284 Sheffield Street, Mountainside, New Jersey 07092, Phone : 908 789 8900,
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DATA PACKAGE

METALS

PROJECT NAME : CON EDISON - 11TH AVE-WEST 50TH ST SITE

PARSONS ENGINEERING OF NEW YORK, INC.

301 Plainfield Road

Suite 350

Syracuse, NY - 13212

Phone No: 315-451-9560

ORDER ID : Q1739

ATTENTION : Stephen Liberatore

Laboratory Certification ID # 20012

Table Of Contents for Q1739

Table Of Contents for Q1739

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Cover Page

Order ID : Q1739

Project ID : Con Edison - 11th Ave-West 50th St Site

Client : PARSONS Engineering of New York, Inc.

Lab Sample Number	Client Sample Number
Q1739-01	WC-LIQUID-20250404
Q1739-02	WC-LIQUID-20250404

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 : APPROVED
By Nimisha Pandya, QA/QC Supervisor at 3:02 pm, Apr 17, 2025

Date: 4/16/2025

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012

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CASE NARRATIVE

PARSONS Engineering of New York, Inc.
Project Name: Con Edison - 11th Ave-West 50th St Site
Project # N/A
Chemtech Project # Q1739
Test Name: TCLP Mercury,TCLP ICP Metals

A. Number of Samples and Date of Receipt:
2 Water samples were received on 04/04/2025.

B. Parameters:
According to the Chain of Custody document, the following analyses were requested: Flash Point, Mercury, Metals ICP-TAL, METALS-TAL, PCB, pH, RCRA CHARACTERISTICS, Reactive Cyanide, Reactive Sulfide, SVOC-TCL BNA -20, TCLP BNA, TCLP Extraction, TCLP Herbicide, TCLP ICP Metals, TCLP Mercury, TCLP METALS, TCLP Pesticide, TCLP VOA, TCLP ZHE Extraction, TPH GC and VOC-TCLVOA-10. This data package contains results for TCLP Mercury,TCLP ICP Metals.

C. Analytical Techniques:
The analysis of TCLP ICP Metals 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 (TP-20DUP) analysis met criteria for all samples except for Barium due to matrix interference.
The Matrix Spike analysis met criteria for all samples.
The Matrix Spike Duplicate (TP-20MSD) analysis met criteria for all samples except for Barium due to matrix interference.
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:

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____ APPROVED
By Nimisha Pandya, QA/QC Supervisor at 3:02 pm, Apr 17, 2025

Alliance TECHNICAL GROUP
284 Sheffield Street, Mountainside NJ 07092
Tel. 908-789-8900 Fax: 908-789-8922

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

METALS CONFORMANCE/NON-CONFORMANCE SUMMARY

CHEMTECH PROJECT NUMBER: Q1739 MATRIX: TCLP

METHOD: 6010D,7470A,1311

		NA	NO	YES
1.	Calibration Summary met criteria.			✓
2.	ICP Interference Check Sample Results Summary Submitted.			✓
3.	Serial Dilution Summary (if applicable) Submitted.			✓
4.	Laboratory Control Sample Summary (if applicable) Submitted.			✓
5.	Blank Contamination - If yes, list compounds and concentrations in each blank:		✓	
6.	Matrix Spike/Matrix Spike Duplicate Recoveries Met Criteria		✓	
	If not met, list those compounds and their recoveries which fall outside the acceptable range. The Matrix Spike analysis met criteria for all samples. The Matrix Spike Duplicate (TP-20MSD) analysis met criteria for all samples except for Barium due to matrix interference.			
7.	Sample Duplicate Analysis Met QC Criteria		✓	
	If not met, list those compounds and their recoveries which fall outside the acceptable range.			
	The Duplicate (TP-20DUP) analysis met criteria for all samples except for Barium due to matrix interference.			
8.	Digestion Holding Time Met			✓
	If not met, list number of days exceeded for each sample:			
9.	Analysis Holding Time Met			✓
	If not met, list those compounds and their recoveries which fall outside the acceptable range.			

ADDITIONAL COMMENTS:

QA REVIEW

REVIEWED
By Sohil Jodhani, QA/QC Director at 12:51 pm, Apr 17, 2025

Date

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APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: Q1739

	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 Castody	✓
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: SOHIL JODHANI **Date:** 04/16/2025

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LAB CHRONICLE

OrderID:	Q1739	**OrderDate:**	4/4/2025 2:08:31 PM
Client:	PARSONS Engineering of New York, Inc.	**Project:**	Con Edison - 11th Ave-West 50th St Site
Contact:	Stephen Liberatore	**Location:**	L31,VOA Ref. #3 Water

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
Q1739-01	**WC-LIQUID-20250404**	**Water**			**04/04/25**			**04/04/25**
			Mercury	7470A		04/10/25	04/11/25	
			Metals ICP-TAL	6010D		04/07/25	04/10/25	
Q1739-02	**WC-LIQUID-20250404**	**TCLP**			**04/04/25**			**04/04/25**
			TCLP ICP Metals	6010D		04/07/25	04/08/25	
			TCLP Mercury	7470A		04/10/25	04/11/25	

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Hit Summary Sheet
SW-846

SDG No.:	Q1739	**Order ID:**	Q1739
Client:	PARSONS Engineering of New York, Inc.	**Project ID:**	Con Edison - 11th Ave-West 50th St Site

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
Client ID : WC-LIQUID-20250404								
Q1739-02	WC-LIQUID-20250404	TCLP	Barium	163	J	62.8	500	ug/L
Q1739-02	WC-LIQUID-20250404	TCLP	Chromium	10.7	J	6.60	50.0	ug/L
Q1739-02	WC-LIQUID-20250404	TCLP	Lead	36.1	J	35.1	60.0	ug/L

SAMPLE DATA

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Report of Analysis

Client:	PARSONS Engineering of New York, Inc.	Date Collected:	04/04/25
Project:	Con Edison - 11th Ave-West 50th St Site	Date Received:	04/04/25
Client Sample ID:	WC-LIQUID-20250404	SDG No.:	Q1739
Lab Sample ID:	Q1739-02	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	04/07/25 12:30	04/08/25 17:54	SW6010	SW3050
7440-39-3	Barium	163	JN*	1	62.8	500	ug/L	04/07/25 12:30	04/08/25 17:54	SW6010	SW3050
7440-43-9	Cadmium	0.94	U	1	0.94	30.0	ug/L	04/07/25 12:30	04/08/25 17:54	SW6010	SW3050
7440-47-3	Chromium	10.7	J	1	6.60	50.0	ug/L	04/07/25 12:30	04/08/25 17:54	SW6010	SW3050
7439-92-1	Lead	36.1	J	1	35.1	60.0	ug/L	04/07/25 12:30	04/08/25 17:54	SW6010	SW3050
7439-97-6	Mercury	0.76	U	1	0.76	2.00	ug/L	04/10/25 14:20	04/11/25 10:26	SW7470A	
7782-49-2	Selenium	58.8	U	1	58.8	100	ug/L	04/07/25 12:30	04/08/25 17:54	SW6010	SW3050
7440-22-4	Silver	5.80	U	1	5.80	50.0	ug/L	04/07/25 12:30	04/08/25 17:54	SW6010	SW3050

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	TCLP METALS				

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

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Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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
ICV84	Mercury	3.61	4.0	90	90 - 110	CV	04/11/2025	10:03	LB135388

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Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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
CCV59	Mercury	5.05	5.0	101	90 - 110	CV	04/11/2025	10:07	LB135388
CCV60	Mercury	4.52	5.0	90	90 - 110	CV	04/11/2025	10:37	LB135388
CCV61	Mercury	4.67	5.0	93	90 - 110	CV	04/11/2025	11:14	LB135388
CCV62	Mercury	4.81	5.0	96	90 - 110	CV	04/11/2025	11:41	LB135388

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Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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	1040	1000	104	90 - 110	P	04/08/2025	14:27	LB135348
	Barium	491	520	94	90 - 110	P	04/08/2025	14:27	LB135348
	Cadmium	486	510	95	90 - 110	P	04/08/2025	14:27	LB135348
	Chromium	526	520	101	90 - 110	P	04/08/2025	14:27	LB135348
	Lead	983	1000	98	90 - 110	P	04/08/2025	14:27	LB135348
	Selenium	1070	1000	107	90 - 110	P	04/08/2025	14:27	LB135348
	Silver	254	250	102	90 - 110	P	04/08/2025	14:27	LB135348

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Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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	19.5	20.0	98	80 - 120	P	04/08/2025	14:32	LB135348
	Barium	80.2	100	80	80 - 120	P	04/08/2025	14:32	LB135348
	Cadmium	5.70	6.0	95	80 - 120	P	04/08/2025	14:32	LB135348
	Chromium	10.9	10.0	108	80 - 120	P	04/08/2025	14:32	LB135348
	Lead	12.7	12.0	106	80 - 120	P	04/08/2025	14:32	LB135348
	Selenium	21.7	20.0	109	80 - 120	P	04/08/2025	14:32	LB135348
	Silver	10.9	10.0	109	80 - 120	P	04/08/2025	14:32	LB135348

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Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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	5270	5000	105	90 - 110	P	04/08/2025	15:30	LB135348
	Barium	9350	10000	94	90 - 110	P	04/08/2025	15:30	LB135348
	Cadmium	2420	2500	97	90 - 110	P	04/08/2025	15:30	LB135348
	Chromium	1060	1000	106	90 - 110	P	04/08/2025	15:30	LB135348
	Lead	4960	5000	99	90 - 110	P	04/08/2025	15:30	LB135348
	Selenium	5190	5000	104	90 - 110	P	04/08/2025	15:30	LB135348
	Silver	1240	1250	100	90 - 110	P	04/08/2025	15:30	LB135348
CCV02	Arsenic	5400	5000	108	90 - 110	P	04/08/2025	16:13	LB135348
	Barium	9540	10000	95	90 - 110	P	04/08/2025	16:13	LB135348
	Cadmium	2480	2500	99	90 - 110	P	04/08/2025	16:13	LB135348
	Chromium	1090	1000	109	90 - 110	P	04/08/2025	16:13	LB135348
	Lead	5090	5000	102	90 - 110	P	04/08/2025	16:13	LB135348
	Selenium	5300	5000	106	90 - 110	P	04/08/2025	16:13	LB135348
	Silver	1290	1250	103	90 - 110	P	04/08/2025	16:13	LB135348
CCV03	Arsenic	5050	5000	101	90 - 110	P	04/08/2025	17:13	LB135348
	Barium	9230	10000	92	90 - 110	P	04/08/2025	17:13	LB135348
	Cadmium	2350	2500	94	90 - 110	P	04/08/2025	17:13	LB135348
	Chromium	1050	1000	105	90 - 110	P	04/08/2025	17:13	LB135348
	Lead	4830	5000	97	90 - 110	P	04/08/2025	17:13	LB135348
	Selenium	5040	5000	101	90 - 110	P	04/08/2025	17:13	LB135348
	Silver	1230	1250	98	90 - 110	P	04/08/2025	17:13	LB135348
CCV04	Arsenic	5320	5000	106	90 - 110	P	04/08/2025	18:16	LB135348
	Barium	9360	10000	94	90 - 110	P	04/08/2025	18:16	LB135348
	Cadmium	2400	2500	96	90 - 110	P	04/08/2025	18:16	LB135348
	Chromium	1070	1000	107	90 - 110	P	04/08/2025	18:16	LB135348
	Lead	4930	5000	98	90 - 110	P	04/08/2025	18:16	LB135348
	Selenium	5220	5000	104	90 - 110	P	04/08/2025	18:16	LB135348
	Silver	1240	1250	100	90 - 110	P	04/08/2025	18:16	LB135348
CCV05	Arsenic	5360	5000	107	90 - 110	P	04/08/2025	18:34	LB135348
	Barium	9190	10000	92	90 - 110	P	04/08/2025	18:34	LB135348
	Cadmium	2380	2500	95	90 - 110	P	04/08/2025	18:34	LB135348
	Chromium	1090	1000	109	90 - 110	P	04/08/2025	18:34	LB135348
	Lead	4940	5000	99	90 - 110	P	04/08/2025	18:34	LB135348
	Selenium	5190	5000	104	90 - 110	P	04/08/2025	18:34	LB135348

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Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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
CCV05	Silver	1230	1250	99	90 - 110	P	04/08/2025	18:34	LB135348

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Metals

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CRDL STANDARD FOR AA & ICP

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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
CRI01	Arsenic	19.0	20.0	95	40 - 160	P	04/08/2025	15:00	LB135348
	Barium	83.4	100	83	40 - 160	P	04/08/2025	15:00	LB135348
	Cadmium	5.70	6.0	95	40 - 160	P	04/08/2025	15:00	LB135348
	Chromium	10.8	10.0	108	40 - 160	P	04/08/2025	15:00	LB135348
	Lead	12.2	12.0	102	40 - 160	P	04/08/2025	15:00	LB135348
	Selenium	21.8	20.0	109	40 - 160	P	04/08/2025	15:00	LB135348
	Silver	11.0	10.0	110	40 - 160	P	04/08/2025	15:00	LB135348
CRA	Mercury	0.21	0.2	104	40 - 160	CV	04/11/2025	10:12	LB135388

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Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB84	Mercury	0.20	+/-0.20	U	0.20	CV	04/11/2025	10:05	LB135388

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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB59	Mercury	0.20	+/-0.20	U	0.20	CV	04/11/2025	10:09	LB135388
CCB60	Mercury	0.20	+/-0.20	U	0.20	CV	04/11/2025	10:39	LB135388
CCB61	Mercury	0.20	+/-0.20	U	0.20	CV	04/11/2025	11:16	LB135388
CCB62	Mercury	0.20	+/-0.20	U	0.20	CV	04/11/2025	11:43	LB135388

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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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	04/08/2025	14:51	LB135348
	Barium	100	+/-100	U	100	P	04/08/2025	14:51	LB135348
	Cadmium	6.00	+/-6.00	U	6.00	P	04/08/2025	14:51	LB135348
	Chromium	10.0	+/-10.0	U	10.0	P	04/08/2025	14:51	LB135348
	Lead	12.0	+/-12.0	U	12.0	P	04/08/2025	14:51	LB135348
	Selenium	20.0	+/-20.0	U	20.0	P	04/08/2025	14:51	LB135348
	Silver	10.0	+/-10.0	U	10.0	P	04/08/2025	14:51	LB135348

Alliance TECHNICAL GROUP
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Fax : 908 789 8922

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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	04/08/2025	15:45	LB135348
	Barium	100	+/-100	U	100	P	04/08/2025	15:45	LB135348
	Cadmium	6.00	+/-6.00	U	6.00	P	04/08/2025	15:45	LB135348
	Chromium	10.0	+/-10.0	U	10.0	P	04/08/2025	15:45	LB135348
	Lead	12.0	+/-12.0	U	12.0	P	04/08/2025	15:45	LB135348
	Selenium	20.0	+/-20.0	U	20.0	P	04/08/2025	15:45	LB135348
	Silver	10.0	+/-10.0	U	10.0	P	04/08/2025	15:45	LB135348
CCB02	Arsenic	20.0	+/-20.0	U	20.0	P	04/08/2025	16:17	LB135348
	Barium	100	+/-100	U	100	P	04/08/2025	16:17	LB135348
	Cadmium	6.00	+/-6.00	U	6.00	P	04/08/2025	16:17	LB135348
	Chromium	10.0	+/-10.0	U	10.0	P	04/08/2025	16:17	LB135348
	Lead	12.0	+/-12.0	U	12.0	P	04/08/2025	16:17	LB135348
	Selenium	20.0	+/-20.0	U	20.0	P	04/08/2025	16:17	LB135348
	Silver	10.0	+/-10.0	U	10.0	P	04/08/2025	16:17	LB135348
CCB03	Arsenic	20.0	+/-20.0	U	20.0	P	04/08/2025	17:28	LB135348
	Barium	100	+/-100	U	100	P	04/08/2025	17:28	LB135348
	Cadmium	6.00	+/-6.00	U	6.00	P	04/08/2025	17:28	LB135348
	Chromium	10.0	+/-10.0	U	10.0	P	04/08/2025	17:28	LB135348
	Lead	12.0	+/-12.0	U	12.0	P	04/08/2025	17:28	LB135348
	Selenium	20.0	+/-20.0	U	20.0	P	04/08/2025	17:28	LB135348
	Silver	10.0	+/-10.0	U	10.0	P	04/08/2025	17:28	LB135348
CCB04	Arsenic	20.0	+/-20.0	U	20.0	P	04/08/2025	18:20	LB135348
	Barium	100	+/-100	U	100	P	04/08/2025	18:20	LB135348
	Cadmium	6.00	+/-6.00	U	6.00	P	04/08/2025	18:20	LB135348
	Chromium	10.0	+/-10.0	U	10.0	P	04/08/2025	18:20	LB135348
	Lead	12.0	+/-12.0	U	12.0	P	04/08/2025	18:20	LB135348
	Selenium	20.0	+/-20.0	U	20.0	P	04/08/2025	18:20	LB135348
	Silver	10.0	+/-10.0	U	10.0	P	04/08/2025	18:20	LB135348
CCB05	Arsenic	20.0	+/-20.0	U	20.0	P	04/08/2025	18:38	LB135348
	Barium	100	+/-100	U	100	P	04/08/2025	18:38	LB135348
	Cadmium	6.00	+/-6.00	U	6.00	P	04/08/2025	18:38	LB135348
	Chromium	10.0	+/-10.0	U	10.0	P	04/08/2025	18:38	LB135348
	Lead	12.0	+/-12.0	U	12.0	P	04/08/2025	18:38	LB135348
	Selenium	20.0	+/-20.0	U	20.0	P	04/08/2025	18:38	LB135348
	Silver	10.0	+/-10.0	U	10.0	P	04/08/2025	18:38	LB135348

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Metals
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PREPARATION BLANK SUMMARY

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Instrument: CV1

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB167488TB		**WATER**		**Batch Number:**	**PB167568**		**Prep Date:**	**04/10/2025**	
	Mercury	2.00	<2.00	U	2.00	CV	04/11/2025	11:21	LB135388

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB167568BL		**WATER**		**Batch Number:**	**PB167568**		**Prep Date:**	**04/10/2025**	
	Mercury	0.20	<0.20	U	0.20	CV	04/11/2025	10:18	LB135388

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Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Instrument: P4

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB167488TB		**WATER**		**Batch Number:**	**PB167489**		**Prep Date:**	**04/07/2025**	
	Arsenic	100	<100	U	100	P	04/08/2025	17:46	LB135348
	Barium	500	<500	U	500	P	04/08/2025	17:46	LB135348
	Cadmium	30.0	<30.0	U	30.0	P	04/08/2025	17:46	LB135348
	Chromium	50.0	<50.0	U	50.0	P	04/08/2025	17:46	LB135348
	Lead	60.0	<60.0	U	60.0	P	04/08/2025	17:46	LB135348
	Selenium	100	<100	U	100	P	04/08/2025	17:46	LB135348
	Silver	50.0	<50.0	U	50.0	P	04/08/2025	17:46	LB135348

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB167489BL		**WATER**		**Batch Number:**	**PB167489**		**Prep Date:**	**04/07/2025**	
	Arsenic	100	<100	U	100	P	04/08/2025	17:59	LB135348
	Barium	500	<500	U	500	P	04/08/2025	17:59	LB135348
	Cadmium	30.0	<30.0	U	30.0	P	04/08/2025	17:59	LB135348
	Chromium	50.0	<50.0	U	50.0	P	04/08/2025	17:59	LB135348
	Lead	60.0	<60.0	U	60.0	P	04/08/2025	17:59	LB135348
	Selenium	100	<100	U	100	P	04/08/2025	17:59	LB135348
	Silver	50.0	<50.0	U	50.0	P	04/08/2025	17:59	LB135348

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Metals
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INTERFERENCE CHECK SAMPLE

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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	2.21			-20	20	04/08/2025	15:04	LB135348
	Barium	-5.93	6.0	99	-94	106	04/08/2025	15:04	LB135348
	Cadmium	1.48	1.0	148	-5	7	04/08/2025	15:04	LB135348
	Chromium	59.5	52.0	114	42	62	04/08/2025	15:04	LB135348
	Lead	4.71			-12	12	04/08/2025	15:04	LB135348
	Selenium	4.79			-20	20	04/08/2025	15:04	LB135348
	Silver	-1.86			-10	10	04/08/2025	15:04	LB135348
ICSAB01	Arsenic	114	104	110	88.4	120	04/08/2025	15:09	LB135348
	Barium	462	537	86	437	637	04/08/2025	15:09	LB135348
	Cadmium	988	972	102	826	1120	04/08/2025	15:09	LB135348
	Chromium	585	542	108	460	624	04/08/2025	15:09	LB135348
	Lead	54.4	49.0	111	37	61	04/08/2025	15:09	LB135348
	Selenium	55.2	46.0	120	26	66	04/08/2025	15:09	LB135348
	Silver	187	201	93	170	232	04/08/2025	15:09	LB135348

METAL QC DATA

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metals
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MATRIX SPIKE SUMMARY

client: PARSONS Engineering of New York, Inc. **level:** low **sdg no.:** Q1739

contract: PARS02 **lab code:** CHEM **case no.:** Q1739 **sas no.:** Q1739

matrix: Water **sample id:** Q1739-02 **client id:** WC-LIQUID-20250404MS

Percent Solids for Sample: NA **Spiked ID:** Q1739-02MS **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	ug/L	75 - 125	35.3		2.00	U	40.0	88		CV

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metals
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MATRIX SPIKE DUPLICATE SUMMARY

client: PARSONS Engineering of New York, Inc. **level:** low **sdg no.:** Q1739

contract: PARS02 **lab code:** CHEM **case no.:** Q1739 **sas no.:** Q1739

matrix: Water **sample id:** Q1739-02 **client id:** WC-LIQUID-20250404MSD

Percent Solids for Sample: NA **Spiked ID:** Q1739-02MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	ug/L	75 - 125	38.2		2.00	U	40.0	96		CV

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metals
- 5a -
MATRIX SPIKE SUMMARY

client: PARSONS Engineering of New York, Inc. **level:** low **sdg no.:** Q1739

contract: PARS02 **lab code:** CHEM **case no.:** Q1739 **sas no.:** Q1739

matrix: Water **sample id:** Q1740-04 **client id:** TP-20MS

Percent Solids for Sample: NA **Spiked ID:** Q1740-04MS **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Arsenic	ug/L	75 - 125	4180		100	U	4000	104		P
Barium	ug/L	75 - 125	3010		2120		1000	89		P
Cadmium	ug/L	75 - 125	928		30.0	U	1000	93		P
Chromium	ug/L	75 - 125	2150		50.0	U	2000	108		P
Lead	ug/L	75 - 125	4450		55.2	J	5000	88		P
Selenium	ug/L	75 - 125	9970		100	U	10000	100		P
Silver	ug/L	75 - 125	380		50.0	U	380	100		P

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metals
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MATRIX SPIKE DUPLICATE SUMMARY

client: PARSONS Engineering of New York, Inc. **level:** low **sdg no.:** Q1739

contract: PARS02 **lab code:** CHEM **case no.:** Q1739 **sas no.:** Q1739

matrix: Water **sample id:** Q1740-04 **client id:** TP-20MSD

Percent Solids for Sample: NA **Spiked ID:** Q1740-04MSD **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	4430		100	U	4000	111		P
Barium	ug/L	75 - 125	3580		2120		1000	147	N	P
Cadmium	ug/L	75 - 125	943		30.0	U	1000	94		P
Chromium	ug/L	75 - 125	2170		50.0	U	2000	108		P
Lead	ug/L	75 - 125	4530		55.2	J	5000	89		P
Selenium	ug/L	75 - 125	10600		100	U	10000	106		P
Silver	ug/L	75 - 125	392		50.0	U	380	103		P

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Metals
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POST DIGEST SPIKE SUMMARY

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

Matrix: Water **Level:** LOW **Client ID:** TP-20A

Sample ID: Q1740-04 **Spiked ID:** Q1740-04A

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Barium	ug/L	75 - 125	2960		2120		1000	84		P

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Metals

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DUPLICATE SAMPLE SUMMARY

Client: PARSONS Engineering of New York, Inc. **Level:** LOW **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

Matrix: Water **Sample ID:** Q1739-02 **Client ID:** WC-LIQUID-20250404DUP

Percent Solids for Sample: NA **Duplicate ID** Q1739-02DUP **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	ug/L	20	2.00	U	2.00	U			CV

"A control limit of ±20% RPD for each matrix applies for sample values greater than 10 times Detection Limit"

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Metals

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DUPLICATE SAMPLE SUMMARY

Client: PARSONS Engineering of New York, Inc. **Level:** LOW **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

Matrix: Water **Sample ID:** Q1739-02MS **Client ID:** WC-LIQUID-20250404MSD

Percent Solids for Sample: NA **Duplicate ID** Q1739-02MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	ug/L	20	35.3		38.2		8		CV

"A control limit of ±20% RPD for each matrix applies for sample values greater than 10 times Detection Limit"

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Metals

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DUPLICATE SAMPLE SUMMARY

Client: PARSONS Engineering of New York, Inc. **Level:** LOW **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

Matrix: Water **Sample ID:** Q1740-04 **Client ID:** TP-20DUP

Percent Solids for Sample: NA **Duplicate ID** Q1740-04DUP **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	2120		2650		22	*	P
Cadmium	ug/L	20	30.0	U	30.0	U			P
Chromium	ug/L	20	50.0	U	50.0	U			P
Lead	ug/L	20	55.2	J	66.9		19		P
Selenium	ug/L	20	100	U	100	U			P
Silver	ug/L	20	50.0	U	50.0	U			P

"A control limit of ±20% RPD for each matrix applies for sample values greater than 10 times Detection Limit"

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Metals

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DUPLICATE SAMPLE SUMMARY

Client: PARSONS Engineering of New York, Inc. **Level:** LOW **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

Matrix: Water **Sample ID:** Q1740-04MS **Client ID:** TP-20MSD

Percent Solids for Sample: NA **Duplicate ID** Q1740-04MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Arsenic	ug/L	20	4180		4430		6		P
Barium	ug/L	20	3010		3580		17		P
Cadmium	ug/L	20	928		943		2		P
Chromium	ug/L	20	2150		2170		1		P
Lead	ug/L	20	4450		4530		2		P
Selenium	ug/L	20	9970		10600		6		P
Silver	ug/L	20	380		392		3		P

"A control limit of ±20% RPD for each matrix applies for sample values greater than 10 times Detection Limit"

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LABORATORY CONTROL SAMPLE SUMMARY

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB167489BS							
Arsenic	ug/L	4000	4110		103	80 - 120	P
Barium	ug/L	1000	832		83	80 - 120	P
Cadmium	ug/L	1000	926		93	80 - 120	P
Chromium	ug/L	2000	2110		106	80 - 120	P
Lead	ug/L	5000	4740		95	80 - 120	P
Selenium	ug/L	10000	10100		101	80 - 120	P
Silver	ug/L	380	365		96	80 - 120	P

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LABORATORY CONTROL SAMPLE SUMMARY

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB167568BS							
Mercury	ug/L	4.0	3.69		92	80 - 120	CV

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Metals

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ICP SERIAL DILUTIONS

SAMPLE NO.

WC-LIQUID-20250404L

Lab Name: Chemtech Consulting Group **Contract:** PARS02

Lab Code: CHEM **Lb No.:** lb135388 **Lab Sample ID :** Q1739-02L **SDG No.:** Q1739

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Mercury	2.00	U	10.0	U			CV

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Metals

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ICP SERIAL DILUTIONS

SAMPLE NO.

TP-20L

Lab Name: Chemtech Consulting Group **Contract:** PARS02

Lab Code: CHEM **Lb No.:** lb135348 **Lab Sample ID :** Q1740-04L **SDG No.:** Q1739

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Arsenic	100	U	500	U			P
Barium	2120		1940	J	8		P
Cadmium	30.0	U	150	U			P
Chromium	50.0	U	250	U			P
Lead	55.2	J	300	U	100.0		P
Selenium	100	U	500	U			P
Silver	50.0	U	250	U			P

METAL PREPARATION & INSTRUMENT DATA

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Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

Instrument ID: **Date:**

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement 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
Lead	220.353	-0.0000920	0.0000000	0.0000380	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

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Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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
Lead	220.353	0.0000000	0.0003170	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

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Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0001400	-0.0008600
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

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Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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
Lead	220.353	0.0000000	0.0006580	0.0000000	0.0000000	0.0001290
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

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Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Case No.:** Q1739 **SAS No.:** Q1739

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
Lead	220.353	0.0000000	-0.0003610	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

METAL PREPARATION & ANALYICAL SUMMARY

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Metals
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SAMPLE PREPARATION SUMMARY

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Method:**

Case No.: Q1739 **SAS No.:** Q1739

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number:	**PB167489**						
PB167488TB	PB167488TB	MB	WATER	04/07/2025	5.0	25.0	
PB167489BL	PB167489BL	MB	WATER	04/07/2025	5.0	25.0	
PB167489BS	PB167489BS	LCS	WATER	04/07/2025	5.0	25.0	
Q1739-02	WC-LIQUID-20250404	SAM	WATER	04/07/2025	5.0	25.0	
Q1740-04DUP	TP-20DUP	DUP	WATER	04/07/2025	5.0	25.0	
Q1740-04MS	TP-20MS	MS	WATER	04/07/2025	5.0	25.0	
Q1740-04MSD	TP-20MSD	MSD	WATER	04/07/2025	5.0	25.0	

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Metals
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SAMPLE PREPARATION SUMMARY

Client: PARSONS Engineering of New York, Inc. **SDG No.:** Q1739

Contract: PARS02 **Lab Code:** CHEM **Method:**

Case No.: Q1739 **SAS No.:** Q1739

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number:	**PB167568**						
PB167488TB	PB167488TB	MB	WATER	04/10/2025	3.0	30.0	
PB167568BL	PB167568BL	MB	WATER	04/10/2025	30.0	30.0	
PB167568BS	PB167568BS	LCS	WATER	04/10/2025	30.0	30.0	
Q1739-02	WC-LIQUID-20250404	SAM	WATER	04/10/2025	3.0	30.0	
Q1739-02DUP	WC-LIQUID-20250404DUP	DUP	WATER	04/10/2025	3.0	30.0	
Q1739-02MS	WC-LIQUID-20250404MS	MS	WATER	04/10/2025	3.0	30.0	
Q1739-02MSD	WC-LIQUID-20250404MSD	MSD	WATER	04/10/2025	3.0	30.0	

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metals
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ANALYSIS RUN LOG

Client: PARSONS Engineering of New York, Inc. **Contract:** PARS02

Lab code: CHEM **Case no.:** Q1739 **Sas no.:** Q1739 **Sdg no.:** Q1739

Instrument id number: **Method:** **Run number:** LB135348

Start date: 04/08/2025 **End date:** 04/08/2025

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1246	Ag,As,Ba,Cd,Cr,Pb,Se
S1	S1	1	1251	Ag,As,Ba,Cd,Cr,Pb,Se
S2	S2	1	1255	Ag,As,Ba,Cd,Cr,Pb,Se
S3	S3	1	1259	Ag,As,Ba,Cd,Cr,Pb,Se
S4	S4	1	1304	Ag,As,Ba,Cd,Cr,Pb,Se
S5	S5	1	1308	Ag,As,Ba,Cd,Cr,Pb,Se
ICV01	ICV01	1	1427	Ag,As,Ba,Cd,Cr,Pb,Se
LLICV01	LLICV01	1	1432	Ag,As,Ba,Cd,Cr,Pb,Se
ICB01	ICB01	1	1451	Ag,As,Ba,Cd,Cr,Pb,Se
CRI01	CRI01	1	1500	Ag,As,Ba,Cd,Cr,Pb,Se
ICSA01	ICSA01	1	1504	Ag,As,Ba,Cd,Cr,Pb,Se
ICSAB01	ICSAB01	1	1509	Ag,As,Ba,Cd,Cr,Pb,Se
CCV01	CCV01	1	1530	Ag,As,Ba,Cd,Cr,Pb,Se
CCB01	CCB01	1	1545	Ag,As,Ba,Cd,Cr,Pb,Se
CCV02	CCV02	1	1613	Ag,As,Ba,Cd,Cr,Pb,Se
CCB02	CCB02	1	1617	Ag,As,Ba,Cd,Cr,Pb,Se
Q1740-04DUP	TP-20DUP	1	1655	Ag,As,Ba,Cd,Cr,Pb,Se
Q1740-04L	TP-20L	5	1659	Ag,As,Ba,Cd,Cr,Pb,Se
CCV03	CCV03	1	1713	Ag,As,Ba,Cd,Cr,Pb,Se
CCB03	CCB03	1	1728	Ag,As,Ba,Cd,Cr,Pb,Se
Q1740-04A	TP-20A	1	1733	Ba
Q1740-04MS	TP-20MS	1	1737	Ag,As,Ba,Cd,Cr,Pb,Se
Q1740-04MSD	TP-20MSD	1	1741	Ag,As,Ba,Cd,Cr,Pb,Se
PB167488TB	PB167488TB	1	1746	Ag,As,Ba,Cd,Cr,Pb,Se
Q1739-02	WC-LIQUID-20250404	1	1754	Ag,As,Ba,Cd,Cr,Pb,Se
PB167489BL	PB167489BL	1	1759	Ag,As,Ba,Cd,Cr,Pb,Se
PB167489BS	PB167489BS	1	1812	Ag,As,Ba,Cd,Cr,Pb,Se
CCV04	CCV04	1	1816	Ag,As,Ba,Cd,Cr,Pb,Se
CCB04	CCB04	1	1820	Ag,As,Ba,Cd,Cr,Pb,Se
CCV05	CCV05	1	1834	Ag,As,Ba,Cd,Cr,Pb,Se
CCB05	CCB05	1	1838	Ag,As,Ba,Cd,Cr,Pb,Se

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metals
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ANALYSIS RUN LOG

Client: PARSONS Engineering of New York, Inc. **Contract:** PARS02

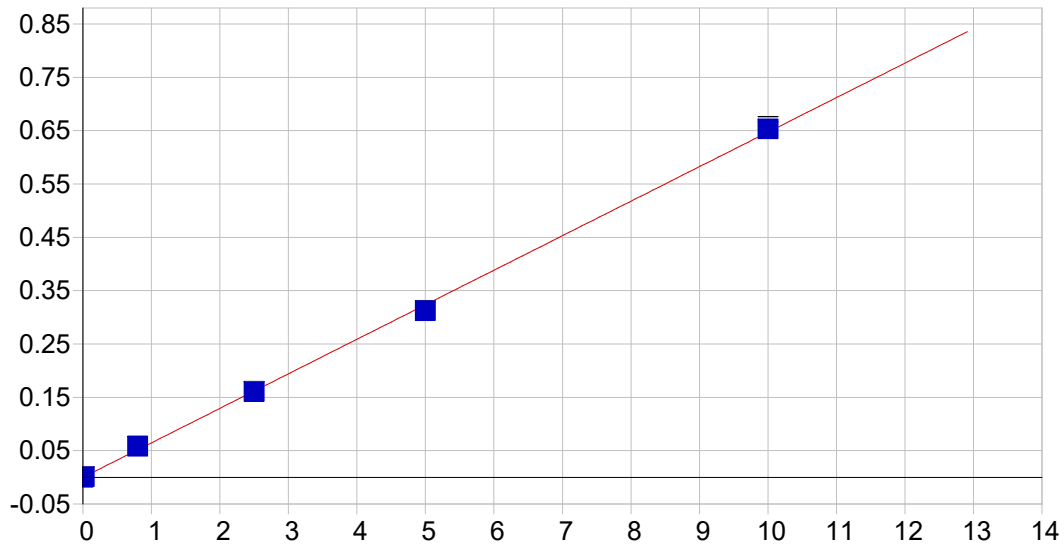
Lab code: CHEM **Case no.:** Q1739 **Sas no.:** Q1739 **Sdg no.:** Q1739

Instrument id number: **Method:** **Run number:** LB135388

Start date: 04/11/2025 **End date:** 04/11/2025

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	0945	HG
S0.2	S0.2	1	0948	HG
S2.5	S2.5	1	0950	HG
S5	S5	1	0952	HG
S7.5	S7.5	1	0954	HG
S10	S10	1	1000	HG
ICV84	ICV84	1	1003	HG
ICB84	ICB84	1	1005	HG
CCV59	CCV59	1	1007	HG
CCB59	CCB59	1	1009	HG
CRA	CRA	1	1012	HG
PB167568BL	PB167568BL	1	1018	HG
PB167568BS	PB167568BS	1	1023	HG
Q1739-02	WC-LIQUID-20250404	1	1026	HG
Q1739-02DUP	WC-LIQUID-20250404DUP	1	1028	HG
Q1739-02MS	WC-LIQUID-20250404MS	1	1030	HG
CCV60	CCV60	1	1037	HG
CCB60	CCB60	1	1039	HG
CCV61	CCV61	1	1114	HG
CCB61	CCB61	1	1116	HG
PB167488TB	PB167488TB	1	1121	HG
Q1739-02L	WC-LIQUID-20250404L	5	1123	HG
Q1739-02MSD	WC-LIQUID-20250404MSD	1	1139	HG
CCV62	CCV62	1	1141	HG
CCB62	CCB62	1	1143	HG

METAL
RAW DATA

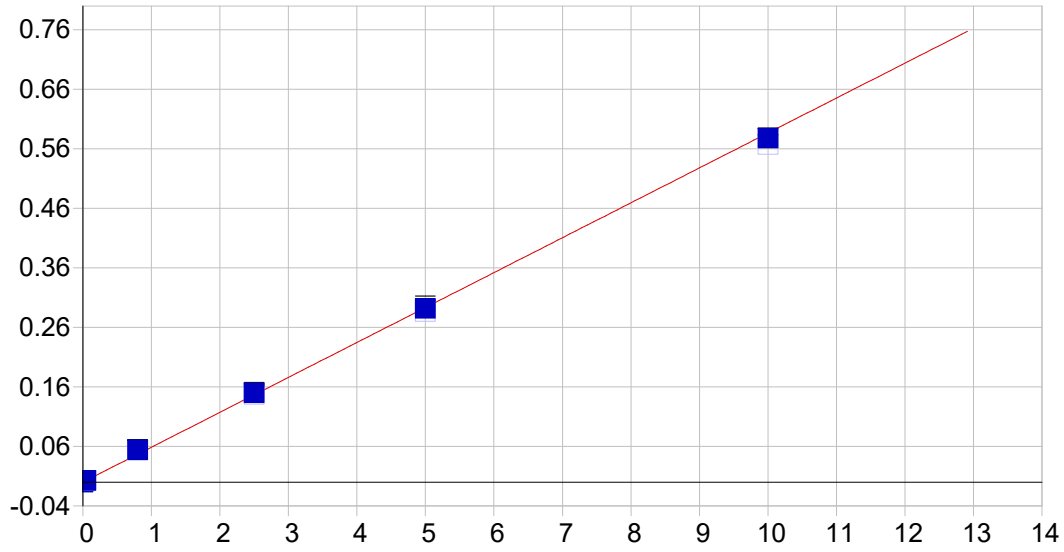


As 189.042 {479}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000117	Re-Slope:	1.000000
A1 (Gain):	0.064733	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999465	Status:	OK.
Std Error of Est:	0.000050		
Predicted MDL:	0.002441		
Predicted MQL:	0.008137		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00012	.000	1
S1	.02000	.01775	-.002	-11.2	.00103	.000	1
S3	2.5000	2.4852	-.015	-.592	.16058	.000	1
S4	5.0000	4.8263	-.174	-3.47	.31195	.001	1
S5	10.000	10.091	.091	.913	.65242	.005	1
S2	.80000	.89951	.100	12.4	.05806	.000	1

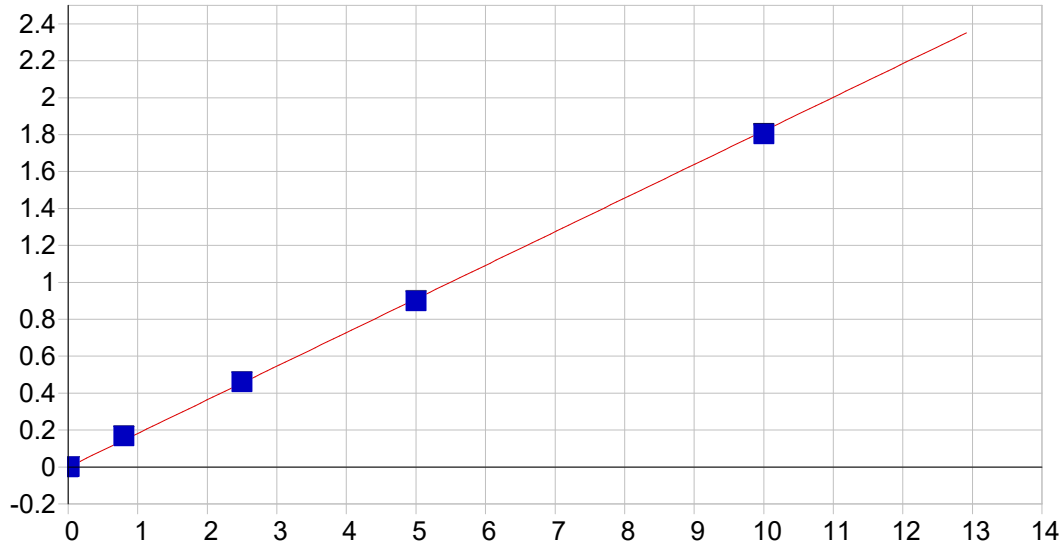


Tl 190.856 {477}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000082	Re-Slope:	1.000000
A1 (Gain):	0.058681	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999385	Status:	OK.
Std Error of Est:	0.000067		
Predicted MDL:	0.001808		
Predicted MQL:	0.006026		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	-.00008	.000	1
S1	.04000	.04033	.000	.816	.00213	.000	1
S3	2.5000	2.5505	.050	2.02	.14688	.001	1
S4	5.0000	4.9785	-.021	-.429	.28666	.004	1
S5	10.000	9.8495	-.150	-1.50	.56709	.001	1
S2	.80000	.92119	.121	15.1	.05311	.001	1

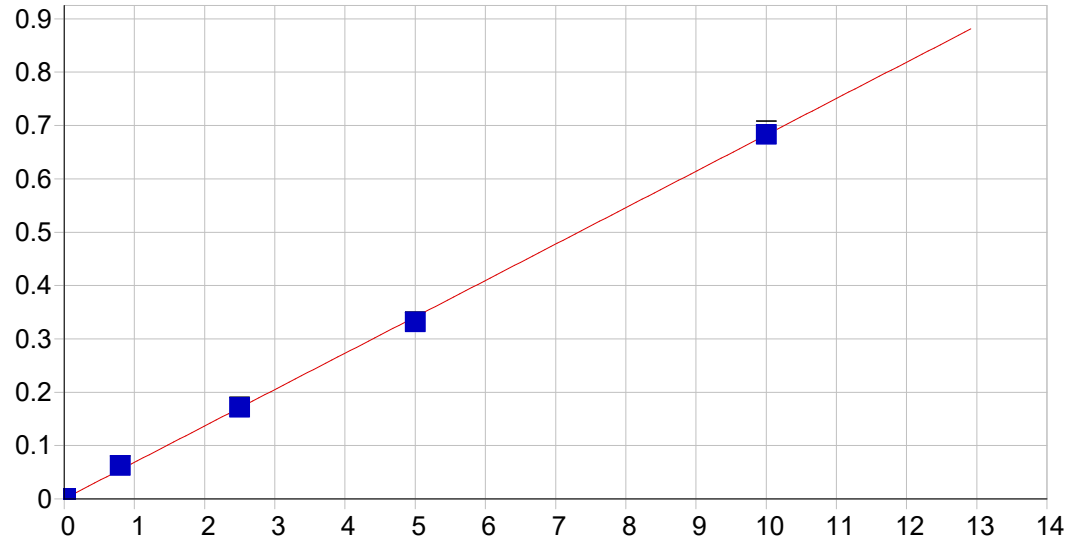


Pb 220.353 {453}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000328	Re-Slope:	1.000000
A1 (Gain):	0.182034	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999474	Status:	OK.
Std Error of Est:	0.000107		
Predicted MDL:	0.001363		
Predicted MQL:	0.004542		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00033	.000	1
S1	.01200	.01115	-.001	-7.05	.00166	.000	1
S3	2.5000	2.5310	.031	1.24	.45990	.001	1
S4	5.0000	4.9428	-.057	-1.14	.89843	.003	1
S5	10.000	9.9092	-.091	-.908	1.8015	.003	1
S2	.80000	.91774	.118	14.7	.16657	.000	1

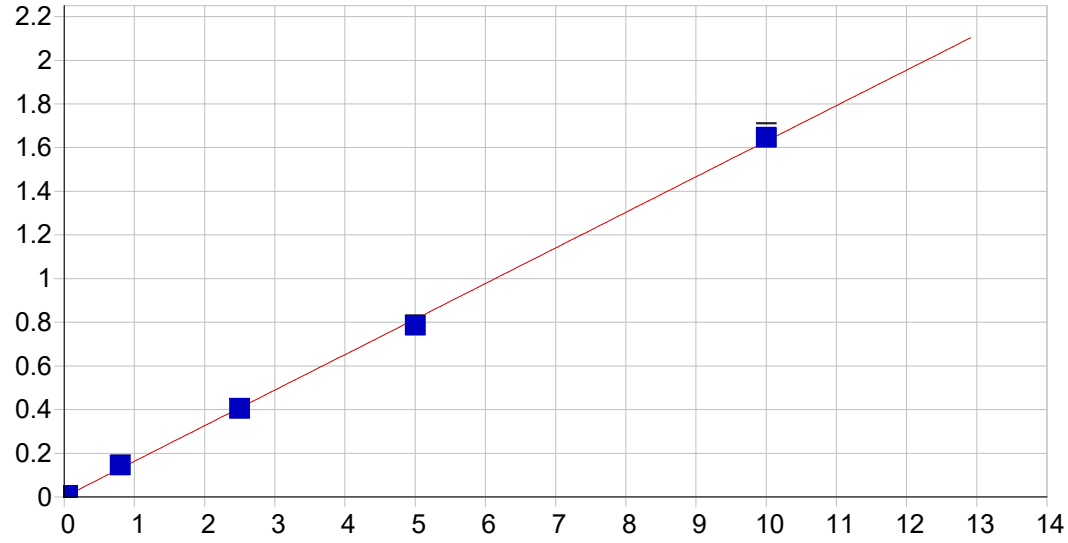


Se 196.090 {472}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000259	Re-Slope:	1.000000
A1 (Gain):	0.068205	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999472	Status:	OK.
Std Error of Est:	0.000052		
Predicted MDL:	0.002743		
Predicted MQL:	0.009143		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00026	.000	1
S1	.02000	.02158	.002	7.91	.00173	.000	1
S3	2.5000	2.5133	.013	.532	.17162	.001	1
S4	5.0000	4.8573	-.143	-2.85	.33143	.000	1
S5	10.000	10.018	.018	.181	.68330	.006	1
S2	.80000	.90973	.110	13.7	.06229	.000	1

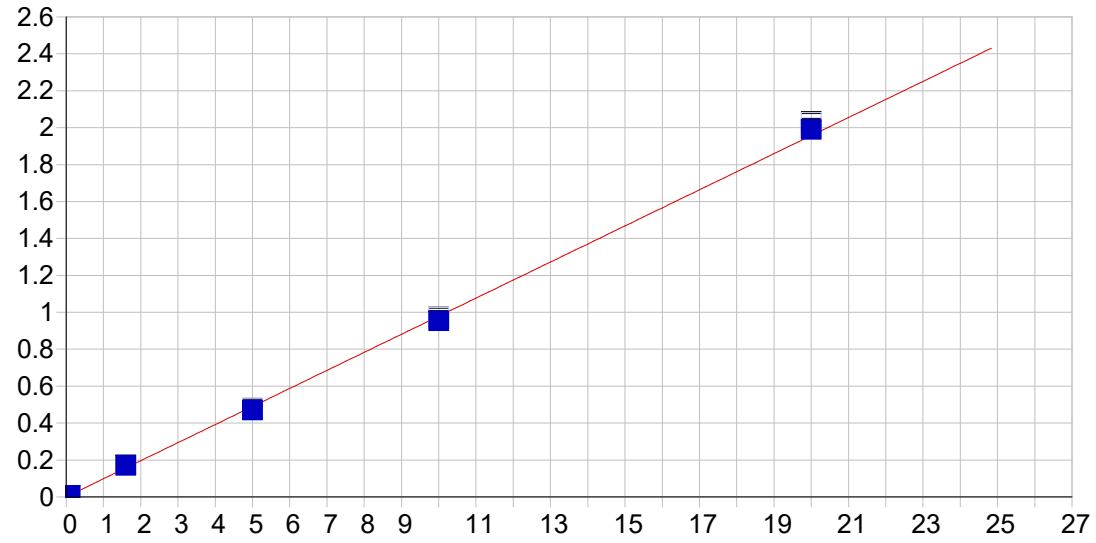


Sb 206.833 {463}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000266	Re-Slope:	1.000000
A1 (Gain):	0.162891	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999499	Status:	OK.
Std Error of Est:	0.000192		
Predicted MDL:	0.001666		
Predicted MQL:	0.005554		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00027	.000	1
S1	.05000	.05038	.000	.756	.00849	.000	1
S3	2.5000	2.4785	-.021	-.860	.40510	.001	1
S4	5.0000	4.8208	-.179	-3.58	.78774	.001	1
S5	10.000	10.108	.108	1.08	1.6512	.017	1
S2	.80000	.89256	.093	11.6	.14601	.000	1

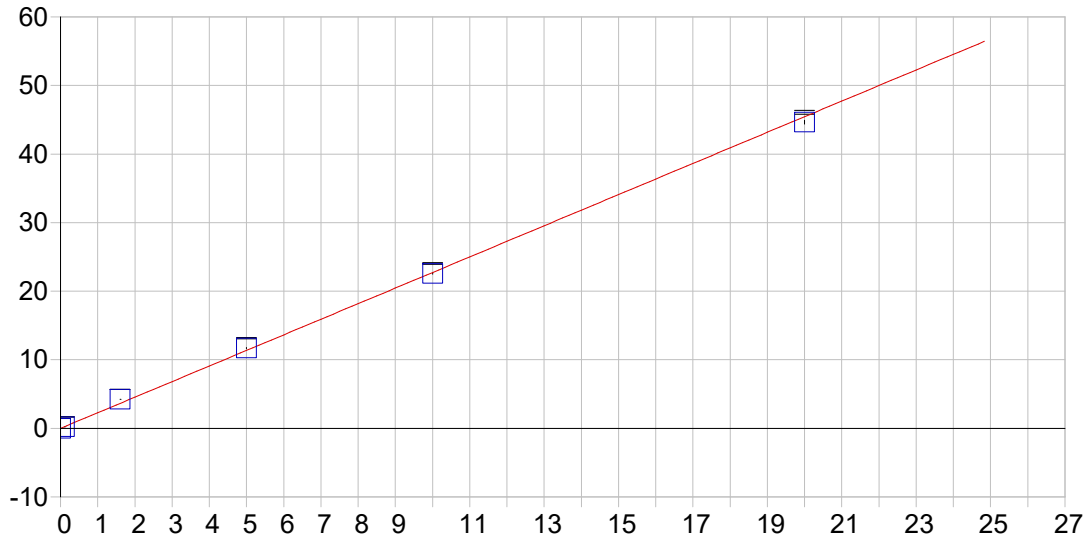


Al 396.152 { 85}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000469	Re-Slope:	1.000000
A1 (Gain):	0.097836	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999579	Status:	OK.
Std Error of Est:	0.000215		
Predicted MDL:	0.003820		
Predicted MQL:	0.012732		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00047	.000	1
S1	.10000	.09298	-.007	-7.02	.01032	.000	1
S3	5.0000	4.8036	-.196	-3.93	.47992	.001	1
S4	10.000	9.7334	-.267	-2.67	.97173	.003	1
S5	20.000	20.337	.337	1.68	2.0281	.006	1
S2	1.6000	1.7337	.134	8.35	.17312	.000	1

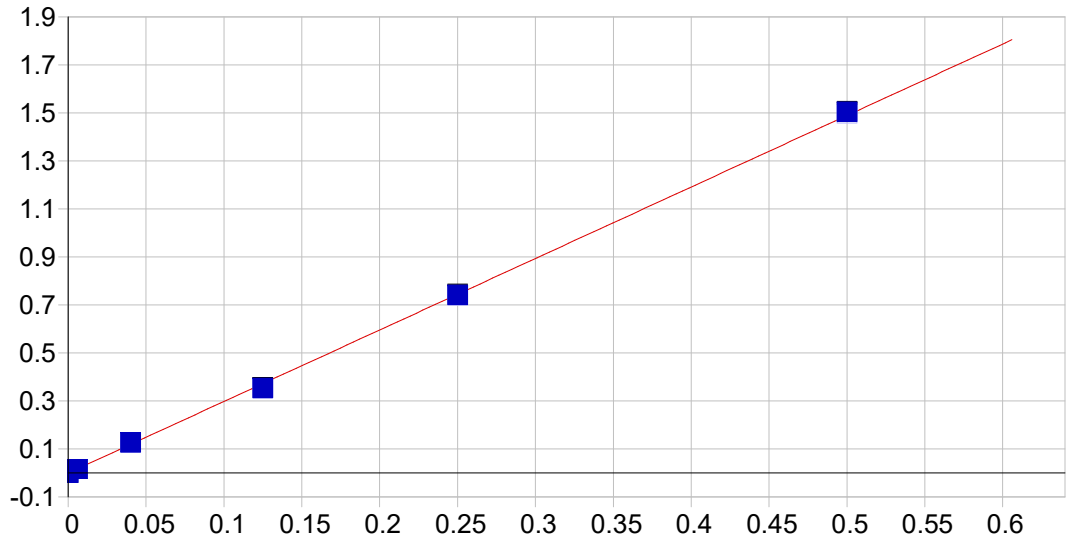


Ba 493.409 { 68}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000280	Re-Slope:	1.000000
A1 (Gain):	2.272506	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999271	Status:	OK.
Std Error of Est:	0.006439		
Predicted MDL:	0.000609		
Predicted MQL:	0.002029		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00002	-.000	.000	.00025	.003	1
S1	.10000	.09824	-.002	-1.76	.22353	.001	1
S3	5.0000	5.1441	.144	2.88	11.690	.101	1
S4	10.000	9.9392	-.061	-.608	22.587	.110	1
S5	20.000	19.656	-.344	-1.72	44.668	.281	1
S2	1.6000	1.8626	.263	16.4	4.2330	.017	1

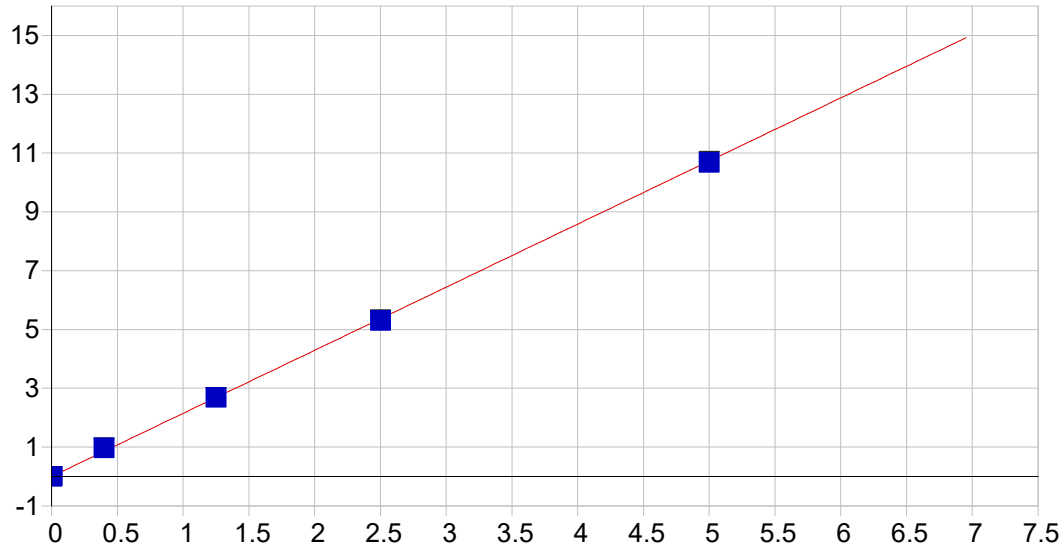


Be 234.861 {144}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000298	Re-Slope:	1.000000
A1 (Gain):	2.978838	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999705	Status:	OK.
Std Error of Est:	0.000207		
Predicted MDL:	0.000047		
Predicted MQL:	0.000158		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00030	.000	1
S1	.00600	.00554	-.000	-7.74	.01606	.000	1
S3	.12500	.11890	-.006	-4.88	.35223	.002	1
S4	.25000	.24904	-.001	-.383	.73822	.004	1
S5	.50000	.50507	.005	1.01	1.4975	.003	1
S2	.04000	.04245	.002	6.12	.12562	.000	1

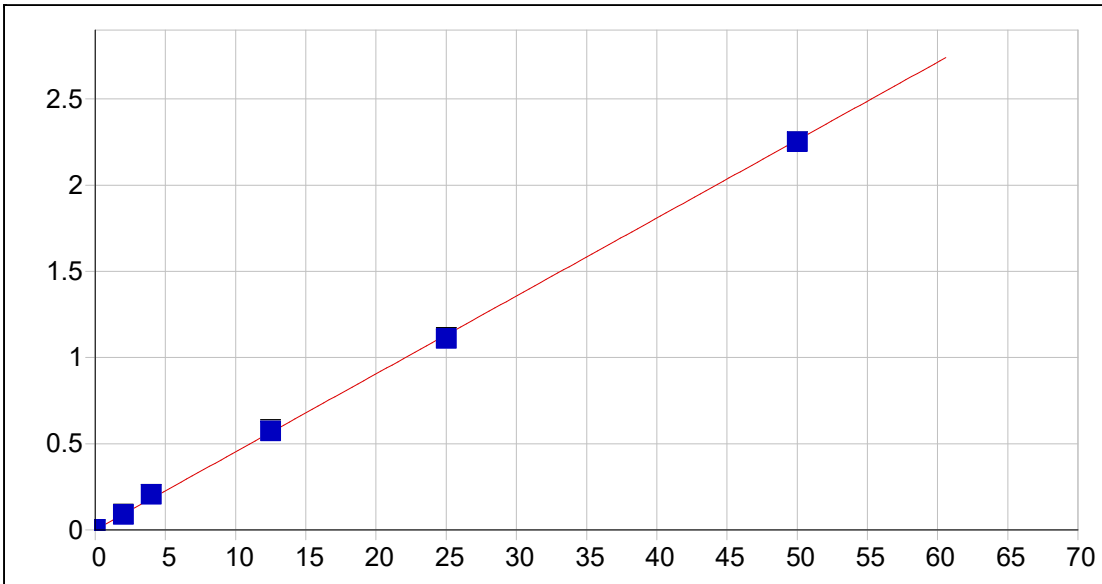


Cd 226.502 {449}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000210	Re-Slope:	1.000000
A1 (Gain):	2.146386	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999615	Status:	OK.
Std Error of Est:	0.000541		
Predicted MDL:	0.000079		
Predicted MQL:	0.000264		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00021	.000	1
S1	.00600	.00577	-.000	-3.76	.01225	.000	1
S3	1.2500	1.2521	.002	.165	2.6896	.001	1
S4	2.5000	2.4720	-.028	-1.12	5.3104	.015	1
S5	5.0000	4.9748	-.025	-.505	10.687	.030	1
S2	.40000	.45142	.051	12.9	.96947	.001	1

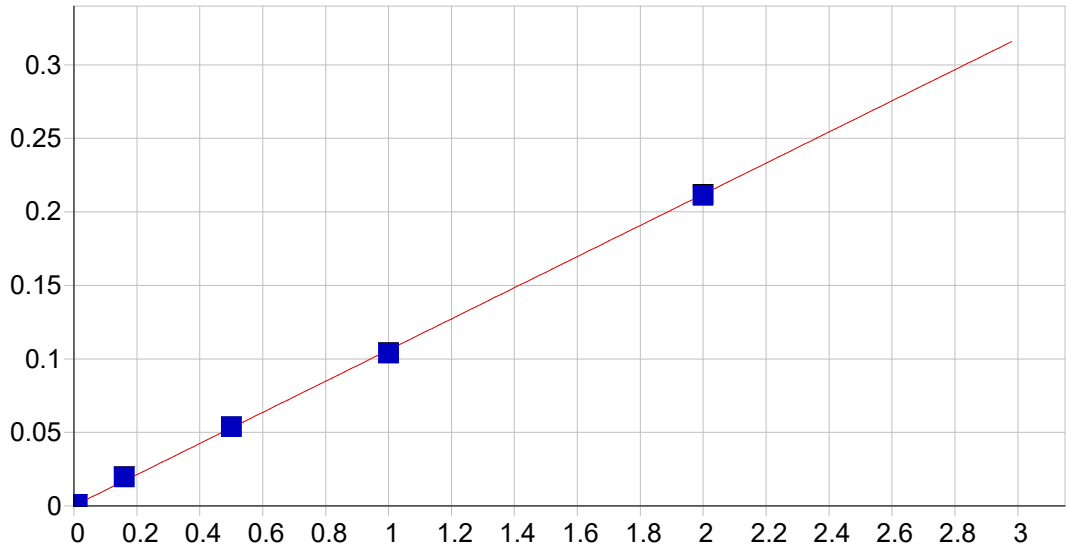


Ca 373.690 { 90}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000999	Re-Slope:	1.000000
A1 (Gain):	0.045208	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999567	Status:	OK.
Std Error of Est:	0.000704		
Predicted MDL:	0.006699		
Predicted MQL:	0.022332		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00021	-.000	.000	.00099	.000	1
S2	4.0000	4.5260	.526	13.1	.20561	.001	1
S3	12.500	12.666	.166	1.33	.57362	.007	1
S4	25.000	24.546	-.454	-1.82	1.1107	.006	1
S5	50.000	49.795	-.205	-.411	2.2521	.002	1
S1	2.0000	1.9668	-.033	-1.66	.08992	.000	1

