carbonate. The sulfide, basic carbonate, oxalate, phosphate, arsenite, arsenate and iodide are insoluble in water.

Stability - 2-100 ppb levels not stable in 1% HNO₃ / LDPE container, stable in 10% HNO₃ packaged in borosilicate glass. 1-100 ppm levels stable in 7% HNO₃ packaged in borosilicate glass. 1000-10,000 ppm solutions are chemically stable for years in 5-10% HNO₃ / LDPE container.

Hg Containing Samples (Preparation and Solution) - Metal (soluble in HNO₃); Oxide (Soluble in HNO₃); Ores and Organic based (The literature has more references to the preparation of Hg containing samples than any other element. Please consult the literature for your specific sample type, since such preparations are prone to error. Or e-mail our technical staff and we will contact you to discuss your particular sample preparation questions in further detail.).

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 202 amu	9 ppt	n/a	186W16O
ICP-OES 184.950 nm	0.03 / 0.005 µg/mL	1	
ICP-OES 194.227 nm	0.03 / 0.005 µg/mL	1	V
ICP-OES 253.652 nm	0.1 / 0.03 µg/mL	1	Ta, Co, Th ,Rh , Fe, U

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

September 22, 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

- **September 22, 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 Prepared By:

Uyen Truong
Supervisor, Product Documentation



Certificate Approved By:

Michael Booth
Director, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





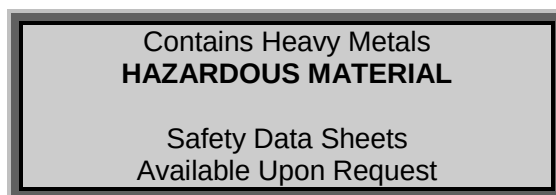
Instructions for QATS Reference Material: ICP-AES ICS

**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.



(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,





Instructions for QATS Reference Material: ICP-AES ICS

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 HNO₃. 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 HNO₃. 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.

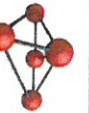
Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

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.

ICSA
M5126
M5127
M5128
M5129
M5130

ICSB
M5219
M5220
M5221
M5222
M5223



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57042
051722
Molybdenum (Mo)

Lot # **Solvent:**
MKB08597V Ammonium hydroxide

0.5% **15.0** **Ammonium hydroxide**
(mL)

Expiration Date: 051725

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL): 3000.41

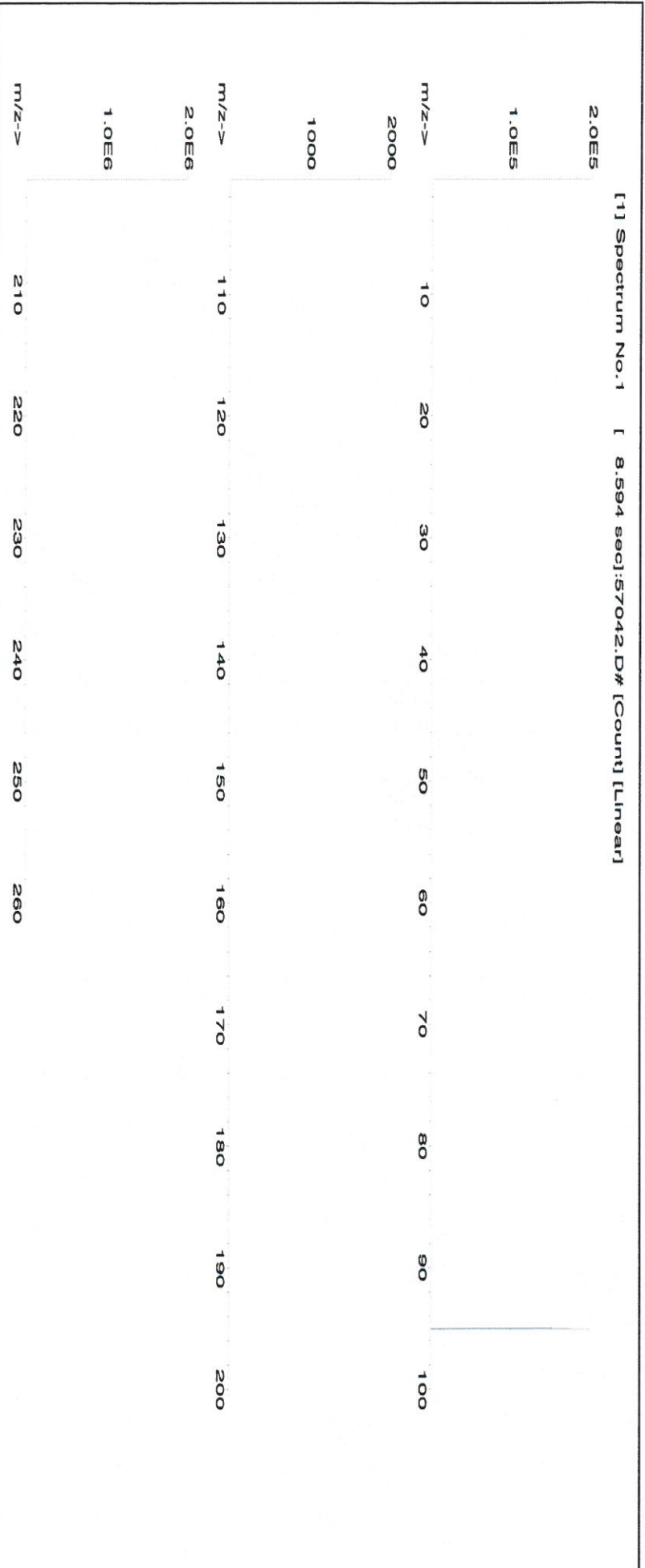
5E-05 **Balance Uncertainty**
0.058 **Flask Uncertainty**

Formulated By:	Lawrence Barry
	051722
Reviewed By:	Pedro L. Rentas
	051722

SDS Information

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)	(Solvent Safety Info. On Attached pg.)	NIST SRM
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1. Ammonium molybdate (Mo) 58142 022222 0.1000 300.0 0.084 1000 10001.0 1000.0 2.1 13106-76-8 5 mg(Mo)/m3 or-trat 333 mg/kg 3134





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	Pt	<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	T	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 certified (+/-) 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).

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: 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 °C)

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, $X_{\text{CRM/RM}}$, where two or more methods of characterization are used is the weighted mean of the results:

$$X_{\text{CRM/RM}} = \sum(w_i)(X_i)$$

X_i = mean of Assay Method i with standard uncertainty $u_{\text{char } i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$$w_i = (1/u_{\text{char } i}^2) / (\sum(1/u_{\text{char } i}^2))$$

$$\text{CRM/RM Expanded Uncertainty } (\pm) = U_{\text{CRM/RM}} = k(u_{\text{char}}^2 + u_{\text{bb}}^2 + u_{\text{Its}}^2 + u_{\text{ts}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char}} = [\sum(w_i)^2(u_{\text{char } i}^2)]^{1/2}$ where $u_{\text{char } i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{Its} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{\text{CRM/RM}}$, where one method of characterization is used is the mean of individual results:

$$X_{\text{CRM/RM}} = (X_a)(u_{\text{char } a})$$

X_a = mean of Assay Method A with

$u_{\text{char } a}$ = the standard uncertainty of characterization Method A

$$\text{CRM/RM Expanded Uncertainty } (\pm) = U_{\text{CRM/RM}} = k(u_{\text{char } a}^2 + u_{\text{bb}}^2 + u_{\text{Its}}^2 + u_{\text{ts}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char } a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{Its} = 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





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,





Instructions for QATS Reference Material: ICP-AES ICS

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 HNO₃. 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 HNO₃. 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.

ICSA
M5126
M5127
M5128
M5129
M5130

ICSB
M5219
M5220
M5221
M5222
M5223



CERTIFIED WEIGHT REPORT:

Part Number: **58119**
Lot Number: **071122**
Description: **Potassium (K)**

Solvent: 20510011 Nitric Acid

Expiration Date: 071125
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): **10000**
NIST Test Number: 6UTB

2% 40.0 (mL) Nitric Acid

Weight shown below was diluted to (mL): 2000.02
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By:	Lawrence Barry
	071122
Reviewed By:	Pedro L. Rentas
	071122

Compound

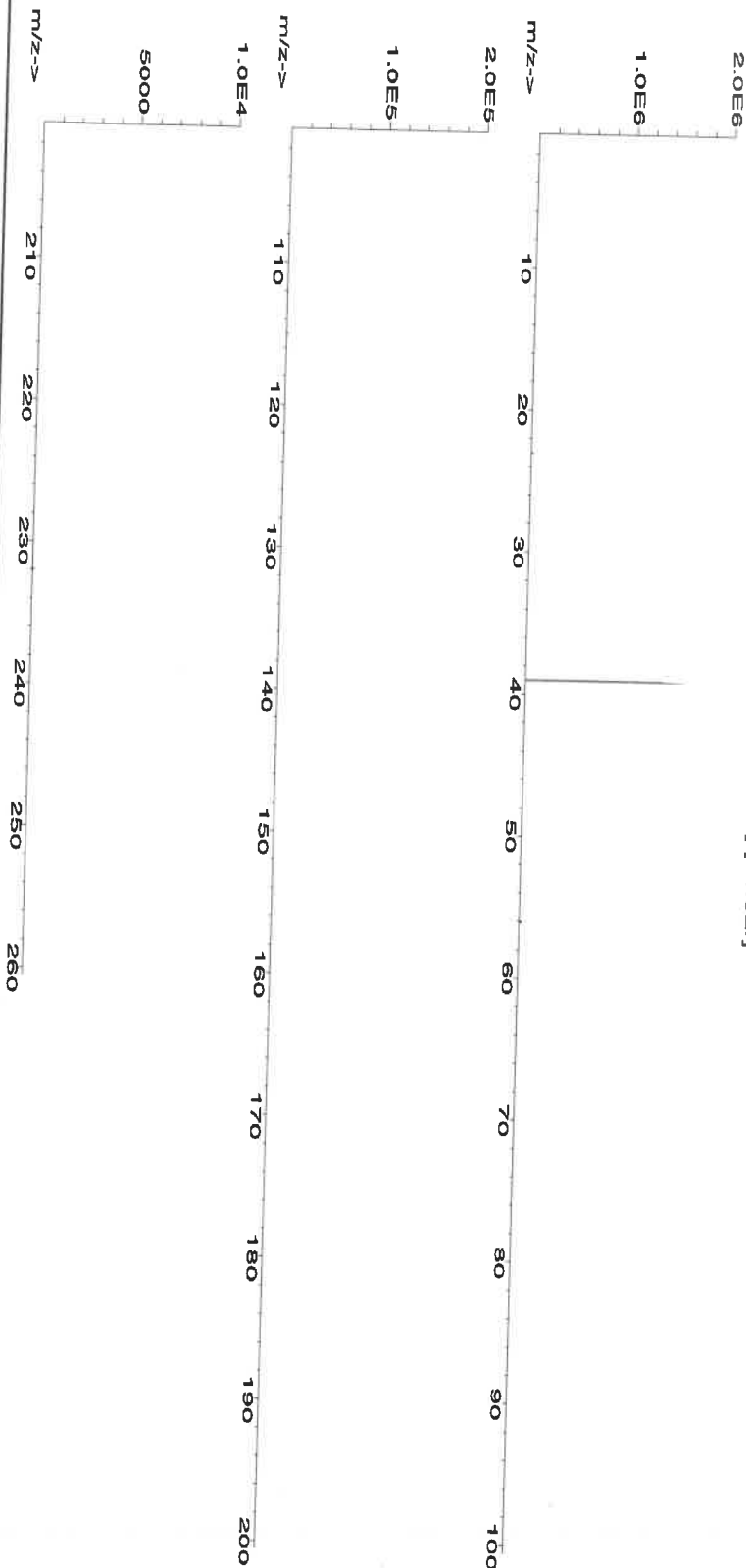
1. Potassium nitrate (K)

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)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
IN034	KD022021A1	10000	99.999	0.10	37.6	53.1925	53.1934	10000.2	20.0	7757-79-1	5 mg/m3	or-rat 3015 mg/kg	3141a

SDS Information

(Solvent Safety Info. On Attached pg.)

[1] Spectrum No. 1 [35.763 sec]:58119.D# [Count] [Linear]





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	Pt	<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	<0.02	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 certified (+/-) 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).



M5289 R: 07/12/22
Certified Reference Material CRM

(34)



ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://AbsoluteStandards.com

CERTIFIED WEIGHT REPORT:

Part Number: 58113
Lot Number: 070622
Description: Aluminum (Al)

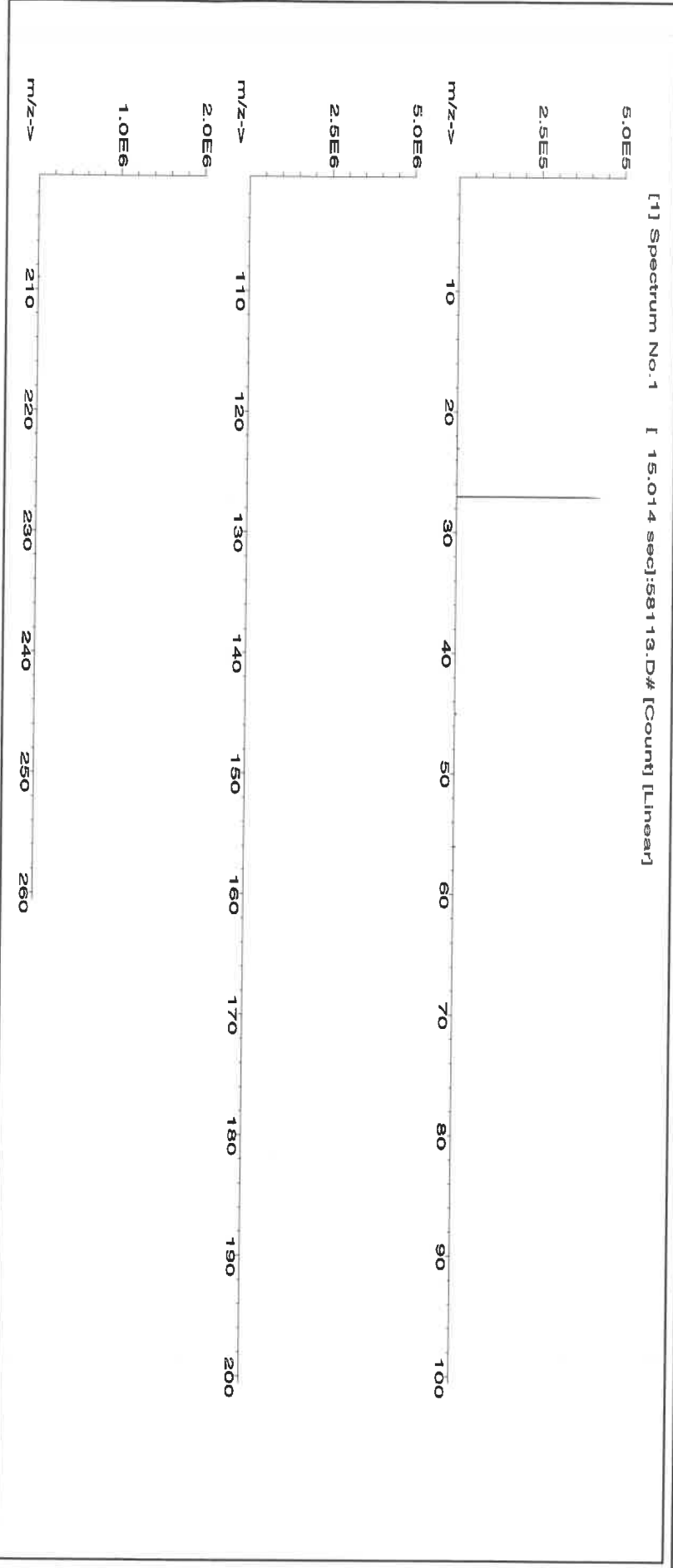
Lot #
Solvent: 20370011 Nitric Acid

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
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By:	Lawrence Barry
070622	
Reviewed By:	Pedro L. Renteria
070622	

SDS Information																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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	Lot		Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Uncertainty	(Solvent Safety Info. On Attached pg.)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	RM#	Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Weight (g)	Conc. (µg/mL)	+/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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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 or-tal 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	Pt	<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	Ru	<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	Sr	<0.02	S	<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	Ta	<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 certified (+/-) 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).



R: 4/20/21

Instructions for QATS Reference Material: *Inorganic ICV Solutions*

QATS LABORATORY INORGANIC REFERENCE MATERIAL
INITIAL CALIBRATION VERIFICATION SOLUTIONS
(ICV1, ICV5, AND ICV6)

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

M5291
M15292
M15293
M15294
M15295

(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.





QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
"An ISO 9001:2015 Certified Program"

Instructions for QATS Reference Material: *Inorganic ICV Solutions*

- 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



R-09/18/22 (RH)
Certified Reference Material CRM

CERTIFIED WEIGHT REPORT:

Part Number: **57056**
Lot Number: **072122**
Description: **Barium (Ba)**

Solvent: **20510011 Nitric Acid**

M5387 - M5389 - M5390 - M5391 - M5392



Expiration Date: **072125**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6UTB**

2% **40.0** **Nitric Acid**
(mL)

Weight shown below was diluted to (mL): **2000.02** **5E-05** **Balance Uncertainty**
0.058 **Flask Uncertainty**

<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	<i>Pedro L. Renteria</i>
	072122

SDS Information									
Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	NIST SRM

1. Barium nitrate (Ba)	IN023	BA022019A1	1000	99.999	0.10	52.3	3.82417	3.82426	1000.0	2.0	10022-31-8	0.5 mg/m3	original 355 mg/kg	3104a
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[1] Spectrum No. 1 [12.514 sec]:58156.D# [Count] [Linear]





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	<0.02	Tb	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.2	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.02	Os	<0.01	Rh	<0.02	Ag	<0.02	Tl	<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
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.02	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<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
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

(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 certified (+/-) 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).



Certified Reference Material CRM

M5429 R1 0126/23 (B)

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57103
070622
Lithium (Li)

Solvent: 20510011 Nitric Acid

Expiration Date:
Recommended Storage:
Nominal Concentration (µg/mL):
NIST Test Number:

070625
Ambient (20 °C)
10000
6UTB

2% 20.0 (mL)

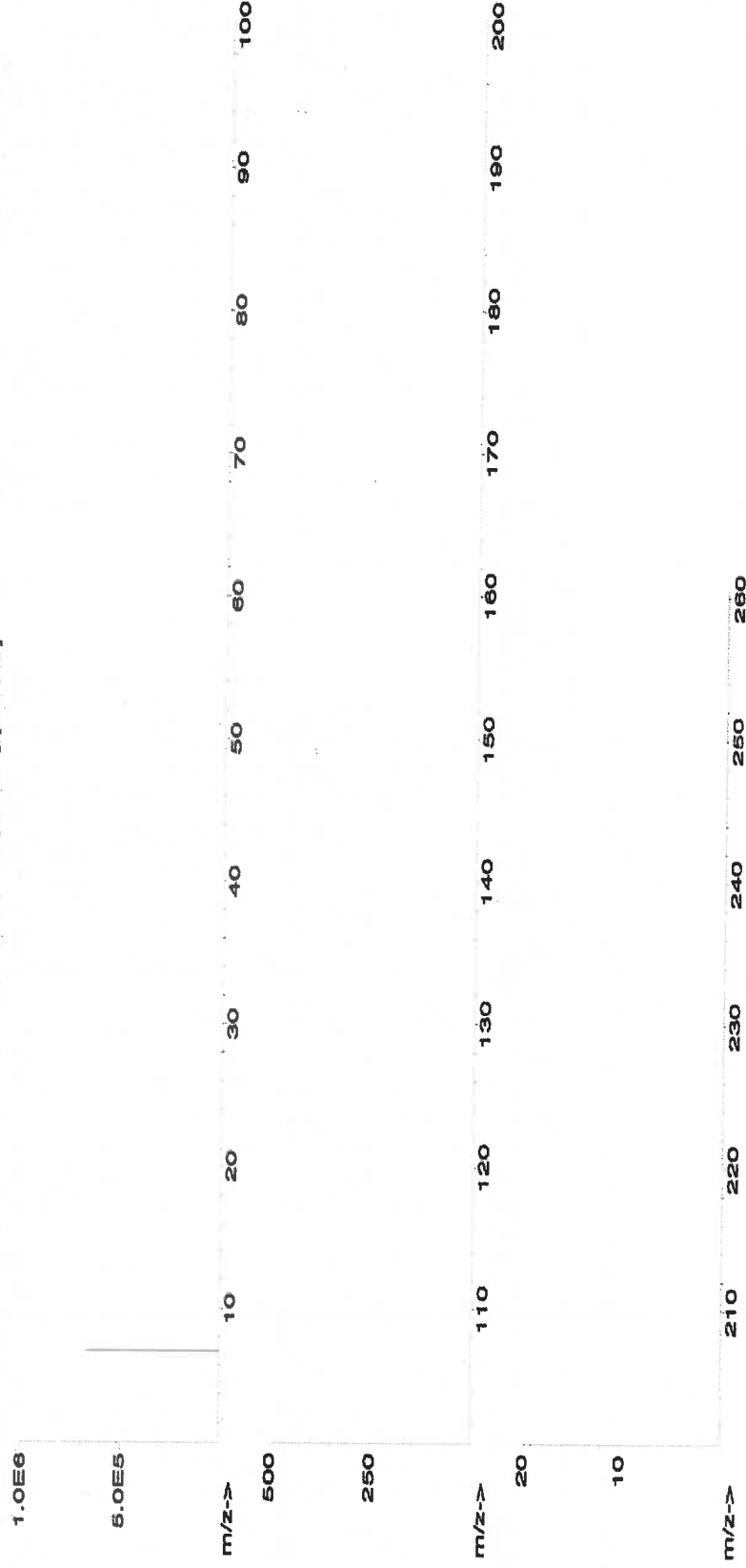
Weight shown below was diluted to (mL): 1000.12
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Lawrence Barry
Formulated By: Lawrence Barry 070622
Pedro L. Rentas
Reviewed By: Pedro L. Rentas 070622

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information		
											(Solvent Safety Info. On Attached pg.)	CAS#	NIST SRM

1. Lithium nitrate (Li)	IN019	L2042019A1	10000	99.999	0.10	10.0	100.0134	100.0173	10000.4	20.0	7790-69-4	5 mg/m3	of-rat 1426 mg/kg	NA
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[1] Spectrum No.1 [9.619 sec]:58103.D# [Count] [Linear]





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	<0.2	Ho	<0.02	La	<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	<0.2	Na	<0.02	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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57058
020623
Cerium (Ce)

Expiration Date:
Recommended Storage:
Nominal Concentration (µg/mL):
NIST Test Number:

020626
Ambient (20 °C)
1000
6UTB

Weight shown below was diluted to (mL):

