

DATA PACKAGE

METALS

PROJECT NAME : NJ SOIL PT

ALLIANCE TECHNICAL GROUP, LLC - NEWARK

284 Sheffiled Stree

Suite 1

Mountainside, NJ - 07092

Phone No: 908-789-8900

ORDER ID : Q3483

ATTENTION : Mohammad Ahmed



Laboratory Certification ID # 20012



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Cover Page

Order ID : Q3483

Project ID : NJ Soil PT

Client : Alliance Technical Group, LLC - Newark

Lab Sample Number

Q3483-01
Q3483-02
Q3483-03
Q3483-04
Q3483-05
Q3483-06
Q3483-07
Q3483-08
Q3483-09
Q3483-10
Q3483-11
Q3483-12
Q3483-13
Q3483-14
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Q3483-18
Q3483-19
Q3483-20
Q3483-21
Q3483-22
Q3483-23
Q3483-24
Q3483-25

Client Sample Number

HW1025-PT-AN-SOIL
HW1025-PT-CORR-SOIL
HW1025-PT-CN-SOIL
HW1025-PT-CN-SOIL
HW1025-PT-FP-SOIL
HW1025-PT-CR6-SOIL
HW1025-PT-NUT-SOIL
HW1025-PT-NUT-SOIL
HW1025-PT-OGR-SOIL
HW1025-PT-MET-SOIL
HW1025-PT-BNA-SOIL
HW1025-PT-TRIAZINE-SOIL
HW1025-PT-PAH-SOIL
HW1025-PT-DIES-SOIL
HW1025-PT-GAS-SOIL
HW1025-PT-NJEPH-SOIL
HW1025-PT-HERB-SOIL
HW1025-PT-PCB-SOIL
HW1025-PT-PCBO-SOIL
HW1025-PT-PEST-SOIL
HW1025-PT-CHLOR-SOIL
HW1025-PT-TXP-SOIL
HW1025-PT-VOA-SOIL
HW1025-PT-SOL-SOIL
HW1025-PT-NO2-SOIL

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Signature : _____

Date: 12/16/2025

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012



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

CASE NARRATIVE

Alliance Technical Group, LLC - Newark

Project Name: NJ Soil PT

Project # N/A

Order ID # Q3483

Test Name: Mercury, Metals ICP-Group1

A. Number of Samples and Date of Receipt:

25 Solid samples were received on 10/29/2025.

B. Parameters:

According to the Chain of Custody document, the following analyses were requested: Mercury, Metals ICP-Group1. This data package contains results for Mercury, Metals ICP-Group1.

C. Analytical Techniques:

The analysis of Metals ICP-Group1 was based on method 6010D, digestion based on method 3050 (soils). The analysis and digestion of Mercury was based on method 7471B.

D. QA/ QC Samples:

The Holding Times were met for all analysis.

Sample HW1025-PT-MET-SOIL was diluted due to high concentrations for Mercury.

The Blank Spike met requirements for all compounds.

The Duplicate analysis met criteria for all compounds.

The Matrix Spike analysis met criteria for all compounds.

The Matrix Spike Duplicate analysis met criteria for all compounds.

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_____

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

ORDER ID: Q3483

MATRIX: Solid

METHOD: 6010D,7471B

	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.			
7. Sample Duplicate Analysis Met QC Criteria			✓
If not met, list those compounds and their recoveries which fall outside the acceptable range.			
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_____
Date

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: Q3483

Completed

For thorough review, the report must have the following:

GENERAL:

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

✓

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

✓

Is the chain of custody signed and complete

✓

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

✓

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

✓

COVER PAGE:

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

✓

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

✓

CHAIN OF CUSTODY:

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

✓

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

✓

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

✓

Were the samples received within hold time

✓

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

✓

ANALYTICAL:

Was method requirement followed?

✓

Was client requirement followed?

✓

Does the case narrative summarize all QC failure?

✓

All runlogs and manual integration are reviewed for requirements

✓

All manual calculations and /or hand notations verified

✓

QA Review Signature: SOHIL JODHANI

Date: 12/16/2025

LAB CHRONICLE

OrderID:	Q3483	OrderDate:	10/29/2025 2:32:00 PM
Client:	Alliance Technical Group, LLC - Newark	Project:	NJ Soil PT
Contact:	Mohammad Ahmed	Location:	QA Office,VOA Lab

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
Q3483-10	HW1025-PT-MET-SOIL	SOIL			10/27/25			10/29/25
	L		Mercury	7471B		11/05/25	11/05/25	
			Metals ICP-Group1	6010D		10/30/25	12/10/25	

Hit Summary Sheet
SW-846

SDG No.: Q3483

Order ID: Q3483

Client: Alliance Technical Group, LLC - Newark

Project ID: NJ Soil PT

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
Client ID : HW1025-PT-MET-SOIL								
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Aluminum	7860		0.73	4.37	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Antimony	18.6		0.19	2.18	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Arsenic	96.6		0.17	0.87	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Barium	283		0.64	4.37	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Beryllium	54.7		0.022	0.26	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Boron	81.0		0.70	4.37	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Cadmium	114		0.021	0.26	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Calcium	8810		9.69	87.3	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Chromium	111		0.041	0.44	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Cobalt	255		0.087	1.31	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Copper	180		0.19	0.87	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Iron	9960		3.48	4.37	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Lead	142		0.11	0.52	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Magnesium	7220		10.5	87.3	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Manganese	151		0.12	0.87	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Mercury	24.7	D	0.36	0.65	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Molybdenum	85.1		0.71	8.73	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Nickel	63.0		0.11	1.75	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Potassium	8640		24.2	87.3	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Selenium	207		0.23	0.87	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Silver	60.2		0.11	0.44	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Sodium	9690		15.5	87.3	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Strontium	52.0		0.22	8.73	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Lithium	156		0.033	0.87	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Thallium	105		0.20	1.75	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Tin	137		0.23	1.75	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Titanium	88.3		0.27	1.75	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Vanadium	82.6		0.22	1.75	mg/Kg
Q3483-10	HW1025-PT-MET-SOIL	SOIL	Zinc	138		0.20	1.75	mg/Kg



SAMPLE DATA

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Report of Analysis

Client: Alliance Technical Group, LLC - Newark
Project: NJ Soil PT
Client Sample ID: HW1025-PT-MET-SOIL
Lab Sample ID: Q3483-10
Level (low/med): low

Date Collected: 10/27/25
Date Received: 10/29/25
SDG No.: Q3483
Matrix: SOIL
% Solid: 100

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7429-90-5	Aluminum	7860		1	0.73	4.37	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-36-0	Antimony	18.6		1	0.19	2.18	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-38-2	Arsenic	96.6		1	0.17	0.87	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-39-3	Barium	283		1	0.64	4.37	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-41-7	Beryllium	54.7		1	0.022	0.26	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-42-8	Boron	81.0		1	0.70	4.37	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-43-9	Cadmium	114		1	0.021	0.26	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-70-2	Calcium	8810		1	9.69	87.3	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-47-3	Chromium	111		1	0.041	0.44	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-48-4	Cobalt	255		1	0.087	1.31	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-50-8	Copper	180		1	0.19	0.87	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7439-89-6	Iron	9960		1	3.48	4.37	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7439-92-1	Lead	142		1	0.11	0.52	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7439-93-2	Lithium	156		1	0.033	0.87	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7439-95-4	Magnesium	7220		1	10.5	87.3	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7439-96-5	Manganese	151		1	0.12	0.87	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7439-97-6	Mercury	24.7	D	50	0.36	0.65	mg/Kg	11/05/25 08:40	11/05/25 12:54	7471B	M7471B
7439-98-7	Molybdenum	85.1		1	0.71	8.73	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-02-0	Nickel	63.0		1	0.11	1.75	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-09-7	Potassium	8640		1	24.2	87.3	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7782-49-2	Selenium	207		1	0.23	0.87	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-22-4	Silver	60.2		1	0.11	0.44	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-23-5	Sodium	9690		1	15.5	87.3	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-24-6	Strontium	52.0		1	0.22	8.73	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-28-0	Thallium	105		1	0.20	1.75	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-31-5	Tin	137		1	0.23	1.75	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-32-6	Titanium	88.3		1	0.27	1.75	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-62-2	Vanadium	82.6		1	0.22	1.75	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050
7440-66-6	Zinc	138		1	0.20	1.75	mg/Kg	10/30/25 10:30	12/10/25 22:17	6010D	SW3050

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: Alliance Technical Group, LLC - Newark
Contract: ALLI03
Initial Calibration Source: EPA
Continuing Calibration Source: PLASMA-PURE

SDG No.: Q3483
Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV99	Mercury	4.14	4.0	104	90 - 110	CV	11/05/2025	10:55	LB137779

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Alliance Technical Group, LLC - Newark
Contract: ALLI03
Initial Calibration Source: EPA
Continuing Calibration Source: PLASMA-PURE

SDG No.: Q3483
Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV28	Mercury	5.11	5.0	102	90 - 110	CV	11/05/2025	11:00	LB137779
CCV29	Mercury	4.99	5.0	100	90 - 110	CV	11/05/2025	11:41	LB137779
CCV30	Mercury	4.89	5.0	98	90 - 110	CV	11/05/2025	12:10	LB137779
CCV31	Mercury	4.99	5.0	100	90 - 110	CV	11/05/2025	12:59	LB137779

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Alliance Technical Group, LLC - Newark
Contract: ALLI03
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

SDG No.: Q3483
Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV01	Aluminum	7870	8000	98	90 - 110	P	12/10/2025	20:58	LB138188
	Antimony	3840	4000	96	90 - 110	P	12/10/2025	20:58	LB138188
	Arsenic	3770	4000	94	90 - 110	P	12/10/2025	20:58	LB138188
	Barium	8100	8000	101	90 - 110	P	12/10/2025	20:58	LB138188
	Beryllium	205	200	102	90 - 110	P	12/10/2025	20:58	LB138188
	Boron	4080	4000	102	90 - 110	P	12/10/2025	20:58	LB138188
	Cadmium	1890	2000	95	90 - 110	P	12/10/2025	20:58	LB138188
	Calcium	19800	20000	99	90 - 110	P	12/10/2025	20:58	LB138188
	Chromium	763	800	95	90 - 110	P	12/10/2025	20:58	LB138188
	Cobalt	1920	2000	96	90 - 110	P	12/10/2025	20:58	LB138188
	Copper	978	1000	98	90 - 110	P	12/10/2025	20:58	LB138188
	Iron	3610	4000	90	90 - 110	P	12/10/2025	20:58	LB138188
	Lead	3760	4000	94	90 - 110	P	12/10/2025	20:58	LB138188
	Lithium	3980	4000	100	90 - 110	P	12/10/2025	20:58	LB138188
	Magnesium	19700	20000	99	90 - 110	P	12/10/2025	20:58	LB138188
	Manganese	2020	2000	101	90 - 110	P	12/10/2025	20:58	LB138188
	Molybdenum	3910	4000	98	90 - 110	P	12/10/2025	20:58	LB138188
	Nickel	1930	2000	96	90 - 110	P	12/10/2025	20:58	LB138188
	Potassium	18000	20000	90	90 - 110	P	12/10/2025	20:58	LB138188
	Selenium	3790	4000	95	90 - 110	P	12/10/2025	20:58	LB138188
	Silver	982	1000	98	90 - 110	P	12/10/2025	20:58	LB138188
	Sodium	18000	20000	90	90 - 110	P	12/10/2025	20:58	LB138188
	Strontium	4150	4000	104	90 - 110	P	12/10/2025	20:58	LB138188
	Thallium	4000	4000	100	90 - 110	P	12/10/2025	20:58	LB138188
	Tin	3850	4000	96	90 - 110	P	12/10/2025	20:58	LB138188
	Titanium	4000	4000	100	90 - 110	P	12/10/2025	20:58	LB138188
	Vanadium	1970	2000	98	90 - 110	P	12/10/2025	20:58	LB138188
	Zinc	1920	2000	96	90 - 110	P	12/10/2025	20:58	LB138188

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

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	Aluminum	116	100	116	80 - 120	P	12/10/2025	21:26	LB138188
	Antimony	52.3	50.0	105	80 - 120	P	12/10/2025	21:26	LB138188
	Arsenic	20.3	20.0	102	80 - 120	P	12/10/2025	21:26	LB138188
	Barium	93.3	100	93	80 - 120	P	12/10/2025	21:26	LB138188
	Beryllium	5.98	6.0	100	80 - 120	P	12/10/2025	21:26	LB138188
	Boron	96.6	100	97	80 - 120	P	12/10/2025	21:26	LB138188
	Cadmium	5.78	6.0	96	80 - 120	P	12/10/2025	21:26	LB138188
	Calcium	1970	2000	99	80 - 120	P	12/10/2025	21:26	LB138188
	Chromium	9.66	10.0	97	80 - 120	P	12/10/2025	21:26	LB138188
	Cobalt	28.5	30.0	95	80 - 120	P	12/10/2025	21:26	LB138188
	Copper	21.1	20.0	105	80 - 120	P	12/10/2025	21:26	LB138188
	Iron	107	100	107	80 - 120	P	12/10/2025	21:26	LB138188
	Lead	11.9	12.0	100	80 - 120	P	12/10/2025	21:26	LB138188
	Lithium	21.9	20.0	109	80 - 120	P	12/10/2025	21:26	LB138188
	Magnesium	2040	2000	102	80 - 120	P	12/10/2025	21:26	LB138188
	Manganese	20.3	20.0	102	80 - 120	P	12/10/2025	21:26	LB138188
	Molybdenum	196	200	98	80 - 120	P	12/10/2025	21:26	LB138188
	Nickel	39.5	40.0	99	80 - 120	P	12/10/2025	21:26	LB138188
	Potassium	2060	2000	103	80 - 120	P	12/10/2025	21:26	LB138188
	Selenium	22.0	20.0	110	80 - 120	P	12/10/2025	21:26	LB138188
	Silver	10.1	10.0	100	80 - 120	P	12/10/2025	21:26	LB138188
	Sodium	2120	2000	106	80 - 120	P	12/10/2025	21:26	LB138188
	Strontium	21.4	20.0	107	80 - 120	P	12/10/2025	21:26	LB138188
	Thallium	33.3	40.0	83	80 - 120	P	12/10/2025	21:26	LB138188
	Tin	36.0	40.0	90	80 - 120	P	12/10/2025	21:26	LB138188
	Titanium	36.5	40.0	91	80 - 120	P	12/10/2025	21:26	LB138188
	Vanadium	33.8	40.0	84	80 - 120	P	12/10/2025	21:26	LB138188
	Zinc	41.2	40.0	103	80 - 120	P	12/10/2025	21:26	LB138188

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Alliance Technical Group, LLC - Newark
Contract: ALLI03
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

SDG No.: Q3483
Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Aluminum	9710	10000	97	90 - 110	P	12/10/2025	22:00	LB138188
	Antimony	5110	5000	102	90 - 110	P	12/10/2025	22:00	LB138188
	Arsenic	5010	5000	100	90 - 110	P	12/10/2025	22:00	LB138188
	Barium	9590	10000	96	90 - 110	P	12/10/2025	22:00	LB138188
	Beryllium	233	250	93	90 - 110	P	12/10/2025	22:00	LB138188
	Boron	4620	5000	92	90 - 110	P	12/10/2025	22:00	LB138188
	Cadmium	2440	2500	98	90 - 110	P	12/10/2025	22:00	LB138188
	Calcium	24000	25000	96	90 - 110	P	12/10/2025	22:00	LB138188
	Chromium	978	1000	98	90 - 110	P	12/10/2025	22:00	LB138188
	Cobalt	2450	2500	98	90 - 110	P	12/10/2025	22:00	LB138188
	Copper	1260	1250	101	90 - 110	P	12/10/2025	22:00	LB138188
	Iron	5200	5000	104	90 - 110	P	12/10/2025	22:00	LB138188
	Lead	4940	5000	99	90 - 110	P	12/10/2025	22:00	LB138188
	Lithium	4720	5000	94	90 - 110	P	12/10/2025	22:00	LB138188
	Magnesium	23900	25000	96	90 - 110	P	12/10/2025	22:00	LB138188
	Manganese	2390	2500	96	90 - 110	P	12/10/2025	22:00	LB138188
	Molybdenum	5000	5000	100	90 - 110	P	12/10/2025	22:00	LB138188
	Nickel	2460	2500	99	90 - 110	P	12/10/2025	22:00	LB138188
	Potassium	25200	25000	101	90 - 110	P	12/10/2025	22:00	LB138188
	Selenium	5080	5000	102	90 - 110	P	12/10/2025	22:00	LB138188
	Silver	1230	1250	99	90 - 110	P	12/10/2025	22:00	LB138188
	Sodium	25600	25000	103	90 - 110	P	12/10/2025	22:00	LB138188
	Strontium	5000	5000	100	90 - 110	P	12/10/2025	22:00	LB138188
	Thallium	4940	5000	99	90 - 110	P	12/10/2025	22:00	LB138188
	Tin	4880	5000	98	90 - 110	P	12/10/2025	22:00	LB138188
	Titanium	4830	5000	97	90 - 110	P	12/10/2025	22:00	LB138188
	Vanadium	2420	2500	97	90 - 110	P	12/10/2025	22:00	LB138188
	Zinc	2460	2500	98	90 - 110	P	12/10/2025	22:00	LB138188
CCV02	Aluminum	9560	10000	96	90 - 110	P	12/10/2025	22:33	LB138188
	Antimony	5130	5000	102	90 - 110	P	12/10/2025	22:33	LB138188
	Arsenic	5030	5000	101	90 - 110	P	12/10/2025	22:33	LB138188
	Barium	9400	10000	94	90 - 110	P	12/10/2025	22:33	LB138188
	Beryllium	233	250	93	90 - 110	P	12/10/2025	22:33	LB138188
	Boron	4630	5000	93	90 - 110	P	12/10/2025	22:33	LB138188

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Alliance Technical Group, LLC - Newark
Contract: ALLI03
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

SDG No.: Q3483
Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV02	Cadmium	2440	2500	98	90 - 110	P	12/10/2025	22:33	LB138188
	Calcium	23500	25000	94	90 - 110	P	12/10/2025	22:33	LB138188
	Chromium	983	1000	98	90 - 110	P	12/10/2025	22:33	LB138188
	Cobalt	2440	2500	98	90 - 110	P	12/10/2025	22:33	LB138188
	Copper	1260	1250	101	90 - 110	P	12/10/2025	22:33	LB138188
	Iron	5080	5000	102	90 - 110	P	12/10/2025	22:33	LB138188
	Lead	4930	5000	99	90 - 110	P	12/10/2025	22:33	LB138188
	Lithium	4660	5000	93	90 - 110	P	12/10/2025	22:33	LB138188
	Magnesium	23600	25000	94	90 - 110	P	12/10/2025	22:33	LB138188
	Manganese	2340	2500	94	90 - 110	P	12/10/2025	22:33	LB138188
	Molybdenum	5010	5000	100	90 - 110	P	12/10/2025	22:33	LB138188
	Nickel	2460	2500	98	90 - 110	P	12/10/2025	22:33	LB138188
	Potassium	24800	25000	99	90 - 110	P	12/10/2025	22:33	LB138188
	Selenium	5080	5000	102	90 - 110	P	12/10/2025	22:33	LB138188
	Silver	1240	1250	99	90 - 110	P	12/10/2025	22:33	LB138188
	Sodium	25400	25000	101	90 - 110	P	12/10/2025	22:33	LB138188
	Strontium	4910	5000	98	90 - 110	P	12/10/2025	22:33	LB138188
	Thallium	4920	5000	98	90 - 110	P	12/10/2025	22:33	LB138188
	Tin	4880	5000	98	90 - 110	P	12/10/2025	22:33	LB138188
	Titanium	4740	5000	95	90 - 110	P	12/10/2025	22:33	LB138188
CCV03	Vanadium	2380	2500	95	90 - 110	P	12/10/2025	22:33	LB138188
	Zinc	2460	2500	98	90 - 110	P	12/10/2025	22:33	LB138188
	Aluminum	9790	10000	98	90 - 110	P	12/10/2025	23:52	LB138188
	Antimony	5080	5000	102	90 - 110	P	12/10/2025	23:52	LB138188
	Arsenic	5000	5000	100	90 - 110	P	12/10/2025	23:52	LB138188
	Barium	9690	10000	97	90 - 110	P	12/10/2025	23:52	LB138188
	Beryllium	236	250	94	90 - 110	P	12/10/2025	23:52	LB138188
	Boron	4690	5000	94	90 - 110	P	12/10/2025	23:52	LB138188
	Cadmium	2410	2500	97	90 - 110	P	12/10/2025	23:52	LB138188
	Calcium	24200	25000	97	90 - 110	P	12/10/2025	23:52	LB138188
	Chromium	988	1000	99	90 - 110	P	12/10/2025	23:52	LB138188
	Cobalt	2430	2500	97	90 - 110	P	12/10/2025	23:52	LB138188
	Copper	1250	1250	100	90 - 110	P	12/10/2025	23:52	LB138188
	Iron	5150	5000	103	90 - 110	P	12/10/2025	23:52	LB138188