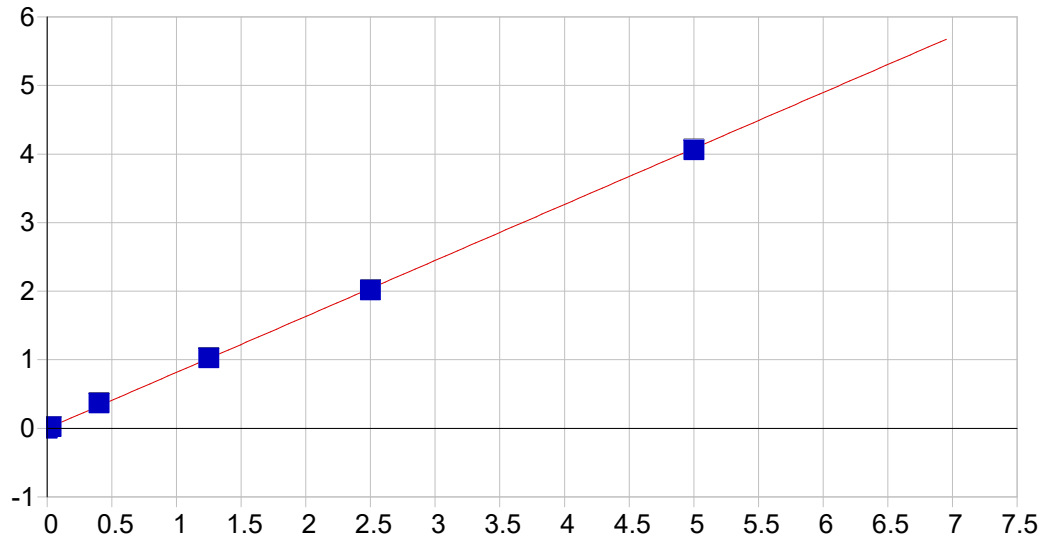


Cr 267.716 {126}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000082	Re-Slope:	1.000000
A1 (Gain):	0.105948	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999394	Status:	OK.
Std Error of Est:	0.000027		
Predicted MDL:	0.000450		
Predicted MQL:	0.001501		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00008	.000	1
S1	.01000	.00916	-.001	-8.35	.00105	.000	1
S3	.50000	.50593	.006	1.19	.05370	.000	1
S4	1.0000	.97835	-.022	-2.17	.10377	.000	1
S5	2.0000	1.9919	-.008	-.407	.21118	.001	1
S2	.16000	.18469	.025	15.4	.01965	.000	1

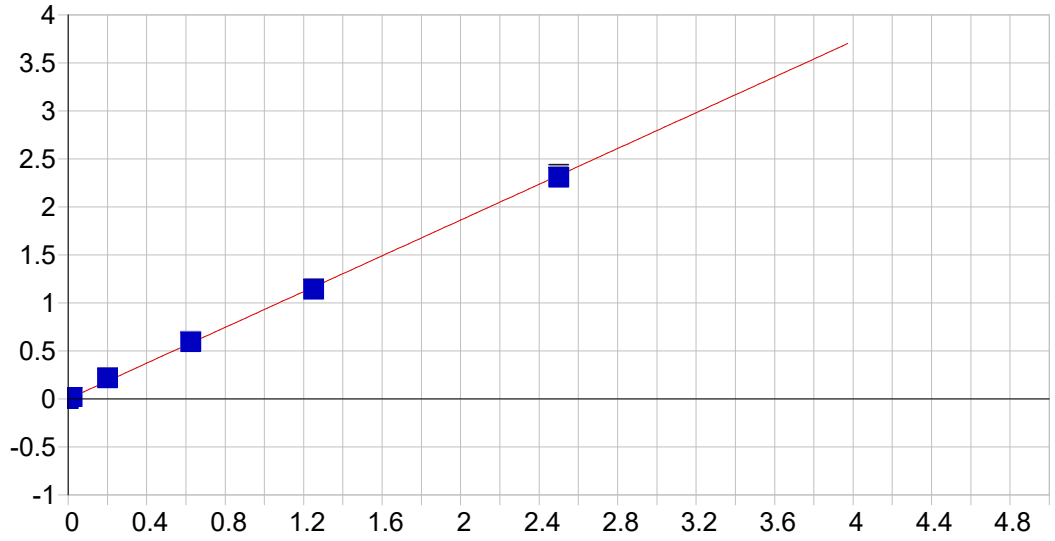


Co 228.616 {448}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000072	Re-Slope:	1.000000
A1 (Gain):	0.816180	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999622	Status:	OK.
Std Error of Est:	0.000457		
Predicted MDL:	0.000220		
Predicted MQL:	0.000733		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00007	.000	1
S1	.03000	.02940	-.001	-2.01	.02396	.000	1
S3	1.2500	1.2550	.005	.398	1.0261	.001	1
S4	2.5000	2.4695	-.031	-1.22	2.0191	.006	1
S5	5.0000	4.9754	-.025	-.492	4.0678	.005	1
S2	.40000	.45075	.051	12.7	.36852	.000	1

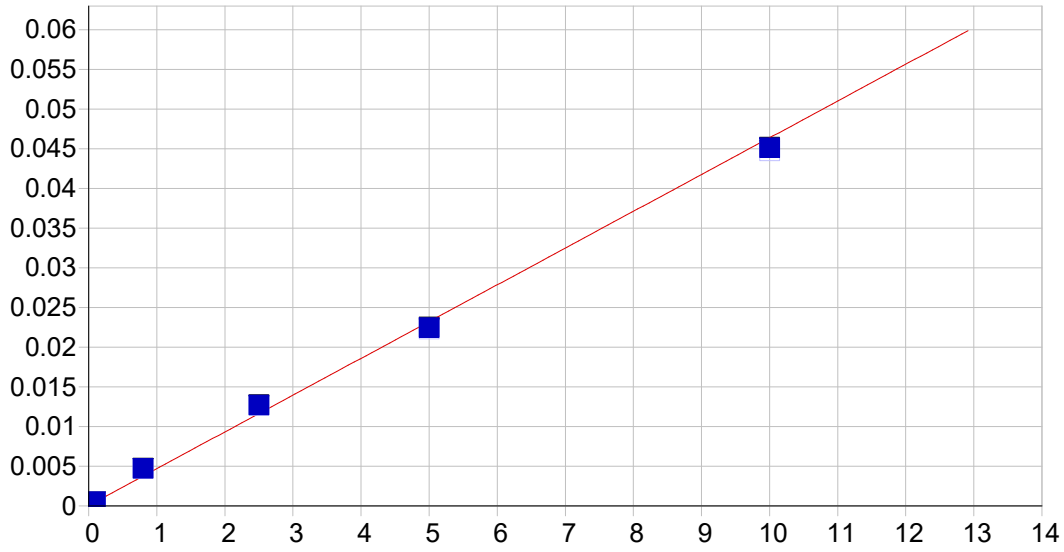


Cu 224.700 {450}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000205	Re-Slope:	1.000000
A1 (Gain):	0.931679	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999246	Status:	OK.
Std Error of Est:	0.000428		
Predicted MDL:	0.000340		
Predicted MQL:	0.001133		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00021	.000	1
S1	.02000	.02172	.002	8.58	.02021	.000	1
S3	.62500	.63812	.013	2.10	.59845	.002	1
S4	1.2500	1.2234	-.027	-2.12	1.1479	.001	1
S5	2.5000	2.4775	-.022	-.899	2.3246	.016	1
S2	.20000	.23419	.034	17.1	.21931	.001	1

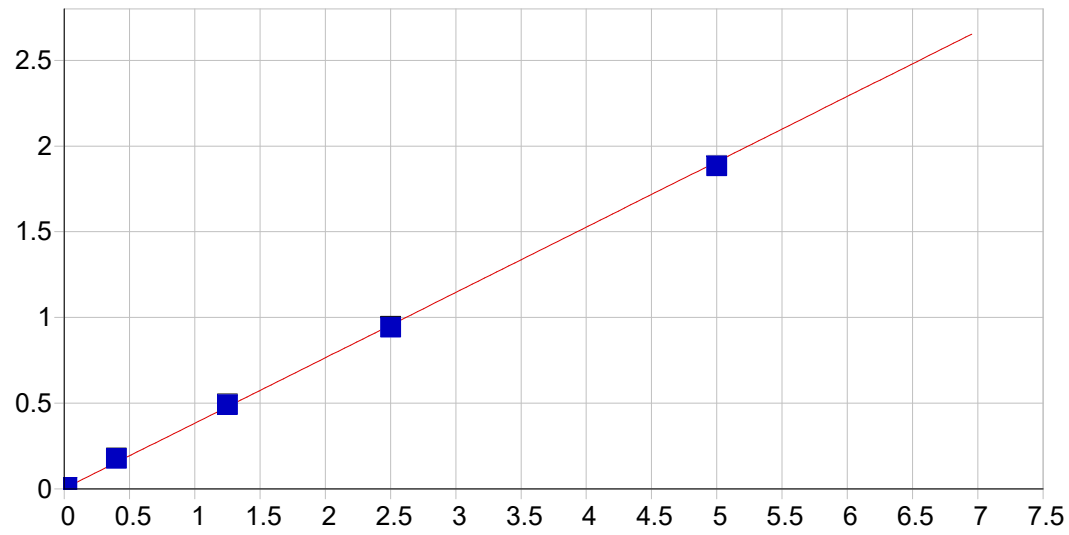


Fe 240.488 {140}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000057	Re-Slope:	1.000000
A1 (Gain):	0.004634	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.997598	Status:	OK.
Std Error of Est:	0.000017		
Predicted MDL:	0.003753		
Predicted MQL:	0.012510		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00003	-.000	.000	.00006	.000	1
S1	.10000	.09878	-.001	-1.22	.00051	.000	1
S3	2.5000	2.7296	.230	9.18	.01261	.000	1
S4	5.0000	4.8364	-.164	-3.27	.02227	.000	1
S5	10.000	9.7286	-.271	-2.71	.04475	.000	1
S2	.80000	1.0066	.207	25.8	.00469	.000	1

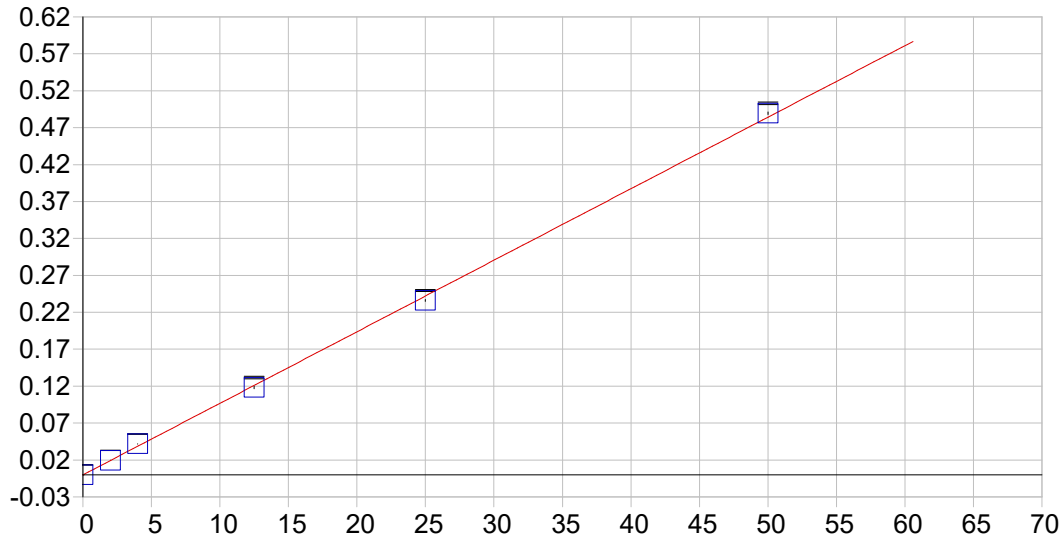


Mn 257.610 {131}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002249	Re-Slope:	1.000000
A1 (Gain):	0.381216	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999370	Status:	OK.
Std Error of Est:	0.000224		
Predicted MDL:	0.000377		
Predicted MQL:	0.001256		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00225	.000	1
S1	.02000	.02146	.001	7.28	.01043	.000	1
S3	1.2500	1.2817	.032	2.53	.49094	.004	1
S4	2.5000	2.4686	-.031	-1.26	.94350	.004	1
S5	5.0000	4.9368	-.063	-1.26	1.8846	.003	1
S2	.40000	.46153	.062	15.4	.17822	.001	1

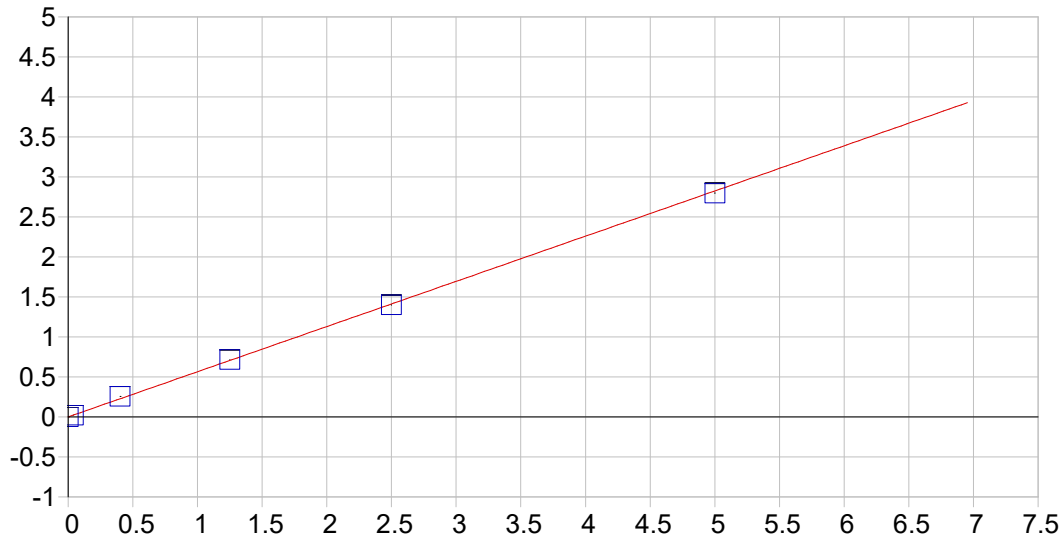


Mg 279.079 {121}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000124	Re-Slope:	1.000000
A1 (Gain):	0.009687	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999701	Status:	OK.
Std Error of Est:	0.000125		
Predicted MDL:	0.013039		
Predicted MQL:	0.043464		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00012	-.000	.000	-.00013	.000	1
S2	4.0000	4.3295	.330	8.24	.04182	.000	1
S3	12.500	12.214	-.286	-2.28	.11820	.002	1
S4	25.000	24.375	-.625	-2.50	.23599	.001	1
S5	50.000	50.552	.552	1.10	.48957	.002	1
S1	2.0000	2.0290	.029	1.45	.01953	.000	1

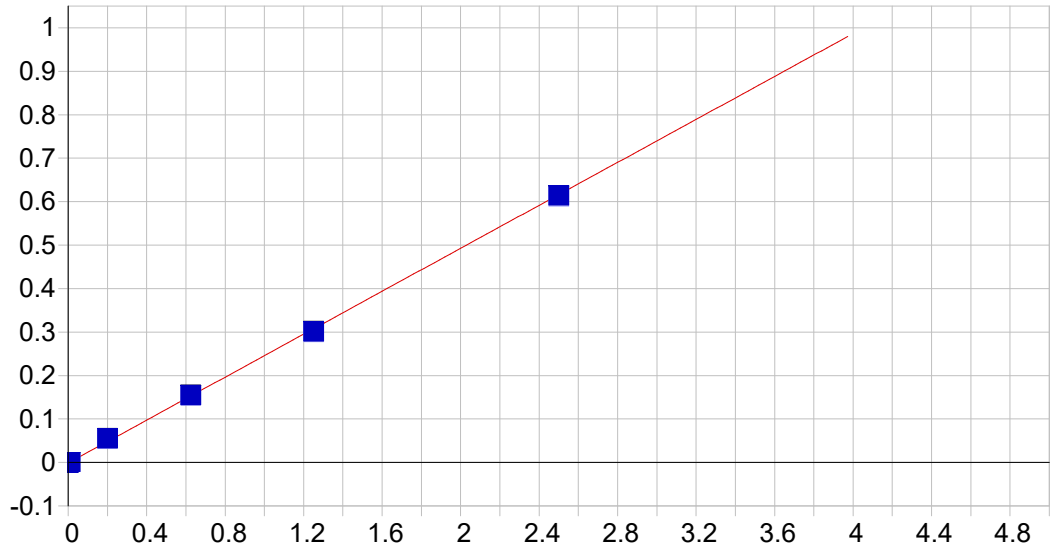


Ni 231.604 {446}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000102	Re-Slope:	1.000000
A1 (Gain):	0.564849	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999521	Status:	OK.
Std Error of Est:	0.000410		
Predicted MDL:	0.000298		
Predicted MQL:	0.000994		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00010	.000	1
S1	.04000	.03909	-.001	-2.26	.02198	.000	1
S3	1.2500	1.2650	.015	1.20	.71444	.001	1
S4	2.5000	2.4764	-.024	-.946	1.3987	.003	1
S5	5.0000	4.9532	-.047	-.937	2.7977	.006	1
S2	.40000	.45637	.056	14.1	.25768	.000	1

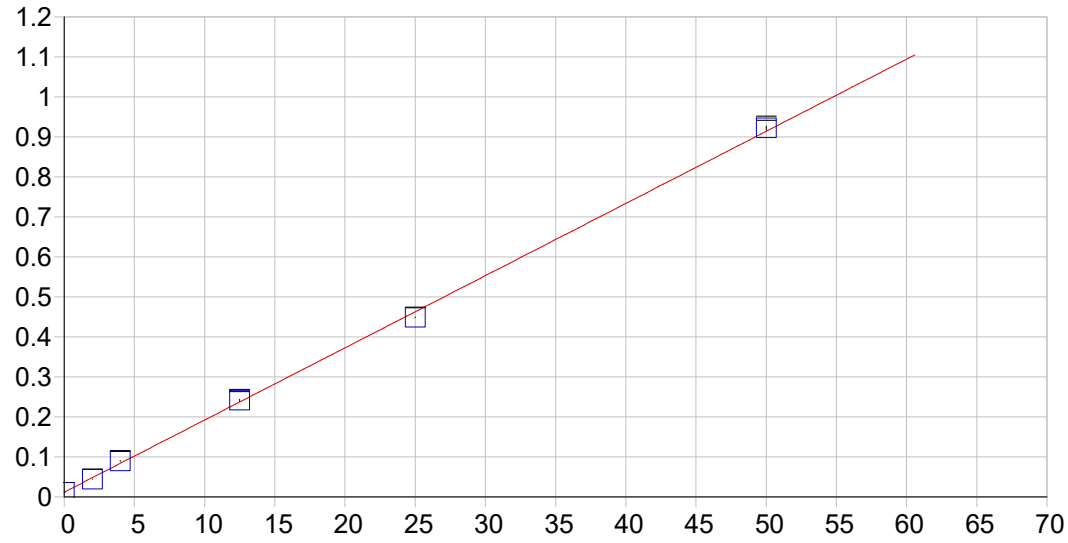


Ag 328.068 {103}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.001350	Re-Slope:	1.000000
A1 (Gain):	0.247042	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999482	Status:	OK.
Std Error of Est:	0.000066		
Predicted MDL:	0.000281		
Predicted MQL:	0.000936		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00135	.000	1
S1	.01000	.01002	.000	.221	.00111	.000	1
S3	.62500	.63177	.007	1.08	.15411	.000	1
S4	1.2500	1.2244	-.026	-2.05	.29990	.001	1
S5	2.5000	2.4903	-.010	-.389	.61140	.000	1
S2	.20000	.22856	.029	14.3	.05492	.000	1

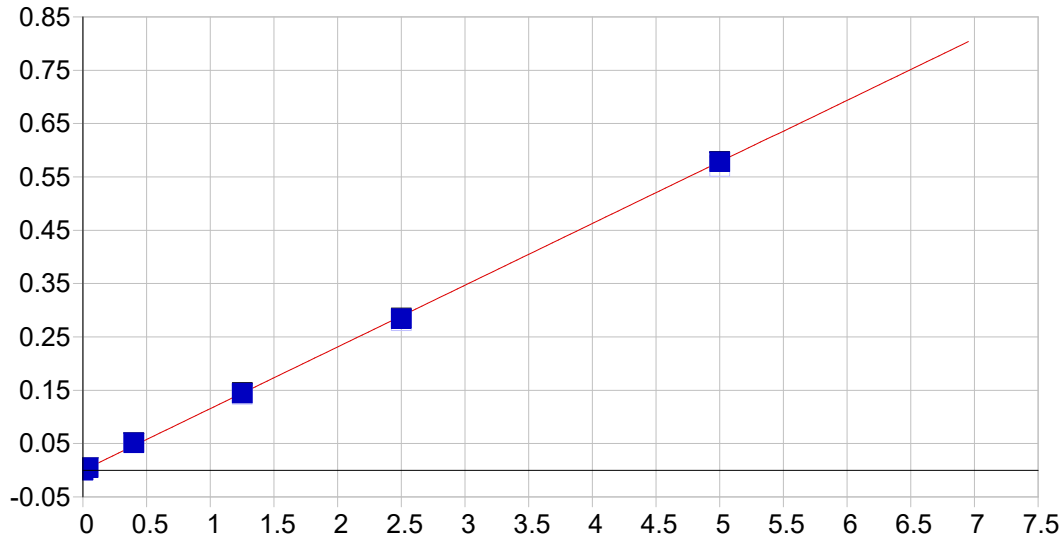


Na 589.592 { 57}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.011861	Re-Slope:	1.000000
A1 (Gain):	0.018043	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999581	Status:	OK.
Std Error of Est:	0.000276		
Predicted MDL:	0.012681		
Predicted MQL:	0.042271		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00006	.000	.000	.01186	.000	1
S2	4.0000	4.3133	.313	7.83	.08969	.001	1
S3	12.500	12.726	.226	1.81	.24148	.003	1
S4	25.000	24.227	-.773	-3.09	.44899	.001	1
S5	50.000	50.443	.443	.886	.92202	.005	1
S1	2.0000	1.7908	-.209	-10.5	.04417	.000	1

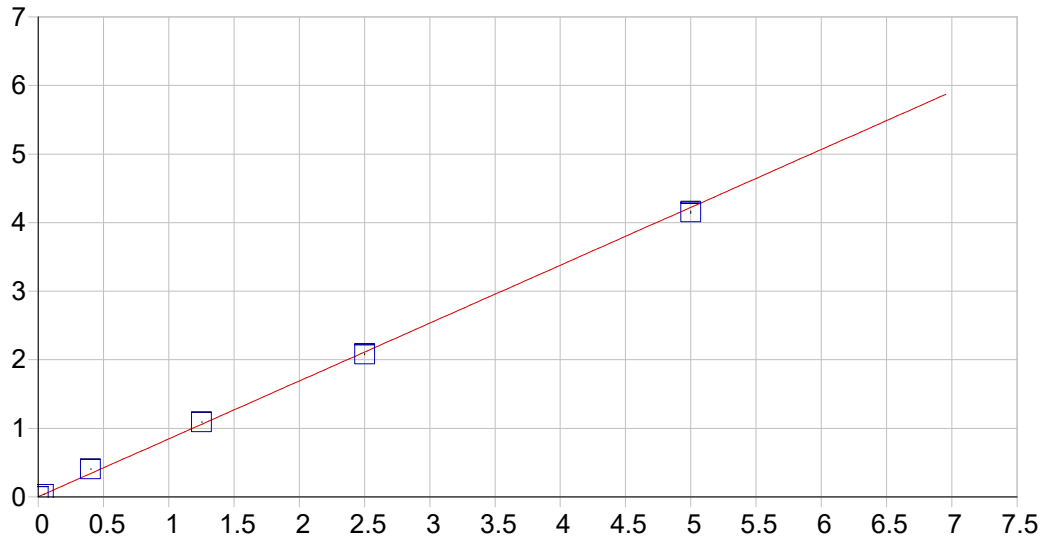


V 292.402 {115}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000115	Re-Slope:	1.000000
A1 (Gain):	0.115643	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999669	Status:	OK.
Std Error of Est:	0.000069		
Predicted MDL:	0.001205		
Predicted MQL:	0.004016		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00012	.000	1
S1	.04000	.04070	.001	1.75	.00442	.000	1
S3	1.2500	1.2493	-.001	-.055	.14225	.001	1
S4	2.5000	2.4562	-.044	-1.75	.27971	.002	1
S5	5.0000	4.9985	-.002	-.031	.56949	.001	1
S2	.40000	.44533	.045	11.3	.05071	.000	1

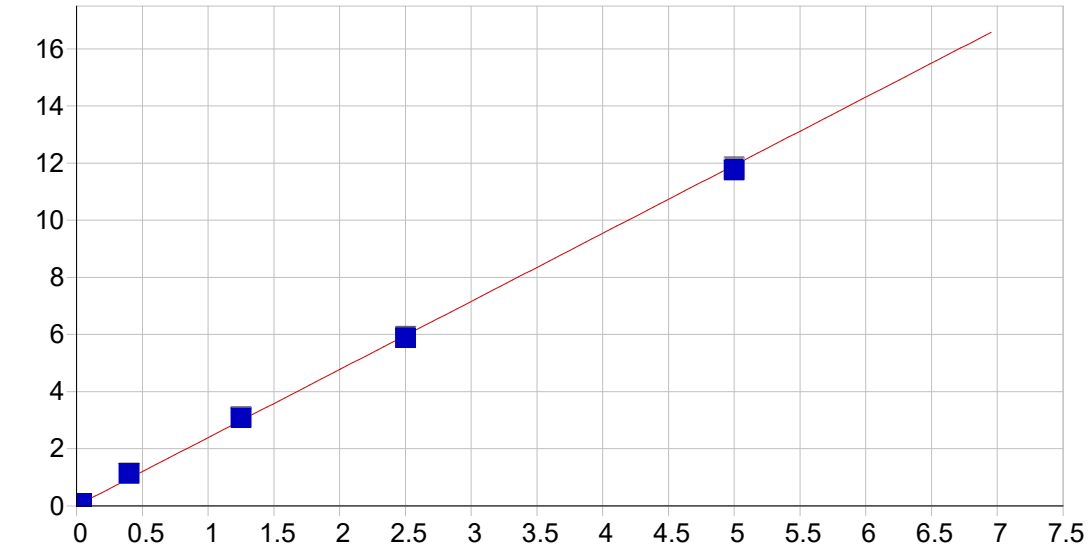


Zn 206.200 {464}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002495	Re-Slope:	1.000000
A1 (Gain):	0.843980	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999015	Status:	OK.
Std Error of Est:	0.000880		
Predicted MDL:	0.000234		
Predicted MQL:	0.000781		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.00249	.000	1
S1	.04000	.04012	.000	.309	.03636	.000	1
S3	1.2500	1.2914	.041	3.31	1.0924	.001	1
S4	2.5000	2.4638	-.036	-1.45	2.0819	.008	1
S5	5.0000	4.9176	-.082	-1.65	4.1528	.016	1
S2	.40000	.47711	.077	19.3	.40517	.001	1

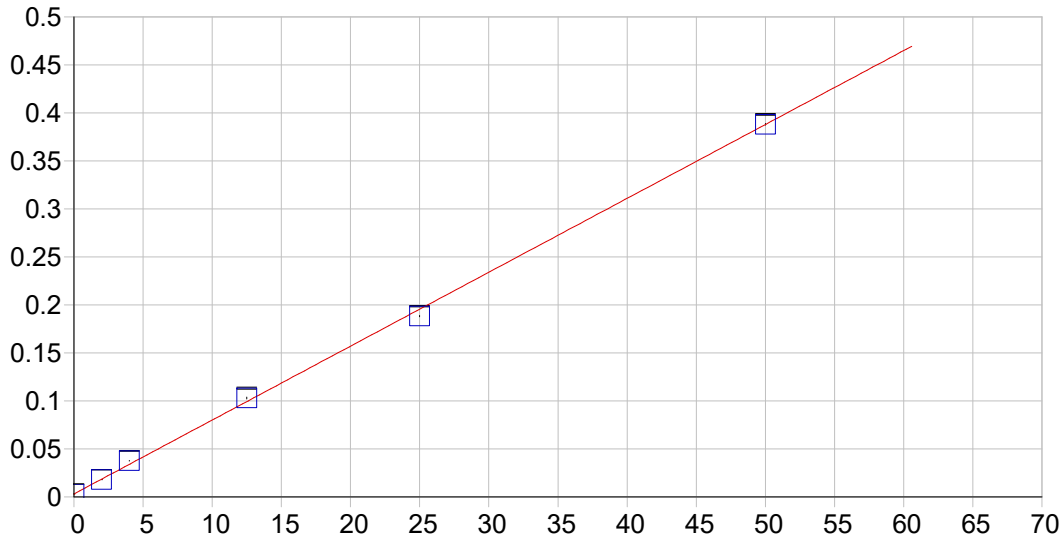


Zn 213.856 {158}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.008430	Re-Slope:	1.000000
A1 (Gain):	2.383723	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999176	Status:	OK.
Std Error of Est:	0.002288		
Predicted MDL:	0.000294		
Predicted MQL:	0.000980		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.00842	.000	1
S1	.04000	.03916	-.001	-2.10	.10245	.001	1
S3	1.2500	1.2909	.041	3.27	3.1062	.003	1
S4	2.5000	2.4625	-.038	-1.50	5.9198	.013	1
S5	5.0000	4.9270	-.073	-1.46	11.836	.028	1
S2	.40000	.47042	.070	17.6	1.1364	.008	1

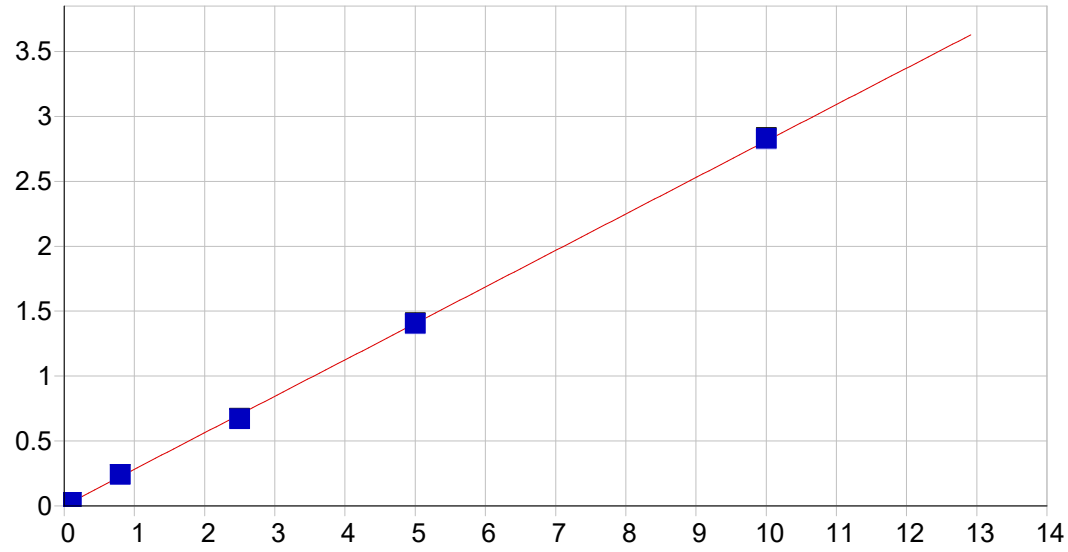


K 766.490 { 44}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.003126	Re-Slope:	1.000000
A1 (Gain):	0.007696	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999375	Status:	OK.
Std Error of Est:	0.000144		
Predicted MDL:	0.019395		
Predicted MQL:	0.064651		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00017	-.000	.000	.00312	.000	1
S2	4.0000	4.4933	.493	12.3	.03771	.000	1
S3	12.500	12.984	.484	3.87	.10305	.001	1
S4	25.000	24.074	-.926	-3.71	.18840	.001	1
S5	50.000	50.027	.027	.054	.38814	.001	1
S1	2.0000	1.9218	-.078	-3.91	.01792	.000	1

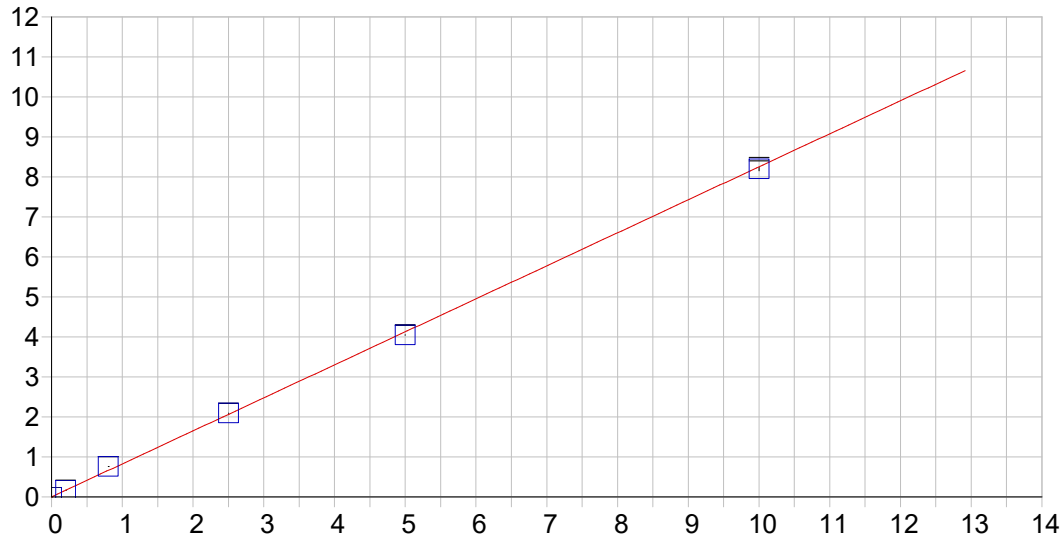


B 249.678 {135}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001319	Re-Slope:	1.000000
A1 (Gain):	0.280890	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999730	Status:	OK.
Std Error of Est:	0.000342		
Predicted MDL:	0.000590		
Predicted MQL:	0.001967		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00132	.000	1
S1	.10000	.09603	-.004	-3.97	.02814	.000	1
S3	2.5000	2.3821	-.118	-4.71	.66836	.004	1
S4	5.0000	4.9974	-.003	-.052	1.4009	.006	1
S5	10.000	10.070	.070	.703	2.8217	.007	1
S2	.80000	.85409	.054	6.76	.24056	.001	1

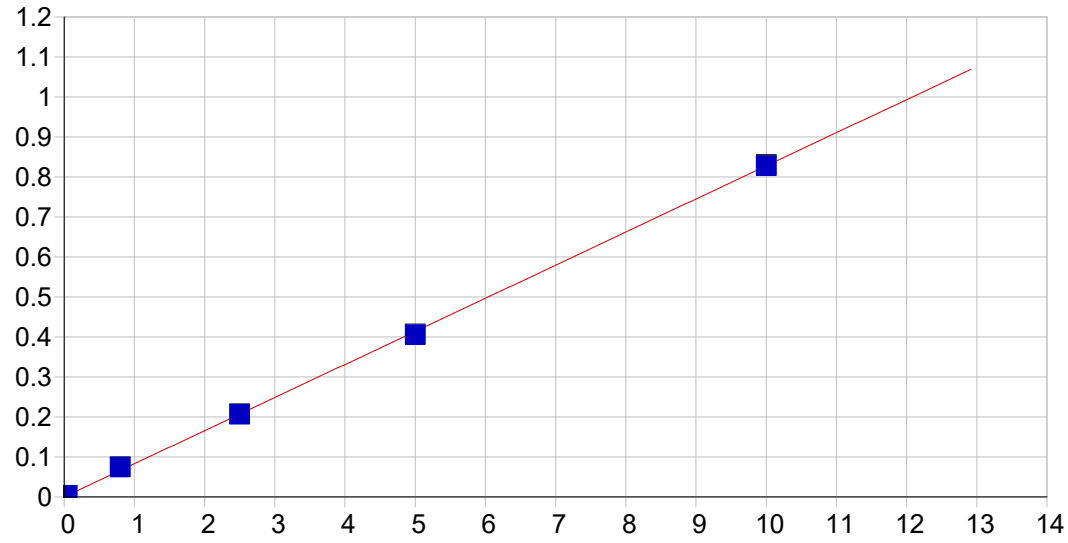


Mo 202.030 {467}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000476	Re-Slope:	1.000000
A1 (Gain):	0.825230	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999413	Status:	OK.
Std Error of Est:	0.002105		
Predicted MDL:	0.000251		
Predicted MQL:	0.000835		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00003	-.000	.000	.00045	.000	1
S1	.20000	.20227	.002	1.14	.16740	.000	1
S3	2.5000	2.5362	.036	1.45	2.0934	.006	1
S4	5.0000	4.9045	-.095	-1.91	4.0478	.010	1
S5	10.000	9.9340	-.066	-.660	8.1983	.043	1
S2	.80000	.92299	.123	15.4	.76216	.001	1

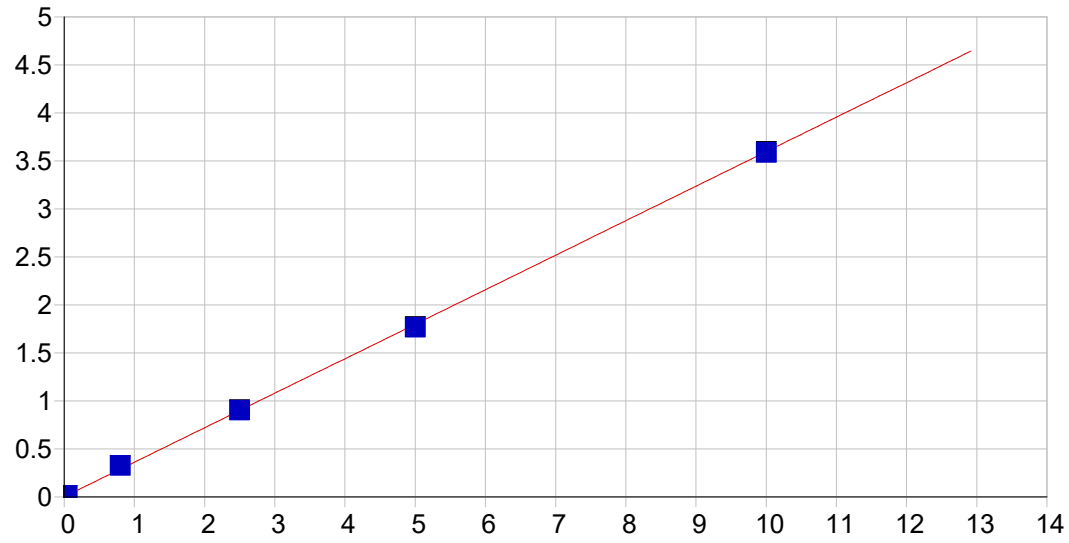


Sn 189.989 {478}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000098	Re-Slope:	1.000000
A1 (Gain):	0.082749	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999614	Status:	OK.
Std Error of Est:	0.000076		
Predicted MDL:	0.000989		
Predicted MQL:	0.003297		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00010	.000	1
S1	.04000	.03852	-.001	-3.70	.00328	.000	1
S3	2.5000	2.4937	-.006	-.251	.20624	.001	1
S4	5.0000	4.9017	-.098	-1.97	.40529	.001	1
S5	10.000	10.007	.007	.074	.82736	.002	1
S2	.80000	.89858	.099	12.3	.07439	.000	1

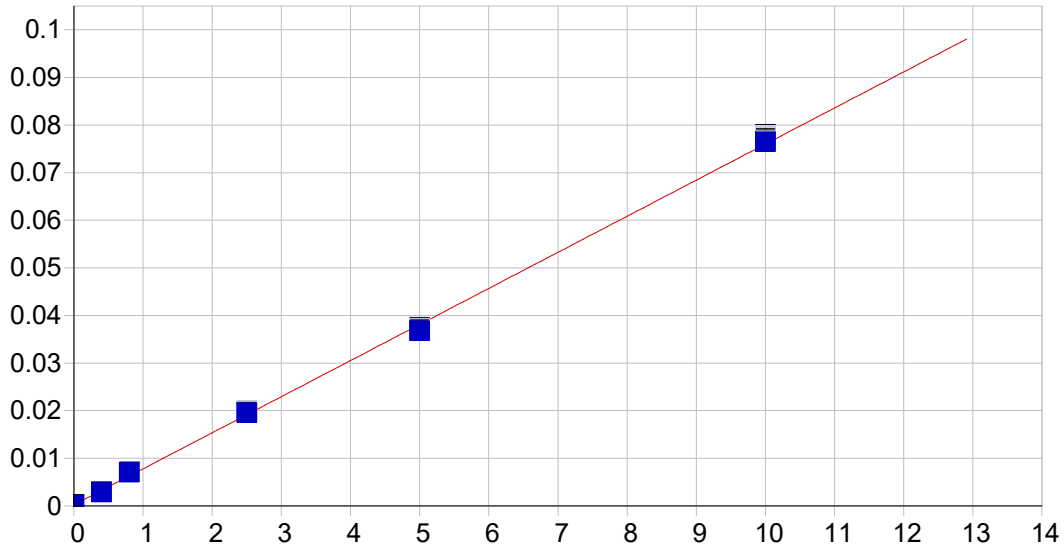


Ti 336.121 {100}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001795	Re-Slope:	1.000000
A1 (Gain):	0.359407	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999610	Status:	OK.
Std Error of Est:	0.000333		
Predicted MDL:	0.000536		
Predicted MQL:	0.001788		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00179	.000	1
S1	.04000	.03975	-.000	-.615	.01607	.000	1
S3	2.5000	2.5104	.010	.416	.90373	.003	1
S4	5.0000	4.9112	-.089	-1.78	1.7663	.006	1
S5	10.000	9.9781	-.022	-.219	3.5867	.009	1
S2	.80000	.90049	.100	12.6	.32533	.000	1

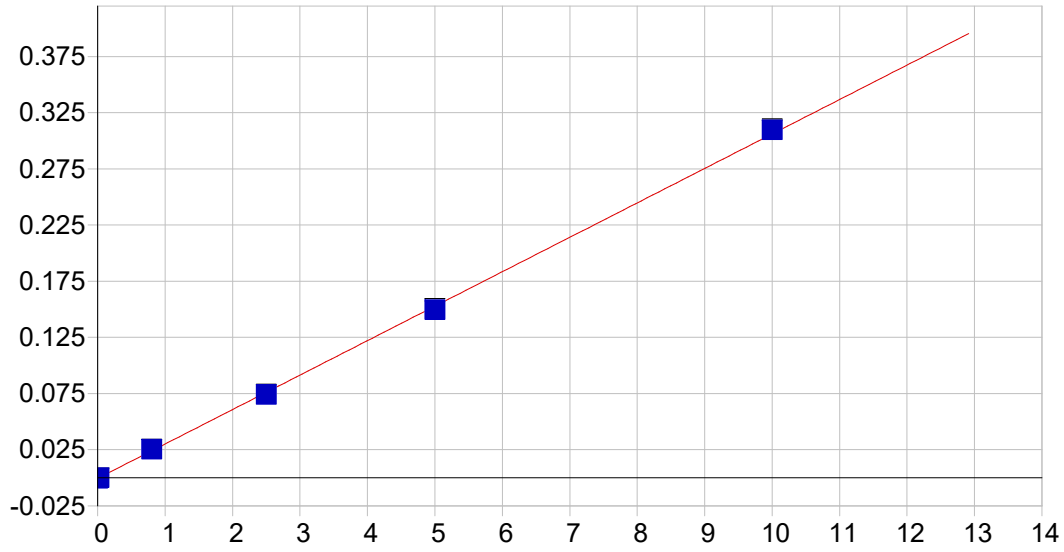


Si 288.158 {117}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000212	Re-Slope:	1.000000
A1 (Gain):	0.007580	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999297	Status:	OK.
Std Error of Est:	0.000031		
Predicted MDL:	0.004508		
Predicted MQL:	0.015028		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00021	.000	1
S1	.40000	.35457	-.045	-11.4	.00290	.000	1
S3	2.5000	2.5523	.052	2.09	.01984	.000	1
S4	5.0000	4.8215	-.178	-3.57	.03733	.000	1
S5	10.000	10.065	.065	.651	.07764	.000	1
S2	.80000	.90593	.106	13.2	.00717	.000	1

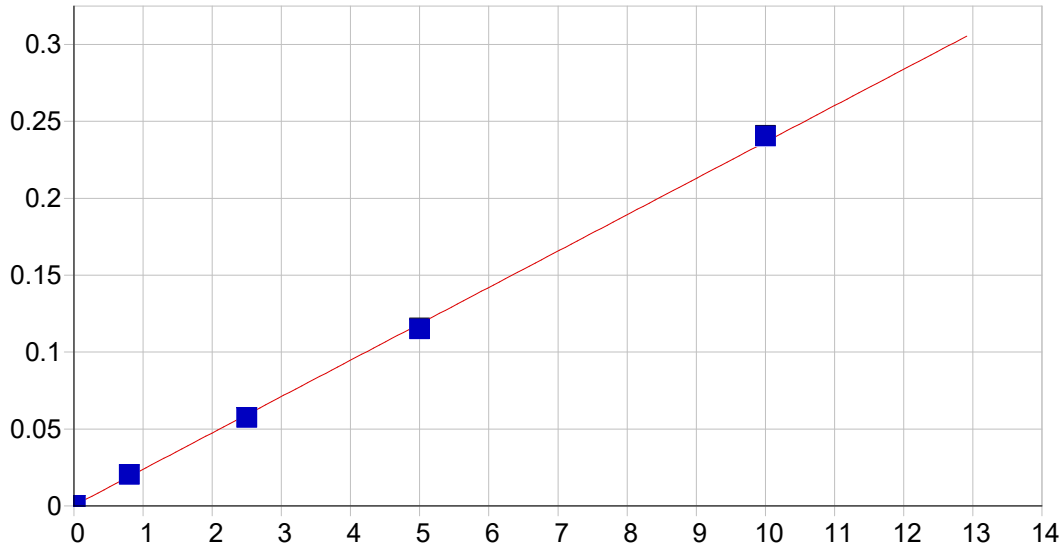


P 177.495 {490}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000534	Re-Slope:	1.000000
A1 (Gain):	0.030665	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999769	Status:	OK.
Std Error of Est:	0.000015		
Predicted MDL:	0.002787		
Predicted MQL:	0.009290		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00053	.000	1
S1	.02000	.01535	-.005	-23.2	-.00006	.000	1
S3	2.5000	2.4396	-.060	-2.41	.07427	.000	1
S4	5.0000	4.8988	-.101	-2.02	.14966	.001	1
S5	10.000	10.123	.123	1.23	.30983	.001	1
S2	.80000	.84353	.044	5.44	.02533	.000	1

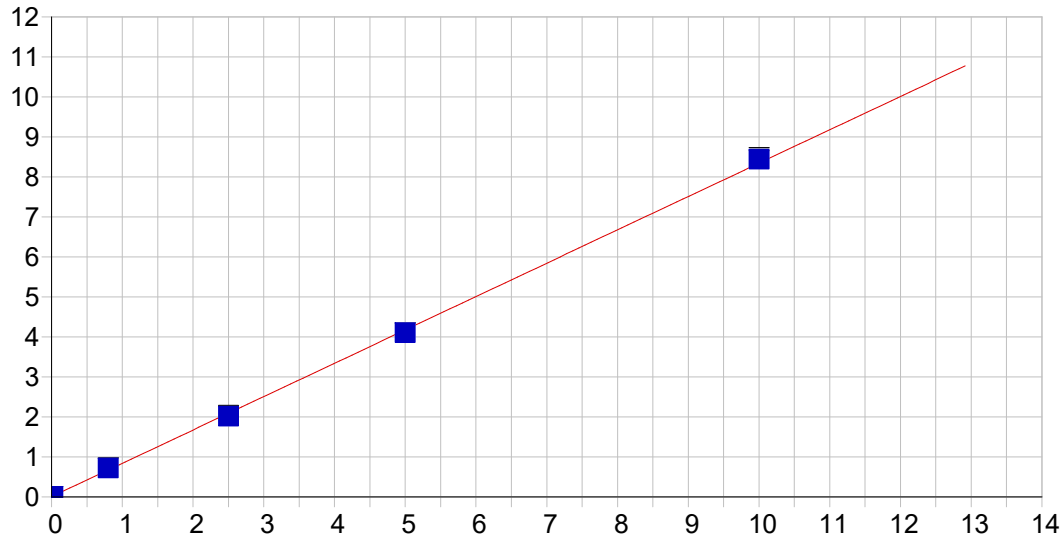


S 182.034 {485}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000179	Re-Slope:	1.000000
A1 (Gain):	0.023642	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999643	Status:	OK.
Std Error of Est:	0.000015		
Predicted MDL:	0.003301		
Predicted MQL:	0.011004		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00018	.000	1
S1	.02000	.01714	-.003	-14.3	.00056	.000	1
S3	2.5000	2.4203	-.080	-3.19	.05725	.000	1
S4	5.0000	4.8624	-.138	-2.75	.11483	.001	1
S5	10.000	10.167	.167	1.67	.23994	.000	1
S2	.80000	.85285	.053	6.61	.02029	.000	1

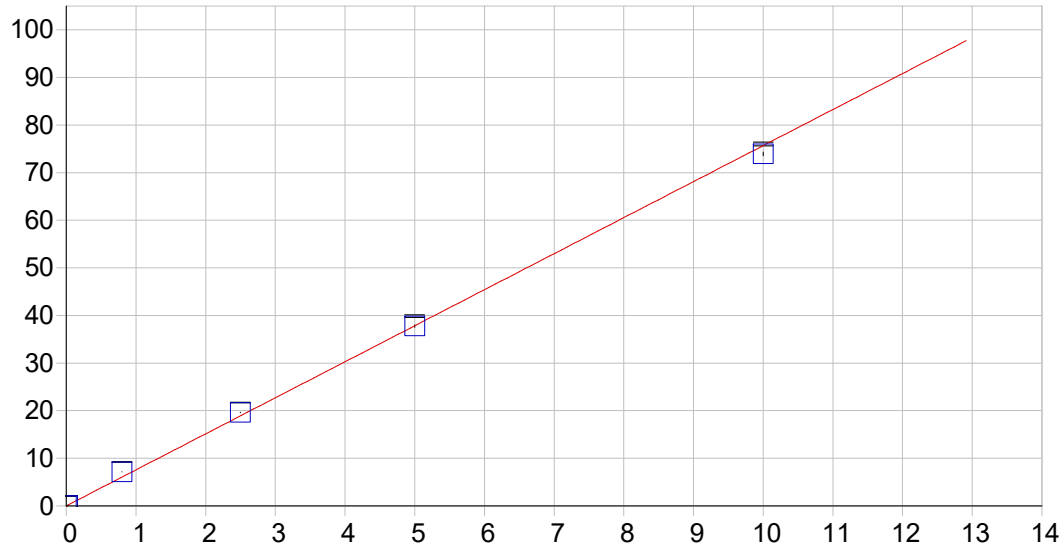


Li 670.784 { 50}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.005632	Re-Slope:	1.000000
A1 (Gain):	0.833848	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999704	Status:	OK.
Std Error of Est:	0.000476		
Predicted MDL:	0.000702		
Predicted MQL:	0.002340		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00563	.000	1
S5	10.000	10.118	.118	1.18	8.4465	.036	1
S4	5.0000	4.9114	-.089	-1.77	4.1031	.005	1
S3	2.5000	2.4129	-.087	-3.48	2.0187	.020	1
S1	.02000	.01752	-.002	-12.4	.02050	.001	1
S2	.80000	.86036	.060	7.55	.72338	.006	1

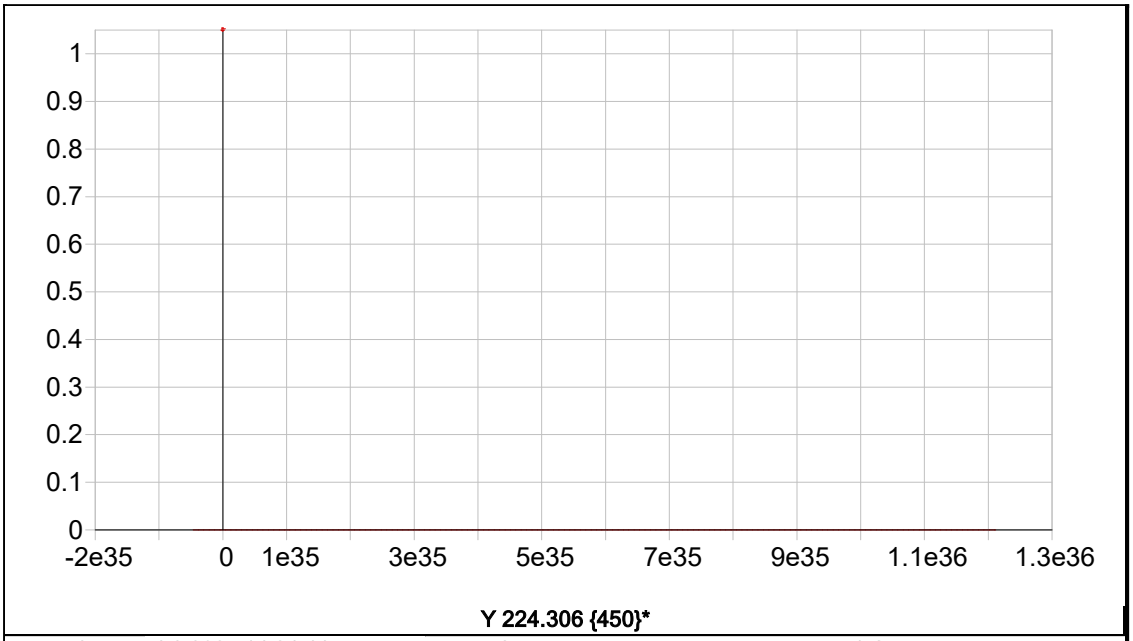


Sr 407.771 { 83}

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000331	Re-Slope:	1.000000
A1 (Gain):	7.568981	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999039	Status:	OK.
Std Error of Est:	0.007782		
Predicted MDL:	0.000050		
Predicted MQL:	0.000167		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00030	.000	1
S1	.02000	.02050	.001	2.51	.15551	.001	1
S3	2.5000	2.5936	.094	3.74	19.631	.081	1
S4	5.0000	4.9922	-.008	-.155	37.787	.244	1
S5	10.000	9.7684	-.232	-2.32	73.937	.417	1
S2	.80000	.94525	.145	18.2	7.1549	.020	1

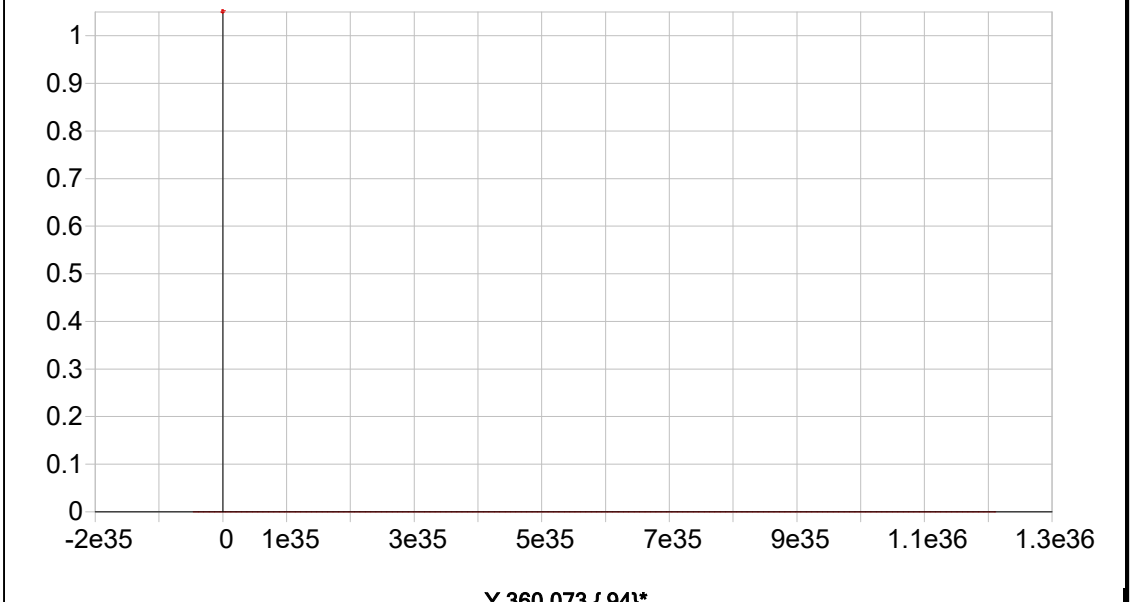


Y 224.306 {450}*

Date of Fit:	4/8/2025 14:24:44	Type of Fit:	Linear	Weighting:	1/Conc

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

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



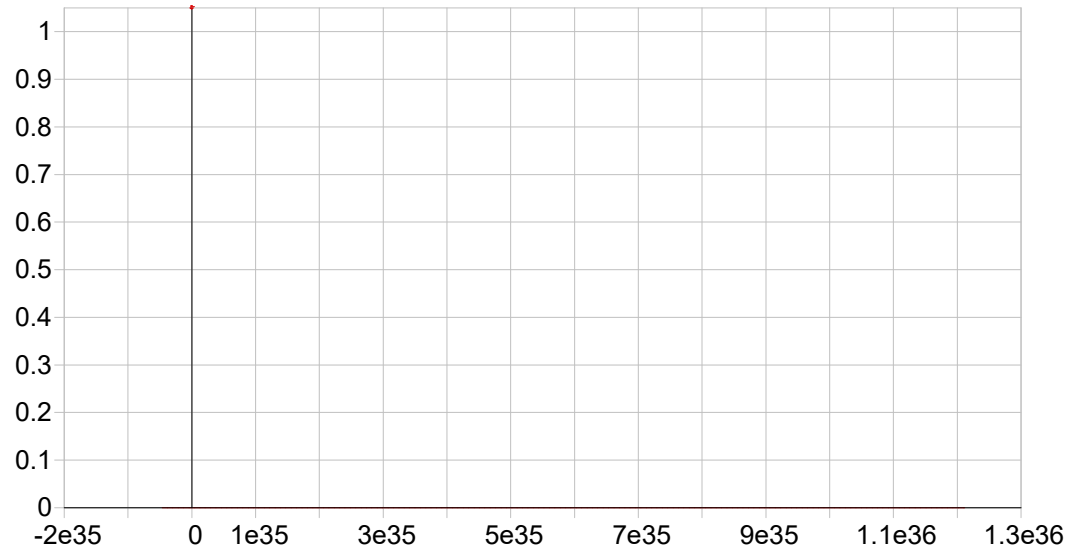
Y 360.073 { 94}*

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

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

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

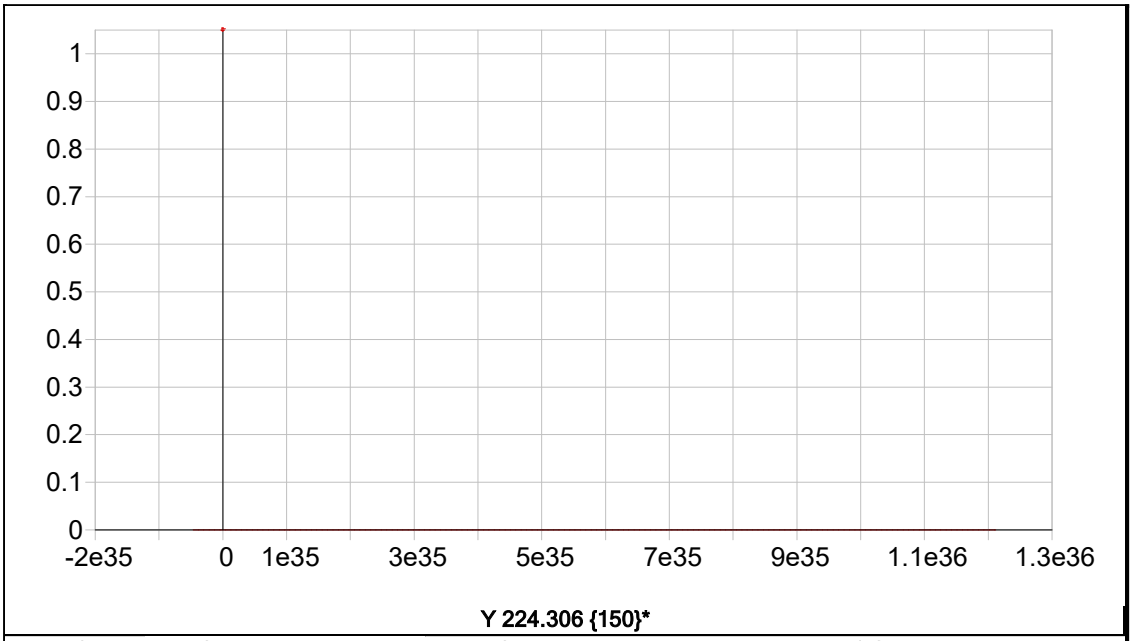
Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