1000.12 **0.058** **Balance Uncertainty**
Flask Uncertainty

Lot #
Solvent: **21110221** **Nitric Acid**

2% **20.0** **Nitric Acid**
(mL)

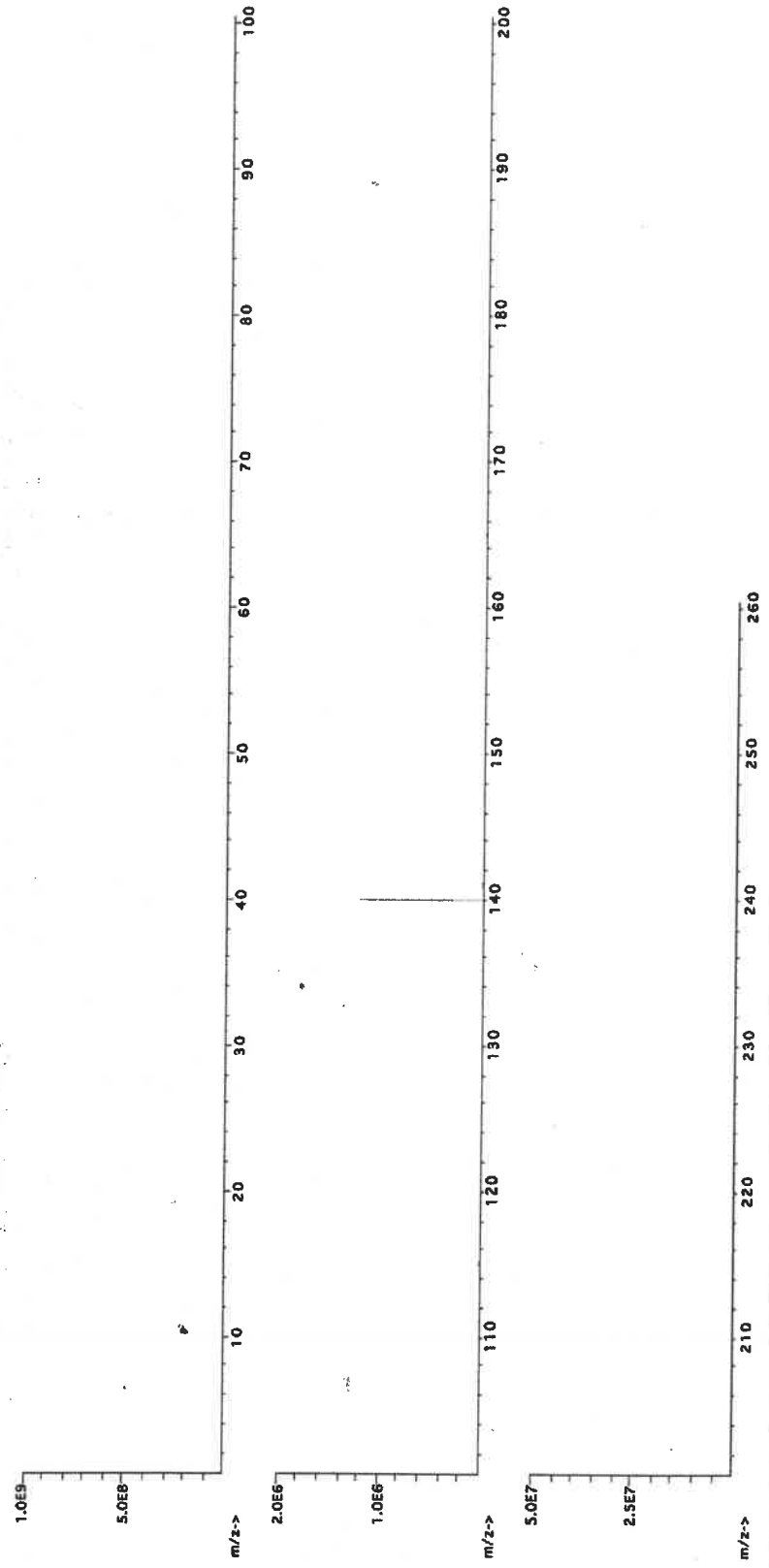
Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas

SDS Information

Expanded Uncertainty	(Solvent Safety Info. On Attached pg.)	NIST
+/- (µg/mL)	LD50	SRM
CAS#	OSHA PEL (TWA)	
2.0	10294-41-4	NA
1000.0	NA	NA

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
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[1] Spectrum No.1 [43.472 sec]58158.D# [Count] [Linear]





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	Tc	<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	<0.02	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 certified (+/-) 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).



15497-15498 R203/17/23(2)

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58120
031523
Calcium (Ca)

Solvent: 21110221 Nitric Acid

Expiration Date:
Recommended Storage:
Nominal Concentration (µg/mL):
NIST Test Number:

031526
Ambient (20 °C)
10000
6UTB

2%
60.0
(mL)
Nitric Acid

Weight shown below was diluted to (mL): 3000.41
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito 031523
<i>Pedro L. Rentas</i>	
Reviewed By:	Pedro L. Rentas 031523

SDS Information

(Solvent Safety Info. On Attached pg.)
NIST
SRM

Expanded
Uncertainty

Actual
Conc. (µg/mL)

Actual
Weight (g)

Actual
Weight (g)

Target
Weight (g)

Assay
(%)

Purity
(%)

Nominal
Conc. (µg/mL)

Lot
Number

RM#

Compound

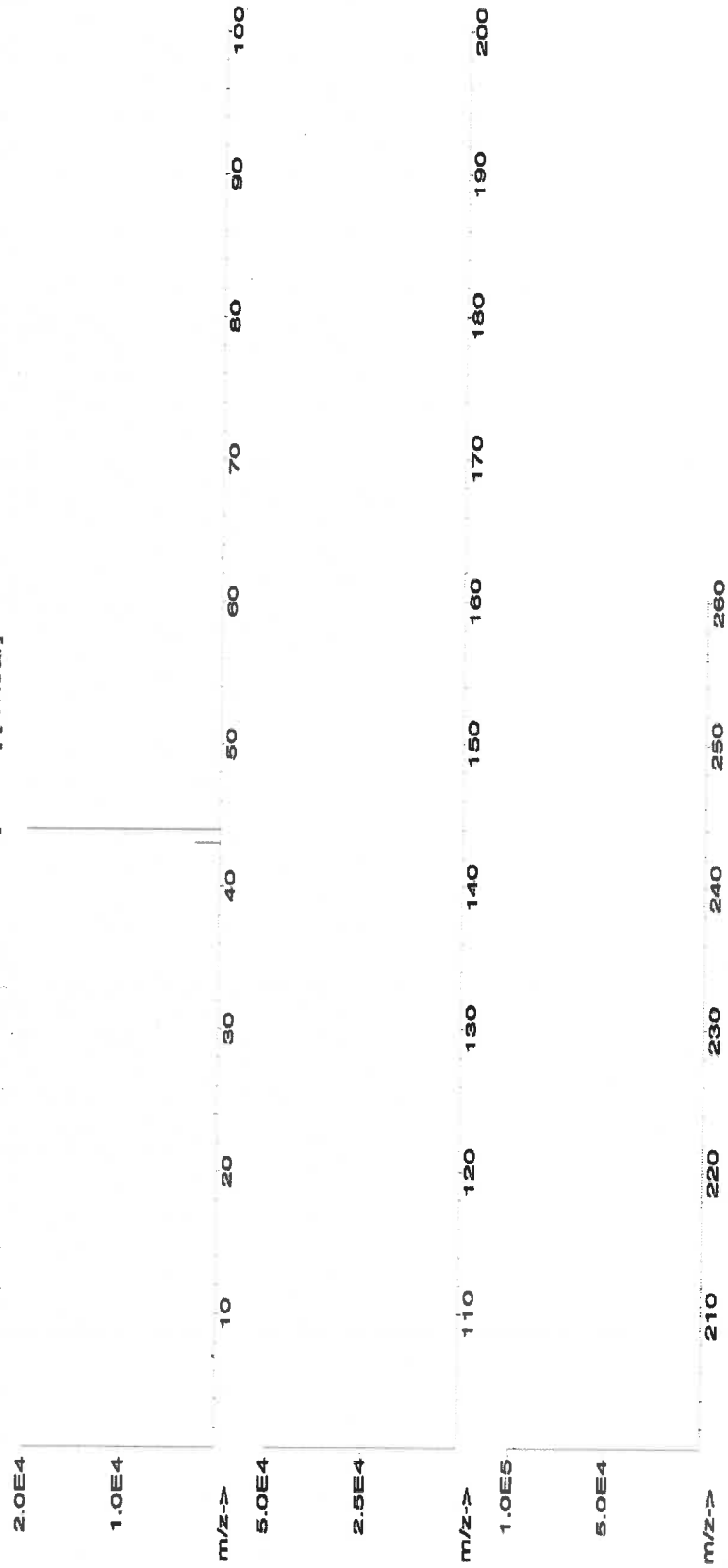
Expanded
Uncertainty

Actual
Conc. (µg/mL)

Actual
Weight (g)

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	or:rat >2000mg/kg	3109a
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[1] Spectrum No.1 [12.514 sec]:58120.D# [Count] [Linear]





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	Pt	<0.02	Se	<0.2	Tb	<0.02
Sb	<0.02	Ca	<0.02	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Tc	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.02	Os	<0.01	Rh	<0.02	Ag	<0.02	Ti	<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
Be	<0.01	Cr	<0.02	Ga	<0.2	Fe	<0.02	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<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
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Tl	<0.02
																W	<0.02
																U	<0.02
																V	<0.02
																Yb	<0.02
																Y	<0.02
																Zn	<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 certified (+/-) 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).



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	Pt	<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	Tc	<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	Ti	<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	<0.2	Fe	<0.02	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	Tl	<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 certified (+/-) 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).

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58126
092122
Iron (Fe)

Expiration Date:
Recommended Storage:
Nominal Concentration (µg/mL):
NIST Test Number:

092125
Ambient (20 °C)
10000
6UTB

Weight shown below was diluted to (mL):

5000.1

Solvent: 20510011 Nitric Acid

7.0% 350.0 Nitric Acid
(mL)

5E-05 Balance Uncertainty
0.12 Flask Uncertainty

Formulated By: Giovanni Esposito	
Reviewed By: Pedro L. Rentas	

SDS Information

Expanded
Uncertainty
(Solvent Safety Info. On Attached pg.)
LD50 OSHA PEL (TWA)

NIST
SRM

Actual
Conc. (µg/mL)

Actual
Weight (g)

Actual
Weight (g)

Target
Weight (g)

Assay
(%)

Purity
(%)

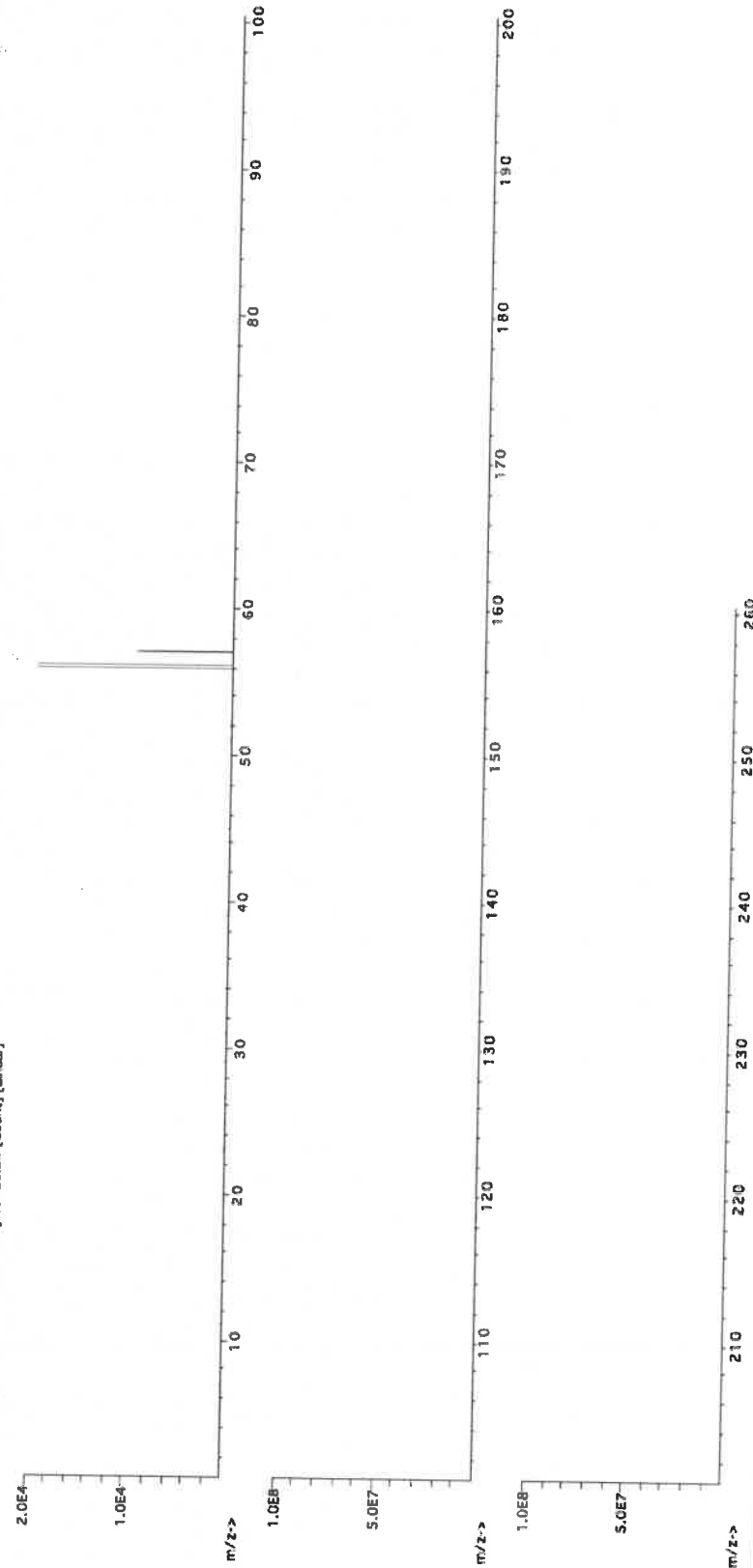
Nominal
Conc. (µg/mL)

Lot
Number

RM#

1. Iron (Fe)	IN346	2224912-500	10000	99.985	0.10	100.0	50.0034	50.0111	10001.5	20.0	7439-88-6	5 mg/m3	orl-rat 7500mg/kg 3126a
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[1] Spectrum No.1 [30.763 sec]:58126.D# [Count] [Linear]





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	La	<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	<0.02	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	<0.05	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	<0.05
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:

Ben P. Galt

- * 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 certified (+/-) 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).



Certified Reference Material CRM

CERTIFIED WEIGHT REPORT:

Part Number: **58119**
Lot Number: **120822**
Description: **Potassium (K)**

Solvent: 20510011 Nitric Acid

Lot #

Expiration Date: 120825
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB

2% 60.0 (mL) Nitric Acid

Weight shown below was diluted to (mL): 3000.4

5E-05 Balance Uncertainty
0.06 Flask Uncertainty

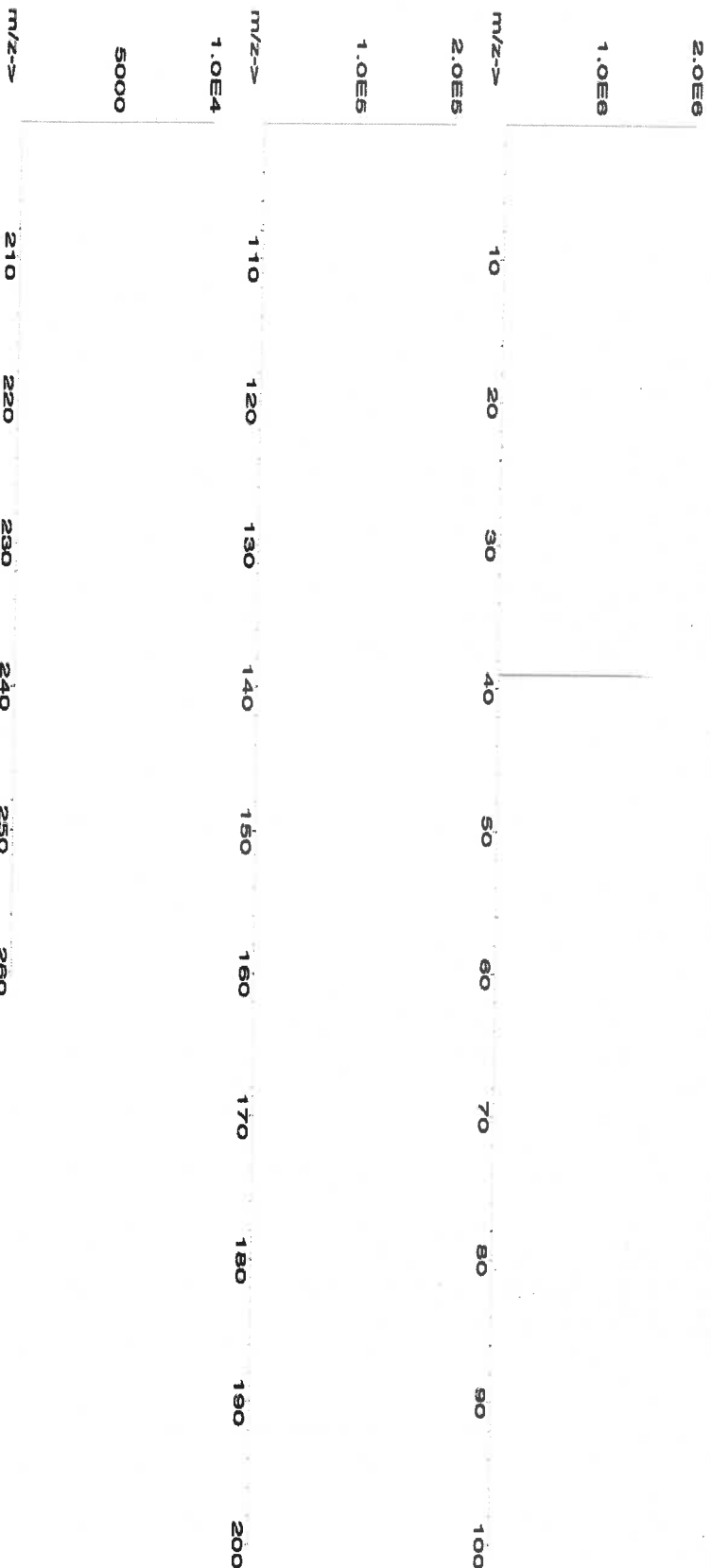
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	Pedro L. Rentas
	120822

Compound

Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Expanded	SDS Information	NIST
RM#	Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Weight (g)	Conc. (µg/mL)	Uncertainty	(Solvent Safety Info. On Attached pg.)
								+/- (µg/mL)	CAS#	OSHA PEL (TWA)
										LD50

1. Potassium nitrate (K) IN034 KD022021A1 10000 99.989 0.10 37.6 79.7990 79.8075 10001.1 20.0 7757-79-1 5 mg/m3 crtat 3015 mg/kg 3141a

[1] Spectrum No.1 [35.763 sec]:58119.D# [Count] [Linear]





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	Pt	<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	<0.02	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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number: 58024
Lot Number: 060523
Description: Chromium (Cr)

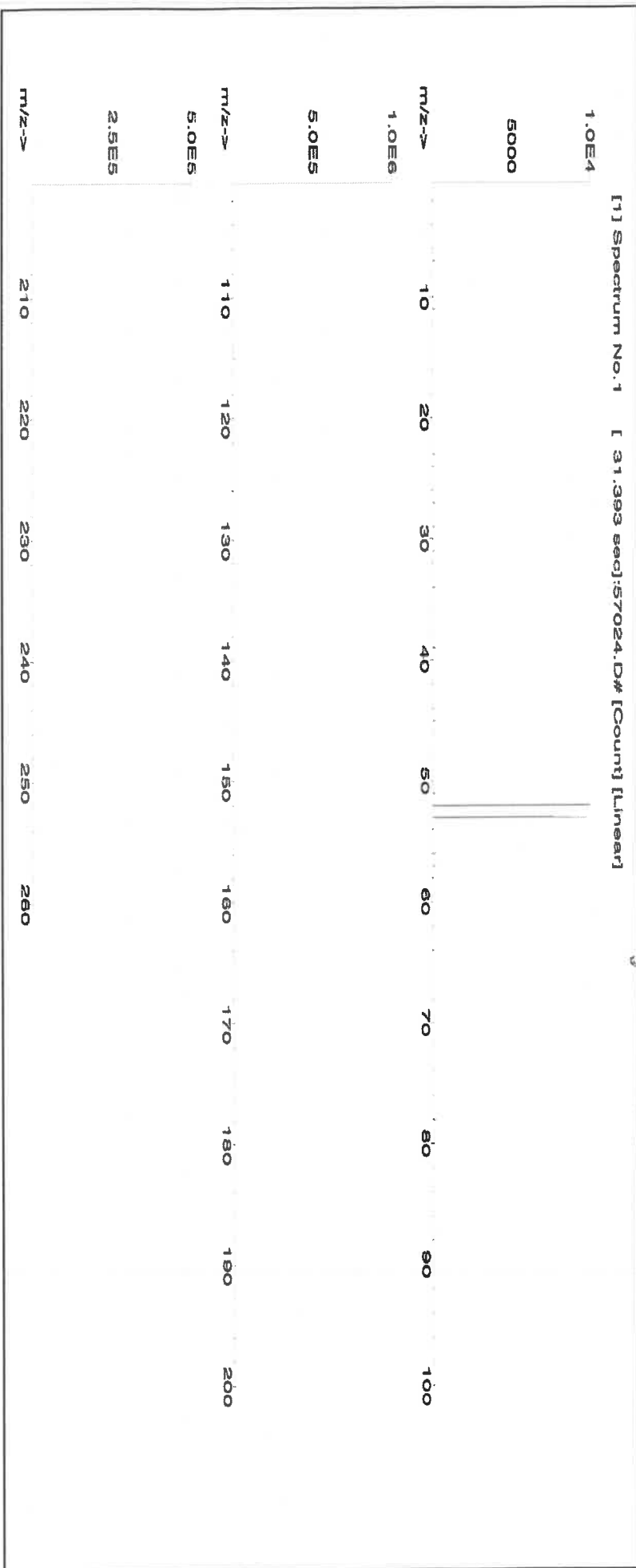
Lot #
21110221
Solvent: Nitric Acid

Formulated By:	Lawrence Barry
	060523
Reviewed By:	Pedro L. Henrias
	060523

Expiration Date: 060526
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 2000.02
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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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 or 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:

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 certified (+/-) 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).