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Alliance Technical Group, LLC - Newark
Contract: ALLI03
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

SDG No.: Q3483
Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV03	Lead	4870	5000	97	90 - 110	P	12/10/2025	23:52	LB138188
	Lithium	4790	5000	96	90 - 110	P	12/10/2025	23:52	LB138188
	Magnesium	24100	25000	96	90 - 110	P	12/10/2025	23:52	LB138188
	Manganese	2420	2500	97	90 - 110	P	12/10/2025	23:52	LB138188
	Molybdenum	5050	5000	101	90 - 110	P	12/10/2025	23:52	LB138188
	Nickel	2430	2500	97	90 - 110	P	12/10/2025	23:52	LB138188
	Potassium	25300	25000	101	90 - 110	P	12/10/2025	23:52	LB138188
	Selenium	5050	5000	101	90 - 110	P	12/10/2025	23:52	LB138188
	Silver	1240	1250	100	90 - 110	P	12/10/2025	23:52	LB138188
	Sodium	25800	25000	103	90 - 110	P	12/10/2025	23:52	LB138188
	Strontium	5040	5000	101	90 - 110	P	12/10/2025	23:52	LB138188
	Thallium	4660	5000	93	90 - 110	P	12/10/2025	23:52	LB138188
	Tin	4890	5000	98	90 - 110	P	12/10/2025	23:52	LB138188
	Titanium	4890	5000	98	90 - 110	P	12/10/2025	23:52	LB138188
	Vanadium	2450	2500	98	90 - 110	P	12/10/2025	23:52	LB138188
	Zinc	2530	2500	101	90 - 110	P	12/10/2025	23:52	LB138188
CCV04	Aluminum	9790	10000	98	90 - 110	P	12/11/2025	00:17	LB138188
	Antimony	5000	5000	100	90 - 110	P	12/11/2025	00:17	LB138188
	Arsenic	4890	5000	98	90 - 110	P	12/11/2025	00:17	LB138188
	Barium	9540	10000	95	90 - 110	P	12/11/2025	00:17	LB138188
	Beryllium	238	250	95	90 - 110	P	12/11/2025	00:17	LB138188
	Boron	4720	5000	94	90 - 110	P	12/11/2025	00:17	LB138188
	Cadmium	2370	2500	95	90 - 110	P	12/11/2025	00:17	LB138188
	Calcium	24000	25000	96	90 - 110	P	12/11/2025	00:17	LB138188
	Chromium	977	1000	98	90 - 110	P	12/11/2025	00:17	LB138188
	Cobalt	2380	2500	95	90 - 110	P	12/11/2025	00:17	LB138188
	Copper	1230	1250	99	90 - 110	P	12/11/2025	00:17	LB138188
	Iron	5140	5000	103	90 - 110	P	12/11/2025	00:17	LB138188
	Lead	4810	5000	96	90 - 110	P	12/11/2025	00:17	LB138188
	Lithium	4800	5000	96	90 - 110	P	12/11/2025	00:17	LB138188
	Magnesium	24000	25000	96	90 - 110	P	12/11/2025	00:17	LB138188
	Manganese	2400	2500	96	90 - 110	P	12/11/2025	00:17	LB138188
	Molybdenum	4900	5000	98	90 - 110	P	12/11/2025	00:17	LB138188
	Nickel	2400	2500	96	90 - 110	P	12/11/2025	00:17	LB138188

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV04	Potassium	25100	25000	100	90 - 110	P	12/11/2025	00:17	LB138188
	Selenium	4960	5000	99	90 - 110	P	12/11/2025	00:17	LB138188
	Silver	1240	1250	99	90 - 110	P	12/11/2025	00:17	LB138188
	Sodium	25500	25000	102	90 - 110	P	12/11/2025	00:17	LB138188
	Strontium	5000	5000	100	90 - 110	P	12/11/2025	00:17	LB138188
	Thallium	4940	5000	99	90 - 110	P	12/11/2025	00:17	LB138188
	Tin	4760	5000	95	90 - 110	P	12/11/2025	00:17	LB138188
	Titanium	4850	5000	97	90 - 110	P	12/11/2025	00:17	LB138188
	Vanadium	2420	2500	97	90 - 110	P	12/11/2025	00:17	LB138188
	Zinc	2420	2500	97	90 - 110	P	12/11/2025	00:17	LB138188

Metals

- 2b -

CRDL STANDARD FOR AA & ICP

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

Initial Calibration Source:

Continuing Calibration Source:

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CRA	Mercury	0.18	0.2	91	70 - 130	CV	11/05/2025	11:05	LB137779
CRI01	Aluminum	117	100	117	65 - 135	P	12/10/2025	21:39	LB138188
	Antimony	50.4	50.0	101	65 - 135	P	12/10/2025	21:39	LB138188
	Arsenic	17.2	20.0	86	65 - 135	P	12/10/2025	21:39	LB138188
	Barium	92.7	100	93	65 - 135	P	12/10/2025	21:39	LB138188
	Beryllium	5.85	6.0	97	65 - 135	P	12/10/2025	21:39	LB138188
	Boron	91.4	100	91	65 - 135	P	12/10/2025	21:39	LB138188
	Cadmium	5.71	6.0	95	65 - 135	P	12/10/2025	21:39	LB138188
	Calcium	1940	2000	97	65 - 135	P	12/10/2025	21:39	LB138188
	Chromium	8.95	10.0	90	65 - 135	P	12/10/2025	21:39	LB138188
	Cobalt	28.6	30.0	95	65 - 135	P	12/10/2025	21:39	LB138188
	Copper	20.9	20.0	104	65 - 135	P	12/10/2025	21:39	LB138188
	Iron	104	100	104	65 - 135	P	12/10/2025	21:39	LB138188
	Lead	13.7	12.0	114	65 - 135	P	12/10/2025	21:39	LB138188
	Lithium	21.5	20.0	107	65 - 135	P	12/10/2025	21:39	LB138188
	Magnesium	2020	2000	101	65 - 135	P	12/10/2025	21:39	LB138188
	Manganese	20.2	20.0	101	65 - 135	P	12/10/2025	21:39	LB138188
	Molybdenum	196	200	98	65 - 135	P	12/10/2025	21:39	LB138188
	Nickel	38.8	40.0	97	65 - 135	P	12/10/2025	21:39	LB138188
	Potassium	1980	2000	99	65 - 135	P	12/10/2025	21:39	LB138188
	Selenium	16.5	20.0	83	65 - 135	P	12/10/2025	21:39	LB138188
	Silver	10.0	10.0	100	65 - 135	P	12/10/2025	21:39	LB138188
	Sodium	2060	2000	103	65 - 135	P	12/10/2025	21:39	LB138188
	Strontium	20.7	20.0	104	65 - 135	P	12/10/2025	21:39	LB138188
	Thallium	31.6	40.0	79	65 - 135	P	12/10/2025	21:39	LB138188
	Tin	37.1	40.0	93	65 - 135	P	12/10/2025	21:39	LB138188
	Titanium	34.4	40.0	86	65 - 135	P	12/10/2025	21:39	LB138188
	Vanadium	34.7	40.0	87	65 - 135	P	12/10/2025	21:39	LB138188
	Zinc	40.7	40.0	102	65 - 135	P	12/10/2025	21:39	LB138188



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

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB99	Mercury	0.076	+/-0.2	U	0.20	CV	11/05/2025	10:57	LB137779

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB28	Mercury	0.076	+/-0.2	U	0.20	CV	11/05/2025	11:02	LB137779
CCB29	Mercury	0.076	+/-0.2	U	0.20	CV	11/05/2025	11:43	LB137779
CCB30	Mercury	0.076	+/-0.2	U	0.20	CV	11/05/2025	12:13	LB137779
CCB31	Mercury	0.076	+/-0.2	U	0.20	CV	11/05/2025	13:02	LB137779

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB01	Aluminum	11.3	+/-50	U	100	P	12/10/2025	21:34	LB138188
	Antimony	6.76	+/-25	U	50.0	P	12/10/2025	21:34	LB138188
	Arsenic	5.12	+/-10	U	20.0	P	12/10/2025	21:34	LB138188
	Barium	14.6	+/-50	U	100	P	12/10/2025	21:34	LB138188
	Beryllium	0.56	+/-3	U	6.00	P	12/10/2025	21:34	LB138188
	Boron	15.7	+/-50	U	100	P	12/10/2025	21:34	LB138188
	Cadmium	0.50	+/-3	U	6.00	P	12/10/2025	21:34	LB138188
	Calcium	234	+/-1000	U	2000	P	12/10/2025	21:34	LB138188
	Chromium	2.12	+/-5	U	10.0	P	12/10/2025	21:34	LB138188
	Cobalt	2.26	+/-15	U	30.0	P	12/10/2025	21:34	LB138188
	Copper	4.60	+/-10	U	20.0	P	12/10/2025	21:34	LB138188
	Iron	23.4	+/-50	U	100	P	12/10/2025	21:34	LB138188
	Lead	2.30	+/-6	U	12.0	P	12/10/2025	21:34	LB138188
	Magnesium	244	+/-1000	U	2000	P	12/10/2025	21:34	LB138188
	Manganese	5.94	+/-10	U	20.0	P	12/10/2025	21:34	LB138188
	Molybdenum	18.7	+/-100	U	200	P	12/10/2025	21:34	LB138188
	Nickel	3.06	+/-20	U	40.0	P	12/10/2025	21:34	LB138188
	Potassium	918	+/-1000	U	2000	P	12/10/2025	21:34	LB138188
	Selenium	9.64	+/-10	U	20.0	P	12/10/2025	21:34	LB138188
	Silver	1.62	+/-5	U	10.0	P	12/10/2025	21:34	LB138188
	Sodium	868	+/-1000	U	2000	P	12/10/2025	21:34	LB138188
	Strontium	4.63	+/-10	U	20.0	P	12/10/2025	21:34	LB138188
	Lithium	15.6	+/-10	U	20.0	P	12/10/2025	21:34	LB138188
	Thallium	4.38	+/-20	U	40.0	P	12/10/2025	21:34	LB138188
	Tin	5.14	+/-20	U	40.0	P	12/10/2025	21:34	LB138188
	Titanium	6.42	+/-20	U	40.0	P	12/10/2025	21:34	LB138188
	Vanadium	6.26	+/-20	U	40.0	P	12/10/2025	21:34	LB138188
	Zinc	16.7	+/-20	U	40.0	P	12/10/2025	21:34	LB138188

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB01	Aluminum	11.3	+/-50	U	100	P	12/10/2025	22:04	LB138188
	Antimony	6.76	+/-25	U	50.0	P	12/10/2025	22:04	LB138188
	Arsenic	5.12	+/-10	U	20.0	P	12/10/2025	22:04	LB138188
	Barium	14.6	+/-50	U	100	P	12/10/2025	22:04	LB138188
	Beryllium	0.56	+/-3	U	6.00	P	12/10/2025	22:04	LB138188
	Boron	15.7	+/-50	U	100	P	12/10/2025	22:04	LB138188
	Cadmium	0.50	+/-3	U	6.00	P	12/10/2025	22:04	LB138188
	Calcium	234	+/-1000	U	2000	P	12/10/2025	22:04	LB138188
	Chromium	2.12	+/-5	U	10.0	P	12/10/2025	22:04	LB138188
	Cobalt	2.26	+/-15	U	30.0	P	12/10/2025	22:04	LB138188
	Copper	4.60	+/-10	U	20.0	P	12/10/2025	22:04	LB138188
	Iron	23.4	+/-50	U	100	P	12/10/2025	22:04	LB138188
	Lead	2.30	+/-6	U	12.0	P	12/10/2025	22:04	LB138188
	Magnesium	244	+/-1000	U	2000	P	12/10/2025	22:04	LB138188
	Manganese	5.94	+/-10	U	20.0	P	12/10/2025	22:04	LB138188
	Molybdenum	18.7	+/-100	U	200	P	12/10/2025	22:04	LB138188
	Nickel	3.06	+/-20	U	40.0	P	12/10/2025	22:04	LB138188
	Potassium	918	+/-1000	U	2000	P	12/10/2025	22:04	LB138188
	Selenium	9.64	+/-10	U	20.0	P	12/10/2025	22:04	LB138188
	Silver	1.62	+/-5	U	10.0	P	12/10/2025	22:04	LB138188
	Sodium	868	+/-1000	U	2000	P	12/10/2025	22:04	LB138188
	Strontium	4.63	+/-10	U	20.0	P	12/10/2025	22:04	LB138188
	Lithium	15.6	+/-10	U	20.0	P	12/10/2025	22:04	LB138188
	Thallium	4.38	+/-20	U	40.0	P	12/10/2025	22:04	LB138188
	Tin	5.14	+/-20	U	40.0	P	12/10/2025	22:04	LB138188
	Titanium	6.42	+/-20	U	40.0	P	12/10/2025	22:04	LB138188
	Vanadium	6.26	+/-20	U	40.0	P	12/10/2025	22:04	LB138188
	Zinc	16.7	+/-20	U	40.0	P	12/10/2025	22:04	LB138188
CCB02	Aluminum	12.2	+/-50	J	100	P	12/10/2025	22:37	LB138188
	Antimony	6.76	+/-25	U	50.0	P	12/10/2025	22:37	LB138188
	Arsenic	5.12	+/-10	U	20.0	P	12/10/2025	22:37	LB138188
	Barium	14.6	+/-50	U	100	P	12/10/2025	22:37	LB138188
	Beryllium	0.56	+/-3	U	6.00	P	12/10/2025	22:37	LB138188
	Boron	15.7	+/-50	U	100	P	12/10/2025	22:37	LB138188
	Cadmium	0.50	+/-3	U	6.00	P	12/10/2025	22:37	LB138188
	Calcium	234	+/-1000	U	2000	P	12/10/2025	22:37	LB138188
	Chromium	2.12	+/-5	U	10.0	P	12/10/2025	22:37	LB138188
	Cobalt	2.26	+/-15	U	30.0	P	12/10/2025	22:37	LB138188
	Copper	4.60	+/-10	U	20.0	P	12/10/2025	22:37	LB138188

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB02	Iron	23.4	+/-50	U	100	P	12/10/2025	22:37	LB138188
	Lead	2.30	+/-6	U	12.0	P	12/10/2025	22:37	LB138188
	Magnesium	244	+/-1000	U	2000	P	12/10/2025	22:37	LB138188
	Manganese	5.94	+/-10	U	20.0	P	12/10/2025	22:37	LB138188
	Molybdenum	18.7	+/-100	U	200	P	12/10/2025	22:37	LB138188
	Nickel	3.06	+/-20	U	40.0	P	12/10/2025	22:37	LB138188
	Potassium	918	+/-1000	U	2000	P	12/10/2025	22:37	LB138188
	Selenium	9.64	+/-10	U	20.0	P	12/10/2025	22:37	LB138188
	Silver	1.62	+/-5	U	10.0	P	12/10/2025	22:37	LB138188
	Sodium	868	+/-1000	U	2000	P	12/10/2025	22:37	LB138188
	Strontium	4.63	+/-10	U	20.0	P	12/10/2025	22:37	LB138188
	Lithium	15.6	+/-10	U	20.0	P	12/10/2025	22:37	LB138188
	Thallium	4.38	+/-20	U	40.0	P	12/10/2025	22:37	LB138188
	Tin	5.14	+/-20	U	40.0	P	12/10/2025	22:37	LB138188
	Titanium	6.42	+/-20	U	40.0	P	12/10/2025	22:37	LB138188
	Vanadium	6.26	+/-20	U	40.0	P	12/10/2025	22:37	LB138188
	Zinc	16.7	+/-20	U	40.0	P	12/10/2025	22:37	LB138188
CCB03	Aluminum	15.8	+/-50	J	100	P	12/10/2025	23:56	LB138188
	Antimony	6.76	+/-25	U	50.0	P	12/10/2025	23:56	LB138188
	Arsenic	5.12	+/-10	U	20.0	P	12/10/2025	23:56	LB138188
	Barium	14.6	+/-50	U	100	P	12/10/2025	23:56	LB138188
	Beryllium	0.56	+/-3	U	6.00	P	12/10/2025	23:56	LB138188
	Boron	15.7	+/-50	U	100	P	12/10/2025	23:56	LB138188
	Cadmium	0.50	+/-3	U	6.00	P	12/10/2025	23:56	LB138188
	Calcium	234	+/-1000	U	2000	P	12/10/2025	23:56	LB138188
	Chromium	2.12	+/-5	U	10.0	P	12/10/2025	23:56	LB138188
	Cobalt	2.26	+/-15	U	30.0	P	12/10/2025	23:56	LB138188
	Copper	4.60	+/-10	U	20.0	P	12/10/2025	23:56	LB138188
	Iron	23.4	+/-50	U	100	P	12/10/2025	23:56	LB138188
	Lead	2.30	+/-6	U	12.0	P	12/10/2025	23:56	LB138188
	Magnesium	244	+/-1000	U	2000	P	12/10/2025	23:56	LB138188
	Manganese	5.94	+/-10	U	20.0	P	12/10/2025	23:56	LB138188
	Molybdenum	18.7	+/-100	U	200	P	12/10/2025	23:56	LB138188
	Nickel	3.06	+/-20	U	40.0	P	12/10/2025	23:56	LB138188
	Potassium	918	+/-1000	U	2000	P	12/10/2025	23:56	LB138188
	Selenium	9.64	+/-10	U	20.0	P	12/10/2025	23:56	LB138188
	Silver	1.62	+/-5	U	10.0	P	12/10/2025	23:56	LB138188
	Sodium	868	+/-1000	U	2000	P	12/10/2025	23:56	LB138188
	Strontium	4.63	+/-10	U	20.0	P	12/10/2025	23:56	LB138188