Y 371.030 { 91}*

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

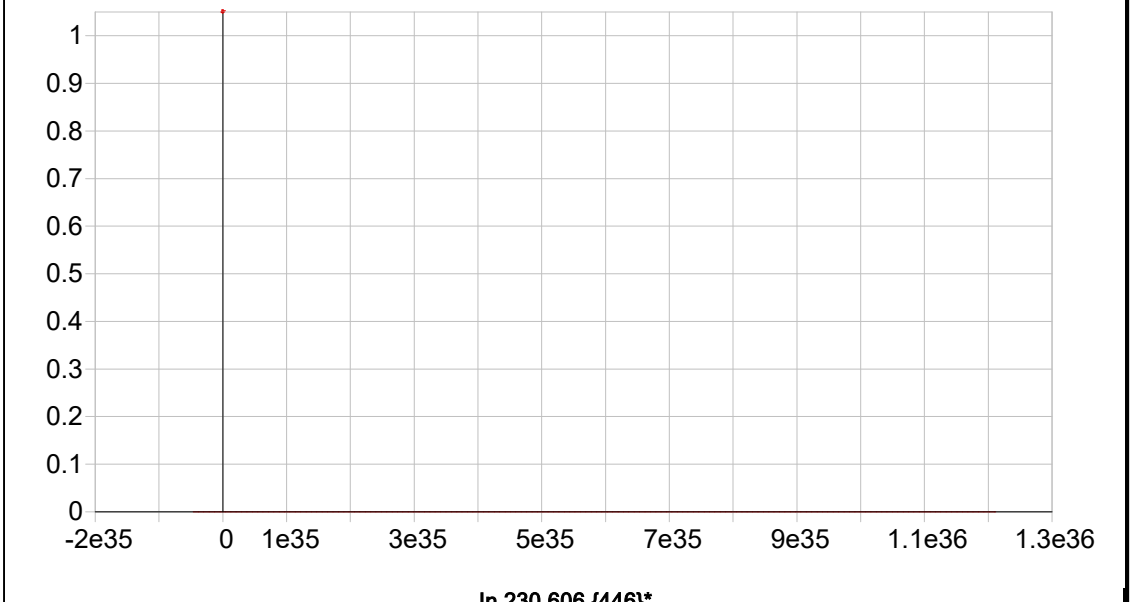
Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



Y 224.306 {150}*

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

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



In 230.606 {446}*

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

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**

Sample Name: S0 Acquired: 4/8/2025 12:46:54 Type: Cal
Method: NON EPA-6010-200.7(v2802) 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	-.00012	-.00008	-.00033	.00026	.00027	.00047	.00025	-.00030
Stddev	.00013	.00009	.00032	.00004	.00018	.00007	.00302	.00012
%RSD	109.46	108.21	97.840	15.297	69.288	15.150	1227.1	39.196
#1	-.00001	-.00018	-.00064	.00023	.00037	.00039	-.00308	-.00032
#2	-.00008	-.00006	.00000	.00025	.00005	.00049	.00101	-.00040
#3	-.00026	-.00000	-.00035	.00030	.00037	.00053	.00280	-.00017

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	-.00021	.00099	.00008	.00007	-.00021	.00006	.00225	-.00013
Stddev	.00010	.00028	.00004	.00011	.00024	.00001	.00005	.00007
%RSD	46.439	28.647	53.046	162.21	112.90	13.903	2.4435	55.349
#1	-.00030	.00088	.00008	.00003	.00006	.00005	.00226	-.00014
#2	-.00010	.00131	.00004	-.00001	-.00033	.00006	.00230	-.00018
#3	-.00023	.00078	.00012	.00020	-.00037	.00006	.00219	-.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	-.00010	-.00135	.01186	-.00012	.00842	.00312	.00132	.00045
Stddev	.00007	.00001	.00009	.00004	.00030	.00009	.00016	.00013
%RSD	68.760	.50125	.77739	38.012	3.5389	2.8639	11.897	28.711
#1	-.00011	-.00136	.01197	-.00010	.00827	.00305	.00127	.00031
#2	-.00017	-.00135	.01181	-.00008	.00876	.00322	.00149	.00056
#3	-.00003	-.00134	.01181	-.00016	.00822	.00311	.00119	.00048

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	.00010	.00179	.00021	-.00053	.00018	.00563	.00030
Stddev	.00007	.00012	.00003	.00005	.00002	.00040	.00004
%RSD	68.851	6.7696	14.897	10.219	11.308	7.1343	14.792
#1	.00015	.00172	.00020	-.00050	.00020	.00604	.00034
#2	.00002	.00193	.00025	-.00051	.00017	.00524	.00030
#3	.00012	.00172	.00019	-.00060	.00017	.00562	.00025

Sample Name: S0 Acquired: 4/8/2025 12:46:54 Type: Cal
Method: NON EPA-6010-200.7(v2802) 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	2428.8	86146.	17981.	2324.2	4807.8
Stddev	10.7	81.	103.	26.0	2.0
%RSD	.44176	.09445	.57193	1.1166	.04218
#1	2440.4	86086.	18095.	2339.8	4808.6
#2	2419.3	86238.	17953.	2338.5	4805.5
#3	2426.7	86114.	17895.	2294.2	4809.3

Sample Name: S1 Acquired: 4/8/2025 12:51:17 Type: Cal
Method: NON EPA-6010-200.7(v2802) 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	.00103	.00213	.00166	.00173	.00849	.01032	.22353	.01606
Stddev	.00015	.00006	.00014	.00015	.00004	.00008	.00136	.00015
%RSD	14.288	2.5900	8.4932	8.4238	.42817	.77430	.60625	.95866
#1	.00113	.00208	.00180	.00182	.00846	.01023	.22409	.01624
#2	.00109	.00212	.00152	.00181	.00853	.01037	.22451	.01596
#3	.00086	.00219	.00166	.00156	.00848	.01038	.22198	.01598

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	.01225	.08992	.00105	.02396	.02021	.00051	.01043	.01953
Stddev	.00009	.00037	.00001	.00022	.00022	.00002	.00015	.00009
%RSD	.70217	.41346	.71830	.90109	1.0839	3.4744	1.4585	.45479
#1	.01219	.09007	.00106	.02372	.02046	.00050	.01054	.01963
#2	.01235	.09019	.00104	.02404	.02012	.00050	.01049	.01948
#3	.01221	.08949	.00106	.02413	.02005	.00053	.01026	.01948

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	.02198	.00111	.04417	.00442	.10245	.01792	.02814	.16740
Stddev	.00010	.00002	.00035	.00008	.00071	.00005	.00009	.00031
%RSD	.44932	1.6123	.79082	1.8475	.69324	.28531	.30885	.18324
#1	.02189	.00110	.04391	.00450	.10323	.01786	.02824	.16718
#2	.02208	.00110	.04457	.00442	.10185	.01796	.02813	.16726
#3	.02197	.00113	.04404	.00434	.10226	.01793	.02807	.16775

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	.00328	.01607	.00290	-.00006	.00056	.02050	.15551
Stddev	.00012	.00015	.00002	.00002	.00002	.00075	.00055
%RSD	3.6694	.93825	.53446	36.637	3.0026	3.6424	.35661
#1	.00321	.01597	.00291	-.00006	.00058	.01995	.15495
#2	.00321	.01624	.00292	-.00009	.00056	.02135	.15606
#3	.00342	.01601	.00289	-.00004	.00055	.02021	.15553

Sample Name: S1 Acquired: 4/8/2025 12:51:17 Type: Cal
Method: NON EPA-6010-200.7(v2802) 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	2321.2	84536.	18617.	2152.3	4636.0
Stddev	5.7	129.	69.	15.6	11.5
%RSD	.24556	.15313	.37073	.72368	.24879
#1	2324.0	84441.	18562.	2159.2	4646.8
#2	2324.9	84483.	18595.	2134.5	4637.4
#3	2314.6	84683.	18694.	2163.3	4623.9

Sample Name: S2 Acquired: 4/8/2025 12:55:41 Type: Cal
Method: NON EPA-6010-200.7(v2802) 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	.05806	.05311	.16657	.06229	.14601	.17312	4.2330	.12562
Stddev	.00022	.00053	.00010	.00025	.00029	.00049	.0167	.00022
%RSD	.38213	1.0026	.05970	.39427	.19654	.28546	.39518	.17811
#1	.05828	.05268	.16665	.06254	.14605	.17311	4.2519	.12546
#2	.05804	.05295	.16646	.06227	.14571	.17263	4.2201	.12587
#3	.05784	.05370	.16660	.06205	.14628	.17362	4.2272	.12552

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	.96947	.20561	.01965	.36852	.21931	.00469	.17822	.04182
Stddev	.00061	.00099	.00008	.00028	.00089	.00003	.00134	.00026
%RSD	.06322	.48259	.39995	.07502	.40506	.55621	.74997	.62581
#1	.96923	.20448	.01968	.36843	.22032	.00468	.17674	.04153
#2	.97016	.20634	.01972	.36883	.21864	.00472	.17860	.04205
#3	.96900	.20600	.01957	.36830	.21897	.00467	.17933	.04187

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	.25768	.05492	.08969	.05071	1.1364	.03771	.24056	.76216
Stddev	.00029	.00010	.00121	.00029	.0081	.00032	.00117	.00150
%RSD	.11420	.17980	1.3486	.57852	.71632	.83786	.48812	.19677
#1	.25752	.05499	.09097	.05037	1.1446	.03804	.23962	.76240
#2	.25801	.05496	.08952	.05087	1.1364	.03768	.24019	.76055
#3	.25749	.05480	.08857	.05089	1.1283	.03741	.24188	.76352

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	.07439	.32533	.00717	.02533	.02029	.72338	7.1549
Stddev	.00007	.00045	.00005	.00016	.00007	.00611	.0205
%RSD	.09358	.13800	.74585	.63958	.32273	.84525	.28647
#1	.07438	.32577	.00723	.02538	.02032	.72988	7.1751
#2	.07446	.32488	.00713	.02515	.02022	.71774	7.1341
#3	.07432	.32535	.00715	.02546	.02034	.72251	7.1556

Sample Name: S2 Acquired: 4/8/2025 12:55:41 Type: Cal
Method: NON EPA-6010-200.7(v2802) 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	2274.3	81896.	18601.	2092.2	4465.9
Stddev	4.7	233.	42.	14.2	4.3
%RSD	.20576	.28481	.22613	.67951	.09686
#1	2270.3	81691.	18649.	2082.5	4461.4
#2	2279.5	81847.	18581.	2085.5	4470.1
#3	2273.1	82150.	18572.	2108.5	4466.1

Sample Name: S3 Acquired: 4/8/2025 12:59:47 Type: Cal
Method: NON EPA-6010-200.7(v2802) 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	.16058	.14688	.45990	.17162	.40510	.47992	11.690	.35223
Stddev	.00048	.00112	.00099	.00067	.00079	.00074	.101	.00218
%RSD	.30046	.75975	.21464	.39292	.19560	.15426	.86238	.62028
#1	.16071	.14739	.45940	.17206	.40572	.47921	11.683	.35471
#2	.16005	.14560	.45927	.17084	.40421	.48069	11.593	.35138
#3	.16099	.14765	.46104	.17196	.40538	.47987	11.794	.35059

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	2.6896	.57362	.05370	1.0261	.59845	.01261	.49094	.11820
Stddev	.0010	.00745	.00032	.0011	.00168	.00005	.00413	.00158
%RSD	.03672	1.2980	.59831	.10359	.28050	.36628	.84140	1.3353
#1	2.6898	.57654	.05372	1.0264	.59934	.01264	.49239	.11876
#2	2.6885	.57915	.05337	1.0249	.59651	.01262	.49415	.11941
#3	2.6904	.56515	.05401	1.0269	.59950	.01256	.48628	.11641

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	.71444	.15411	.24148	.14225	3.1062	.10305	.66836	2.0934
Stddev	.00062	.00025	.00269	.00117	.0028	.00104	.00370	.0056
%RSD	.08654	.16488	1.1154	.82539	.09092	1.0054	.55351	.26961
#1	.71399	.15439	.24032	.14291	3.1030	.10228	.67156	2.0968
#2	.71419	.15390	.23957	.14295	3.1077	.10265	.66922	2.0869
#3	.71514	.15404	.24456	.14090	3.1081	.10423	.66431	2.0966

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	.20624	.90373	.01984	.07427	.05725	2.0187	19.631
Stddev	.00073	.00331	.00005	.00019	.00008	.0203	.081
%RSD	.35219	.36609	.25456	.26179	.13649	1.0039	.41195
#1	.20605	.90643	.01982	.07418	.05730	2.0125	19.708
#2	.20563	.90471	.01980	.07413	.05716	2.0022	19.639
#3	.20704	.90004	.01990	.07449	.05729	2.0413	19.547

Sample Name: S3 Acquired: 4/8/2025 12:59:47 Type: Cal
Method: NON EPA-6010-200.7(v2802) 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	2237.3	80639.	18438.	2056.8	4298.0
Stddev	8.0	78.	132.	8.3	13.4
%RSD	.35785	.09619	.71711	.40405	.31081
#1	2233.2	80728.	18385.	2061.6	4293.2
#2	2246.5	80587.	18340.	2047.2	4313.1
#3	2232.1	80602.	18588.	2061.6	4287.7

Sample Name: S4 Acquired: 4/8/2025 13:04:04 Type: Cal
Method: NON EPA-6010-200.7(v2802) 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	.31195	.28666	.89843	.33143	.78774	.97173	22.587	.73822
Stddev	.00072	.00400	.00335	.00038	.00150	.00287	.110	.00378
%RSD	.23105	1.3960	.37302	.11590	.19040	.29558	.48591	.51184
#1	.31136	.28218	.89457	.33102	.78623	.97412	22.461	.73738
#2	.31174	.28790	.90014	.33178	.78776	.96854	22.659	.73493
#3	.31276	.28989	.90059	.33149	.78923	.97253	22.642	.74235

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	5.3104	1.1107	.10377	2.0191	1.1479	.02227	.94350	.23599
Stddev	.0149	.0057	.00041	.0062	.0012	.00006	.00431	.00143
%RSD	.27997	.51637	.39650	.30863	.10480	.28641	.45674	.60795
#1	5.2932	1.1122	.10330	2.0119	1.1469	.02221	.94593	.23631
#2	5.3185	1.1043	.10407	2.0226	1.1493	.02227	.93852	.23443
#3	5.3194	1.1155	.10393	2.0227	1.1475	.02234	.94604	.23725

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	1.3987	.29990	.44899	.27971	5.9198	.18840	1.4009	4.0478
Stddev	.0034	.00061	.00096	.00167	.0131	.00065	.0055	.0101
%RSD	.24229	.20185	.21291	.59772	.22089	.34623	.39563	.24818
#1	1.3948	.29931	.44860	.28103	5.9231	.18827	1.4014	4.0362
#2	1.4003	.30052	.45008	.27783	5.9054	.18911	1.3951	4.0531
#3	1.4009	.29986	.44829	.28028	5.9309	.18782	1.4062	4.0541

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	.40529	1.7663	.03733	.14966	.11483	4.1031	37.787
Stddev	.00142	.0060	.00015	.00112	.00052	.0050	.244
%RSD	.35013	.34208	.40320	.74762	.45620	.12255	.64654
#1	.40380	1.7718	.03715	.14850	.11425	4.1087	37.655
#2	.40543	1.7598	.03741	.14977	.11527	4.1016	37.636
#3	.40663	1.7673	.03741	.15073	.11497	4.0990	38.068

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: S4 Acquired: 4/8/2025 13:04:04 Type: Cal
Method: NON EPA-6010-200.7(v2802) 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	2205.8	79211.	16724.	1996.8	4133.9
Stddev	2.4	129.	100.	7.8	10.5
%RSD	.10913	.16251	.59833	.39180	.25467
#1	2206.1	79313.	16691.	1990.3	4145.0
#2	2203.3	79253.	16837.	2005.5	4124.0
#3	2208.1	79066.	16645.	1994.5	4132.8

Sample Name: S5 Acquired: 4/8/2025 13:08:15 Type: Cal
Method: NON EPA-6010-200.7(v2802) 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	.65242	.56709	1.8015	.68330	1.6512	2.0281	44.668	1.4975
Stddev	.00501	.00063	.0028	.00636	.0174	.0059	.281	.0026
%RSD	.76841	.11050	.15376	.93016	1.0560	.29127	.62801	.17276
#1	.64778	.56647	1.8046	.67753	1.6354	2.0245	44.882	1.4955
#2	.65175	.56707	1.7994	.68227	1.6482	2.0249	44.772	1.4967
#3	.65774	.56772	1.8004	.69011	1.6699	2.0349	44.351	1.5004

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	10.687	2.2521	.21118	4.0678	2.3246	.04475	1.8846	.48957
Stddev	.030	.0017	.00067	.0050	.0156	.00006	.0026	.00167
%RSD	.28043	.07346	.31656	.12202	.66926	.12831	.13540	.34139
#1	10.721	2.2510	.21095	4.0736	2.3115	.04474	1.8852	.48788
#2	10.676	2.2513	.21193	4.0652	2.3204	.04481	1.8818	.48961
#3	10.664	2.2540	.21065	4.0647	2.3418	.04469	1.8868	.49122

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	2.7977	.61140	.92202	.56949	11.836	.38814	2.8217	8.1983
Stddev	.0056	.00026	.00537	.00108	.028	.00095	.0073	.0432
%RSD	.20055	.04279	.58239	.18962	.23716	.24587	.25856	.52638
#1	2.8041	.61144	.92274	.56894	11.827	.38754	2.8215	8.1623
#2	2.7953	.61164	.91633	.56880	11.813	.38765	2.8145	8.1865
#3	2.7937	.61112	.92700	.57074	11.867	.38924	2.8291	8.2462

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	.82736	3.5867	.07764	.30983	.23994	8.4465	73.937
Stddev	.00207	.0091	.00038	.00073	.00038	.0356	.417
%RSD	.24996	.25345	.49023	.23614	.16027	.42199	.56446
#1	.82951	3.5844	.07724	.30987	.24033	8.4395	74.418
#2	.82538	3.5790	.07769	.31055	.23956	8.4150	73.666
#3	.82719	3.5967	.07800	.30908	.23993	8.4852	73.728

Sample Name: S5 Acquired: 4/8/2025 13:08:15 Type: Cal
Method: NON EPA-6010-200.7(v2802) 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	2029.2	75011.	15798.	1839.8	3802.6
Stddev	21.7	42.	23.	5.8	21.1
%RSD	1.0704	.05615	.14348	.31627	.55431
#1	2050.6	75048.	15815.	1842.2	3825.2
#2	2029.7	74965.	15806.	1844.0	3799.1
#3	2007.2	75020.	15772.	1833.2	3783.5

Sample Name: ICV01 Acquired: 4/8/2025 14:27:28 Type: Unk
Method: NON EPA-6010-200.7(v2898) 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	1.043083	.9905997	.9833646	1.066502	1.032802	2.511766
Stddev	.012025	.0017400	.0045300	.006050	.011760	.016459
%RSD	1.152816	.1756494	.4606631	.5672861	1.138681	.6552908
#1	1.037126	.9916471	.9864808	1.065735	1.031756	2.517592
#2	1.035199	.9885912	.9781681	1.060871	1.021599	2.524520
#3	1.056923	.9915609	.9854448	1.072898	1.045050	2.493186

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4910995	.5422654	.4862906	9.329628	.5255883	.4954388
Stddev	.0043599	.0035062	.0028703	.032971	.0051082	.0039217
%RSD	.8877817	.6465776	.5902350	.3534040	.9718978	.7915551
#1	.4915189	.5411363	.4872052	9.331193	.5202924	.4970845
#2	.4952346	.5394629	.4830745	9.295902	.5259870	.4909624
#3	.4865451	.5461970	.4885921	9.361789	.5304854	.4982695

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5091033	10.41786	.4855102	5.421684	.5132334	.2543550
Stddev	.0061399	.03860	.0022665	.011872	.0043189	.0011258
%RSD	1.206023	.3705651	.4668264	.2189771	.8415027	.4425890
#1	.5074372	10.37350	.4872950	5.424347	.5138239	.2530578
#2	.5039683	10.44377	.4829602	5.408707	.5086497	.2549314
#3	.5159042	10.43633	.4862755	5.431999	.5172267	.2550758

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.81160	.4834282	1.048106	10.51916	F -.006178	F -.000557
Stddev	.25319	.0004713	.001580	.12423	.000339	.000293
%RSD	2.341824	.0975018	.1507631	1.180997	5.491837	52.58369
#1	10.69813	.4838844	1.047582	10.43665	-.006072	-.000312
#2	11.10167	.4829430	1.049882	10.66204	-.006558	-.000477
#3	10.63499	.4834572	1.046854	10.45879	-.005905	-.000881

Sample Name: ICV01 Acquired: 4/8/2025 14:27:28 Type: Unk
Method: NON EPA-6010-200.7(v2898) 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 -.001198	F .0000395	F .0040183	F -.003575	F -.005170	F .0005667
Stddev	.000612	.0003232	.0024195	.000667	.002228	.0005658
%RSD	51.11218	817.6556	60.21200	18.66188	43.10428	99.84596
#1	-.001722	-.000077	.0067871	-.003692	-.003105	.0004301
#2	-.000525	.000405	.0023103	-.004175	-.004872	.0000817
#3	-.001345	-.000209	.0029577	-.002856	-.007532	.0011884

Elem	Sr4077
Units	ppm
Avg	F .0011896
Stddev	.0000349
%RSD	2.934909
#1	.0011851
#2	.0012266
#3	.0011572

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2019.590	76728.45	18959.54	1801.903	4298.655
Stddev	26.075	290.30	47.54	19.563	42.164
%RSD	1.291112	.3783429	.2507667	1.085666	.9808696
#1	2021.488	76951.17	18904.70	1798.643	4294.855
#2	2044.665	76400.14	18984.73	1784.176	4342.591
#3	1992.618	76834.04	18989.19	1822.891	4258.520

Sample Name: LLICV01 Acquired: 4/8/2025 14:32:37 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	.0195271	.0376629	.0127336	.0217320	.0538255	.0982583
Stddev	.0014689	.0003679	.0006374	.0027867	.0013218	.0054246
%RSD	7.522513	.9767246	5.005693	12.82286	2.455621	5.520763
#1	.0182435	.0375123	.0129507	.0238895	.0533139	.0930365
#2	.0192087	.0373942	.0120159	.0185858	.0553266	.0978733
#3	.0211291	.0380821	.0132340	.0227208	.0528360	.1038652

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0802180	.0053829	.0056974	1.833399	.0108508	.0285499
Stddev	.0004543	.0000813	.0000637	.009025	.0000703	.0001972
%RSD	.5663162	1.511078	1.117143	.4922526	.6478029	.6907054
#1	.0797903	.0053498	.0056588	1.825137	.0108704	.0283222
#2	.0801689	.0054756	.0057708	1.832031	.0109093	.0286649
#3	.0806949	.0053234	.0056624	1.843031	.0107728	.0286627

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0231447	.0908647	.0194666	1.964285	.0378995	.0109256
Stddev	.0002962	.0005984	.0003261	.008944	.0003935	.0003727
%RSD	1.279865	.6585925	1.675155	.4553209	1.038244	3.411576
#1	.0231282	.0905049	.0194783	1.959037	.0374764	.0107993
#2	.0228570	.0915555	.0191348	1.959205	.0379675	.0113451
#3	.0234488	.0905337	.0197867	1.974612	.0382546	.0106324

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.691166	.0396517	.0447222	1.730369	.0952550	.2236185
Stddev	.030392	.0014497	.0006398	.025101	.0008733	.0010062
%RSD	1.797125	3.655980	1.430717	1.450607	.9168505	.4499461
#1	1.691523	.0381171	.0453739	1.719059	.0952647	.2224567
#2	1.721379	.0409979	.0446979	1.759136	.0943768	.2241905
#3	1.660597	.0398402	.0440949	1.712914	.0961234	.2242081

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: LLICV01 Acquired: 4/8/2025 14:32:37 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	.0398878	.0389505	.3776768	F .0149741	F .0146920	.0162453
Stddev	.0006700	.0005880	.0057072	.0014860	.0017820	.0002690
%RSD	1.679657	1.509625	1.511145	9.923836	12.12920	1.655631
#1	.0406294	.0384059	.3815950	.0135164	.0144589	.0164846
#2	.0393263	.0388718	.3803066	.0164868	.0165791	.0159542
#3	.0397076	.0395739	.3711287	.0149192	.0130380	.0162970

Elem	Sr4077
Units	ppm
Avg	.0190925
Stddev	.0000398
%RSD	.2084514
#1	.0191372
#2	.0190608
#3	.0190797

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1996.219	76921.66	17725.18	1775.337	4395.346
Stddev	4.331	900.12	33.85	25.584	16.411
%RSD	.2169456	1.170174	.1909966	1.441081	.3733681
#1	2001.033	76704.46	17725.51	1767.021	4412.244
#2	1992.640	76150.01	17758.87	1754.946	4394.323
#3	1994.984	77910.50	17691.17	1804.045	4379.470

Sample Name: ICB01 Acquired: 4/8/2025 14:51:37 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	-.002454	-.000695	.0000856	-.000715	-.001187	-.003253	-.009605
Stddev	.002663	.000639	.0006837	.001072	.002088	.001186	.000936
%RSD	108.5342	92.03553	798.4877	149.9509	175.9557	36.46934	9.748408
#1	-.005107	-.000664	-.000686	-.001056	-.002081	-.004492	-.009398
#2	.000219	-.001349	.000328	.000486	-.002679	-.002127	-.010627
#3	-.002472	-.000071	.000615	-.001575	.001200	-.003140	-.008790

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000112	.0000119	-.009488	.0000055	.0000556	-.000338	-.007185
Stddev	.0000239	.0000075	.004721	.0000571	.0000887	.000153	.003335
%RSD	214.0813	63.00385	49.75487	1034.043	159.5924	45.19013	46.42276
#1	-.000012	.0000035	-.004265	.0000705	.0000451	-.000269	-.005966
#2	.000010	.0000145	-.013451	-.000037	-.000027	-.000513	-.004631
#3	.000036	.0000178	-.010747	-.000017	.000149	-.000231	-.010958

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001934	-.001036	-.000351	.0006657	-.347463	.0000706	-.001392
Stddev	.000119	.006548	.000273	.0003233	.012102	.0013468	.000153
%RSD	6.169311	631.8684	77.73066	48.56376	3.483000	1906.758	10.99926
#1	-.002026	.003500	-.000036	.0006975	-.334799	-.001191	-.001216
#2	-.001799	-.008543	-.000518	.0009718	-.358911	-.000086	-.001491
#3	-.001977	.001934	-.000498	.0003277	-.348680	.001489	-.001470

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.311989	-.002178	-.000272	-.000184	.0012639	.0015099	-.007118
Stddev	.010047	.000500	.000156	.000663	.0004153	.0015329	.001390
%RSD	3.220353	22.96893	57.20076	360.2817	32.85847	101.5263	19.53567
#1	-.322333	-.002700	-.000401	-.000129	.0011631	.0032797	-.006746
#2	-.302267	-.002132	-.000099	-.000873	.0017203	.0006010	-.005951
#3	-.311367	-.001702	-.000316	.000450	.0009082	.0006489	-.008656

Sample Name: ICB01 Acquired: 4/8/2025 14:51:37 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	-.003708	-.002462	-.000015
Stddev	.001271	.000752	.000035
%RSD	34.26137	30.53382	228.7510
#1	-.002552	-.003056	-.000054
#2	-.003504	-.002712	.000011
#3	-.005068	-.001617	-.000002

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2072.731	77707.62	17237.53	1826.595	4577.569
Stddev	7.830	86.16	176.37	6.938	18.615
%RSD	.3777556	.1108826	1.023151	.3798500	.4066504
#1	2069.036	77756.01	17050.50	1832.532	4574.508
#2	2081.724	77758.71	17261.26	1828.285	4597.524
#3	2067.432	77608.14	17400.83	1818.968	4560.674

Sample Name: CRI01 Acquired: 4/8/2025 15:00:18 Type: Unk
Method: NON EPA-6010-200.7(v2899) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0189774	.0386689	.0122214	.0218368	.0563227	.0979520	.0834269
Stddev	.0011447	.0014805	.0010735	.0022175	.0013123	.0024823	.0001361
%RSD	6.032204	3.828568	8.783681	10.15500	2.329871	2.534155	.1631886
#1	.0199125	.0400356	.0109819	.0217432	.0559767	.1007526	.0835817
#2	.0177007	.0388750	.0128298	.0196675	.0577733	.0970800	.0833733
#3	.0193189	.0370962	.0128525	.0240996	.0552181	.0960235	.0833257

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0049918	.0056976	1.828939	.0107791	.0286007	.0231591	.1023787
Stddev	.0000592	.0000419	.004887	.0001820	.0000788	.0000429	.0019389
%RSD	1.186927	.7358872	.2672183	1.688186	.2755588	.1851668	1.893811
#1	.0049318	.0056592	1.823331	.0108734	.0286842	.0231151	.1029716
#2	.0050502	.0056912	1.832290	.0108946	.0285276	.0231616	.1039519
#3	.0049933	.0057424	1.831196	.0105694	.0285902	.0232007	.1002126

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0195506	1.929041	.0376877	.0110388	1.786983	.0393014	.0455434
Stddev	.0002853	.006954	.0003304	.0003142	.012802	.0006991	.0005648
%RSD	1.459036	.3604741	.8767642	2.845837	.7164266	1.778834	1.240148
#1	.0192519	1.933082	.0374946	.0110518	1.776285	.0387306	.0461954
#2	.0195797	1.933029	.0374991	.0113462	1.783495	.0400812	.0452323
#3	.0198202	1.921012	.0380692	.0107183	1.801167	.0390926	.0452026

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.885588	.0859257	.2236621	.0400238	.0394751	.4087096	.0148253
Stddev	.012505	.0008672	.0007629	.0006311	.0000617	.0029830	.0013674
%RSD	.6632114	1.009181	.3410828	1.576902	.1563488	.7298564	9.223221
#1	1.878870	.0854714	.2244185	.0405220	.0395292	.4121336	.0164040
#2	1.877878	.0869257	.2236749	.0393141	.0394079	.4073220	.0140153
#3	1.900017	.0853802	.2228929	.0402354	.0394882	.4066731	.0140566

Sample Name: CRI01 Acquired: 4/8/2025 15:00:18 Type: Unk
Method: NON EPA-6010-200.7(v2899) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0162605	.0150604	.0193118
Stddev	.0023203	.0004663	.0000733
%RSD	14.26933	3.096459	.3793953
#1	.0169979	.0155945	.0193000
#2	.0136612	.0147342	.0192452
#3	.0181225	.0148524	.0193903

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2014.014	75943.16	19055.65	1749.239	4435.301
Stddev	8.485	148.73	46.01	.669	8.658
%RSD	.4213060	.1958442	.2414756	.0382706	.1952031
#1	2004.266	75988.68	19066.63	1748.494	4426.447
#2	2018.034	75776.99	19005.14	1749.431	4443.748
#3	2019.742	76063.81	19095.18	1749.791	4435.708

Sample Name: ICSA01 Acquired: 4/8/2025 15:04:36 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	.0022100	.0101492	.0047109	.0047929	-.005414	254.4237
Stddev	.0016729	.0029437	.0027421	.0016278	.002164	.3951
%RSD	75.69604	29.00421	58.20722	33.96233	39.96352	.1553091
#1	.0037322	.0074200	.0021856	.0066716	-.007671	254.8527
#2	.0024788	.0132685	.0043195	.0039031	-.005215	254.0747
#3	.0004190	.0097590	.0076277	.0038040	-.003357	254.3438

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.005927	.0010464	.0014784	224.4413	.0594618	.0021321
Stddev	.000782	.0000519	.0001442	1.0274	.0006708	.0001596
%RSD	13.19875	4.962291	9.753299	.4577691	1.128173	7.486191
#1	-.005224	.0009940	.0014912	224.2653	.0600652	.0023163
#2	-.005787	.0010472	.0013283	225.5454	.0587394	.0020451
#3	-.006770	.0010979	.0016158	223.5132	.0595806	.0020348

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0092971	97.84895	.0267694	244.8322	.0006232	-.001858
Stddev	.0003078	.47881	.0005052	1.0437	.0002172	.000251
%RSD	3.310404	.4893387	1.887139	.4263101	34.84808	13.51838
#1	.0096488	97.35138	.0262982	245.0176	.0006722	-.001860
#2	.0091656	98.30649	.0267073	245.7709	.0008117	-.001605
#3	.0090770	97.88898	.0273028	243.7082	.0003857	-.002107

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.194811	.0028330	.0059236	-.229643	-.091183	-.000448
Stddev	.019592	.0007031	.0000330	.003855	.001555	.000367
%RSD	10.05716	24.81795	.5563708	1.678505	1.705677	81.89389
#1	-.173214	.0028398	.0059320	-.227848	-.092612	-.000026
#2	-.211444	.0035326	.0059515	-.234068	-.089527	-.000688
#3	-.199777	.0021265	.0058872	-.227014	-.091409	-.000631

Sample Name: ICSA01 Acquired: 4/8/2025 15:04:36 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	-.003699	.0005309	.0361700	-.005556	-.014991	.0009449
Stddev	.001861	.0006976	.0049418	.004590	.001650	.0001571
%RSD	50.30540	131.4028	13.66266	82.60514	11.00959	16.62881
#1	-.003413	-.000152	.0308951	-.008936	-.013202	.0011239
#2	-.001998	.000502	.0369227	-.000331	-.015319	.0008295
#3	-.005686	.001242	.0406923	-.007401	-.016454	.0008813

Elem	Sr4077
Units	ppm
Avg	F .0950188
Stddev	.0001257
%RSD	.1322462
#1	.0951492
#2	.0948985
#3	.0950088

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1817.951	68222.40	17113.96	1602.664	3461.211
Stddev	2.759	121.51	57.04	9.702	7.459
%RSD	.1517503	.1781156	.3333029	.6053601	.2155011
#1	1815.175	68318.35	17084.84	1611.595	3468.978
#2	1820.692	68085.76	17077.36	1592.341	3460.553
#3	1817.985	68263.09	17179.69	1604.057	3454.103

Sample Name: ICSAB01 Acquired: 4/8/2025 15:09:01 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	.1136917	.1072251	.0543784	.0551625	.6350533	260.9989
Stddev	.0003795	.0021578	.0009113	.0054123	.0027710	.8038
%RSD	.3338186	2.012374	1.675902	9.811529	.4363479	.3079840
#1	.1133059	.1048418	.0554287	.0585862	.6328084	261.0542
#2	.1137045	.1090460	.0537973	.0579784	.6381503	260.1689
#3	.1140646	.1077875	.0539092	.0489228	.6342011	261.7737

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4616438	.4849665	.9883850	227.7714	.5850673	.4988453
Stddev	.0021898	.0020991	.0042084	.5293	.0015836	.0007005
%RSD	.4743493	.4328294	.4257899	.2323977	.2706651	.1404159
#1	.4593585	.4826140	.9845799	227.7314	.5836585	.4982628
#2	.4618493	.4856372	.9929052	227.2632	.5847623	.4996225
#3	.4637236	.4866482	.9876698	228.3196	.5867812	.4986506

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5139718	93.40238	.4997390	250.9836	.9738020	.1871188
Stddev	.0018009	.23044	.0004380	.7011	.0024103	.0004256
%RSD	.3503991	.2467188	.0876412	.2793309	.2475153	.2274449
#1	.5148245	93.65677	.4995350	251.5335	.9723455	.1871859
#2	.5119029	93.20761	.4994403	250.1941	.9765841	.1875068
#3	.5151881	93.34276	.5002418	251.2230	.9724763	.1866636

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.250764	.4683326	1.073175	-.302193	.9401602	F 1.199150
Stddev	.013051	.0024402	.004156	.027779	.0013732	.001679
%RSD	5.204572	.5210369	.3872546	9.192379	.1460631	.1400263
#1	-.254418	.4699955	1.077901	-.334188	.9417432	1.197211
#2	-.261599	.4655312	1.070093	-.288161	.9392893	1.200144
#3	-.236275	.4694710	1.071530	-.284229	.9394481	1.200095

Sample Name: ICSAB01 Acquired: 4/8/2025 15:09:01 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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 1.187125	1.076836	1.040682	F .0009209	F -.014426	F -.001035
Stddev	.007841	.005484	.007119	.0032832	.003678	.000178
%RSD	.6605126	.5092358	.6840699	356.5298	25.49260	17.24676
#1	1.178154	1.070926	1.045658	.0036476	-.010592	-.001238
#2	1.192675	1.077821	1.043860	.0018386	-.017924	-.000966
#3	1.190545	1.081760	1.032527	-.002724	-.014763	-.000901

Elem	Sr4077
Units	ppm
Avg	F .0954636
Stddev	.0004951
%RSD	.5186561
#1	.0949413
#2	.0955234
#3	.0959261

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1833.911	68576.10	15997.67	1619.582	3479.943
Stddev	7.849	150.52	14.80	11.146	8.994
%RSD	.4280054	.2195004	.0924989	.6881916	.2584608
#1	1829.387	68402.86	15996.87	1606.713	3474.047
#2	1842.975	68650.54	16012.85	1626.109	3490.296
#3	1829.372	68674.90	15983.29	1625.925	3475.486

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: ICSADLX20 Acquired: 4/8/2025 15:13:13 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	.0012611	.0001173	-.000478	.0034597	-.000282	12.61338	-.009456
Stddev	.0020760	.0002641	.000506	.0020583	.000823	.04393	.000175
%RSD	164.6264	225.2057	105.8081	59.49511	291.5296	.3483071	1.854490
#1	.0036486	.0002718	-.000317	.0015141	-.000385	12.64327	-.009254
#2	.0002541	-.000188	-.000072	.0056148	-.001049	12.56294	-.009545
#3	-.000119	.000268	-.001044	.0032501	.000587	12.63393	-.009569

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000954	-.000024	11.55357	.0030117	.0002033	.0000034	4.850400
Stddev	.0000489	.000041	.01866	.0002018	.0001525	.0003224	.040224
%RSD	51.29317	170.0520	.1615403	6.701308	75.02330	9447.210	.8293006
#1	.0000391	.000004	11.54986	.0028101	.0003309	-.000368	4.805216
#2	.0001277	-.000071	11.53703	.0032138	.0002445	.000204	4.882309
#3	.0001193	-.000005	11.57380	.0030111	.0000344	.000175	4.863675

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0191387	11.99627	-.000218	.0003399	-.354430	.0005254	-.000875
Stddev	.0004918	.06140	.000144	.0000411	.012428	.0008359	.000147
%RSD	2.569623	.5118543	65.96418	12.07804	3.506558	159.0914	16.76914
#1	.0190165	11.97825	-.000384	.0003073	-.345525	.0004522	-.000715
#2	.0187196	11.94589	-.000138	.0003264	-.349136	.0013955	-.000908
#3	.0196801	12.06467	-.000132	.0003860	-.368629	-.000271	-.001003

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.336522	-.007442	-.000176	-.000486	.0008155	.0170685	-.004050
Stddev	.004810	.000457	.000141	.000753	.0004088	.0017802	.000863
%RSD	1.429394	6.137548	79.69820	154.9232	50.12931	10.42955	21.30675
#1	-.337980	-.007835	-.000225	-.001166	.0006032	.0187638	-.003433
#2	-.340435	-.006941	-.000287	-.000615	.0012868	.0152141	-.003680
#3	-.331152	-.007550	-.000018	.000323	.0005565	.0172275	-.005036

Sample Name: ICSADLX20 Acquired: 4/8/2025 15:13:13 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	-.002727	-.002306	.0048299
Stddev	.003435	.000610	.0000389
%RSD	125.9527	26.45265	.8054221
#1	.000360	-.001602	.0048145
#2	-.002113	-.002669	.0048011
#3	-.006427	-.002647	.0048741

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2049.648	77006.58	17583.84	1812.654	4336.024
Stddev	11.035	348.40	43.26	11.329	17.271
%RSD	.5383807	.4524275	.2460256	.6249703	.3983255
#1	2058.571	77400.70	17542.12	1825.727	4354.975
#2	2053.065	76739.65	17628.49	1806.509	4331.929
#3	2037.309	76879.38	17580.90	1805.725	4321.168

Sample Name: ICSABDLX20 Acquired: 4/8/2025 15:17:29 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	.0109359	.0108269	.0066343	.0082474	.0649746	F 24.68383
Stddev	.0031915	.0015221	.0014358	.0017618	.0005954	.03597
%RSD	29.18368	14.05805	21.64276	21.36123	.9162774	.1457262
#1	.0100847	.0105492	.0080163	.0102212	.0656035	24.68439
#2	.0144667	.0094629	.0067364	.0068341	.0644197	24.71951
#3	.0082563	.0124687	.0051501	.0076869	.0649005	24.64758

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0352067	.0460009	.0973942	F 22.50077	.0609783	.0483243
Stddev	.0002236	.0004610	.0002529	.11209	.0005125	.0001239
%RSD	.6352522	1.002065	.2597080	.4981425	.8403922	.2563510
#1	.0354612	.0464548	.0974044	22.55320	.0603903	.0482482
#2	.0350417	.0460145	.0976419	22.57702	.0612152	.0484673
#3	.0351171	.0455332	.0971363	22.37207	.0613295	.0482575

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0555802	F 9.552888	.0671601	F 23.62027	.0960992	.0181585
Stddev	.0004398	.026193	.0006084	.07887	.0003998	.0002718
%RSD	.7913635	.2741869	.9058641	.3339036	.4160556	1.496665
#1	.0560225	9.560620	.0678431	23.64740	.0962852	.0184086
#2	.0555753	9.523699	.0669611	23.68199	.0956403	.0181976
#3	.0551428	9.574344	.0666762	23.53142	.0963723	.0178693

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.357734	.0476138	.1045985	-.337656	.0908999	.1260316
Stddev	.006002	.0005261	.0001529	.023113	.0006802	.0006665
%RSD	1.677755	1.104941	.1462027	6.845046	.7483251	.5288021
#1	-.352893	.0481800	.1046725	-.349621	.0901276	.1265757
#2	-.355859	.0475211	.1044227	-.352333	.0914101	.1262309
#3	-.364449	.0471401	.1047004	-.311014	.0911619	.1252883

Sample Name: ICSABDLX20 Acquired: 4/8/2025 15:17:29 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	.1187567	.1069758	.1173648	-.005111	-.001711	-.002390
Stddev	.0006877	.0007127	.0049503	.002657	.001952	.000426
%RSD	.5790767	.6662365	4.217893	51.99343	114.0907	17.83182
#1	.1189151	.1076169	.1149084	-.005318	-.003827	-.002207
#2	.1193513	.1071021	.1230629	-.007658	.000020	-.002086
#3	.1180036	.1062083	.1141230	-.002356	-.001327	-.002877

Elem	Sr4077
Units	ppm
Avg	.0094862
Stddev	.0000217
%RSD	.2285634
#1	.0094855
#2	.0095082
#3	.0094649

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1921.096	74977.33	17441.23	1740.411	4068.260
Stddev	2.032	167.41	68.44	11.290	5.415
%RSD	.1057874	.2232851	.3924057	.6486831	.1331134
#1	1922.681	75131.76	17408.69	1751.644	4068.582
#2	1918.805	75000.83	17395.12	1740.525	4062.691
#3	1921.801	74799.41	17519.87	1729.065	4073.507

Sample Name: CCV01 Acquired: 4/8/2025 15:30:12 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	5.267376	4.824261	4.955303	5.192981	5.269157	9.913331	9.347216
Stddev	.020502	.042709	.005602	.031480	.022578	.012980	.029687
%RSD	.3892234	.8852996	.1130464	.6062059	.4284998	.1309379	.3176071
#1	5.245865	4.828136	4.949140	5.164988	5.244306	9.914089	9.333544
#2	5.286693	4.864900	4.960086	5.227060	5.288408	9.899989	9.381276
#3	5.269570	4.779746	4.956682	5.186895	5.274759	9.925916	9.326828

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2292955	2.417094	22.81238	1.057213	2.406059	1.308832	4.809914
Stddev	.0017697	.002858	.10545	.001690	.002569	.005516	.010374
%RSD	.7718161	.1182618	.4622567	.1598789	.1067906	.4214490	.2156836
#1	.2304452	2.416772	22.86018	1.055372	2.403524	1.302581	4.799267
#2	.2272576	2.414410	22.69150	1.057573	2.405991	1.313019	4.810485
#3	.2301837	2.420100	22.88547	1.058694	2.408662	1.310895	4.819992

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.369393	23.04467	2.396883	1.243702	26.39521	2.355843	2.532329
Stddev	.012853	.12142	.004249	.002058	.17499	.010422	.012075
%RSD	.5424644	.5268997	.1772523	.1654964	.6629783	.4423942	.4768439
#1	2.377558	23.07990	2.395949	1.243596	26.32628	2.365052	2.520979
#2	2.354577	22.90953	2.393180	1.241699	26.59417	2.344529	2.530991
#3	2.376043	23.14459	2.401521	1.245811	26.26517	2.357950	2.545018

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.19227	4.653066	5.204673	5.094261	4.675748	5.111402	5.063909
Stddev	.14432	.036883	.016828	.005877	.008727	.016843	.003761
%RSD	.5728771	.7926666	.3233329	.1153608	.1866428	.3295175	.0742655
#1	25.11379	4.672841	5.185753	5.097509	4.683017	5.092084	5.065236
#2	25.35883	4.610512	5.217969	5.087477	4.666069	5.119115	5.066827
#3	25.10419	4.675844	5.210297	5.097797	4.678158	5.123008	5.059665

Sample Name: CCV01 Acquired: 4/8/2025 15:30:12 Type: Unk
Method: NON EPA-6010-200.7(v2899) 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	4.837644	4.835776	4.758983
Stddev	.019449	.016662	.021265
%RSD	.4020259	.3445516	.4468481
#1	4.849250	4.846489	4.783318
#2	4.848490	4.844259	4.749659
#3	4.815191	4.816580	4.743972

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1948.657	73128.06	16975.57	1737.818	3942.162
Stddev	9.535	274.93	47.00	16.480	9.789
%RSD	.4893099	.3759521	.2768627	.9483369	.2483232
#1	1959.306	73423.40	16947.84	1756.835	3953.365
#2	1940.911	72879.58	17029.83	1727.720	3935.259
#3	1945.753	73081.18	16949.03	1728.897	3937.862

Sample Name: CCB01 Acquired: 4/8/2025 15:45:34 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	-.002165	-.001531	.0000057	.0016982	-.000780	-.004417	-.011250
Stddev	.000437	.001226	.0008626	.0028093	.002192	.002197	.000742
%RSD	20.17561	80.03497	15131.18	165.4269	281.0396	49.72467	6.598877
#1	-.002011	-.002432	.0008325	.0029225	-.003302	-.001941	-.012077
#2	-.002658	-.000136	-.000889	.0036876	.000671	-.006129	-.011035
#3	-.001826	-.002026	.000073	-.001515	.000291	-.005183	-.010640

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000334	-.000027	-.013381	-.000072	-.000152	-.000251	-.005664
Stddev	.0000180	.000067	.005333	.000222	.000127	.000190	.002176
%RSD	53.88023	250.2798	39.85304	309.0726	83.57169	75.58562	38.41635
#1	.0000323	-.000072	-.019107	-.000262	-.000126	-.000457	-.003175
#2	.0000519	.000050	-.012481	.000172	-.000290	-.000085	-.006616
#3	.0000160	-.000058	-.008556	-.000125	-.000040	-.000211	-.007202

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002218	.0017544	-.000335	.0008551	-.400035	.0009696	-.001676
Stddev	.000043	.0087166	.000155	.0000765	.009991	.0004925	.000201
%RSD	1.929012	496.8434	46.11305	8.948189	2.497414	50.79668	11.99135
#1	-.002168	.0117795	-.000494	.0009404	-.389682	.0012975	-.001478
#2	-.002244	-.004034	-.000185	.0008323	-.400805	.0012079	-.001880
#3	-.002240	-.002482	-.000327	.0007926	-.409619	.0004032	-.001669

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.326704	.0036920	-.000201	-.000807	.0011816	.0040496	-.005622
Stddev	.006104	.0006122	.000250	.001437	.0001285	.0008119	.001314
%RSD	1.868224	16.58258	124.6871	178.1228	10.87887	20.04886	23.37628
#1	-.327517	.0043845	-.000199	-.002360	.0010769	.0035578	-.005178
#2	-.332360	.0032229	.000049	.000476	.0011429	.0036042	-.007101
#3	-.320234	.0034684	-.000452	-.000537	.0013250	.0049867	-.004587

Sample Name: CCB01 Acquired: 4/8/2025 15:45:34 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	-.001288	-.003163	.0000315
Stddev	.001796	.000103	.0000144
%RSD	139.4827	3.250294	45.54804
#1	.000784	-.003176	.0000355
#2	-.002413	-.003054	.0000434
#3	-.002233	-.003258	.0000156

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2026.017	76632.94	16734.83	1807.687	4433.233
Stddev	3.014	308.52	96.92	9.097	9.840
%RSD	.1487580	.4025974	.5791490	.5032276	.2219566
#1	2029.495	76453.99	16761.28	1797.527	4436.994
#2	2024.392	76455.63	16627.43	1810.456	4422.067
#3	2024.165	76989.18	16815.77	1815.077	4440.637

Sample Name: Q1719-02 Acquired: 4/8/2025 15:49:54 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	-.004384	-.011615	.1966531	.0067387	.0051223	.0191390	.2451487
Stddev	.002181	.000301	.0026397	.0016159	.0034611	.0015673	.0012971
%RSD	49.75747	2.590271	1.342290	23.97858	67.56884	8.188938	.5291000
#1	-.003051	-.011862	.1936065	.0056787	.0088221	.0183666	.2439710
#2	-.003199	-.011280	.1982555	.0059390	.0045810	.0181079	.2465389
#3	-.006902	-.011703	.1980974	.0085985	.0019637	.0209426	.2449363

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000109	.0002345	29.75018	.0000447	-.000415	.0055500	.0121597
Stddev	.000007	.0000497	.18492	.0002008	.000056	.0001605	.0025071
%RSD	6.785532	21.18842	.6215599	448.7641	13.44012	2.891138	20.61805
#1	-.000107	.0002876	29.60960	.0000959	-.000430	.0054524	.0147426
#2	-.000117	.0002266	29.68129	.0002150	-.000461	.0057352	.0097360
#3	-.000102	.0001892	29.95965	-.000177	-.000353	.0054624	.0120005

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0655565	2.227272	.0014396	.0006170	363.8680	.0008224	.2543001
Stddev	.0006827	.023823	.0001906	.0000781	3.4364	.0002470	.0002969
%RSD	1.041351	1.069590	13.24197	12.65543	.9444152	30.03348	.1167717
#1	.0648456	2.221770	.0015485	.0006545	363.3231	.0006992	.2543216
#2	.0656171	2.206681	.0015508	.0005272	367.5443	.0006612	.2539930
#3	.0662069	2.253364	.0012195	.0006692	360.7365	.0011067	.2545857

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.209253	.0499693	.0003749	-.000136	.0004120	1.379790	.2234739
Stddev	.014480	.0002563	.0001551	.000712	.0000300	.013797	.0015190
%RSD	.4511931	.5128087	41.35994	522.0413	7.289819	.9999006	.6797331
#1	3.218747	.0497459	.0004291	.000219	.0003794	1.377187	.2224547
#2	3.216425	.0502490	.0004957	-.000956	.0004181	1.394703	.2227473
#3	3.192587	.0499130	.0002001	.000328	.0004385	1.367482	.2252198

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1719-02 Acquired: 4/8/2025 15:49:54 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	2.277584	-.007217	.1371385
Stddev	.011581	.000687	.0002796
%RSD	.5084655	9.513559	.2039007
#1	2.264760	-.006761	.1368484
#2	2.287279	-.008007	.1374063
#3	2.280712	-.006884	.1371607

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1811.045	69002.32	17356.14	1591.531	3695.985
Stddev	5.041	218.07	67.98	6.394	13.763
%RSD	.2783562	.3160304	.3916711	.4017745	.3723791
#1	1809.979	69170.25	17417.06	1598.183	3696.615
#2	1806.622	68755.86	17368.56	1585.430	3681.918
#3	1816.534	69080.84	17282.81	1590.979	3709.423

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1719-04 Acquired: 4/8/2025 15:54:18 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	-.004894	-.010051	.0092366	.0071239	.0022379	.0100778	.2602601
Stddev	.001115	.001185	.0014946	.0039896	.0007375	.0018723	.0019213
%RSD	22.77521	11.78837	16.18124	56.00346	32.95339	18.57837	.7382181
#1	-.005302	-.011121	.0075628	.0025402	.0017053	.0122396	.2624759
#2	-.005747	-.008778	.0097095	.0090169	.0019287	.0089763	.2592488
#3	-.003633	-.010254	.0104377	.0098146	.0030796	.0090174	.2590558

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000236	.0002527	45.78720	-.000496	.0053806	.0739502	.0163951
Stddev	.000018	.0000344	.27368	.000242	.0003473	.0003462	.0038916
%RSD	7.577438	13.62034	.5977111	48.67975	6.455154	.4682119	23.73659
#1	-.000229	.0002161	46.02909	-.000504	.0057395	.0736580	.0199053
#2	-.000222	.0002845	45.84238	-.000734	.0053562	.0738599	.0122103
#3	-.000256	.0002575	45.49014	-.000251	.0050461	.0743326	.0170697

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.433709	2.901135	.0019738	.0006782	404.3951	.0020317	.2096509
Stddev	.019257	.029612	.0003695	.0000966	5.5289	.0007923	.0025486
%RSD	.7912482	1.020690	18.72048	14.23878	1.367192	38.99867	1.215621
#1	2.453151	2.911000	.0021523	.0005667	400.9167	.0017797	.2091289
#2	2.433334	2.924555	.0022201	.0007357	401.4983	.0029194	.2074037
#3	2.414643	2.867850	.0015489	.0007323	410.7705	.0013960	.2124200

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.508393	.0582847	.0000250	-.000554	.0001544	2.228468	.0341337
Stddev	.041808	.0000733	.0003823	.000234	.0001261	.014857	.0030044
%RSD	1.191670	.1257812	1530.796	42.29193	81.64138	.6666807	8.801812
#1	3.496113	.0582870	.0004655	-.000790	.0002607	2.217339	.0375966
#2	3.474101	.0582104	-.000171	-.000321	.0000151	2.222726	.0322214
#3	3.554967	.0583569	-.000220	-.000552	.0001876	2.245339	.0325831

Sample Name: Q1719-04 Acquired: 4/8/2025 15:54:18 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	2.646591	-.010797	.2256374
Stddev	.002303	.000447	.0017035
%RSD	.0870341	4.141770	.7549869
#1	2.647468	-.011129	.2275907
#2	2.643978	-.010289	.2244594
#3	2.648328	-.010973	.2248622

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1773.340	67635.78	17647.61	1564.154	3607.190
Stddev	2.437	363.32	107.10	12.793	3.445
%RSD	.1373986	.5371738	.6069000	.8178779	.0954996
#1	1770.529	67795.01	17525.89	1563.475	3603.486
#2	1774.838	67892.29	17689.53	1577.273	3610.297
#3	1774.654	67220.03	17727.42	1551.714	3607.788

Sample Name: Q1719-06 Acquired: 4/8/2025 15:58:45 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	-.004513	-.009001	.0106206	.0056774	.0036699	-.020820	.3082246
Stddev	.001446	.000308	.0009879	.0039120	.0014267	.004595	.0009168
%RSD	32.04395	3.421097	9.301758	68.90452	38.87711	22.06799	.2974376
#1	-.006171	-.009242	.0097744	.0049071	.0036038	-.022204	.3076545
#2	-.003510	-.008654	.0103810	.0022079	.0022773	-.015692	.3092821
#3	-.003858	-.009106	.0117062	.0099172	.0051285	-.024563	.3077372

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000145	.0001735	150.3298	.0001406	-.000675	.0010078	.0100078
Stddev	.000021	.0000373	.2023	.0001418	.000032	.0005619	.0010598
%RSD	14.11288	21.47860	.1345944	100.8405	4.812115	55.75446	10.59010
#1	-.000169	.0001318	150.4866	.0002346	-.000691	.0015961	.0093391
#2	-.000134	.0002034	150.1014	.0002096	-.000637	.0009507	.0112298
#3	-.000133	.0001855	150.4013	-.000022	-.000695	.0004767	.0094545

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0175606	3.452922	.0001225	.0005488	418.9363	.0027508	.1201407
Stddev	.0001676	.025107	.0004637	.0000755	5.3655	.0003233	.0011995
%RSD	.9545717	.7271126	378.4695	13.75544	1.280753	11.75123	.9984150
#1	.0177303	3.431521	.0003780	.0005601	422.0377	.0028986	.1215258
#2	.0173951	3.446686	.0004023	.0004683	422.0305	.0029737	.1194468
#3	.0175565	3.480558	-.000413	.0006180	412.7407	.0023800	.1194496

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.465628	.0297448	.0009846	-.002671	-.001845	1.063417	.0652524
Stddev	.015067	.0005451	.0002963	.001265	.000406	.010171	.0034633
%RSD	.4347411	1.832627	30.09289	47.37416	22.02336	.9564832	5.307607
#1	3.456448	.0294826	.0009065	-.003957	-.002199	1.071609	.0626177
#2	3.457421	.0293803	.0007351	-.001427	-.001401	1.052032	.0691752
#3	3.483017	.0303714	.0013121	-.002628	-.001936	1.066610	.0639643

Sample Name: Q1719-06 Acquired: 4/8/2025 15:58:45 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	2.400474	-.027757	.3308853
Stddev	.003652	.000218	.0006025
%RSD	.1521576	.7862838	.1820846
#1	2.401644	-.027674	.3308721
#2	2.403398	-.028005	.3314943
#3	2.396380	-.027593	.3302896

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1677.898	65435.33	17426.01	1485.450	3449.082
Stddev	3.234	222.98	38.89	15.751	5.855
%RSD	.1927630	.3407629	.2231742	1.060352	.1697598
#1	1674.183	65406.49	17414.50	1476.835	3442.807
#2	1680.088	65671.32	17394.16	1503.630	3454.399
#3	1679.423	65228.17	17469.35	1475.886	3450.041

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1719-08 Acquired: 4/8/2025 16:03:11 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	-.006698	-.012039	.0056735	.0069908	.0042882	-.029386	.2292847
Stddev	.003193	.000347	.0008560	.0029231	.0015221	.003984	.0008184
%RSD	47.66517	2.882492	15.08710	41.81344	35.49542	13.55730	.3569365
#1	-.010364	-.011895	.0051902	.0037511	.0037180	-.026169	.2294476
#2	-.004531	-.012435	.0051684	.0094307	.0031335	-.028146	.2300094
#3	-.005199	-.011787	.0066618	.0077906	.0060131	-.033842	.2283971

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000207	.0001786	116.6855	.0007471	-.000553	.0020814	.0123710
Stddev	.000019	.0000405	.6014	.0003689	.000274	.0003229	.0020241
%RSD	9.063470	22.68963	.5154053	49.38034	49.53287	15.51468	16.36194
#1	-.000186	.0001319	117.1178	.0003542	-.000451	.0022245	.0104869
#2	-.000223	.0001994	115.9987	.0008010	-.000344	.0017117	.0121153
#3	-.000211	.0002044	116.9399	.0010860	-.000863	.0023081	.0145108

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0222376	4.619978	.0012345	.0003561	468.4637	.0013654	.1350277
Stddev	.0000921	.013749	.0005079	.0001795	8.9153	.0005996	.0010865
%RSD	.4139245	.2976041	41.13688	50.39571	1.903084	43.91539	.8046369
#1	.0222726	4.614093	.0017093	.0004591	475.4845	.0006736	.1357644
#2	.0223070	4.610150	.0012952	.0004603	458.4331	.0016880	.1337799
#3	.0221332	4.635690	.0006991	.0001489	471.4736	.0017347	.1355388

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.967292	.0384601	.0006979	-.002849	-.001250	1.608812	.0305288
Stddev	.017186	.0007999	.0002359	.000381	.000812	.011039	.0036606
%RSD	.4331987	2.079867	33.80118	13.38554	65.01388	.6861548	11.99054
#1	3.962975	.0384686	.0007227	-.002459	-.001782	1.614221	.0330281
#2	3.952677	.0376560	.0004505	-.003221	-.001653	1.596112	.0263271
#3	3.986226	.0392558	.0009204	-.002867	-.000315	1.616104	.0322312