Certified Reference Material CRM



ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

M5697 R: 10/27/23

CERTIFIED WEIGHT REPORT:

Part Number: **58029**
Lot Number: **102523**
Description: **Copper (Cu)**

Lot # **24002546**
Solvent: **Nitric Acid**

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

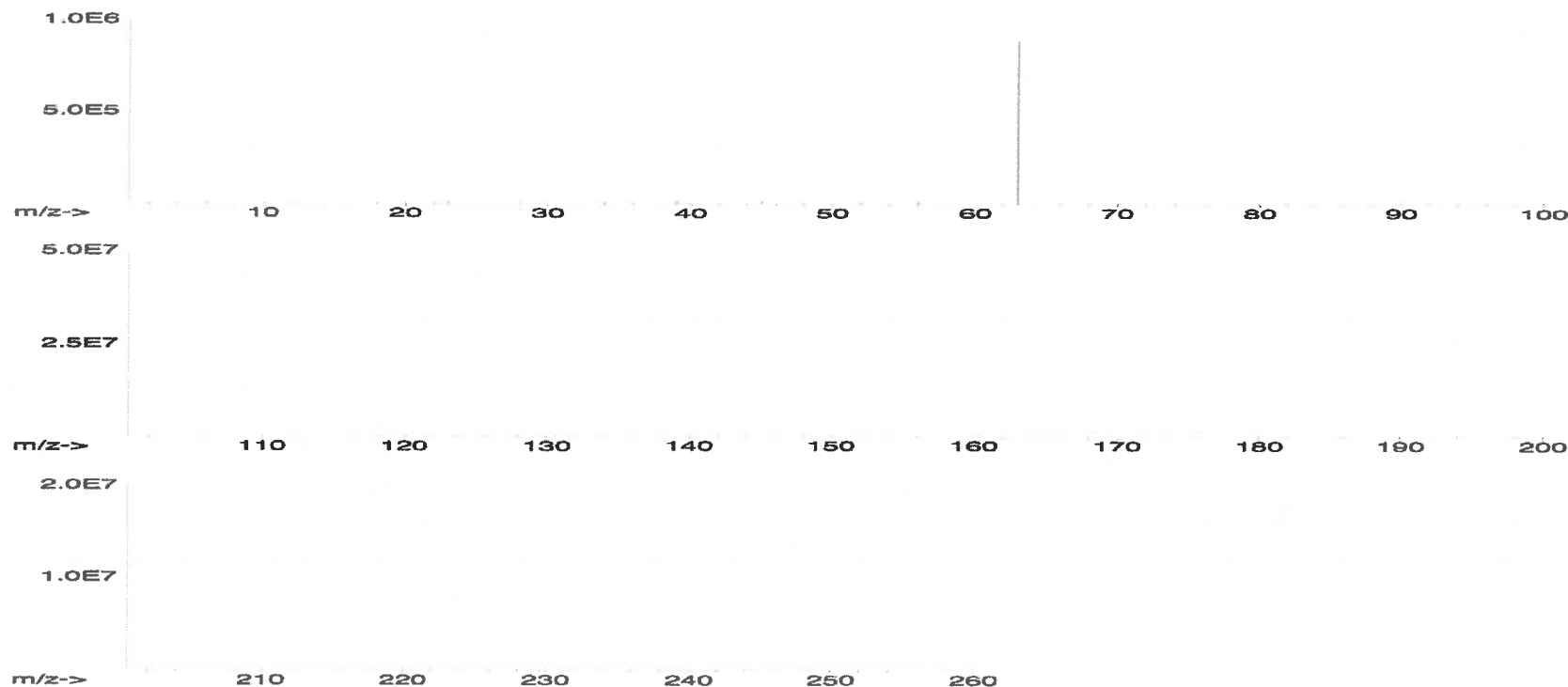
Formulated By:	Benson Chan	102523
Reviewed By:	Pedro L. Rentas	102523

Expanded

SDS Information

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)	(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	ori-rat 794 mg/kg	3114

[1] Spectrum No.1 [33.422 sec]:58029.D# [Count] [Linear]





Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS ($\mu\text{g/mL}$)

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.
- * Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- * Standards are certified (+/-) 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).



Certified Reference Material CRM

M5698 R: 10/23/23



CERTIFIED WEIGHT REPORT:

Part Number: 58025
Lot Number: 102623
Description: Manganese (Mn)

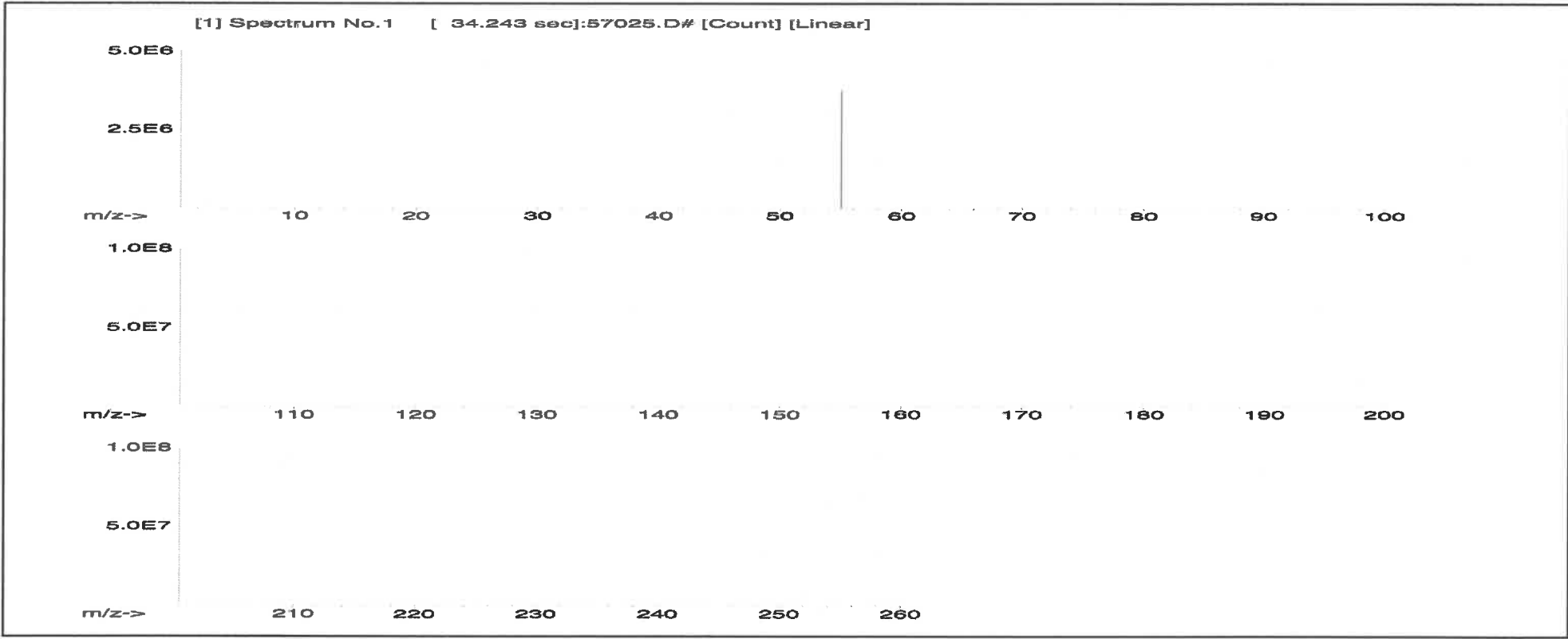
Lot # 24002546
Solvent: Nitric Acid
2.0% 60.0 (mL) Nitric Acid

Expiration Date: 102626
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 3000.41
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By: Benson Chan 102623

Reviewed By: Pedro L. Rentas 102623

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Expanded			SDS Information			NIST SRM
							Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Uncertainty +/- (µg/mL)	(Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	
1. Manganese(II) nitrate tetrahydrate (Mn)	58125	071123	0.1000	300.0	0.084	1000	10000.1	1000.0	2.1	20694-39-7	5 mg/m3	ori-rat >300mg/kg	3132





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:

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 balances that are calibrated with weights traceable to NIST (see above).
- * Standards are certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number: 57082
Lot Number: 100923
Description: Lead (Pb)

Solvent: 24002546 Nitric Acid

Lot #

R: 12/20/23 MS747

Formulated By:	Lawrence Barry
	100923
Reviewed By:	Pedro L. Rentas
	100923

Expiration Date: 100926
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

2% 60.0 Nitric Acid
(mL)

Weight shown below was diluted to (mL): 3000.41 0.06 Flask Uncertainty

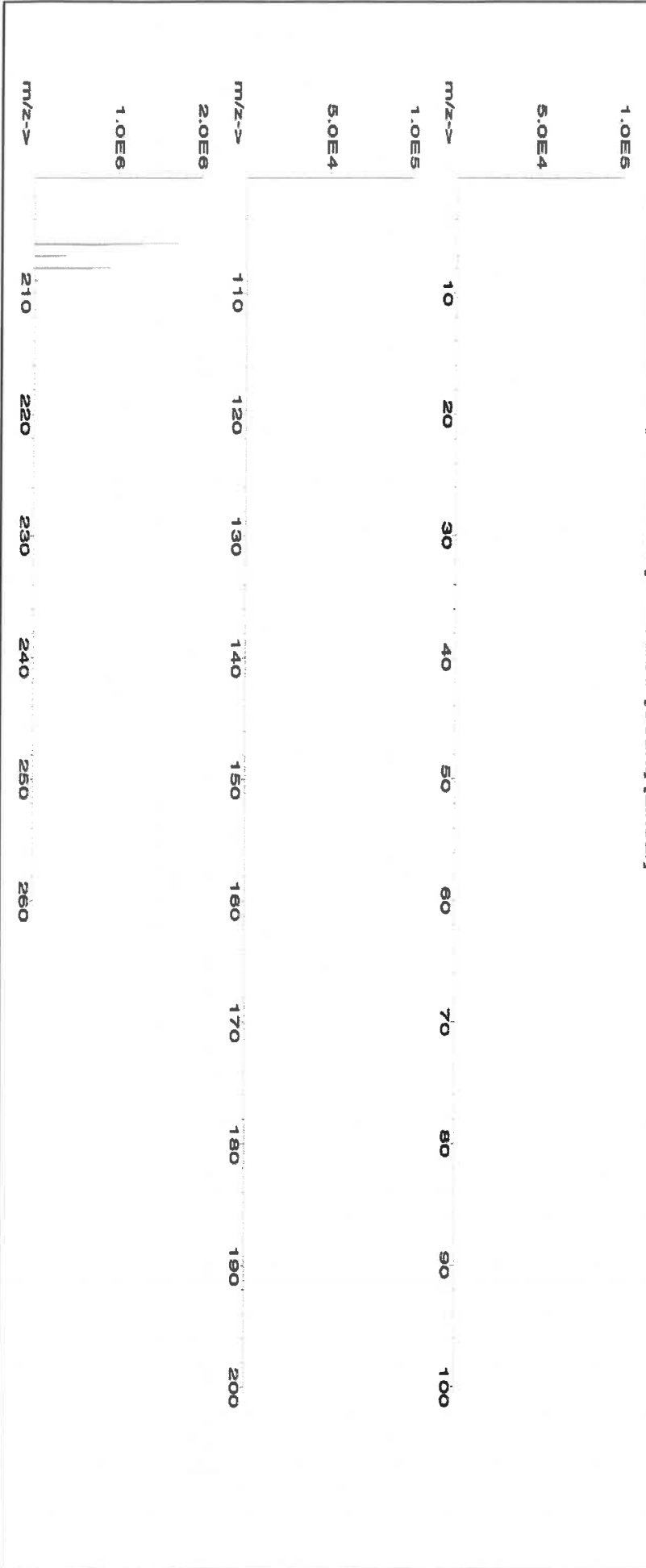
Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded		NIST SRM
										Uncertainty	+/- (µg/mL)	

SDS Information

(Solvent Safety Info. On Attached pg.)
CAS# OSHA PEL (TWA) LD50

1. Lead(II) nitrate (Pb) IN029 Pb0122016A1 1000 99.999 0.10 62.5 4.80071 4.80077 1000.0 2.0 10099-74-8 0.05 mg/m3 Intyms-ret 89 mg/kg 3128

[1] Spectrum No. 1 [14.144 sec]:58082.D# [Count] [Linear]





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	Ba	<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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number: **57028**
Lot Number: **091223**
Description: **Nickel (NI)**

Lot # **24002546**
Solvent: **Nitric Acid**

Expiration Date: **091226**

Recommended Storage: **Ambient (20 °C)**

Nominal Concentration (µg/mL): **1000**

NIST Test Number: **6U7B**

Volume shown below was diluted to (mL): **2000.02**

Balance Uncertainty: **5E-05**

Flask Uncertainty: **0.056**

2.0%

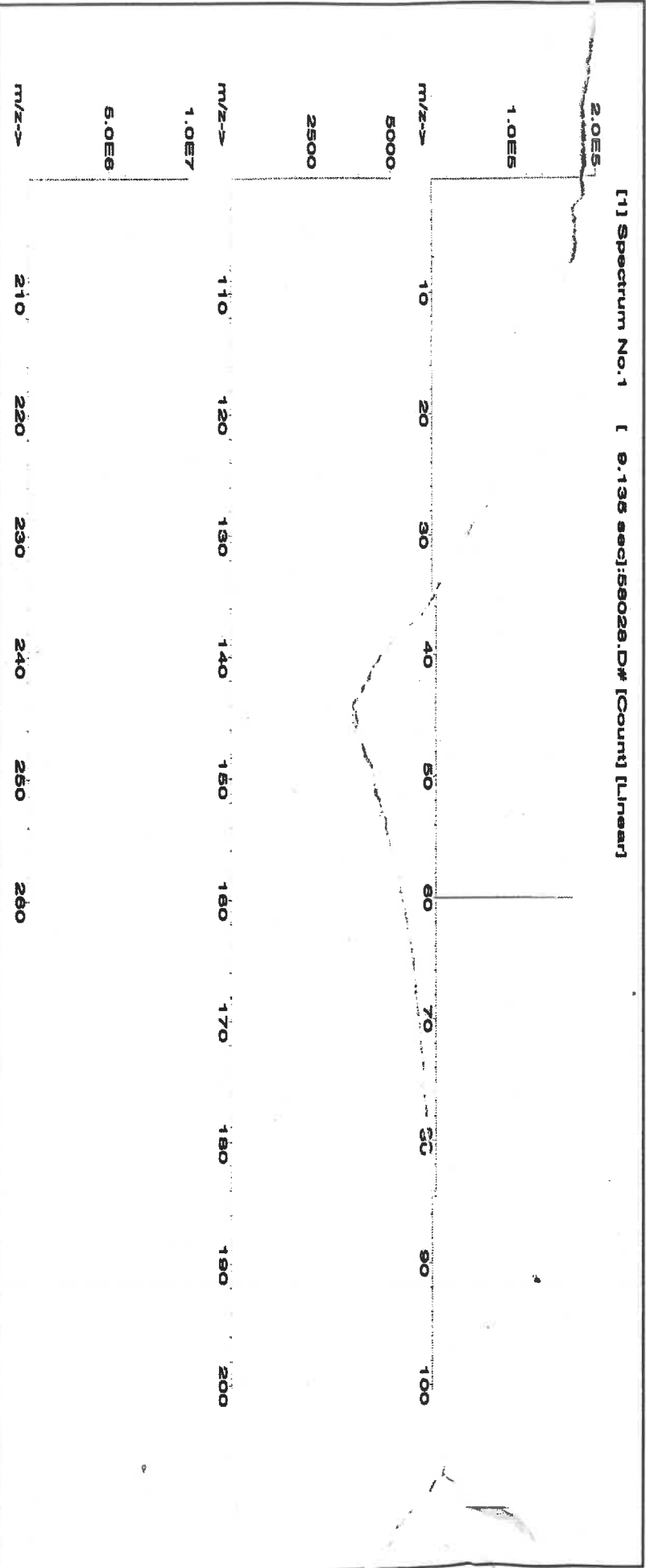
40.0 (mL)

Nitric Acid

Formulated By:	<i>Lawrence Barry</i>	091223
Reviewed By:	<i>Pedro L. Renteria</i>	091223

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty (mL)	Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
----------	-------------	------------	-----------------	-------------------	------------------	--------------	-----------------------	-----------------------	---------------------	----------------------------------	------	----------------	------	----------

1. Nickel(II) nitrate hexahydrate (NI) 58128 062023 0.1000 200.0 0.084 1000 10000.4 1000.0 2.2 13478-00-7 1 mg/m3 or-rel 1620 mg/kg 3136





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	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	Tb	<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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number: **58029**
Lot Number: **071723**
Description: **Copper (Cu)**

Lot #: **2110221**
Solvent: **Nitric Acid**

2.0%

40.0 (mL)
Nitric Acid

Formulated By:	Benson Chan	071723
Reviewed By:	Pedro L. Ruelas	071723

Expiration Date: **071726**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**

NIST Test Number: **6L7B**

Volume shown below was diluted to (mL): **2000.02**
Balance Uncertainty: **5E-05**
Flask Uncertainty: **0.058**

SDS Information

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
----------	-------------	------------	-----------------	-------------------	------------------	-----------------------	-----------------------	---------------------	----------------------------------	------	----------------	------	----------

1. Copper(II) nitrate trihydrate (Cu) 58129 022723 0.1000 200.0 0.084 1000 10000.5 1000.0 2.2 10031-43-3 1 mg/m3 or rat 794 mg/kg 3114

[1] Spectrum No.1 [33.422 sec]:58029.D# [Count] [Linear]

1.0E6	m/z-->	10	20	30	40	50	60	70	80	90	100
5.0E5	m/z-->	110	120	130	140	150	160	170	180	190	200
2.5E7	m/z-->	210	220	230	240	250	260				



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	Bu	<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	Ru	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	La	<0.2	Hg	<0.2	P	<0.02	Sr	<0.02	S	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	Pb	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	Ta	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	T	Au	<0.02			Nd	<0.02	K	<0.2	Sc	<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 certified (+/-) 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).



M5768 M5769
Certified Reference Material CRM
R: 1/13/24



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58112
091823
Magnesium (Mg)

Solvent: 24002546 Nitric Acid

Lot #

Expiration Date:

091826

2% 40.0 (mL) Nitric Acid

Recommended Storage:
Nominal Concentration (µg/mL):

Ambient (20 °C)
10000

M5768 M5769

NIST Test Number:

6UTB

5E-05 Balance Uncertainty

BP R: 1/13/24

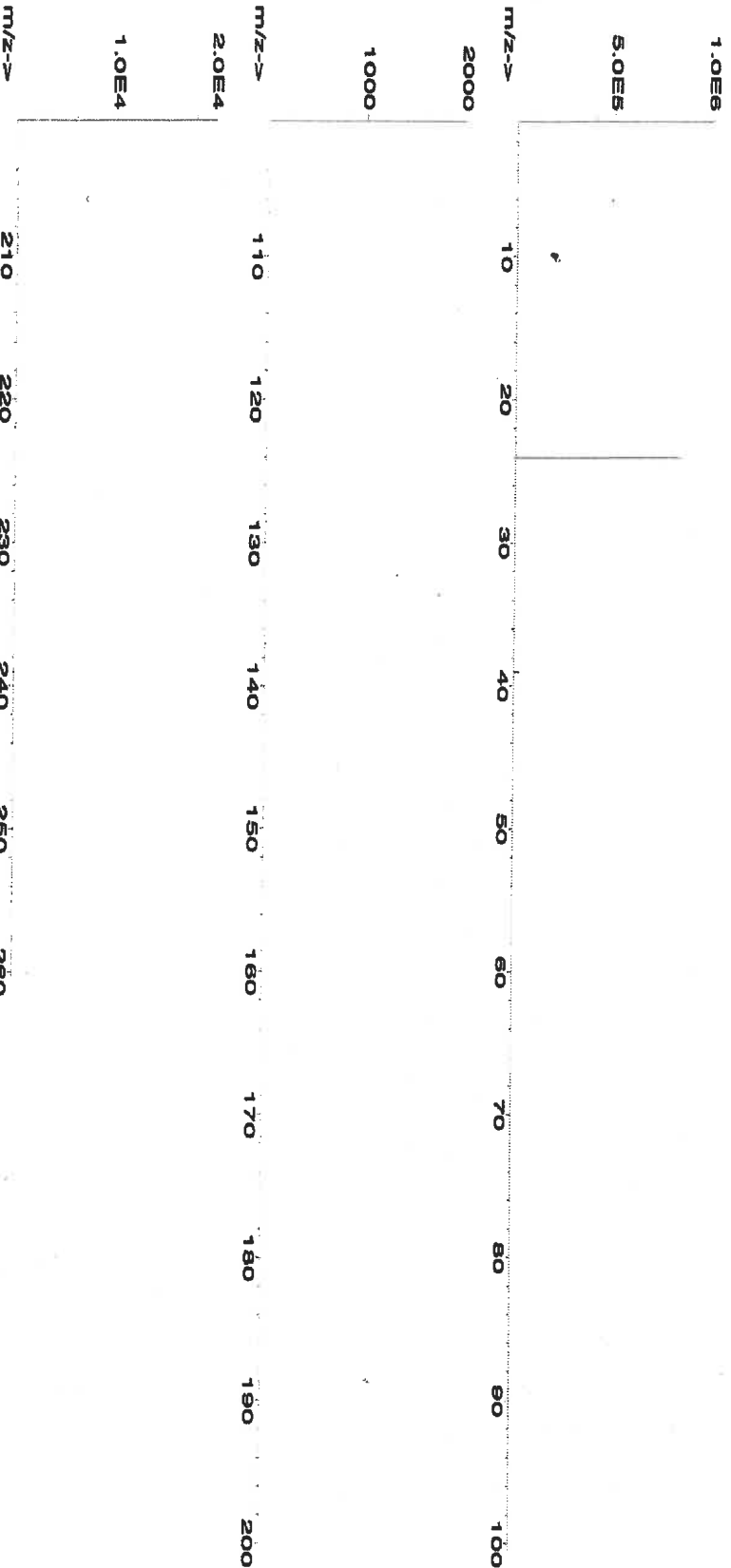
Weight shown below was diluted to (mL): 2000.02 0.058 Flask Uncertainty

Compound

Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Expanded	SDS Information	NIST
RW#	Number	Conc. (µg/mL)	(%)	Purity (%)	Weight (g)	Weight (g)	Conc. (µg/mL)	Uncertainty +/- (µg/mL)	(Solvent Safety Info. On Attached pg.)	SRM

1. Magnesium nitrate hexahydrate (Mg) IN030 M500222A1 10000 99.999 0.10 8.51 234.9118 234.9126 10000.0 20.0 13446-18-9 NA or-lat 5440 mg/kg 3131a

[1] Spectrum No. 1 [19.923 sec]: 58112.D# [Count] [Linear]





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:

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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number: 57004
Lot Number: 102523
Description: Beryllium (Be)

Lot # 24002546
Solvent: Nitric Acid

Expiration Date:

102526

2.0%

40.0 (mL)

Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL): 2000.02

5E-05 Balance Uncertainty

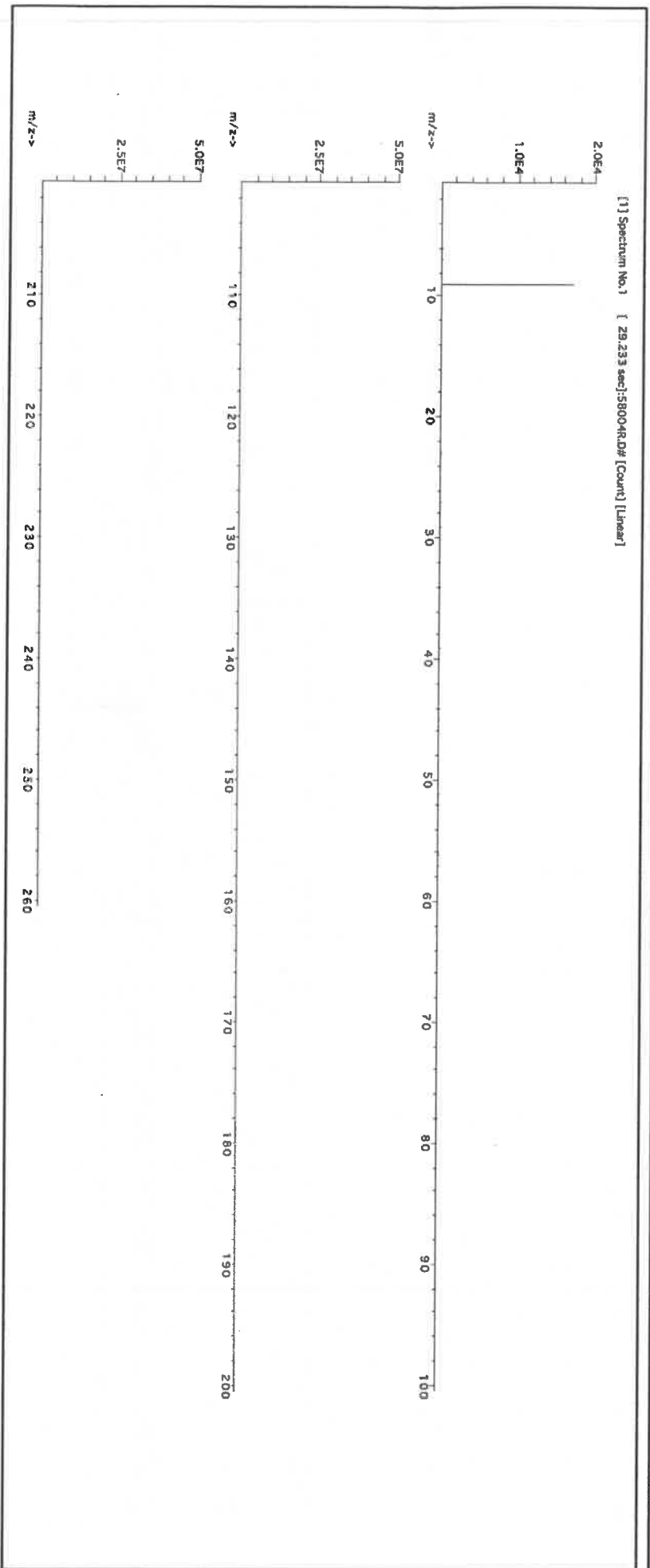
0.058 Flask Uncertainty

Formulated By:	Benson Chan	102523
Reviewed By:	Pedro L. Rentas	102523

SDS Information

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)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Beryllium nitrate (Be)	58104	091423	0.1000	200.0	0.084	1000	10001.5	1000.0	2.2	13597-99-4	0.2µg/m3	intrinsc-rat 3.16mg/kg	NA
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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS ($\mu\text{g/mL}$)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<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	Tc	<0.02	U	<0.02
As	<0.02	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Ti	<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	<0.02	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	<0.02	Sc	<0.02	Ta	<0.02	Tl	<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 certified (+/-) 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).



Certified Reference Material CRM

CERTIFIED WEIGHT REPORT:

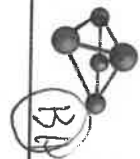
Part Number: 57050
Lot Number: 071123
Description: Tin (Sn)

Solvents: 21110221 Nitric Acid
22D0562008 Hydrochloric acid

Lot #

R-02509124

M599



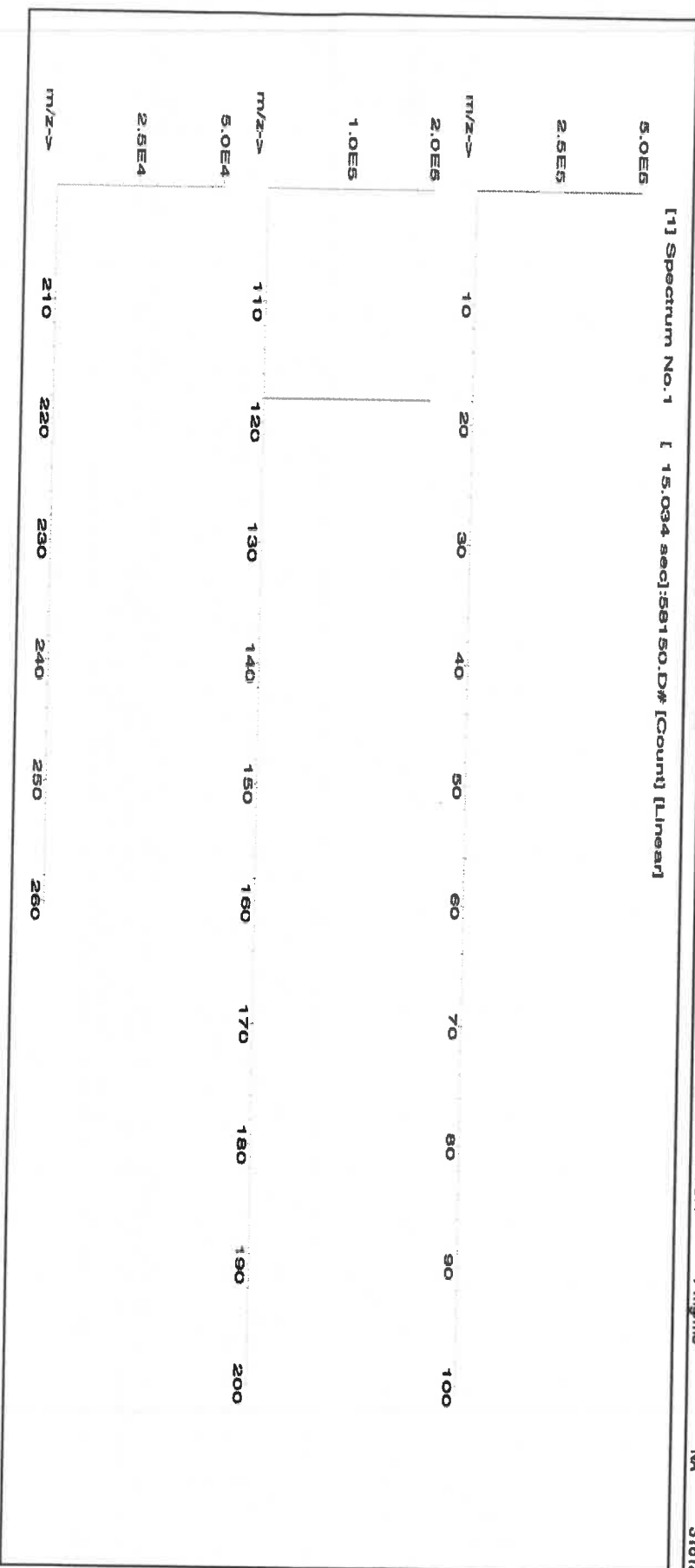
Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 499.93
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By:	Benson Chan	071123
Reviewed By:	Pedro L. Rientas	071123

SDS Information											NIST
Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty (%)	(Solvent Safety Info. On Attached pg.)	
RM#											

1. Ammonium hexafluoroantimonate(V) (Sn) INO10 SMD042023A1 1000 99.999 0.10 44.2 1.13107 1.13286 1001.6 2.0 16919-24-7 7 mg/m3 NA 3161a

[1] Spectrum No. 1 [15.034 sec]:56150.D# [Coun] [Linear]





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	Ti	<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	Ta	<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	Tl	<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 certified (+/-) 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).



R: 02/09/24 115800 (54)

CERTIFIED WEIGHT REPORT:

Part Number: 57027
Lot Number: 091923
Description: Cobalt (Co)

Expiration Date: 091926
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

Volume shown below was diluted to (mL): 2000.02

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Lot # 24002546
Solvent: Nitric Acid

2.0% Nitric Acid
40.0 (mL)

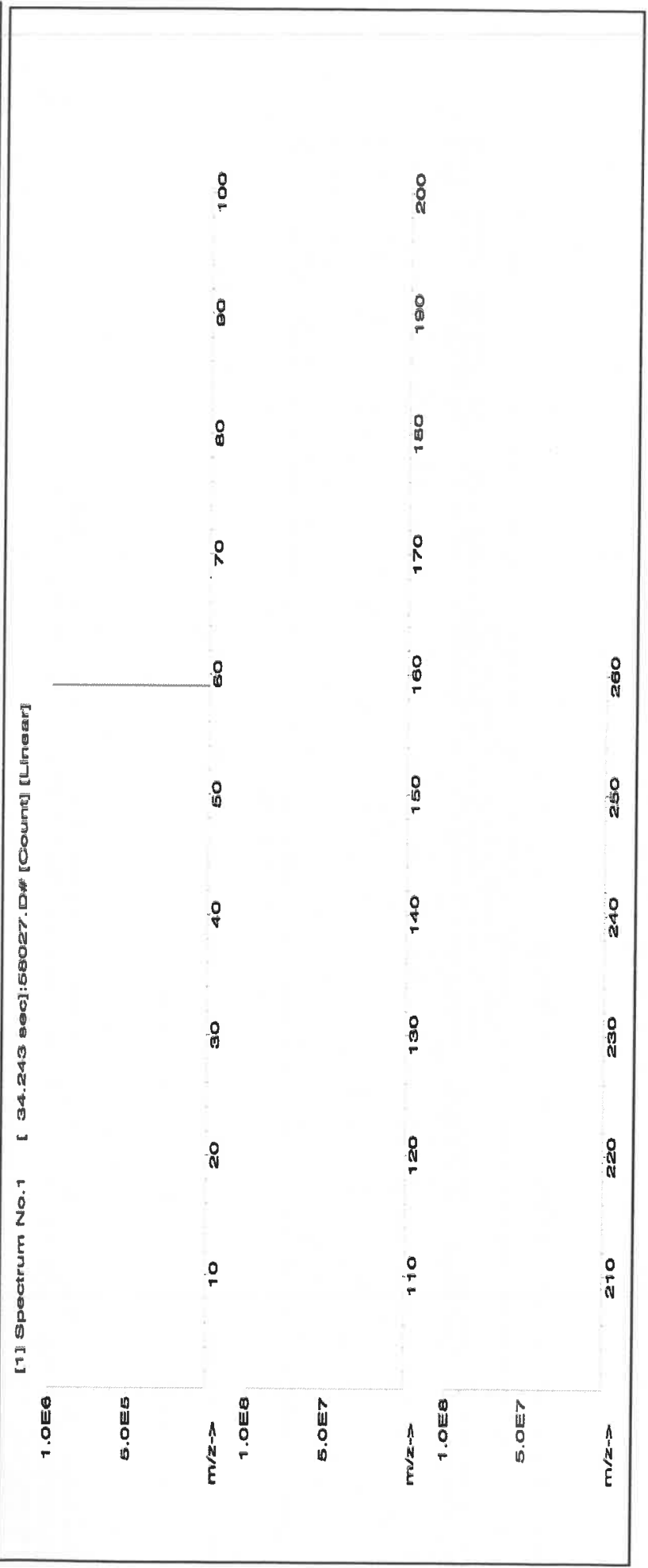
Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas

SDS Information

Expanded Uncertainty +/- (µg/mL)
Final Conc. (µg/mL)
Initial Conc. (µg/mL)
Nominal Conc. (µg/mL)
Pipette (mL)
Initial Vol. (mL)
Dilution Factor
Part Number
Lot Number

(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





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	<0.02	Os	<0.01	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	<0.2	Na	<0.02	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	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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57033
111323
Arsenic (As)

Lot #
Solvent:

24002546
Nitric Acid

2.0%

80.0

Nitric Acid

Expiration Date:
Recommended Storage:
Nominal Concentration (µg/mL):

111326
Ambient (20 °C)
1000

NIST Test Number:
Volume shown below was diluted to (mL):

6UTB
4000.0

5E-05
Balance Uncertainty
0.06
Flask Uncertainty

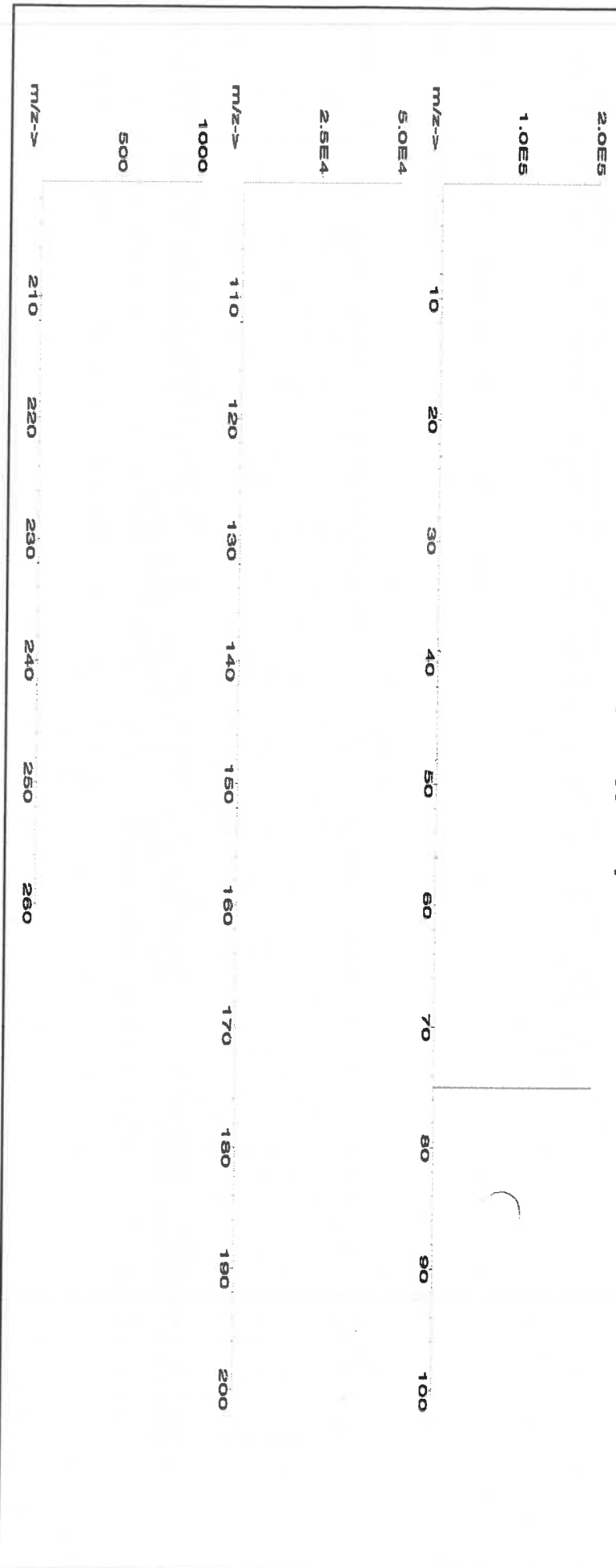
Formulated By:	Lawrence Barry	111323
Reviewed By:	Pedro L. Rendas	111323

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)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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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	or-rat 500 mg/kg	3103a
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[1] Spectrum No.1 [34.433 sec]:57033.D# [Count] [Linear]





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	Pt	<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	Tl	<0.02	Yb	<0.02
Bc	<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	Sa	<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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number: **57005**
Lot Number: **071123**
Description: **Boron (B)**

Solvent: MKB8697V Ammonium hydroxide

Lot #

AI: 021009124 MS814

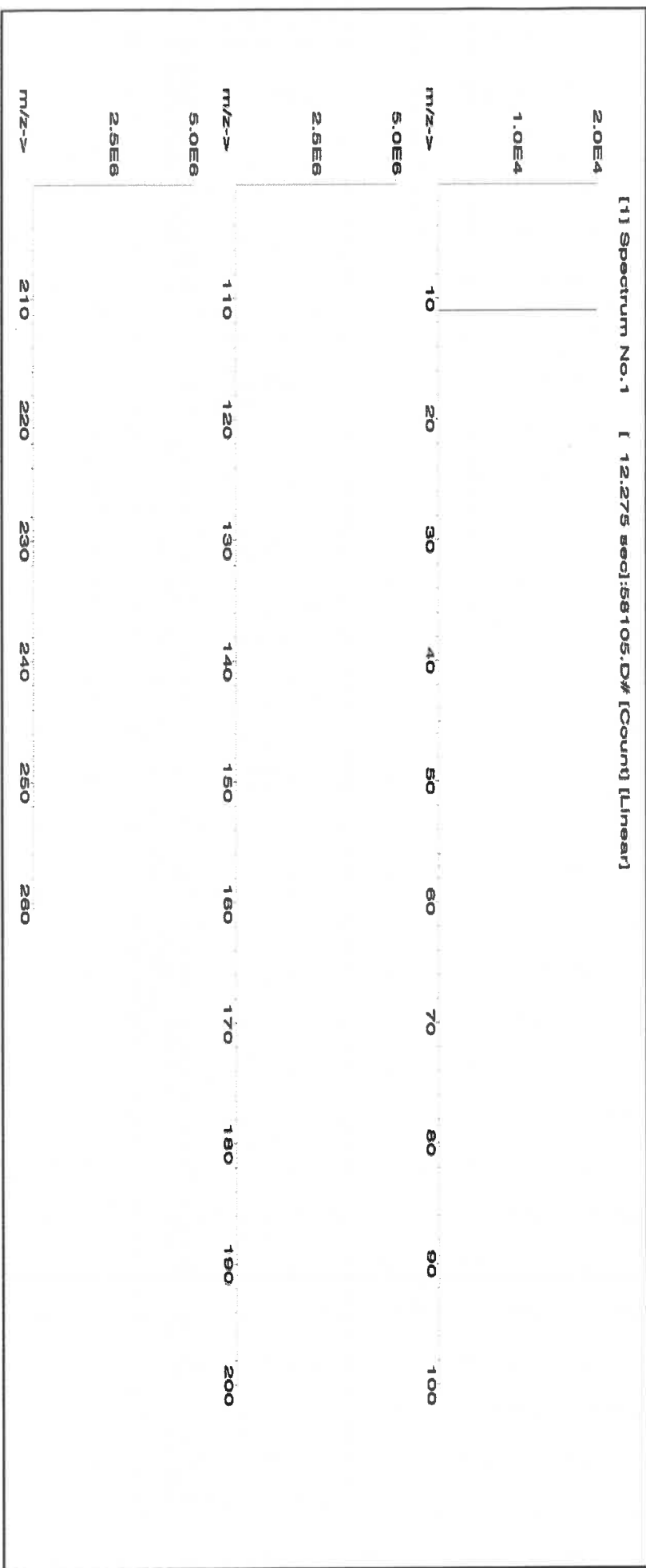
Formulated By:	Benson Chan
Reviewed By:	Pedro L. Rientas
071123	

Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 1999.48
5E-05 Balance Uncertainty
0.058 Flask Uncertainty
2.0% 40.0 (mL) Ammonium hydroxide

SDS Information

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)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Boric acid (B) IN018 BV082018A1 1000 99.9999 0.10 17.3 11.55772 11.56201 1000.4 2.0 10043-35-3 2 mg/m3 or-nat 2660 mg/kg 3107





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	Pt	<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	T	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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number: 57115
Lot Number: 041723
Description: Phosphorous (P)

Solvent: 21110221 Nitric Acid

Lot #

R102109124 M5815

Expiration Date: 041726
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB

2% 40.0 (mL) Nitric Acid

Weight shown below was diluted to (mL): 2000.02 0.058 Balance Uncertainty Flask Uncertainty

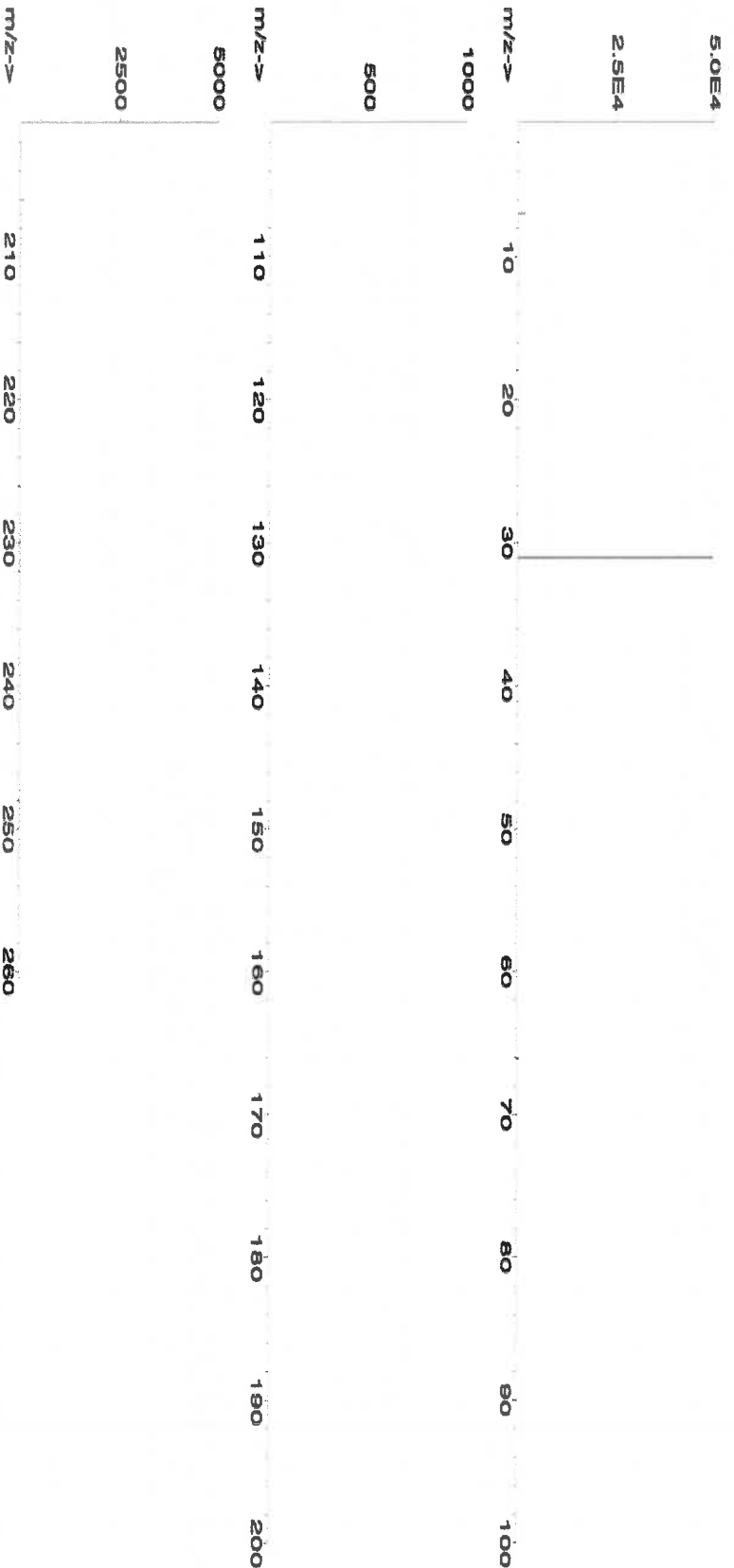
Formulated By: Lawrence Barry	041723
Reviewed By: Pedro L. Rentas	041723