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB03	Lithium	15.6	+/-10	U	20.0	P	12/10/2025	23:56	LB138188
	Thallium	4.38	+/-20	U	40.0	P	12/10/2025	23:56	LB138188
	Tin	5.14	+/-20	U	40.0	P	12/10/2025	23:56	LB138188
	Titanium	6.42	+/-20	U	40.0	P	12/10/2025	23:56	LB138188
	Vanadium	6.26	+/-20	U	40.0	P	12/10/2025	23:56	LB138188
	Zinc	16.7	+/-20	U	40.0	P	12/10/2025	23:56	LB138188
CCB04	Aluminum	19.5	+/-50	J	100	P	12/11/2025	00:42	LB138188
	Antimony	6.76	+/-25	U	50.0	P	12/11/2025	00:42	LB138188
	Arsenic	5.12	+/-10	U	20.0	P	12/11/2025	00:42	LB138188
	Barium	14.6	+/-50	U	100	P	12/11/2025	00:42	LB138188
	Beryllium	0.56	+/-3	U	6.00	P	12/11/2025	00:42	LB138188
	Boron	15.7	+/-50	U	100	P	12/11/2025	00:42	LB138188
	Cadmium	0.50	+/-3	U	6.00	P	12/11/2025	00:42	LB138188
	Calcium	234	+/-1000	U	2000	P	12/11/2025	00:42	LB138188
	Chromium	2.12	+/-5	U	10.0	P	12/11/2025	00:42	LB138188
	Cobalt	2.26	+/-15	U	30.0	P	12/11/2025	00:42	LB138188
	Copper	4.60	+/-10	U	20.0	P	12/11/2025	00:42	LB138188
	Iron	23.4	+/-50	U	100	P	12/11/2025	00:42	LB138188
	Lead	2.30	+/-6	U	12.0	P	12/11/2025	00:42	LB138188
	Magnesium	244	+/-1000	U	2000	P	12/11/2025	00:42	LB138188
	Manganese	5.94	+/-10	U	20.0	P	12/11/2025	00:42	LB138188
	Molybdenum	18.7	+/-100	U	200	P	12/11/2025	00:42	LB138188
	Nickel	3.06	+/-20	U	40.0	P	12/11/2025	00:42	LB138188
	Potassium	918	+/-1000	U	2000	P	12/11/2025	00:42	LB138188
	Selenium	9.64	+/-10	U	20.0	P	12/11/2025	00:42	LB138188
	Silver	1.62	+/-5	U	10.0	P	12/11/2025	00:42	LB138188
	Sodium	868	+/-1000	U	2000	P	12/11/2025	00:42	LB138188
	Strontium	4.63	+/-10	U	20.0	P	12/11/2025	00:42	LB138188
	Lithium	15.6	+/-10	U	20.0	P	12/11/2025	00:42	LB138188
	Thallium	4.38	+/-20	U	40.0	P	12/11/2025	00:42	LB138188
	Tin	5.14	+/-20	U	40.0	P	12/11/2025	00:42	LB138188
	Titanium	6.42	+/-20	U	40.0	P	12/11/2025	00:42	LB138188
	Vanadium	6.26	+/-20	U	40.0	P	12/11/2025	00:42	LB138188
	Zinc	16.7	+/-20	U	40.0	P	12/11/2025	00:42	LB138188

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Alliance Technical Group, LLC - Newark**SDG No.:** Q3483**Instrument:** CV1

Sample ID	Analyte	Result (mg/Kg)	Acceptance Limit	Conc Qual	CRQL mg/Kg	M	Analysis Date	Analysis Time	Run
PB170393BL		SOLID		Batch Number:	PB170393		Prep Date:	11/05/2025	
	Mercury	0.0070	<0.012	U	0.012	CV	11/05/2025	11:14	LB137779

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Instrument: P4

Sample ID	Analyte	Result (mg/Kg)	Acceptance Limit	Conc Qual	CRQL mg/Kg	M	Analysis Date	Analysis Time	Run
PB170335BL	SOLID			Batch Number:	PB170335		Prep Date:	10/30/2025	
	Aluminum	0.86	<2.5	J	5.00	P	12/10/2025	22:08	LB138188
	Antimony	0.22	<1.25	U	2.50	P	12/10/2025	22:08	LB138188
	Arsenic	0.19	<0.5	U	1.00	P	12/10/2025	22:08	LB138188
	Barium	0.73	<2.5	U	5.00	P	12/10/2025	22:08	LB138188
	Beryllium	0.025	<0.15	U	0.30	P	12/10/2025	22:08	LB138188
	Boron	0.80	<2.5	U	5.00	P	12/10/2025	22:08	LB138188
	Cadmium	0.024	<0.15	U	0.30	P	12/10/2025	22:08	LB138188
	Calcium	11.1	<50	U	100	P	12/10/2025	22:08	LB138188
	Chromium	0.047	<0.25	U	0.50	P	12/10/2025	22:08	LB138188
	Cobalt	0.10	<0.75	U	1.50	P	12/10/2025	22:08	LB138188
	Copper	0.22	<0.5	U	1.00	P	12/10/2025	22:08	LB138188
	Iron	3.99	<2.5	U	5.00	P	12/10/2025	22:08	LB138188
	Lead	0.13	<0.3	U	0.60	P	12/10/2025	22:08	LB138188
	Magnesium	12.0	<50	U	100	P	12/10/2025	22:08	LB138188
	Manganese	0.14	<0.5	U	1.00	P	12/10/2025	22:08	LB138188
	Molybdenum	0.81	<5	U	10.0	P	12/10/2025	22:08	LB138188
	Nickel	0.13	<1	U	2.00	P	12/10/2025	22:08	LB138188
	Potassium	27.7	<50	U	100	P	12/10/2025	22:08	LB138188
	Selenium	0.26	<0.5	U	1.00	P	12/10/2025	22:08	LB138188
	Silver	0.12	<0.25	U	0.50	P	12/10/2025	22:08	LB138188
	Sodium	17.8	<50	U	100	P	12/10/2025	22:08	LB138188
	Strontium	0.25	<5	U	10.0	P	12/10/2025	22:08	LB138188
	Lithium	0.055	<0.5	J	1.00	P	12/10/2025	22:08	LB138188
	Thallium	0.23	<1	U	2.00	P	12/10/2025	22:08	LB138188
	Tin	0.26	<1	U	2.00	P	12/10/2025	22:08	LB138188
	Titanium	0.31	<1	U	2.00	P	12/10/2025	22:08	LB138188
	Vanadium	0.25	<1	U	2.00	P	12/10/2025	22:08	LB138188
	Zinc	0.23	<1	U	2.00	P	12/10/2025	22:08	LB138188

Metals
- 4 -
INTERFERENCE CHECK SAMPLE

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

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	Aluminum	234000	255000	92	216000	294000	12/10/2025	21:43	LB138188
	Antimony	3.57			-50	50	12/10/2025	21:43	LB138188
	Arsenic	4.72			-20	20	12/10/2025	21:43	LB138188
	Barium	3.36	6.0	56	-94	106	12/10/2025	21:43	LB138188
	Beryllium	1.13			-6	6	12/10/2025	21:43	LB138188
	Boron	38.2	1000	4	-100	100	12/10/2025	21:43	LB138188
	Cadmium	1.98	1.0	198	-5	7	12/10/2025	21:43	LB138188
	Calcium	218000	245000	89	208000	282000	12/10/2025	21:43	LB138188
	Chromium	48.8	52.0	94	42	62	12/10/2025	21:43	LB138188
	Cobalt	2.39			-30	30	12/10/2025	21:43	LB138188
	Copper	10.0	2.0	501	-18	22	12/10/2025	21:43	LB138188
	Iron	89100	101000	88	85600	116500	12/10/2025	21:43	LB138188
	Lead	7.83			-12	12	12/10/2025	21:43	LB138188
	Magnesium	237000	255000	93	216000	294000	12/10/2025	21:43	LB138188
	Manganese	7.46	7.0	107	-13	27	12/10/2025	21:43	LB138188
	Molybdenum	1.61	1000		-200	200	12/10/2025	21:43	LB138188
	Nickel	5.65	2.0	282	-38	42	12/10/2025	21:43	LB138188
	Potassium	111			0	0	12/10/2025	21:43	LB138188
	Selenium	2.55			-20	20	12/10/2025	21:43	LB138188
	Silver	3.33			-10	10	12/10/2025	21:43	LB138188
	Sodium	151			0	0	12/10/2025	21:43	LB138188
	Strontium	9.60			0	0	12/10/2025	21:43	LB138188
	Lithium	0	1000		-20	20	12/10/2025	21:43	LB138188
	Thallium	14.9			-40	40	12/10/2025	21:43	LB138188
	Tin	-3.53	1000		-40	40	12/10/2025	21:43	LB138188
	Titanium	-6.12			0	0	12/10/2025	21:43	LB138188
	Vanadium	0.70			-40	40	12/10/2025	21:43	LB138188
	Zinc	5.16			-40	40	12/10/2025	21:43	LB138188
ICSAB01	Aluminum	228000	247000	92	209000	285000	12/10/2025	21:47	LB138188
	Antimony	580	618	94	525	711	12/10/2025	21:47	LB138188
	Arsenic	99.4	104	96	88.4	120	12/10/2025	21:47	LB138188
	Barium	446	537	83	437	637	12/10/2025	21:47	LB138188
	Beryllium	437	495	88	420	570	12/10/2025	21:47	LB138188
	Boron	869	1000	87	850	1150	12/10/2025	21:47	LB138188
	Cadmium	911	972	94	826	1120	12/10/2025	21:47	LB138188
	Calcium	214000	235000	91	199000	271000	12/10/2025	21:47	LB138188
	Chromium	506	542	93	460	624	12/10/2025	21:47	LB138188
	Cobalt	459	476	96	404	548	12/10/2025	21:47	LB138188
	Copper	451	511	88	434	588	12/10/2025	21:47	LB138188
	Iron	95400	99300	96	84400	114500	12/10/2025	21:47	LB138188
	Lead	54.2	49.0	111	37	61	12/10/2025	21:47	LB138188
	Magnesium	231000	248000	93	210000	286000	12/10/2025	21:47	LB138188

Metals
- 4 -
INTERFERENCE CHECK SAMPLE

Client: Alliance Technical Group, LLC - Newark **SDG No.:** Q3483
Contract: ALLI03 **Lab Code:** ACE
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
ICSAB01	Manganese	445	507	88	430	584	12/10/2025	21:47	LB138188
	Molybdenum	913	1000	91	850	1150	12/10/2025	21:47	LB138188
	Nickel	921	954	96	810	1100	12/10/2025	21:47	LB138188
	Potassium	96.3			0	0	12/10/2025	21:47	LB138188
	Selenium	51.6	46.0	112	26	66	12/10/2025	21:47	LB138188
	Silver	176	201	88	170	232	12/10/2025	21:47	LB138188
	Sodium	146			0	0	12/10/2025	21:47	LB138188
	Strontium	1030			0	0	12/10/2025	21:47	LB138188
	Lithium	900	1000	90	850	1150	12/10/2025	21:47	LB138188
	Thallium	110	108	102	68	148	12/10/2025	21:47	LB138188
	Tin	899	1000	90	850	1150	12/10/2025	21:47	LB138188
	Titanium	868			0	0	12/10/2025	21:47	LB138188
	Vanadium	441	491	90	417	565	12/10/2025	21:47	LB138188
	Zinc	958	952	101	809	1095	12/10/2025	21:47	LB138188



METAL QC DATA

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metals
- 5a -
MATRIX SPIKE SUMMARY

client: <u>Alliance Technical Group, LLC - Newark</u>	level: <u>low</u>	sdg no.: <u>Q3483</u>
contract: <u>ALLI03</u>		lab code: <u>ACE</u>
matrix: <u>Solid</u>	sample id: <u>Q3532-05</u>	client id: <u>TP-2MS</u>
Percent Solids for Sample: 85.4	Spiked ID: Q3532-05MS	Percent Solids for Spike Sample: 85.4

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/Kg	80 - 120	0.29		0.014	U	0.28	102		CV

metals
- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

client: <u>Alliance Technical Group, LLC - Newark</u>	level: <u>low</u>	sdg no.: <u>Q3483</u>
contract: <u>ALLI03</u>		lab code: <u>ACE</u>
matrix: <u>Solid</u>	sample id: <u>Q3532-05</u>	client id: <u>TP-2MSD</u>
Percent Solids for Sample: 85.4	Spiked ID: Q3532-05MSD	Percent Solids for Spike Sample: 85.4

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/Kg	80 - 120	0.28		0.014	U	0.27	102		CV



Metals
- 5b -

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

Matrix:

Level: LOW

Client ID:

Sample ID:

Spiked ID:

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

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DUPLICATE SAMPLE SUMMARY

Client: Alliance Technical Group, LLC - Newark **Level:** LOW **SDG No.:** Q3483
Contract: ALLI03 **Lab Code:** ACE
Matrix: Solid **Sample ID:** Q3532-05 **Client ID:** TP-2DUP
Percent Solids for Sample: 85.4 **Duplicate ID** Q3532-05DUP **Percent Solids for Spike Sample:** 85.4

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/Kg	20	0.014	U	0.014	U			CV

“A control limit of $\pm 20\%$ RPD for each matrix applies for sample values greater than 10 times Detection Limit”

Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client: Alliance Technical Group, LLC - Newark **Level:** LOW **SDG No.:** Q3483
Contract: ALLI03 **Lab Code:** ACE
Matrix: Solid **Sample ID:** Q3532-05MS **Client ID:** TP-2MSD
Percent Solids for Sample: 85.4 **Duplicate ID** Q3532-05MSD **Percent Solids for Spike Sample:** 85.4

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/Kg	20	0.29		0.28		4		CV

“A control limit of $\pm 20\%$ RPD for each matrix applies for sample values greater than 10 times Detection Limit”

Metals

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB170335BS							
Aluminum	mg/Kg	100	97.2		97	80 - 120	P
Antimony	mg/Kg	40.0	39.6		99	80 - 120	P
Arsenic	mg/Kg	40.0	38.1		95	80 - 120	P
Barium	mg/Kg	10.0	9.52		95	80 - 120	P
Beryllium	mg/Kg	10.0	9.54		95	80 - 120	P
Boron	mg/Kg	15.0	14.2		95	80 - 120	P
Cadmium	mg/Kg	10.0	9.27		93	80 - 120	P
Calcium	mg/Kg	50.0	49.5	J	99	80 - 120	P
Chromium	mg/Kg	20.0	19.1		96	80 - 120	P
Cobalt	mg/Kg	10.0	9.36		94	80 - 120	P
Copper	mg/Kg	15.0	15.0		100	80 - 120	P
Iron	mg/Kg	150	144		96	80 - 120	P
Lead	mg/Kg	50.0	46.3		93	80 - 120	P
Magnesium	mg/Kg	100	97.9	J	98	80 - 120	P
Manganese	mg/Kg	10.0	9.83		98	80 - 120	P
Molybdenum	mg/Kg	20.0	20.0		100	80 - 120	P
Nickel	mg/Kg	25.0	23.8		95	80 - 120	P
Potassium	mg/Kg	500	460		92	80 - 120	P
Selenium	mg/Kg	100	96.5		96	80 - 120	P
Silver	mg/Kg	3.8	3.50		92	80 - 120	P
Sodium	mg/Kg	150	147		98	80 - 120	P
Strontium	mg/Kg	10.0	9.73	J	97	80 - 120	P
Lithium	mg/Kg	10.0	10.1		101	80 - 120	P
Thallium	mg/Kg	100	84.7		85	80 - 120	P
Tin	mg/Kg	35.0	32.0		91	80 - 120	P
Titanium	mg/Kg	10.0	9.63		96	80 - 120	P
Vanadium	mg/Kg	15.0	14.4		96	80 - 120	P
Zinc	mg/Kg	10.0	9.91		99	80 - 120	P

Metals

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB170393BS Mercury	mg/Kg	0.25	0.26		105	80 - 120	CV

Metals
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ICP SERIAL DILUTIONS

SAMPLE NO.

TP-2L

Lab Name: Alliance **Contract:** ALLI03
Lab Code: ACE **Lb No.:** lb137779 **Lab Sample ID :** Q3532-05L **SDG No.:** Q3483
Matrix (soil/water): Solid **Level (low/med):** LOW
Concentration Units: mg/Kg

Analyte	Initial Sample Result (I) C	Serial Dilution Result (S) C	% Differ- ence	Q	M
Mercury	0.014 U	0.071 U			CV



METAL PREPARATION & INSTRUMENT DATA

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Metals

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ICP INTERELEMENT CORRECTION FACTORS

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

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
Aluminum	396.100	0.0000000	-0.0002060	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
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
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000930	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	-0.0075970	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0007850	0.0000000	0.0000000
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0000920	0.0000000	0.0000380	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	-0.0001440	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	-0.0001490	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0001050	0.0000000	0.0000000

Metals

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ICP INTERELEMENT CORRECTION FACTORS

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

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
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
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
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0002870
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0000000	0.0009530
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	-0.0039600
Lead	220.353	0.0000000	0.0003170	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	-0.0003570
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0054900
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Metals

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ICP INTERELEMENT CORRECTION FACTORS

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

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
Aluminum	396.100	0.0000000	0.0000000	0.0000590	0.0000000	0.0396900
Antimony	206.833	0.0122000	0.0000000	0.0000000	0.0000000	0.0000000
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
Beryllium	234.861	0.0000000	0.0000000	0.0000000	-0.0000710	-0.0003400
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000070	0.0002200	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	-0.0007860
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0006510	0.0020500
Iron	240.488	0.0000000	0.0000000	0.0000730	0.0000000	-0.0015250
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0001400	-0.0008600
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0007460	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	-0.0000120
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0017400	-0.0100400
Vanadium	292.402	-0.0025100	0.0000000	0.0000000	0.0000000	-0.0072000
Zinc	213.800	0.0000000	0.0009010	0.0000000	0.0000000	0.0000000

Metals

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ICP INTERELEMENT CORRECTION FACTORS

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

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
Aluminum	396.100	0.0000000	0.0000000	0.0012800	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
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
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	-0.0047000	0.0036100	0.0000000	0.0000000
Iron	240.488	0.0000000	-0.0017000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0006580	0.0000000	0.0000000	0.0001290
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0003330	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0067600	0.0000000	0.0000000	0.0000000

Metals

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ICP INTERELEMENT CORRECTION FACTORS

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q3483

Contract: ALLI03

Lab Code: ACE

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
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	-0.0035600	-0.0007970	0.0000000	-0.0018900	0.0000000
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
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000630	0.0001280	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0001110	0.0000000
Cobalt	228.616	0.0000000	0.0018800	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0003840	0.0000000	0.0000000	0.0000000
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	-0.0003610	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	-0.0007420	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	-0.0039700	0.0000000	-0.0115600	0.0000000
Vanadium	292.402	0.0000000	0.0005320	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

METAL PREPARATION & ANALYICAL SUMMARY

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SAMPLE PREPARATION SUMMARY

Client: Alliance Technical Group, LLC - Newark **SDG No.:** Q3483
Contract: ALLI03 **Lab Code:** ACE **Method:** _____

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number: PB170335							
PB170335BL	PB170335BL	MB	SOLID	10/30/2025	2.00	100.0	100.00
PB170335BS	PB170335BS	LCS	SOLID	10/30/2025	2.00	100.0	100.00
Q3483-10	HW1025-PT-MET-SOIL	SAM	SOLID	10/30/2025	2.29	100.0	100.00

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SAMPLE PREPARATION SUMMARY

Client: Alliance Technical Group, LLC - Newark **SDG No.:** Q3483
Contract: ALLI03 **Lab Code:** ACE **Method:** _____

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number: PB170393							
PB170393BL	PB170393BL	MB	SOLID	11/05/2025	0.57	35.0	100.00
PB170393BS	PB170393BS	LCS	SOLID	11/05/2025	0.55	35.0	100.00
Q3483-10	HW1025-PT-MET-SOIL	SAM	SOLID	11/05/2025	0.54	35.0	100.00
Q3532-05DUP	TP-2DUP	DUP	SOLID	11/05/2025	0.60	35.0	85.40
Q3532-05MS	TP-2MS	MS	SOLID	11/05/2025	0.58	35.0	85.40
Q3532-05MSD	TP-2MSD	MSD	SOLID	11/05/2025	0.60	35.0	85.40

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ANALYSIS RUN LOG

Client: Alliance Technical Group, LLC - Newark

Contract: ALLI03

Lab code: ACE

Sdg no.: Q3483

Instrument id number:

Method:

Run number: LB137779

Start date: 11/05/2025

End date: 11/05/2025

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1039	HG
S0.2	S0.2	1	1042	HG
S2.5	S2.5	1	1044	HG
S5	S5	1	1046	HG
S7.5	S7.5	1	1049	HG
S10	S10	1	1051	HG
ICV99	ICV99	1	1055	HG
ICB99	ICB99	1	1057	HG
CCV28	CCV28	1	1100	HG
CCB28	CCB28	1	1102	HG
CRA	CRA	1	1105	HG
PB170393BL	PB170393BL	1	1114	HG
PB170393BS	PB170393BS	1	1117	HG
Q3532-05DUP	TP-2DUP	1	1127	HG
Q3532-05MS	TP-2MS	1	1138	HG
CCV29	CCV29	1	1141	HG
CCB29	CCB29	1	1143	HG
Q3532-05MSD	TP-2MSD	1	1146	HG
Q3532-05L	TP-2L	5	1202	HG
CCV30	CCV30	1	1210	HG
CCB30	CCB30	1	1213	HG
Q3483-10	HW1025-PT-MET-SOIL	50	1254	HG
CCV31	CCV31	1	1259	HG
CCB31	CCB31	1	1302	HG