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1719-08 Acquired: 4/8/2025 16:03:11 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	4.053225	-.022271	.6567807
Stddev	.019637	.000449	.0016349
%RSD	.4844890	2.018081	.2489284
#1	4.043648	-.021938	.6577879
#2	4.040213	-.022094	.6576598
#3	4.075813	-.022782	.6548943

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1648.875	65056.27	16307.65	1480.749	3408.570
Stddev	8.033	207.00	27.15	19.392	10.549
%RSD	.4871599	.3181916	.1664859	1.309585	.3094926
#1	1654.913	64824.08	16283.15	1459.091	3417.234
#2	1639.758	65221.53	16302.95	1496.502	3396.822
#3	1651.953	65123.21	16336.84	1486.654	3411.652

Sample Name: CCV02 Acquired: 4/8/2025 16:13:31 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	5.396717	4.995116	5.087768	5.302596	5.440552	10.34474	9.539941
Stddev	.024615	.021732	.017024	.018033	.030733	.03031	.118433
%RSD	.4561060	.4350638	.3346157	.3400795	.5648913	.2929550	1.241442
#1	5.387252	4.976909	5.091841	5.284631	5.415445	10.36870	9.652844
#2	5.378239	5.019175	5.069076	5.302460	5.431385	10.31067	9.416661
#3	5.424659	4.989264	5.102386	5.320696	5.474825	10.35484	9.550319

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2445993	2.482825	23.40738	1.087560	2.476147	1.343096	4.820145
Stddev	.0016468	.008548	.10080	.003708	.007249	.005377	.009206
%RSD	.6732570	.3442951	.4306130	.3409774	.2927541	.4003105	.1909998
#1	.2461930	2.483623	23.52179	1.088363	2.475562	1.337933	4.810681
#2	.2447008	2.473906	23.36869	1.090802	2.469208	1.342692	4.820684
#3	.2429041	2.490947	23.33166	1.083516	2.483671	1.348663	4.829070

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.270137	23.77279	2.460401	1.286451	26.71695	2.432802	2.620684
Stddev	.003974	.12342	.007026	.000497	.26655	.009519	.004055
%RSD	.1750580	.5191477	.2855586	.0386507	.9976635	.3912609	.1547175
#1	2.271250	23.91380	2.461978	1.287022	26.49533	2.443483	2.624704
#2	2.265725	23.72009	2.452720	1.286115	26.64282	2.429705	2.620752
#3	2.273436	23.68447	2.466504	1.286216	27.01272	2.425217	2.616596

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.25105	4.990416	5.386144	5.238804	4.825693	5.136547	5.187106
Stddev	.24631	.030299	.026461	.020882	.015901	.027940	.028073
%RSD	.9754417	.6071401	.4912747	.3986064	.3295147	.5439506	.5412113
#1	25.05418	5.025395	5.366443	5.231696	4.835125	5.105946	5.161181
#2	25.17172	4.973512	5.375770	5.222404	4.807334	5.160699	5.183215
#3	25.52725	4.972341	5.416220	5.262313	4.834620	5.142997	5.216921

Sample Name: CCV02 Acquired: 4/8/2025 16:13:31 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	4.933521	5.034633	4.850161
Stddev	.010583	.045562	.008089
%RSD	.2145058	.9049707	.1667720
#1	4.933584	5.016717	4.848684
#2	4.922907	5.000753	4.842912
#3	4.944072	5.086430	4.858886

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1964.301	73338.35	16444.55	1728.704	3979.165
Stddev	8.693	203.39	34.90	8.159	7.772
%RSD	.4425595	.2773298	.2122358	.4719535	.1953263
#1	1973.500	73570.83	16404.26	1737.898	3987.480
#2	1963.183	73250.95	16463.88	1725.887	3977.934
#3	1956.222	73193.26	16465.51	1722.328	3972.082

Sample Name: CCB02 Acquired: 4/8/2025 16:17:43 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	-.001457	-.001928	-.000445	.0005036	-.002204	-.002795	-.009922
Stddev	.001782	.000744	.000637	.0023271	.001120	.000695	.000277
%RSD	122.3586	38.61443	143.3768	462.1161	50.82485	24.87815	2.793318
#1	.000184	-.002234	-.000003	.0019934	-.001350	-.003559	-.009710
#2	-.001200	-.002469	-.001175	-.002178	-.001789	-.002627	-.009821
#3	-.003353	-.001079	-.000156	.001695	-.003472	-.002199	-.010236

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000318	.0000374	-.014825	-.000357	-.000039	-.000388	-.007327
Stddev	.0000169	.0000285	.001991	.000226	.000330	.000172	.004537
%RSD	53.18682	76.09295	13.42777	63.14900	840.6453	44.33844	61.92612
#1	.0000181	.0000140	-.013578	-.000322	-.000220	-.000290	-.003455
#2	.0000266	.0000292	-.013776	-.000152	-.000240	-.000288	-.006207
#3	.0000507	.0000691	-.017121	-.000599	.000342	-.000587	-.012319

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001869	.0041281	-.000237	.0010704	-.303419	.0015353	-.001442
Stddev	.000466	.0061204	.000134	.0000615	.009635	.0009032	.000435
%RSD	24.92122	148.2625	56.69217	5.743716	3.175332	58.83026	30.17065
#1	-.002336	.0094058	-.000335	.0010049	-.312140	.0021756	-.000988
#2	-.001868	-.002581	-.000084	.0011269	-.305040	.0019282	-.001855
#3	-.001404	.005560	-.000292	.0010795	-.293077	.0005022	-.001482

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.279195	.0049314	.0000851	-.000303	.0011006	.0064402	-.007776
Stddev	.005610	.0003765	.0002482	.001325	.0003528	.0032804	.000211
%RSD	2.009213	7.635196	291.5639	436.6792	32.05428	50.93733	2.719251
#1	-.274747	.0052149	.0003629	-.001614	.0014512	.0050356	-.007589
#2	-.285497	.0050751	-.000115	-.000331	.0007457	.0101890	-.007733
#3	-.277340	.0045042	.000008	.001035	.0011048	.0040958	-.008006

Sample Name: CCB02 Acquired: 4/8/2025 16:17:43 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	-.004161	-.001746	.0000254
Stddev	.001856	.000697	.0000355
%RSD	44.59625	39.92094	139.7062
#1	-.005593	-.002246	.0000662
#2	-.002065	-.000950	.0000090
#3	-.004825	-.002041	.0000011

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2025.378	76705.98	18231.02	1811.359	4513.355
Stddev	5.692	126.30	20.15	6.659	10.625
%RSD	.2810361	.1646504	.1105149	.3676432	.2354225
#1	2028.223	76823.93	18224.08	1805.422	4513.251
#2	2029.087	76721.28	18215.25	1810.097	4524.032
#3	2018.824	76572.73	18253.72	1818.560	4502.782

Sample Name: PB167467TB Acquired: 4/8/2025 16:22:03 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	-.006793	-.010100	-.000353	.0072049	.0030032	.0042546
Stddev	.002523	.001372	.001669	.0021307	.0018483	.0001991
%RSD	37.13982	13.58696	472.1363	29.57355	61.54450	4.679506
#1	-.008647	-.008582	.001572	.0047615	.0020333	.0044453
#2	-.007813	-.010464	-.001375	.0086765	.0018416	.0042704
#3	-.003920	-.011254	-.001258	.0081767	.0051345	.0040481

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.015691	-.000196	-.000101	.0028628	.0009578	-.000657
Stddev	.000973	.000021	.000044	.0018572	.0004389	.000211
%RSD	6.198562	10.69759	44.14523	64.87412	45.82562	32.05997
#1	-.015610	-.000211	-.000075	.0007188	.0008243	-.000893
#2	-.016702	-.000172	-.000075	.0038948	.0006011	-.000590
#3	-.014762	-.000205	-.000152	.0039748	.0014479	-.000488

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000873	.0059441	-.003016	.0049845	.0007899	.0006927
Stddev	.000192	.0043372	.000217	.0065619	.0002219	.0001576
%RSD	21.97222	72.96618	7.191165	131.6449	28.09361	22.74654
#1	-.000668	.0109006	-.003000	.0081154	.0005525	.0008283
#2	-.000905	.0028441	-.002807	.0093945	.0009921	.0005198
#3	-.001047	.0040878	-.003240	-.002556	.0008253	.0007300

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 511.8273	.0005066	.0008691	-.384920	.0010494	.0003381
Stddev	3.6761	.0006561	.0003298	.013726	.0000570	.0002510
%RSD	.7182317	129.5039	37.95132	3.565982	5.433844	74.24532
#1	515.2461	-.000166	.0004913	-.400731	.0010816	.0003884
#2	507.9390	.001145	.0010999	-.376057	.0010831	.0005601
#3	512.2968	.000540	.0010161	-.377972	.0009836	.0000657

Sample Name: PB167467TB Acquired: 4/8/2025 16:22:03 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	.0018100	.0009127	.0119751	-.000717	F .0359570	-.004221
Stddev	.0007836	.0004789	.0010634	.002614	.0034746	.000851
%RSD	43.29369	52.46934	8.880216	364.6687	9.663303	20.15728
#1	.0012768	.0014176	.0131856	-.003689	.0361609	-.003239
#2	.0027097	.0008555	.0111910	.000311	.0323849	-.004731
#3	.0014435	.0004650	.0115489	.001227	.0393251	-.004693

Elem	Sr4077
Units	ppm
Avg	.0000741
Stddev	.0000079
%RSD	10.67947
#1	.0000823
#2	.0000665
#3	.0000737

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1680.298	65830.96	15648.34	1523.279	3506.629
Stddev	12.359	109.87	26.37	4.018	16.763
%RSD	.7355362	.1668974	.1684848	.2637484	.4780335
#1	1692.373	65886.61	15643.47	1518.802	3519.771
#2	1680.846	65901.88	15624.74	1526.569	3512.365
#3	1667.673	65704.40	15676.80	1524.467	3487.751

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1712-04 Acquired: 4/8/2025 16:26:32 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	-.009210	-.011606	.0137157	.0089883	.0017017	-.012125	.2239543
Stddev	.002471	.002564	.0016055	.0011295	.0014768	.002482	.0007660
%RSD	26.83367	22.09380	11.70585	12.56635	86.78268	20.47301	.3420478
#1	-.008396	-.012556	.0122082	.0091544	.0021701	-.009395	.2234450
#2	-.007248	-.013560	.0135350	.0077849	.0000475	-.012735	.2248353
#3	-.011985	-.008703	.0154040	.0100256	.0028875	-.014246	.2235827

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000173	.0003086	92.65564	-.000144	-.000739	.0053666	.0160325
Stddev	.000052	.0000681	.17104	.000287	.000195	.0002135	.0031088
%RSD	30.24295	22.05653	.1845984	199.0443	26.32061	3.977399	19.39089
#1	-.000113	.0003618	92.81051	.000038	-.000945	.0051227	.0191978
#2	-.000203	.0002319	92.47206	-.000475	-.000714	.0055195	.0159161
#3	-.000203	.0003320	92.68435	.000004	-.000559	.0054575	.0129834

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0585336	3.055766	.0012718	.0004925	416.8736	.0025480	.0488663
Stddev	.0002909	.021811	.0002019	.0003081	6.6954	.0010168	.0002774
%RSD	.4968955	.7137530	15.87601	62.54991	1.606089	39.90596	.5676847
#1	.0584629	3.061378	.0010876	.0007448	411.8474	.0037221	.0486203
#2	.0582846	3.031698	.0014877	.0001492	414.2994	.0019633	.0488116
#3	.0588533	3.074223	.0012402	.0005836	424.4740	.0019586	.0491669

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.483424	.0186441	.0010013	-.001558	-.000440	2.123092	.1355707
Stddev	.031560	.0003363	.0001476	.000723	.000460	.018316	.0019017
%RSD	.7039175	1.803884	14.73600	46.37872	104.3905	.8626849	1.402729
#1	4.464060	.0186055	.0009229	-.002392	-.000616	2.136985	.1333795
#2	4.519842	.0189981	.0009095	-.001118	-.000786	2.102336	.1367908
#3	4.466371	.0183288	.0011715	-.001164	.000081	2.129955	.1365417

Sample Name: Q1712-04 Acquired: 4/8/2025 16:26:32 Type: Unk
Method: NON EPA-6010-200.7(v2802) 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	1.046708	-.013212	.5385061
Stddev	.007773	.000472	.0023330
%RSD	.7426376	3.573319	.4332359
#1	1.041514	-.012727	.5367397
#2	1.042967	-.013239	.5411508
#3	1.055645	-.013670	.5376279

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1727.052	66304.44	16362.45	1516.103	3524.410
Stddev	12.744	208.72	33.14	5.656	16.001
%RSD	.7379086	.3147941	.2025167	.3730638	.4540137
#1	1712.778	66146.90	16393.15	1515.516	3506.238
#2	1731.089	66541.17	16327.32	1522.030	3536.393
#3	1737.288	66225.26	16366.88	1510.763	3530.597

Sample Name: Q1712-08 Acquired: 4/8/2025 16:37:15 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	-.003354	-.010410	.0000094	.0065248	.0043266	-.038182	.1222966
Stddev	.001240	.001337	.0000920	.0015122	.0029975	.004523	.0011674
%RSD	36.96746	12.84588	974.9751	23.17641	69.28157	11.84547	.9545748
#1	-.004531	-.010725	.0000359	.0056405	.0056047	-.041282	.1236124
#2	-.003473	-.008943	-.000093	.0082710	.0064732	-.040272	.1218925
#3	-.002059	-.011562	.000085	.0056631	.0009019	-.032992	.1213850

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000155	.0004110	172.6334	.0003411	.0007085	.0048051	.0128418
Stddev	.000036	.0000330	.5505	.0004624	.0000620	.0001857	.0007385
%RSD	23.09053	8.030514	.3189020	135.5642	8.756993	3.865003	5.750799
#1	-.000146	.0004156	173.0725	-.000108	.0006970	.0050067	.0134065
#2	-.000194	.0003759	172.8121	.000315	.0006529	.0046409	.0120060
#3	-.000124	.0004415	172.0158	.000816	.0007754	.0047678	.0131128

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2202191	2.358613	.0028377	.0005797	410.9485	.0023634	.0503106
Stddev	.0019117	.018122	.0001037	.0000650	4.3323	.0013730	.0007600
%RSD	.8680699	.7683381	3.655350	11.20793	1.054219	58.09578	1.510625
#1	.2223601	2.374899	.0027233	.0005642	410.5278	.0015184	.0494904
#2	.2196138	2.361851	.0028644	.0006511	415.4758	.0016241	.0504506
#3	.2186834	2.339091	.0029255	.0005240	406.8419	.0039476	.0509910

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.530456	.0563576	.0025097	-.001462	-.001396	7.012187	.0286161
Stddev	.009122	.0004904	.0002164	.001341	.000336	.018059	.0029269
%RSD	.3604877	.8701316	8.622007	91.71430	24.04203	.2575337	10.22812
#1	2.522614	.0559266	.0023087	-.001061	-.001748	6.993955	.0319857
#2	2.540467	.0568911	.0027387	-.000368	-.001361	7.030067	.0267050
#3	2.528287	.0562551	.0024816	-.002958	-.001080	7.012539	.0271577

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1712-08 Acquired: 4/8/2025 16:37:15 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	2.760141	-.029076	.7992213
Stddev	.013980	.000559	.0032629
%RSD	.5064908	1.922624	.4082579
#1	2.747382	-.029711	.8014193
#2	2.775085	-.028658	.8007724
#3	2.757956	-.028860	.7954722

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1721.069	67186.07	15844.19	1546.922	3514.081
Stddev	5.052	127.70	38.38	15.235	7.112
%RSD	.2935623	.1900695	.2422418	.9848894	.2023964
#1	1718.651	67316.96	15834.96	1560.371	3513.520
#2	1717.679	67061.81	15811.26	1530.376	3507.266
#3	1726.875	67179.45	15886.34	1550.019	3521.458

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1732-04 Acquired: 4/8/2025 16:41:45 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	-.002933	-.013464	.0006592	.0089671	.0028086	-.036817	.2488527
Stddev	.001077	.000978	.0008321	.0032307	.0016421	.006866	.0007739
%RSD	36.71698	7.261035	126.2359	36.02783	58.46505	18.64792	.3109758
#1	-.004161	-.014001	.0002908	.0067437	.0038580	-.029604	.2492903
#2	-.002149	-.014055	.0016119	.0126729	.0009163	-.043273	.2493085
#3	-.002490	-.012335	.0000749	.0074848	.0036516	-.037575	.2479591

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000280	.0011258	174.9740	-.000233	.0079254	.0156212	.0110045
Stddev	.000056	.0000229	.9099	.000435	.0001264	.0001521	.0011486
%RSD	20.16391	2.030185	.5200397	186.4754	1.594570	.9734651	10.43748
#1	-.000219	.0011002	175.7532	-.000688	.0080458	.0156013	.0110779
#2	-.000330	.0011440	173.9739	-.000192	.0079365	.0157823	.0121146
#3	-.000290	.0011333	175.1948	.000180	.0077938	.0154801	.0098210

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.240040	4.890296	.0094556	.0005131	472.2661	.0013793	.0540682
Stddev	.012755	.017815	.0002522	.0001167	6.2822	.0003870	.0003618
%RSD	.5694318	.3642973	2.667462	22.73886	1.330218	28.05925	.6692203
#1	2.253846	4.909222	.0093735	.0003874	467.7361	.0009368	.0538476
#2	2.228693	4.873851	.0097386	.0005342	479.4377	.0015467	.0544857
#3	2.237580	4.887816	.0092546	.0006178	469.6245	.0016545	.0538712

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.265494	.0366599	.0019841	-.002647	-.001653	7.437333	.0227890
Stddev	.025352	.0009831	.0002254	.000702	.000171	.042375	.0024334
%RSD	.7763591	2.681764	11.36083	26.50181	10.33033	.5697614	10.67802
#1	3.240723	.0376399	.0019560	-.002828	-.001537	7.389989	.0239728
#2	3.291390	.0366662	.0017740	-.001873	-.001849	7.450301	.0244040
#3	3.264369	.0356737	.0022222	-.003241	-.001573	7.471708	.0199902

Sample Name: Q1732-04 Acquired: 4/8/2025 16:41:45 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	3.403802	-.029228	.6042060
Stddev	.021202	.000153	.0012066
%RSD	.6228797	.5228198	.1996977
#1	3.428087	-.029328	.6051008
#2	3.394341	-.029303	.6046834
#3	3.388977	-.029052	.6028337

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1654.810	65261.39	16004.90	1486.919	3409.239
Stddev	13.888	270.96	44.90	11.639	11.552
%RSD	.8392222	.4151952	.2805131	.7827534	.3388352
#1	1669.338	65572.96	15961.15	1499.624	3418.764
#2	1653.426	65130.41	16050.86	1476.772	3412.564
#3	1641.666	65080.81	16002.70	1484.362	3396.390

Sample Name: Q1737-02 Acquired: 4/8/2025 16:46:13 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	-.001040	-.010285	.1176657	.0065415	.0053243	-.015045	.3072775
Stddev	.000740	.001073	.0033699	.0028145	.0034243	.004887	.0006036
%RSD	71.17679	10.43144	2.863984	43.02506	64.31436	32.48132	.1964515
#1	-.001856	-.010409	.1180517	.0062853	.0049669	-.014210	.3077996
#2	-.000411	-.011291	.1208260	.0038639	.0089134	-.010630	.3066165
#3	-.000853	-.009156	.1141194	.0094754	.0020928	-.020296	.3074164

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000079	-.000272	107.6618	-.000326	.0095311	.0065599	11.66920
Stddev	.000048	.000057	.4985	.000071	.0002383	.0002731	.18376
%RSD	60.19732	21.00424	.4630586	21.74874	2.500796	4.162479	1.574783
#1	-.000033	-.000302	108.2191	-.000394	.0092688	.0062721	11.65120
#2	-.000076	-.000206	107.5081	-.000332	.0095900	.0068153	11.49511
#3	-.000128	-.000308	107.2583	-.000253	.0097344	.0065924	11.86131

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8127805	3.063070	.0158589	.0004449	401.9309	.0006578	1.923792
Stddev	.0060530	.031648	.0004076	.0005406	5.3301	.0003995	.020050
%RSD	.7447330	1.033202	2.569890	121.5017	1.326122	60.73165	1.042201
#1	.8167706	3.086587	.0157007	.0009363	399.9557	.0002543	1.916966
#2	.8157553	3.075535	.0155541	-.000134	397.8704	.0006659	1.908046
#3	.8058157	3.027088	.0163218	.000533	407.9667	.0010531	1.946363

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.575099	.0095661	.0006201	-.000324	-.000712	2.312443	.0003435
Stddev	.033694	.0002757	.0004041	.000607	.000049	.033139	.0003640
%RSD	2.139152	2.881479	65.16342	187.2820	6.937185	1.433083	105.9505
#1	1.573181	.0094156	.0007303	.000045	-.000760	2.300156	.0004413
#2	1.542405	.0093984	.0009576	.000007	-.000661	2.287201	.0006487
#3	1.609711	.0098842	.0001723	-.001025	-.000714	2.349970	-.000059

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1737-02 Acquired: 4/8/2025 16:46:13 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	.8482551	-.013037	.4386660
Stddev	.0061100	.000553	.0023570
%RSD	.7203075	4.243819	.5373108
#1	.8552423	-.013669	.4410592
#2	.8439150	-.012804	.4363469
#3	.8456079	-.012639	.4385919

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1689.018	66295.61	17230.94	1510.423	3493.004
Stddev	4.730	874.51	87.31	22.504	9.991
%RSD	.2800591	1.319113	.5066953	1.489889	.2860235
#1	1688.294	66390.62	17130.28	1510.733	3488.542
#2	1694.069	67118.74	17286.04	1532.769	3504.449
#3	1684.692	65377.47	17276.51	1487.765	3486.022

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1740-04 Acquired: 4/8/2025 16:50:37 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	-.002879	-.008782	.0110349	.0105276	.0010770	.0134404	.4231180
Stddev	.000810	.000251	.0005822	.0036541	.0031806	.0003113	.0010988
%RSD	28.13657	2.855828	5.276443	34.70927	295.3135	2.316091	.2596835
#1	-.003099	-.008664	.0117072	.0122354	-.001711	.0134818	.4243013
#2	-.003556	-.008611	.0106914	.0130151	.004541	.0137289	.4229229
#3	-.001981	-.009070	.0107062	.0063323	.000400	.0131104	.4221299

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000067	.0000005	6.232822	.0004770	-.000004	.0284712	.0257879
Stddev	.0000455	.0000520	.031431	.0001185	.000139	.0003769	.0031249
%RSD	683.3219	9857.919	.5042762	24.84109	3277.890	1.323680	12.11778
#1	.0000045	-.000025	6.208501	.0003486	-.000074	.0282287	.0281819
#2	-.000038	.000060	6.221654	.0005822	.000156	.0289053	.0269291
#3	.000053	-.000034	6.268312	.0005000	-.000094	.0282794	.0222528

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3863444	.6653863	.0028261	.0005824	391.9848	.0009219	.1718941
Stddev	.0025862	.0069419	.0002346	.0002874	2.9849	.0007017	.0010239
%RSD	.6694116	1.043287	8.299441	49.34893	.7614868	76.11296	.5956781
#1	.3835060	.6602463	.0025858	.0008914	395.1078	.0005939	.1721086
#2	.3869595	.6732832	.0028381	.0003231	391.6860	.0017275	.1727938
#3	.3885675	.6626295	.0030544	.0005326	389.1605	.0004442	.1707799

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3199826	.0775020	.0001316	.0005534	.0006423	.1955619	.0325310
Stddev	.0104233	.0005243	.0002236	.0008950	.0002992	.0027483	.0023223
%RSD	3.257469	.6764954	169.9160	161.7312	46.58673	1.405350	7.138589
#1	.3299818	.0772791	.0003229	.0005981	.0006053	.1978251	.0300299
#2	.3091814	.0771260	.0001859	-.000363	.0009582	.1963568	.0346190
#3	.3207846	.0781009	-.000114	.001425	.0003633	.1925037	.0329441

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Sample Name: Q1740-04 Acquired: 4/8/2025 16:50:37 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	.5704202	-.005259	.0411774
Stddev	.0024661	.000262	.0001781
%RSD	.4323277	4.988517	.4324943
#1	.5694718	-.005171	.0413585
#2	.5685691	-.005554	.0411712
#3	.5732197	-.005052	.0410025

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1825.355	68557.15	16749.21	1607.547	3730.969
Stddev	12.725	154.44	34.25	7.941	22.902
%RSD	.6971091	.2252655	.2044843	.4939791	.6138295
#1	1813.108	68380.76	16718.02	1603.454	3707.383
#2	1838.509	68622.64	16785.86	1602.487	3753.119
#3	1824.449	68668.06	16743.75	1616.699	3732.405

Sample Name: Q1740-04DUP Acquired: 4/8/2025 16:55:04 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	-.004258	-.011387	.0133899	.0077139	.0034717	.0176544	.5297485
Stddev	.001073	.001630	.0014545	.0037089	.0010631	.0010099	.0021426
%RSD	25.20044	14.31314	10.86267	48.08098	30.62222	5.720667	.4044648
#1	-.003792	-.012331	.0143283	.0107431	.0036549	.0178248	.5288255
#2	-.003497	-.012324	.0117144	.0088213	.0044312	.0185683	.5282220
#3	-.005486	-.009505	.0141269	.0035774	.0023288	.0165701	.5321979

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001168	.0000291	7.626829	.0002809	.0000595	.0353627	.0337254
Stddev	.0000364	.0000922	.050883	.0005132	.0001476	.0000351	.0008729
%RSD	31.19785	317.0530	.6671525	182.6912	248.2359	.0991317	2.588350
#1	.0001164	.0000151	7.645318	-.000200	.0002013	.0353444	.0337500
#2	.0000806	-.000055	7.665882	.000221	.0000703	.0353406	.0328404
#3	.0001535	.000128	7.569287	.000821	-.000093	.0354031	.0345858

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4785010	.8115137	.0035452	.0006386	494.2036	.0009176	.2144432
Stddev	.0012411	.0103681	.0001367	.0001948	4.5506	.0005465	.0021602
%RSD	.2593690	1.277629	3.855301	30.50599	.9207897	59.55015	1.007341
#1	.4798688	.8156477	.0034345	.0006319	498.8221	.0004190	.2138767
#2	.4781874	.8191771	.0036980	.0004473	489.7242	.0008322	.2168302
#3	.4774467	.7997163	.0035032	.0008367	494.0646	.0015018	.2126228

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5756089	.0923611	.0001257	.0021048	.0010603	.2484841	.0401764
Stddev	.0113509	.0009502	.0000696	.0012268	.0003400	.0053768	.0011532
%RSD	1.971984	1.028774	55.36969	58.28398	32.06922	2.163836	2.870287
#1	.5764591	.0930925	.0001536	.0020837	.0013950	.2439600	.0412120
#2	.5638568	.0912871	.0000465	.0008887	.0007152	.2544284	.0389337
#3	.5865109	.0927037	.0001770	.0033419	.0010705	.2470640	.0403835

Sample Name: Q1740-04DUP Acquired: 4/8/2025 16:55:04 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	.7310874	-.005851	.0506568
Stddev	.0026967	.000507	.0002482
%RSD	.3688624	8.661950	.4899598
#1	.7311474	-.005588	.0504627
#2	.7337536	-.005529	.0505714
#3	.7283612	-.006435	.0509365

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1765.733	68005.28	17328.86	1590.314	3614.733
Stddev	7.396	197.18	17.41	12.831	12.126
%RSD	.4188561	.2899435	.1004529	.8068024	.3354625
#1	1771.699	67994.23	17328.06	1587.803	3628.303
#2	1768.042	67813.86	17346.65	1578.924	3610.936
#3	1757.458	68207.75	17311.87	1604.214	3604.959

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1740-04LX5 Acquired: 4/8/2025 16:59:29 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	-.000219	-.002540	.0020726	.0033914	.0000646	.0013982	.0777090
Stddev	.000732	.000227	.0013982	.0005752	.0014402	.0026725	.0010532
%RSD	333.8168	8.929617	67.46388	16.96081	2230.284	191.1403	1.355375
#1	-.001003	-.002367	.0020409	.0027369	.0007104	.0034008	.0764951
#2	.000445	-.002457	.0006905	.0036210	.0010688	-.001636	.0783808
#3	-.000100	-.002797	.0034864	.0038164	-.001585	.002430	.0782511

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000256	.0000060	1.262403	-.000049	.0000581	.0059442	.0050373
Stddev	.0000258	.0000641	.009163	.000215	.0001580	.0000705	.0008570
%RSD	100.8205	1064.389	.7258085	436.2819	272.0695	1.185412	17.01254
#1	.0000544	-.000014	1.254862	-.000086	-.000057	.0058639	.0060268
#2	.0000177	.000078	1.272600	.000182	.000238	.0059958	.0045322
#3	.0000047	-.000045	1.259748	-.000244	-.000007	.0059728	.0045529

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0948113	.1366109	.0003717	.0007376	78.73801	.0000946	.0327036
Stddev	.0007244	.0099769	.0001342	.0002181	.71241	.0002954	.0005881
%RSD	.7640628	7.303154	36.11323	29.56620	.9047833	312.4032	1.798185
#1	.0939865	.1451546	.0002171	.0004907	78.83805	.0004326	.0326182
#2	.0953443	.1256463	.0004591	.0008180	77.98088	-.000114	.0321629
#3	.0951031	.1390317	.0004388	.0009040	79.39512	-.000035	.0333297

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1313309	.0143268	-.000418	.0008575	.0010619	.0573844	.0019744
Stddev	.0130708	.0004788	.000179	.0008511	.0004648	.0019742	.0009388
%RSD	9.952604	3.342129	42.71534	99.25541	43.77014	3.440297	47.55003
#1	.1346223	.0143702	-.000539	.0002025	.0007168	.0551193	.0019056
#2	.1169289	.0147824	-.000213	.0018195	.0015904	.0582945	.0010719
#3	.1424414	.0138277	-.000503	.0005504	.0008786	.0587394	.0029457

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1740-04LX5 Acquired: 4/8/2025 16:59:29 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	.1150125	.0021863	.0083637
Stddev	.0018122	.0005722	.0000150
%RSD	1.575640	26.17080	.1791247
#1	.1148919	.0027288	.0083799
#2	.1132636	.0022418	.0083610
#3	.1168819	.0015884	.0083503

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1907.008	72694.27	18201.66	1701.284	4059.288
Stddev	10.109	847.44	56.01	17.984	9.204
%RSD	.5301177	1.165762	.3077137	1.057107	.2267490
#1	1915.637	73185.85	18240.02	1707.861	4066.985
#2	1909.502	73181.23	18137.39	1715.054	4061.787
#3	1895.885	71715.73	18227.57	1680.937	4049.092

Sample Name: CCV03 Acquired: 4/8/2025 17:13:46 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	5.052281	4.725349	4.828592	5.035653	5.206899	9.739096	9.226413
Stddev	.020100	.012992	.004050	.024022	.025765	.020559	.078896
%RSD	.3978474	.2749480	.0838786	.4770396	.4948151	.2110999	.8551129
#1	5.050173	4.716952	4.824918	5.031750	5.189769	9.759717	9.221255
#2	5.033318	4.718782	4.827922	5.013822	5.194399	9.738973	9.307762
#3	5.073352	4.740314	4.832935	5.061388	5.236529	9.718599	9.150222

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2268975	2.350074	26.88145	1.054450	2.346304	1.282104	4.812241
Stddev	.0012334	.002427	.10512	.008440	.003716	.004348	.051906
%RSD	.5435981	.1032545	.3910331	.8003915	.1583866	.3391344	1.078627
#1	.2266351	2.350865	26.77561	1.048061	2.346809	1.280240	4.778433
#2	.2282410	2.347351	26.98583	1.064018	2.342361	1.278998	4.872006
#3	.2258165	2.352007	26.88290	1.051271	2.349742	1.287073	4.786285

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.606977	22.55309	2.326871	1.228512	26.72699	2.319979	2.483847
Stddev	.013163	.09826	.001777	.012844	.11642	.010677	.024765
%RSD	.5048998	.4356670	.0763575	1.045494	.4355769	.4602006	.9970513
#1	2.597883	22.52014	2.327160	1.221934	26.59779	2.317474	2.466721
#2	2.622070	22.66359	2.324968	1.243312	26.82373	2.331685	2.512243
#3	2.600977	22.47554	2.328486	1.220289	26.75946	2.310777	2.472577

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.15233	4.510968	5.162504	4.994243	4.613610	5.066583	4.921862
Stddev	.14831	.022807	.017573	.012691	.012418	.032586	.009525
%RSD	.5896666	.5055975	.3404056	.2541134	.2691584	.6431524	.1935244
#1	25.06300	4.501272	5.155110	4.982636	4.606926	5.038995	4.916447
#2	25.32354	4.537022	5.149836	4.992298	4.627938	5.102536	4.932860
#3	25.07046	4.494611	5.182567	5.007794	4.605966	5.058219	4.916278

Sample Name: CCV03 Acquired: 4/8/2025 17:13:46 Type: Unk
Method: NON EPA-6010-200.7(v2900) 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	4.622963	4.724559	4.682737
Stddev	.014806	.011491	.044129
%RSD	.3202651	.2432219	.9423765
#1	4.611315	4.736036	4.670268
#2	4.617948	4.713054	4.646184
#3	4.639625	4.724585	4.731759

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1967.520	74049.50	17445.08	1757.433	4028.055
Stddev	9.245	509.87	19.31	7.927	14.203
%RSD	.4698713	.6885538	.1107097	.4510336	.3526134
#1	1976.263	74366.27	17442.25	1765.643	4043.170
#2	1968.452	73461.33	17427.34	1749.824	4026.010
#3	1957.844	74320.90	17465.65	1756.832	4014.985

Sample Name: CCB03 Acquired: 4/8/2025 17:28:41 Type: Unk
Method: NON EPA-6010-200.7(v2901) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000982	-.001048	.0009674	.0000219	-.001386	-.005633	-.012278
Stddev	.000755	.000598	.0001639	.0016250	.001809	.001628	.000181
%RSD	76.87320	57.07281	16.94650	7406.676	130.5037	28.89654	1.475611
#1	-.000976	-.000641	.0010616	.0016887	-.001153	-.004637	-.012345
#2	-.001739	-.000767	.0007781	-.000065	.000295	-.004751	-.012415
#3	-.000230	-.001734	.0010624	-.001558	-.003300	-.007512	-.012073

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000178	.0000031	-.006035	-.000010	-.000119	-.000618	-.003748
Stddev	.0000187	.0000863	.001691	.000084	.000166	.000352	.001931
%RSD	105.6397	2743.528	28.02076	847.3403	139.0457	56.99086	51.52042
#1	.0000053	-.000077	-.007786	.000008	-.000197	-.000439	-.001767
#2	.0000086	-.000008	-.005909	.000064	.000071	-.001023	-.005625
#3	.0000393	.000095	-.004411	-.000102	-.000232	-.000391	-.003852

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001490	-.005281	-.000434	.0008115	-.231637	-.000778	-.001357
Stddev	.000101	.010018	.000188	.0000901	.009406	.001129	.000112
%RSD	6.753188	189.7140	43.25212	11.10084	4.060722	145.1371	8.278522
#1	-.001452	-.008692	-.000395	.0007142	-.222198	-.002062	-.001322
#2	-.001605	.005998	-.000638	.0008921	-.241009	.000059	-.001483
#3	-.001415	-.013147	-.000269	.0008281	-.231705	-.000331	-.001267

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.213173	.0050793	-.000036	-.000231	.0007388	-.001360	-.005403
Stddev	.016358	.0006136	.000255	.000545	.0001759	.000646	.002934
%RSD	7.673377	12.08060	714.4658	236.2073	23.81442	47.52711	54.31133
#1	-.223099	.0046816	.000226	-.000630	.0009128	-.001707	-.007386
#2	-.194293	.0057859	-.000284	-.000452	.0005610	-.000614	-.002032
#3	-.222127	.0047702	-.000049	.000390	.0007424	-.001759	-.006791

Sample Name: CCB03 Acquired: 4/8/2025 17:28:41 Type: Unk
Method: NON EPA-6010-200.7(v2901) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB03 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.001783	-.001760	-.000031
Stddev	.001380	.000201	.000028
%RSD	77.39578	11.39862	93.14368
#1	-.000351	-.001761	-.000017
#2	-.003103	-.001559	-.000012
#3	-.001895	-.001960	-.000063

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2016.282	76023.77	17155.67	1805.131	4503.730
Stddev	2.202	288.17	56.78	11.994	4.100
%RSD	.1092148	.3790460	.3309489	.6644339	.0910270
#1	2014.694	76120.04	17218.42	1813.968	4506.277
#2	2015.356	75699.79	17107.85	1791.478	4505.911
#3	2018.796	76251.48	17140.75	1809.948	4499.000

Sample Name: Q1740-04A Acquired: 4/8/2025 17:33:00 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	.8469581	1.670921	.8947721	2.036311	.8609318	1.921700	.5918371
Stddev	.0141601	.013650	.0091747	.024536	.0133422	.005220	.0025789
%RSD	1.671878	.8168860	1.025363	1.204924	1.549740	.2716507	.4357418
#1	.8628111	1.686350	.9053473	2.063609	.8762839	1.917677	.5888921
#2	.8355644	1.660419	.8900302	2.016096	.8521384	1.927599	.5929276
#3	.8424989	1.665995	.8889387	2.029227	.8543730	1.919824	.5936916

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1807672	.1869622	6.054858	.4262861	.1879787	.3273203	2.868627
Stddev	.0002175	.0022820	.030814	.0018045	.0024805	.0043385	.023805
%RSD	.1202940	1.220565	.5089104	.4232961	1.319570	1.325472	.8298283
#1	.1809979	.1895943	6.059316	.4283636	.1907598	.3321219	2.876699
#2	.1807376	.1855398	6.022059	.4253846	.1859948	.3236818	2.841836
#3	.1805660	.1857524	6.083201	.4251099	.1871815	.3261573	2.887346

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5314269	2.605216	.4643741	.0765594	382.2040	.2739216	.3703956
Stddev	.0032160	.018313	.0052037	.0005884	1.3743	.0018089	.0008229
%RSD	.6051636	.7029490	1.120578	.7685811	.3595763	.6603588	.2221609
#1	.5308611	2.614203	.4703345	.0766383	382.1391	.2734257	.3708833
#2	.5285313	2.584145	.4607353	.0771044	383.6096	.2724123	.3694455
#3	.5348882	2.617299	.4620526	.0759355	380.8632	.2759266	.3708578

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.95282	.3213607	.4357952	.6889367	.1817481	1.014793	6.097152
Stddev	.03326	.0011688	.0061577	.0106476	.0008002	.009506	.073074
%RSD	.3036263	.3636997	1.412990	1.545507	.4402890	.9367520	1.198499
#1	10.92572	.3218502	.4425536	.7011995	.1808493	1.005229	6.176438
#2	10.98993	.3222052	.4305027	.6820388	.1820117	1.024240	6.032507
#3	10.94280	.3200268	.4343292	.6835717	.1823833	1.014909	6.082510

Sample Name: Q1740-04A Acquired: 4/8/2025 17:33:00 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	.5596812	.1907628	.2224076
Stddev	.0061378	.0025679	.0008860
%RSD	1.096665	1.346122	.3983757
#1	.5664490	.1880618	.2214208
#2	.5581195	.1931728	.2231348
#3	.5544751	.1910538	.2226673

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1811.781	69841.88	16724.91	1658.348	3692.690
Stddev	22.190	154.88	34.29	9.542	39.222
%RSD	1.224741	.2217621	.2050442	.5753906	1.062141
#1	1787.145	69771.82	16731.58	1657.097	3649.659
#2	1830.197	70019.42	16755.37	1668.453	3726.435
#3	1818.002	69734.41	16687.77	1649.493	3701.978

Sample Name: Q1740-04MS Acquired: 4/8/2025 17:37:44 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	.8350544	1.640395	.8891704	1.994490	.8500593	1.908695	.6018962
Stddev	.0008331	.012169	.0013074	.010615	.0022820	.010048	.0019871
%RSD	.0997618	.7418265	.1470420	.5322064	.2684496	.5264365	.3301347
#1	.8349056	1.626664	.8881887	1.982565	.8481471	1.900759	.6025732
#2	.8359518	1.649844	.8906545	1.997997	.8494455	1.905332	.6034564
#3	.8343057	1.644678	.8886679	2.002906	.8525854	1.919993	.5996592

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1706402	.1856935	6.008619	.4293856	.1870921	.3207025	2.975303
Stddev	.0001986	.0006263	.043235	.0082687	.0007238	.0004130	.029705
%RSD	.1163629	.3372558	.7195495	1.925714	.3868937	.1287959	.9983998
#1	.1708517	.1851478	5.990288	.4240834	.1864928	.3202618	2.950118
#2	.1706111	.1863773	6.058000	.4251601	.1878963	.3207648	3.008062
#3	.1704578	.1855554	5.977570	.4389132	.1868872	.3210808	2.967729

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5261429	2.547436	.4607670	.0760431	391.0951	.2729393	.3679922
Stddev	.0043596	.018004	.0018565	.0005278	5.1776	.0007064	.0032348
%RSD	.8285890	.7067388	.4029183	.6940319	1.323877	.2587925	.8790410
#1	.5232502	2.528185	.4591420	.0756571	395.3251	.2735894	.3643364
#2	.5311571	2.563858	.4627904	.0758277	385.3211	.2730407	.3704837
#3	.5240213	2.550266	.4603687	.0766445	392.6392	.2721877	.3691564

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.55097	.3034555	.4360092	.6859897	.1815244	1.059996	5.980790
Stddev	.06809	.0010005	.0022317	.0064325	.0001300	.008878	.036687
%RSD	.5894528	.3297049	.5118451	.9376905	.0716224	.8375868	.6134142
#1	11.47285	.3028934	.4334326	.6808075	.1815315	1.050165	5.974593
#2	11.58240	.3046106	.4372622	.6931889	.1816508	1.062394	6.020181
#3	11.59767	.3028624	.4373327	.6839726	.1813910	1.067429	5.947596

Sample Name: Q1740-04MS Acquired: 4/8/2025 17:37:44 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	.5513354	.1913196	.2248248
Stddev	.0111400	.0004469	.0002801
%RSD	2.020553	.2336000	.1245878
#1	.5408302	.1910839	.2247385
#2	.5630169	.1918350	.2251379
#3	.5501592	.1910398	.2245980

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1841.071	70060.85	17645.27	1644.598	3751.510
Stddev	11.953	581.02	32.91	14.870	14.418
%RSD	.6492425	.8293127	.1865089	.9041588	.3843258
#1	1851.112	70666.26	17677.22	1660.461	3767.125
#2	1844.251	70008.53	17647.12	1642.357	3748.706
#3	1827.850	69507.76	17611.48	1630.976	3738.701

Sample Name: Q1740-04MSD Acquired: 4/8/2025 17:41:55 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	.8854157	1.645505	.9054274	2.122720	.8933312	1.947026	.7165046
Stddev	.0036880	.006328	.0033268	.007285	.0009530	.001455	.0026569
%RSD	.4165273	.3845568	.3674273	.3432056	.1066810	.0747382	.3708202
#1	.8832460	1.640200	.9051648	2.114697	.8941974	1.947271	.7186041
#2	.8833271	1.643806	.9088777	2.124543	.8923103	1.945464	.7173921
#3	.8896740	1.652509	.9022397	2.128921	.8934858	1.948343	.7135175

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1677544	.1885131	7.126959	.4345097	.1891703	.3383730	3.095595
Stddev	.0010966	.0007545	.014709	.0006797	.0004446	.0000747	.017614
%RSD	.6536950	.4002457	.2063886	.1564249	.2350371	.0220876	.5690026
#1	.1689879	.1879076	7.126032	.4352404	.1886578	.3384081	3.115309
#2	.1673855	.1893584	7.142109	.4343923	.1894533	.3384238	3.090068
#3	.1668898	.1882735	7.112735	.4338963	.1893998	.3382872	3.081407

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5992425	2.726142	.4673072	.0783379	509.8050	.2741002	.4218635
Stddev	.0017664	.013421	.0028380	.0003821	3.4366	.0011312	.0009355
%RSD	.2947777	.4923162	.6073006	.4877556	.6740962	.4126999	.2217499
#1	.6011000	2.738631	.4642864	.0783750	509.7096	.2751969	.4219261
#2	.5990437	2.727844	.4699177	.0787001	513.2883	.2741664	.4227661
#3	.5975839	2.711951	.4677174	.0779386	506.4171	.2729374	.4208983

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.77498	.3139568	.4443452	.6982319	.1828316	1.164038	6.155725
Stddev	.09326	.0001599	.0012173	.0046567	.0006300	.010010	.028812
%RSD	.7299844	.0509259	.2739604	.6669326	.3445897	.8599487	.4680493
#1	12.70346	.3141011	.4430112	.6932921	.1835492	1.152696	6.123035
#2	12.88046	.3137849	.4453959	.7025413	.1823694	1.171639	6.177421
#3	12.74102	.3139842	.4446286	.6988623	.1825761	1.167778	6.166720

Sample Name: Q1740-04MSD Acquired: 4/8/2025 17:41:55 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	.6952985	.1984478	.2383933
Stddev	.0026216	.0006868	.0005194
%RSD	.3770416	.3460745	.2178831
#1	.6943004	.1981927	.2386906
#2	.6982726	.1992256	.2386958
#3	.6933227	.1979251	.2377936

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1739.325	67202.47	17766.39	1547.792	3578.684
Stddev	4.831	251.48	19.75	13.483	17.132
%RSD	.2777458	.3742156	.1111604	.8711022	.4787194
#1	1744.855	67476.09	17755.73	1563.353	3597.852
#2	1735.923	66981.44	17789.18	1540.427	3564.864
#3	1737.198	67149.89	17754.26	1539.595	3573.336

Sample Name: PB167488TB Acquired: 4/8/2025 17:46:07 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	-.009278	-.011305	-.000120	.0084694	.0026876	.0047312
Stddev	.000702	.001568	.001099	.0036659	.0011636	.0019536
%RSD	7.567220	13.87178	918.2825	43.28438	43.29394	41.29119
#1	-.009824	-.013094	-.000322	.0098936	.0014648	.0069821
#2	-.009524	-.010169	-.001104	.0112095	.0028169	.0037347
#3	-.008486	-.010652	.001067	.0043051	.0037811	.0034769

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.013883	-.000177	-.000106	-.008048	.0002873	-.000695
Stddev	.000882	.000010	.000041	.004916	.0002349	.000233
%RSD	6.353956	5.365664	38.84562	61.08980	81.76924	33.50994
#1	-.014866	-.000177	-.000072	-.009606	.0001152	-.000523
#2	-.013623	-.000187	-.000095	-.011996	.0005549	-.000603
#3	-.013161	-.000168	-.000152	-.002541	.0001917	-.000960

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000567	.0056523	-.002827	.0054402	.0000449	.0008700
Stddev	.000388	.0028505	.000256	.0088859	.0002009	.0000491
%RSD	68.33221	50.43053	9.050207	163.3383	447.4419	5.644139
#1	-.001008	.0024211	-.003003	.0155972	.0000965	.0009142
#2	-.000416	.0078110	-.002945	.0016213	.0002149	.0008172
#3	-.000278	.0067248	-.002534	-.000898	-.000177	.0008787

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 400.2400	.0002899	.0001160	-.394876	-.000751	.0001069
Stddev	2.7078	.0000772	.0003164	.009476	.000189	.0000852
%RSD	.6765370	26.61160	272.7162	2.399761	25.14541	79.71910
#1	397.1379	.0003712	.0002340	-.399514	-.000607	.0001868
#2	401.4523	.0002808	-.000242	-.401139	-.000965	.0001167
#3	402.1299	.0002177	.000356	-.383974	-.000682	.0000172

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: PB167488TB Acquired: 4/8/2025 17:46:07 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	.0009925	.0013419	.0070801	-.000789	F .0282646	-.004119
Stddev	.0011513	.0003959	.0028774	.002059	.0002784	.000412
%RSD	116.0034	29.50473	40.64047	261.0017	.9850102	10.01193
#1	.0020896	.0010889	.0039164	.000087	.0284459	-.003738
#2	.0010943	.0017982	.0095409	-.003141	.0284039	-.004557
#3	-.000206	.0011386	.0077830	.000687	.0279441	-.004062

Elem	Sr4077
Units	ppm
Avg	.0000251
Stddev	.0000115
%RSD	45.79374
#1	.0000344
#2	.0000285
#3	.0000123

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1763.772	67861.31	17313.26	1567.693	3696.741
Stddev	8.136	575.22	34.67	6.533	7.409
%RSD	.4613067	.8476468	.2002251	.4167019	.2004066
#1	1754.597	67238.34	17329.35	1563.102	3689.066
#2	1766.610	68372.32	17336.95	1575.172	3697.307
#3	1770.109	67973.27	17273.47	1564.805	3703.851

Sample Name: Q1742-01 Acquired: 4/8/2025 17:50:36 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	.1527106	.0130679	.2322914	.0142429	-.008270	90.87914	.3469379
Stddev	.0018609	.0025032	.0014210	.0025398	.002063	.37665	.0013090
%RSD	1.218601	19.15572	.6117471	17.83194	24.94540	.4144563	.3773119
#1	.1546883	.0108365	.2329598	.0113279	-.005890	90.51855	.3456932
#2	.1524494	.0125924	.2306594	.0159791	-.009535	90.84885	.3468176
#3	.1509941	.0157748	.2332550	.0154217	-.009386	91.27003	.3483029

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0079560	.0035902	94.12841	.2909130	.1479045	.2989738	281.5660
Stddev	.0000569	.0003750	1.07874	.0005494	.0001379	.0009765	1.6254
%RSD	.7155510	10.44587	1.146033	.1888613	.0932278	.3266347	.5772836
#1	.0079694	.0040146	92.88385	.2913266	.1477744	.2984252	280.0118
#2	.0078936	.0033036	94.79531	.2911227	.1480490	.3001013	283.2544
#3	.0080050	.0034524	94.70605	.2902896	.1478901	.2983950	281.4318

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.130468	40.31039	.1205881	-.003912	4.720830	.4356432	.4294948
Stddev	.056697	.42713	.0005136	.000589	.050696	.0026539	.0011414
%RSD	1.105101	1.059599	.4259482	15.05971	1.073883	.6091833	.2657511
#1	5.065296	39.82306	.1201689	-.004541	4.762576	.4327439	.4305563
#2	5.157671	40.61978	.1204342	-.003822	4.664418	.4362332	.4282875
#3	5.168437	40.48833	.1211610	-.003373	4.735498	.4379523	.4296406

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.220805	-.240351	.0059065	.0120620	1.614253	6.428419	4.350107
Stddev	.072643	.004243	.0002989	.0017629	.012555	.097516	.010126
%RSD	.7878143	1.765469	5.060969	14.61512	.7777516	1.516952	.2327739
#1	9.300147	-.241359	.0062079	.0140836	1.599805	6.541019	4.343414
#2	9.157564	-.235694	.0059015	.0112567	1.622510	6.371510	4.361756
#3	9.204703	-.243999	.0056101	.0108455	1.620443	6.372729	4.345151

Sample Name: Q1742-01 Acquired: 4/8/2025 17:50:36 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	2.596071	.1682259	.2238474
Stddev	.002751	.0006749	.0010955
%RSD	.1059855	.4012130	.4894144
#1	2.595972	.1675784	.2229801
#2	2.598871	.1681742	.2234836
#3	2.593371	.1689253	.2250786

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1996.668	77579.98	19443.86	1789.870	3749.707
Stddev	5.263	165.97	109.78	6.335	5.097
%RSD	.2635831	.2139399	.5646062	.3539537	.1359366
#1	2001.442	77539.40	19569.45	1788.072	3754.347
#2	1991.025	77438.07	19396.02	1784.628	3744.251
#3	1997.536	77762.49	19366.13	1796.910	3750.521

Sample Name: Q1739-02 Acquired: 4/8/2025 17:54:42 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	-.001185	-.003114	.0072151	.0041018	-.000019	.5008957	.0326374
Stddev	.001771	.000370	.0003405	.0005416	.001079	.0048609	.0002953
%RSD	149.4568	11.88038	4.718681	13.20529	5596.447	.9704401	.9048641
#1	-.003186	-.003526	.0072111	.0047195	-.001141	.4974110	.0328073
#2	.000182	-.003003	.0075576	.0038776	.001011	.5064486	.0328086
#3	-.000552	-.002812	.0068767	.0037082	.000072	.4988273	.0322964

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001404	-.000102	5.721241	.0021394	-.000021	.0050154	1.686258
Stddev	.0000146	.000029	.039127	.0001543	.000153	.0000823	.002114
%RSD	10.36844	28.33688	.6838822	7.210836	718.2140	1.641083	.1253441
#1	.0001430	-.000074	5.748936	.0022139	-.000098	.0049545	1.687144
#2	.0001247	-.000100	5.738306	.0022423	-.000120	.0051090	1.687786
#3	.0001534	-.000132	5.676480	.0019620	.000154	.0049827	1.683846

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2169132	1.205764	-.000192	.0008173	93.00617	.0069198	.0231307
Stddev	.0005009	.026047	.000151	.0000787	.38597	.0010859	.0004090
%RSD	.2309356	2.160190	79.01579	9.634444	.4149897	15.69297	1.768176
#1	.2167234	1.221246	-.000086	.0008624	92.82807	.0076059	.0233575
#2	.2174813	1.220352	-.000365	.0007264	92.74142	.0056678	.0233760
#3	.2165349	1.175692	-.000124	.0008631	93.44903	.0074856	.0226585

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7112837	.0088158	.0000994	-.000504	.0275338	.3762607	.0145957
Stddev	.0044990	.0005629	.0002112	.000856	.0003957	.0035961	.0015643
%RSD	.6325200	6.384815	212.6023	169.9870	1.437000	.9557392	10.71787
#1	.7098094	.0082132	.0003111	.000016	.0274256	.3721308	.0128092
#2	.7077068	.0093280	-.000111	-.001492	.0279724	.3779525	.0152576
#3	.7163348	.0089061	.000098	-.000036	.0272036	.3786990	.0157203

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1739-02 Acquired: 4/8/2025 17:54:42 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	.9215658	-.003553	.0460917
Stddev	.0085801	.000359	.0001167
%RSD	.9310339	10.11732	.2531217
#1	.9308258	-.003691	.0462082
#2	.9199865	-.003145	.0460920
#3	.9138850	-.003823	.0459749

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1955.606	75067.43	18964.09	1740.637	4136.778
Stddev	3.642	96.80	65.11	4.093	8.086
%RSD	.1862358	.1289489	.3433171	.2351196	.1954651
#1	1951.847	75049.15	18986.72	1739.500	4127.785
#2	1955.851	74981.07	18890.68	1737.233	4139.099
#3	1959.119	75172.07	19014.86	1745.178	4143.449

Sample Name: PB167489BL Acquired: 4/8/2025 17:59:00 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	-.002120	-.001326	-.000475	.0002230	-.000120	-.001847	-.011329
Stddev	.001044	.001789	.001218	.0004702	.000786	.000235	.001436
%RSD	49.24711	134.9100	256.5287	210.8932	657.6187	12.70846	12.67245
#1	-.002715	-.001250	.000888	.0007538	-.000978	-.001939	-.012815
#2	-.000915	-.003152	-.001459	.0000563	.000053	-.002022	-.009949
#3	-.002731	.000424	-.000854	-.000141	.000566	-.001581	-.011222

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000008	-.000013	-.011686	.0000431	-.000106	-.000555	-.005613
Stddev	.0000437	.000024	.002789	.0003340	.000127	.000178	.002702
%RSD	5196.892	179.0568	23.86600	775.2745	120.0684	32.05272	48.13370
#1	-.000030	.000006	-.013854	.0002342	-.000179	-.000612	-.004018
#2	-.000019	-.000040	-.008540	.0002376	.000041	-.000356	-.004088
#3	.000051	-.000006	-.012663	-.000343	-.000179	-.000698	-.008733

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0191348	-.004486	-.000452	.0006555	-.079905	.0004635	.0027416
Stddev	.0003424	.009054	.000300	.0000903	.009819	.0011603	.0000940
%RSD	1.789132	201.8238	66.32271	13.77925	12.28860	250.3319	3.427895
#1	.0187695	.000047	-.000796	.0006368	-.068817	.0016712	.0026376
#2	.0191868	-.014912	-.000255	.0007538	-.083395	.0003622	.0027669
#3	.0194482	.001406	-.000304	.0005761	-.087502	-.000643	.0028204

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.160783	-.000917	-.000200	-.000817	.0007599	.0142255	-.006347
Stddev	.005759	.000468	.000137	.000442	.0002186	.0056387	.000562
%RSD	3.581865	51.02168	68.31127	54.10795	28.76955	39.63772	8.847218
#1	-.167341	-.000844	-.000246	-.000906	.0009493	.0175977	-.006845
#2	-.158461	-.000490	-.000046	-.001207	.0005207	.0077159	-.005738
#3	-.156548	-.001417	-.000308	-.000337	.0008098	.0173628	-.006458

Sample Name: PB167489BL Acquired: 4/8/2025 17:59:00 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	-.000518	.0000387	-.000011
Stddev	.001058	.0006695	.000025
%RSD	204.3205	1730.051	238.3748
#1	.000127	-.000441	.000008
#2	-.001740	.000804	-.000000
#3	.000059	-.000247	-.000039

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2102.478	77220.56	17691.35	1813.690	4684.235
Stddev	29.360	382.89	62.87	16.482	79.023
%RSD	1.396456	.4958345	.3553558	.9087760	1.687008
#1	2069.628	76817.31	17737.14	1794.805	4596.501
#2	2126.160	77265.20	17619.67	1821.086	4749.823
#3	2111.647	77579.17	17717.22	1825.179	4706.381

Sample Name: Q1737-01 Acquired: 4/8/2025 18:07:22 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	.0524166	.0213949	9.224671	.0072209	.0183314	65.25848
Stddev	.0012533	.0018368	.064373	.0043954	.0023722	.37626
%RSD	2.391088	8.585461	.6978359	60.87004	12.94084	.5765640
#1	.0538187	.0225974	9.150342	.0116222	.0161663	65.67760
#2	.0520258	.0223067	9.262369	.0072090	.0208672	64.94982
#3	.0514052	.0192805	9.261302	.0028315	.0179609	65.14801

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4868633	.0054716	.0167776	141.7751	.2938970	.1090353
Stddev	.0020333	.0001049	.0007144	1.2091	.0010411	.0008512
%RSD	.4176255	1.917030	4.258215	.8528370	.3542400	.7806692
#1	.4887063	.0055927	.0160145	143.1623	.2927539	.1080660
#2	.4846821	.0054119	.0174306	140.9443	.2947908	.1093792
#3	.4872014	.0054102	.0168877	141.2188	.2941464	.1096608

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.723407	334.2079	2.576348	68.65326	.2424233	-.002276
Stddev	.021770	.6229	.021159	.66870	.0008651	.000141
%RSD	.7993829	.1863869	.8212944	.9740190	.3568520	6.196620
#1	2.701496	334.9204	2.600324	69.42299	.2415168	-.002397
#2	2.745034	333.7663	2.560287	68.21556	.2425130	-.002310
#3	2.723692	333.9369	2.568433	68.32123	.2432400	-.002121

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.744010	.2953502	9.362932	8.980067	-.316221	.0175204
Stddev	.062320	.0018021	.051635	.045133	.004957	.0003425
%RSD	.6395717	.6101713	.5514849	.5025906	1.567641	1.954780
#1	9.672588	.2974292	9.419542	8.932850	-.318776	.0174852
#2	9.772114	.2942339	9.350835	9.022777	-.310507	.0171969
#3	9.787329	.2943874	9.318420	8.984573	-.319379	.0178791

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: Q1737-01 Acquired: 4/8/2025 18:07:22 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	2.136429	3.324819	2.782088	6.973648	F 13.66247	.2007576
Stddev	.011183	.021763	.026386	.036421	.07496	.0002963
%RSD	.5234657	.6545753	.9484152	.5222590	.5486574	.1475777
#1	2.123552	3.348146	2.768355	6.931809	13.57907	.2008439
#2	2.142022	3.305061	2.812508	6.998252	13.72422	.2004277
#3	2.143712	3.321249	2.765401	6.990883	13.68411	.2010011

Elem	Sr4077
Units	ppm
Avg	.4142605
Stddev	.0022585
%RSD	.5452014
#1	.4165174
#2	.4120003
#3	.4142636

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1872.463	75730.44	18863.17	1680.161	3551.346
Stddev	15.530	160.35	145.18	16.966	19.534
%RSD	.8293635	.2117319	.7696331	1.009782	.5500560
#1	1885.380	75635.67	18695.92	1664.288	3569.272
#2	1855.233	75640.08	18956.60	1678.152	3530.526
#3	1876.776	75915.57	18937.00	1698.041	3554.240