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)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Ammonium dihydrogen phosphate (P) IN008 P082019A1 10000 99.999 0.10 27.5 72.7287 72.7289 10000.0 20.0 7722-76-1 5 mg/m3 or-hal->2000mg/kg 3186

[1] Spectrum No.1 [12.074 sec]:58115.D# [Count] [Linear]





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	Pt	<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:

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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number: **57016**
Lot Number: **122923**
Description: **Sulfur (S)**

Solvent: **122923** Lot #
ASTM Type 1 Water

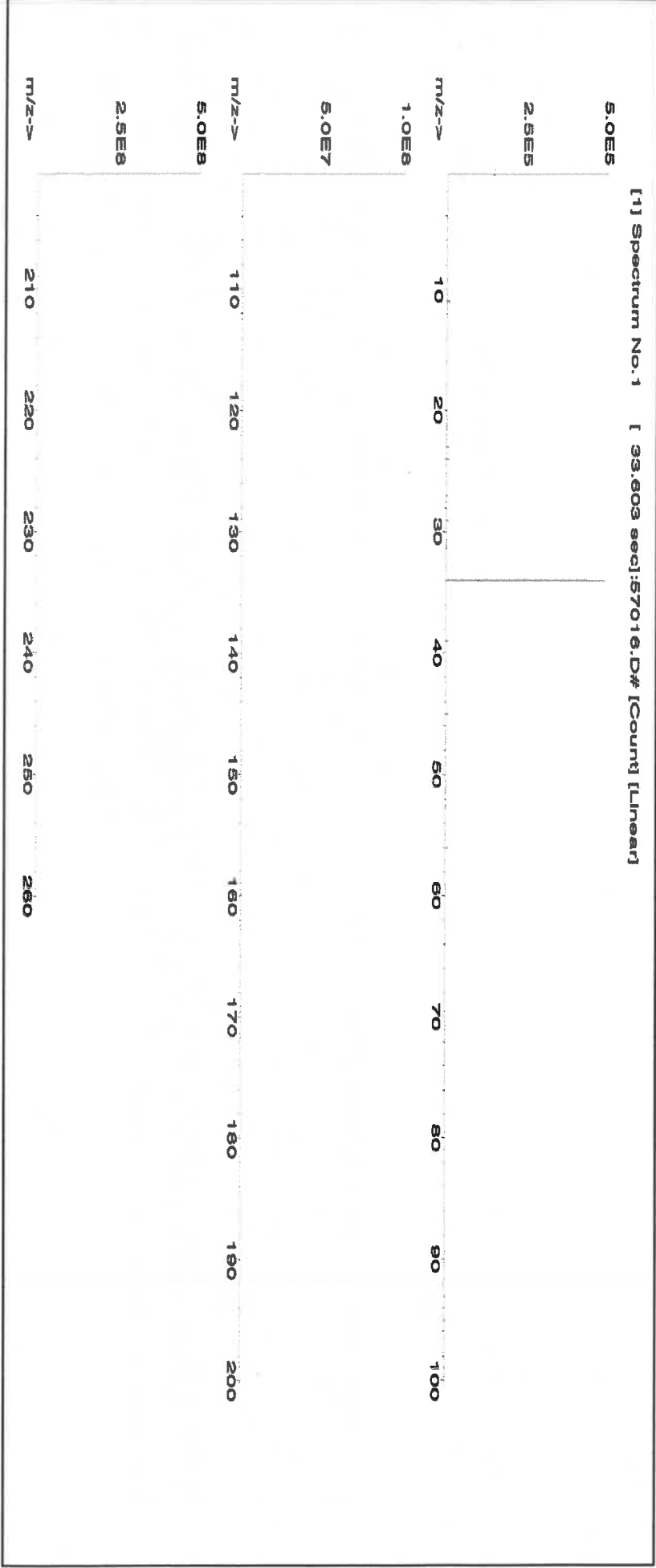
Formulated By:	Benson Chan
Reviewed By:	Pedro L. Rentas

Expiration Date: **122926**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6L7B**
Weight shown below was diluted to (mL): **4000.0**
5E-05 Balance Uncertainty
0.06 Flask Uncertainty

SDS Information													
Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay Purity (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	(Solvent Safety Info. On Attached pg.)			
										CAS#	OSHA PEL (TWA)	LD50	SRM

1. Ammonium sulfate (S) IN117 SLBR725V 1000 99.9 0.10 24.3 16.4979 16.4980 1000.0 2.0 7783-20-2 NA 3181

[1] Spectrum No. 1 [33.603 sec]:57016.D# [Count] [Linear]





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	La	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Ba	<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	Ru	<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	S	<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	Ta	<0.02	Ti	<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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number: **57116**
Lot Number: **071123**
Description: **Sulfur (S)**

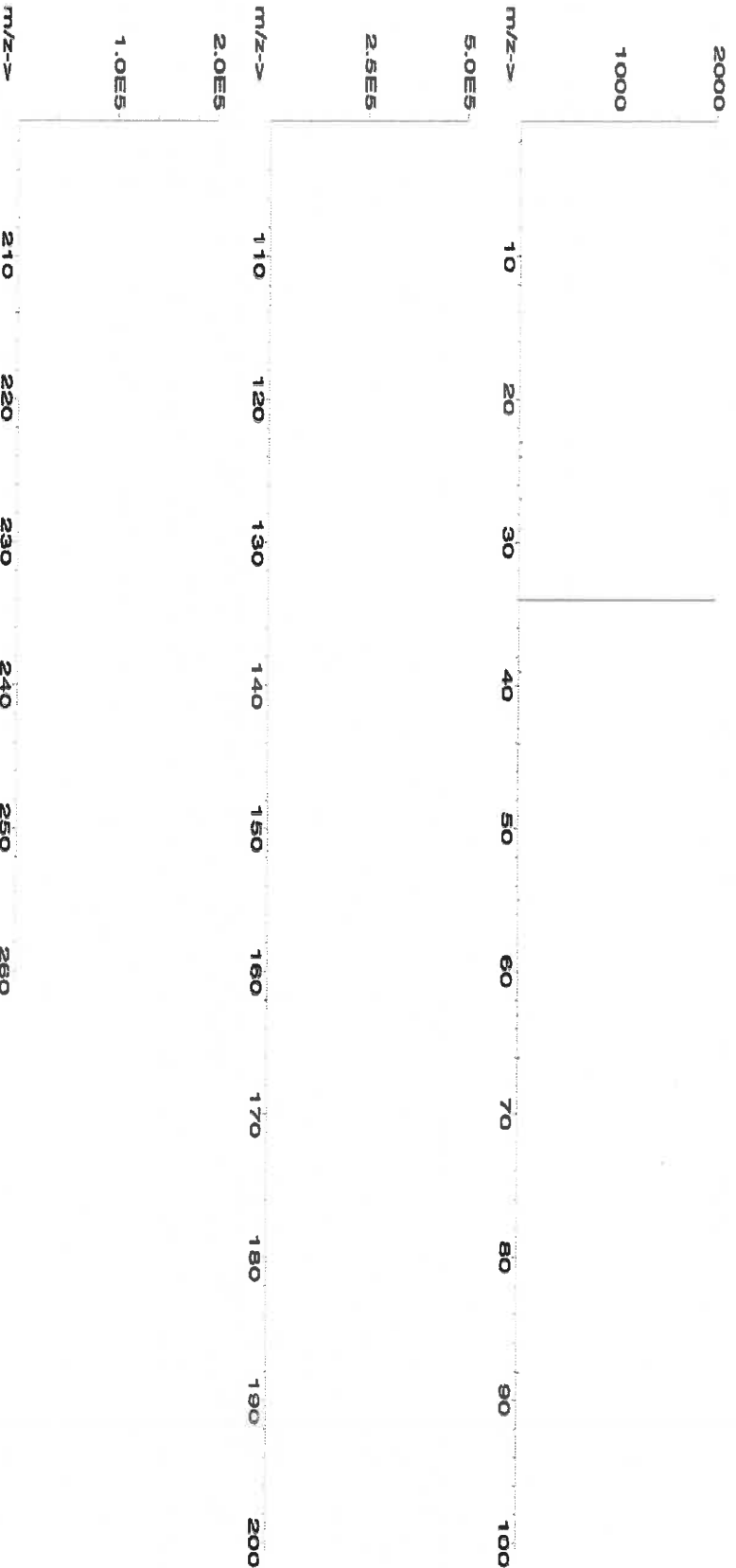
Lot #
Solvent: 071123
ASTM Type 1 Water

Formulated By:	Lawrence Barry
071123	
Reviewed By:	Pedro L. Rentas
071123	

Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 1999.48
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

SDS Information									
Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)
Ammonium sulfate (S)	IN117 SLBR725V	10000	99.9	0.10	24.3	82.4675	82.4692	10000.1	20.0
						7763-20-2	NA		oral 4250mg/kg 3181

[1] Spectrum No. 1 [24.004 sec]:58116.D# [Count] [Linear]





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	Pt	<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

Physical Characterization:

(T)= Target analyte

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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number: **57014**
Lot Number: **122023**
Description: **Silicon (Si)**

Solvent: **24002546 Nitric Acid**

Lot #

Expiration Date: **122026**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6UTB**

2% 40.0 (mL) Nitric Acid

Weight shown below was diluted to (mL): **1999.48** 0.058 Balance Uncertainty
0.058 Flask Uncertainty

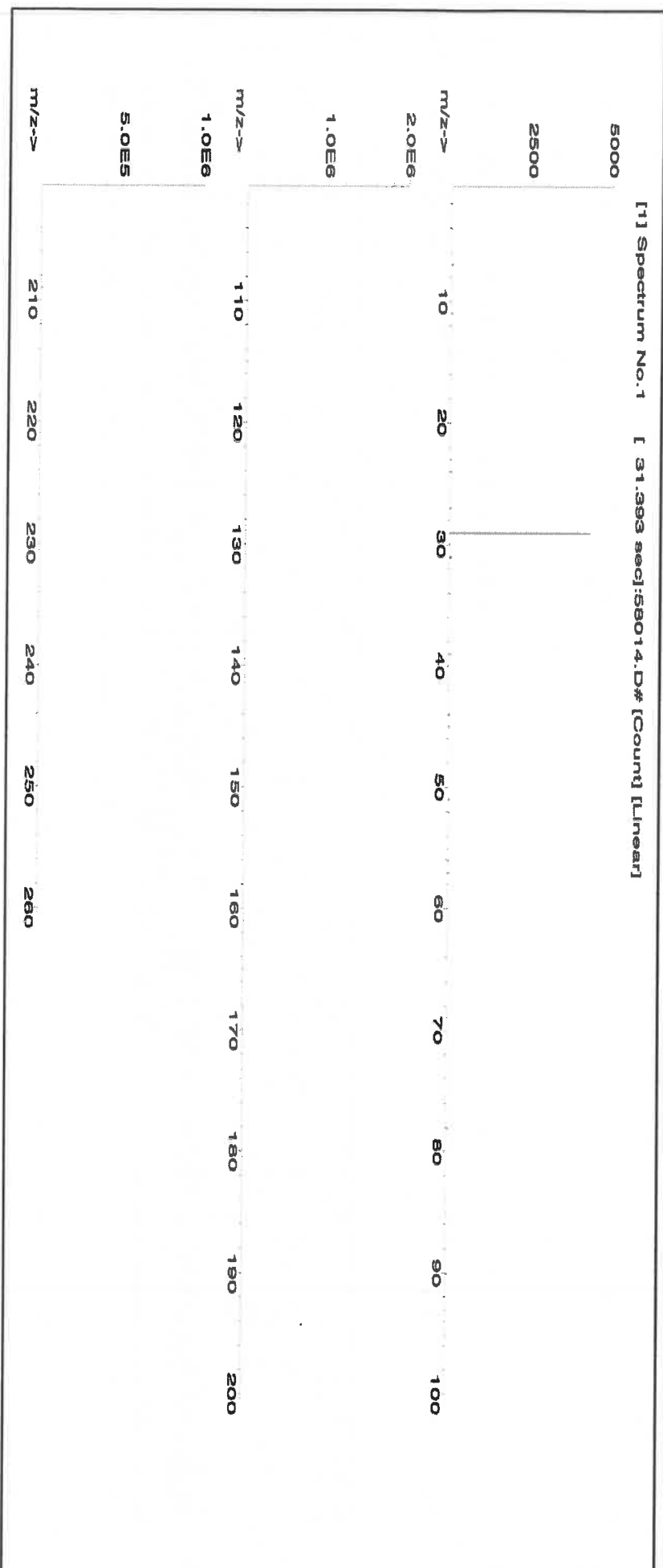
Aleah O Brady	
Formulated By:	Aleah O Brady
Reviewed By:	Pedro L. Rentas
	122023

SDS Information

Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Ammonium hexafluorosilicate (Si) IN009 S1D08022A1 1000 99.999 0.10 14.4 13.8854 13.8855 1000.0 2.0 18919-19-0 2.5 mg/m3 off-mus 70 mg/kg NA

[1] Spectrum No. 1 [31.393 sec] 58014.D# [Count] [Linear]





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	Pt	<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	Bu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Ru	<0.02	Ag	<0.02	Ti	<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	Tl	<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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number: 58030
Lot Number: 111623
Description: Zinc (Zn)

Solvent: 24002546 Nitric Acid

2% 60.0 (mL) Nitric Acid

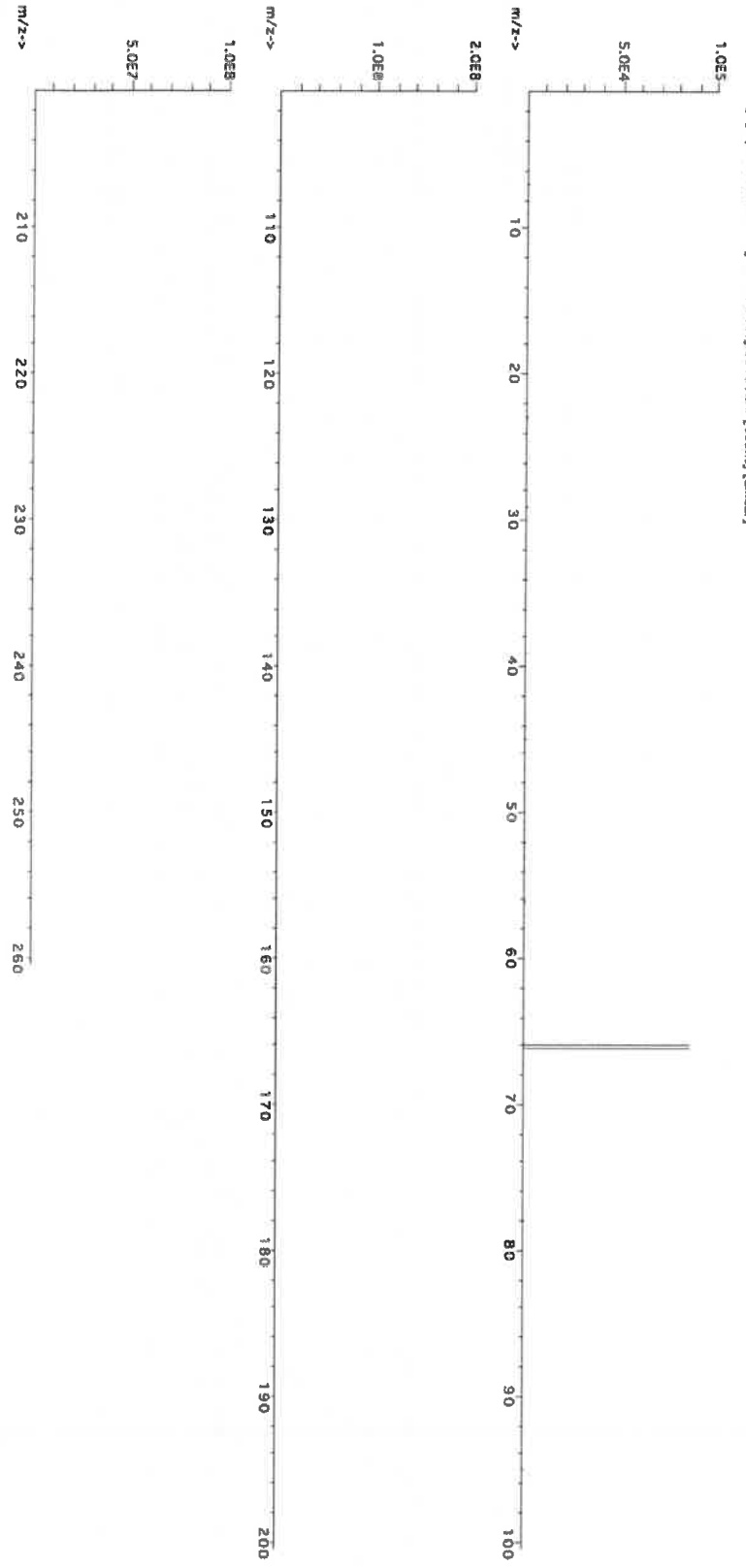
Expiration Date: 111626
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

Formulated By:	Benson Chan
Reviewed By:	Pedro L. Reintas
111623	

Weight shown below was diluted to (mL): 3000.4 0.06 Balance Uncertainty
5E-05 Flask Uncertainty

SDS Information									
Expanded					(Solvent Safety Info. On Attached pg.)				
Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)
1. Zinc nitrate hexahydrate (Zn)	IN016	ZNE03021A1	1000	99.999	0.10	24.3	12.3475	12.3502	1000.2
									2.0
									10196-16-6
									1 mg/mL
									on-rat 1190mg/kg
									3168
									NIST SRM

[1] Spectrum No.1 [31.103 sec]58130.D# [Count] [Linear]





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	Bu	<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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number: **57015**
Lot Number: **091123**
Description: **Phosphorous (P)**

Solvent: **24002546 Nitric Acid**

Lot #

R: 02109124 M5820

Formulated By:	Lawrence Barry
	091123
Reviewed By:	Pedro L. Rentas
	091123

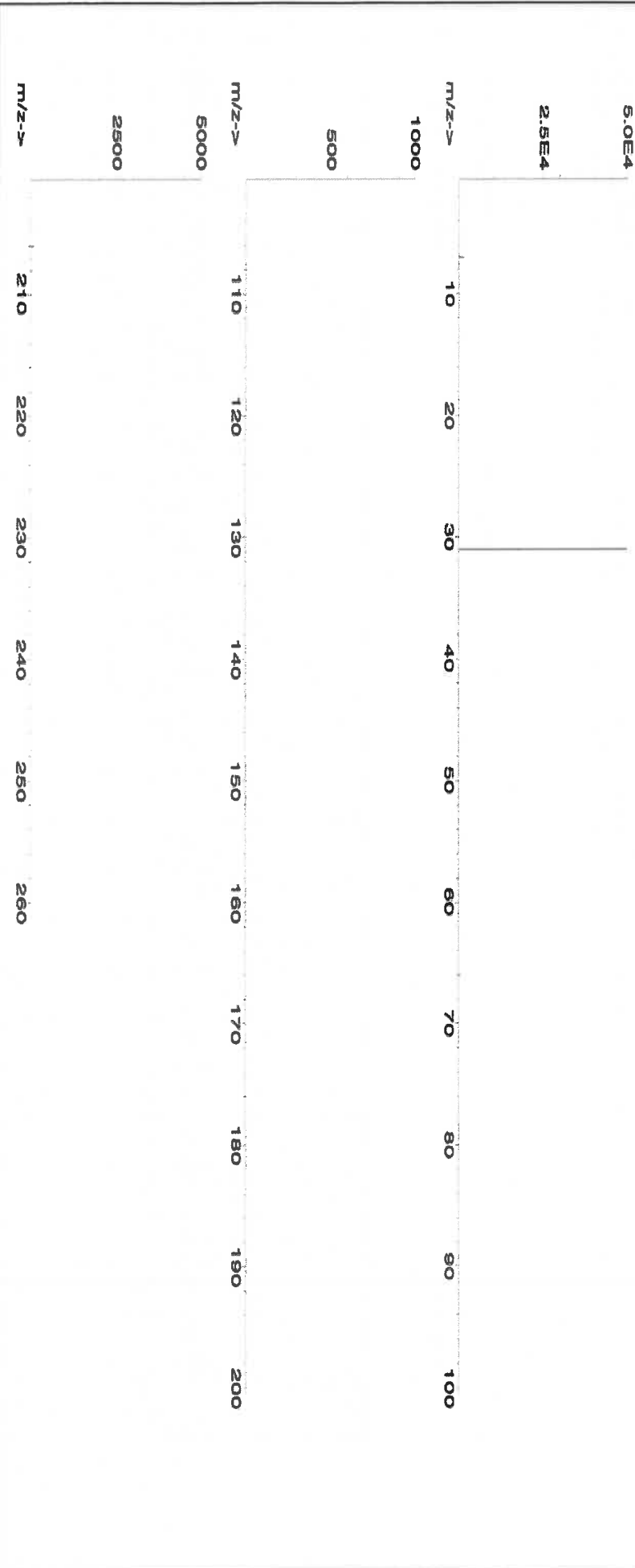
Expiration Date: 091126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6LJB
Weight shown below was diluted to (mL): 2000.02
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Ammonium dihydrogen phosphate (P) IN008 PY062019A1 1000 99.999 0.10 27.5 7.2729 7.2730 1000.0 2.0 7722-76-1 5 mg/m3 xH-rat >2000mg/kg 3186

[1] Spectrum No.1 [12.074 sec]:58115.D# [Count] [Linear]





Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS ($\mu\text{g/mL}$)

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	Tc	<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	Sa	<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 certified (+/-) 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).



QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
"An ISO 9001:2015 Certified Program"

Instructions for QATS Reference Material: *Inorganic ICV Solutions*

QATS LABORATORY INORGANIC REFERENCE MATERIAL
INITIAL CALIBRATION VERIFICATION SOLUTIONS
(ICV1, ICV5, AND ICV6)

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.