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ANALYSIS RUN LOG

Client: Alliance Technical Group, LLC - Newark

Contract: ALLI03

Lab code: ACE

Sdg no.: Q3483

Instrument id number:

Method:

Run number: LB138188

Start date: 12/10/2025

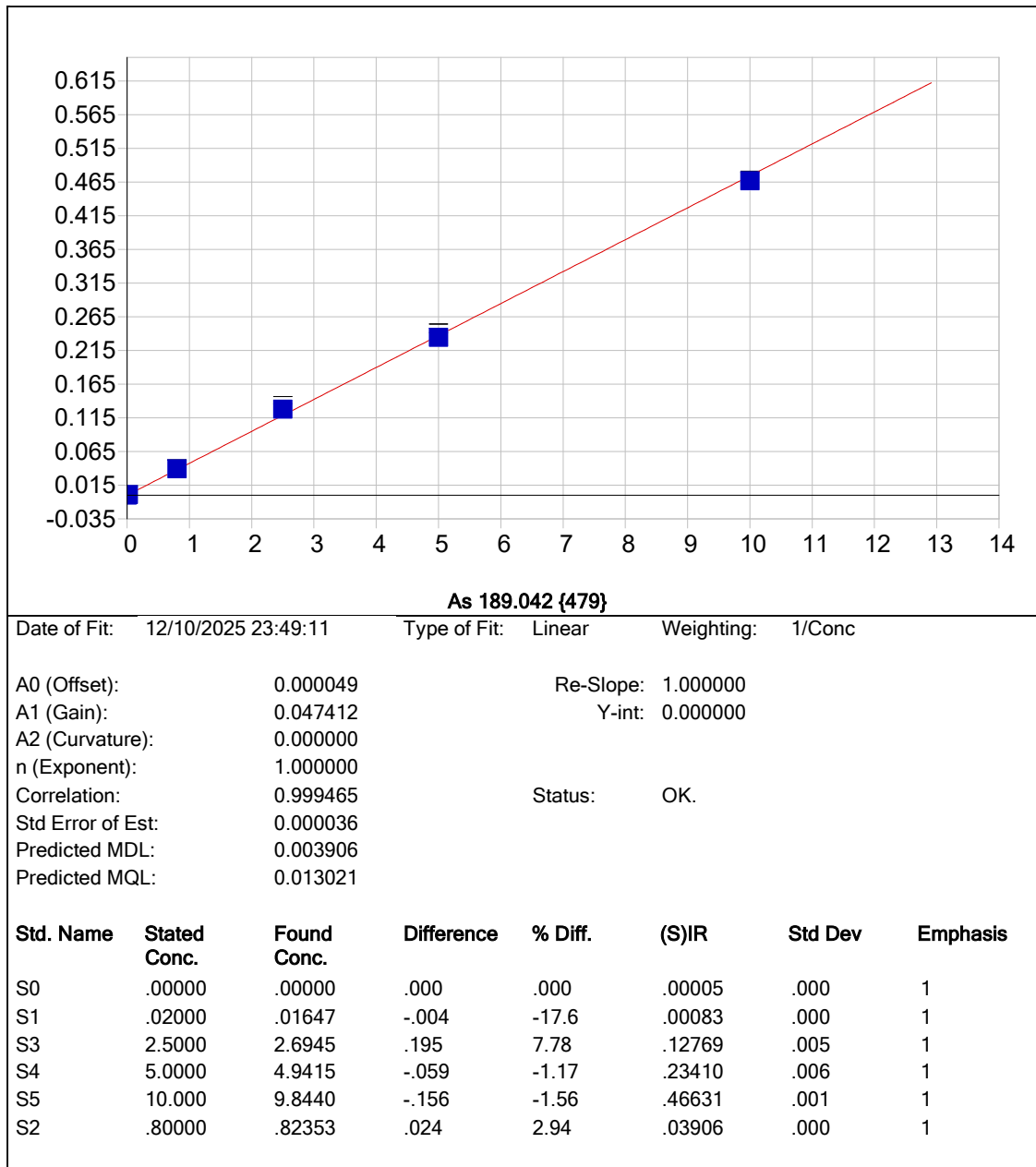
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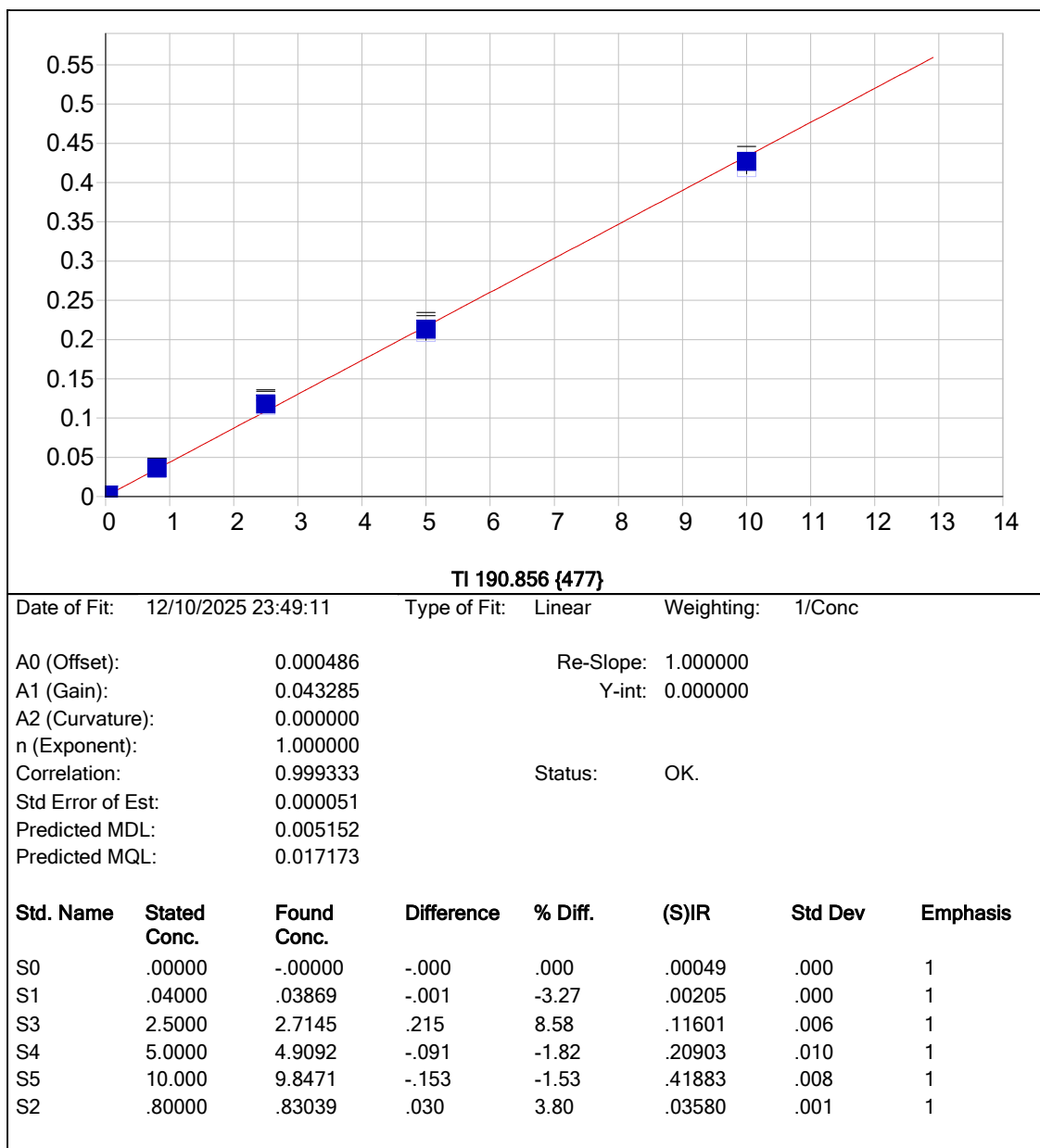
Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	2033	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
S1	S1	1	2037	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
S2	S2	1	2042	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
S3	S3	1	2046	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
S4	S4	1	2050	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
S5	S5	1	2054	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
ICV01	ICV01	1	2058	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
LLICV01	LLICV01	1	2126	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
ICB01	ICB01	1	2134	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
CRI01	CRI01	1	2139	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
ICSA01	ICSA01	1	2143	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
ICSAB01	ICSAB01	1	2147	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
CCV01	CCV01	1	2200	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
CCB01	CCB01	1	2204	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
PB170335BL	PB170335BL	1	2208	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
PB170335BS	PB170335BS	1	2213	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
Q3483-10	HW1025-PT-MET-SOIL	1	2217	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
CCV02	CCV02	1	2233	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
CCB02	CCB02	1	2237	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
CCV03	CCV03	1	2352	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
CCB03	CCB03	1	2356	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
CCV04	CCV04	1	0017	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti
CCB04	CCB04	1	0042	Ag,Al,As,B,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Li,Mg,Mn,Mo,Na,Ni,Pb,Sb,Se,Sn,Sr,Ti