Sample Name: PB167489BS Acquired: 4/8/2025 18:12:34 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	.8222743	1.897981	.9472399	2.025472	.8507390	1.912904
Stddev	.0105076	.020718	.0114154	.020677	.0125402	.037364
%RSD	1.277876	1.091597	1.205121	1.020842	1.474032	1.953270
#1	.8208579	1.883187	.9407966	2.015150	.8506897	1.869784
#2	.8334183	1.921660	.9604202	2.049277	.8633037	1.935721
#3	.8125467	1.889097	.9405030	2.011988	.8382235	1.933208

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1664794	.1824976	.1852346	.9070148	.4217653	.1870270
Stddev	.0035189	.0024138	.0022002	.0172441	.0011844	.0018606
%RSD	2.113730	1.322674	1.187780	1.901193	.2808218	.9948205
#1	.1624616	.1797174	.1844368	.8871088	.4224054	.1866843
#2	.1679628	.1837154	.1877224	.9173819	.4224920	.1890351
#3	.1690137	.1840599	.1835447	.9165537	.4203986	.1853616

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3213630	2.733803	.1861319	1.934773	.4645101	.0730186
Stddev	.0043060	.002957	.0030681	.032627	.0055011	.0003128
%RSD	1.339922	.1081720	1.648331	1.686348	1.184270	.4283294
#1	.3200280	2.736187	.1826760	1.897139	.4618400	.0733076
#2	.3261784	2.734728	.1885348	1.952078	.4708366	.0726865
#3	.3178826	2.730493	.1871848	1.955102	.4608537	.0730618

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.500559	.2741095	.1982214	8.833749	.2661219	.4247261
Stddev	.013229	.0046890	.0015328	.057788	.0033493	.0053323
%RSD	.5290485	1.710615	.7732514	.6541779	1.258572	1.255475
#1	2.489640	.2687999	.1991971	8.796354	.2623394	.4228505
#2	2.515270	.2776823	.1990123	8.900308	.2673146	.4307428
#3	2.496765	.2758463	.1964547	8.804585	.2687116	.4205850

Sample Name: PB167489BS Acquired: 4/8/2025 18:12:34 Type: Unk
Method: NON EPA-6010-200.7(v2901) 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	.6968954	.1817512	.7518742	5.591015	F -.007244	.1879323
Stddev	.0092523	.0038183	.0021954	.056011	.001429	.0045468
%RSD	1.327643	2.100834	.2919908	1.001804	19.72192	2.419377
#1	.6947707	.1775336	.7497826	5.555208	-.006202	.1826835
#2	.7070252	.1827472	.7541604	5.655562	-.008872	.1906606
#3	.6888903	.1849727	.7516798	5.562274	-.006657	.1904528

Elem	Sr4077
Units	ppm
Avg	.1855527
Stddev	.0031973
%RSD	1.723095
#1	.1818856
#2	.1870167
#3	.1877559

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2042.293	80215.03	17917.74	1867.481	4419.240
Stddev	29.397	436.21	236.18	8.008	60.168
%RSD	1.439426	.5438070	1.318108	.4288075	1.361495
#1	2049.665	79888.89	18190.44	1865.436	4439.093
#2	2009.911	80045.68	17783.72	1860.694	4351.655
#3	2067.303	80710.53	17779.06	1876.313	4466.973

Sample Name: CCV04 Acquired: 4/8/2025 18:16:38 Type: Unk
Method: NON EPA-6010-200.7(v2901) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.322563	4.896631	4.927024	5.217164	5.361863	9.767728
Stddev	.055608	.073415	.048877	.058744	.050619	.027620
%RSD	1.044757	1.499305	.9920107	1.125972	.9440558	.2827639
#1	5.386685	4.981153	4.983003	5.284809	5.419620	9.751797
#2	5.287587	4.860018	4.892813	5.178980	5.325214	9.751766
#3	5.293417	4.848724	4.905257	5.187704	5.340756	9.799620

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.364631	.2252005	2.395478	22.66292	1.068987	2.384585
Stddev	.025282	.0015264	.021973	.08184	.015180	.024907
%RSD	.2699756	.6778200	.9172827	.3611298	1.420057	1.044494
#1	9.377555	.2259462	2.420756	22.69242	1.086249	2.413221
#2	9.380838	.2262108	2.380939	22.57042	1.057719	2.367953
#3	9.335499	.2234445	2.384740	22.72593	1.062993	2.372582

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.314221	4.960341	2.359013	24.93717	2.366147	1.244464
Stddev	.014145	.072160	.007229	.06648	.025351	.019893
%RSD	1.076329	1.454746	.3064446	.2665726	1.071415	1.598487
#1	1.330499	5.018909	2.357840	24.94500	2.395418	1.267341
#2	1.304915	4.879730	2.352442	24.86713	2.351764	1.231240
#3	1.307250	4.982383	2.366757	24.99938	2.351258	1.234811

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	27.34879	2.337887	2.506966	25.95689	F 4.470886	5.277242
Stddev	.35721	.003917	.049662	.34312	.029512	.055064
%RSD	1.306114	.1675262	1.980972	1.321888	.6600902	1.043426
#1	27.51918	2.334820	2.563311	26.25816	4.495783	5.340798
#2	26.93829	2.336541	2.469560	25.58341	4.478588	5.243881
#3	27.58889	2.342299	2.488027	26.02911	4.438287	5.247047

Sample Name: CCV04 Acquired: 4/8/2025 18:16:38 Type: Unk
Method: NON EPA-6010-200.7(v2901) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV04 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.130485	4.665633	5.232187	5.126080	4.794465	4.756521
Stddev	.046018	.011098	.077961	.062639	.057509	.022058
%RSD	.8969515	.2378635	1.490026	1.221963	1.199486	.4637374
#1	5.182271	4.659019	5.302003	5.196865	4.859653	4.733921
#2	5.094281	4.659434	5.148063	5.077814	4.750909	4.757649
#3	5.114903	4.678445	5.246496	5.103561	4.772834	4.777993

Elem	Sr4077
Units	ppm
Avg	4.753891
Stddev	.015823
%RSD	.3328517
#1	4.771558
#2	4.749093
#3	4.741022

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1965.523	74888.53	18070.81	1784.300	4033.794
Stddev	24.736	1262.78	58.24	41.855	52.114
%RSD	1.258516	1.686212	.3222825	2.345758	1.291928
#1	1937.181	73513.09	18005.94	1741.001	3973.951
#2	1976.625	75995.45	18087.89	1824.544	4058.239
#3	1982.764	75157.06	18118.60	1787.355	4069.191

Sample Name: CCB04 Acquired: 4/8/2025 18:20:49 Type: Unk
Method: NON EPA-6010-200.7(v2901) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002294	-.000583	.0001968	.0030757	-.000305	-.005027	-.010892
Stddev	.001001	.002175	.0002770	.0010082	.000581	.003748	.000391
%RSD	43.60877	373.0571	140.7457	32.77860	190.3742	74.54727	3.590927
#1	-.001160	.001766	.0005125	.0020073	-.000960	-.009256	-.011264
#2	-.002673	-.002529	.0000836	.0040103	.000148	-.002116	-.010927
#3	-.003051	-.000986	-.000006	.0032095	-.000103	-.003710	-.010484

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000360	.0001548	-.010367	.0002472	.0000536	-.000426	-.005503
Stddev	.0000485	.0000631	.004519	.0001612	.0001285	.000146	.002490
%RSD	134.6866	40.76941	43.59046	65.21035	239.8140	34.34206	45.24947
#1	.0000398	.0002084	-.010386	.0003432	-.000053	-.000594	-.008051
#2	-.000014	.0001709	-.014877	.0003374	.000196	-.000324	-.003076
#3	.000083	.0000852	-.005839	.0000611	.000017	-.000361	-.005381

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001719	.0039045	-.000276	.0009552	-.333012	.0012866	-.001320
Stddev	.000121	.0023962	.000060	.0000714	.008262	.0005098	.000253
%RSD	7.041176	61.37119	21.68528	7.473078	2.481042	39.62234	19.19464
#1	-.001615	.0064333	-.000344	.0008838	-.324758	.0012557	-.001095
#2	-.001852	.0036127	-.000247	.0009553	-.332995	.0007929	-.001594
#3	-.001691	.0016676	-.000235	.0010266	-.341282	.0018111	-.001272

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.263471	.0024385	.0002313	-.000277	.0015721	.0045131	-.007435
Stddev	.008128	.0004530	.0004070	.000607	.0002103	.0023751	.002814
%RSD	3.084951	18.57658	175.9395	218.9240	13.37923	52.62602	37.85384
#1	-.270458	.0028539	.0001656	-.000255	.0014249	.0026992	-.005485
#2	-.254551	.0019555	-.000139	.000319	.0018130	.0072015	-.006158
#3	-.265405	.0025062	.000667	-.000896	.0014784	.0036388	-.010661

Sample Name: CCB04 Acquired: 4/8/2025 18:20:49 Type: Unk
Method: NON EPA-6010-200.7(v2901) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.003573	-.001696	.0001924
Stddev	.003343	.000385	.0000713
%RSD	93.58418	22.71413	37.04775
#1	-.005589	-.001340	.0001725
#2	-.005415	-.001642	.0001331
#3	.000287	-.002105	.0002714

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2041.801	77598.18	17499.59	1827.038	4630.917
Stddev	3.915	175.28	127.23	2.272	7.192
%RSD	.1917547	.2258770	.7270724	.1243508	.1553133
#1	2044.281	77473.59	17357.86	1827.401	4635.971
#2	2043.835	77798.60	17603.95	1829.106	4622.683
#3	2037.287	77522.33	17536.97	1824.606	4634.098

Sample Name: LR1 Acquired: 4/8/2025 18:24:46 Type: Unk
Method: NON EPA-6010-200.7(v2902) 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	.0824829	.0791567	.0250116	.0519403	-.008150	2138.034	.0038322
Stddev	.0075188	.0029534	.0109613	.0226493	.004614	10.870	.0002837
%RSD	9.115536	3.731034	43.82489	43.60647	56.61604	.5083968	7.402659
#1	.0741567	.0766136	.0191229	.0656896	-.002931	2136.057	.0035324
#2	.0887763	.0784605	.0376586	.0257988	-.011688	2149.757	.0040964
#3	.0845157	.0823959	.0182532	.0643323	-.009832	2128.289	.0038677

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0051614	.0365271	1944.982	.0230270	.0336492	-.061119	1085.974
Stddev	.0001674	.0015919	11.190	.0012227	.0005318	.003261	17.083
%RSD	3.242326	4.358069	.5753398	5.309770	1.580309	5.335453	1.573017
#1	.0049822	.0380055	1957.822	.0218569	.0335765	-.057498	1070.261
#2	.0051886	.0348420	1937.307	.0229279	.0342135	-.063823	1104.157
#3	.0053136	.0367337	1939.816	.0242962	.0331575	-.062038	1083.505

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0124543	1752.581	.0042213	.0092510	2178.757	.0160902	.7087478
Stddev	.0006410	13.908	.0011290	.0034431	41.988	.0011029	.0110305
%RSD	5.147037	.7935841	26.74487	37.21815	1.927164	6.854436	1.556331
#1	.0120276	1762.707	.0030590	.0083764	2152.334	.0172708	.7090747
#2	.0121440	1736.723	.0053137	.0130470	2156.763	.0159133	.6975576
#3	.0131915	1758.313	.0042913	.0063296	2227.173	.0150864	.7196112

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1436.765	^ *****	-.011797	.0075374	-.029356	.2046509	.0665539
Stddev	19.030	-----	.000589	.0032848	.000466	.0049545	.0073773
%RSD	1.324481	-----	4.992658	43.57975	1.587235	2.420935	11.08467
#1	1420.361	^ -----	-.012433	.0112478	-.029540	.2006783	.0732411
#2	1432.305	^ -----	-.011688	.0063641	-.028826	.2102024	.0586403
#3	1457.628	^ -----	-.011270	.0050004	-.029702	.2030720	.0677804

Sample Name: LR1 Acquired: 4/8/2025 18:24:46 Type: Unk
Method: NON EPA-6010-200.7(v2902) 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	-.258433	.1280996	.0113159
Stddev	.009217	.0076371	.0000844
%RSD	3.566483	5.961828	.7460309
#1	-.258616	.1200447	.0112350
#2	-.267557	.1352357	.0113093
#3	-.249125	.1290184	.0114035

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1207.552	49651.51	14410.51	1081.566	2158.535
Stddev	8.143	559.95	48.57	12.035	10.697
%RSD	.6743166	1.127767	.3370689	1.112732	.4955480
#1	1215.985	50251.70	14409.90	1094.254	2169.733
#2	1199.734	49559.67	14459.39	1080.132	2148.422
#3	1206.938	49143.15	14362.25	1070.313	2157.450

Reviewed By:jaswal
On:4/9/2025 10:44:20 PM
Inst Id :P4
LB :LB135348

Sample Name: LR2 Acquired: 4/8/2025 18:29:44 Type: Unk
Method: NON EPA-6010-200.7(v2902) 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	.0106627	-.054581	253.7806	-.010543	-.008947	.2754963	^F *****
Stddev	.0037356	.001651	1.2850	.001744	.004939	.0128792	-----
%RSD	35.03453	3.024362	.5063296	16.54253	55.20172	4.674922	-----
#1	.0090723	-.056333	253.1111	-.008763	-.012929	.2900200	^ -----
#2	.0149303	-.053055	252.9687	-.010617	-.003420	.2654647	^ -----
#3	.0079855	-.054356	255.2621	-.012249	-.010492	.2710043	^ -----

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001861	-.002510	.3657146	.0002178	.0044408	254.9528	.0957636
Stddev	.000056	.000071	.0082109	.0004573	.0005369	1.2530	.0109085
%RSD	2.994167	2.844910	2.245174	209.9788	12.09048	.4914656	11.39102
#1	-.001803	-.002525	.3751816	-.000304	.0038224	256.3982	.1083576
#2	-.001914	-.002433	.3614301	.000406	.0047886	254.1746	.0896582
#3	-.001868	-.002573	.3605321	.000551	.0047113	254.2856	.0892750

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.50590	-.019542	49.72631	.0019970	.0349934	-.008716	37.89753
Stddev	.53218	.012175	.24112	.0001122	.0309952	.000420	.10997
%RSD	1.097142	62.30108	.4849010	5.617730	88.57439	4.819152	.2901851
#1	48.02847	-.005872	49.58482	.0018688	.0690110	-.009200	37.78431
#2	48.40957	-.029218	49.58938	.0020448	.0276182	-.008454	38.00393
#3	49.07966	-.023538	50.00472	.0020773	.0083511	-.008493	37.90436

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.108059	-.000864	-.003838	-.005948	-.036054	-.003195	.1086293
Stddev	.018681	.000375	.000506	.000845	.000191	.002481	.0046863
%RSD	17.28787	43.42914	13.18869	14.21326	.5308614	77.65567	4.314037
#1	-.086649	-.000431	-.004418	-.005003	-.035833	-.005641	.1042245
#2	-.121041	-.001071	-.003484	-.006207	-.036167	-.003262	.1135538
#3	-.116488	-.001089	-.003612	-.006634	-.036162	-.000681	.1081098

Sample Name: LR2 Acquired: 4/8/2025 18:29:44 Type: Unk
Method: NON EPA-6010-200.7(v2902) 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	-.053628	-.001690	.0013882
Stddev	.001341	.000434	.0000255
%RSD	2.499938	25.67990	1.837560
#1	-.054490	-.001456	.0013779
#2	-.052083	-.001423	.0013696
#3	-.054311	-.002190	.0014173

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1720.514	72139.72	17538.07	1584.064	4021.338
Stddev	14.011	232.45	158.00	13.977	23.590
%RSD	.8143366	.3222274	.9008844	.8823412	.5866288
#1	1704.366	72388.26	17720.11	1596.933	3996.546
#2	1729.440	71927.66	17436.56	1569.195	4043.508
#3	1727.736	72103.23	17457.54	1586.063	4023.960

Sample Name: CCV05 Acquired: 4/8/2025 18:34:03 Type: Unk
Method: NON EPA-6010-200.7(v2903) 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	5.361220	4.766162	4.939504	5.187893	5.420131	10.07192	9.191417
Stddev	.069313	.025502	.062091	.054442	.076418	.15720	.159945
%RSD	1.292860	.5350656	1.257039	1.049405	1.409891	1.560755	1.740155
#1	5.404163	4.761453	4.967520	5.230892	5.483555	10.21876	9.269834
#2	5.398239	4.793691	4.982651	5.206109	5.441547	10.09090	9.297020
#3	5.281257	4.743343	4.868341	5.126679	5.335289	9.90609	9.007397

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2288304	2.382562	22.78469	1.093452	2.367768	1.341086	4.704488
Stddev	.0044565	.027683	.47367	.009081	.027834	.019194	.026277
%RSD	1.947519	1.161903	2.078907	.8304434	1.175542	1.431192	.5585421
#1	.2329826	2.395145	23.24622	1.092316	2.382768	1.354749	4.707932
#2	.2293867	2.401718	22.80810	1.103047	2.384884	1.349368	4.728872
#3	.2241218	2.350822	22.29975	1.084993	2.335651	1.319142	4.676659

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.379986	22.76507	2.347399	1.234103	26.36830	2.358029	2.466462
Stddev	.053392	.51169	.029617	.008813	.23118	.049307	.021676
%RSD	2.243387	2.247686	1.261702	.7140943	.8767262	2.091010	.8788419
#1	2.432008	23.26912	2.361690	1.230327	26.14174	2.406497	2.455711
#2	2.382629	22.78002	2.367161	1.244175	26.60384	2.359666	2.491412
#3	2.325322	22.24608	2.313347	1.227807	26.35931	2.307925	2.452262

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.27588	4.691417	5.324456	5.158812	4.678149	5.055529	4.977958
Stddev	.14734	.091688	.059437	.064689	.087052	.038829	.052768
%RSD	.6069378	1.954382	1.116304	1.253955	1.860826	.7680492	1.060035
#1	24.11488	4.767687	5.366933	5.192839	4.765349	5.028515	5.014080
#2	24.40400	4.716874	5.349902	5.199386	4.677852	5.100026	5.002392
#3	24.30876	4.589691	5.256532	5.084211	4.591245	5.038045	4.917401

Sample Name: CCV05 Acquired: 4/8/2025 18:34:03 Type: Unk
Method: NON EPA-6010-200.7(v2903) 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	4.680732	4.763150	4.702499
Stddev	.057652	.055063	.108456
%RSD	1.231677	1.156024	2.306348
#1	4.715296	4.820641	4.766275
#2	4.712722	4.757920	4.763950
#3	4.614178	4.710888	4.577272

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1947.285	74375.08	16853.89	1715.786	4054.414
Stddev	30.247	471.05	295.84	14.926	62.254
%RSD	1.553286	.6333467	1.755346	.8699316	1.535468
#1	1920.788	74681.81	16565.27	1727.458	4008.434
#2	1940.827	73832.71	16839.95	1698.968	4029.551
#3	1980.239	74610.74	17156.46	1720.931	4125.257

Sample Name: CCB05 Acquired: 4/8/2025 18:38:14 Type: Unk
Method: NON EPA-6010-200.7(v2903) 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	.0013276	.0002607	.0013268	.0013474	-.000850	-.003886	-.009371
Stddev	.0020716	.0014986	.0006875	.0011561	.000875	.001143	.000572
%RSD	156.0420	574.7946	51.81540	85.80628	102.9675	29.41636	6.106845
#1	.0036829	-.000462	.0013768	.0009114	-.000244	-.003400	-.010006
#2	-.000212	-.000739	.0019879	.0026581	-.001852	-.003066	-.009214
#3	.000512	.001984	.0006157	.0004726	-.000453	-.005192	-.008894

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000197	.0001577	-.006479	-.000145	.0000149	.0002172	-.002938
Stddev	.0000207	.0000056	.001102	.000326	.0001743	.0001243	.003475
%RSD	105.1025	3.562090	17.00451	223.9029	1165.851	57.25039	118.2763
#1	.0000431	.0001522	-.005310	-.000497	.0001140	.0001643	-.002696
#2	.0000039	.0001574	-.006630	.000145	.0001171	.0003592	.000409
#3	.0000120	.0001635	-.007499	-.000084	-.000186	.0001281	-.006528

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001755	.0022598	-.000203	.0007167	-.190707	.0008146	-.001141
Stddev	.000112	.0053882	.000100	.0001276	.011337	.0012697	.000157
%RSD	6.394192	238.4382	49.30881	17.80614	5.944938	155.8716	13.75278
#1	-.001827	.0080229	-.000271	.0006981	-.194832	-.000061	-.001065
#2	-.001812	.0014088	-.000249	.0008526	-.177885	.002271	-.001036
#3	-.001625	-.002652	-.000088	.0005994	-.199404	.000234	-.001321

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.281352	.0021588	.0004681	.0006249	.0012120	.0005456	-.007600
Stddev	.008044	.0003015	.0002267	.0004725	.0005266	.0033138	.001659
%RSD	2.859066	13.96440	48.42728	75.60596	43.45110	607.3821	21.82462
#1	-.272067	.0024636	.0002067	.0010882	.0009614	.0029444	-.008102
#2	-.285778	.0021520	.0006101	.0006427	.0008574	.0019280	-.008950
#3	-.286211	.0018608	.0005875	.0001438	.0018171	-.003236	-.005749

Sample Name: CCB05 Acquired: 4/8/2025 18:38:14 Type: Unk
Method: NON EPA-6010-200.7(v2903) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB05 Custom ID2: Custom ID3:
Comment:

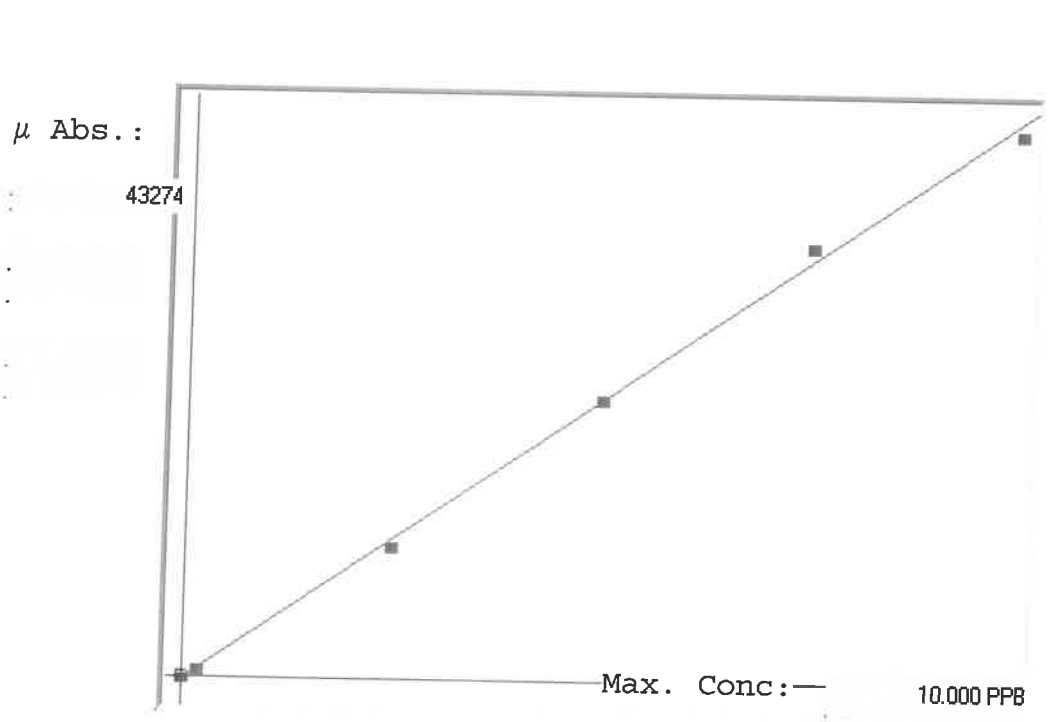
Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.001472	-.002297	.0002076
Stddev	.001436	.000418	.0000281
%RSD	97.55281	18.19560	13.53864
#1	-.001990	-.002341	.0001798
#2	.000151	-.002691	.0002070
#3	-.002578	-.001859	.0002360

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2104.360	79827.43	18116.03	1927.124	4663.472
Stddev	7.886	122.16	172.14	19.708	25.216
%RSD	.3747669	.1530328	.9501868	1.022687	.5407173
#1	2112.264	79737.82	18188.73	1904.420	4692.112
#2	2096.491	79777.90	17919.47	1937.135	4653.698
#3	2104.324	79966.58	18239.88	1939.818	4644.606

LB135388

7470A

INSTRUMENT ID: CV1



Std ID	Conc.	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	%D
0.0	0.000	0.017	0.017	-87	0.000	-87	0				-
0.2	0.200	0.203	0.003	736	0.0 %	736					2
2.5	2.500	2.383	-0.117	10393	0.0 %	10393					-5
5.0	5.000	5.028	0.028	22106	0.0 %	22106					1
7.5	7.500	7.763	0.263	34221	0.0 %	34221					4
10.0	10.000	9.806	-0.194	43274	0.0 %	43274					-2

LB135388 INSTRUMENT ID : CV1

Method: 7470A Operator: Admin Date of Analysis: 11 Apr 2025 09:37:35

Sample ID	Extended ID	µ Abs.	Conc.	Stnd Conc	Method	Units	Date	Type	Type
0.0 - 1	S0	-87	-	0.00000	7470A	PPB	11 Apr 2025 09:45:43	S	Std
0.2 - 1	S0-2	736	-	0.20000	7470A	PPB	11 Apr 2025 09:48:01	S	Std
2.5 - 1	S2.5	10393	-	2.50000	7470A	PPB	11 Apr 2025 09:50:19	S	Std
5.0 - 1	S5	22106	-	5.00000	7470A	PPB	11 Apr 2025 09:52:36	S	Std
7.5 - 1	S7.5	34221	-	7.50000	7470A	PPB	11 Apr 2025 09:54:53	S	Std
10.0 - 1	S10	43274	-	10.00000	7470A	PPB	11 Apr 2025 10:00:03	S	Std
ICV84 - 1	ICV84	15826	3.6098		7470A	PPB	11 Apr 2025 10:03:03	U	SMPL
ICB84 - 1	ICB84	-272	-0.0245		7470A	PPB	11 Apr 2025 10:05:18	U	SMPL
CCV59 - 1	CCV59	22192	5.0469		7470A	PPB	11 Apr 2025 10:07:34	U	SMPL
CCB59 - 1	CCB59	-301	-0.0310		7470A	PPB	11 Apr 2025 10:09:50	U	SMPL
CRA - 1	CRA	755	0.2074		7470A	PPB	11 Apr 2025 10:12:07	U	SMPL
HighStd - 1	HighStd	42351	9.5980		7470A	PPB	11 Apr 2025 10:14:22	U	SMPL
ChkStd - 1	ChkStd	30286	6.8742		7470A	PPB	11 Apr 2025 10:16:38	U	SMPL
PB167568BL - 1	PBW	-448	-0.0642		7470A	PPB	11 Apr 2025 10:18:56	U	SMPL
PB167568BS - 1	LCSW	16168	3.6870		7470A	PPB	11 Apr 2025 10:23:56	U	SMPL
Q1739-02 - 1	WC-LIQUID-20250404	-113	0.0114		7470A	PPB	11 Apr 2025 10:26:12	U	SMPL
Q1739-02DUP - 1	WC-LIQUID-20250404DUP	-13	0.0340		7470A	PPB	11 Apr 2025 10:28:30	U	SMPL
Q1739-02MS - 1	WC-LIQUID-20250404MS	15483	3.5323		7470A	PPB	11 Apr 2025 10:30:47	U	SMPL
PB167569BL - 1	PBW	-310	-0.0331		7470A	PPB	11 Apr 2025 10:35:21	U	SMPL
CCV60 - 1	CCV60	19878	4.5245		7470A	PPB	11 Apr 2025 10:37:38	U	SMPL
CCB60 - 1	CCB60	-247	-0.0188		7470A	PPB	11 Apr 2025 10:39:54	U	SMPL
PB167569BS - 1	LCSW	17742	4.0423		7470A	PPB	11 Apr 2025 10:46:52	U	SMPL
Q1739-01 - 1	WC-LIQUID-20250404	318	0.1087		7470A	PPB	11 Apr 2025 10:49:07	U	SMPL
Q1746-05 - 1	B-158-GW01	700	0.1950		7470A	PPB	11 Apr 2025 10:56:12	U	SMPL
Q1746-05DUP - 1	B-158-GW01DUP	700	0.1950		7470A	PPB	11 Apr 2025 10:58:28	U	SMPL
Q1746-05MS - 1	B-158-GW01MS	9660	2.2177		7470A	PPB	11 Apr 2025 11:00:45	U	SMPL
Q1746-05MSD - 1	B-158-GW01MSD	9396	2.1581		7470A	PPB	11 Apr 2025 11:03:02	U	SMPL
Q1746-06 - 1	B-149-GW01	180	0.0776		7470A	PPB	11 Apr 2025 11:05:22	U	SMPL
Q1746-07 - 1	EB-2025-4-7	-100	0.0143		7470A	PPB	11 Apr 2025 11:07:40	U	SMPL
Q1774-02 - 1	TT-073-IDWGW-20250409	37	0.0453		7470A	PPB	11 Apr 2025 11:09:58	U	SMPL
Q1774-03 - 1	TT-074-IDWGW-20250409	124	0.0649		7470A	PPB	11 Apr 2025 11:12:14	U	SMPL
CCV61 - 1	CCV61	20513	4.6679		7470A	PPB	11 Apr 2025 11:14:30	U	SMPL
CCB61 - 1	CCB61	-264	-0.0227		7470A	PPB	11 Apr 2025 11:16:45	U	SMPL
Q1774-04 - 1	TT-075-IDWGW-20250409	170	0.0753		7470A	PPB	11 Apr 2025 11:19:02	U	SMPL
PB167488TB - 1	PB167488TB	16	0.0405		7470A	PPB	11 Apr 2025 11:21:17	U	SMPL
Q1739-02LX5 - 1		57	0.0498		7470A	PPB	11 Apr 2025 11:23:33	U	SMPL
Q1739-02A - 1		18810	4.2834		7470A	PPB	11 Apr 2025 11:25:48	U	SMPL
Q1746-05LX5 - 1		-138	0.0058		7470A	PPB	11 Apr 2025 11:28:04	U	SMPL
Q1746-05A - 1		14144	3.2300		7470A	PPB	11 Apr 2025 11:30:22	U	SMPL
Q1739-02MSD - 1	WC-LIQUID-2025MSD	16760	3.8206		7470A	PPB	11 Apr 2025 11:39:00	U	SMPL
CCV62 - 1	CCV62	21143	4.8101		7470A	PPB	11 Apr 2025 11:41:16	U	SMPL
CCB62 - 1	CCB62	-243	-0.0179		7470A	PPB	11 Apr 2025 11:43:35	U	SMPL

Alliance TECHNICAL GROUP

Water Metals Preparation Sheet

PB167489

SOP ID : M3010A-Digestion-17

SDG No : N/A

Matrix : WATER

Pippete ID: ICP A

Balance ID : N/A

Filter paper ID : N/A

pH Strip ID : N/A

Hood ID : #3

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

Start Digest Date: 04/07/2025 **Time :** 12:30 **Temp :** 96 °C

End Digest Date: 04/07/2025 **Time :** 15:35 **Temp :** 96 °C

Digestion tube ID: M5595

Block thermometer ID: MET-DIG. #1

Dig Technician Signature: SJ23.

Supervisor Signature: SO

Temp : 1. 96°C 2. N/A

Standared Name	MLS USED	STD REF. # FROM LOG
LFS-1	0.25	M6003
LFS-2	0.25	M6012
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	M6158
1:1 HCL	5.00	MP85156
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 50 Temp :96 C

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
04/07/25 16:35	SJ23. met dig	SJ metals Lab
	Preparation Group	Analysis Group

Alliance TECHNICAL GROUP

Water Metals Preparation Sheet

PB167489

Lab Sample ID	Client Sample ID	pH	Initial Vol (ml)	Final Vol (ml)	Color Before	Color After	Clarity Before	Clarity After	Comment	Prep Pos
PB167467TB	PB167467TB	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	10
PB167488TB	PB167488TB	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	11
PB167489BL	PBW489	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	12
PB167489BS	LCS489	<2	5	25	Colorless	Colorless	Clear	Clear	M6003,M6012	13
Q1712-04	Z-05A	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	14
Q1712-08	TT-7	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	15
Q1719-02	TP-3-2	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	16
Q1719-04	TP-3-4	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	17
Q1719-06	TP-3-6	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	18
Q1719-08	TP-3-8	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	19
Q1732-04	TT-8	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	20
Q1737-02	RT3069	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	21
Q1739-02	WC-LIQUID-20250404	<2	5	50	Colorless	Colorless	Clear	Clear	N/A	22
Q1740-04	TP-20	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	23
Q1740-04MS	TP-20MS	<2	5	25	Colorless	Colorless	Clear	Clear	M6003,M6012	25
Q1740-04MSD	TP-20MSD	<2	5	25	Colorless	Colorless	Clear	Clear	M6003,M6012	26
Q1740-04DUP	TP-20DUP	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	24

Alliance TECHNICAL GROUP

TCLP EXTRACTION LOGPAGE

PB167467

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 Po
PB167467TB	LEB467	18	N/A	2000	N/A	N/A	N/A	4.94	1.0	T-2
Q1712-04	Z-05A	01	100.02	2000	N/A	N/A	N/A	7.0	1.5	T-1
Q1712-08	TT-7	02	100.03	2000	N/A	N/A	N/A	7.6	1.0	T-1
~~Q1719-01~~	~~TP-3-1~~ SR 041725	~~03~~	~~100.04~~	~~2000~~ SR	N/A	~~N/A~~	~~N/A~~	~~5.8~~ SR	~~1.0~~	~~T-1~~
Q1719-02	TP-3-2	04	100.02	2000	N/A	N/A	N/A	5.6	1.5	T-1
~~Q1719-03~~	~~TP-3-3~~ SR. 041725	~~05~~	~~100.01~~ SR	~~2000~~	N/A	~~N/A~~	~~N/A~~ SR	~~5.6~~	~~1.0~~	~~T-1~~
Q1719-04	TP-3-4	06	100.02	2000	N/A	N/A	N/A	5.5	1.5	T-1
~~Q1719-05~~	~~TP-3-5~~ SR 041725	~~07~~	~~100.03~~ SR	~~2000~~	N/A	~~N/A~~	~~N/A~~ SR	~~5.8~~	~~1.5~~ SR	~~T-1~~
Q1719-06	TP-3-6	08	100.02	2000	N/A	N/A	N/A	6.2	1.0	T-1
~~Q1719-07~~	~~TP-3-7~~ SR 041725	~~09~~	~~100.01~~ SR	~~2000~~ SR	N/A	~~N/A~~ SR	~~N/A~~	~~5.8~~	~~1.5~~ SR	~~T-1~~
Q1719-08	TP-3-8	10	100.02	2000	N/A	N/A	N/A	5.6	1.0	T-1
~~Q1719-09~~	~~TP-3-9~~ SR 041725	~~11~~	~~100.03~~ SR	~~2000~~	N/A	~~N/A~~ SR	N/A	5.5	1.5 SR	T-2
~~Q1719-10~~	~~TP-3-10~~	~~12~~	~~100.02~~	~~2000~~	N/A	N/A	N/A	5.8	1.5	T-2
~~Q1719-11~~	~~TP-3-11~~ SR 041725	~~13~~	~~100.03~~ SR	~~2000~~	N/A	N/A	N/A SR	5.6	1.0	T-2
~~Q1719-12~~	~~TP-3-12~~	14	100.02	2000	N/A	N/A	N/A	5.6	1.5	T-2
Q1732-04	TT-8	15	100.03	2000	N/A	N/A	N/A	8.6	1.0	T-2
Q1737-02	RT3069	16	100.02	2000	N/A	N/A	N/A	6.2	1.5	T-2
Q1740-04	TP-20	17	100.02	2000	N/A	N/A	N/A	3.5	1.0	T-2

Alliance TECHNICAL GROUP

TCLP EXTRACTION LOGPAGE

PB167488

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	P... P...
PB167488TB	LEB488	N/A	N/A	N/A	N/A	N/A	N/A	4.94	1.0	N/...
Q1739-02	WC-LIQUID-20250404	N/A	N/A	N/A	N/A	N/A	N/A	6.6	1.5	N/...

Alliance TECHNICAL GROUP

Water Mercury Preparation Sheet

PB167568

SOP ID : M7470A-Mercury-19

SDG No : NA

Matrix : WATER

Pippete ID: HG A

Balance ID : N/A

Filter paper ID : NA

pH Strip ID : M6069

Hood ID : #1

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

Start Digest Date: 04/10/2025 **Time :** 14:20 **Temp :** 95 °C

End Digest Date: 04/10/2025 **Time :** 16:20 **Temp :** 95 °C

Digestion tube ID: M5595

Block thermometer ID: HG-DIG#3

Dig Technician Signature: MB

Supervisor Signature: MV

Temp : 1. 95°C 2. N/A

Standared Name	MLS USED	STD REF. # FROM LOG
ICV	30mL	MP85182
CCV	30mL	MP85184
CRA	30mL	MP85186
Blank Spike	0.48mL	MP85175
Matrix Spike	0.48mL	MP85175

Chemical Used	ML/SAMPLE USED	Lot Number
HNO3/H2SO4(1:2)	2.5mL	MP84563
KMnO4 (5%)	4.5mL	MP84564
K2S2O8 (5%)	2.5mL	MP84565
Hydroxylamine HCL (12%)	2.0mL	MP84566
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	MP85176
0.05 ppb	S0.05	N/A	N/A
0.2 ppb	S0.2	30mL	MP85177
2.5 ppb	S2.5	30mL	MP85178
5.0 ppb	S5.0	30mL	MP85179
7.5 ppb	S7.5	30mL	MP85180
10.0 ppb	S10.0	30mL	MP85181
ICV	ICV	30mL	MP85182
ICB	ICB	30mL	MP85183
CCV	CCV	30mL	MP85184
CCB	CCB	30mL	MP85185
CRI	CRI	30mL	MP85186
CHK STD	CHK STD	30mL	MP85187

Extraction Conformance/Non-Conformance Comments:

N/A

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
4/10/25 @ 17:10	MB - DIG. Lab	MB - Metal Lab
	Preparation Group	Analysis Group

Alliance TECHNICAL GROUP

Water Mercury Preparation Sheet

PB167568

Lab Sample ID	Client Sample ID	Initial Vol (ml)	Final Vol (ml)	pH	Comment	Prep Pos
PB167488TB	PB167488TB	3	30	<2	N/A	3-1
PB167568BL	PBW568	30	30	<2	N/A	2
PB167568BS	LCS568	30	30	<2	MP85175	3
Q1739-02DUP	WC-LIQUID-20250404DUP	3	30	<2	N/A	5
Q1739-02MS	WC-LIQUID-20250404MS	3	30	<2	MP85175	6
Q1739-02MSD	WC-LIQUID-20250404MSD	3	30	<2	MP85175	7
Q1739-02	WC-LIQUID-20250404	3	30	<2	N/A	4

Alliance TECHNICAL GROUP

TCLP EXTRACTION LOGPAGE

PB167488

SOP ID : M1311-TCLP-15
SDG No : N/A
Weigh By : N/A
Balance ID : N/A
pH Meter ID : WC PH METER-1
Extraction By : N/A
Filter By : JP
Pippete ID : N/A
Tumbler ID : N/A
TCLP Filter ID : 115525

Start Prep Date : N/A **Time :** N/A
End Prep Date : N/A **Time :** N/A
Combination Ratio : N/A
ZHE Cleaning Batch : ~~N/A~~ 70
Initial Room Temperature: N/A
Final Room Temperature: N/A
TCLP Technician Signature : [signature]
Supervisor By : 12

Standared Name	MLS USED	STD REF. # FROM LOG
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Chemical Used	ML/SAMPLE U	Lot Number
N/A	N/A	N/A
N/A	N/A	N/A
HNO3-TCLP,1N	N/A	WP110804
pH Strips	N/A	W1931,W1934,W3171,W3172
pH Strips	W1941,W1942	W3166,W1938,W1939,W1940,
1 Liter Amber	N/A	90424-08
120ml Plastic bottle	N/A	405130101
1:1 HNO3	N/A	MP84041

Extraction Conformance/Non-Conformance Comments:

Matrix spikes are added after filtration and before preservation. q1739-02 is used for ms-msd.

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
04/07/25 1230	[signature] TCLP Room	5123. RJ / EH
	Preparation Group	Analysis Group Metals

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

Instrument ID: P4

Daily Analysis Runlog For Sequence/QCBatch ID # LB135348

Review By	kareem	Review On	4/9/2025 6:29:09 PM
Supervise By	jaswal	Supervise On	4/9/2025 10:44:20 PM

STD. NAME	STD REF.#
ICAL Standard	MP85016,MP85017,MP85018,MP85019,MP85020,MP85022
ICV Standard	MP85023
CCV Standard	MP85026
ICSA Standard	MP85024,MP85025
CRI Standard	MP85022
LCS Standard	
Chk Standard	MP85030,MP85031

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	04/08/25 12:46		Kareem	OK
2	S1	S1	CAL2	04/08/25 12:51		Kareem	OK
3	S2	S2	CAL3	04/08/25 12:55		Kareem	OK
4	S3	S3	CAL4	04/08/25 12:59		Kareem	OK
5	S4	S4	CAL5	04/08/25 13:04		Kareem	OK
6	S5	S5	CAL6	04/08/25 13:08		Kareem	OK
7	ICV01	ICV01	ICV	04/08/25 14:27		Kareem	OK
8	LLICV01	LLICV01	LLICV	04/08/25 14:32		Kareem	OK
9	ICB01	ICB01	ICB	04/08/25 14:51		Kareem	OK
10	CRI01	CRI01	CRDL	04/08/25 15:00		Kareem	OK
11	ICSA01	ICSA01	ICSA	04/08/25 15:04		Kareem	OK
12	ICSAB01	ICSAB01	ICSAB	04/08/25 15:09		Kareem	OK
13	ICSADL	ICSADL	ICSA	04/08/25 15:13		Kareem	OK
14	ICSABDL	ICSABDL	ICSAB	04/08/25 15:17		Kareem	OK
15	CCV01	CCV01	CCV	04/08/25 15:30		Kareem	OK
16	CCB01	CCB01	CCB	04/08/25 15:45		Kareem	OK
17	Q1719-02	TP-3-2	SAM	04/08/25 15:49		Kareem	OK
18	Q1719-04	TP-3-4	SAM	04/08/25 15:54		Kareem	OK

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

Instrument ID: P4

Daily Analysis Runlog For Sequence/QCBatch ID # LB135348

Review By	kareem	Review On	4/9/2025 6:29:09 PM
Supervise By	jaswal	Supervise On	4/9/2025 10:44:20 PM

STD. NAME	STD REF.#
ICAL Standard	MP85016,MP85017,MP85018,MP85019,MP85020,MP85022
ICV Standard	MP85023
CCV Standard	MP85026
ICSA Standard	MP85024,MP85025
CRI Standard	MP85022
LCS Standard	
Chk Standard	MP85030,MP85031

19	Q1719-06	TP-3-6	SAM	04/08/25 15:58		Kareem	OK
20	Q1719-08	TP-3-8	SAM	04/08/25 16:03		Kareem	OK
21	CCV02	CCV02	CCV	04/08/25 16:13		Kareem	OK
22	CCB02	CCB02	CCB	04/08/25 16:17		Kareem	OK
23	PB167467TB	PB167467TB	MB	04/08/25 16:22		Kareem	OK
24	Q1712-04	Z-05A	SAM	04/08/25 16:26		Kareem	OK
25	Q1712-08	TT-7	SAM	04/08/25 16:37		Kareem	OK
26	Q1732-04	TT-8	SAM	04/08/25 16:41		Kareem	OK
27	Q1737-02	RT3069	SAM	04/08/25 16:46		Kareem	OK
28	Q1740-04	TP-20	SAM	04/08/25 16:50		Kareem	OK
29	Q1740-04DUP	TP-20DUP	DUP	04/08/25 16:55		Kareem	OK
30	Q1740-04L	TP-20L	SD	04/08/25 16:59		Kareem	OK
31	CCV03	CCV03	CCV	04/08/25 17:13		Kareem	OK
32	CCB03	CCB03	CCB	04/08/25 17:28		Kareem	OK
33	Q1740-04A	TP-20A	PS	04/08/25 17:33	0.1 ML OF M6004 AND M6013 WERE ADDED TO 10 ML OF SAMPLE	Kareem	OK
34	Q1740-04MS	TP-20MS	MS	04/08/25 17:37	0.1 ML OF M6004 AND M6013 WERE ADDED TO 10 ML OF SAMPLE	Kareem	OK
35	Q1740-04MSD	TP-20MSD	MSD	04/08/25 17:41	0.1 ML OF M6004 AND M6013 WERE ADDED TO 10 ML OF SAMPLE	Kareem	OK

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Instrument ID: P4

Daily Analysis Runlog For Sequence/QCBatch ID # LB135348

Review By	kareem	Review On	4/9/2025 6:29:09 PM
Supervise By	jaswal	Supervise On	4/9/2025 10:44:20 PM

STD. NAME	STD REF.#
ICAL Standard	MP85016,MP85017,MP85018,MP85019,MP85020,MP85022
ICV Standard	MP85023
CCV Standard	MP85026
ICSA Standard	MP85024,MP85025
CRI Standard	MP85022
LCS Standard	
Chk Standard	MP85030,MP85031

36	PB167488TB	PB167488TB	MB	04/08/25 17:46		Kareem	OK
37	Q1742-01	TR-06-040725	SAM	04/08/25 17:50		Kareem	OK
38	Q1739-02	WC-LIQUID-2025040	SAM	04/08/25 17:54		Kareem	OK
39	PB167489BL	PB167489BL	MB	04/08/25 17:59		Kareem	OK
40	Q1737-01	RT3069	SAM	04/08/25 18:07		Kareem	OK
41	PB167489BS	PB167489BS	LCS	04/08/25 18:12	0.1 ML OF M6004 AND M6013 WERE ADDED TO 10 ML OF SAMPLE	Kareem	OK
42	CCV04	CCV04	CCV	04/08/25 18:16		Kareem	OK
43	CCB04	CCB04	CCB	04/08/25 18:20		Kareem	OK
44	LR1	LR1	HIGH STD	04/08/25 18:24		Kareem	OK
45	LR2	LR2	HIGH STD	04/08/25 18:29		Kareem	OK
46	CCV05	CCV05	CCV	04/08/25 18:34		Kareem	OK
47	CCB05	CCB05	CCB	04/08/25 18:38		Kareem	OK

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Instrument ID: CV1

Daily Analysis Runlog For Sequence/QCBatch ID # LB135388

Review By	mohan	Review On	4/14/2025 8:08:06 AM
Supervise By	jaswal	Supervise On	4/14/2025 11:29:48 PM

STD. NAME	STD REF.#
ICAL Standard	MP85176,MP85177,MP85178,MP85179,MP85180,MP85181
ICV Standard	MP85182
CCV Standard	MP85184
ICSA Standard	
CRI Standard	MP85186
LCS Standard	
Chk Standard	MP85183,MP85185,MP85187,MP85196

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	04/11/25 09:45		mohan	OK
2	S0.2	S0.2	CAL2	04/11/25 09:48		mohan	OK
3	S2.5	S2.5	CAL3	04/11/25 09:50		mohan	OK
4	S5	S5	CAL4	04/11/25 09:52		mohan	OK
5	S7.5	S7.5	CAL5	04/11/25 09:54		mohan	OK
6	S10	S10	CAL6	04/11/25 10:00		mohan	OK
7	ICV84	ICV84	ICV	04/11/25 10:03		mohan	OK
8	ICB84	ICB84	ICB	04/11/25 10:05		mohan	OK
9	CCV59	CCV59	CCV	04/11/25 10:07		mohan	OK
10	CCB59	CCB59	CCB	04/11/25 10:09		mohan	OK
11	CRA	CRA	CRDL	04/11/25 10:12		mohan	OK
12	HighStd	HighStd	HIGH STD	04/11/25 10:14		mohan	OK
13	ChkStd	ChkStd	SAM	04/11/25 10:16		mohan	OK
14	PB167568BL	PB167568BL	MB	04/11/25 10:18		mohan	OK
15	PB167568BS	PB167568BS	LCS	04/11/25 10:23		mohan	OK
16	Q1739-02	WC-LIQUID-2025040	SAM	04/11/25 10:26		mohan	OK
17	Q1739-02DUP	WC-LIQUID-2025040	DUP	04/11/25 10:28		mohan	OK
18	Q1739-02MS	WC-LIQUID-2025040	MS	04/11/25 10:30		mohan	OK

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Instrument ID: CV1

Daily Analysis Runlog For Sequence/QCBatch ID # LB135388

Review By	mohan	Review On	4/14/2025 8:08:06 AM
Supervise By	jaswal	Supervise On	4/14/2025 11:29:48 PM

STD. NAME	STD REF.#
ICAL Standard	MP85176,MP85177,MP85178,MP85179,MP85180,MP85181
ICV Standard	MP85182
CCV Standard	MP85184
ICSA Standard	
CRI Standard	MP85186
LCS Standard	
Chk Standard	MP85183,MP85185,MP85187,MP85196

19	PB167569BL	PB167569BL	MB	04/11/25 10:35		mohan	OK
20	CCV60	CCV60	CCV	04/11/25 10:37		mohan	OK
21	CCB60	CCB60	CCB	04/11/25 10:39		mohan	OK
22	PB167569BS	PB167569BS	LCS	04/11/25 10:46		mohan	OK
23	Q1739-01	WC-LIQUID-2025040	SAM	04/11/25 10:49		mohan	OK
24	Q1746-05	B-158-GW01	SAM	04/11/25 10:56		mohan	OK
25	Q1746-05DUP	B-158-GW01DUP	DUP	04/11/25 10:58		mohan	OK
26	Q1746-05MS	B-158-GW01MS	MS	04/11/25 11:00		mohan	OK
27	Q1746-05MSD	B-158-GW01MSD	MSD	04/11/25 11:03		mohan	OK
28	Q1746-06	B-149-GW01	SAM	04/11/25 11:05		mohan	OK
29	Q1746-07	EB-2025-4-7	SAM	04/11/25 11:07		mohan	OK
30	Q1774-02	TT-073-IDWGW-2025	SAM	04/11/25 11:09		mohan	OK
31	Q1774-03	TT-074-IDWGW-2025	SAM	04/11/25 11:12		mohan	OK
32	CCV61	CCV61	CCV	04/11/25 11:14		mohan	OK
33	CCB61	CCB61	CCB	04/11/25 11:16		mohan	OK
34	Q1774-04	TT-075-IDWGW-2025	SAM	04/11/25 11:19		mohan	OK
35	PB167488TB	PB167488TB	MB	04/11/25 11:21		mohan	OK
36	Q1739-02L	WC-LIQUID-2025040	SD	04/11/25 11:23		mohan	OK
37	Q1739-02A	WC-LIQUID-2025040	PS	04/11/25 11:25		mohan	OK
38	Q1746-05L	B-158-GW01L	SD	04/11/25 11:28		mohan	OK

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Instrument ID: CV1

Daily Analysis Runlog For Sequence/QCBatch ID # LB135388

Review By	mohan	Review On	4/14/2025 8:08:06 AM
Supervise By	jaswal	Supervise On	4/14/2025 11:29:48 PM

STD. NAME	STD REF.#
ICAL Standard	MP85176,MP85177,MP85178,MP85179,MP85180,MP85181
ICV Standard	MP85182
CCV Standard	MP85184
ICSA Standard	
CRI Standard	MP85186
LCS Standard	
Chk Standard	MP85183,MP85185,MP85187,MP85196

39	Q1746-05A	B-158-GW01A	PS	04/11/25 11:30		mohan	OK
40	Q1739-02MSD	WC-LIQUID-2025040	MSD	04/11/25 11:39		mohan	OK
41	CCV62	CCV62	CCV	04/11/25 11:41		mohan	OK
42	CCB62	CCB62	CCB	04/11/25 11:43		mohan	OK

Alliance TECHNICAL GROUP

TCLP EXTRACTION LOGPAGE

PB167488

SOP ID : M1311-TCLP-15

SDG No : N/A

Weigh By : N/A

Balance ID : N/A

pH Meter ID : WC PH METER-1

Extraction By : N/A

Filter By : JP

Pippete ID : N/A

Tumbler ID : N/A

TCLP Filter ID : 115525

Start Prep Date : N/A **Time :** N/A

End Prep Date : N/A **Time :** N/A

Combination Ratio : N/A

ZHE Cleaning Batch : 70 ~~N/A~~

Initial Room Temperature: N/A

Final Room Temperature: N/A

TCLP Technician Signature : SB

Supervisor By : 12

Standared Name	MLS USED	STD REF. # FROM LOG
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Chemical Used	ML/SAMPLE U	Lot Number
N/A	N/A	N/A
N/A	N/A	N/A
HNO3-TCLP,1N	N/A	WP110804
pH Strips	N/A	W1931,W1934,W3171,W3172
pH Strips	W1941,W1942	W3166,W1938,W1939,W1940,
1 Liter Amber	N/A	90424-08
120ml Plastic bottle	N/A	405130101
1:1 HNO3	N/A	MP84041

Extraction Conformance/Non-Conformance Comments:

Matrix spikes are added after fiftration and before preservation. q1739-02 is used for ms-msd.

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
04/07/25 12:30	SB / TCLP Room	5123. RJ / EA
	Preparation Group	Analysis Group Metals

Alliance TECHNICAL GROUP

TCLP EXTRACTION LOGPAGE

PB167488

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
PB167488TB	LEB488	N/A	N/A	N/A	N/A	N/A	N/A	4.94	1.0	N/A
Q1739-02	WC-LIQUID-20250404	N/A	N/A	N/A	N/A	N/A	N/A	6.6	1.5	N/A

SampleID	ClientID	Sample Weight (g)	Filter Weight (g)	Filtrate (mL)	Filter + Solid (After 100°C)	% solids	% Dry Solids
PB167488TB	LEB488	N/A	N/A	N/A	N/A	N/A	N/A
Q1739-02	WC-LIQUID-20250404	N/A	N/A	N/A	N/A	<0.5	N/A

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Prep Standard - Chemical Standard Summary

Order ID : Q1739

Test : TCLP ICP Metals,TCLP Mercury

Prepbatch ID : PB167489,PB167568,

Sequence ID/Qc Batch ID: LB135348,LB135348,LB135348,LB135388,

Standard ID :
MP84563,MP84564,MP84565,MP84566,MP85016,MP85017,MP85018,MP85019,MP85020,MP85021,MP85022,MP850
23,MP85024,MP85025,MP85026,MP85030,MP85031,MP85156,MP85175,MP85176,MP85177,MP85178,MP85179,MP
85180,MP85181,MP85182,MP85183,MP85184,MP85185,MP85186,MP85187,MP85196,

Chemical ID :
M4371,M4465,M4883,M4891,M4916,M5020,M5062,M5288,M5387,M5395,M5429,M5466,M5472,M5496,M5497,M5516
,M5521,M5532,M5658,M5747,M5748,M5768,M5789,M5798,M5799,M5800,M5801,M5811,M5814,M5816,M5817,M5820
,M5875,M5882,M5884,M5959,M5970,M5978,M5985,M6003,M6012,M6021,M6023,M6028,M6030,M6041,M6058,M607
6,M6126,M6128,M6137,M6150,M6151,M6152,M6155,M6156,M6158,M6160,W3112,

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
3965	2:1 H2SO4 : HNO3	MP84563	02/18/2025	06/03/2025	Mohan Bera	None	None	Janvi Patel 02/19/2025

FROM 1600.00000ml of M6041 + 800.00000ml of M6126 = Final Quantity: 3200.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
65	POTASSIUM PERMANGANATE SOLUTION 5 %	MP84564	02/18/2025	08/18/2025	Mohan Bera	None	None	Janvi Patel 02/19/2025

FROM 100.00000gram of M4916 + 2000.00000ml of W3112 = Final Quantity: 2000.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
66	POTASSIUM PERSULFATE SOLUTION 5 %	MP84565	02/18/2025	08/06/2025	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Janvi Patel 02/19/2025

FROM 100.00000ml of M4465 + 2000.00000ml of W3112 = Final Quantity: 2000.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
67	SODIUM CHLORIDE - HYDROXYL- CHLORIDE SOLUTION	MP84566	02/18/2025	06/25/2025	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Janvi Patel 02/19/2025

FROM 2000.00000ml of W3112 + 240.00000gram of M4371 + 240.00000gram of M5884 = Final Quantity: 2000.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
902	ICP AES CAL BLK (SO/ICB/CCB)	MP85016	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 125.00000ml of M6151 + 2350.00000ml of W3112 + 25.00000ml of M5789 = Final Quantity: 2500.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
907	ICP AES STD S (S5)	MP85017	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 5.00000ml of M5395 + 5.00000ml of M5466 + 5.00000ml of M5472 + 5.00000ml of M5816 + 5.00000ml of M5820 + 5.00000ml of M5875 + 5.00000ml of M5970 + 5.00000ml of M6076 + 5.00000ml of M6160 + 455.00000ml of MP85016 = Final Quantity: 500.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
910	ICP AES STD S4	MP85018	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 50.00000ml of MP85016 + 50.00000ml of MP85017 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
909	ICP AES STD S3	MP85019	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 25.00000ml of MP85017 + 75.00000ml of MP85016 = Final Quantity: 100.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
3913	ICP AES STD S2	MP85020	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 16.00000ml of MP85017 + 184.00000ml of MP85016 = Final Quantity: 200.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
2950	ICP AES S1/CRI STOCK STD	MP85021	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 0.03000ml of M5798 + 0.03000ml of M6028 + 0.04000ml of M6137 + 0.05000ml of M5496 + 0.05000ml of M5658 + 0.05000ml of M5811 + 0.05000ml of M6030 + 0.06000ml of M5747 + 0.10000ml of M4883 + 0.10000ml of M5472 + 0.10000ml of M5521 + 0.10000ml of M5801 + 0.10000ml of M5820 + 0.10000ml of M5970 + 0.10000ml of M6128 + 0.15000ml of M5800 + 0.20000ml of M4891 + 0.20000ml of M5748 + 0.20000ml of M5799 + 0.20000ml of M6021 + 0.20000ml of M6023 + 0.25000ml of M5466 + 0.25000ml of M6160 + 0.50000ml of M5387 + 0.50000ml of M5814 + 1.00000ml of M5288 + 1.00000ml of M5497 + 1.00000ml of M5516 + 1.00000ml of M5768 + 1.00000ml of M5978 + 1.00000ml of M6156 + 2.00000ml of M5816 + 77.68000ml of MP85016 = Final Quantity: 100.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
2951	ICP AES S1/CRI WORK STD	MP85022	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 2.00000ml of MP85021 + 98.00000ml of MP85016 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
912	ICP AES ICV SOLN	MP85023	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 0.02500ml of M5020 + 0.02500ml of M5429 + 0.02500ml of M5817 + 0.10000ml of M5466 + 0.25000ml of M5472 + 0.25000ml of M6058 + 10.00000ml of M6150 + 89.77500ml of MP85016 = Final Quantity: 100.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
904	ICP AES ICSA SOLN	MP85024	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 25.00000ml of M6152 + 225.00000ml of MP85016 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
3494	ICP AES ICSAB SOLN-1	MP85025	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 0.01000ml of M5020 + 0.01000ml of M5817 + 0.10000ml of M5472 + 0.10000ml of M5970 + 0.10000ml of M6076 + 10.00000ml of M6152 + 10.00000ml of M6155 + 79.50000ml of MP85016 = Final Quantity: 100.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
911	ICP AES CCV SOLN	MP85026	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 50.00000ml of MP85016 + 50.00000ml of MP85017 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
919	ICP AES INTERNAL STD	MP85030	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 1.00000ml of M5959 + 10.00000ml of M5985 + 1969.00000ml of W3112 + 20.00000ml of M5789 = Final Quantity: 2000.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
513	RINSE SOLN	MP85031	03/26/2025	04/26/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 200.00000ml of M5789 + 9800.00000ml of W3112 = Final Quantity: 10000.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
170	1:1HCL	MP85156	04/07/2025	08/18/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 04/07/2025

FROM 1250.00000ml of M6151 + 1250.00000ml of W3112 = Final Quantity: 2500.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
871	MERCURY INTERMEDIATE B 250PPB WORKING STD.	MP85175	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 1.00000ml of M6158 + 2.50000ml of M5062 + 96.50000ml of W3112 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1340	Hg 0.00 PPB STD	MP85176	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 2.50000ml of M6158 + 247.50000ml of W3112 = Final Quantity: 250.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1341	Hg 0.2 PPB STD	MP85177	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 2.50000ml of M6158 + 247.30000ml of W3112 + 0.20000ml of MP85175 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1342	Hg 2.5 PPB STD	MP85178	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 2.50000ml of M6158 + 245.00000ml of W3112 + 2.50000ml of MP85175 = Final Quantity: 250.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1343	Hg 5.0 PPB STD	MP85179	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 2.50000ml of M6158 + 242.50000ml of W3112 + 5.00000ml of MP85175 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1344	Hg 7.5 PPB STD	MP85180	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 2.50000ml of M6158 + 240.00000ml of W3112 + 7.50000ml of MP85175 = Final Quantity: 250.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1345	Hg 10.0 PPB STD	MP85181	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 2.50000ml of M6158 + 237.50000ml of W3112 + 10.00000ml of MP85175 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1346	Hg ICV SOLUTION	MP85182	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 2.50000ml of M5532 + 2.50000ml of M6158 + 245.00000ml of W3112 = Final Quantity: 250.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1351	ICB (Hg 0.00 PPB SOLUTION)	MP85183	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 2.50000ml of M6158 + 247.50000ml of W3112 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1358	CCV (Hg 5.0 PPB SOLUTION)	MP85184	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 485.00000ml of W3112 + 5.00000ml of M6158 + 10.00000ml of MP85175 = Final Quantity: 500.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1352	CCB (Hg 0.00 PPB SOLUTION)	MP85185	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 495.00000ml of W3112 + 5.00000ml of M6158 = Final Quantity: 500.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1349	CRA/CRI (Hg 0.2 PPB SOLUTION)	MP85186	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 2.50000ml of M6158 + 247.30000ml of W3112 + 0.20000ml of MP85175 = Final Quantity: 250.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1350	CHK STD (Hg 7.0 PPB SOLUTION)	MP85187	04/10/2025	04/11/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 04/15/2025

FROM 2.50000ml of M6158 + 240.50000ml of W3112 + 7.00000ml of MP85175 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
68	STANNOUS CHLORIDE SOLUTION	MP85196	04/11/2025	04/12/2025	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal 04/15/2025

FROM 450.00000ml of W3112 + 50.00000gram of M5882 + 50.00000ml of M6151 = Final Quantity: 500.000 ml

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-2196-01 / Hydroxylamine Hydrochloride, Crystal (cs/4x500g)	0000215387	06/25/2025	07/01/2019 / RICHARD	06/07/2019 / RICHARD	M4371

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-3238-05 / Potassium Persulfate (2.5kg)	0000234156	08/06/2025	07/23/2019 / jaswal	07/25/2019 / manojkumar	M4465

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	070221	09/07/2025	08/06/2021 / jaswal	08/05/2021 / jaswal	M4883

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	031921	05/19/2025	08/25/2021 / bin	08/05/2021 / jaswal	M4891

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-3227-05 / Potassium Permanganate (2.5kg)	210800	03/31/2026	11/30/2022 / mohan	07/28/2021 / mohan	M4916

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	032921	05/17/2025	12/13/2021 / bin	12/09/2021 / bin	M5020

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	MSHG-10PPM / MERCURY HCl 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 #
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.	57056 / Ba, 1000 PPM, 125 ml	072122	07/21/2025	11/01/2022 / jaswal	09/18/2022 / jaswal	M5387

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	01/30/2024 / bin	09/19/2022 / bin	M5395

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	061322	06/13/2025	03/06/2023 / bin	03/01/2023 / bin	M5466

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57038 / Sr, 1000 PPM, 125 ml	082922	08/29/2025	01/14/2025 / Jaswal	03/16/2023 / jaswal	M5472

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58113 / Al, 10000 PPM, 500 ml	011623	01/16/2026	08/15/2023 / jaswal	03/17/2023 / bin	M5496

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58120 / Ca, 10000 PPM, 500 ml	031523	03/15/2026	03/18/2023 / bin	03/17/2023 / bin	M5497

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58111 / Na, 10000 PPM, 500 ml	022123	11/06/2025	11/06/2024 / kareem	03/17/2023 / bin	M5516

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	102622	10/26/2025	11/21/2022 / bin	11/20/2022 / bin	M5521

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	04/30/2025	01/02/2025 / jaswal	03/30/2023 / mohan	M5532

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	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.	/ 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

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	01/08/2024 / bin	01/03/2024 / bin	M5768

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)	23G1262003	07/30/2025	02/08/2024 / Al-Terek	06/26/2023 / Al-Terek	M5789

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57004 / Be, 1000 PPM, 125 ml	102523	10/25/2026	02/09/2024 / bin	02/09/2024 / bin	M5798

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57050 / Sn, 1000 PPM, 125 ml	071123	07/11/2026	02/09/2024 / bin	02/09/2024 / bin	M5799

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57027 / CO, 1000 PPM, 125 ml	091923	09/19/2026	05/31/2024 / bin	02/09/2024 / bin	M5800

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57033 / As, 1000 PPM, 125 ml	111323	11/13/2026	02/09/2024 / bin	02/09/2024 / bin	M5801

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58126 / Fe, 10000 PPM, 500 ml	051523	05/15/2026	02/06/2025 / kareem	01/03/2024 / jaswal	M5811

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

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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.	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 #
Seidler Chemical	BA-3980-01 / Stannous Chloride (cs/4x500g)	232820	08/31/2028	04/30/2024 / mohan	04/25/2024 / mohan	M5882

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-3624-05 / Sodium Chloride, Crystal (cs/4x2.5kg)	0000281938	07/06/2026	04/30/2024 / mohan	04/25/2024 / mohan	M5884

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGY10-1 / YTTRIUM 125mL 10,000ug/mL	V2-Y740548	02/20/2029	07/01/2024 / Jaswal	06/14/2024 / Jaswal	M5959

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGIN10-5 / INDIUM 1 x 500 ml	U2-IN729349	02/21/2028	10/08/2024 / Jaswal	06/14/2024 / Jaswal	M5985

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	08/26/2025	02/26/2025 / Eman	05/14/2024 / Jaswal	M6003

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	09/17/2025	03/17/2025 / Eman	05/14/2024 / Jaswal	M6012

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

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57081 / Tl, 1000 PPM, 125 ml	0624724	06/27/2027	08/05/2024 / kareem	08/05/2024 / Jaswal	M6023

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57048 / Cd, 1000 PPM, 125 ml	070124	07/01/2027	08/05/2024 / kareem	08/05/2024 / Jaswal	M6028

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57047 / Ag, 1000 PPM, 125 ml	122823	12/28/2026	08/05/2024 / kareem	08/05/2024 / Jaswal	M6030

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9673-33 / Sulfuric Acid, Instra-Analyzed (cs/6c2.5L)	23D2462010	03/20/2028	08/16/2024 / mohan	08/16/2024 / mohan	M6041

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	V2-MEB746173	01/29/2026	01/29/2025 / JANVI	08/22/2024 / Jaswal	M6058

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	Z9651Q / CHEM-CLP-4/.25L	V2-MEB746762	01/01/2026	01/01/2025 / kareem	09/19/2024 / kareem	M6076

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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	06/03/2025	12/03/2024 / Janvi	11/12/2024 / Janvi	M6126

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58025 / Mn, 1000 PPM, 500 ml	101124	10/11/2027	01/13/2025 / kareem	01/13/2025 / kareem	M6128

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGSI1-1 / SILICON 125mL 1000ug/mL	V2-SI744713	07/10/2029	01/14/2025 / Jaswal	10/03/2024 / Jaswal	M6137

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	ICV-1 / ICV (ICP/ICPMS) STOCK SOLN	ICV1-1014	07/07/2025	02/07/2025 / JANVI	04/20/2021 / JANVI	M6150

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)	22G2862015	08/18/2025	02/18/2025 / Sagar	01/15/2025 / Sagar	M6151

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	08/24/2025	02/24/2025 / kareem	04/20/2021 / kareem	M6152

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CHEMICAL RECEIPT LOG BOOK

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	06/20/2025	02/10/2025 / kareem	02/09/2024 / kareem	M6155

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	032123	03/21/2026	11/06/2024 / JANVI	06/12/2024 / JANVI	M6156

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	03/10/2025 / Eman	02/02/2025 / Sagar	M6158

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57051 / Sb, 1000 PPM, 125 ml	071724	03/24/2026	03/24/2025 / kareem	10/18/2024 / kareem	M6160

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	DIW / DI Water	Daily Lab-Certified	07/03/2029	07/03/2024 / Iwona	07/03/2024 / Iwona	W3112

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Certificate of Analysis

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201.796.1329 fax

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2015 by SAI Global Certificate Number CERT – 0120633

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Thermo Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Products are for research use or further manufacturing. Not for direct administration to humans or animals. It is the responsibility of the final formulator and end user to determine suitability based upon the intended use of the end product. Products are tested to meet the analytical requirements of the noted grade. The following information is the actual analytical results obtained.