M5528-32
M5953
3/30/23

(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.





QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
"An ISO 9001:2015 Certified Program"

Instructions for QATS Reference Material: Inorganic ICV Solutions

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 ($\mu\text{g/L}$) (after 10-fold dilution)	Concentration ($\mu\text{g/L}$) (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 ($\mu\text{g/L}$) (after 100-fold dilution)	Analyte	Concentration ($\mu\text{g/L}$) (after 100-fold dilution)
Hg	4.0	CN ⁻	99



CERTIFIED WEIGHT REPORT:

Part Number: **57028**

Lot Number: **041124**

Description: **Nickel (NI)**

Solvent: **24002546 Nitric Acid**

Lot #

MS961 R-1 6/11/24

2% 5.0 (mL) Nitric Acid

Expiration Date: **041127**

Recommended Storage: **Ambient (20 °C)**

Nominal Concentration (µg/mL): **1000**

NIST Test Number: **6UTB**

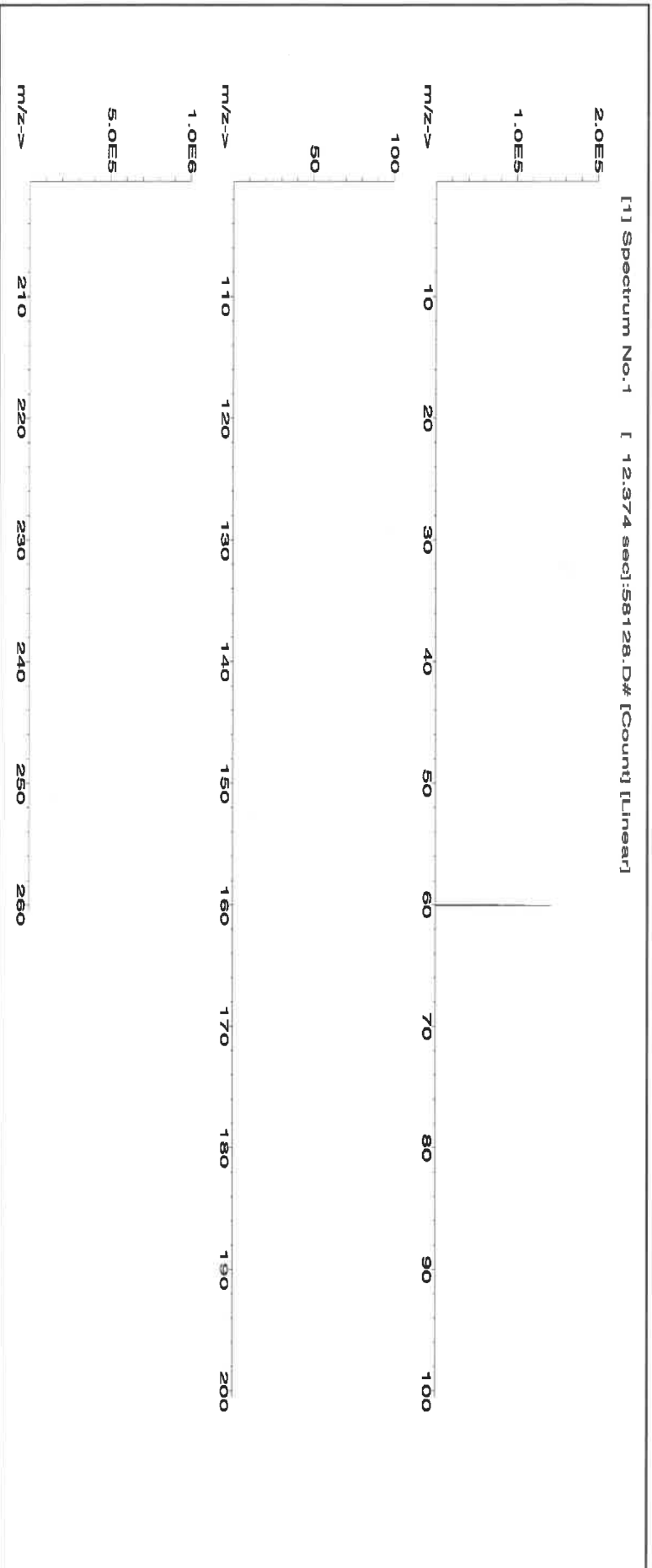
Weight shown below was diluted to (mL): **249.85** 5E-05 Balance Uncertainty 0.002 Flask Uncertainty

Formulated By:		Brian Geddes	041124
Reviewed By:		Pedro L. Rentas	041124

SDS Information

Compound	Lot	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	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	ort-rat 1620 mg/kg	3136

[1] Spectrum No.1 [12.374 sec]:58128.D# [Count] [Linear]





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	Ba	<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
Bc	<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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

MS962 **R10614124**

Lot # **24002546** Solvent: **Nitric Acid**

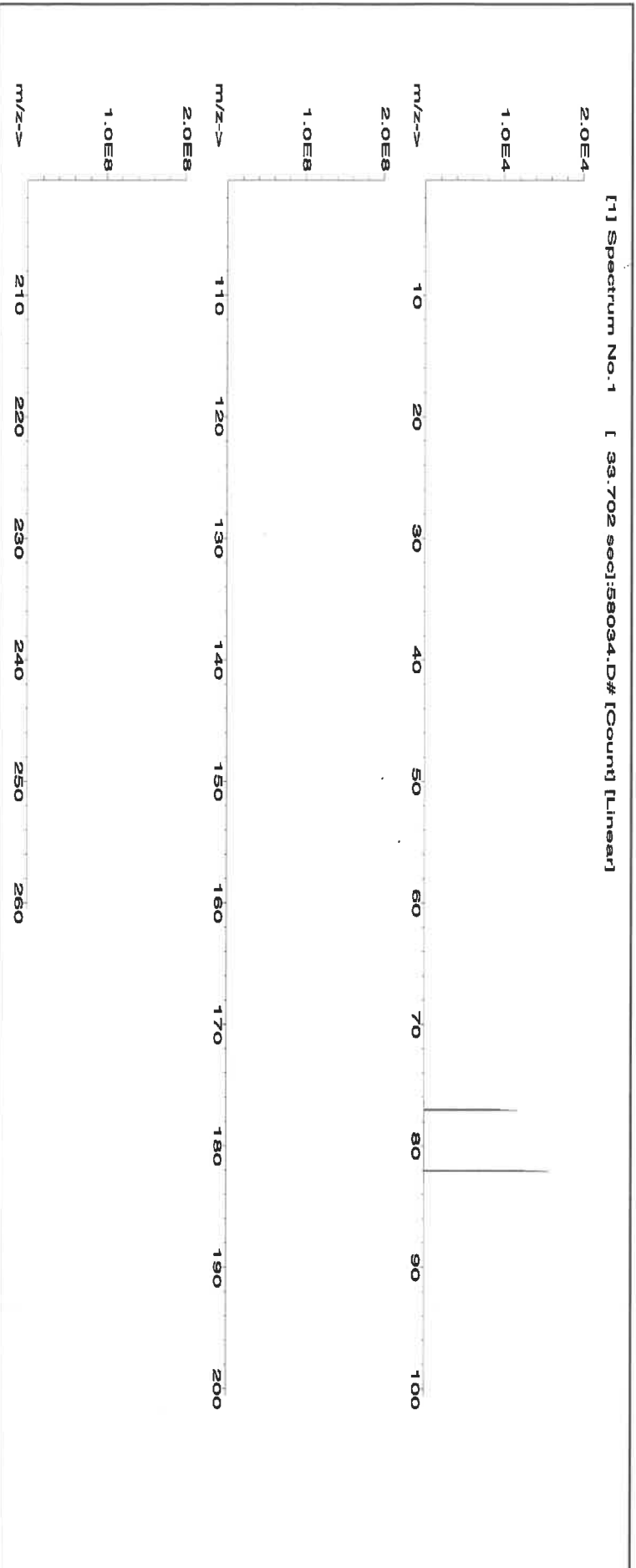
Part Number: **57034**
Lot Number: **060624**
Description: **Selenium (Se)**

2.0% 40.0 (mL) Nitric Acid

Expiration Date: **060627**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6UTB**
Volume shown below was diluted to (mL): **2000.07**
SE-05 Balance Uncertainty **0.100** Flask Uncertainty

Formulated By:	Benson Chan	060624
Reviewed By:	Pedro L. Rantas	060624

SDS Information									
Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)
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	or-tral 6700 mg/kg	31.49





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	Pt	<0.02	Se	T	Tb	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	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	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Ru	<0.02	Na	<0.2	Th	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Sr	<0.02	S	<0.02	Tm	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	Ta	<0.02	Sn	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02		<0.02	Ti	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 certified (+/-) 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).

Nitric Acid 69%
CMOS

avantor™



MS963 MS964 MS965
MS966 MS967 MS968

Material No.: 9606-03
Batch No.: 24B1362001
Manufactured Date: 2024-01-25
Retest Date: 2029-01-23
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO ₃)	69.0 – 70.0 %	69.6 %
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	< 0.2 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	< 50 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



Material No.: 9606-03
Batch No.: 24B1362001

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	3 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	1 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

 **avantorsTM**

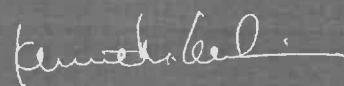


Material No.: 9606-03
Batch No.: 24B1362001

Test	Specification	Result
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For Microelectronic Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC



Ken Koehnlein
Sr. Manager, Quality Assurance

Absolute Standards, Inc.
800-368-1131
www.absolute-standards.com



Certified Reference Material CRM
M5970 M5971 R1 710124



ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://AbsoluteStandards.com

CERTIFIED WEIGHT REPORT:

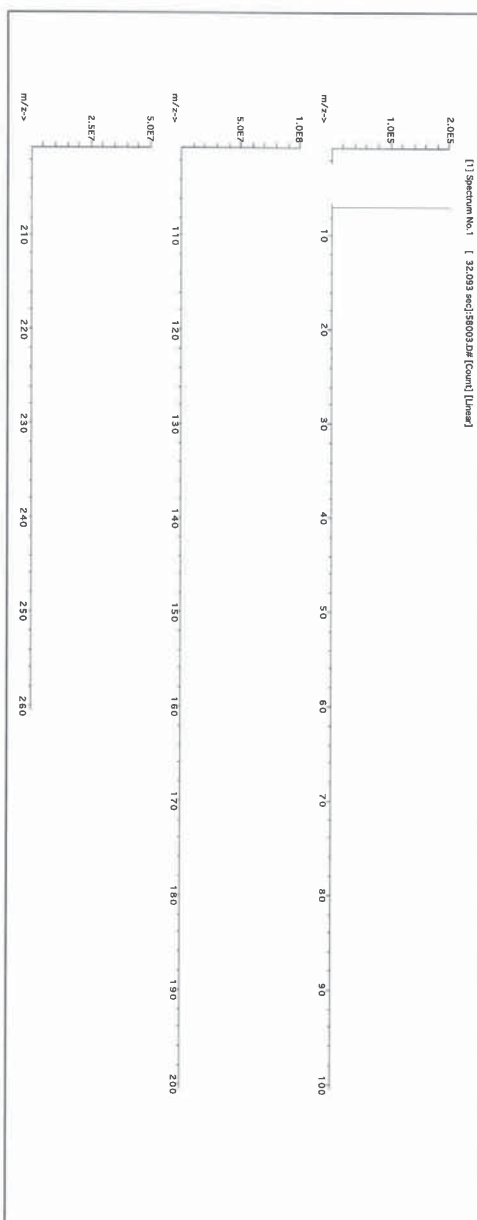
Part Number: 57003
Lot Number: 062124
Description: Lithium (Li)
Expiration Date: 06/127
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 250.11
SE-05 Balance Uncertainty
0.016 Flask Uncertainty

Lot # 24002546
Solvent: Nitric Acid

2.0% 5.0 (mL) Nitric Acid

Formulated By:	Giovanni Esposito	062124
Reviewed By:	Pedro L. Parias	062124

Compound		Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty	Initial Conc. (µg/mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty	SDS Information	NIST
1. Lithium nitrate (Li)		58103	070622	0.1000	25.0	0.004	1000	1000.0	10000.4	1000.0	2.0	7790-68-4 5 mg/mL 3 or-hat 1428 mg/kg	NA





Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)															
Al	<0.02	Ca	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pb	<0.02	Se	<0.02
Sb	<0.02	Ce	<0.2	Er	<0.02	In	<0.02	Mg	<0.02	Nb	<0.02	Rb	<0.02	Si	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	Ir	<0.02	Mn	<0.02	Os	<0.02	Sb	<0.02	Ag	<0.02
Ba	<0.02	Cr	<0.02	Gd	<0.02	Te	<0.2	Hg	<0.2	Pd	<0.02	Sn	<0.02	Nd	<0.2
Be	<0.01	Cr	<0.02	Ga	<0.02	Ta	<0.02	K	<0.02	P	<0.02	Sm	<0.02	Sr	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	Tb	<0.02	Mo	<0.02	Pr	<0.2	So	<0.02	Sc	<0.02
B	<0.02	Co	<0.02	Au	<0.02	Ti	<0.02	Nd	<0.02	K	<0.2	So	<0.02	Ta	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

[Signature]

- * 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 certified (+/-) 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).

Certificate of Analysis

M5976, M5977

R: 02/22/24

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: 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:

$$X_{CRM/RM} = \sum (w_i) (X_i)$$

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.

$$w_i = (1/u_{char i}^2) / (\sum (1/u_{char i}^2))$$

$$CRM/RM \text{ Expanded Uncertainty } (\pm) = U_{CRM/RM} = k (u_{char}^2 + u_{bb}^2 + u_{lts}^2 + u_{ts}^2)^{1/2}$$

k = coverage factor = 2

$u_{char} = [\sum (w_i)^2 (u_{char i}^2)]^{1/2}$ 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

$$CRM/RM \text{ Expanded Uncertainty } (\pm) = U_{CRM/RM} = k (u_{char a}^2 + u_{bb}^2 + u_{lts}^2 + u_{ts}^2)^{1/2}$$

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	<	0.000590	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,79Br16O,190Os2+,190Pt2+
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

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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



Certificate of Analysis

MS978, MS979



Refine your results. Redefine your industry.

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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).



2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution

Catalog Number: CGT1

Lot Number: T2-T1719972

Matrix: 2% (v/v) HNO₃

Value / Analyte(s): tr. HF

Starting Material: 1 000 µg/mL ea.

Starting Material: 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 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:

$X_{CRM/RM} = \sum (X_i / U_i)$

X_i = mean of Assay Method i with standard uncertainty $U_{CRM,i}$

U_i = the weighting factors for each method calculated using the inverse square of the variance

$U_i = (U_{CRM,i} / \sum (U_{CRM,i}^2))^{1/2}$

$U_{CRM,i} = (2 \sum (U_{CRM,i}^2))^{1/2}$ where $U_{CRM,i}$ are the errors from each characterization method

$k = \text{coverage factor} = 2$

$U_{CRM} = (2 \sum (U_{CRM,i}^2))^{1/2}$

$U_{CRM} = \text{long term stability standard uncertainty (storage)}$

$U_{CRM} = \text{transport stability standard uncertainty}$

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 UHPA-filtered Clean Room. An UHPA-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
M 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	<	0.000986			
O B	<	0.008929	M Ge	<	0.002146	M Os	<	0.000269	O Sr	<	0.000986			
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 Th	<	0.001341			
O Ca	<	0.000676	M In	<	0.002683	M Pr	<	0.000268	M Tl	<	0.053663			
M Cd	<	0.000268	M Ir	<	0.000269	M Pt	<	0.000536	S Tl	<				
M Co	<	0.000268	M K	<	0.001172	M Rb	<	0.000268	M Ti	<	0.000268			
M Cr	<	0.000752	O Li	<	0.000268	M Re	<	0.000268	M Tm	<	0.000268			
M Cs	<	0.000268	M Lu	<	0.000268	M Rh	<	0.000268	M U	<	0.000268			
O Cu	<	0.010890	O Mg	<	0.005445	I S	<	0.006976	M Y	<	0.002146			
M Dy	<	0.000268	O Mn	<	0.003267	M Sb	<	0.004900	M Yb	<	0.000536			
M Er	<	0.000268	M Mo	<	0.000774	O Sc	<							

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 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); K₂SiO₃ - no KF if silica not present); Organic Matrices (Dry ash at 450°C in P10 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 crystaline form).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	14 ppt
ICP-MS 48 amu	N/A	
ICP-OES 323.452 nm	0.0054 / 0.00092 µg/mL	
ICP-OES 334.941 nm	0.0038 / 0.00028 µg/mL	
ICP-OES 336.121 nm	0.0053 / 0.00034 µg/mL	
HF Note: This standard should not be prepared or stored in glass.		
		W, Mo, Co
		Nb, Ta, Cr, U
		Ce, Ar, Ni
		Ru
		(where X = Zr, Mo,
		14N17N2, 36Ar12C,
		48Ca, 196X=2
		14N16O18O,
		32S16O, 32S14N,
		N/A
		Order Interferences (underlined indicates severe)

8.0 HAZARDOUS INFORMATION

HF Note: This standard should not be prepared or stored in glass.

9.0 HOMOGENEITY

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

- 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: 800.868.6786; 540.565.3030; Fax: 540.565.3030; Email: info@inorganicventures.com

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 Kozlikowski
Manager, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul Gaines

80978



MS981

R:6/11/24



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57092
060724
Uranium (U)

Expiration Date:
Recommended Storage:
Nominal Concentration (µg/mL):
NIST Test Number:

060727
Ambient (20 °C)
1000
6UTB

Volume shown below was diluted to (mL): 2000.07

5E-05 Balance Uncertainty
0.100 Flask Uncertainty

Lot # Solvent:
24002546 Nitric Acid

2.0% Nitric Acid
40.0 (mL)

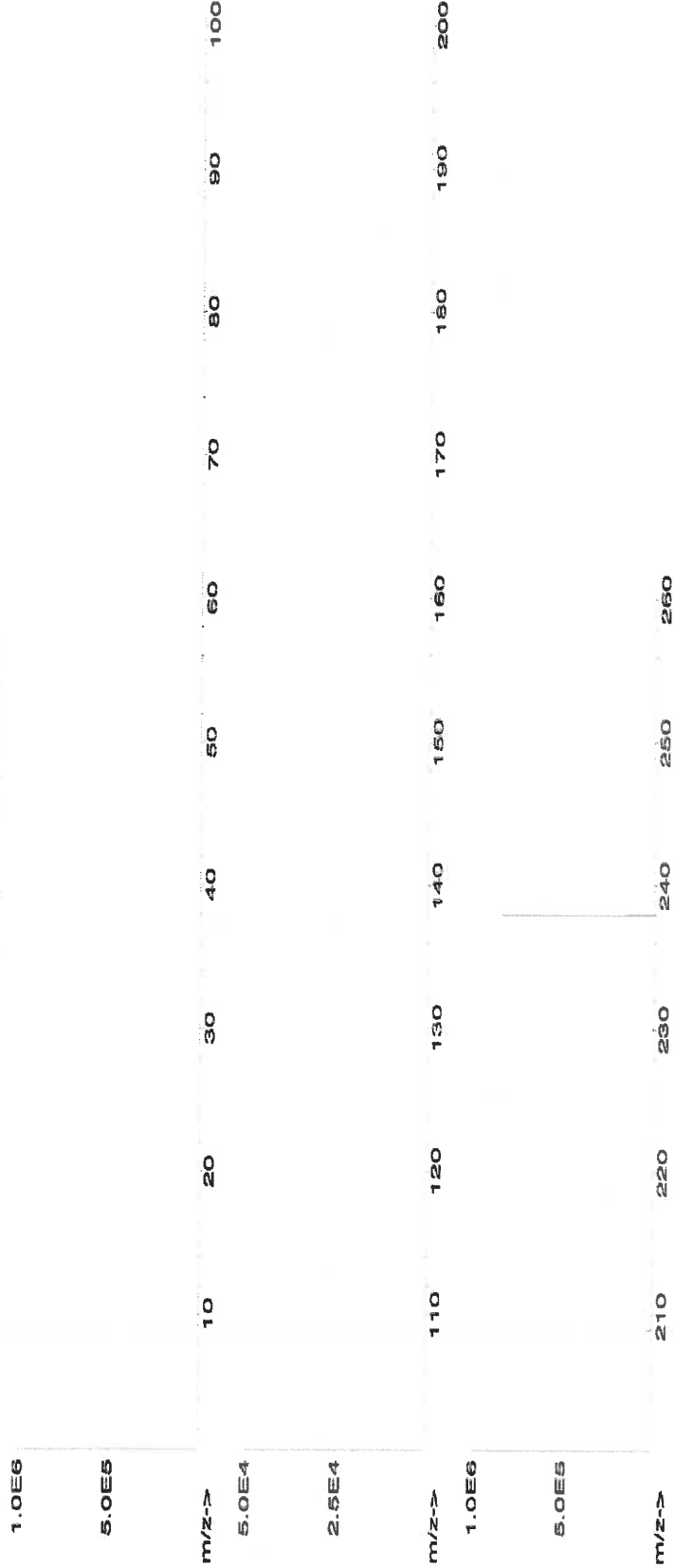
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
<i>Pedro L. Rentas</i>	
Reviewed By:	Pedro L. Rentas

SDS Information

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)	(Solvent Safety Info. On Attached pg.)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
----------	-------------	------------	-----------------	-------------------	--------------------------	-----------------------	-----------------------	---------------------	----------------------------------	--	------	----------------	------	----------

1. Uranyl nitrate hexahydrate (U) 58192 041524 0.1000 200.0 0.084 1000 10001.5 1000.0 2.2 13620-83-7 0.05 mg/m3 orl-rat 1040 mg/kg 3164

[1] Spectrum No.1 [23.264 sec]:57092.D# [Count] [Linear]





Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS ($\mu\text{g/mL}$)																			
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<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	<0.02	Os	<0.01	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	<0.02	Hg	<0.2	P	<0.2	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	<0.02	Sc	<0.2	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 certified (+/-) 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).

7236 673 3.67



45982

R: 6/11/24

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57038
031524
Strontium (Sr)

Solvent: 24002546 Nitric Acid

Expiration Date:
Recommended Storage:
Nominal Concentration (µg/mL):
NIST Test Number:

031527
Ambient (20 °C)
1000
6UTB
5E-05 Balance Uncertainty
0.100 Flask Uncertainty

Weight shown below was diluted to (mL): 2000.07

Lot #

2% 40.0 Nitric Acid
(mL)

Formulated By:	Benson Chan	031524
Reviewed By:	Pedro L. Rentas	031524

SDS Information

Expanded

Uncertainty

(Solvent Safety Info. On Attached pg.)