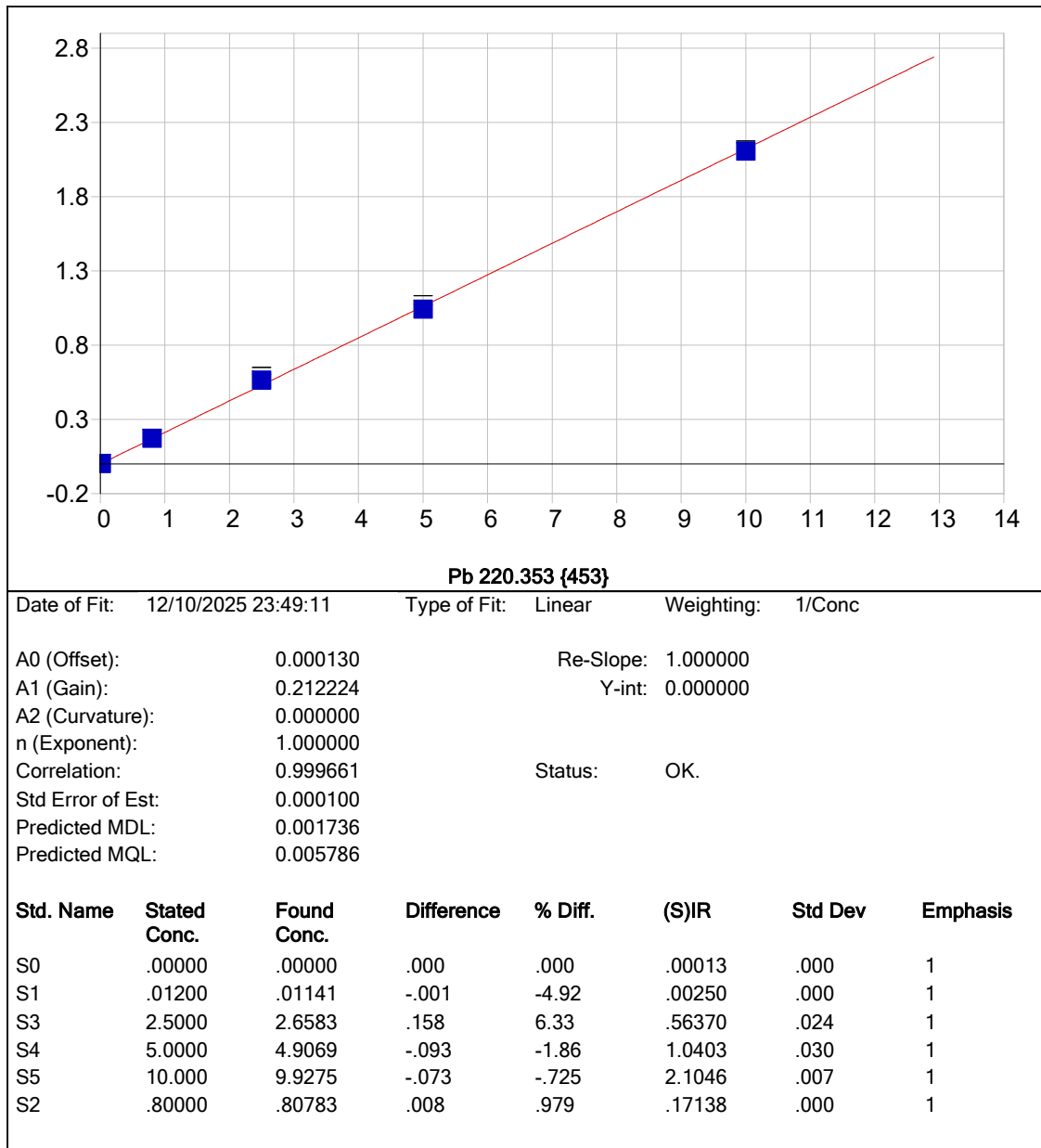


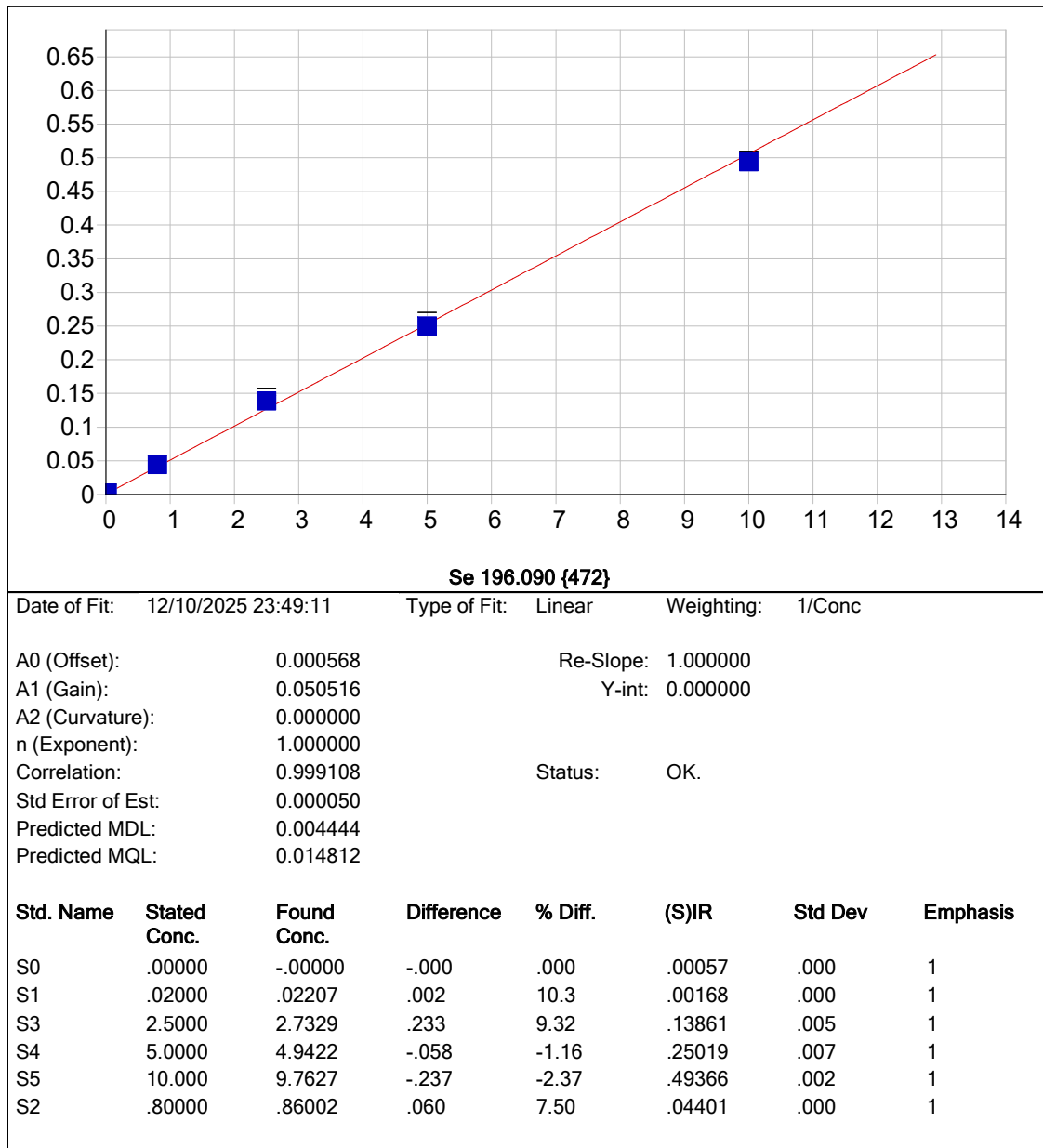
METAL RAW DATA

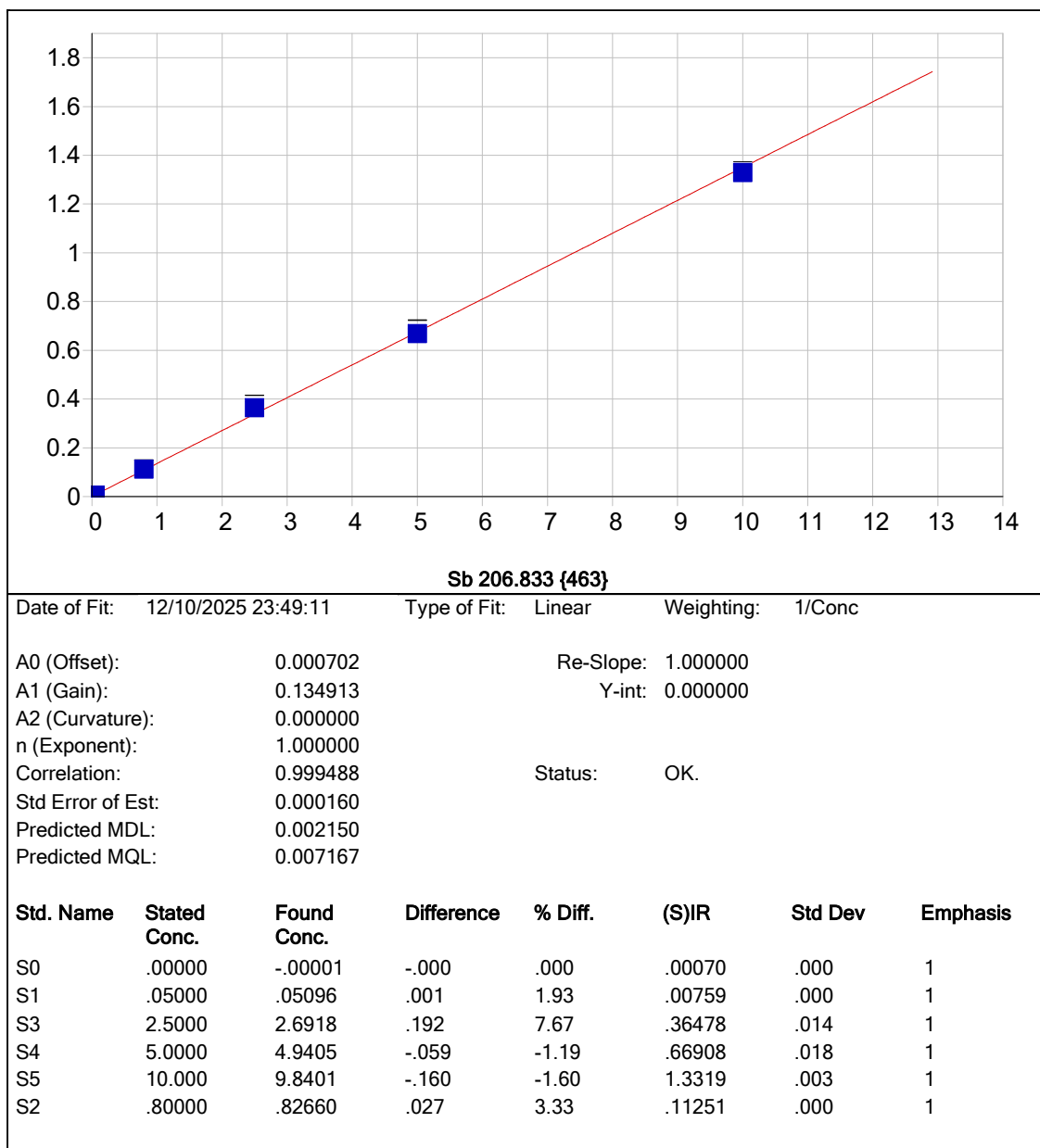
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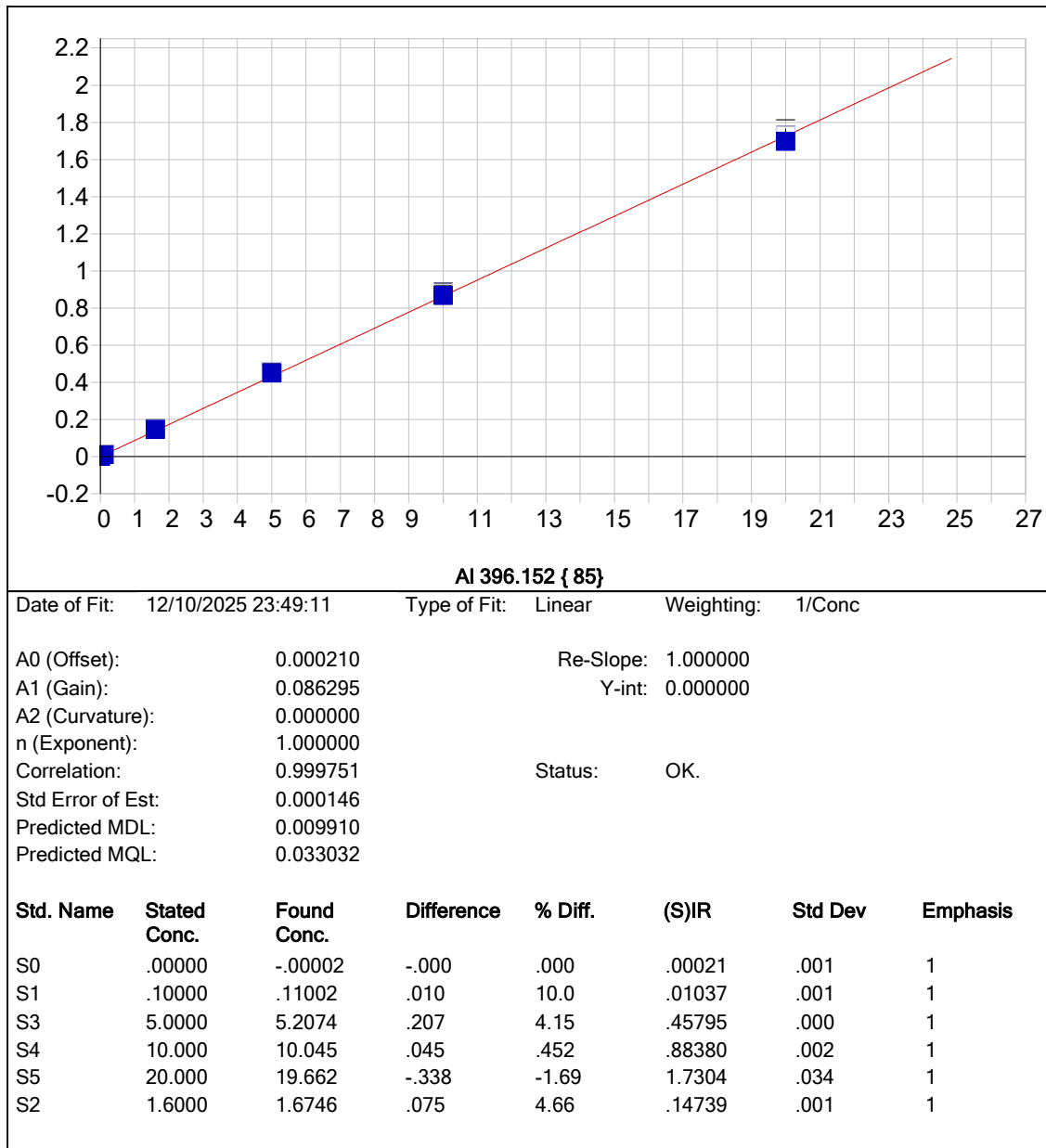