Catalog Number	T142	Quality Test / Release Date	08/17/2023
Lot Number	232820		
Description	STANNOUS CHLORIDE, DIHYDRATE CERTIFIED ACS (Suitable for Mercury Determination)		
Country of Origin	United States	Suggested Retest Date	Aug/2028
Chemical Origin	Inorganic-non animal		
BSE/TSE Comment	No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product.		

N/A			
Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	Clear crystals
ASSAY	%	Inclusive Between 98 - 103	100.65
CALCIUM	%	<= 0.005	0.0017
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
IRON (Fe)	%	<= 0.003	0.0011
LEAD (Pb)	%	<= 0.01	0.0006
MERCURY (Hg)	ppm	<= 0.05	<0.05
POTASSIUM (K)	%	<= 0.005	0.0001
SODIUM (Na)	%	<= 0.01	<0.01
SOLUBILITY IN HCL	PASS/FAIL	= PASS TEST	PASS TEST
SULFATE (SO4)	PASS/FAIL	= P.T. (ABOUT 0.003%)	P.T. (ABOUT 0.003%)

Harout Sahagian - Quality Control Supervisor - Fair Lawn

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of this catalog number listed above.
If there are any questions with this certificate, please call at (800) 227-6701.
*Based on suggested storage condition.

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

M6028

R 8/15/24

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT:

Part Number: 57048
Lot Number: 070124
Description: Cadmium (Cd)

Expiration Date: 070127
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

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

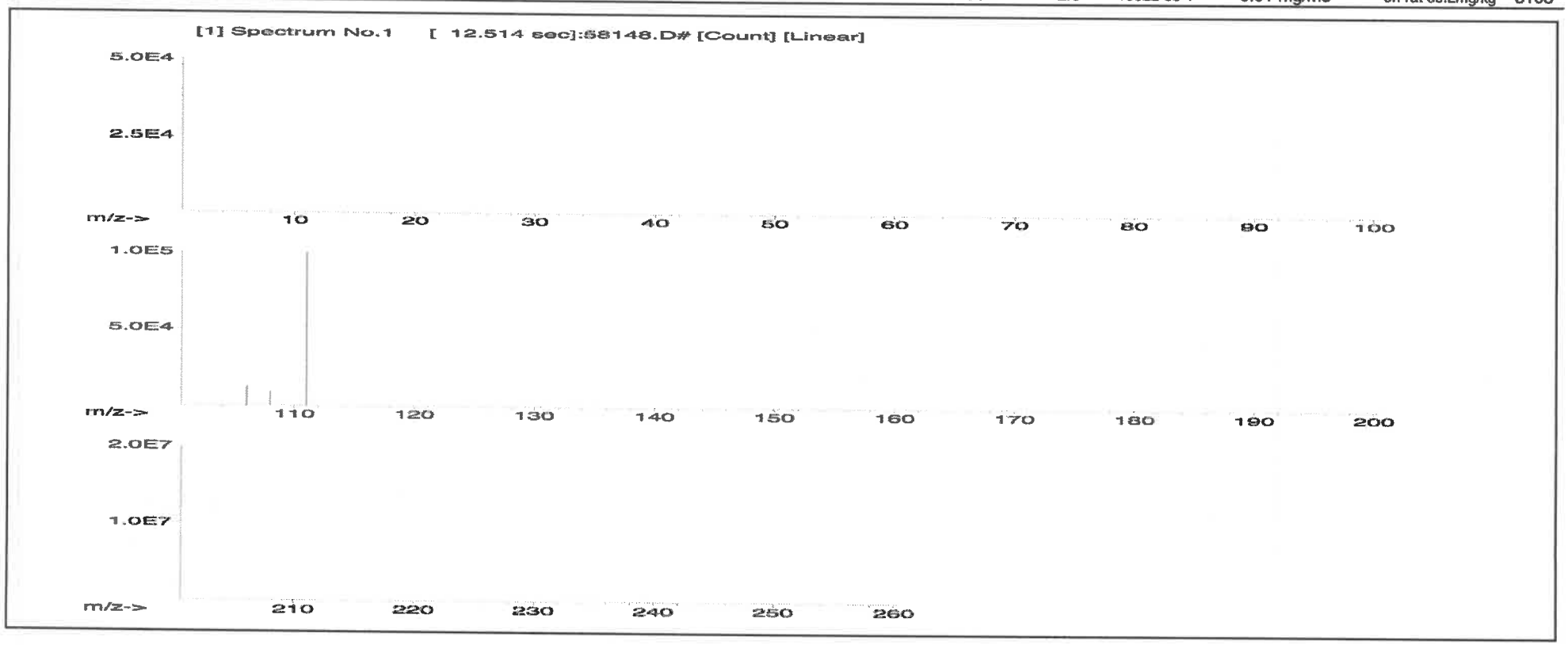
	Lot #		
Solvent:	24002546	Nitric Acid	
2%	40.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty

Aleah O'Brady
Formulated By: Aleah O'Brady 070124

Pedro Rentas
Reviewed By: Pedro L. Rentas 070124

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Cadmium nitrate tetrahydrate (Cd)	IN024	CDM092021A1	1000	99.999	0.10	36.5	5.4797	5.4804	**1000.1**	**2.0**	10022-68-1	0.01 mg/m3	orl-rat 60.2mg/kg	3108



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Certified Reference Material CRM

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

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

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	T	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certificate of Analysis

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CLPP-CAL-1
Lot Number:	T2-MEB714417
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	5 000 µg/mL ea: Calcium, Potassium, Magnesium, Sodium, 2 000 µg/mL ea: Aluminum, Barium, 1 000 µg/mL ea: Iron, 500 µg/mL ea: Nickel, Vanadium, Zinc, Cobalt, Manganese, 250 µg/mL ea: Silver, Copper, 200 µg/mL ea: Chromium, 50 µg/mL ea: Beryllium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	2 000 ± 7 µg/mL	Barium, Ba	2 000 ± 9 µg/mL
Beryllium, Be	50.00 ± 0.26 µg/mL	Calcium, Ca	5 000 ± 22 µg/mL
Chromium, Cr	200.0 ± 1.0 µg/mL	Cobalt, Co	500.0 ± 2.4 µg/mL
Copper, Cu	250.0 ± 1.0 µg/mL	Iron, Fe	1 000 ± 4 µg/mL
Magnesium, Mg	5 000 ± 20 µg/mL	Manganese, Mn	500.0 ± 2.0 µg/mL
Nickel, Ni	500.0 ± 2.2 µg/mL	Potassium, K	5 000 ± 19 µg/mL
Silver, Ag	250.0 ± 1.1 µg/mL	Sodium, Na	5 000 ± 18 µg/mL
Vanadium, V	499.7 ± 2.2 µg/mL	Zinc, Zn	500.0 ± 2.2 µg/mL

Density: 1.118 g/mL (measured at 20 ± 4 ºC)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Be	Calculated		See Sec. 4.2
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cr	Calculated		See Sec. 4.2
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
V	IC Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

$CRM/RM\ Expanded\ Uncertainty\ (\pm) = U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

$CRM/RM\ Expanded\ Uncertainty\ (\pm) = U_{CRM/RM} = k\ (u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Note: This solution contains Silver (Ag), please refer to our Sample Preparation Guide for more information.

https://www.inorganicventures.com/sample-preparation-guide/samples-containing-silver

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 27, 2022

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **January 27, 2027**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

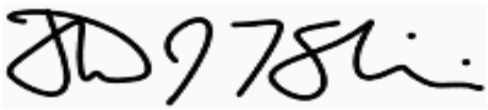
- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

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1.0 ACCREDITATION / REGISTRATION

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ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CLPP-CAL-3
Lot Number:	T2-MEB714159
Matrix:	7% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Arsenic, Lead, Selenium, Thallium, 500 µg/mL ea: Cadmium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Arsenic, As	**1 000 ± 8 µg/mL**	**Cadmium, Cd**	**500.0 ± 2.1 µg/mL**
Lead, Pb	**1 000 ± 5 µg/mL**	**Selenium, Se**	**1 000 ± 8 µg/mL**
Thallium, Tl	**1 000 ± 7 µg/mL**		

Density: 1.043 g/mL (measured at 20 ± 4 ºC)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
As	ICP Assay	3103a	100818
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Tl	ICP Assay	3158	151215

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

$CRM/RM\ Expanded\ Uncertainty\ (\pm) = U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

$CRM/RM\ Expanded\ Uncertainty\ (\pm) = U_{CRM/RM} = k\ (u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

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

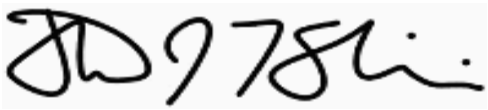
- Sealed TCT Bag Open Date: _____

- 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

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Certified Reference Material CRM

R : 01/03/24. M5810, M5811

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT:

Part Number: 58126
Lot Number: 051523
Description: Iron (Fe)

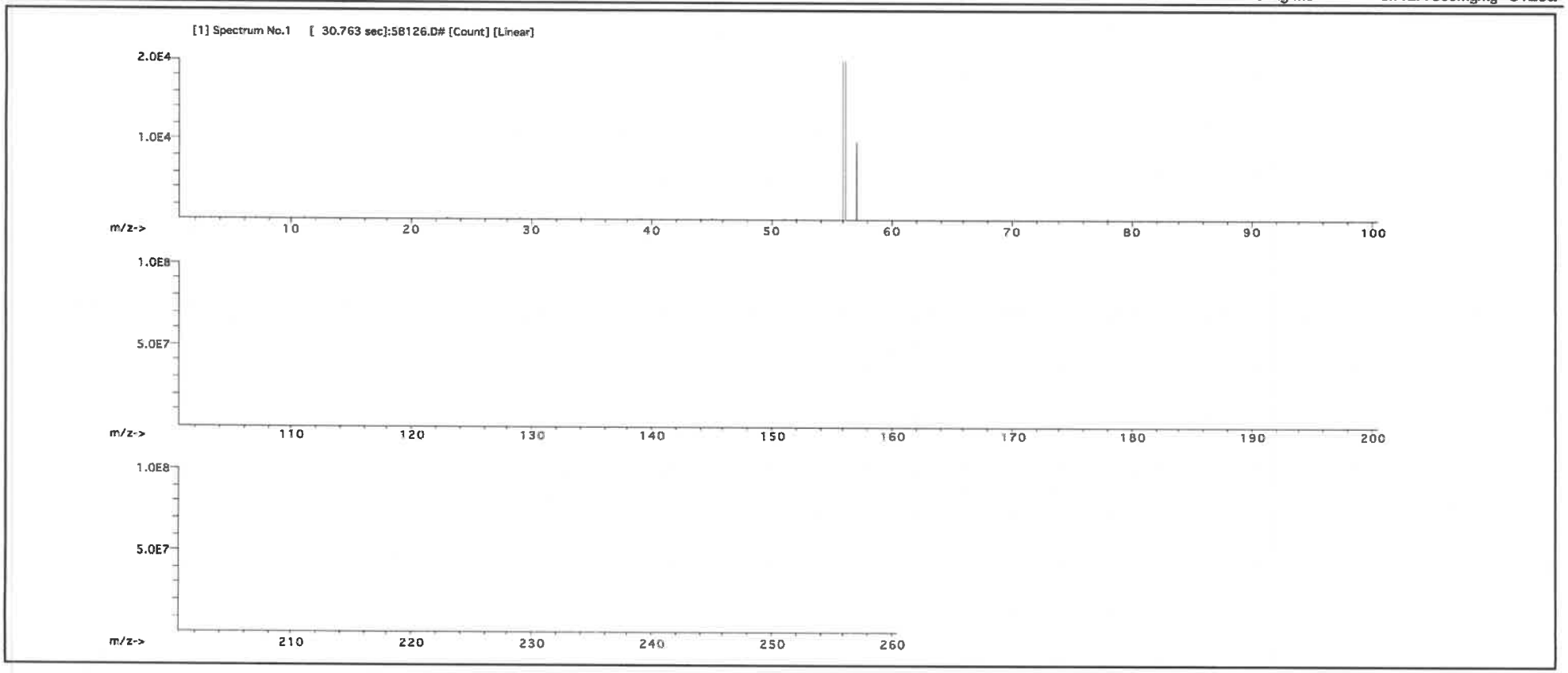
Expiration Date: 051526
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 5000.1

	Lot #		
Solvent:	21110221	Nitric Acid	
5.0%	250.0 (mL)	Nitric Acid	
5E-05	Balance Uncertainty		
0.12	Flask Uncertainty		

Giovanni Esposito

Formulated By:	Giovanni Esposito	051523
Reviewed By:	Pedro L. Rentas	051523

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Iron (Fe)	IN346	2302010-500	10000	99.995	0.10	100.0	50.0034	50.0111	**10001.5**	**20.0**	7439-89-6	5 mg/m3	orl-rat 7500mg/kg	3126a



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ANAB ISO 17034 Accredited
AR-1539 Certificate Number
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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.10	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.10	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.05	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.10	Ge	<0.10	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.10
B	<0.02	Cu	<0.10	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

INORGANIC VENTURES

Refine your results. Redefine your industry.

Certificate of Analysis

RD:05/14/2024

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	WW-LFS-1
Lot Number:	T2-MEB723367
Matrix:	5% (v/v) HNO3

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, Cerium, Thallium,	Aluminum, Selenium,
	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, Vanadium,	Boron,
	20 µg/mL ea: Zinc, Barium, Cadmium, Manganese,	Strontium, Beryllium, Cobalt, 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, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

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

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

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

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

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"

- 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

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

INORGANIC VENTURES

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Certificate of Analysis

RD:05/14/2024

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1.0 ACCREDITATION / REGISTRATION

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ACCREDITED Testing Laboratory Certificate 863.01 ACCREDITED Reference Material Producer Certificate 863.02

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, SiO2	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
SiO2	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, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

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

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

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

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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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

M4371

Hydroxylamine Hydrochloride, Crystal
BAKER ANALYZED® A.C.S. Reagent
Suitable for Mercury Determination
(hydroxylammonium chloride)

Rec – 06.07.19

J.T.Baker® | avantor™

Material No.: 2196-01
Batch No.: 0000215387
Manufactured Date: 2018/06/27
Retest Date: 2025/06/25
Revision No: 1

Certificate of Analysis

Meets ACS Reagent Chemical Requirements,

Test	Specification	Result
Assay ($NH_2OH \cdot HCl$) (by $KMnO_4$ titrn)	>= 96.0 %	99.1
Clarity of Alcohol Solution	Passes Test	PT
Residue after Ignition	<= 0.050 %	0.017
Titrable Free Acid (meq/g)	<= 0.25	0.19
Ammonium (NH_4)	Passes Test	PT
Sulfur Compounds (as SO_4)	<= 0.005 %	< 0.003
Trace Impurities - ACS - Heavy Metals (as Pb)	<= 5 ppm	4
Trace Impurities - Iron (Fe)	<= 5 ppm	< 3
Trace Impurities - Mercury (Hg)	<= 0.050 ppm	< 0.005

For Laboratory, Research or Manufacturing Use

Country of Origin: CN
Packaging Site: Paris Mfg Ctr & DC

ISO
Phillipsburg, NJ 9001:2015, FSSC22000
Paris, KY 9001:2008
Mexico City, Mexico 9001:2008
Gliwice, Poland 9001:2015, 13485:2012
Selangor, Malaysia 9001:2008
Dehradun, India, 9001:2008, 14001:2004, 13485:2003
Mumbai, India, 9001:2015, 17025:2005
Panoli, India 9001:2015

James Ethier
Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57034**	20370011	Nitric Acid	
Lot Number:	**070221**			
Description:	**Selenium (Se)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	070224			
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	

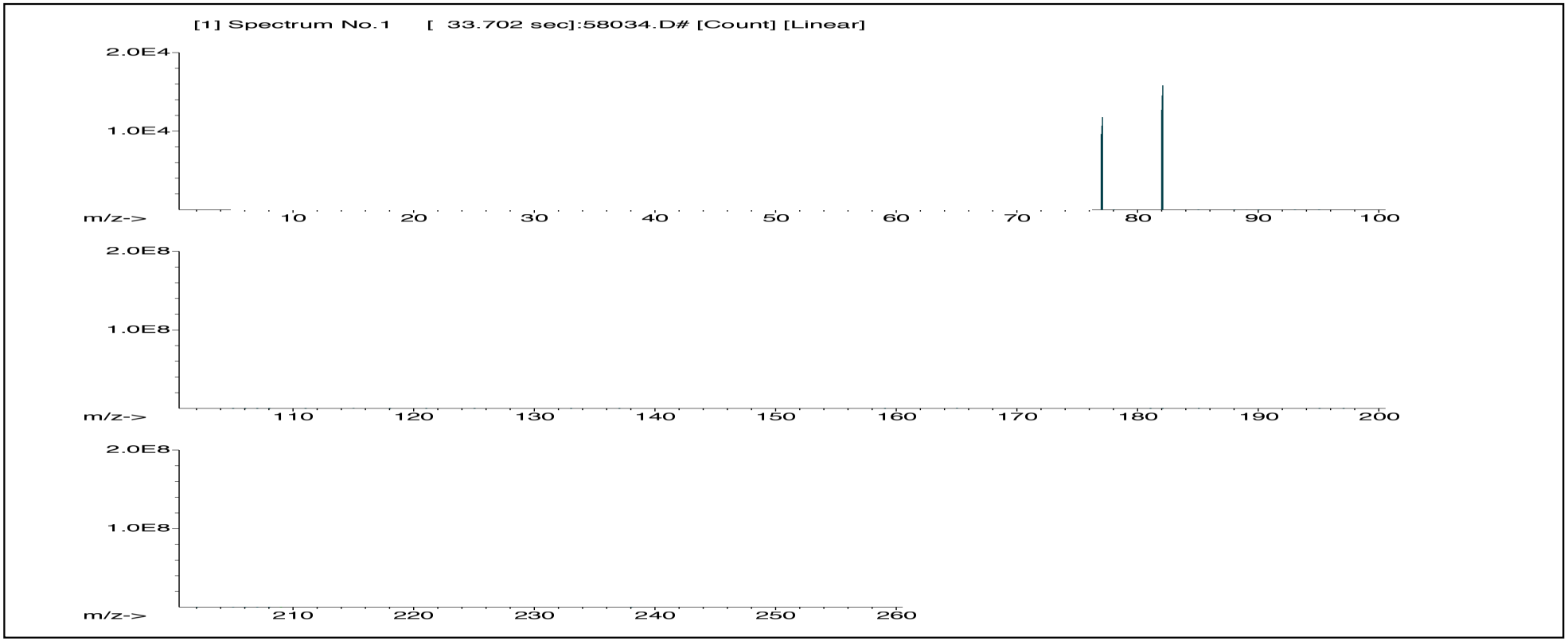
Giovanni Esposito

Formulated By:	Giovanni Esposito	070221

Pedro Rentas

Reviewed By:	Pedro L. Rentas	070221

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	**Final Conc. (µg/mL)**	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Selenium(IV) oxide (Se)	58134	021621	0.1000	200.0	0.084	1000	10000.2	**1000.0**	**2.2**	7446-08-4	0.2 mg/m3	orl-rat 68 mg/kg	3149



Absolute Standards, Inc.
800-368-1131
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Certified Reference Material CRM

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

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	T	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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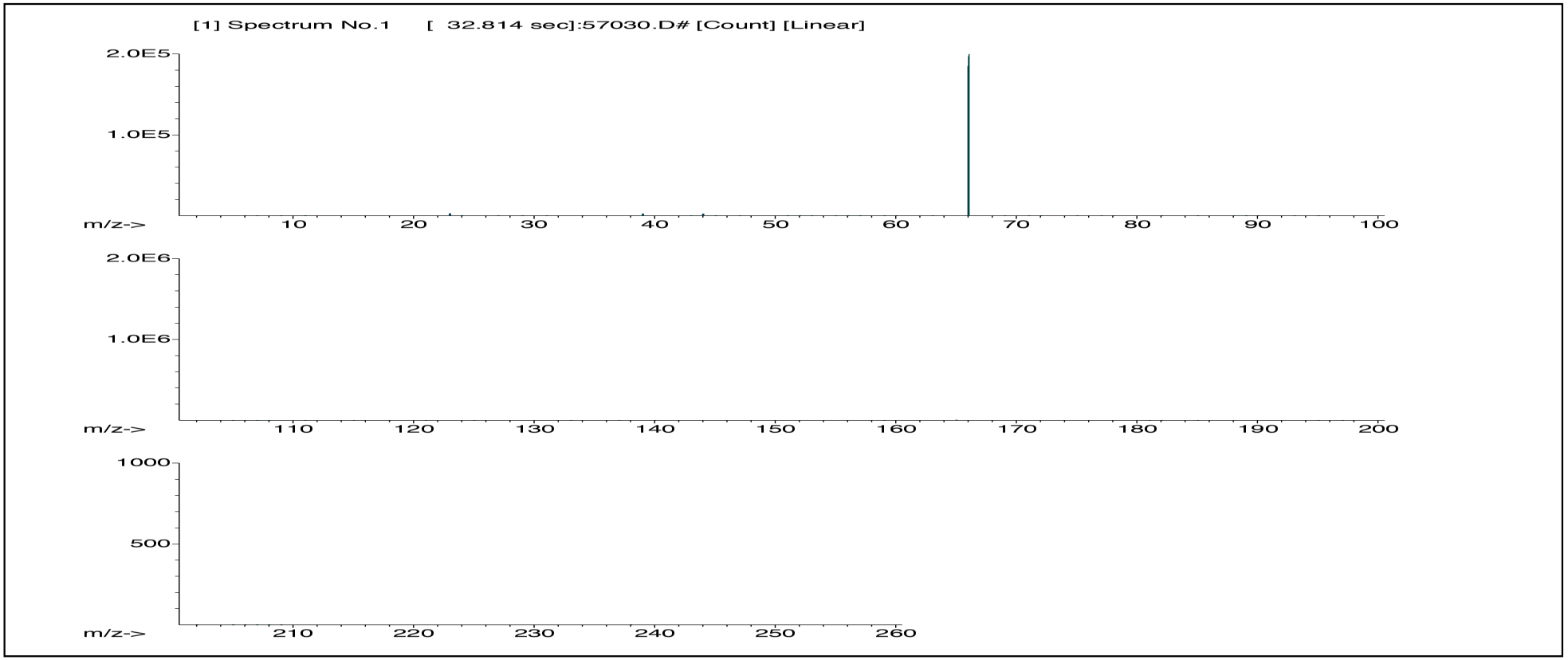
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**58030**	20370011	Nitric Acid	
Lot Number:	**031921**			
Description:	**Zinc (Zn)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	031924			
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:	Giovanni Esposito	031921
Reviewed By:	Pedro L. Rentas	031921

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	**Final Conc. (µg/mL)**	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Zinc nitrate hexahydrate (Zn)	58130	082020	0.1000	200.0	0.084	1000	10000.3	**1000.0**	**2.2**	10196-18-6	1 mg/m3	orl-rat 1190mg/kg	3168



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

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	T
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
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* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

M4913-16
MB

Certificate of Analysis

1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2015 by SAI Global Certificate Number CERT – 0120632

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Thermo Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Products are for research use or further manufacturing. Not for direct administration to humans or animals. It is the responsibility of the final formulator and end user to determine suitability based upon the intended use of the end product. Products are tested to meet the analytical requirements of the noted grade. The following information is the actual analytical results obtained.

Catalog Number	P279	Quality Test / Release Date	01/12/2021
Lot Number	210306		
Description	POTASSIUM PERMANGANATE, A.C.S.		
Country of Origin	United States	Suggested Retest Date	Jan/2026

N/A			
Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	Dark purple to purple green crystals
ASSAY	%	>= 99	99.3
CHLORIDE & CHLORATE	%	<= 0.005	<0.005
IDENTIFICATION	PASS/FAIL	= PASS TEST	pass test
INSOLUBLE MATTER	%	<= 0.2	<0.2
MERCURY (Hg)	ppm	<= 0.05	<0.004
SULFATE (SO4)	%	<= 0.02	<0.02

Julian Burton

Julian Burton - Quality Control Manager – Fair Lawn

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of this catalog number listed above.
If there are any questions with this certificate, please call at (800) 227-6701.
*Based on suggested storage condition.

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BH M5020 R: 12/09/21

CERTIFIED WEIGHT REPORT:

Part Number: 57115
Lot Number: 032921
Description: Phosphorous (P)

Expiration Date: 032924
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.41

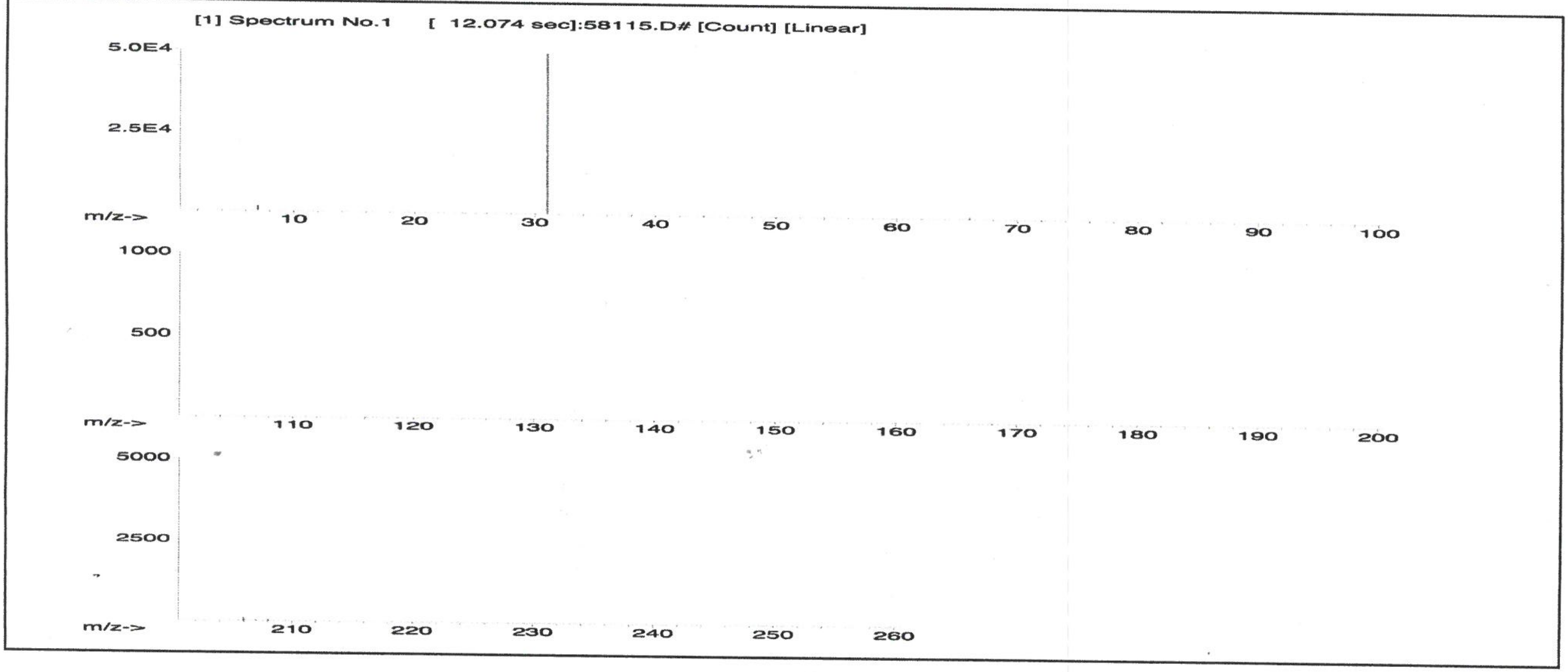
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

	Lot #	
Solvent:	20370011	Nitric Acid
2%	60.0 (mL)	Nitric Acid

Formulated By:	Lawrence Barry	032921
Reviewed By:	Pedro L. Rentas	032921

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
1. Ammonium dihydrogen phosphate (P)	IN008	PV052018A1	10000	99.999	0.10	27.3	109.9063	109.9093	**10000.3**	**20.0**	7722-76-1	5 mg/m3	NA	3186

SDS Information (Solvent Safety Info. On Attached pg.)



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

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	T	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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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

M5062
M5063
M3

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte 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:

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

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

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

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

$$\text{CRM/RM Expanded Uncertainty } (\pm) = U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

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

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 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

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Certified Reference Material CRM

M5288 R: 07/21/2022

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CERTIFIED WEIGHT REPORT:

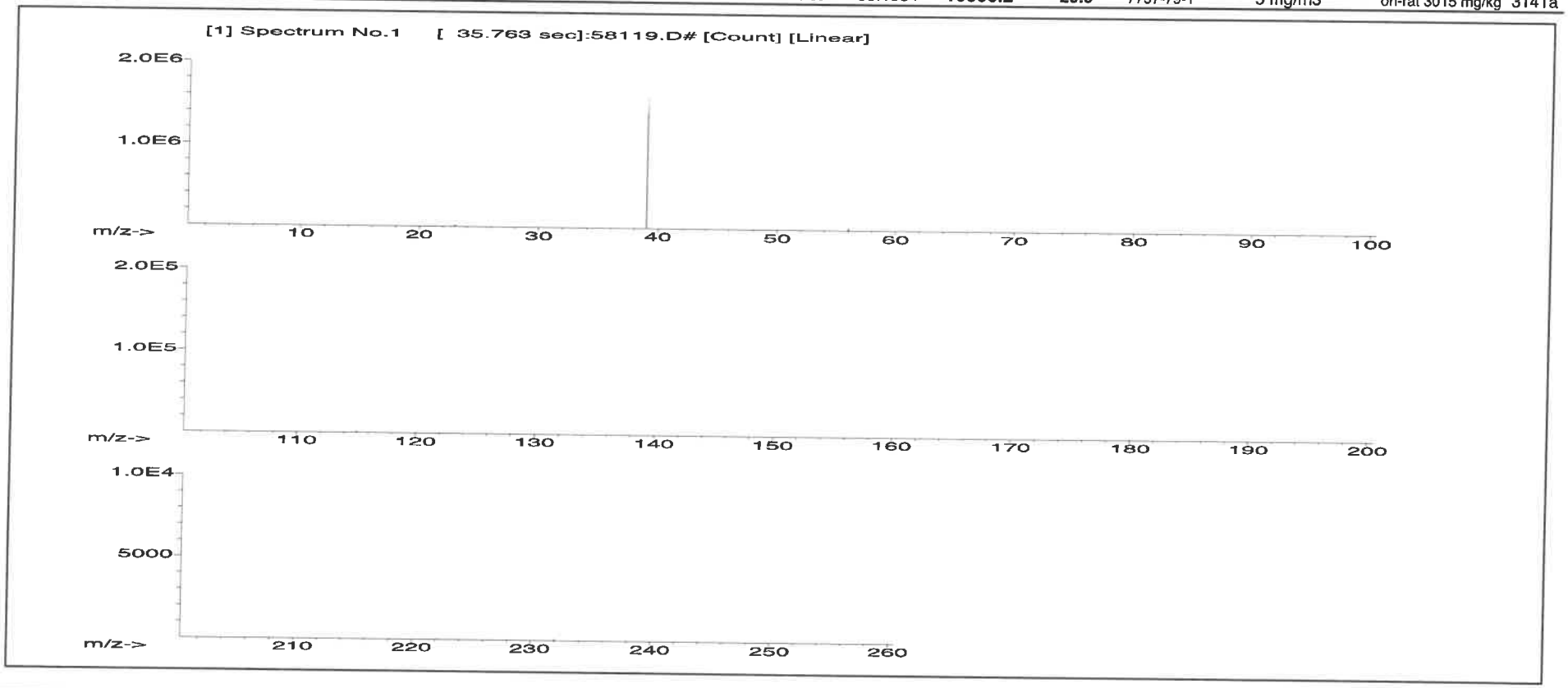
Part Number: 58119
Lot Number: 071122
Description: Potassium (K)

Expiration Date: 071125
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 2000.02

	Lot #		
Solvent:	20510011	Nitric Acid	
2%	40.0 (mL)	Nitric Acid	
	5E-05	Balance Uncertainty	
	0.058	Flask Uncertainty	

Formulated By:	Lawrence Barry	071122
Reviewed By:	Pedro L. Rentas	071122

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	**Actual Conc. (µg/mL)**	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Potassium nitrate (K)	IN034	KD022021A1	10000	99.999	0.10	37.6	53.1925	53.1934	**10000.2**	**20.0**	7757-79-1	5 mg/m3	orl-rat 3015 mg/kg	3141a



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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	T	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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R:09/08/22 (BA)

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M5387 . M5389 . M5390 . M5391 . M5392

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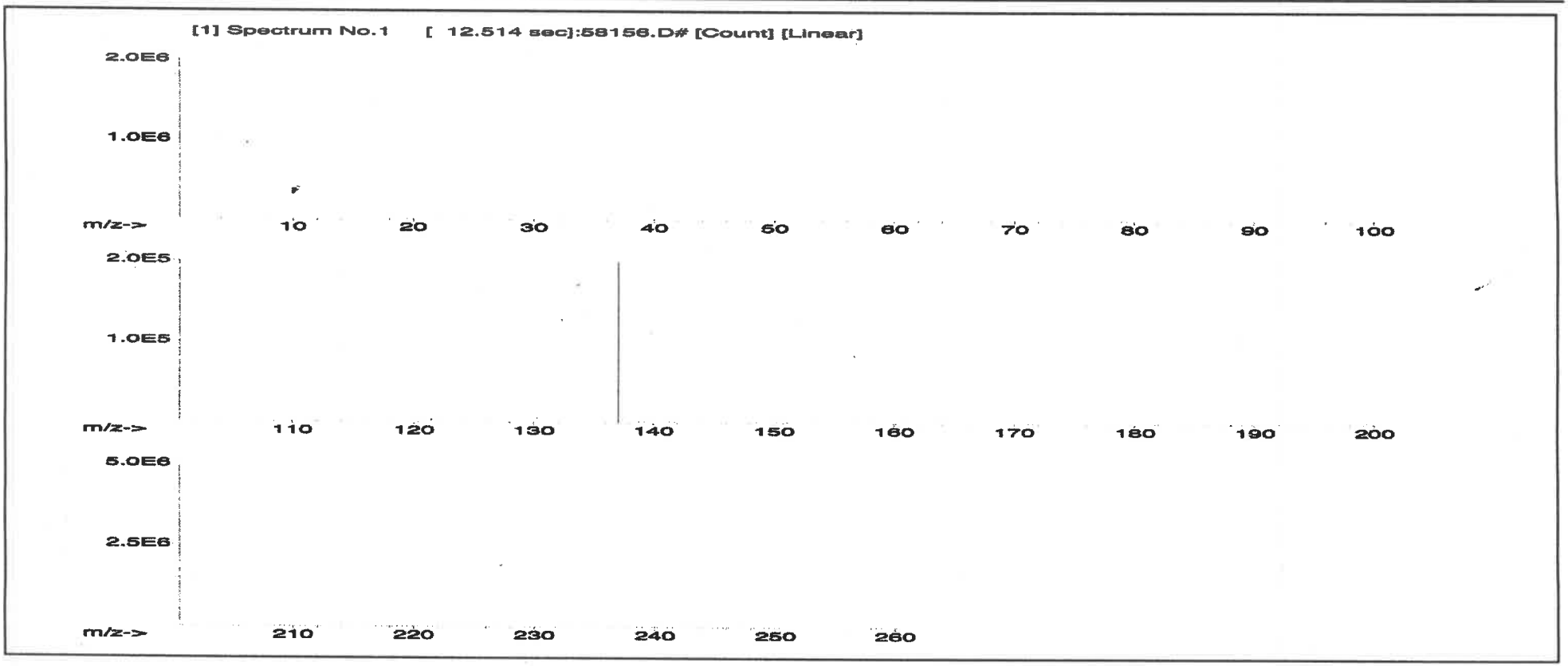
CERTIFIED WEIGHT REPORT:

Part Number:	**57056**		**Lot #**		
Lot Number:	**072122**	**Solvent:**	20510011	Nitric Acid	
Description:	**Barium (Ba)**	2%	40.0 (mL)	Nitric Acid	
Expiration Date:	072125				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty		

Giovanni Esposito

Formulated By:	Giovanni Esposito	072122
Reviewed By:	Pedro L. Rentas	072122

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Barium nitrate (Ba)	IN023	BAD022019A1	1000	99.999	0.10	52.3	3.82417	3.82426	**1000.0**	**2.0**	10022-31-8	0.5 mg/m3	orl-rat 355 mg/kg	3104a



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

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	T	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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M5429 R1 01/26/23 BH

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CERTIFIED WEIGHT REPORT:

Part Number: 57103
Lot Number: 070622
Description: Lithium (Li)

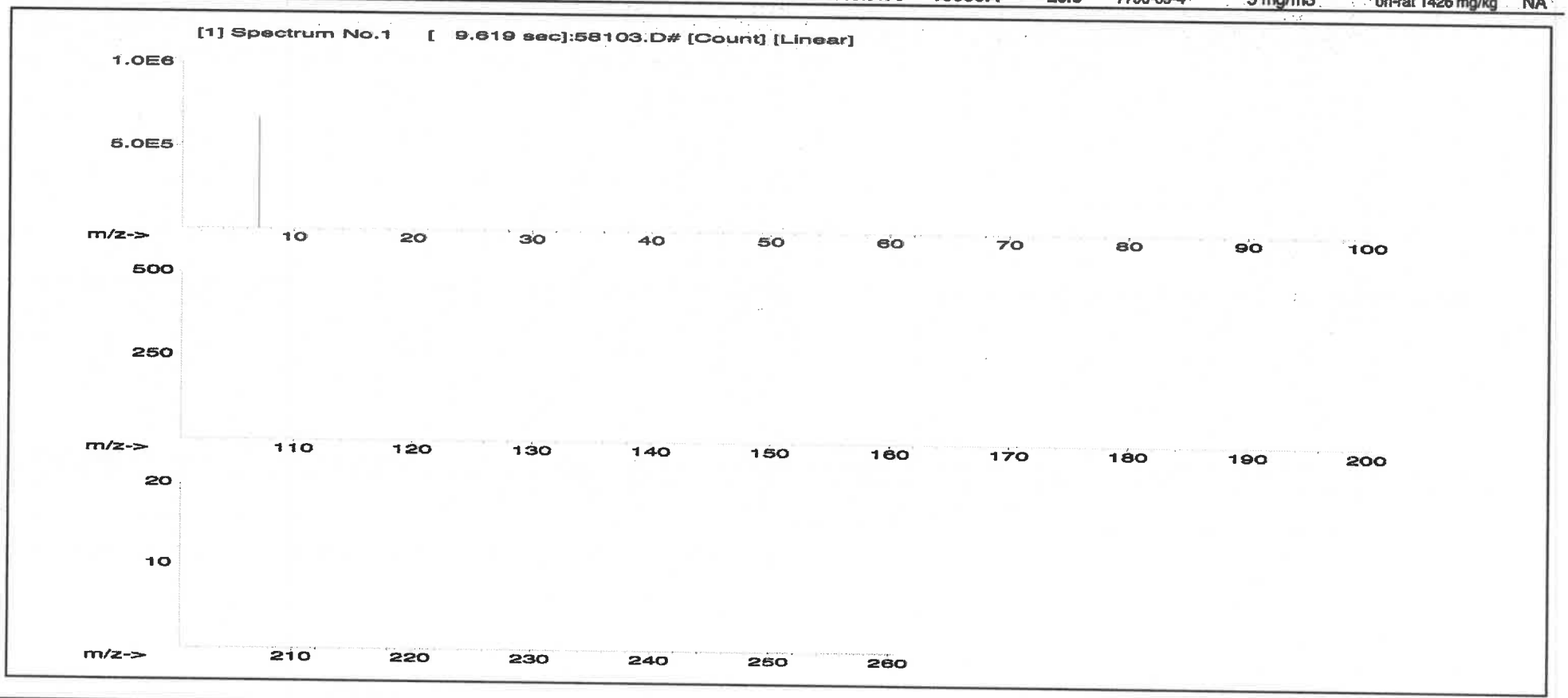
Expiration Date: 070625
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 1000.12

Lot #			
Solvent:	20510011	Nitric Acid	
2%	20.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By:	Lawrence Barry	070622
Reviewed By:	Pedro L. Rentas	070622

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Lithium nitrate (Li)	IN019	LIZ042018A1	10000	99.999	0.10	10.0	100.0134	100.0173	**10000.4**	**20.0**	7790-69-4	5 mg/m3	orl-rat 1426 mg/kg	NA



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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	T	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
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* 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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M 5466

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R: 03/01/23 BH

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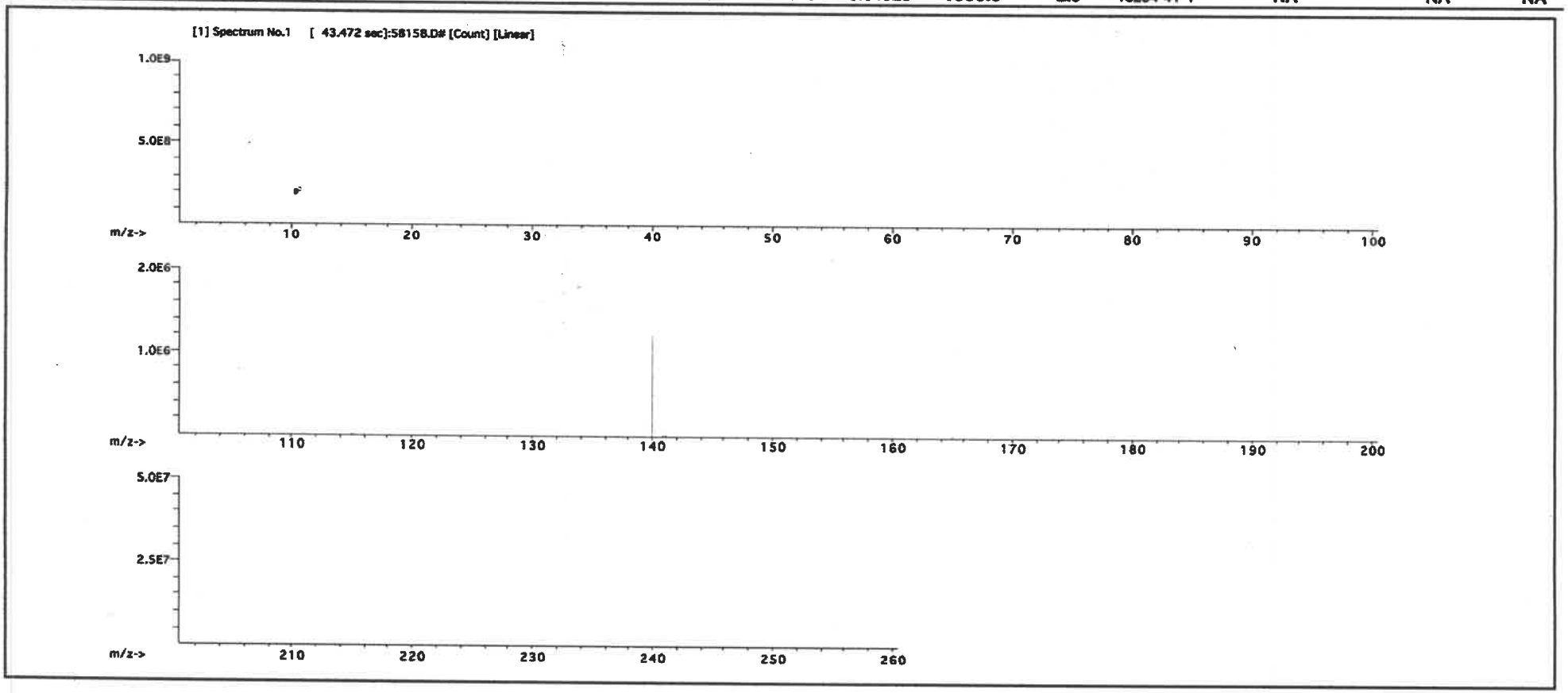
CERTIFIED WEIGHT REPORT:

Part Number:	**57058**		**Lot #**		
Lot Number:	**061322**	**Solvent:**	20510011	Nitric Acid	
Description:	**Cerium (Ce)**				
		2%	20.0 (mL)	Nitric Acid	
Expiration Date:	061325				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	1000				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	1000.12	0.058	Flask Uncertainty		

Formulated By:	Lawrence Barry	061322
Reviewed By:	Pedro L. Rentas	061322

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Cerium nitrate hexahydrate (Ce)	IN146	Z512CEB1	1000	99.999	0.10	32.8	3.04919	3.04923	1000.0	2.0	10294-41-4	NA	NA	NA



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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	T	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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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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* 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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M5496 R 7/20/23

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CERTIFIED WEIGHT REPORT:

Part Number:	**58113**		**Lot #**		
Lot Number:	**011623**	**Solvent:**	20510011	Nitric Acid	
Description:	**Aluminum (Al)**				
		2%	40.0 (mL)	Nitric Acid	
Expiration Date:	011626				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**10000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty		

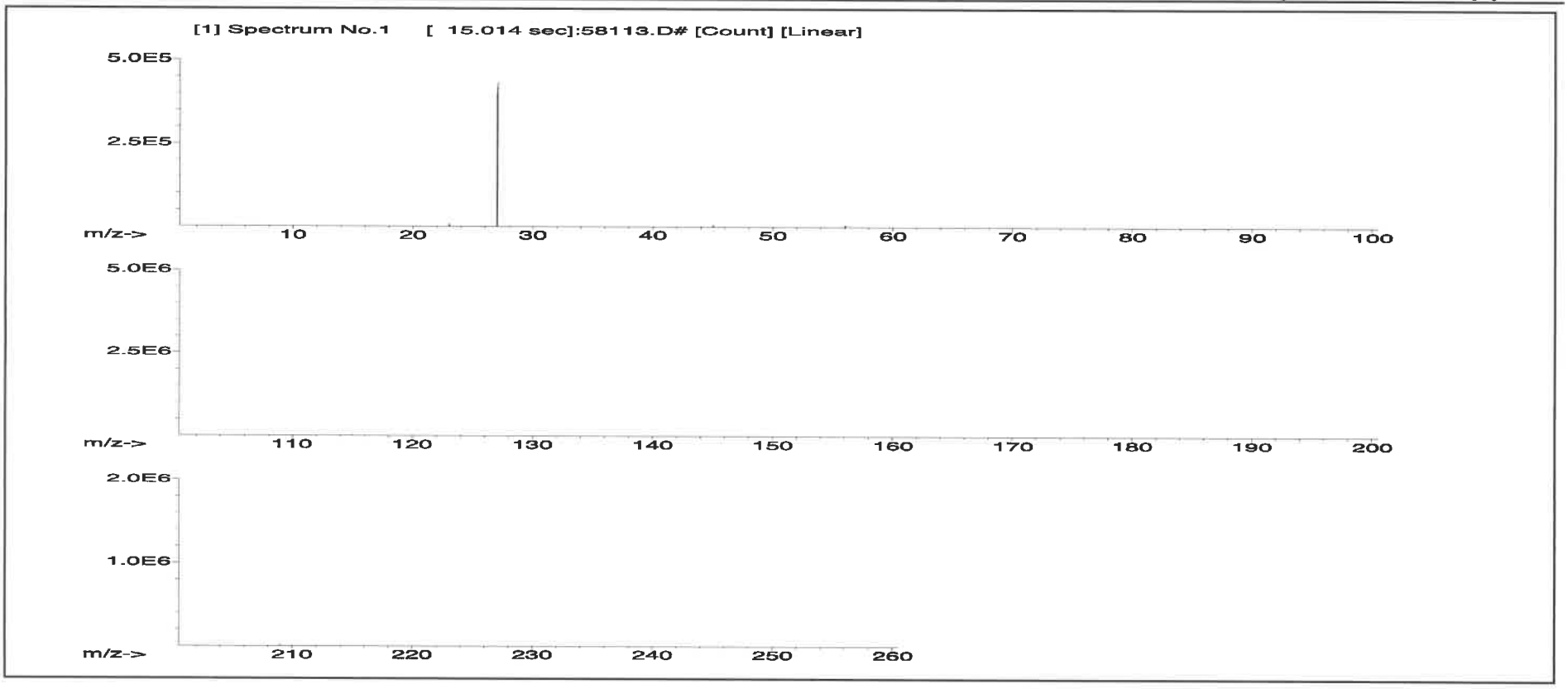
Giovanni Esposito

Formulated By:	Giovanni Esposito	011623

Pedro Rentas

Reviewed By:	Pedro L. Rentas	011623

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Aluminum nitrate nonahydrate (Al)	IN022	ALM112021A1	10000	99.999	0.10	7.30	273.9779	274.0078	**10001.1**	**20.0**	7784-27-2	2 mg/m3	orl-rat 3671 mg/kg	3101a



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IN5497 - IN5498 R: 03/17/23 BH

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CERTIFIED WEIGHT REPORT:

Part Number: 58120
Lot Number: 031523
Description: Calcium (Ca)

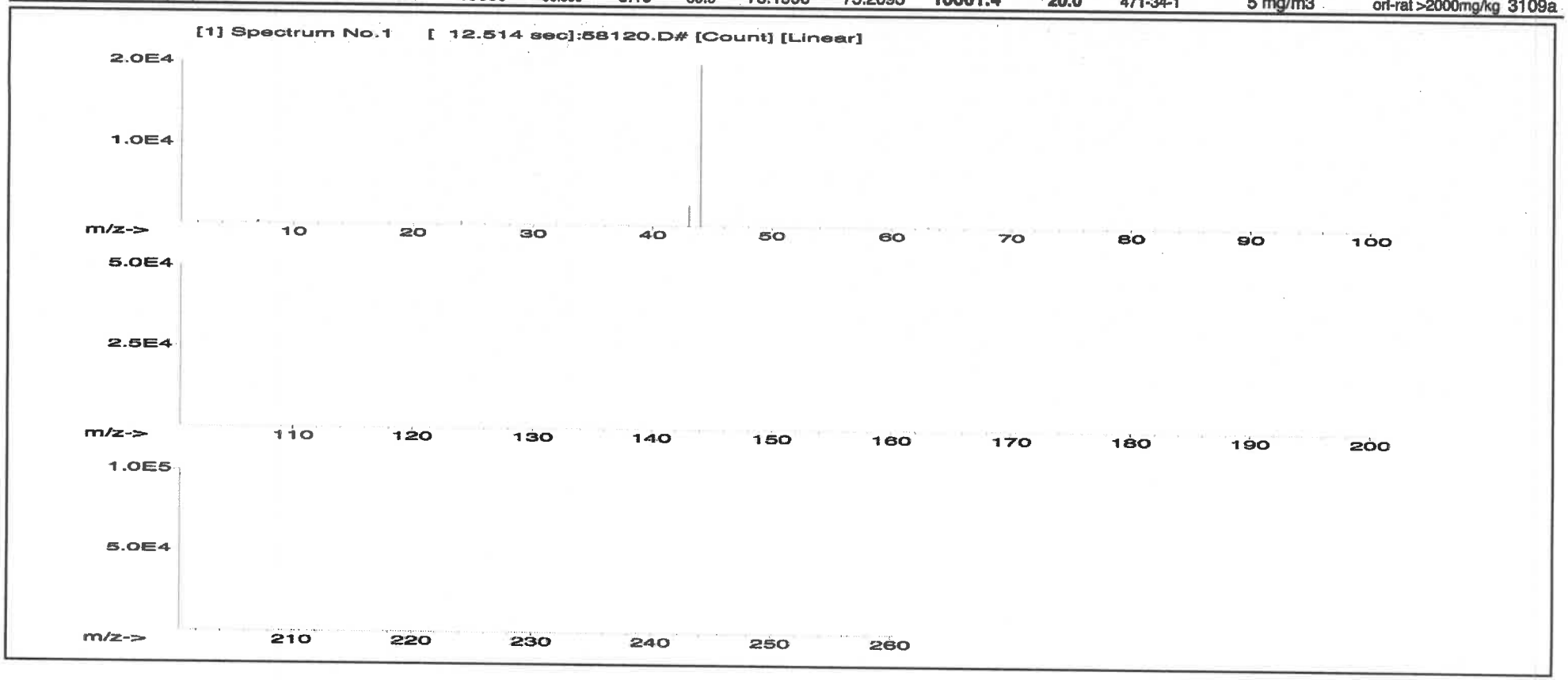
Expiration Date: 031526
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.41

	Lot #		
Solvent:	21110221	Nitric Acid	
2%	60.0 (mL)	Nitric Acid	
	5E-05	Balance Uncertainty	
	0.058	Flask Uncertainty	

Giovanni Esposito

Formulated By:	Giovanni Esposito	031523
Reviewed By:	Pedro L. Rentas	031523

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Calcium carbonate (Ca)	IN014	CAD072022A1	10000	99.999	0.10	39.9	75.1990	75.2093	**10001.4**	**20.0**	471-34-1	5 mg/m3	orl-rat >2000mg/kg	3109a



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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	T	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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Q1739-METALS

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M516 M517 R: 03/17/22 BH

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CERTIFIED WEIGHT REPORT:

Part Number: 58111
Lot Number: 022123
Description: Sodium (Na)

Expiration Date: 022126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.41 ± 0.06 Flask Uncertainty

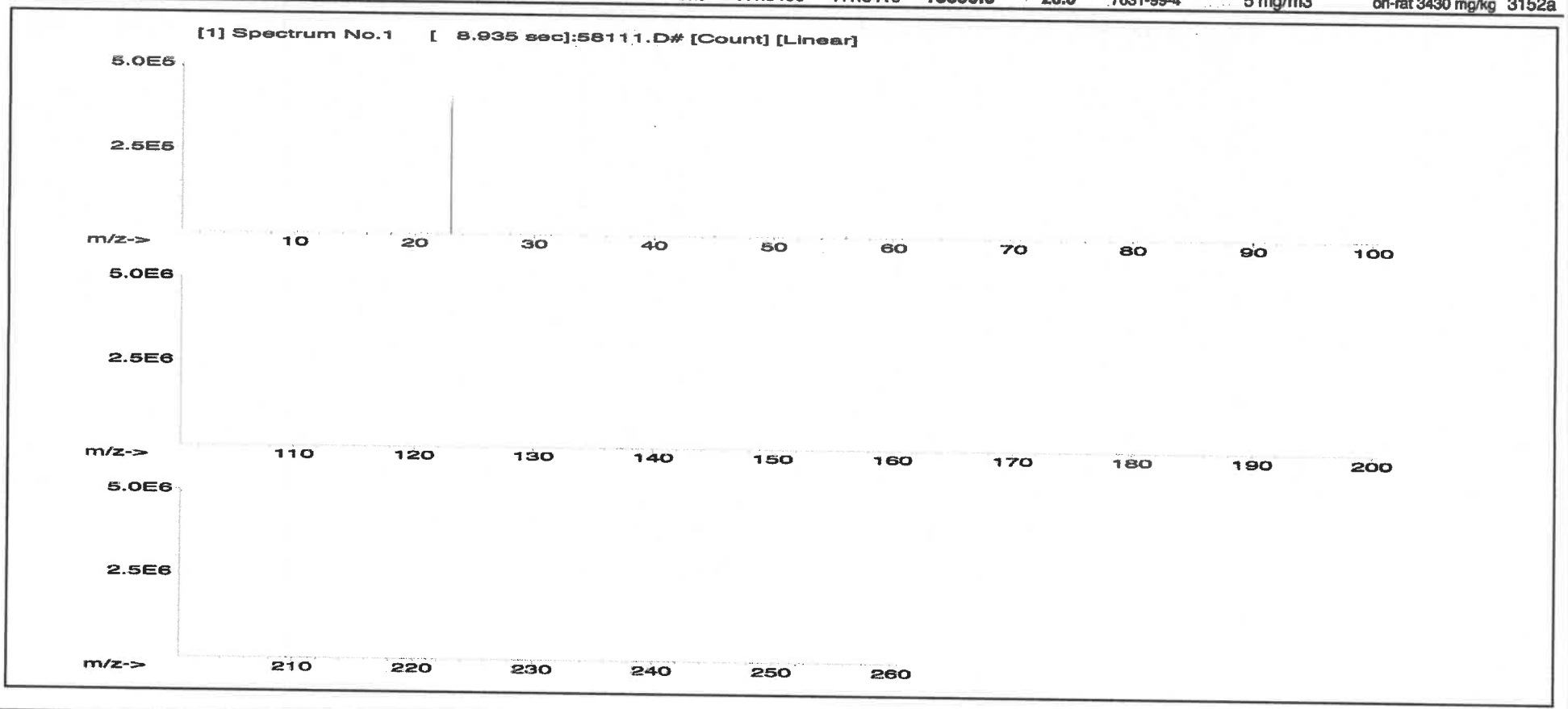
	Lot #		
Solvent:	21110221	Nitric Acid	
2%	60.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty

Formulated By: Lawrence Barry 022123

Reviewed By: Pedro L. Rentas 022123

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Sodium nitrate (Na)	IN036	NAV012015I1	10000	99.999	0.10	26.9	111.5406	111.5410	**10000.0**	**20.0**	7631-99-4	5 mg/m3	orl-rat 3430 mg/kg	3152a



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AR-1539 Certificate Number
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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	T	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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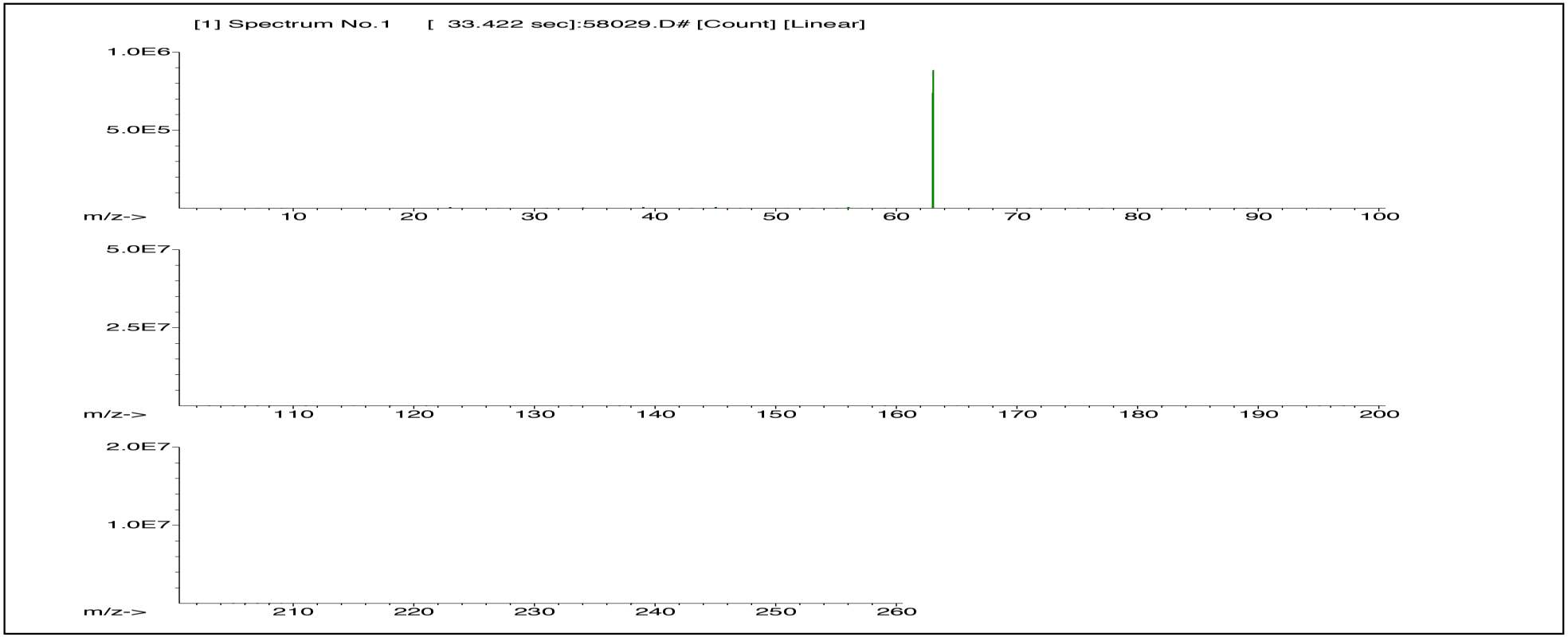
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**58029**	20510011	Nitric Acid	
Lot Number:	**102622**			
Description:	**Copper (Cu)**	2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	102625			
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:	Eli Aliaga 102622
Reviewed By:	Pedro L. Rentas 102622

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	**Final Conc. (µg/mL)**	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Copper(II) nitrate trihydrate (Cu)	58129	021422	0.1000	200.0	0.084	1000	10000.8	**1000.0**	**2.2**	10031-43-3	1 mg/m3	orl-rat 794 mg/kg	3114



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

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	T	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

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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* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

QATS LABORATORY INORGANIC REFERENCE MATERIAL INITIAL CALIBRATION VERIFICATION SOLUTIONS (ICV1, ICV5, AND ICV6)

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.