+/- (µg/mL)

LD50

CAS#

OSHA PEL (TWA)

Actual

Conc. (µg/mL)

Actual

Weight (g)

Target

Weight (g)

Assay

Purity (%)

Purity (%)

Nominal

Conc. (µg/mL)

Lot

Number

RM#

IN017

SR2022018A1

1000

89.997

0.10

41.2

4.85470

4.85502

1000.1

2.0

10042-76-9

NA

orl-rat >2000mg/kg

3153a

1. Strontium nitrate (Sr)

[1] Spectrum No.1 [14.495 sec]:58136.D# [Count] [Linear]

5.0E6

2.5E6

m/z-->

1.0E6

5.0E5

m/z-->

5.0E6

2.5E6

m/z-->



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	Pt	<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	<0.02	Os	<0.01	Rh	<0.02	Ag	<0.02	Ti	<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	<0.02	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	Tl	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

[Signature]

- * 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 certified (+/-) 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).

2024 JUN 7 3:58 PM



145983

R: 6/11/24

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57040
071423
Zirconium (Zr)

Expiration Date:
Recommended Storage:
Nominal Concentration (µg/mL):
NIST Test Number:

071426
Ambient (20 °C)
1000
6UTB
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Volume shown below was diluted to (mL): 2000.02

Lot # Solvent:
21110221 Nitric Acid

2.0% Nitric Acid
40.0 (mL)

Formulated By:	Benson Chan
Reviewed By:	Pedro L. Rentas

Expanded
Uncertainty
+/- (µg/mL)

Final
Conc. (µg/mL)

SDS Information
(Solvent Safety Info. On Attached pg.)

CAS# OSHA PEL (TWA) LD50

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)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Zirconyl chloride octahydrate (Zr)	58140	070621	0.1000	200.0	0.084	1000	10000.3	1000.0	2.2	13520-92-8	NA	NA	NA

[1] Spectrum No.1 [41.153 sec]:57040.D# [Count] [Linear]

1.OE6

5.OE5

m/z-->

1.OE8

5.OE7

m/z-->

1.OE8

5.OE7

m/z-->



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS ($\mu\text{g/mL}$)

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	<0.02	Os	<0.01	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	<0.2	Fe	<0.02	Hg	<0.2	P	<0.2	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	<0.02	Sc	<0.2	Ta	<0.02	Ti	<0.02	Zr	<0.02
																			T

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

[Signature]

- * 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 certified (+/-) 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).



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

M5984
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).



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:

$$X_{CRM/RM} = \sum(w_i)(X_i)$$

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:

$$w_i = (1/u_{char i}^2) / (\sum(1/(u_{char i}^2)))$$

$$CRM/RM \text{ Expanded Uncertainty } (k) = U_{CRM/RM} = k(u_{char}^2 + u_{bb}^2 + u_{ts}^2 + u_{ts}^2)^{1/2}$$

k = coverage factor = 2

$u_{char} = [\sum(w_i)^2(u_{char i}^2)]^{1/2}$ where $u_{char i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{ts} = 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

$$CRM/RM \text{ Expanded Uncertainty } (k) = U_{CRM/RM} = k(u_{char a}^2 + u_{bb}^2 + u_{ts}^2 + u_{ts}^2)^{1/2}$$

k = coverage factor = 2

$u_{char a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{ts} = 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 PtO 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

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 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





Certified Reference Material CRM
R: 01/03/24 M6033



ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://AbsoluteStandards.com

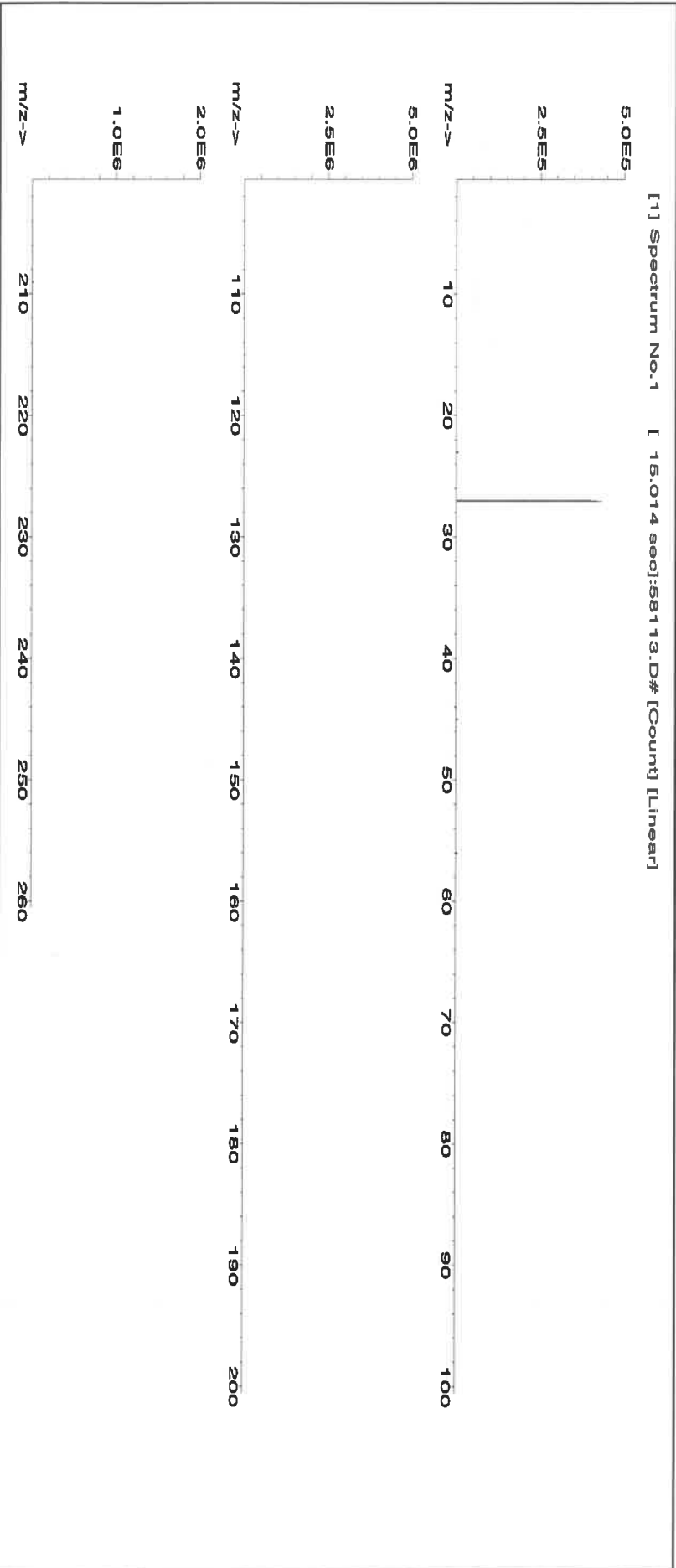
CERTIFIED WEIGHT REPORT:

Part Number: 58113
Lot Number: 011623
Description: Aluminum (Al)
Expiration Date: 011626
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6LUTB
Weight shown below was diluted to (mL): 2000.02
Solvent: 20510011 Nitric Acid
Lot #
2% 40.0 (mL) Nitric Acid
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	<i>Pedro L. Rentas</i>
	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)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Aluminum nitrate nonahydrate (Al) IN022 ALUM12021A1 10000 99.999 0.10 7.30 273.9779 274.0078 10001.1 20.0 7784-27-2 2 mg/m³ or rat 3671 mg/kg 3101a



Nitric Acid 69%
CMOS

avantor™



Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

Draw
date: 1.1 - 08/01/2023

M6034, M6037
M6035, M6038,
M6036, 1

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

 **avantorsTM**



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	16 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	10 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	3 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

 **avantorsTM**



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
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For Microelectronic Use

Country of Origin: USA

Packaging Site: Phillipsburg Mfg Ctr & DC



Jamie Croak
Director Quality Operations, Bioscience Production

Nitric Acid 69%
CMOS

avantor™



Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

Draw
date: 1.1 - 08/01/2023

M6034, M6037
M6035, M6038,
M6036, 1

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

 **avantorsTM**



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	16 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	10 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	3 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

 **avantor™**



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
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For Microelectronic Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC



Jamie Croak
Director Quality Operations, Bioscience Production

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA–ANALYZED® Reagent
For Trace Metal Analysis

 **avantor™**



Material No.: 9530–33
Batch No.: 24D1562005
Manufactured Date: 2024–03–18
Retest Date: 2029–03–17
Revision No.: 0

Received! — 08/01/2024
pater
m6039
m6040

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 ppm
ACS – Specific Gravity at 60°/60°F	1.185 – 1.192	1.192
ACS – Bromide (Br)	≤ 0.005 %	< 0.005 %
ACS – Extractable Organic Substances	≤ 5 ppm	< 1 ppm
ACS – Free Chlorine (as Cl ₂)	≤ 0.5 ppm	< 0.5 ppm
Phosphate (PO ₄)	≤ 0.05 ppm	0.03 ppm
Sulfate (SO ₄)	≤ 0.5 ppm	< 0.3 ppm
Sulfite (SO ₃)	≤ 0.8 ppm	0.3 ppm
Ammonium (NH ₄)	≤ 3 ppm	< 1 ppm
Trace Impurities – Arsenic (As)	≤ 0.010 ppm	< 0.003 ppm
Trace Impurities – Aluminum (Al)	≤ 10.0 ppb	< 5.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 3.0 ppb
Trace Impurities – Barium (Ba)	≤ 1.0 ppb	< 1.0 ppb
Trace Impurities – Beryllium (Be)	≤ 1.0 ppb	< 1.0 ppb
Trace Impurities – Bismuth (Bi)	≤ 10.0 ppb	< 10.0 ppb
Trace Impurities – Boron (B)	≤ 20.0 ppb	2.2 ppb
Trace Impurities – Cadmium (Cd)	≤ 1.0 ppb	< 1.0 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	31.0 ppb
Trace Impurities – Chromium (Cr)	≤ 1.0 ppb	0.5 ppb
Trace Impurities – Cobalt (Co)	≤ 1.0 ppb	0.2 ppb
Trace Impurities – Copper (Cu)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Gallium (Ga)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Germanium (Ge)	≤ 3.0 ppb	< 2.0 ppb
Trace Impurities – Gold (Au)	≤ 4.0 ppb	< 0.2 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 15 ppb	3 ppb

>>> Continued on page 2 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

 **avantorsm**



Material No.: 9530-33
Batch No.: 24D1562005

Test	Specification	Result
Trace Impurities – Lead (Pb)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Lithium (Li)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Magnesium (Mg)	≤ 10.0 ppb	2.2 ppb
Trace Impurities – Manganese (Mn)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Mercury (Hg)	≤ 0.5 ppb	< 0.1 ppb
Trace Impurities – Molybdenum (Mo)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Nickel (Ni)	≤ 4.0 ppb	0.2 ppb
Trace Impurities – Niobium (Nb)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Potassium (K)	≤ 9.0 ppb	< 1.0 ppb
Trace Impurities – Selenium (Se), For Information Only		< 1.0 ppb
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	< 10.0 ppb
Trace Impurities – Silver (Ag)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Sodium (Na)	≤ 100.0 ppb	2.0 ppb
Trace Impurities – Strontium (Sr)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Tantalum (Ta)	≤ 1.0 ppb	< 0.9 ppb
Trace Impurities – Thallium (Tl)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Tin (Sn)	≤ 5.0 ppb	< 0.4 ppb
Trace Impurities – Titanium (Ti)	≤ 1.0 ppb	0.2 ppb
Trace Impurities – Vanadium (V)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Zinc (Zn)	≤ 5.0 ppb	< 0.2 ppb
Trace Impurities – Zirconium (Zr)	≤ 1.0 ppb	< 0.1 ppb

>>> Continued on page 3 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

 **avantor™**



Material No.: 9530-33
Batch No.: 24D1562005

Test	Specification	Result
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For Laboratory, Research, or Manufacturing Use
Product Information (not specifications):
Appearance (clear, fuming liquid)
Meets ACS Specifications
Storage Condition: Store below 25 °C.

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC



Jamie Croak
Director Quality Operations, Bioscience Production

Nitric Acid 69%
CMOS

avantor™



Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

R: 9/2/24

Certificate of Analysis

M6080, M6081, M6082, M6083, M6084

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**TM



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	16 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	10 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	3 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

 **avantor™**



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
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For Microelectronic Use

Country of Origin: USA

Packaging Site: Phillipsburg Mfg Ctr & DC



Jamie Croak
Director Quality Operations, Bioscience Production

Nitric Acid 69%
CMOS



Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

R: 9/2/24

Certificate of Analysis

M6080, M6081, M6082, M6083, M6084

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



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	16 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	10 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	3 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

 **avantorsTM**



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
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For Microelectronic Use

Country of Origin: USA

Packaging Site: Phillipsburg Mfg Ctr & DC



Jamie Croak
Director Quality Operations, Bioscience Production

Nitric Acid 69%
CMOS



Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

R: 9/2/24

Certificate of Analysis

M6080, M6081, M6082, M6083, M6084

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



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	16 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	10 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	3 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

 **avantor™**



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
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For Microelectronic Use

Country of Origin: USA

Packaging Site: Phillipsburg Mfg Ctr & DC



Jamie Croak
Director Quality Operations, Bioscience Production



CERTIFIED WEIGHT REPORT:

Part Number: 58111
Lot Number: 122223
Description: Sodium (Na)

Solvent: 24002546 Nitric Acid

Lot #

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

<i>Aleah O Brady</i>	
Formulated By:	Aleah O Brady
Reviewed By:	Pedro L. Rentas
	122223

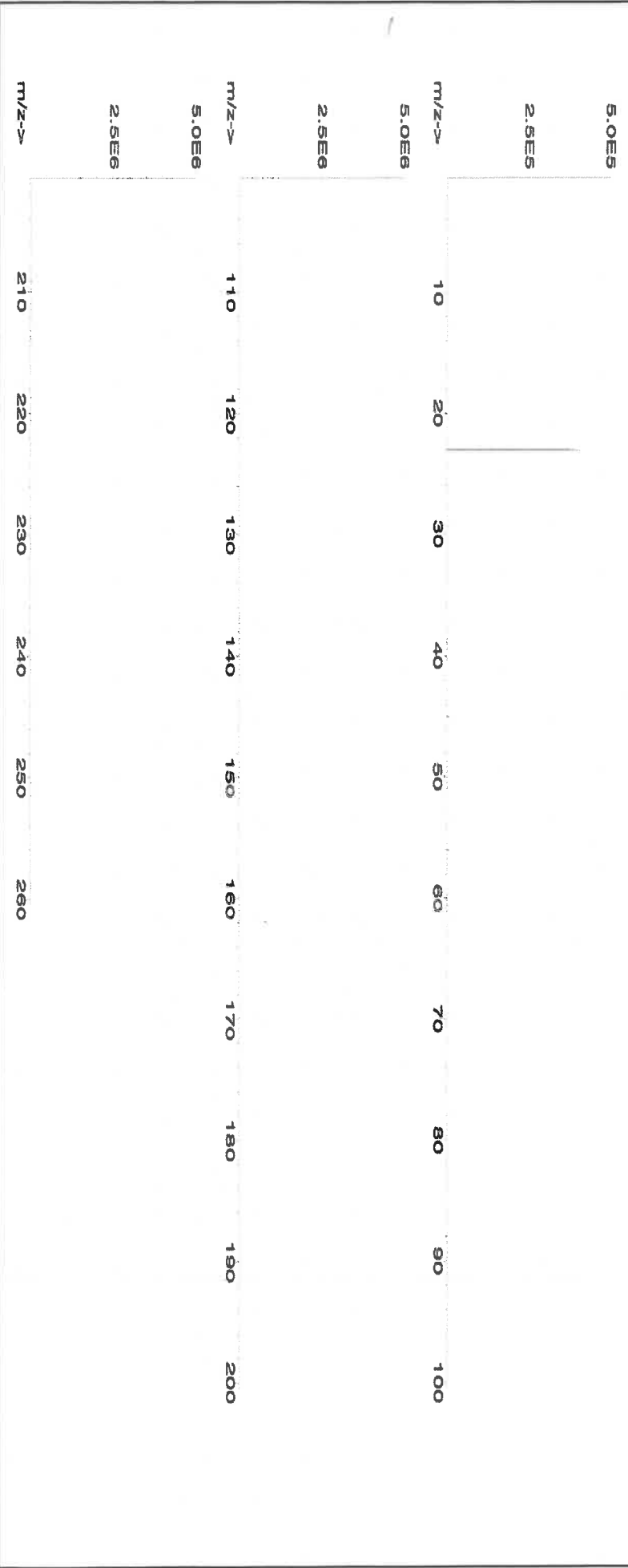
Expanded

SDS Information

Compound	Lot	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Sodium nitrate (Na) IN036 NAV01201511 10000 99.999 0.10 26.9 111.5406 111.5479 10000.7 20.0 7631-99-4 5 mg/m3 or-trat 3430 mg/kg 3152a

[1] Spectrum No.1 [8.935 sec]:58111.D# [Count] [Linear]





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	Li	<0.02	Ni	<0.02	Pt	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<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	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	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.02	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	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	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	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 certified (+/-) 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).



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57051
120523
Antimony (Sb)

Lot #
Solvent:

24002546
Nitric Acid

2.0%
60.0
Nitric Acid
(mL)

Expiration Date:

120526

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6U7B

Volume shown below was diluted to (mL):

3000.41

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

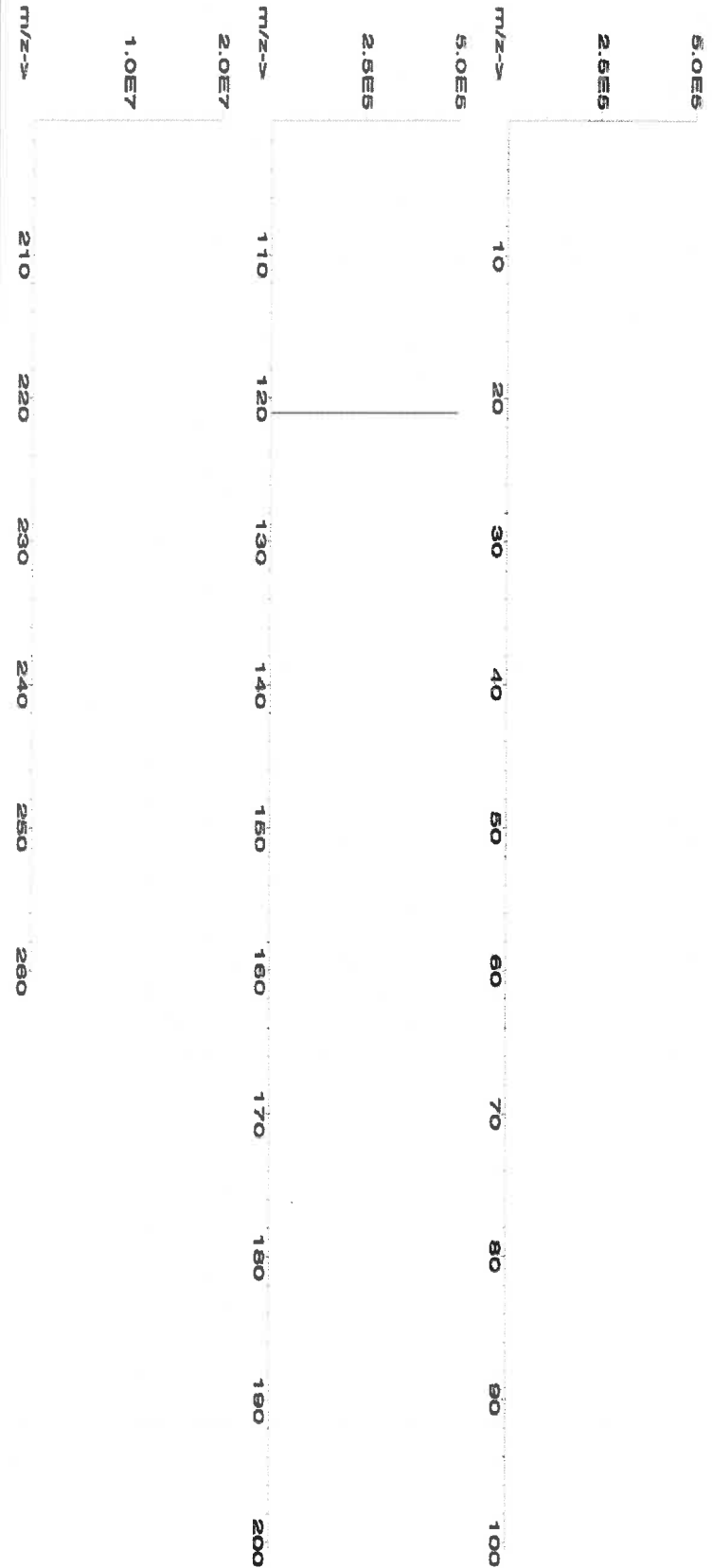
Formulated By:	Lawrence Barry	120523
Reviewed By:	Pedro L. Renteria	120523

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)	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 or-rel 7000 mg/kg 3102a

[1] Spectrum No.1 [17.964 sec]:58051.D# [Count] [Linear]





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	Pt	<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.
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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).