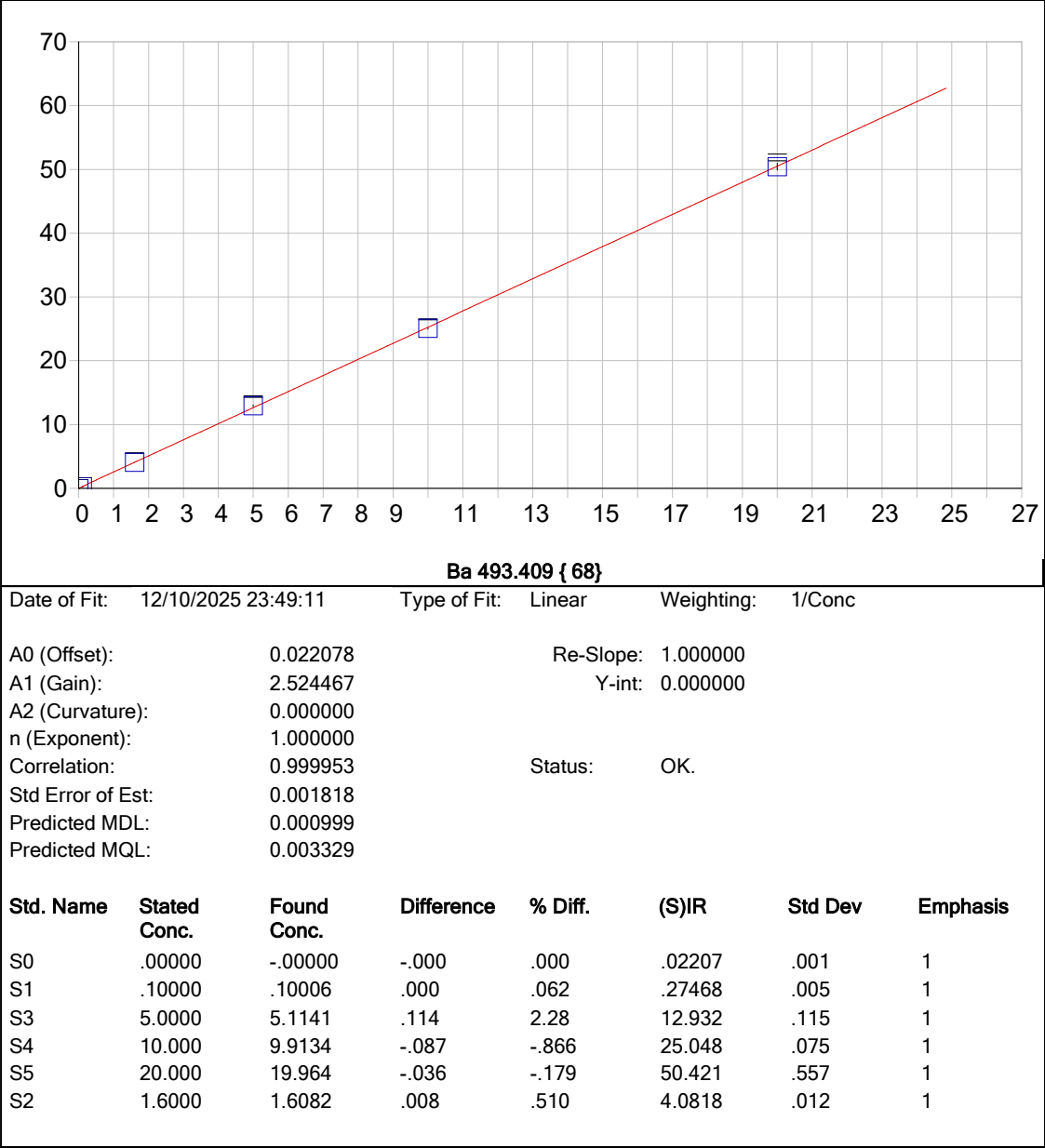


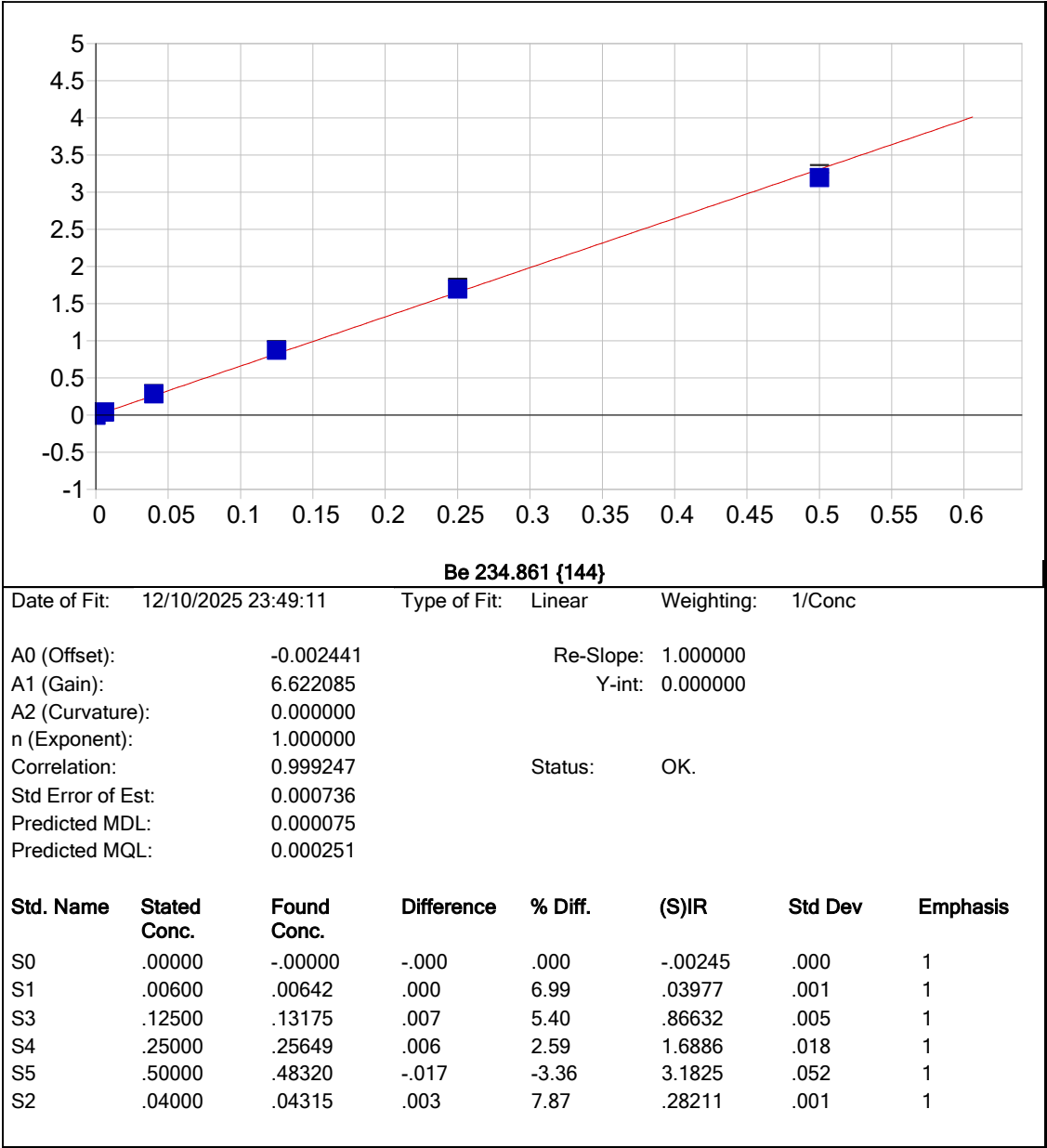


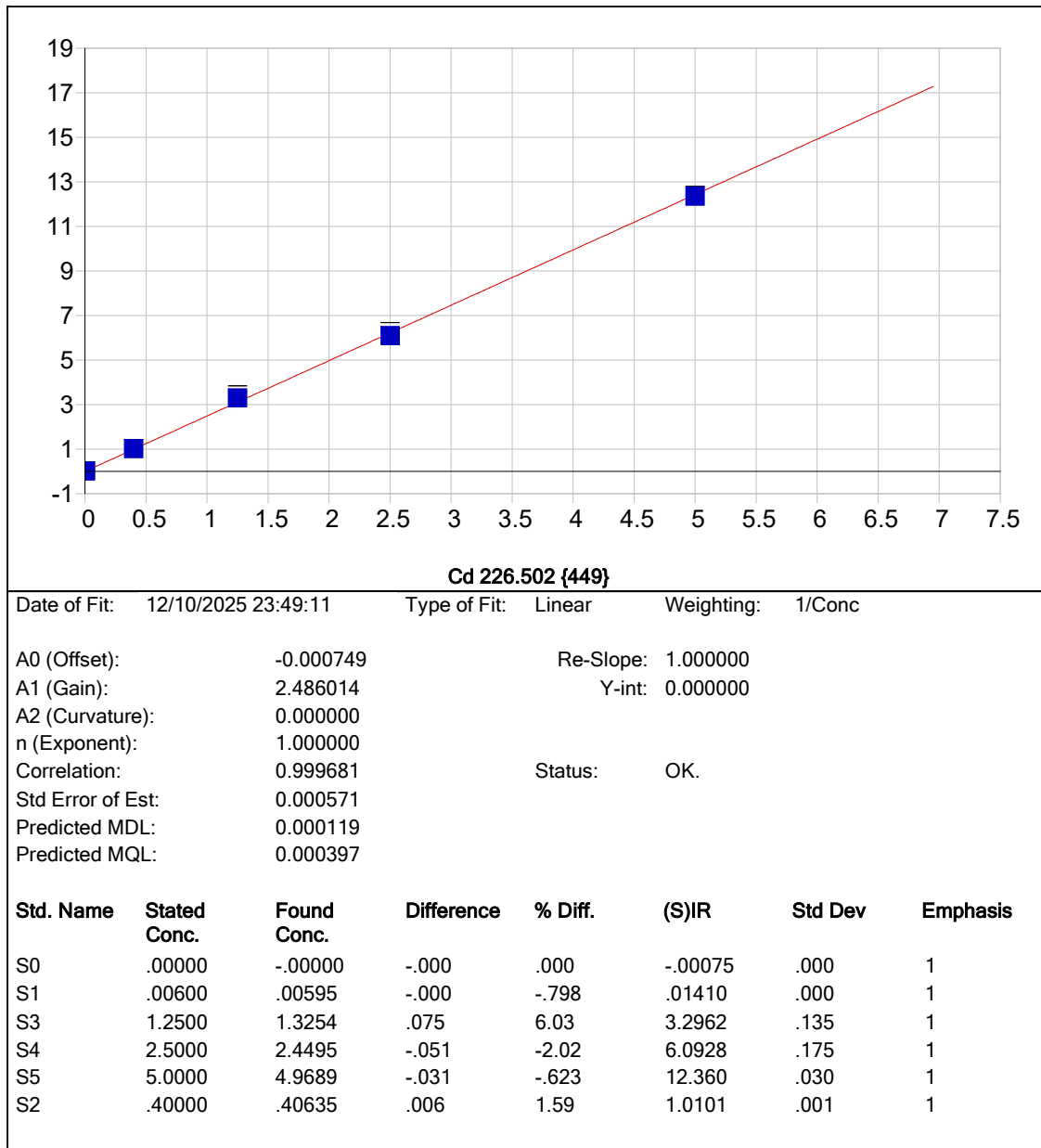


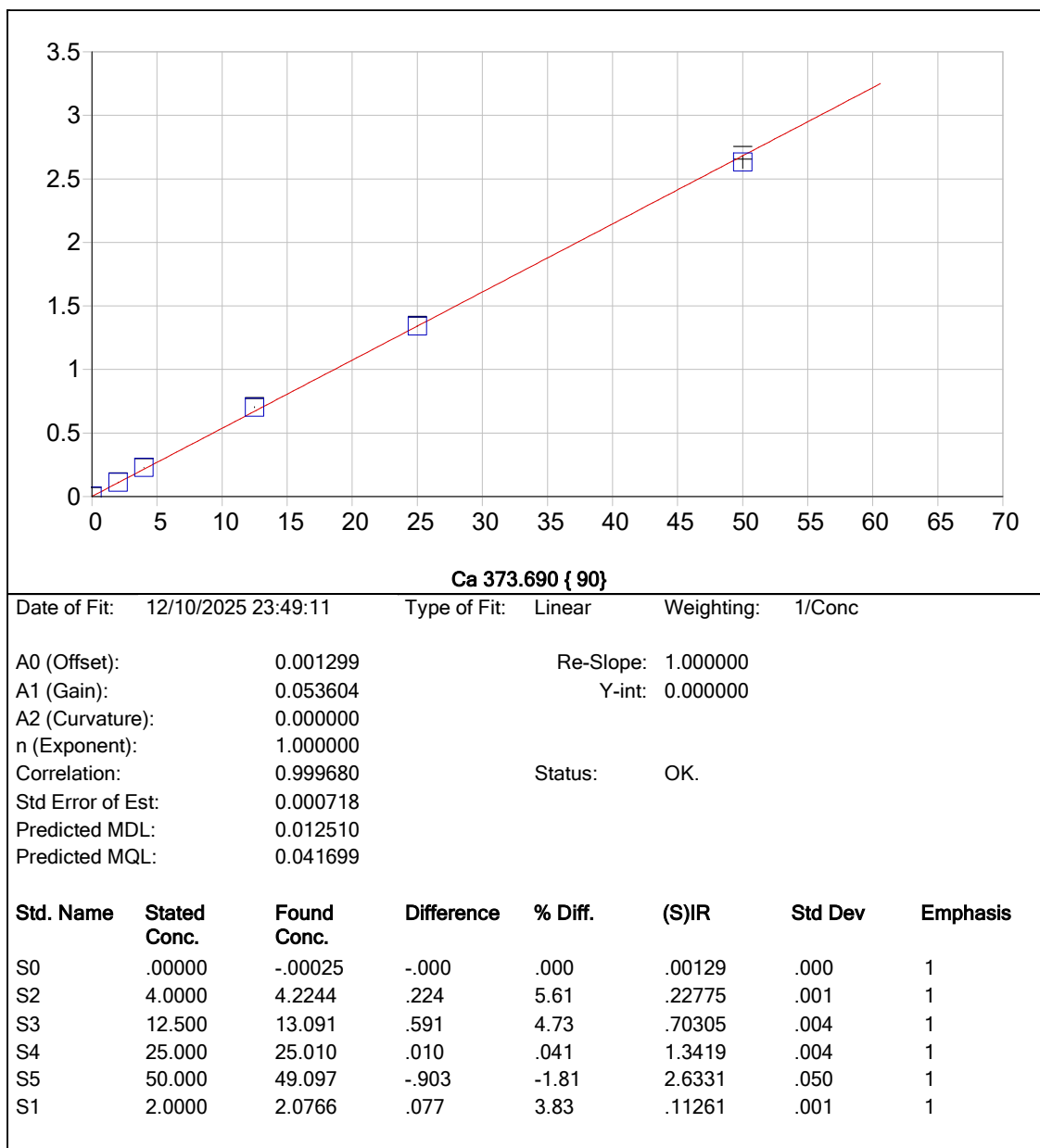


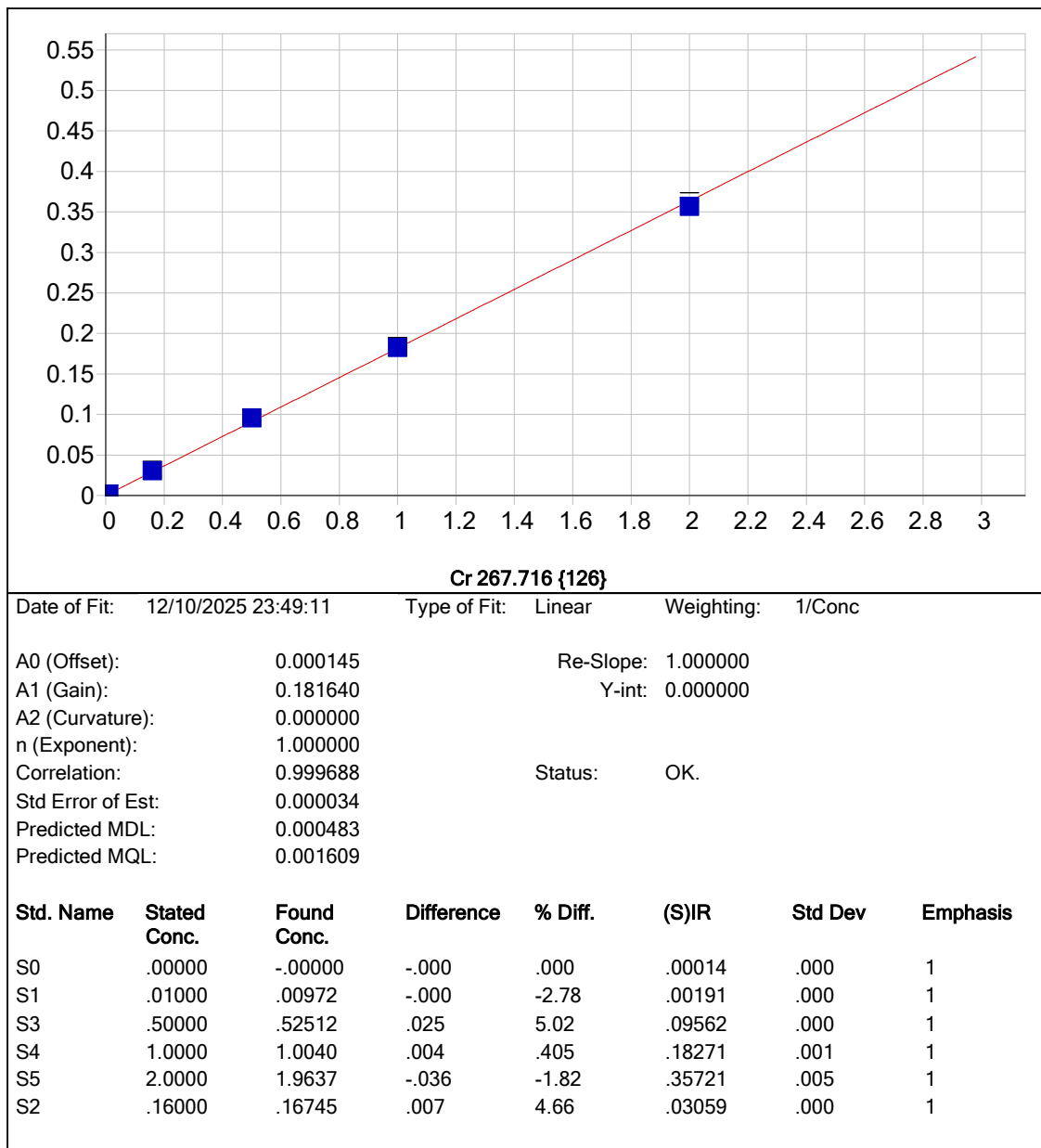


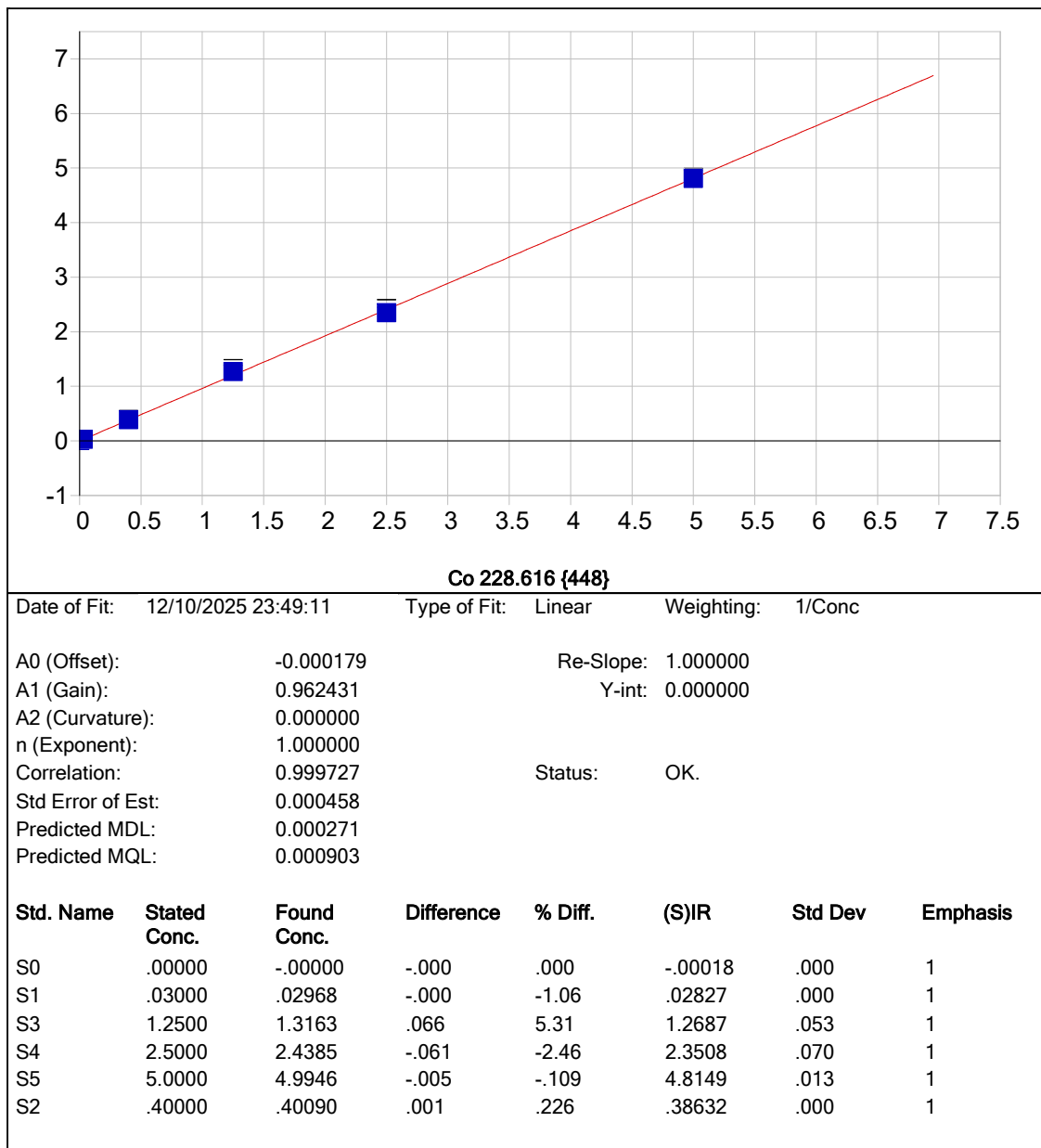


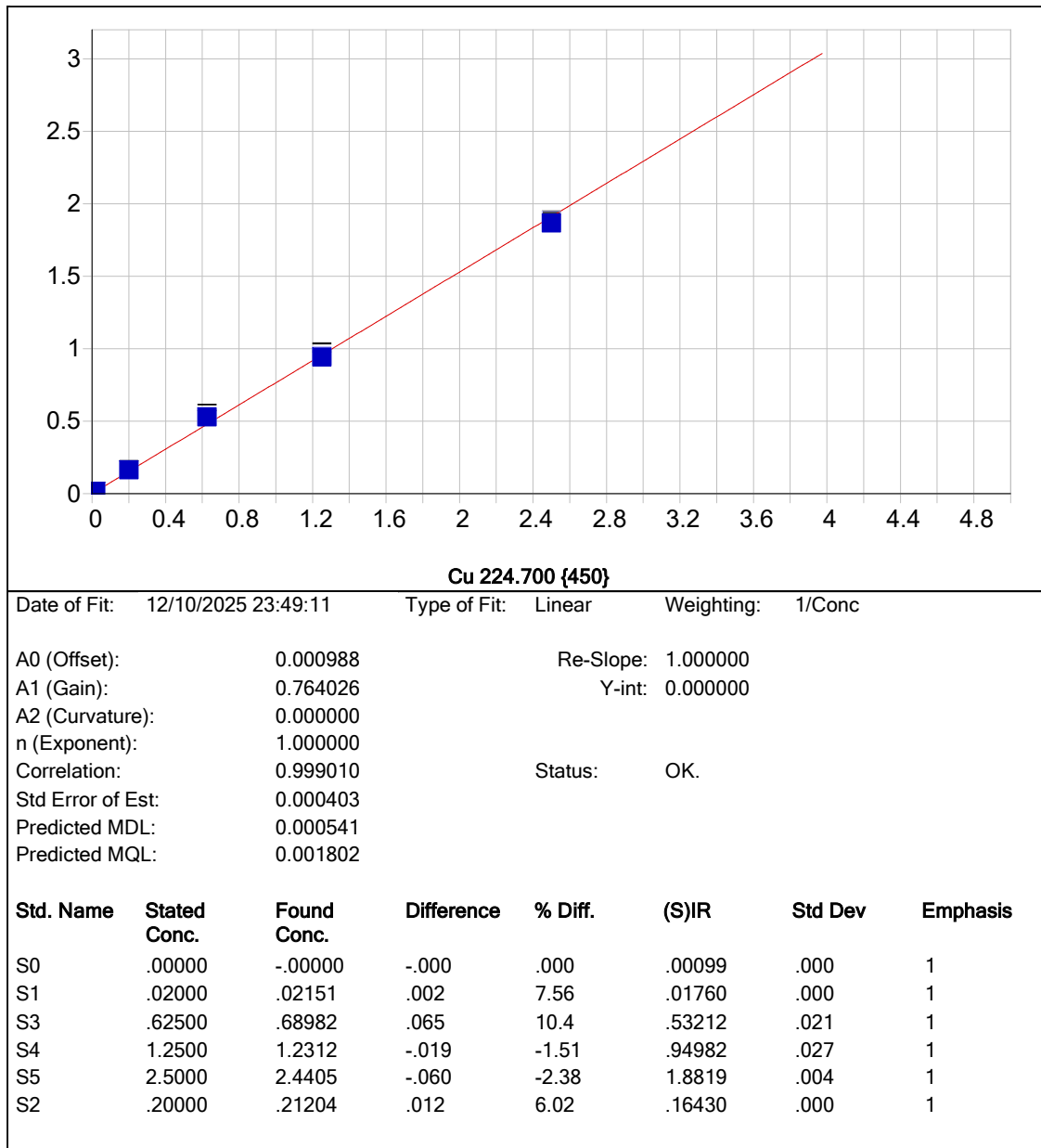