MSS28-37
MB

Contains Metals in Dilute Acidic or Cyanide in Basic Aqueous Solutions
HAZARDOUS MATERIAL

Safety Data Sheets Available Upon Request

(A) *SAMPLE DESCRIPTION*

Enclosed is a set of one (1) or more Aqueous Inorganic Reference Materials containing various analyte concentrations. ICV1 and ICV5 are in a matrix of dilute nitric acid. ICV6 is in a matrix of dilute basic solution. **For the reference material source in reporting ICVs use "USEPA". For the reference material lot number for the ICV1, ICV5, and ICV6 solutions use "ICV1-1014", "ICV5-0415", and "ICV6-0400", respectively.**

(B) *BREAKAGE OR MISSING ITEMS*

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) *ANALYSIS OF SAMPLES*

The Initial Calibration Verification Solutions (ICVs) are to be used to evaluate the accuracy of the initial calibrations of ICP, AA, and Cyanide colorimetric instruments, and are to be used with the CLP SOWs and revisions. The values for each element in the ICVs are listed below in µg/L (ppb) for the resulting solution(s) after the dilution of the concentrate(s) according to the following instructions. Use Class 'A' glassware to prepare the solution(s).

ICV1-1014 For ICP-AES analysis, use a 10-fold dilution by pipetting 10 mL of the ICV1 concentrate into a 100 mL volumetric flask and dilute to volume with 2% (v/v) nitric acid.

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

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M5658 R ! 8/25/23

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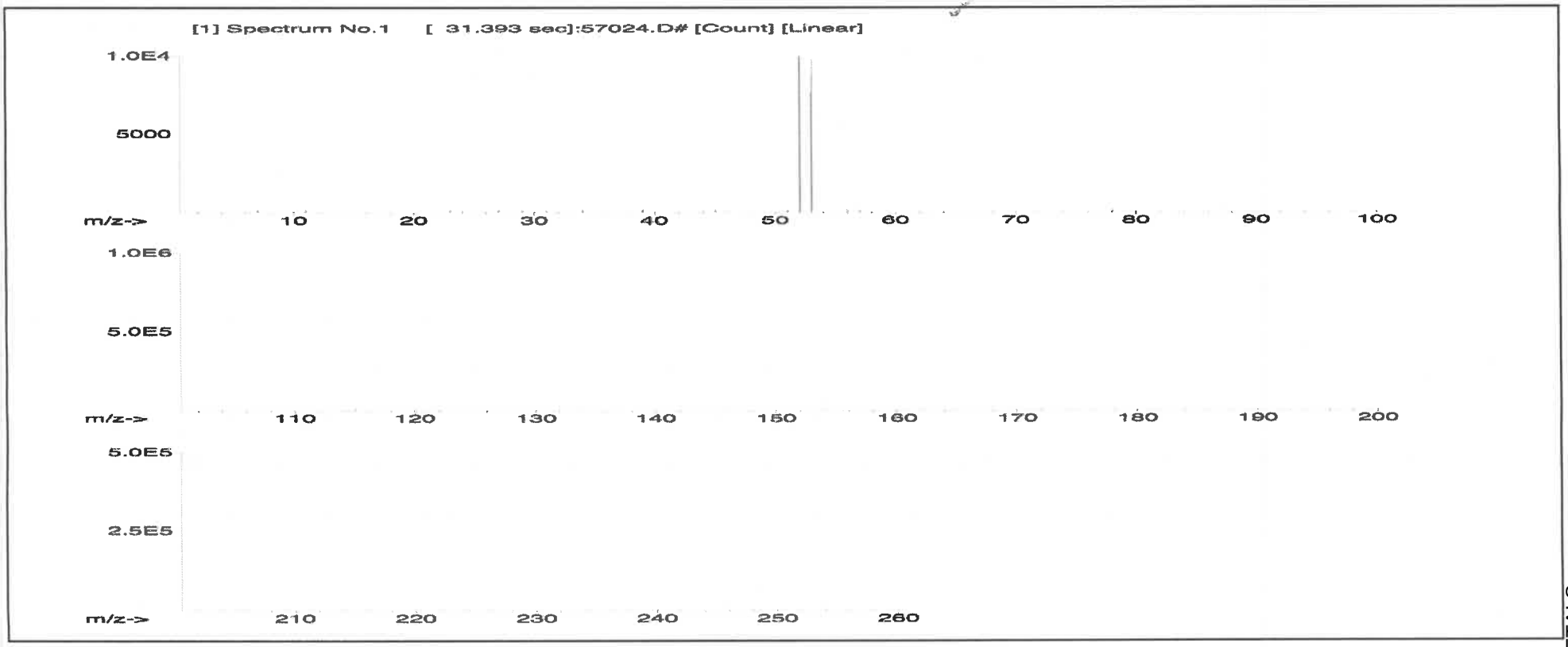
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**58024**	21110221	Nitric Acid	
Lot Number:	**060523**			
Description:	**Chromium (Cr)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	060526			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty	

Formulated By:	Lawrence Barry	060523
Reviewed By:	Pedro L. Rentas	060523

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Chromium(III) nitrate nonahydrate (Cr)	58124	071122	0.1000	200.0	0.084	1000	10000.1	**1000.0**	**2.2**	7789-02-8	0.5 mg(Cr)/m3	orl-rat 3250 mg/kg	3112a



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

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	T	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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R: 12/20/23 M5747

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CERTIFIED WEIGHT REPORT:

Part Number: 57082
Lot Number: 100923
Description: Lead (Pb)

Expiration Date: 100926
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

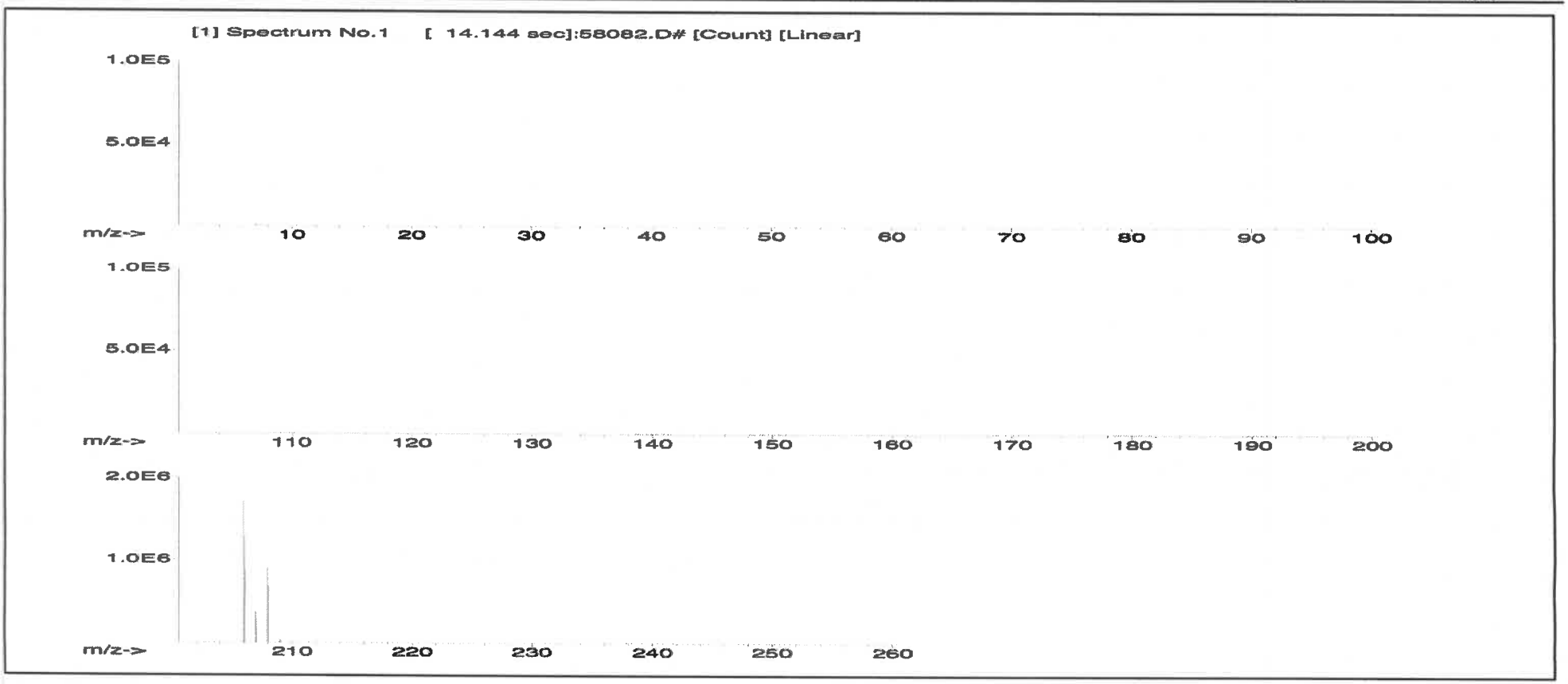
Weight shown below was diluted to (mL): 3000.41 0.06 Flask Uncertainty

	Lot #		
Solvent:	24002546	Nitric Acid	
2%	60.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty

Formulated By:	Lawrence Barry	100923
Reviewed By:	Pedro L. Rentas	100923

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Lead(II) nitrate (Pb)	IN029	PBD122016A1	1000	99.999	0.10	62.5	4.80071	4.80077	**1000.0**	**2.0**	10099-74-8	0.05 mg/m3	intrvns-rat 93 mg/kg	3128



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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	T	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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R: 12/20/23 M5748

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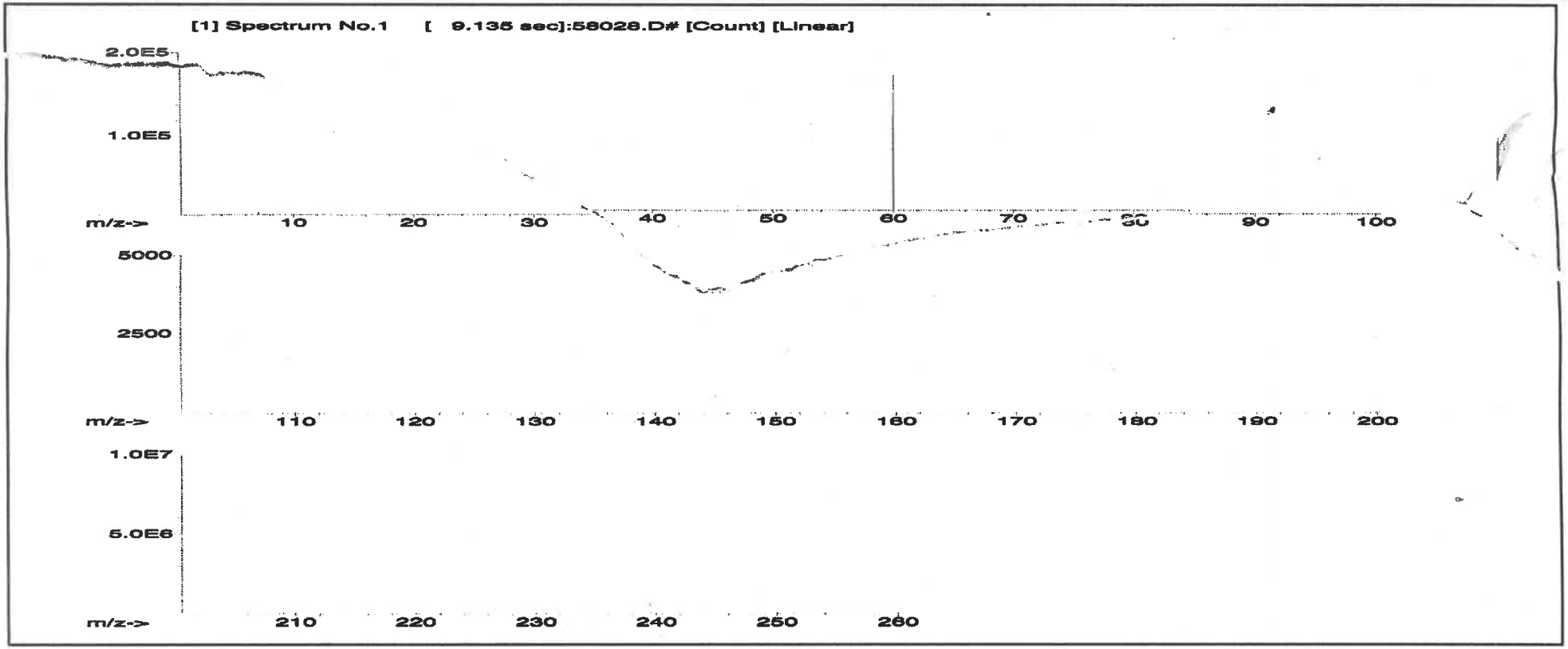
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57028**	24002546	Nitric Acid	
Lot Number:	**091223**			
Description:	**Nickel (Ni)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	091226			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty	

Formulated By:	Lawrence Barry	091223
Reviewed By:	Pedro L. Rentas	091223

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. 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	orl-rat 1620 mg/kg	3136



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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	T	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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M5768 M5769 (BP) R:1/3/24

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CERTIFIED WEIGHT REPORT:

Part Number: 58112
Lot Number: 091823
Description: Magnesium (Mg)

Expiration Date: 091826
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 2000.02 ± 0.058 Flask Uncertainty

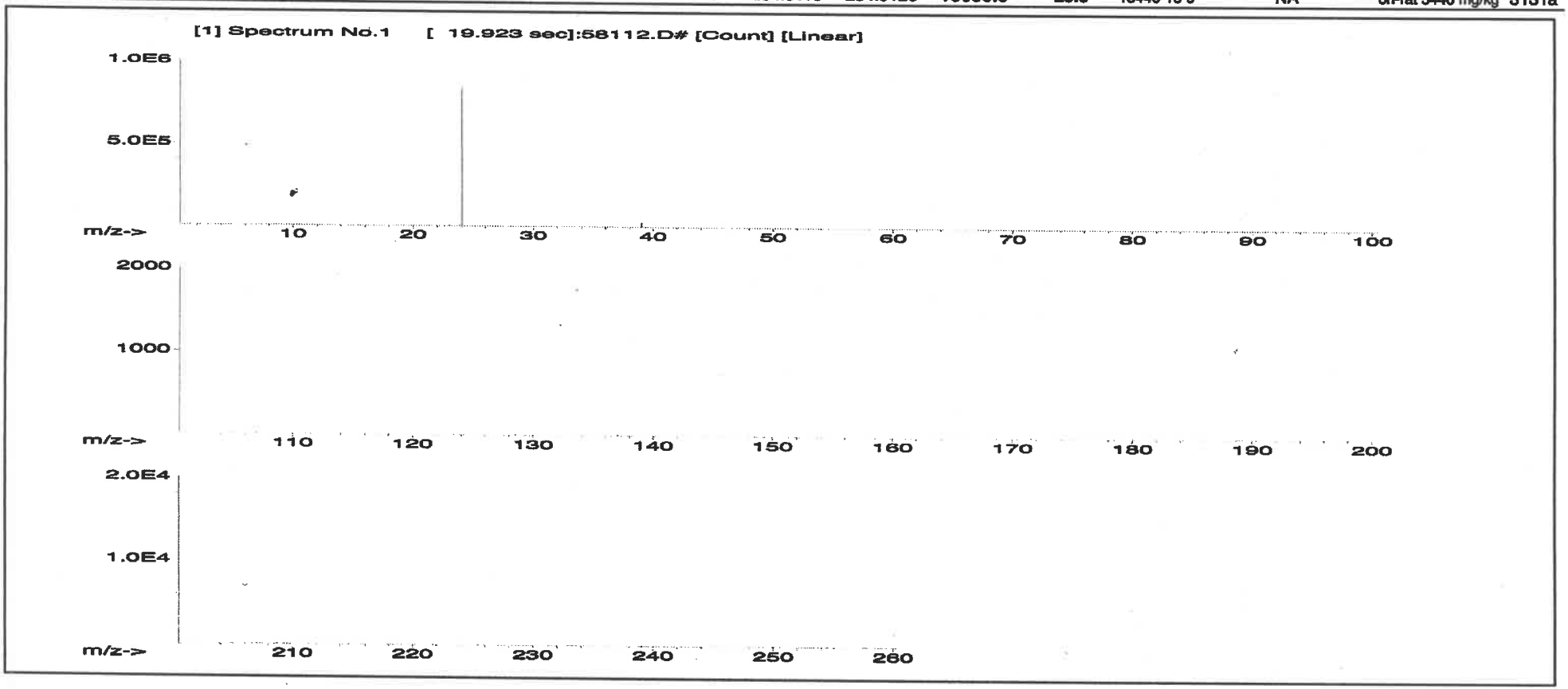
	Lot #		
Solvent:	24002546	Nitric Acid	
2%	40.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty

M5768, M5769 (BP) R: 1/3/24

Formulated By:	Lawrence Barry	091823
Reviewed By:	Pedro L. Rentas	091823

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Magnesium nitrate hexahydrate (Mg)	IN030	MGD052023A1	10000	99.999	0.10	8.51	234.9118	234.9126	**10000.0**	**20.0**	13446-18-9	NA	ori-rat 5440 mg/kg	3131a



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

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	T	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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R: 02/09/24 M5798

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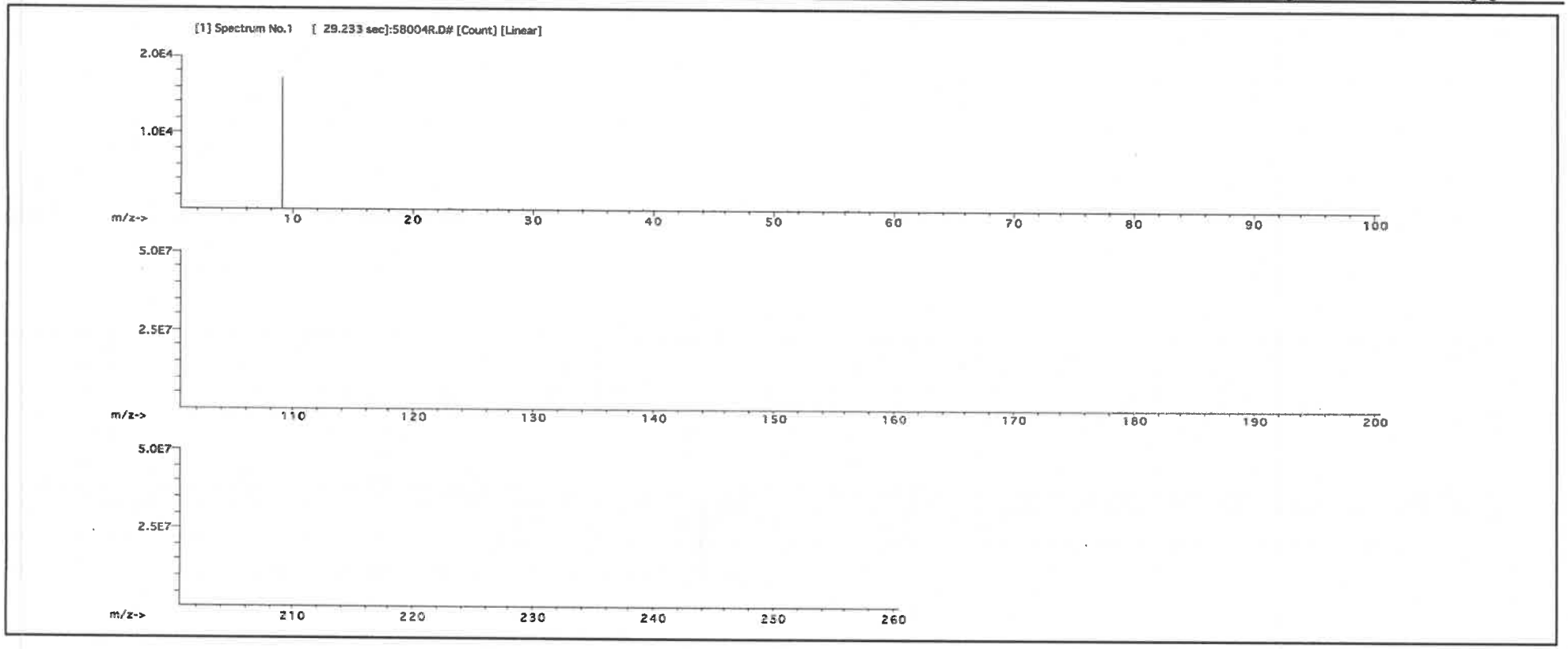
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57004**	24002546	Nitric Acid	
Lot Number:	**102523**			
Description:	**Beryllium (Be)**	2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	102526			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty	

Formulated By:	Benson Chan	102523
Reviewed By:	Pedro L. Rentas	102523

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Beryllium nitrate (Be)	58104	091423	0.1000	200.0	0.084	1000	10001.5	**1000.0**	**2.2**	13597-99-4	0.2ug/m3	intrvns-rat 3.16mg/kg	NA



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

Trace Metals Verification by ICP-MS (µg/mL)																		
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	T	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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R? 02/09/24 IV15799

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CERTIFIED WEIGHT REPORT:

Part Number: 57050
Lot Number: 071123
Description: Tin (Sn)

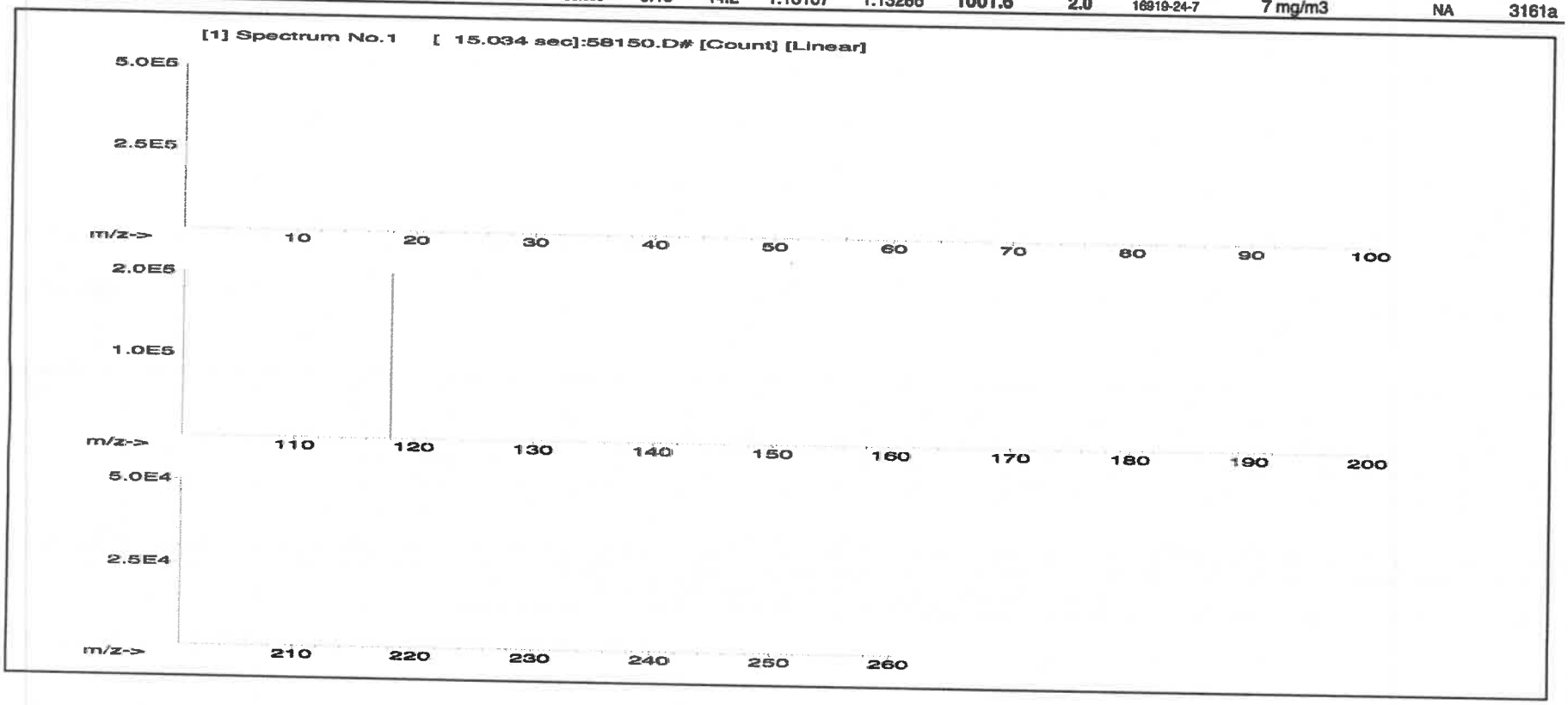
Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 499.93

Solvents:	Lot #	
	21110221	Nitric Acid
	22D0562008	Hydrochloric acid
2%	10.0	Nitric Acid
6%	30.0	Hydrochloric acid
	(mL)	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By:	Benson Chan	071123
Reviewed By:	Pedro L. Rentas	071123

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium hexafluorostannate(IV) (Sn)	IN010	SND042023A1	1000	99.999	0.10	44.2	1.13107	1.13286	**1001.6**	**2.0**	16919-24-7	7 mg/m3	NA	3161a



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

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<500	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	T	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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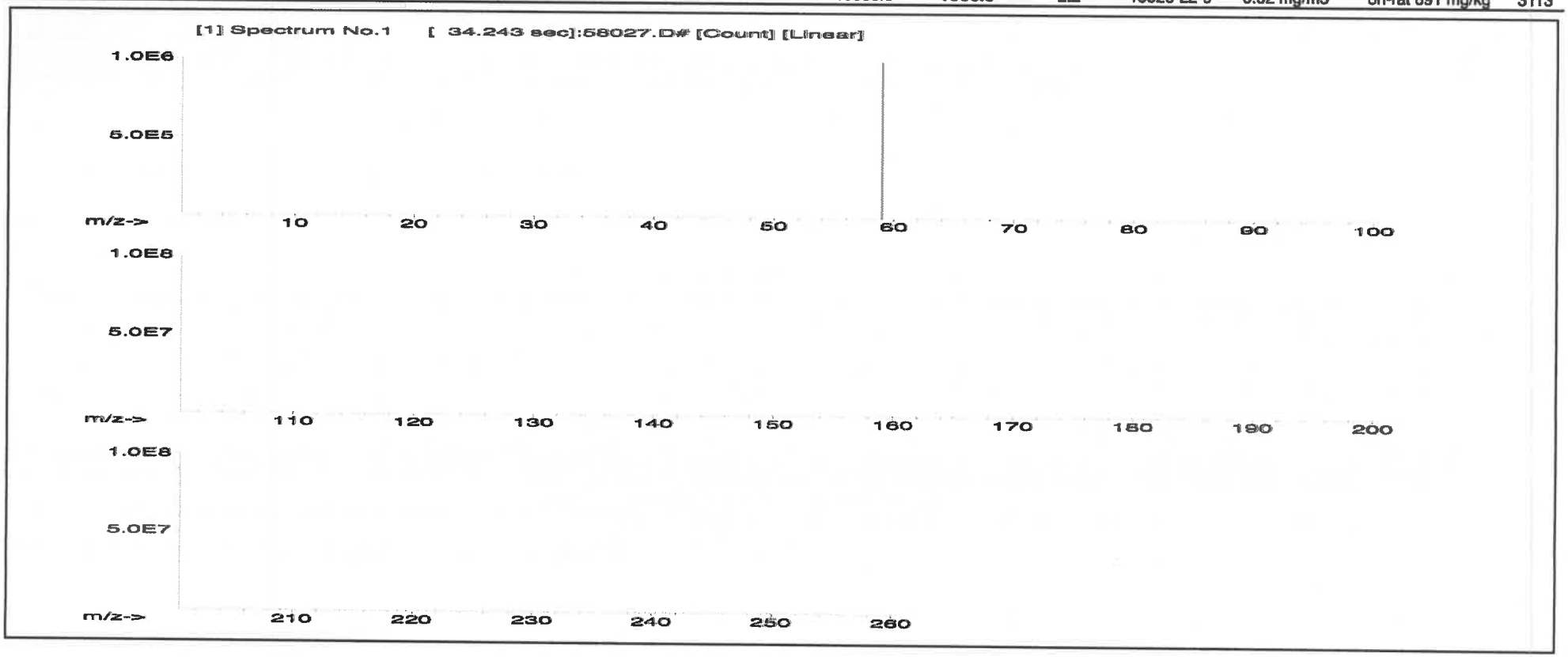
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:		
Part Number:	**57027**	24002546	Nitric Acid		
Lot Number:	**091923**				
Description:	**Cobalt (Co)**	2.0%	40.0 (mL)	Nitric Acid	
Expiration Date:	091926				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty		

Formulated By: Lawrence Barry 091923

Reviewed By: Pedro L. Rentas 091923

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Cobalt(II) nitrate hexahydrate (Co)	58127	050923	0.1000	200.0	0.084	1000	10000.0	**1000.0**	2.2	10026-22-9	0.02 mg/m3	orl-rat 691 mg/kg	3113



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

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	T	Gé	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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R: 02/09/24 M5801 BH

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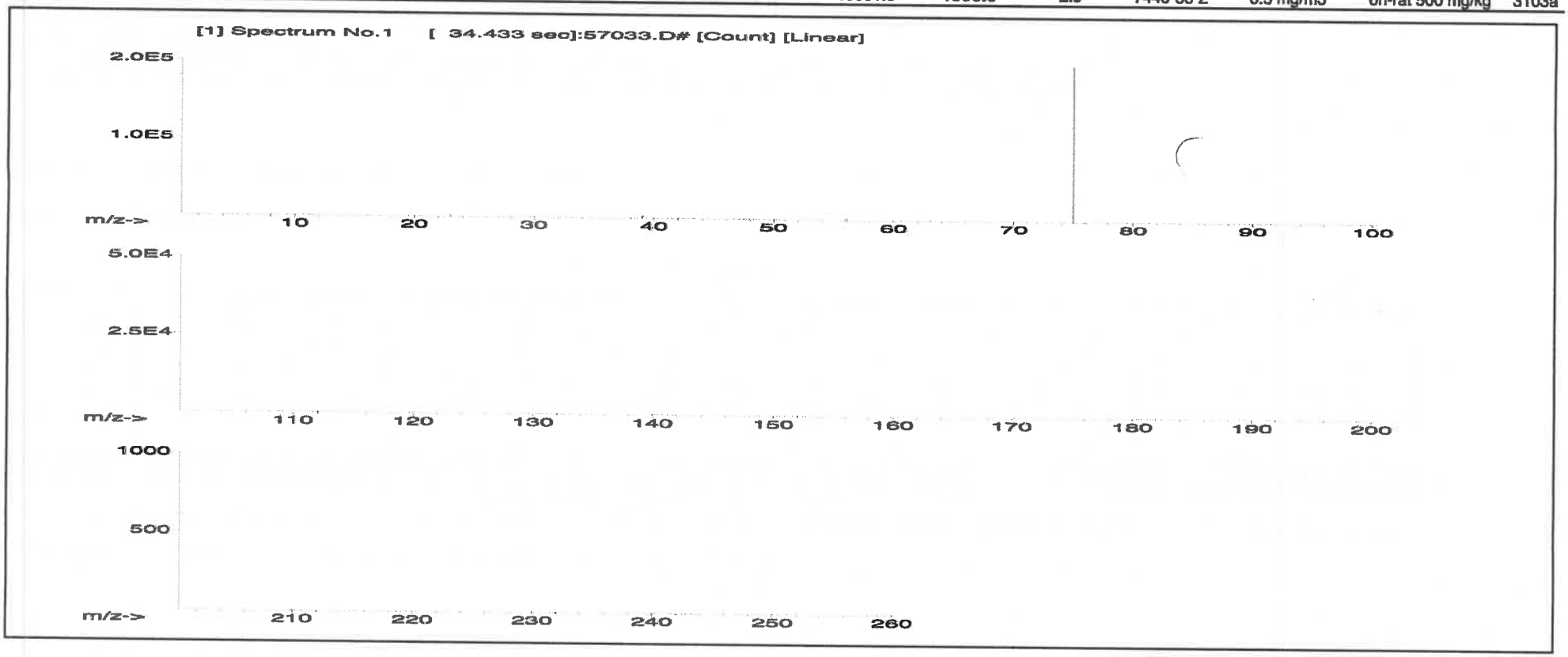
CERTIFIED **WEIGHT** REPORT:

		Lot #	Solvent:
Part Number:	**57033**		
Lot Number:	**111323**	24002546	Nitric Acid
Description:	**Arsenic (As)**		
		2.0%	80.0 (mL) Nitric Acid
Expiration Date:	111326		
Recommended Storage:	Ambient (20 °C)		
Nominal Concentration (µg/mL):	**1000**		
NIST Test Number:	6UTB	5E-05 Balance Uncertainty	
Volume shown below was diluted to (mL):	4000.0	0.06 Flask Uncertainty	

Formulated By:	Lawrence Barry	111323
Reviewed By:	Pedro L. Rentas	111323

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Arsenic (As)	58133	020522	0.1000	400.0	0.084	1000	10001.0	**1000.0**	**2.0**	7440-38-2	0.5 mg/m3	orl-rat 500 mg/kg	3103a



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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	T	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge*	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

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A: 02/09/24 M.5814

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CERTIFIED WEIGHT REPORT:

Part Number: 57005
Lot Number: 071123
Description: Boron (B)

Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

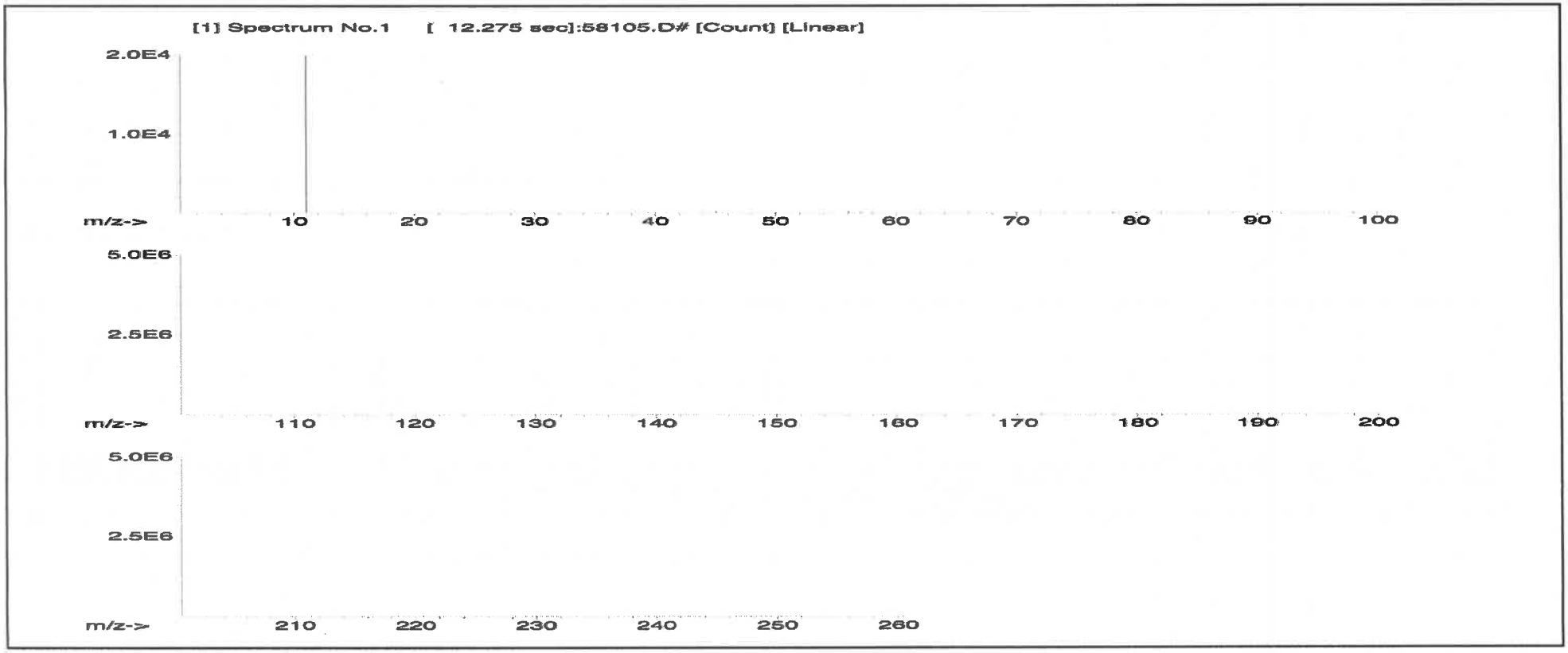
Weight shown below was diluted to (mL): 1999.48 0.058 Flask Uncertainty

	Lot #		
Solvent:	MKBQ8597V	Ammonium hydroxide	
	2.0%	40.0 (mL)	Ammonium hydroxide
	5E-05	Balance Uncertainty	

Formulated By: Benson Chan 071123

Reviewed By: Pedro L. Rentas 071123

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Boric acid (B)	IN018	BV092016A1	1000	99.9999	0.10	17.3	11.55772	11.56201	**1000.4**	**2.0**	10043-35-3	2 mg/m3	orl-rat 2660 mg/kg	3107



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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<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:

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Certified Reference Material CRM

R: 02/09/24 M5816

ANAB ISO 17034 Accredited
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CERTIFIED WEIGHT REPORT:

Part Number: 57016
Lot Number: 122923
Description: Sulfur (S)

Expiration Date: 122926
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

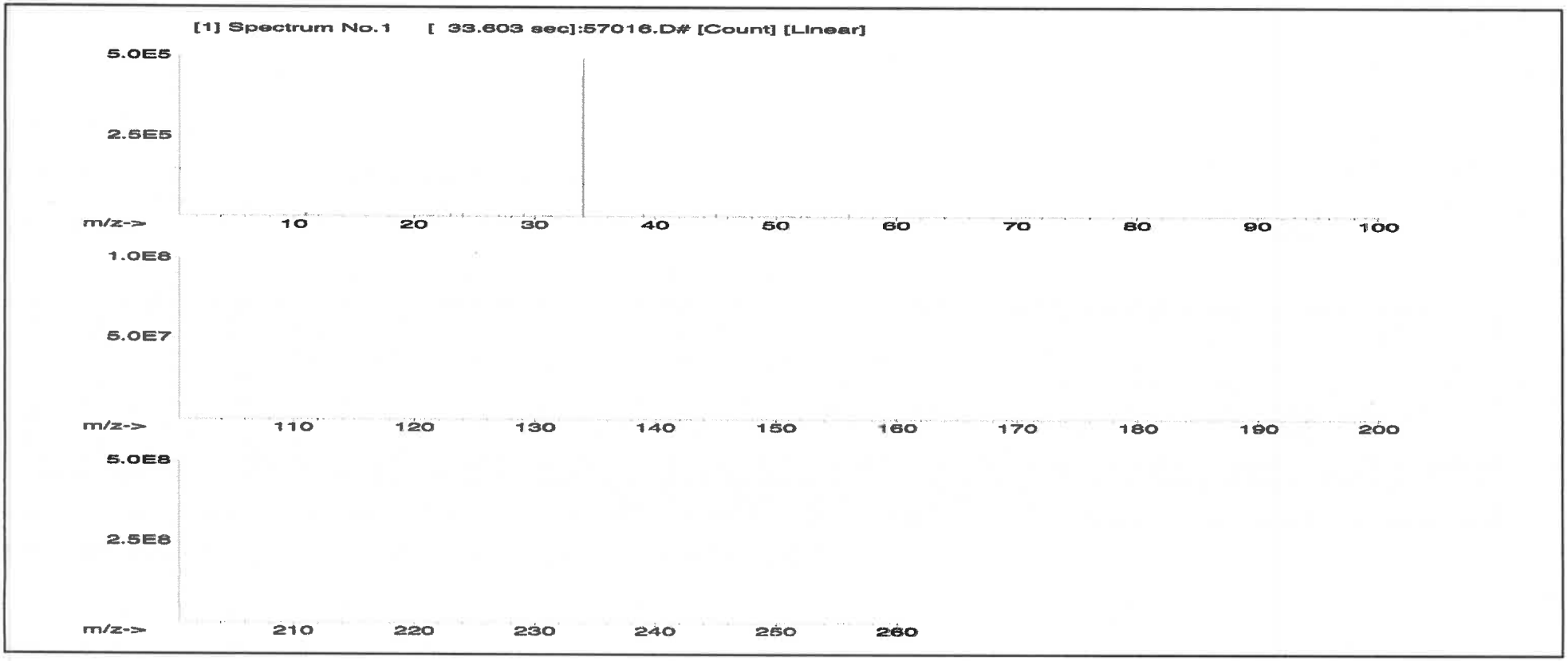
Weight shown below was diluted to (mL): 4000.0 ± 0.06 Flask Uncertainty

Solvent: Lot # 122923 ASTM Type 1 Water

5E-05 Balance Uncertainty

Formulated By:	Benson Chan	122923
Reviewed By:	Pedro L. Rentas	122923

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium sulfate (S)	IN117	SLBR7225V	1000	99.9	0.10	24.3	16.4979	16.4980	**1000.0**	**2.0**	7783-20-2	NA	orl-rat 4250mg/kg	3181



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Certified Reference Material CRM

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AR-1539 Certificate Number
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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	T	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certified Reference Material CRM

R: 02/09/24 M5817

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CERTIFIED WEIGHT REPORT:

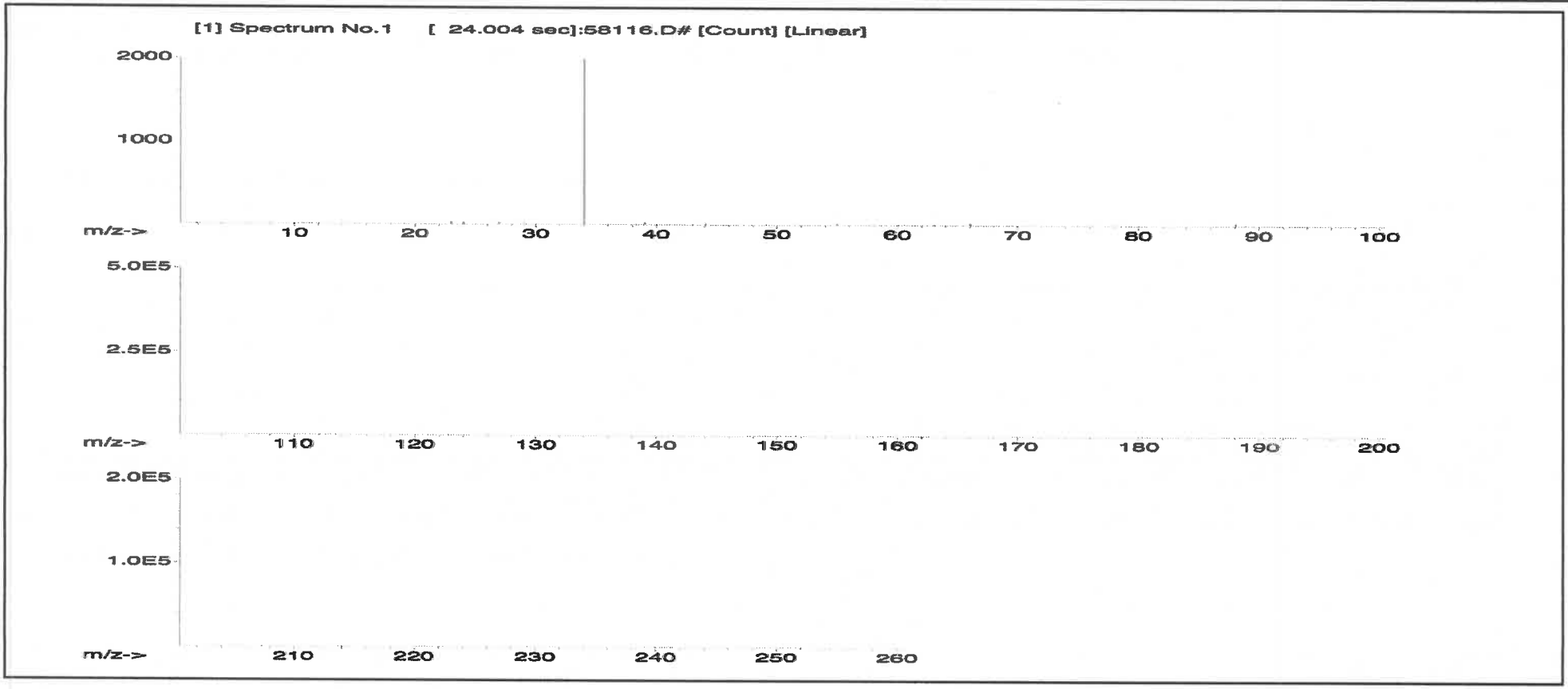
Part Number: 57116
Lot Number: 071123
Description: Sulfur (S)

Lot #
Solvent: 071123 ASTM Type 1 Water

Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB 5E-05 Balance Uncertainty
Weight shown below was diluted to (mL): 1999.48 0.058 Flask Uncertainty

Formulated By:	Lawrence Barry	071123
Reviewed By:	Pedro L. Rentas	071123

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium sulfate (S)	IN117	SLBR7225V	10000	99.9	0.10	24.3	82.4675	82.4682	**10000.1**	**20.0**	7783-20-2	NA	ori-rat 4250mg/kg	3181



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Certified Reference Material CRM

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	T	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
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Certified Reference Material CRM

R: 02/09/24 M5820

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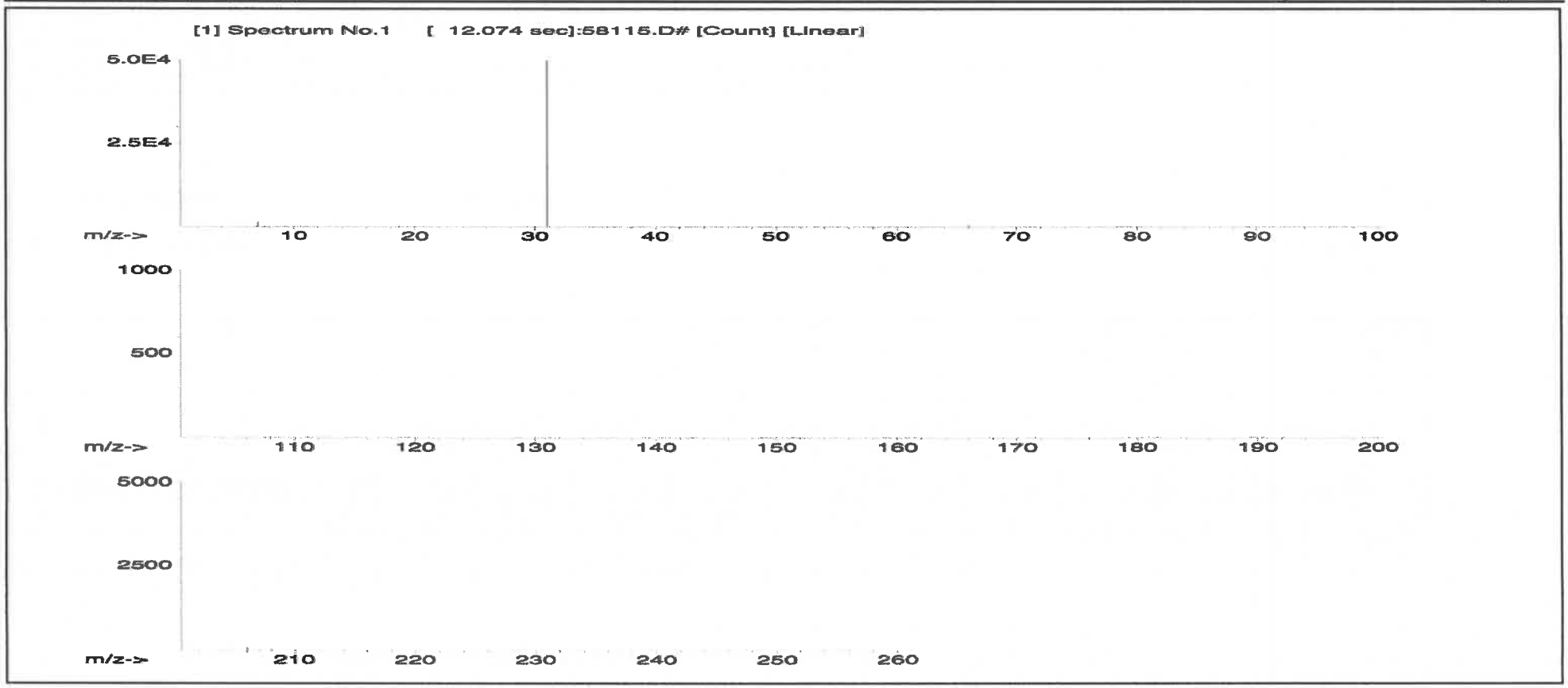
CERTIFIED WEIGHT REPORT:

Part Number:	**57015**			**Lot #**	
Lot Number:	**091123**	**Solvent:**	24002546	Nitric Acid	
Description:	**Phosphorous (P)**				
		2%	40.0 (mL)	Nitric Acid	
Expiration Date:	091126				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty		

Formulated By:	Lawrence Barry	091123
Reviewed By:	Pedro L. Rentas	091123

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium dihydrogen phosphate (P)	IN008	PV082019A1	1000	99.999	0.10	27.5	7.2729	7.2730	**1000.0**	**2.0**	7722-76-1	5 mg/m3	orl-rat >2000mg/k	3186



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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
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Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	T	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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

MF884
MB

avantor™ | J.T.Baker®

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

James T Ethier
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

INORGANIC VENTURES™
Refine your results. Redefine your industry.

Certificate of Analysis

M5959 R: 6/14/24.

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 863.01 ACCREDITED Reference Material Producer Certificate 863.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGY10
Lot Number:	V2-Y740548
Matrix:	2% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Yttrium
Starting Material:	Yttrium Oxide
Starting Material Lot#:	2661 and 06230520YL
Starting Material Purity:	99.9984%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10000 ± 30 µg/mL

Density: 1.032 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	**10011 ± 25 µg/mL** EDTA NIST SRM 928 Lot Number: 928
Assay Method #2	**9997 ± 50 µg/mL** ICP Assay NIST SRM 3167a Lot Number: 190730
Assay Method #3	**9984 ± 31 µg/mL** Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.004600	M	Eu		0.009037	M	Na		0.086360	M	Se	<	0.005200	M	Zn		0.030125
M	Al		0.014862	O	Fe		0.002410	M	Nb	<	0.000570	O	Si		0.024100	O	Zr	<	0.002600
M	As	<	0.003500	M	Ga	<	0.000570	M	Nd		0.000923	M	Sm		0.000461				
M	Au	<	0.001700	M	Gd	<	0.003500	M	Ni	<	0.005700	M	Sn	<	0.002300				
O	B		0.002209	M	Ge	<	0.005200	M	Os	<	0.001200	M	Sr	<	0.004600				
O	Ba	<	0.002500	M	Hf	<	0.000570	n	P	<		M	Ta	<	0.000570				
O	Be	<	0.001400	M	Hg	<	0.000570	M	Pb		0.005020	M	Tb		0.001044				
M	Bi	<	0.003500	M	Ho		0.009037	M	Pd	<	0.005100	M	Te	<	0.002300				
O	Ca		0.009841	M	In	<	0.002300	M	Pr	<	0.002300	M	Th	<	0.000570				
M	Cd	<	0.000570	M	Ir	<	0.000570	M	Pt	<	0.000570	M	Ti	<	0.003500				
M	Ce	<	0.002300	O	K		0.018677	M	Rb	<	0.000570	M	Tl	<	0.000570				
M	Co	<	0.000570	M	La		0.000461	M	Re	<	0.000570	M	Tm	<	0.003500				
M	Cr	<	0.004000	O	Li	<	0.009300	M	Rh	<	0.008000	M	U	<	0.000570				
M	Cs	<	0.000570	M	Lu		0.000582	M	Ru	<	0.000570	M	V		0.001265				
M	Cu		0.002610	O	Mg		0.001486	n	S	<		M	W	<	0.002300				
M	Dy		0.003815	M	Mn		0.000582	M	Sb		0.005422	s	Y	<					
M	Er		0.003615	M	Mo	<	0.005700	M	Sc	<	0.001200	M	Yb		0.001827				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 88.91 +3 6 Y(OH)(H2O)x+2

Chemical Compatibility -Soluble in HCl, H2SO4 and HNO3. Avoid HF, H3PO4 and neutral to basic media. Stable with most metals and inorganic anions forming an insoluble carbonate, oxide, oxalate, and fluoride. Avoid mixing with elements / solutions containing moderate amounts of fluoride.

Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO3 / LDPE container.