Certified Reference Material CRM

M6030



CERTIFIED WEIGHT REPORT:

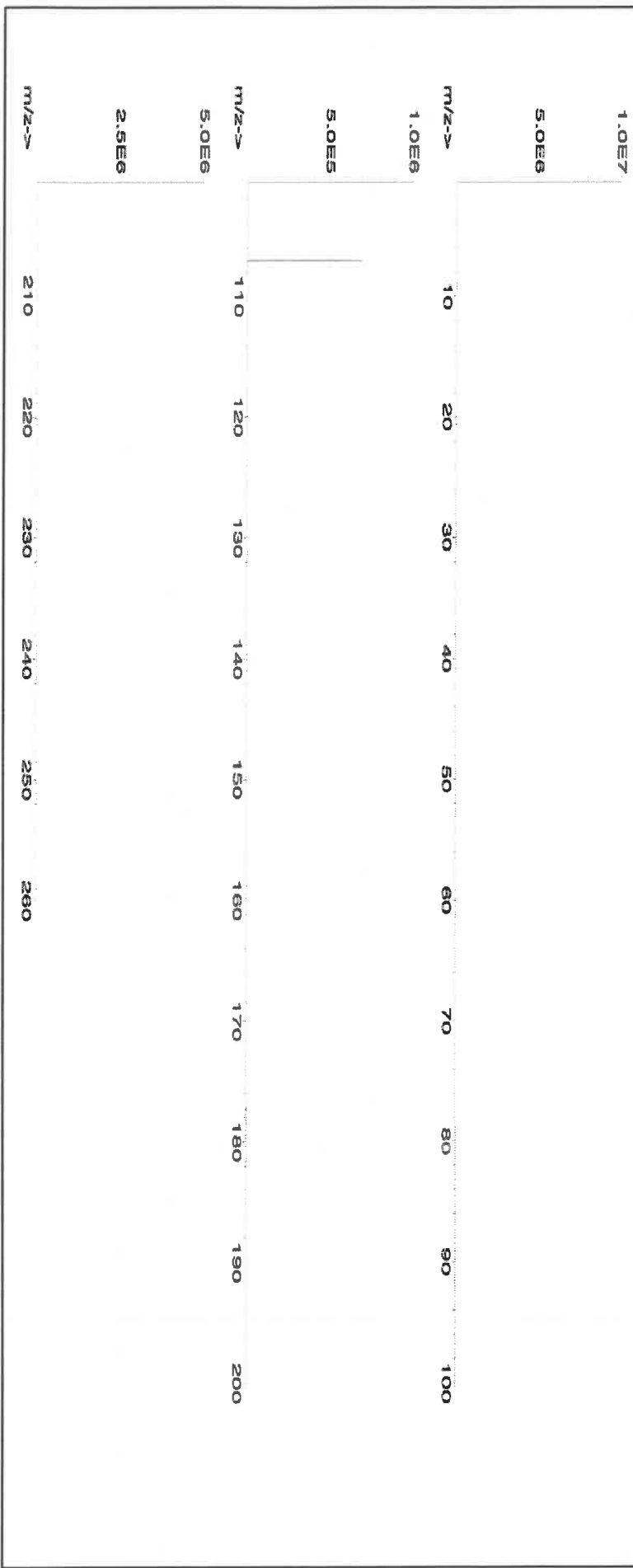
Part Number: 57047
Lot Number: 122823
Description: Silver (Ag)
Solvent: 24002546 Nitric Acid
Lot #

Expiration Date: 122826
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 4000.30
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By:	Benson Chan
Reviewed By:	Pedro L. Rentas
	122823

SDS Information									
Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)
1. Silver nitrate (Ag)	IN035	J0612AGA1	1000.0	99.9996	0.10	63.7	6.27992	6.27998	1000.0
							2.0	7761-88-8	10 µg/mL
									NA
									3151

[1] Spectrum No. 1 [14.044 sec]:58147.D# [Count] [Linear]





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	Pt	<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:

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * Purified acids, 18.2 meghom 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 certified (+/-) 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>

R: 03/16/23 M5473 M5474 M5475 M5476

CERTIFIED WEIGHT REPORT:

Lot #

Part Number: 56138
Lot Number: 082922
Description: Strontium (Sr)

Solvent: 20510011 Nitric Acid

2% 20.0 Nitric Acid
(mL)

Expiration Date: 082925

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 10000

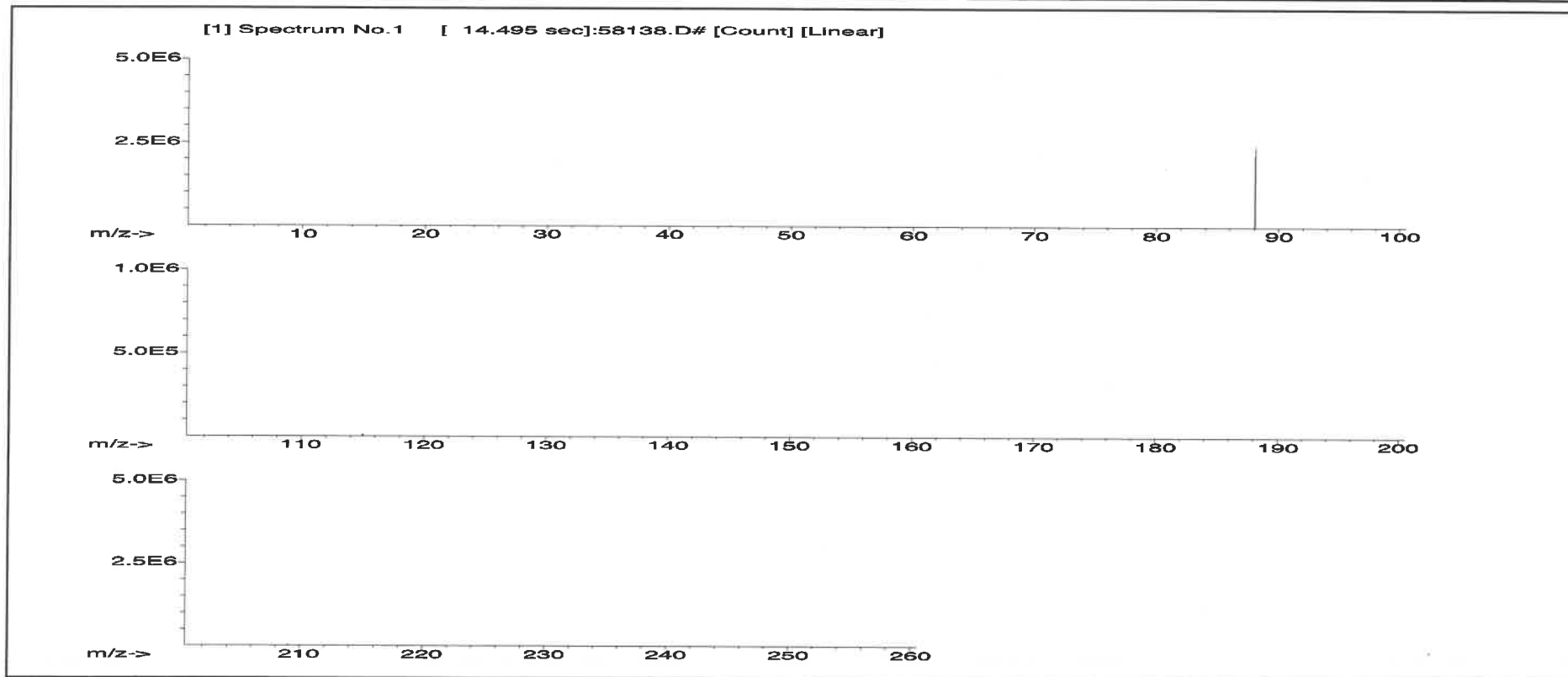
NIST Test Number: 6UTB

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.)			NIST SRM
											CAS#	OSHA PEL (TWA)	LD50	
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	ori-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.

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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).



CERTIFIED WEIGHT REPORT:

Part Number: 57081
Lot Number: 062724
Description: Thallium (TI)

Lot #

Solvent: 24002546 Nitric Acid

2% 40.0 Nitric Acid (mL)

Expiration Date:

062727

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL):

2000.1

5E-05 Balance Uncertainty
0.10 Flask Uncertainty

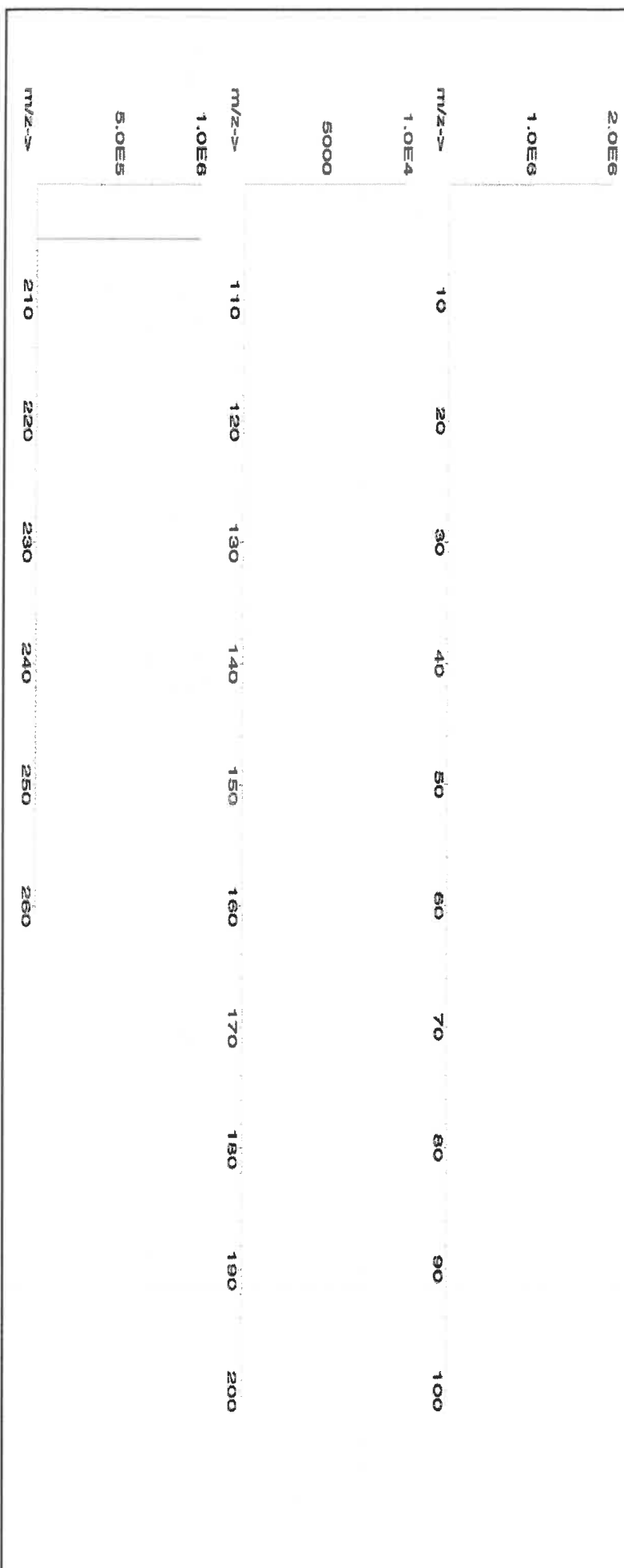
<i>Aleah O'Brady</i>	
Formulated By:	Aleah O'Brady
	062724
Reviewed By:	<i>Pedro L. Renias</i>
	Pedro L. Renias
	062724

SDS Information

Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
----------	------------	-----------------------	------------	-----------------	-----------	-------------------	-------------------	----------------------	----------------------------------	------	----------------	------	----------

1. Thallium nitrate (TI) 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

[1] Spectrum No.1 [14.044 sec]:57081.D# [Count] [Linear]





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	Pt	<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	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	Tm	<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	Sn	<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	Ti	<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			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 Reference Material CRM

M6021



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AR-1539 Certificate Number
https://absolutestandards.com

CERTIFIED WEIGHT REPORT:

Part Number: 57023
Lot Number: 062424
Description: Vanadium (V)

Lot # 24002546
Solvent: Nitric Acid

Aleah O'Brady	
Formulated By:	Aleah O'Brady
Reviewed By:	Pedro L. Rantas
	062424

Expiration Date: 062427
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

2.0% 40.0 (mL) Nitric Acid

Volume shown below was diluted to (mL): 2000.3 0.06 Balance Uncertainty Flask Uncertainty

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM

1. Ammonium metavanadate (V) 58123 021224 0.1000 200.0 0.084 1000 10000.3 10000.0 2.2 7803-55-6 0.05 mg/m3 or-at 58.1mg/kg 3165

[1] Spectrum No.1 [34.243 sec]:58023.D# [Count] [Linear]

2.0E6	m/z-->	10	20	30	40	50	60	70	80	90	100
1.0E7	m/z-->	110	120	130	140	150	160	170	180	190	200
5.0E8	m/z-->	210	220	230	240	250	260				
2.5E9	m/z-->										



SHIPPING DOCUMENTS

CHEMTECH

CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 • Fax (908) 789-8922
www.chemtech.net

CHEMTECH PROJECT NO. P4258/P4261
QUOTE NO.
COC Number 2041986

CLIENT INFORMATION

REPORT TO BE SENT TO:
COMPANY: Roman E&G
ADDRESS: 14 Ogden St
CITY: Newark STATE: NJ ZIP: 07104
ATTENTION: Sonny Puzzo
PHONE: 973-482-1123 FAX: 973-482-7154

CLIENT PROJECT INFORMATION

PROJECT NAME: Perth Amboy Wastewater
PROJECT NO.: 24-651 LOCATION: Perth Amboy
PROJECT MANAGER: Mark Matthews
e-mail: engineers@romaneg.com
PHONE: 973-482-1123 FAX: 973-482-7154

CLIENT BILLING INFORMATION

BILL TO: Roman E&G PO#: 24-651
ADDRESS: 14 Ogden St
CITY: Newark STATE: NJ ZIP: 07104
ATTENTION: Frank PHONE: 973-482-1123

ANALYSIS

DATA TURNAROUND INFORMATION

FAX (RUSH): 6 10/17 DAYS*
HARDCOPY (DATA PACKAGE): 6 10/17 DAYS*
EDD: 6 10/17 DAYS*

*TO BE APPROVED BY CHEMTECH

STANDARD HARDCOPY TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

☐ Level 1 (Results Only) ☐ Level 4 (QC + Full Raw Data)
☐ Level 2 (Results + QC) ☐ NJ Reduced ☐ US EPA CLP
☐ Level 3 (Results + QC) ☐ NYS ASP A ☐ NYS ASP B
+ Raw Data ☐ Other
☐ EDD FORMAT NJ-DEP-SRS

PRESERVATIVES

COMMENTS

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE		SAMPLE COLLECTION		# OF BOTTLES										← Specify Preservatives A-HCl D-NaOH B-HNO3 E-ICE C-H2SO4 F-OTHER
			COMP	GRAB	DATE	TIME		1	2	3	4	5	6	7	8	9	
1.	Chamberlin Ave ↓	S		X	10/1	11:45	1										
2.		S		X	10/1	11:45	1										
3.		S		X	10/1	11:45	1										
4.		S		X	10/1	11:45	1										
5.		S		X	10/1	11:45	1										
6.		S		X	10/1	11:45	1										
7.		S		X	10/1	11:45	1										
8.		S		X	10/1	11:45	1										
9.																	
10.																	

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER: 1. Sonny Puzzo	DATE/TIME: 10/1 12:54	RECEIVED BY: 1. [Signature]	Conditions of bottles or coolers at receipt: ☐ COMPLIANT ☐ NON COMPLIANT ☐ COOLER TEMP 22.1 °C
RELINQUISHED BY SAMPLER: 2.	DATE/TIME:	RECEIVED BY: 2.	Comments: If Air # 1
RELINQUISHED BY SAMPLER: 3.	DATE/TIME:	RECEIVED BY: 3.	

Page ____ of ____

CLIENT: ☐ Hand Delivered ☐ Other
CHEMTECH: ☐ Picked Up ☐ Field Sampling

Shipment Complete
☐ YES ☐ NO

Test Group	Analyses	Matrix	Method
METALS-TAL	Mercury	Water	7470A
	TAL ICP Metals	Water	6010D
RCRA CHARACTERIS	Flash Point	Water	1010B
	pH	Water	9040C
	Reactive Cyanide	Water	9012B
	Reactive Sulfide	Water	9034
TCLP METALS	TCLP Extraction	Water	1311
	TCLP ICP Metals	Water	6010D
	TCLP Mercury	Water	7470A
GROWS Concrete	Ammonia	Solid	SM4500-NH3
	Chemical Oxygen Demar	Solid	SM5220 D
	Oil & Grease	Solid	1664A
	Paint Filter Test	Solid	9095B
	PCBs	Solid	8082A
	Percent Solids	Solid	Chemtech -SOP
	pH	Solid	9045D
	Total Solids	Solid	SM2540 B
	Total Volatile Solids	Solid	160.4
GROWS Concrete AS	ASTM Leachate/ Ammon	Solid	SM4500-NH3
	ASTM Leachate/COD	Solid	SM5220 D
	ASTM Leachate Extracti	Solid	ASTM
	ASTM Leachate/Oil & Gr	Solid	1664A
	ASTM Leachate/Total Sol	Solid	SM2540 B
GROWS Concrete-Wa	Corrosivity	Solid	9045D
	Ignitability	Solid	1030
	Reactive Cyanide	Solid	9012B
	Reactive Sulfide	Solid	9034
	TCLP Semivolatiles	Solid	8270E
	TCLP Extraction	Solid	1311
	TCLP Herbicides	Solid	8151A
	TCLP Mercury	Solid	7470A
	TCLP Metals + Cu+Ni+Zr	Solid	6010D
	TCLP Pesticides	Solid	8081B
	TCLP Volatiles	Solid	8260C
	TCLP ZHE Extraction	Solid	1311 ZHE
GROWS Soil	PCBs	Solid	8082A
	Percent Solids	Solid	Chemtech -SOP
	pH	Solid	9045D
	TCL Volatiles+10	Solid	8260D
GROWS Soil-Waste C	Corrosivity	Solid	9045D
	Ignitability	Solid	1030
	Reactive Cyanide	Solid	9012B
	Reactive Sulfide	Solid	9034
	TCLP Semivolatiles	Solid	8270E
	TCLP Extraction	Solid	1311
	TCLP Herbicides	Solid	8151A
	TCLP Mercury	Solid	7470A
	TCLP Metals + Cu+Ni+Zr	Solid	6010D
	TCLP Pesticides	Solid	8081B
	TCLP Volatiles	Solid	8260D
	TCLP ZHE Extraction	Solid	1311 ZHE

Grows Concrete

Grows Concrete ASTM

Grows Soil

Grows Soil-Waste Class

Seperate

Seperate

From: Kiran Saleem <Kiran.Saleem@alliancetg.com>
Sent: Wednesday, October 2, 2024 11:07 AM
Subject: Re: Project: Perth Amboy Query

Good Morning Sonny,

I am reaching out to inform you that samples received for project were out of temperature range of -6.

It's a standard procedure to inform client, for documentation purposes.

Regards,



Kiran Saleem
Project Manager
An Alliance Technical Group Company
Main: 908-789-8900
Direct: 908-728-3148
Address: 284 Sheffield St, Ste 1, Mountainside, NJ 07092
www.alliancetg.com

From: Sonny Puzzo <spuzzo@romaneg.com>
Sent: Tuesday, October 1, 2024 3:16 PM
To: Kiran Saleem <Kiran.Saleem@alliancetg.com>
Subject: Re: Project: Perth Amboy Query

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

Kiran,

Should be 24-651.

Thank you.

All the Best,

Sonny Puzzo
Project Coordinator

14 Ogden Street
Newark, NJ 07104
Office: (973) 482-1123 Ext:21
Fax: (973) 482-7154
Cell: (973) 803-6113

From: Kiran Saleem <Kiran.Saleem@alliancetg.com>
Sent: Tuesday, October 1, 2024 3:15 PM
To: Sonny Puzzo <spuzzo@romaneg.com>
Subject: Re: Project: Perth Amboy Query

Also, can you please clarify the PO# under 'Client Billing Information', I can't make out what the first digit is.

Regards,



Kiran Saleem
Project Manager
An Alliance Technical Group Company
Main: 908-789-8900
Direct: 908-728-3148
Address: 284 Sheffield St, Ste 1, Mountainside, NJ 07092
www.alliancetg.com

From: Kiran Saleem <Kiran.Saleem@alliancetg.com>
Sent: Tuesday, October 1, 2024 2:35 PM
To: Sonny Puzzo <spuzzo@romaneg.com>
Subject: Re: Project: Perth Amboy Query

Thank you Sonny.

Regards,



Kiran Saleem
Project Manager
An Alliance Technical Group Company
Main: 908-789-8900
Direct: 908-728-3148
Address: 284 Sheffield St, Ste 1, Mountainside, NJ 07092
www.alliancetg.com

From: Sonny Puzzo <spuzzo@romaneg.com>
Sent: Tuesday, October 1, 2024 2:26 PM
To: Kiran Saleem <Kiran.Saleem@alliancetg.com>
Cc: Jordan Hedvat <Jordan.Hedvat@alliancetg.com>
Subject: Re: Project: Perth Amboy Query

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 Afternoon Kiran,

Roman would like the results of the test back by 10/7.

Sorry for the confusion... Thank you!

All the Best,

Sonny Puzzo

Project Coordinator

14 Ogden Street
Newark, NJ 07104
Office: (973) 482-1123 Ext:21
Fax: (973) 482-7154
Cell: (973) 803-6113
Veteran-Owned Business (NJ)

From: Kiran Saleem <Kiran.Saleem@alliancetg.com>

Sent: Tuesday, October 1, 2024 2:19 PM

To: Sonny Puzzo <spuzzo@romaneg.com>

Cc: Jordan Hedvat <Jordan.Hedvat@alliancetg.com>

Subject: Project: Perth Amboy Query

Hi Sonny,

I am reaching out to regarding the Turn around time (TAT) of the results, the fax required says 6 days and then 10/7 which is confusing.

If results are required on 10/7, then TAT would be 4 days. If results are required in 6 days, then you will have results on 10/9.

Please confirm ASAP. Attached COC for your review.

Thanks.

NOTE: Chemtech is now an Alliance Technical Group company. Please add [AllianceTG.com](https://www.alliancetg.com) to your safe senders list to ensure receipt of important emails.

Regards,



Kiran Saleem

Project Manager

An Alliance Technical Group Company

Main: 908-789-8900

Direct: 908-728-3148

Address: 284 Sheffield St, Ste 1, Mountainside, NJ 07092

www.alliancetg.com



284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Laboratory Certification

Certified By	License No.
CAS EPA CLP Contract	68HERH20D0011
Connecticut	PH-0830
DOD ELAP (L-A-B)	L2219
Maine	2024021
Maryland	296
New Hampshire	255423
New Jersey	20012
New York	11376
Pennsylvania	68-00548
Soil Permit	525-24-234-08441
Texas	T104704488



284 Sheffield Street, Mountainside, New Jersey 07092, Phone : 908 789 8900,
Fax : 908 789 8922

LOGIN REPORT/SAMPLE TRANSFER

18,A,001
Q1218,024
Q863
RN
SS
D15
JE
R25,0
F100
GW0,0,102,121

Order ID : P4258 **ROMA02**
Client Name : Roman E&G Corp
Client Contact : Mark Mattheiss
Invoice Name : Roman E&G Corp
Invoice Contact : Mark Mattheiss

Order Date : 10/1/2024 1:21:00 PM
Project Name : Perth Amboy
Receive DateTime : 10/1/2024 12:54:00 PM
Purchase Order :

Project Mgr : Kiran
Report Type : Level 2 ~~Level 1~~ NJ Reduced
EDD Type : Excel ~~Excel~~ HAZ/Excel
Hard Copy Date :
Date Signoff : 10/1/2024 3:13:24 PM

LAB ID	CLIENT ID	MATRIX	SAMPLE DATE	SAMPLE TIME	TEST	TEST GROUP	METHOD	FAX DATE	DUE DATES
P4258-03	Chamberlain Ave	Solid	10/01/2024	11:45	VOC-TCLVOA-10	GROWS Soil	8260D		4 Bus. Days
P4258-04	Chamberlain Ave	Solid	10/01/2024	11:45	TCLP VOA	GROWS Soil-Waste Cla	8260C		4 Bus. Days

Relinquished By : 

Date / Time : 10-2-24 8:03

Received By : 

Date / Time : 10/02/24 8:03

Storage Area : VOA Refridgerator Room