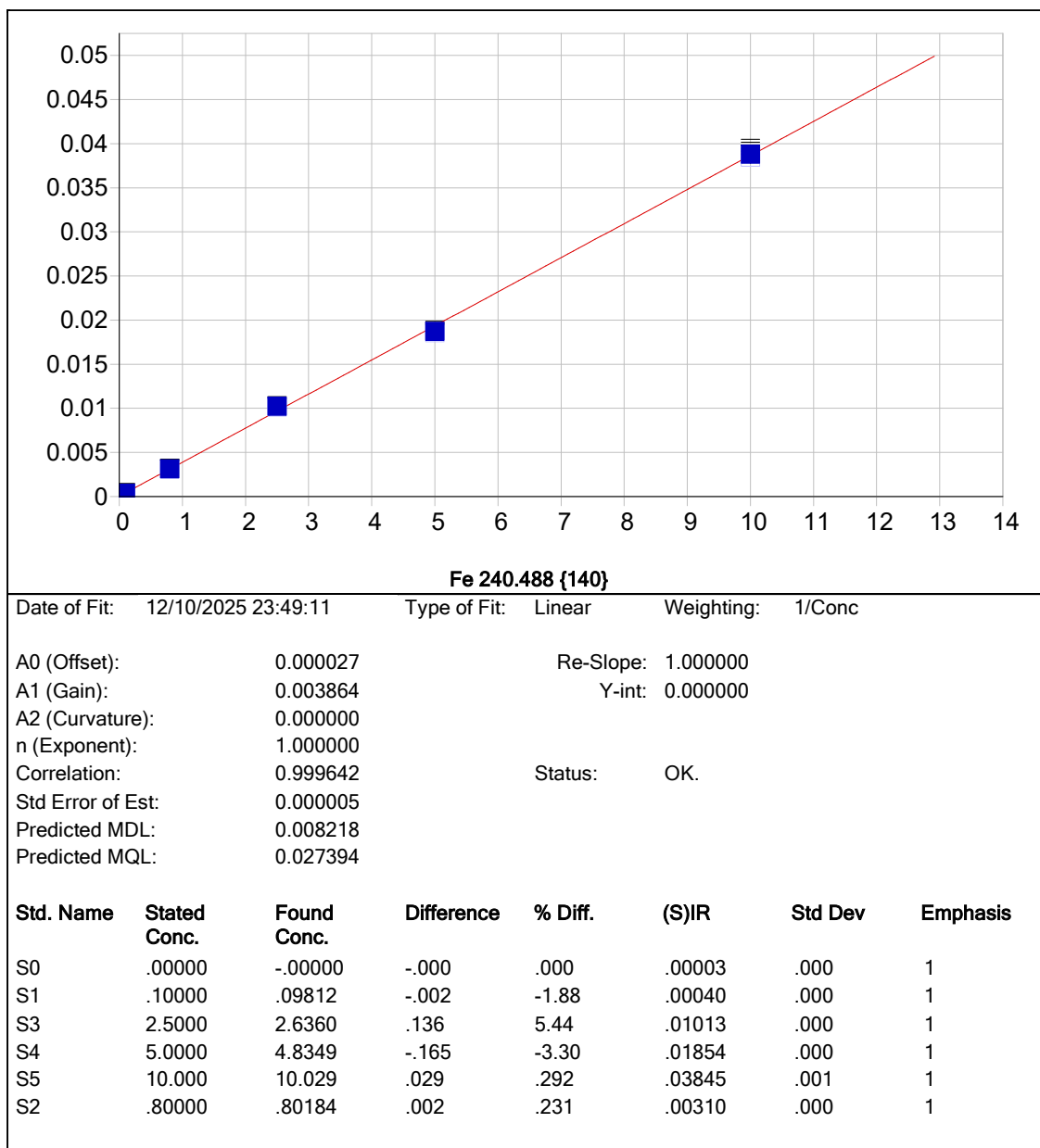


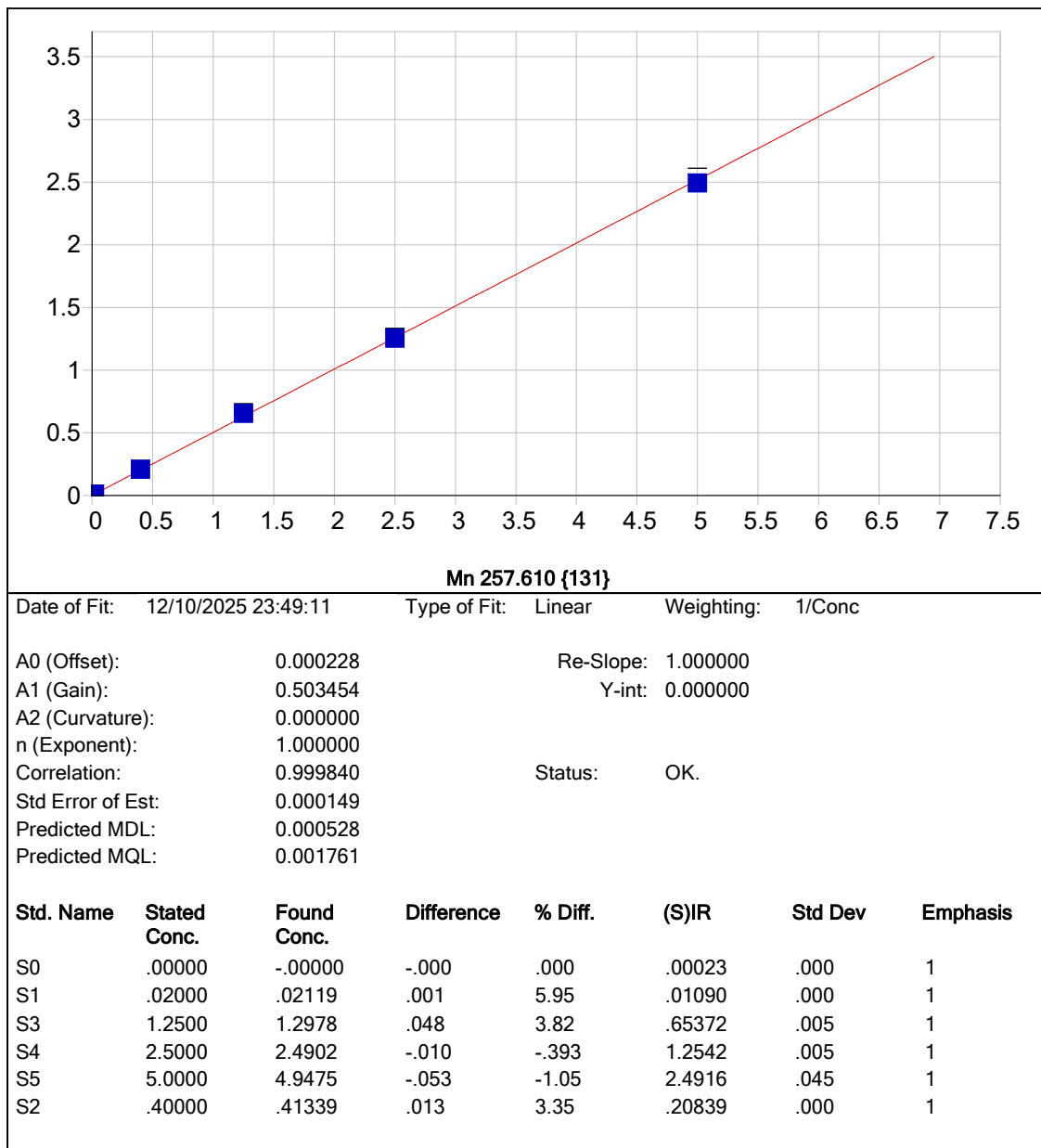


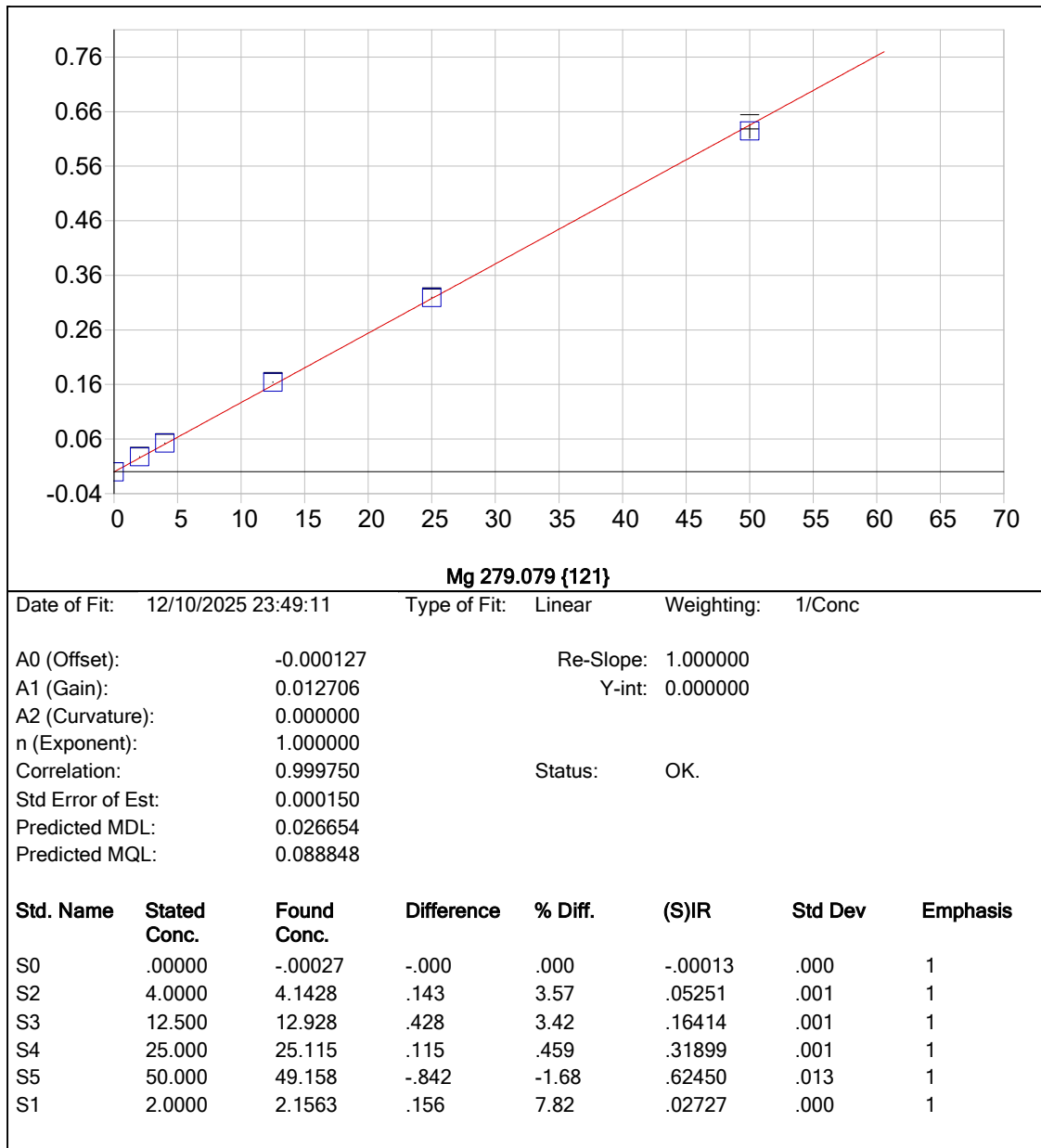


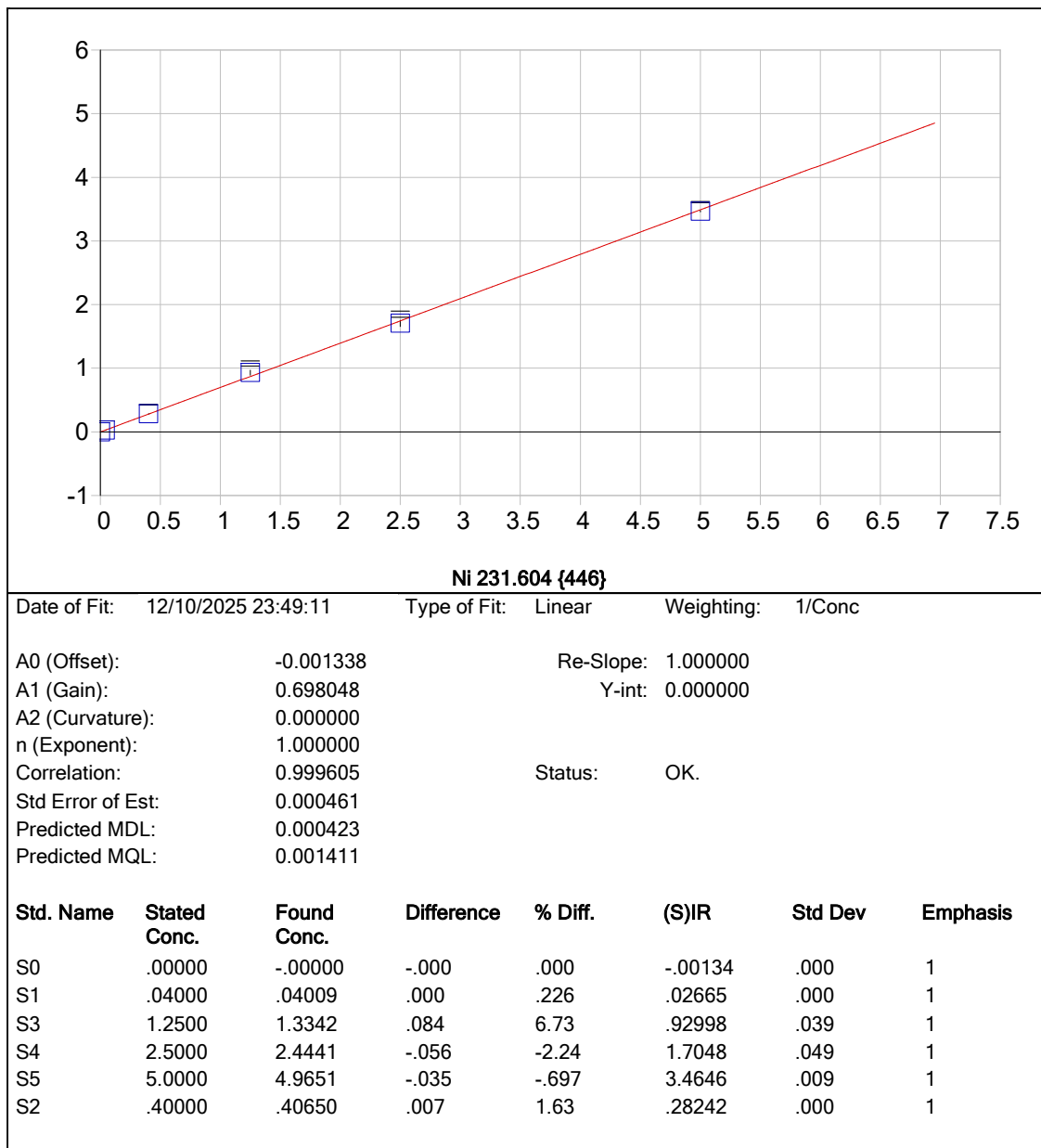


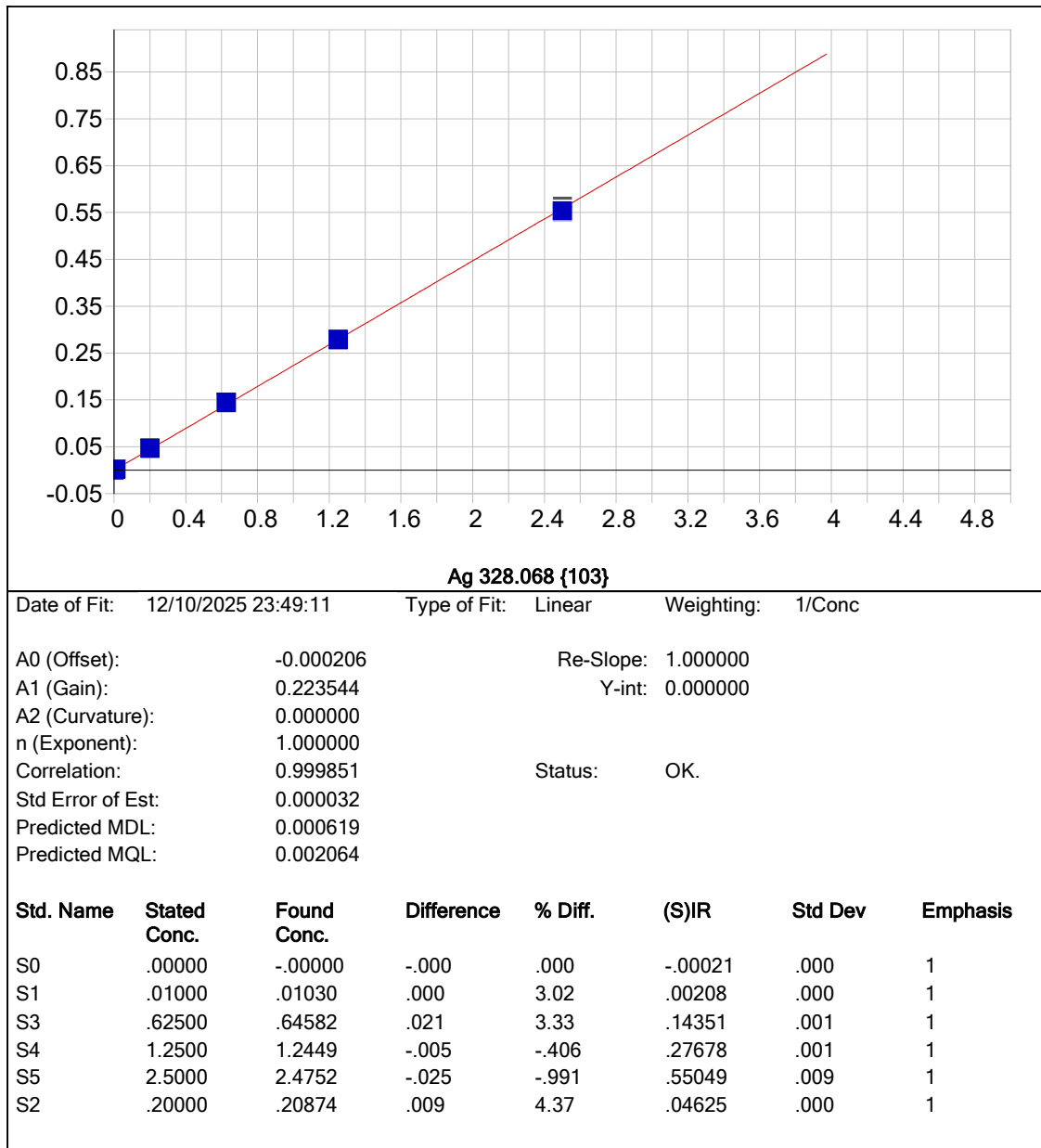


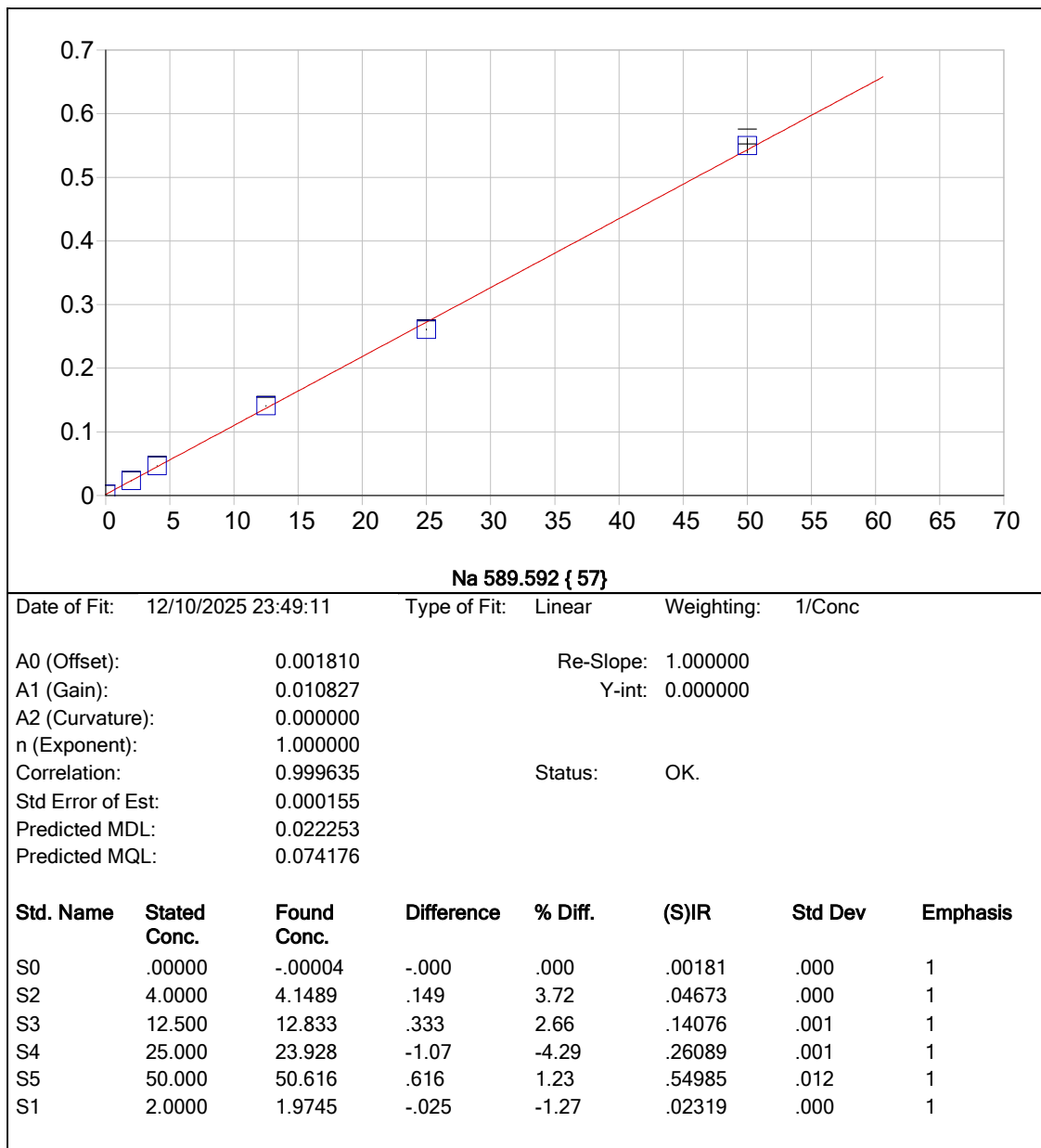