Y Containing Samples (Preparation and Solution) - Metal (Soluble in acids); Oxide (Dissolve by heating in H2O/ HNO3); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (Dry ash and dissolve in 1:1 H2O / HCl or HNO3).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 89 amu	0.8 ppt	N/A	73Ge16O, 178Hf+2
ICP-OES 360.073 nm	0.005 / 0.000036 µg/mL	1	Ce, Th
ICP-OES 371.030 nm	0.004 / 0.00007 µg/mL	1	Ce
ICP-OES 377.433 nm	0.005 / 0.0009 µg/mL	1	Ta, Th

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

M5970, M5971 R: 7/01/24

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

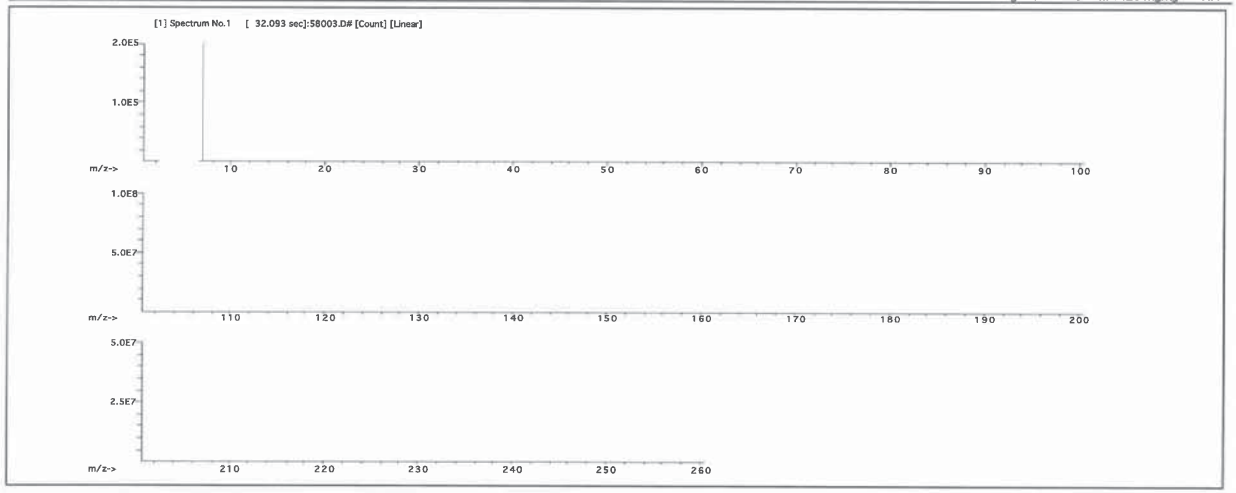
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:		
Part Number:	**57003**	24002546	Nitric Acid		
Lot Number:	**062124**				
Description:	**Lithium (Li)**	2.0%	5.0 (mL)	Nitric Acid	
Expiration Date:	062127				
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):	250.11	0.016	Flask Uncertainty		

Giovanni Esposito

Formulated By:	Giovanni Esposito	062124
Reviewed By:	Pedro L. Rentas	062124

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Lithium nitrate (Li)	58103	070622	0.1000	25.0	0.004	1000	10000.4	**1000.0**	**2.0**	7790-69-4	5 mg/m3	orl-rat 1426 mg/kg	NA



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https://Absolutestandards.com

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	T	Ni	<0.02	Pr	<0.02	Sc	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

MS978, MS979

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Certificate of Analysis

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R: 2/22/24

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 865.01

ACCREDITED Reference Material Producer Certificate 865.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGTI1
Lot Number:	T2-TI719972
Matrix:	2% (v/v) HNO3 tr. HF
Value / Analyte(s):	1 000 µg/mL ea: Titanium TI Metal
Starting Material:	
Starting Material Lot#:	2094
Starting Material Purity:	99.9975%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 5 µg/mL

Density: 1.012 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	**1002 ± 4 µg/mL**
	ICP Assay NIST SRM 3162a Lot Number: 130925

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

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

$$X_{CRM/RM} = \Sigma(w_i)\,(x_i)$$

x_i = mean of Assay Method i with standard uncertainty $u_{Char\,i}$

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

$$w_i = (1/u_{Char\,i})^2 \,/\, (\Sigma(1/u_{Char\,i})^2)$$

CRM/RM Expanded Uncertainty ($\pm$) = $u_{CRM/RM} = k\,(u^2_{Char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{Char} = [\Sigma((w_i)^2\,(u_{Char\,i})^2)]^{½}$ where $u_{Char\,i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

CRM/RM Expanded Uncertainty ($\pm$) = $u_{CRM/RM} = k\,(u^2_{Char\,a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000536	M	Eu	<	0.000268	O	Na	<	0.032670	M	Se		0.001204	O	Zn	<	0.003267
O	Al		0.000872	O	Fe		0.003225	O	Nb	<	0.043560	O	Si		0.004735	O	Zr	<	0.043560
M	As	<	0.008586	M	Ga	<	0.000268	M	Nd	<	0.000268	M	Sm	<	0.000268				
M	Au	<	0.004577	M	Gd	<	0.000268	O	Ni	<	0.010890	M	Sn		0.000096				
O	B	<	0.008929	M	Ge	<	0.002146	M	Os	<	0.000269	O	Sr		0.000096				
M	Ba	<	0.002683	M	Hf		0.002161	O	P	<	0.054450	M	Ta		0.010560				
M	Be	<	0.005366	M	Hg	<	0.003231	M	Pb	<	0.001073	M	Tb	<	0.000268				
M	Bi	<	0.001609	M	Ho	<	0.000268	M	Pd	<	0.000268	M	Te	<	0.001341				
O	Ca		0.000676	M	In	<	0.002683	M	Pr	<	0.000268	M	Th	<	0.053663				
M	Cd	<	0.000268	M	Ir	<	0.000269	M	Pt	<	0.000536	s	Ti	<					
M	Ce	<	0.000268	M	K		0.001172	M	Rb	<	0.000268	M	Tl	<	0.000268				
M	Co	<	0.004293	M	La	<	0.000268	M	Re	<	0.000268	M	Tm	<	0.000268				
M	Cr		0.000752	O	Li	<	0.027225	M	Rh	<	0.000268	M	U	<	0.000268				
M	Cs	<	0.000268	M	Lu	<	0.000268	M	Ru	<	0.000269	M	V	<	0.019855				
O	Cu	<	0.010890	O	Mg	<	0.005445	i	S	<		M	W		0.000473				
M	Dy	<	0.000268	O	Mn	<	0.003267	M	Sb	<	0.006976	M	Y	<	0.002146				
M	Er	<	0.000268	M	Mo		0.000774	O	Sc	<	0.004900	M	Yb	<	0.000536				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form In Solution - 47.87 +4 6 Ti(F)6-2

Chemical Compatibility - Soluble in concentrated HCl, HF, H3PO4 H2SO4 and HNO3. Avoid neutral to basic media. Unstable at ppm levels with metals that would pull F- away (i.e. Do not mix with Alkaline or Rare Earths or high levels of transition elements unless they are fluorinated). Stable with most inorganic anions with a tendency to hydrolyze forming the hydrated oxide in all dilute acids except HF.

Stability - 2-100 ppb levels stable (Alone or mixed with all other metals) as the Ti(F)6-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the Ti(F)6-2 for months in 1% 2-5% HNO3 / trace HF in an LDPE container.

Ti Containing Samples (Preparation and Solution) - Metal (Soluble in H2O / HF caution -powder reacts violently); Oxide - low temperature history anatase or rutile (Dissolved by heating in 1:1:1 H2O / HF / H2SO4); Oxide - high temperature history (~800EC) brookite (fuse in Pt0 with K2S2O7); Ores (fuse in Pt0 with KF + K2SO7 - no KF if silica not present); Organic Matrices (Dry ash at 450EC in Pt0 and dissolve by heating with 1:1:1 H2O / HF / H2SO4 or fuse ash with pyrosulfate if oxide is as plastic pigment and likely in brookite crystalline form).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 48 amu	14 ppt	N/A	32S16O, 32S14N, 14N16O18O, 14N17N2, 36Ar12C, 48Ca, [96X=2 (where X = Zr, Mo, Ru)]
ICP-OES 323.452 nm	0.0054 / 0.00092 µg/mL	1	Ce, Ar, Ni
ICP-OES 334.941 nm	0.0038 / 0.000028 µg/mL	1	Nb, Ta, Cr, U
ICP-OES 336.121 nm	0.0053 / 0.000034 µg/mL	1	W, Mo, Co

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.5798; 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

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 property 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

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MS985
R: 6/14/24

1.0 ACCREDITATION / REGISTRATION

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ACCREDITED Testing Laboratory Certificate 863.01
ACCREDITED Reference Material Producer Certificate 863.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGIN10
Lot Number:	U2-IN729349
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Indium
Starting Material:	Indium Metal
Starting Material Lot#:	2511
Starting Material Purity:	99.9995%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10022 ± 30 µg/mL

Density: 1.044 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	**10021 ± 56 µg/mL** ICP Assay NIST SRM 3124a Lot Number: 110516
Assay Method #2	**10035 ± 25 µg/mL** EDTA NIST SRM 928 Lot Number: 928
Assay Method #3	**10001 ± 33 µg/mL** Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000760	M	Eu	<	0.000760	O	Na		0.012771	M	Se	<	0.023000	M	Zn	<	0.006100
M	Al		0.003385	O	Fe		0.004462	M	Nb	<	0.000760	O	Si		0.024619	M	Zr	<	0.000760
M	As	<	0.004600	M	Ga	<	0.000760	M	Nd	<	0.000760	M	Sm	<	0.000760				
M	Au	<	0.002300	M	Gd	<	0.000760	O	Ni	<	0.005100	M	Sn	<	0.000760				
O	B		0.003692	M	Ge	<	0.001600	M	Os	<	0.000760	O	Sr	<	0.000610				
M	Ba	<	0.001600	M	Hf	<	0.000760	n	P	<		M	Ta	<	0.000760				
O	Be	<	0.000130	M	Hg	<	0.003100	M	Pb		0.001400	M	Tb	<	0.000760				
M	Bi	<	0.000760	M	Ho	<	0.000760	M	Pd	<	0.001600	M	Te	<	0.000760				
O	Ca		0.004616	s	In	<		M	Pr	<	0.000760	M	Th	<	0.000760				
M	Cd	<	0.000760	M	Ir	<	0.000760	M	Pt	<	0.000760	O	Ti	<	0.001100				
M	Ce	<	0.000760	O	K		0.007078	M	Rb	<	0.000760	M	Tl	<	0.000760				
M	Co	<	0.000760	M	La	<	0.000760	M	Re	<	0.000760	M	Tm	<	0.000760				
O	Cr	<	0.001300	O	Li	<	0.000130	M	Rh	<	0.000760	M	U	<	0.000760				
M	Cs	<	0.000760	M	Lu	<	0.000760	M	Ru	<	0.000760	M	V	<	0.001600				
M	Cu	<	0.003800	O	Mg		0.000707	n	S	<		M	W	<	0.001600				
M	Dy	<	0.000760	O	Mn		0.000149	M	Sb	<	0.000760	M	Y	<	0.000760				
M	Er	<	0.000760	M	Mo	<	0.002300	M	Sc	<	0.000760	M	Yb	<	0.000760				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 114.82 +3 6 In(H2O)6+3

Chemical Compatibility -Soluble in HCl, HNO3, and H2SO4. Avoid neutral and basic media. Stable with most metals and inorganic anions. The oxalate, sulfide, carbonate, hydroxide and phosphate are insoluble in water.

Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO3 / LDPE container.

In Containing Samples (Preparation and Solution) -Metal (Best dissolved in HCl / HNO3); Oxide (Soluble in mineral acids); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (Sulfuric/peroxide digestion or dry ash and dissolution in dilute HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 115 amu	1 ppt	n/a	115Sn, 99Ru16O
ICP-OES 158.583 nm	0.05 / 0.002 µg/mL	1	
ICP-OES 230.606 nm	0.1 / 0.03 µg/mL	1	Ni, Os
ICP-OES 325.609 nm	0.2 / 0.05 µg/mL	1	Mn, Mo, Th

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 21, 2023

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- February 21, 2028

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Sulfuric Acid
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis
Low Selenium

M 6041-46
MG

avantor™ | J.T.Baker®

Material No.: 9673-33
Batch No.: 23D2462010
Manufactured Date: 2023-03-22
Retest Date: 2028-03-20
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
ACS – Assay (H_2SO_4)	95.0 – 98.0 %	96.1 %
Appearance	Passes Test	Passes Test
ACS – Color (APHA)	≤ 10	5
ACS – Residue after Ignition	≤ 3 ppm	< 1 ppm
ACS – Substances Reducing Permanganate (as SO2)	≤ 2 ppm	< 2 ppm
Ammonium (NH_4)	≤ 1 ppm	1 ppm
Chloride (Cl)	≤ 0.1 ppm	< 0.1 ppm
Nitrate (NO_3)	≤ 0.2 ppm	< 0.1 ppm
Phosphate (PO_4)	≤ 0.5 ppm	< 0.1 ppm
Trace Impurities – Aluminum (Al)	≤ 30.0 ppb	< 5.0 ppb
Arsenic and Antimony (as As)	≤ 4.0 ppb	< 2.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	8.5 ppb
Trace Impurities – Cadmium (Cd)	≤ 2.0 ppb	< 0.3 ppb
Trace Impurities – Chromium (Cr)	≤ 6.0 ppb	< 0.4 ppb
Trace Impurities – Cobalt (Co)	≤ 0.5 ppb	< 0.3 ppb
Trace Impurities – Copper (Cu)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Gold (Au)	≤ 10.0 ppb	0.5 ppb
Heavy Metals (as Pb)	≤ 500.0 ppb	< 100.0 ppb
Trace Impurities – Iron (Fe)	≤ 50.0 ppb	1.3 ppb
Trace Impurities – Lead (Pb)	≤ 0.5 ppb	< 0.5 ppb
Trace Impurities – Magnesium (Mg)	≤ 7.0 ppb	0.8 ppb
Trace Impurities – Manganese (Mn)	≤ 1.0 ppb	< 0.4 ppb
Trace Impurities – Mercury (Hg)	≤ 0.5 ppb	< 0.1 ppb
Trace Impurities – Nickel (Ni)	≤ 2.0 ppb	0.3 ppb
Trace Impurities – Potassium (K)	≤ 500.0 ppb	< 2.0 ppb
Trace Impurities – Selenium (Se)	≤ 50.0 ppb	< 0.1 ppb
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	31.5 ppb
Trace Impurities – Silver (Ag)	≤ 1.0 ppb	< 0.3 ppb

>>> Continued on page 2 >>>

Sulfuric Acid
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis
Low Selenium

avantor™ | J.T.Baker®

Material No.: 9673-33
Batch No.: 23D2462010

Test	Specification	Result
Trace Impurities - Sodium (Na)	≤ 500.0 ppb	5.4 ppb
Trace Impurities - Strontium (Sr)	≤ 5.0 ppb	< 0.2 ppb
Trace Impurities - Tin (Sn)	≤ 5.0 ppb	< 0.8 ppb
Trace Impurities - Zinc (Zn)	≤ 5.0 ppb	0.4 ppb

For Laboratory,Research,or Manufacturing Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

James T Ethier

Jamie Ethier
Vice President Global Quality

INORGANIC VENTURES
Refine your results. Redefine your industry.

Certificate of Analysis

R! 08/22/24 M6058, M6059

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inorganicventures.com

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F: 540-585-3012
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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CHEM-CLP-4
Lot Number:	V2-MEB746172
Matrix:	3% (v/v) HNO3 3% (v/v) HF
Value / Analyte(s):	1 000 µg/mL ea: Boron, Molybdenum, Silicon, Tin, Titanium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Boron, B	1 000 ± 5 µg/mL	Molybdenum, Mo	1 000 ± 5 µg/mL
Silicon, Si	1 000 ± 7 µg/mL	Tin, Sn	1 000 ± 5 µg/mL
Titanium, Ti	1 000 ± 6 µg/mL		

Density: 1.032 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
B	ICP Assay	3107	190605
B	Calculated		See Sec. 4.2
Mo	ICP Assay	traceable to 3134	U2-MO739068
Si	ICP Assay	Traceable to 3150	S2-SI702546
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	traceable to 3162a	T2-TI725816

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

August 12, 2024

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- August 12, 2029

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Joseph Burns
Custom VS Manager

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

INORGANIC VENTURES™
Refine your results. Redefine your industry.

Certificate of Analysis

M6074
M6075
M6076
M6077

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EXP.: 9/6/2029

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CHEM-CLP-4
Lot Number:	V2-MEB746762
Matrix:	3% (v/v) HNO3 3% (v/v) HF
Value / Analyte(s):	1 000 µg/mL ea: Boron, Molybdenum, Silicon, Tin, Titanium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Boron, B	1 000 ± 5 µg/mL	Molybdenum, Mo	1 000 ± 5 µg/mL
Silicon, Si	1 000 ± 7 µg/mL	Tin, Sn	1 000 ± 5 µg/mL
Titanium, Ti	1 000 ± 6 µg/mL		

Density: 1.033 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
B	ICP Assay	3107	190605
B	Calculated		See Sec. 4.2
Mo	ICP Assay	traceable to 3134	U2-MO739068
Si	ICP Assay	Traceable to 3150	S2-SI702546
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	traceable to 3162a	T2-TI725816

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 06, 2024

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- September 06, 2029

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Joseph Burns
Custom VS Manager

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

R -> 11/12/24

M6126

Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO_3)	69.0 - 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	1 ppm
Chloride (Cl)	≤ 0.08 ppm	< 0.03 ppm
Phosphate (PO_4)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO_4)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities - Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities - Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Bismuth (Bi)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Boron (B)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities - Calcium (Ca)	≤ 50.0 ppb	2.3 ppb
Trace Impurities - Chromium (Cr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities - Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Germanium (Ge)	≤ 20 ppb	< 10 ppb
Trace Impurities - Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 100 ppb	100 ppb
Trace Impurities - Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities - Lead (Pb)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities - Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result

For Microelectronic Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Jamie Croak
Director Quality Operations, Bioscience Production

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT:

R->1/13/25
M6128

Part Number:	**58025**	**Solvent:**	**Lot #** 24002546	Nitric Acid
Lot Number:	**101124**			
Description:	**Manganese (Mn)**	2%	80.0 (mL)	Nitric Acid
Expiration Date:	101127			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Weight shown below was diluted to (mL):	4000.2	0.10	Flask Uncertainty	

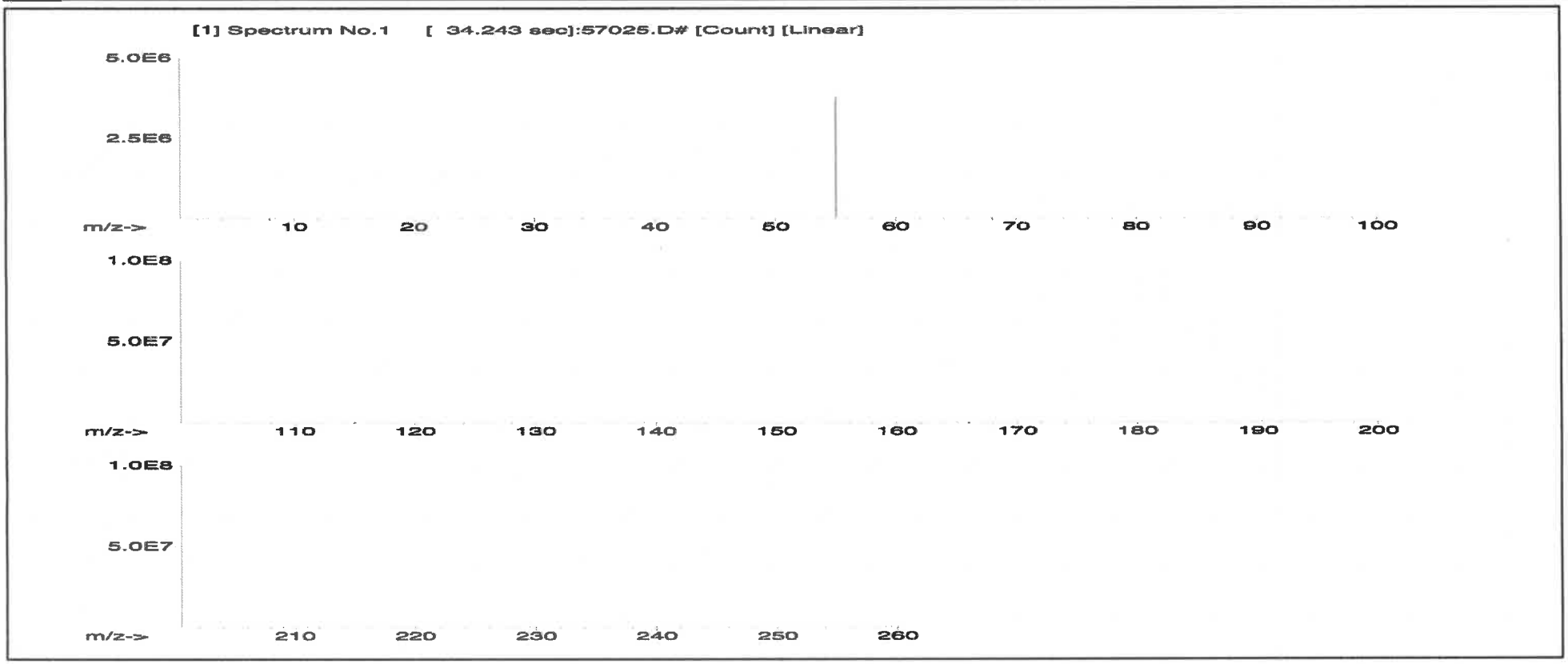
Giovanni Esposito

Formulated By:	Giovanni Esposito	101124

Pedro Rentas

Reviewed By:	Pedro L. Rentas	101124

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	**Actual Conc. (µg/mL)**	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Manganese(II) nitrate hydrate (Mn)	IN031	MNM092020A1	1000	99.999	0.10	20.8	19.2322	19.2344	**1000.1**	**2.0**	15710-66-4	5 mg/m3	orl-rat >300mg/kg	3132



Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	T	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

INORGANIC VENTURES
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

M6137 R→10/3/24

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGSI1
Lot Number:	V2-SI744713
Matrix:	tr. HNO3 tr. HF
Value / Analyte(s):	1 000 µg/mL ea: Silicon
Starting Material:	Silica
Starting Material Lot#:	1771
Starting Material Purity:	99.9981%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 999 ± 6 µg/mL

Density: 1.003 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **999 ± 5 µg/mL**
ICP Assay NIST SRM Traceable to 3150 Lot Number: S2-SI702546

Assay Method #2 **1000 ± 7 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000310	M	Eu	<	0.000310	O	Na		0.001656	M	Se	<	0.022000	M	Zn	<	0.002500
M	Al		0.010787	M	Fe	<	0.027000	M	Nb	<	0.001300	s	Si	<		O	Zr	<	0.001900
M	As	<	0.001900	M	Ga	<	0.001300	M	Nd	<	0.000310	M	Sm	<	0.000310				
M	Au	<	0.000910	M	Gd	<	0.000310	M	Ni	<	0.005500	M	Sn		0.000096				
M	B		0.016180	M	Ge	<	0.001900	M	Os	<	0.000610	O	Sr		0.000092				
M	Ba		0.000096	M	Hf		0.000423	i	P	<		M	Ta		0.002542				
O	Be	<	0.000570	M	Hg	<	0.000610	M	Pb	<	0.000310	M	Tb	<	0.000310				
M	Bi	<	0.000310	M	Ho	<	0.000610	M	Pd	<	0.000610	M	Te	<	0.000910				
O	Ca		0.011557	M	In	<	0.000310	M	Pr	<	0.000310	M	Th	<	0.001900				
M	Cd	<	0.000310	M	Ir	<	0.000310	M	Pt	<	0.000310	M	Ti		0.001078				
M	Ce	<	0.000610	O	K		0.000577	M	Rb	<	0.009100	M	Tl	<	0.000310				
M	Co	<	0.001600	M	La	<	0.000310	M	Re	<	0.000310	M	Tm	<	0.000310				
M	Cr	<	0.010000	O	Li	<	0.000460	M	Rh	<	0.000310	M	U	<	0.000310				
M	Cs	<	0.000310	M	Lu	<	0.000310	M	Ru	<	0.000310	O	V	<	0.001300				
M	Cu	<	0.002500	O	Mg		0.001348	O	S	<	0.570000	M	W	<	0.001900				
M	Dy	<	0.000310	M	Mn	<	0.002500	M	Sb	<	0.000310	M	Y	<	0.000310				
M	Er	<	0.000310	M	Mo	<	0.000310	O	Sc	<	0.000590	M	Yb	<	0.000310				

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 - 28.09 +4 6 Si(OH)x(F)y2-

Chemical Compatibility -Soluble in HCl, HF, H3PO4 H2SO4 and HNO3 as the Si(OH)x(F)y2-. Avoid neutral to basic media. Unstable at ppm levels with metals that would pull F- away (i.e. Do not mix with Alkaline or Rare Earths, or high levels of transition elements unless they are fluorinated. Stable with most inorganic anions with a tendency to hydrolyze forming silicic acid (silicic acid is soluble up to ∼100 ppm in water) in all dilute acids except HF.

Stability - 2-100 ppb levels - stability unknown - (alone or mixed with all other metals) as the Si(OH)x(F)y2-. 1-10,000 ppm single element solutions as the Si(OH)x(F)y2- chemically stable for years in 2-5 % HNO3 / trace HF in a LDPE container.

Si Containing Samples (Preparation and Solution) -Metal (Soluble in 1:1:1 H2O / HF / HNO3); Oxide - SiO2, amorphic (dissolve by heating in 1:1:1 H2O / HF / HNO3); Oxide - quartz (fuse in Pt0 with Na2CO3); Geological Samples(fuse in Pt0with Na2CO3 followed by HCl solution of the fuseate); Organic Matrices containing silicates and non volatile silicon compounds (dry ash at 4500C in Pt0 and dissolve by gently warming with 1:1:1 H2O / HF / H2SO4 or fuse / ash with Na2CO3 and dissolve fuseate with HCl / H2O); Silicone Oils - dimethyl silicones depolymerize to form volatile monomer units when heated (Measure directly in alcoholic KOH / xylene mixture where sample is treated first with the KOH at 60-1000C to "unzip" the Si- O-Si polymeric structure or digest with conc. H2SO4 / H2O2 followed by cooling and dissolution of the dehydrated silica with HF.) Note that the direct analysis of silicone oils in an organic solvent will result in false high results due to high vapor pressure of volatile monomer units like hexamethylcyclotrisiloxane. The KOH forms the K2+Si(CH3)2O= salt which is not volatile at room temperature.

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 28 amu	4000 - 8000 ppt	N/A	N2, 12C16O
ICP-OES 212.412 nm	0.02/0.01 µg/mL	1	Hf, Os, Mo, Ta
ICP-OES 251.611 nm	0.012/0.003 µg/mL	1	Ta, U, Zn, Th
ICP-OES 288.158 nm	0.03/0.004 µg/mL	1	Ta, Ce, Cr, Cd, Th

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

July 10, 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

- **July 10, 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

R : 4/20/21

QATS LABORATORY INORGANIC REFERENCE MATERIAL INITIAL CALIBRATION VERIFICATION SOLUTIONS (ICV1, ICV5, AND ICV6)

M6150

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.

Contains Metals in Dilute Acidic or Cyanide in Basic Aqueous Solutions
HAZARDOUS MATERIAL

Safety Data Sheets Available Upon Request

(A) *SAMPLE DESCRIPTION*

Enclosed is a set of one (1) or more Aqueous Inorganic Reference Materials containing various analyte concentrations. ICV1 and ICV5 are in a matrix of dilute nitric acid. ICV6 is in a matrix of dilute basic solution. **For the reference material source in reporting ICVs use "USEPA". For the reference material lot number for the ICV1, ICV5, and ICV6 solutions use "ICV1-1014", "ICV5-0415", and "ICV6-0400", respectively.**

(B) *BREAKAGE OR MISSING ITEMS*

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) *ANALYSIS OF SAMPLES*

The Initial Calibration Verification Solutions (ICVs) are to be used to evaluate the accuracy of the initial calibrations of ICP, AA, and Cyanide colorimetric instruments, and are to be used with the CLP SOWs and revisions. The values for each element in the ICVs are listed below in µg/L (ppb) for the resulting solution(s) after the dilution of the concentrate(s) according to the following instructions. Use Class 'A' glassware to prepare the solution(s).

ICV1-1014 For ICP-AES analysis, use a 10-fold dilution by pipetting 10 mL of the ICV1 concentrate into a 100 mL volumetric flask and dilute to volume with 2% (v/v) nitric acid.

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

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

avantor™ | J.T.Baker®

M6151

R→ 1/15/25

Material No.: 9530-33
Batch No.: 22G2862015
Manufactured Date: 2022-06-15
Retest Date: 2027-06-14
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
ACS – Assay (as HCl) (by acid-base titrn)	36.5 – 38.0 %	37.9 %
ACS – Color (APHA)	≤ 10	5
ACS – Residue after Ignition	≤ 3 ppm	< 1 ppm
ACS – Specific Gravity at 60°/60°F	1.185 – 1.192	1.191
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	1.3 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 3.0 ppb
Trace Impurities – Barium (Ba)	≤ 1.0 ppb	0.2 ppb
Trace Impurities – Beryllium (Be)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Bismuth (Bi)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 20.0 ppb	< 5.0 ppb
Trace Impurities – Cadmium (Cd)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	163.0 ppb
Trace Impurities – Chromium (Cr)	≤ 1.0 ppb	0.7 ppb
Trace Impurities – Cobalt (Co)	≤ 1.0 ppb	< 0.3 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	0.6 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 15 ppb	6 ppb

>>> Continued on page 2 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

avantor™ | J.T.Baker®

Material No.: 9530-33
Batch No.: 22G2862015

Test	Specification	Result
Trace Impurities – Lead (Pb)	≤ 1.0 ppb	< 0.5 ppb
Trace Impurities – Lithium (Li)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Magnesium (Mg)	≤ 10.0 ppb	2.9 ppb
Trace Impurities – Manganese (Mn)	≤ 1.0 ppb	< 0.4 ppb
Trace Impurities – Mercury (Hg)	≤ 0.5 ppb	0.1 ppb
Trace Impurities – Molybdenum (Mo)	≤ 10.0 ppb	< 3.0 ppb
Trace Impurities – Nickel (Ni)	≤ 4.0 ppb	< 0.3 ppb
Trace Impurities – Niobium (Nb)	≤ 1.0 ppb	0.8 ppb
Trace Impurities – Potassium (K)	≤ 9.0 ppb	< 2.0 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	0.5 ppb
Trace Impurities – Sodium (Na)	≤ 100.0 ppb	2.3 ppb
Trace Impurities – Strontium (Sr)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Tantalum (Ta)	≤ 1.0 ppb	1.6 ppb
Trace Impurities – Thallium (Tl)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Tin (Sn)	≤ 5.0 ppb	4.0 ppb
Trace Impurities – Titanium (Ti)	≤ 1.0 ppb	1.5 ppb
Trace Impurities – Vanadium (V)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Zinc (Zn)	≤ 5.0 ppb	0.8 ppb
Trace Impurities – Zirconium (Zr)	≤ 1.0 ppb	0.3 ppb

>>> Continued on page 3 >>>

Hydrochloric Acid, 36.5-38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

avantor™ | J.T.Baker®

Material No.: 9530-33
Batch No.: 22G2862015

Test	Specification	Result

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

James T Ethier

Jamie Ethier
Vice President Global Quality

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

M6156

Certified Reference Material CRM

R→ 6/12/24

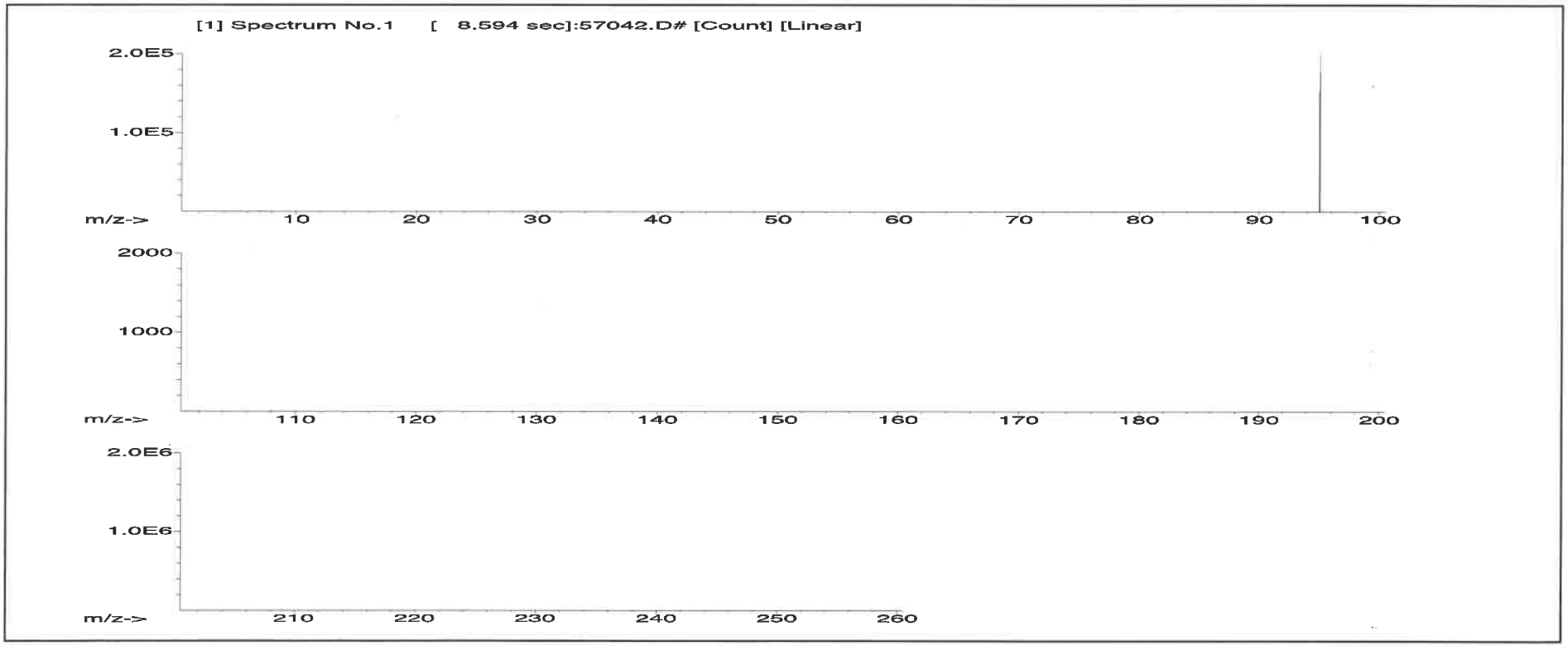
ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:
Part Number:	**57042**	MKBQ8597V	Ammonium hydroxide
Lot Number:	**032123**		
Description:	**Molybdenum (Mo)**		
		0.5%	15.0 (mL) Ammonium hydroxide
Expiration Date:	032126		
Recommended Storage:	Ambient (20 °C)		
Nominal Concentration (µg/mL):	**1000**		
NIST Test Number:	6UTB	5E-05	Balance Uncertainty
Volume shown below was diluted to (mL):	3000.41	0.058	Flask Uncertainty

Formulated By:	Lawrence Barry 032123
Reviewed By:	Pedro L. Rentas 032123

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium molybdate (Mo)	58142	112322	0.1000	300.0	0.084	1000	10001.4	**1000.0**	**2.1**	13106-76-8	5 mg(Mo)/m3	orl-rat 333 mg/kg	3134



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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<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:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

Nitric Acid 69%
CMOS

R-02102/2025

M-6158

Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO_3)	69.0 - 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	1 ppm
Chloride (Cl)	≤ 0.08 ppm	< 0.03 ppm
Phosphate (PO_4)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO_4)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities - Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities - Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Bismuth (Bi)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Boron (B)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities - Calcium (Ca)	≤ 50.0 ppb	2.3 ppb
Trace Impurities - Chromium (Cr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities - Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Germanium (Ge)	≤ 20 ppb	< 10 ppb
Trace Impurities - Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 100 ppb	100 ppb
Trace Impurities - Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities - Lead (Pb)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities - Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
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™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result

For Microelectronic Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Jamie Croak
Director Quality Operations, Biosciences Production

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M6030

R: 8/5/24

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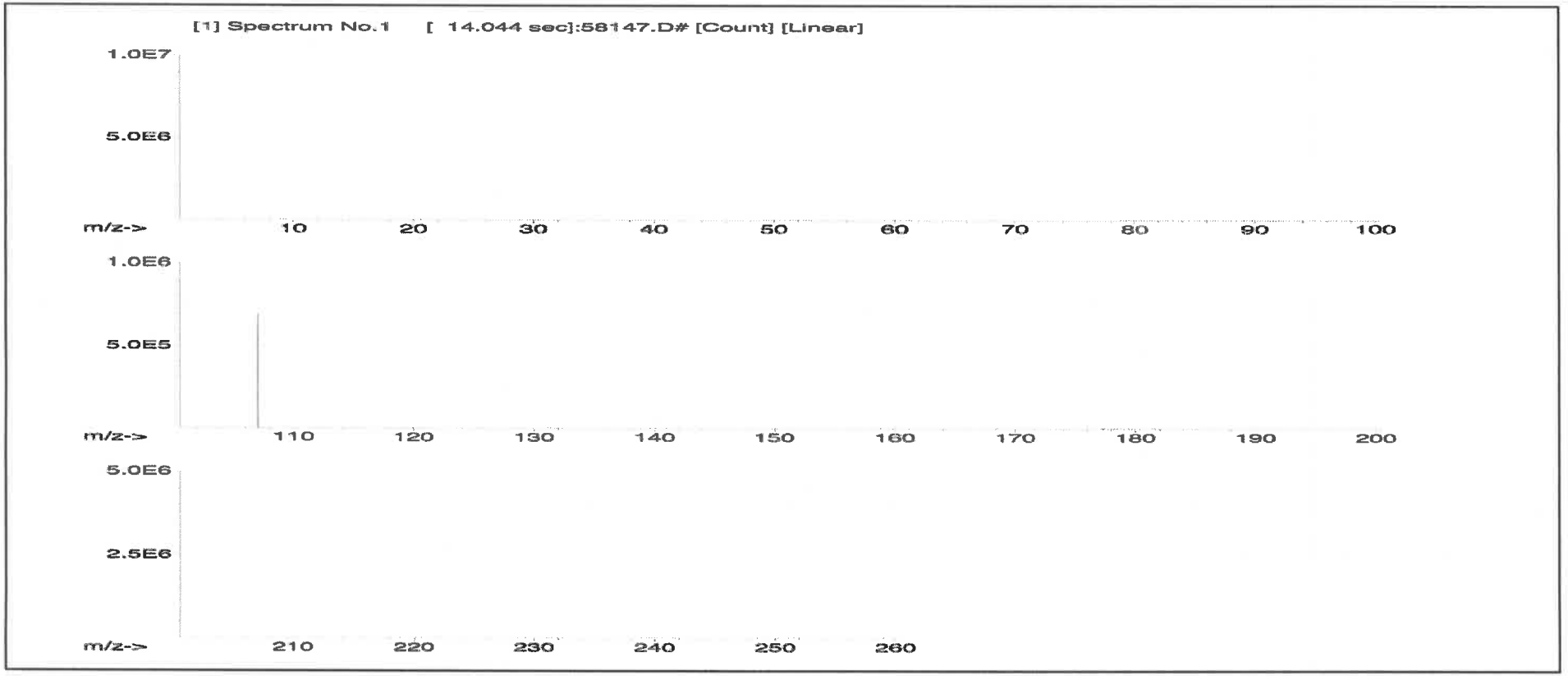
CERTIFIED WEIGHT REPORT:

Part Number:	**57047**		**Solvent:**	24002546	Nitric Acid
Lot Number:	**122823**				
Description:	**Silver (Ag)**		2%	80.0 (mL)	Nitric Acid
Expiration Date:	122826				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	4000.30	0.058	Flask Uncertainty		

Lot #

Formulated By:	Benson Chan	122823
Reviewed By:	Pedro L. Rentas	122823

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Silver nitrate (Ag)	IN035	J0612AGA1	1000.0	99.9999	0.10	63.7	6.27992	6.27998	**1000.0**	**2.0**	7761-88-8	10 ug/m3	NA	3151



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ANAB ISO 17034 Accredited
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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	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 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

R : 04/20/21

APTIM

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
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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.

M6152

Contains Heavy Metals
HAZARDOUS MATERIAL

Safety Data Sheets
Available Upon Request

(A) *SAMPLE DESCRIPTION*

Enclosed is a set of one (1) or more bottles of Aqueous Reference Material, each composed of metals at various concentrations and prepared with nitrate salts and oxy-acids of the respective elements in a 5% nitric acid matrix. **For the reference material source in reporting ICSA and ICSAB mixture use "USEPA". For the reference material lot number for the ICSA use "ICSA-1211" and for the ICSAB mixture use "ICSA-1211+ICSB-0710".**

CAUTION: The bottle(s) should be protected from light during storage to ensure the stability of silver which is contained in the ICSB solution. The bottle(s) should be stored at room temperature. **Do not allow the solution(s) to freeze.**

(B) *BREAKAGE OR MISSING ITEMS*

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) *ANALYSIS OF SAMPLES*

The interference check sample set is to be used to verify inter-element and background correction factors of inductively-coupled plasma (ICP) spectrometers. This reference material set consists of two (2) concentrated solutions. The ICSA solution contains the four (4) interferent elements: Al, Ca, Fe, and Mg. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be,

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSAB solution by ICP-AES.

(D) *"CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)*

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.

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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.

M6155

Contains Heavy Metals
HAZARDOUS MATERIAL

Safety Data Sheets
Available Upon Request

(A) *SAMPLE DESCRIPTION*

Enclosed is a set of one (1) or more bottles of Aqueous Reference Material, each composed of metals at various concentrations and prepared with nitrate salts and oxy-acids of the respective elements in a 5% nitric acid matrix. **For the reference material source in reporting ICSA and ICSAB mixture use "USEPA". For the reference material lot number for the ICSA use "ICSA-1211" and for the ICSAB mixture use "ICSA-1211+ICSB-0710".**

CAUTION: The bottle(s) should be protected from light during storage to ensure the stability of silver which is contained in the ICSB solution. The bottle(s) should be stored at room temperature. **Do not allow the solution(s) to freeze.**

(B) *BREAKAGE OR MISSING ITEMS*

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) *ANALYSIS OF SAMPLES*

The interference check sample set is to be used to verify inter-element and background correction factors of inductively-coupled plasma (ICP) spectrometers. This reference material set consists of two (2) concentrated solutions. The ICSA solution contains the four (4) interferent elements: Al, Ca, Fe, and Mg. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be,

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSAB solution by ICP-AES.

(D) *"CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)*

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.

opened : 3/24/25

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CERTIFIED WEIGHT REPORT: M6160

Part Number: 57051
Lot Number: 071724
Description: Antimony (Sb)

Expiration Date: 071727
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 2000.26

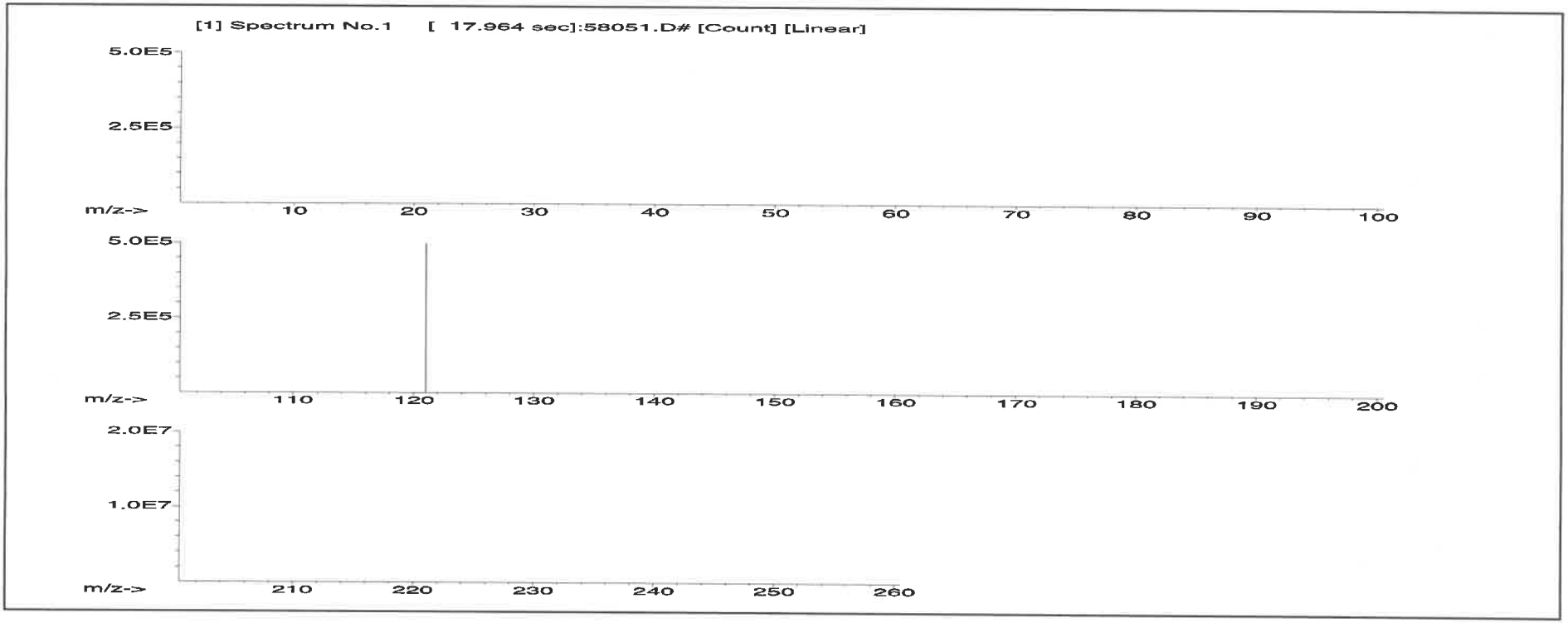
Lot #	Solvent:		
24002546	Nitric Acid		
2.0%	40.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Giovanni Esposito
Formulated By: Giovanni Esposito 071724

Pedro Rentas
Reviewed By: Pedro L. Rentas 071724

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Antimony (Sb)	58151	060324	0.1000	200.0	0.084	1000	10001.4	**1000.0**	**2.2**	7440-36-0	0.5 mg/m3	orl-rat 7000 mg/kg	3102a



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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	T	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
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* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

INORGANIC VENTURES™
Refine your results. Redefine your industry.

Certificate of Analysis

R: 8/5/24 M6019

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 888.01 ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGSR1
Lot Number:	U2-SR730227
Matrix:	0.1% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Strontium
Starting Material:	SrCO3
Starting Material Lot#:	M2-2192
Starting Material Purity:	99.9993%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1001 ± 3 µg/mL

Density: 1.000 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **998 ± 4 µg/mL**
ICP Assay NIST SRM Traceable to 3153a Lot Number: K2-SR650985

Assay Method #2 **1001 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #3 **1001 ± 2 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.001980	M	Eu	<	0.000495	O	Na		0.000200	M	Se	<	0.013862	O	Zn		0.000143
O	Al		0.000370	O	Fe		0.000410	M	Nb	<	0.000495	i	Si	<		M	Zr	<	0.000495
M	As	<	0.000495	M	Ga	<	0.000495	M	Nd	<	0.000495	M	Sm	<	0.000495				
M	Au	<	0.000989	M	Gd	<	0.000495	O	Ni	<	0.007631	M	Sn	<	0.000990				
M	B	<	0.039606	M	Ge	<	0.000495	M	Os	<	0.000494	s	Sr	<					
M	Ba		0.006486	M	Hf	<	0.000495	i	P	<		M	Ta	<	0.000495				
M	Be	<	0.000990	M	Hg	<	0.000989	M	Pb	<	0.002970	M	Tb	<	0.000495				
M	Bi	<	0.000495	M	Ho	<	0.000495	M	Pd	<	0.003957	M	Te	<	0.027724				
O	Ca		0.004255	M	In	<	0.000495	M	Pr	<	0.000495	M	Th	<	0.000990				
M	Cd		0.001339	M	Ir	<	0.000494	M	Pt	<	0.002970	M	Ti	<	0.005940				
M	Ce	<	0.004950	O	K	<	0.008184	M	Rb	<	0.002970	M	Tl	<	0.000495				
M	Co	<	0.000495	M	La	<	0.000495	M	Re	<	0.000495	M	Tm	<	0.000495				
O	Cr	<	0.003207	O	Li	<	0.000884	O	Rh	<	0.012829	M	U	<	0.001485				
M	Cs	<	0.000990	M	Lu	<	0.002970	M	Ru	<	0.000989	M	V	<	0.001980				
M	Cu		0.000099	O	Mg		0.000064	i	S	<		M	W	<	0.003960				
M	Dy	<	0.000495	O	Mn		0.000066	M	Sb	<	0.014852	O	Y	<	0.000995				
M	Er	<	0.000495	M	Mo	<	0.001980	M	Sc	<	0.001980	M	Yb	<	0.000495				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 87.62 +2 6 $Sr(H_2O)_{6}^{+2}$

Chemical Compatibility - Soluble in HCl, and HNO_3. Avoid H_2SO_4, HF and neutral to basic media. Stable with most metals and inorganic anions forming insoluble silicate, carbonate, hydroxide, oxide, fluoride, sulfate, oxalate, chromate, arsenate and tungstate in neutral aqueous media.

Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1 - 3.5% HNO_3 / LDPE container.

Sr Containing Samples (Preparation and Solution) -Metal (Best dissolved in diluted HNO_3); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (Dry ash and dissolution in dilute HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 88 amu	1200 ppt	N/A	72Ge16O, 176Yb+2, 176Lu+2 , 176Hf+2
ICP-OES 407.771 nm	0.0004 / 0.00006 µg/mL	1	U, Ce
ICP-OES 421.552 nm	0.0008 / 0.00004 µg/mL	1	Rb
ICP-OES 460.733 nm	0.07 / 0.003 µg/mL	1	Ce

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 03, 2023

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **March 03, 2028**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

M6023

R ! 8/5/24

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

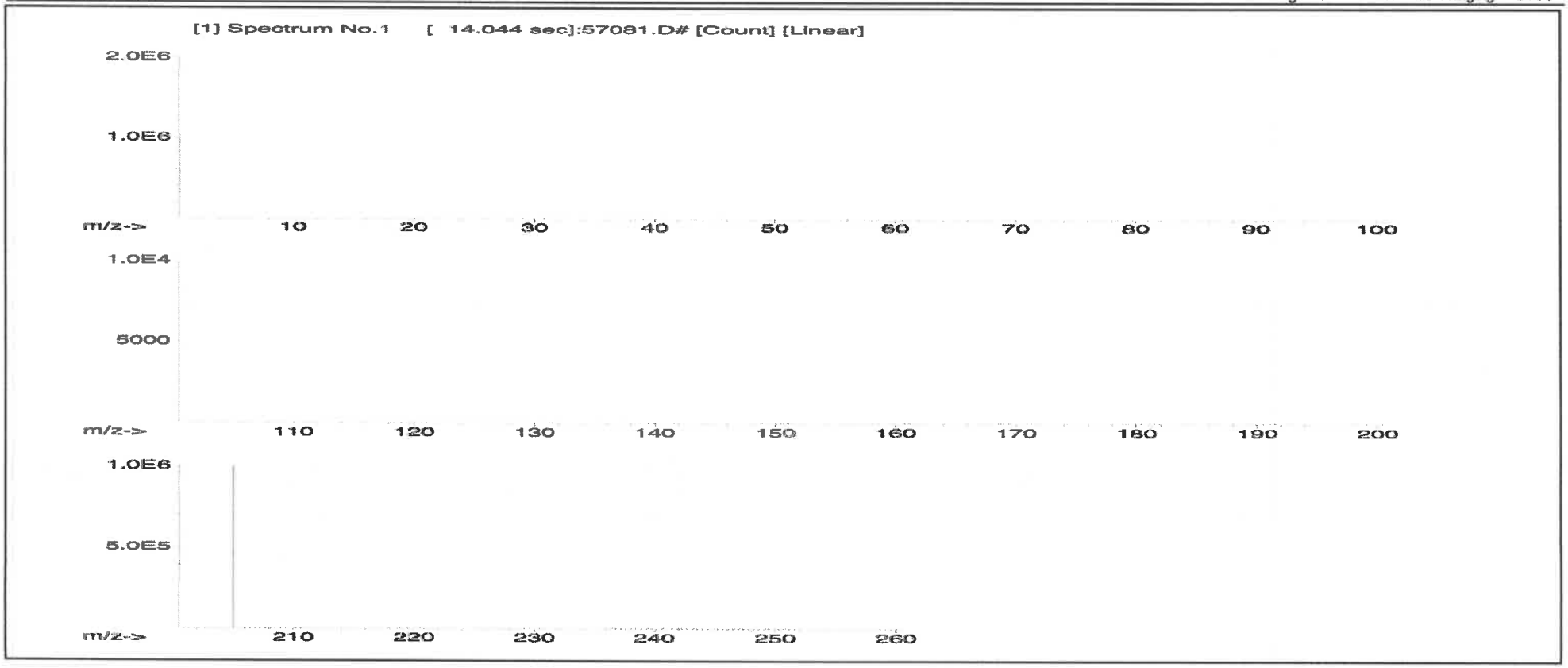
CERTIFIED WEIGHT REPORT:

Part Number:	**57081**			**Lot #**	
Lot Number:	**062724**		**Solvent:**	24002546	Nitric Acid
Description:	**Thallium (Tl)**		2%	40.0 (mL)	Nitric Acid
Expiration Date:	062727				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.1	0.10	Flask Uncertainty		

Aleah O'Brady

Formulated By:	Aleah O'Brady	062724
Reviewed By:	Pedro L. Rentas	062724

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Thallium nitrate (Tl)	IN037	BCCF4399	1000	99.999	0.10	77.0	2.5975	2.5977	**1000.1**	**2.0**	10102-45-1	0.1 mg/m3	orl-mus 15mg/kg	3158



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www.absolutestandards.com

Certified Reference Material CRM

ANAB ISO 17034 Accredited
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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	T	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

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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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Certified Reference Material CRM

M6021

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

Rc. 8/5/24

CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57023**			
Lot Number:	**062424**	24002546	Nitric Acid	
Description:	**Vanadium (V)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	062427			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.3	0.06	Flask Uncertainty	

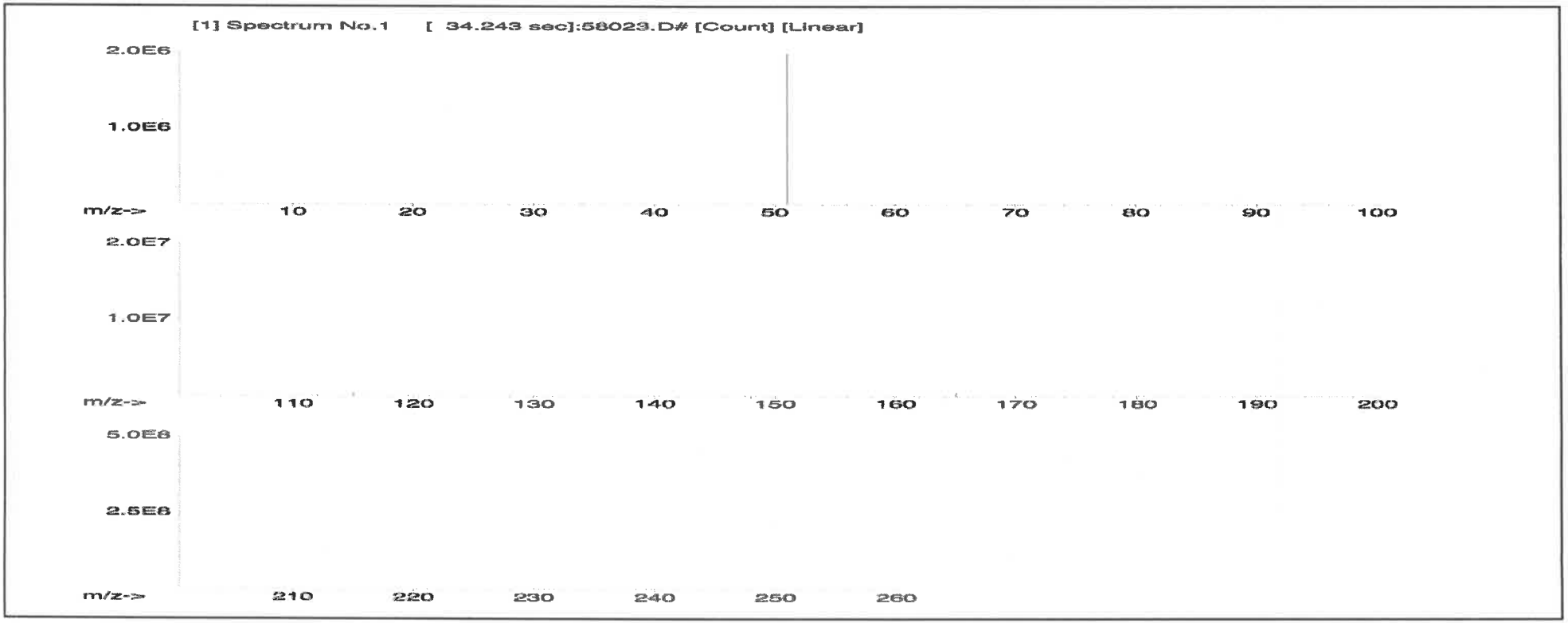
Aleah O'Brady

Formulated By:	Aleah O'Brady	062424

Pedro Rentas

Reviewed By:	Pedro L. Rentas	062424

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium metavanadate (V)	58123	021224	0.1000	200.0	0.084	1000	10000.3	**1000.0**	**2.2**	7803-55-6	0.05 mg/m3	orl-rat 58.1mg/kg	3165



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

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Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	T
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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SHIPPING DOCUMENTS

Alliance TECHNICAL GROUP

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 • Fax (908) 789-8922
www.chemtech.net

ALLIANCE PROJECT NO.
QUOTE NO. Q1739
COC Number 2045994

CLIENT INFORMATION

REPORT TO BE SENT TO:
COMPANY: Parsons
ADDRESS: 301 Plainfied Rd
CITY Syracuse STATE: NY ZIP: 13212
ATTENTION: Stephen Liberatore
PHONE: 315-552-9738 FAX:

CLIENT PROJECT INFORMATION

PROJECT NAME: Con Ed 11th Ave
PROJECT NO.: LOCATION: 11th Ave New York, NY
PROJECT MANAGER: Stephen Liberatore
e-mail: Stephen.Liberatore@parsons.com
PHONE: FAX:

CLIENT BILLING INFORMATION

BILL TO: Parsons PO#: 454053
ADDRESS: 301 Plainfied Road
CITY Syracuse STATE: NY ZIP: 13212
ATTENTION: Stephen Liberatore PHONE: 315-552-9738

DATA TURNAROUND INFORMATION

FAX (RUSH) 5-day rush DAYS*
HARDCOPY (DATA PACKAGE): 5-day rush DAYS*
EDD: 5-day rus DAYS*
*TO BE APPROVED BY CHEMTECH
STANDARD HARDCOPY TURNAROUND TIME IS 10 BUSINESS

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 + Raw Data) ☐ NYS ASP A ☐ NYS ASP B
☐ Other
☐ EDD FORMAT

ANALYSIS

1 TPH
2 TCLP Pesticide/Herbicide
3 Flash Point/TCLP VOA
4 SVOC-TCL BNA-20/PCB
5 TCLP BNA/Extraction
6 pH Reactive Cyanide/Sulfide
7 VOC-TCL VOA-10/
8 Mercury Metals TCP-TAL
9 TCLP ICP Metals/Mercury

ALLIANCE SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# OF BOTTLES	PRESERVATIVES H2SO4 1	ICE 2	ICE 3	E 4	E 5	E 6	HCl 7	HNO3 8	ICE 9	COMMENTS
1.	WC-Liquid_20250404	L	X		4/4/25	0940	16	X	X	X	X	X	X	X	X	X	
2.																	
3.																	
4.																	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

← Specify Preservatives
A-HCl D-NaOH
B-HN03 E-ICE
C-H2SO4 F-OTHER

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE/TIME:	RECEIVED BY:
1. Francine Phillips	1400 4/4/25	1 1460 4-4-25
2.		2.
3.	1630 4-4-25	3.

Conditions of bottles or coolers at receipt: ☐ COMPLIANT ☐ NON COMPLIANT ☐ COOLER TEMP 2.4 °C
Comments: Include kirstenovalentini@parsons.com

Temp 2.4 C Adjustment Factor +1 IR Gun #1

Page 1 of 1
CLIENT: ☐ Hand Delivered ☐ Other
Shipment Complete ☐ YES ☐ NO

WHITE - ALLIANCE COPY FOR RETURN TO CLIENT YELLOW - ALLIANCE COPY PINK - SAMPLER COPY

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 (ANAB)	L2219
Maine	2024021
Maryland	296
New Hampshire	255424 Rev 1
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

Order ID : Q1739 PARS02
Client Name : PARSONS Engineering of N
Client Contact : Stephen Liberatore
Invoice Name : PARSONS Engineering of N
Invoice Contact : Stephen Liberatore

Order Date : 4/4/2025 2:08:31 PM
Project Name : Con Edison - 11th Ave-Wes
Receive DateTime : 4/4/2025 ~~12:00:00 AM~~
Purchase Order : 04:30 PM

yg
04/11/25

Project Mgr :
Report Type : ~~Results Only~~ Level 4
EDD Type : Excel NY
Hard Copy Date :
Date Signoff :

LAB ID	CLIENT ID	MATRIX	SAMPLE DATE	SAMPLE TIME	TEST	TEST GROUP	METHOD	FAX DATE	DUE DATES
Q1739-01	WC-LIQUID-20250404	Water	04/04/2025	09:40					
					VOC-TCLVOA-10		8260D	10 Bus. Days	

Relinguished By :
Date / Time : 4/7/25 0915

Received By :
Date / Time : 4/7/25 09:15

Storage Area : VOA Refridgerator Room