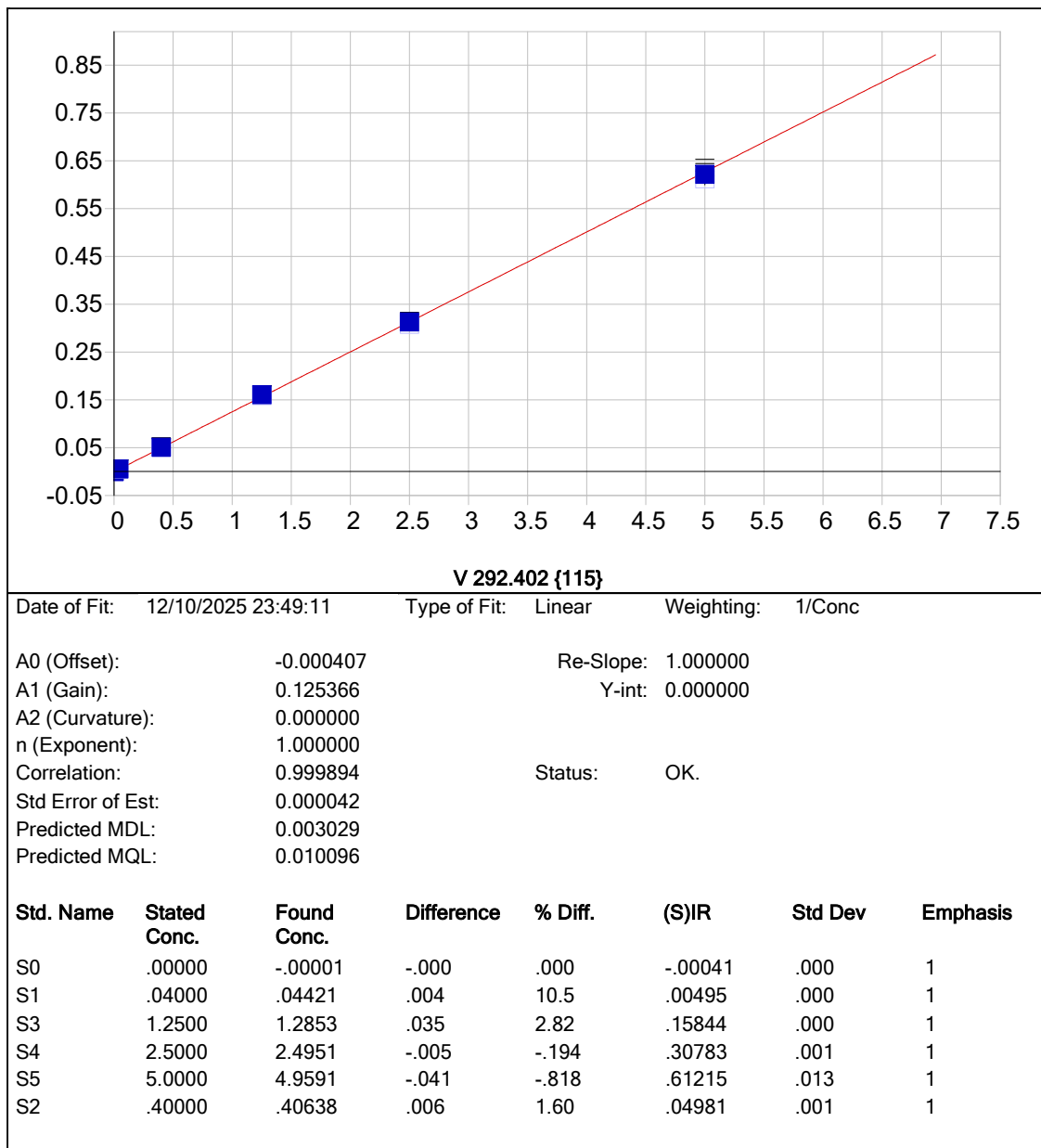


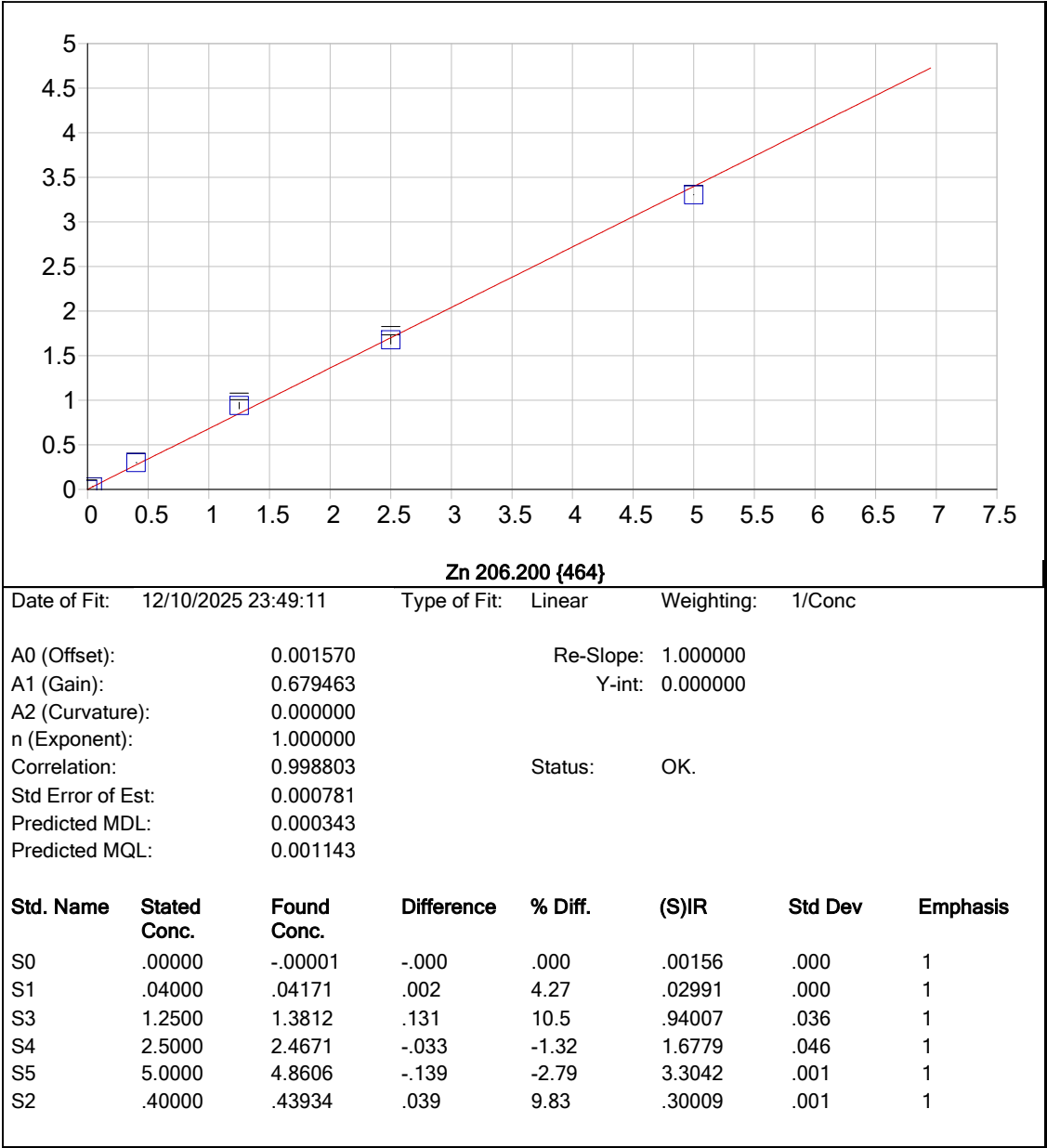


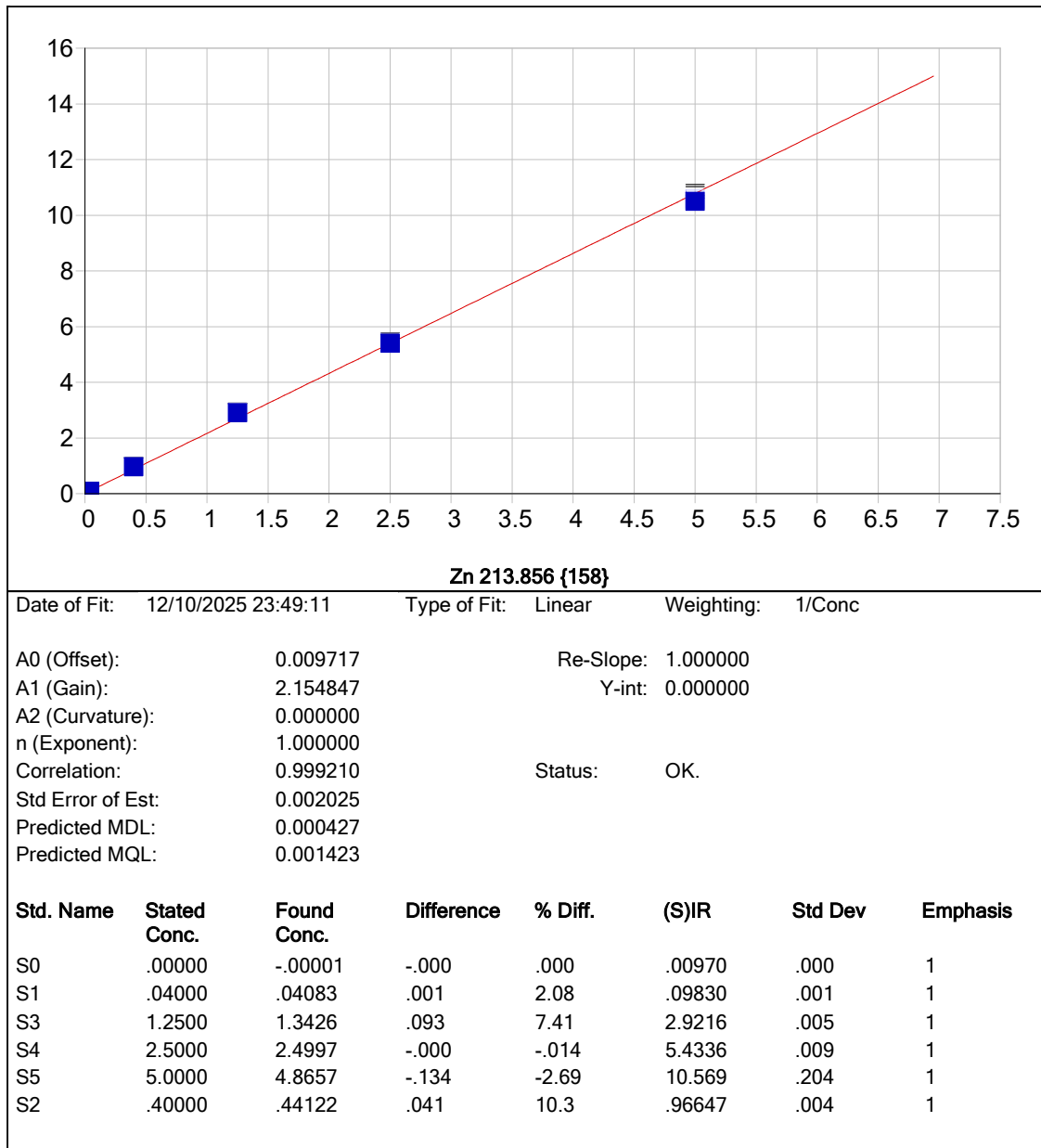


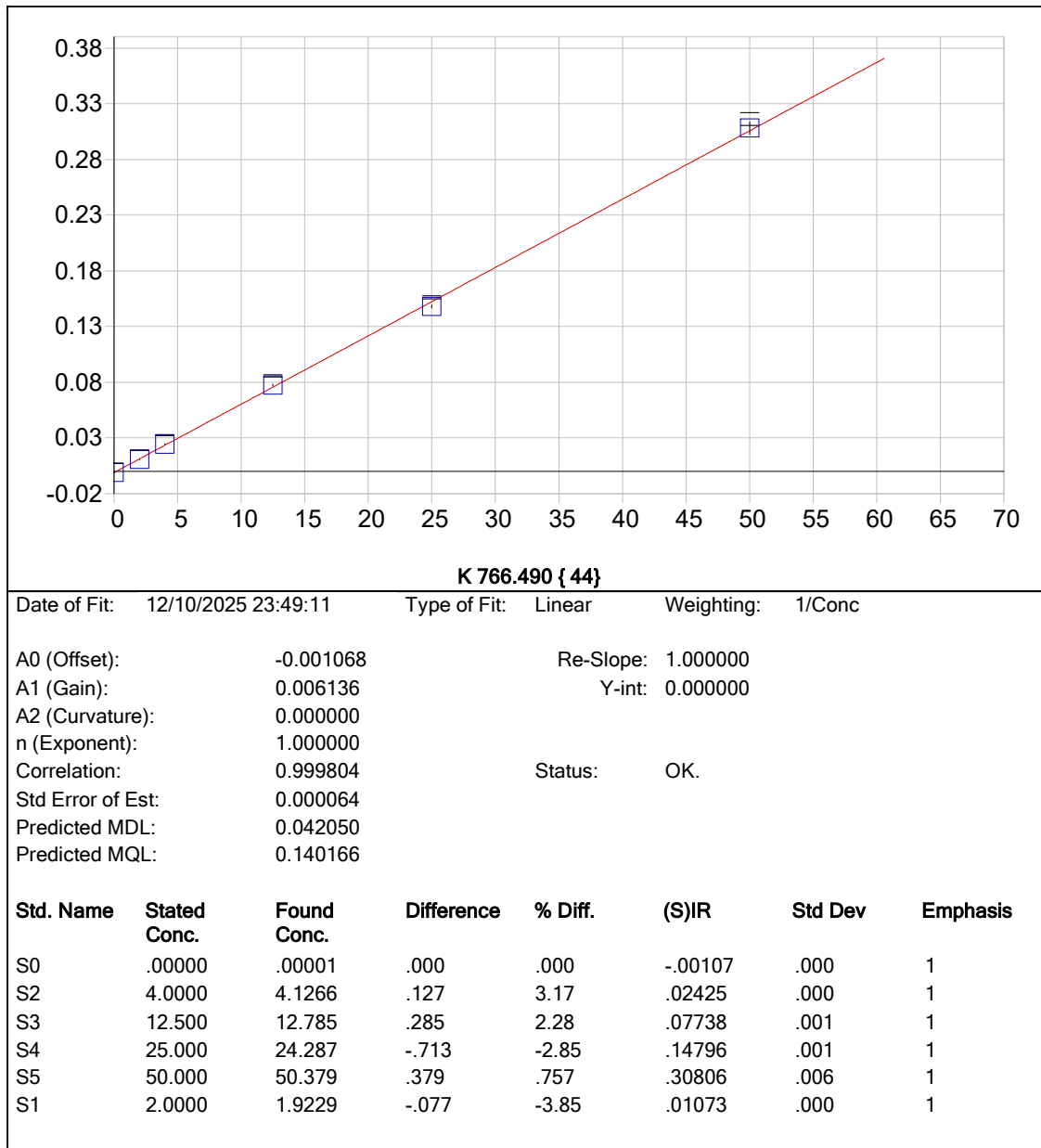


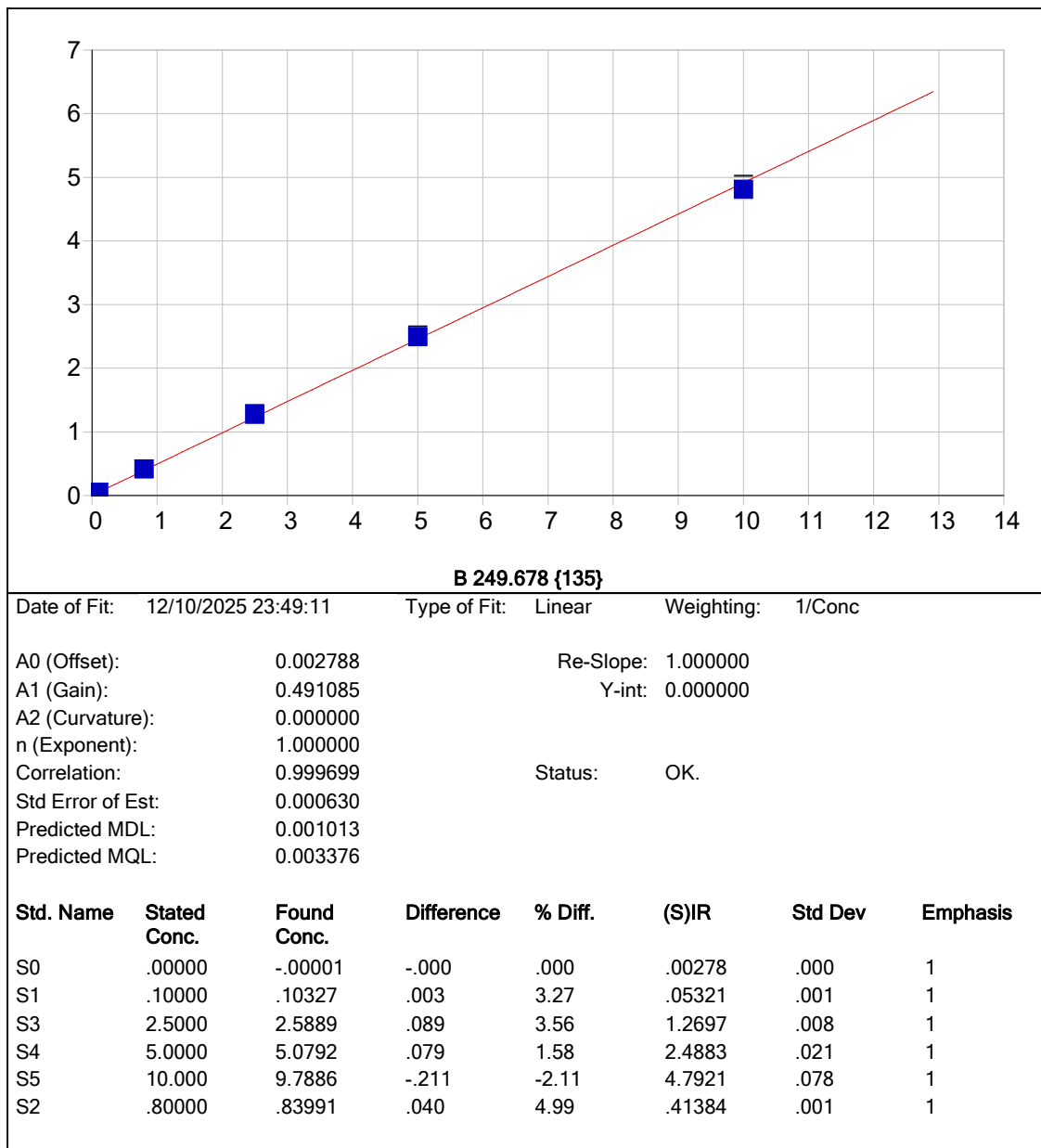


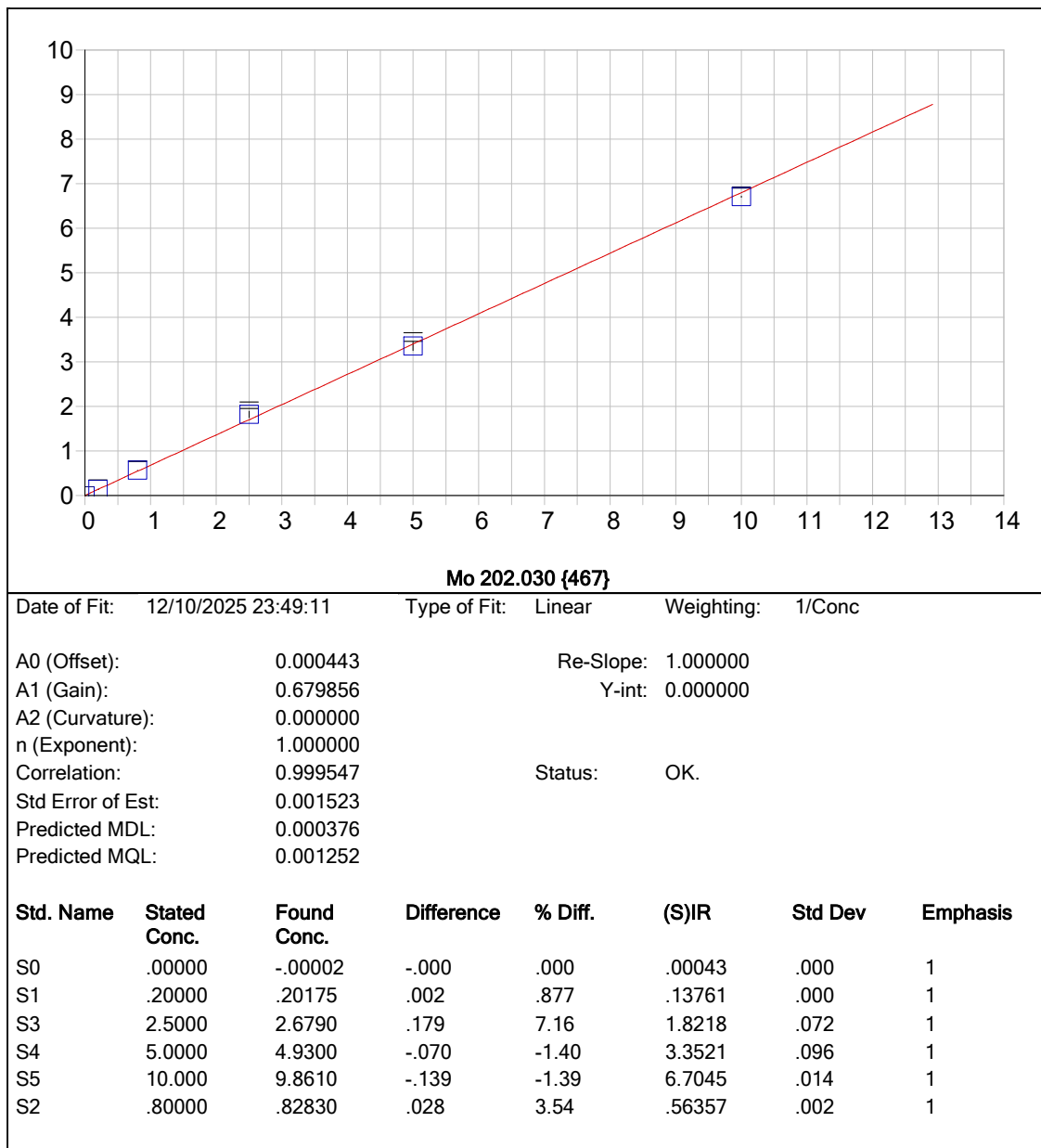


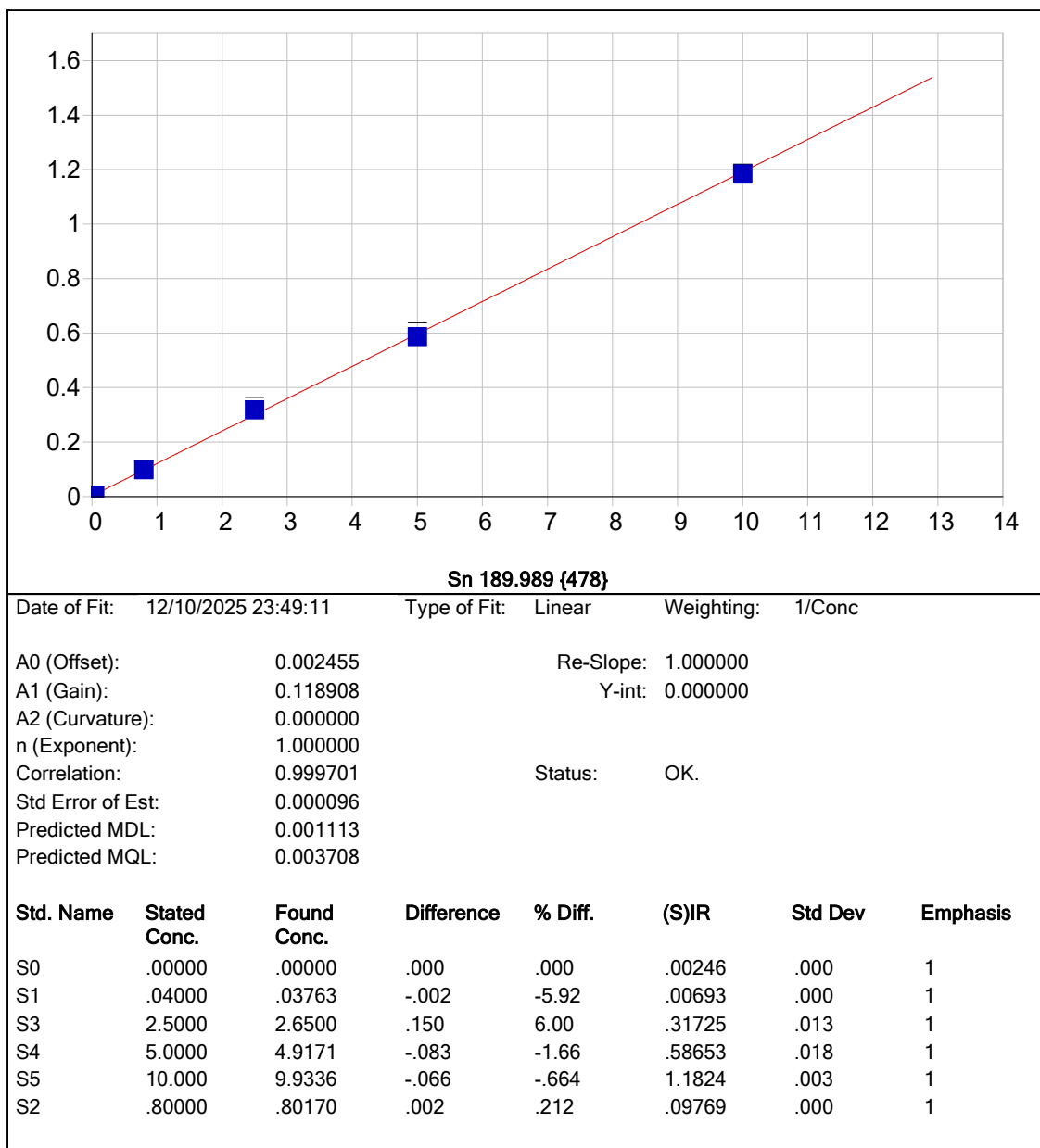


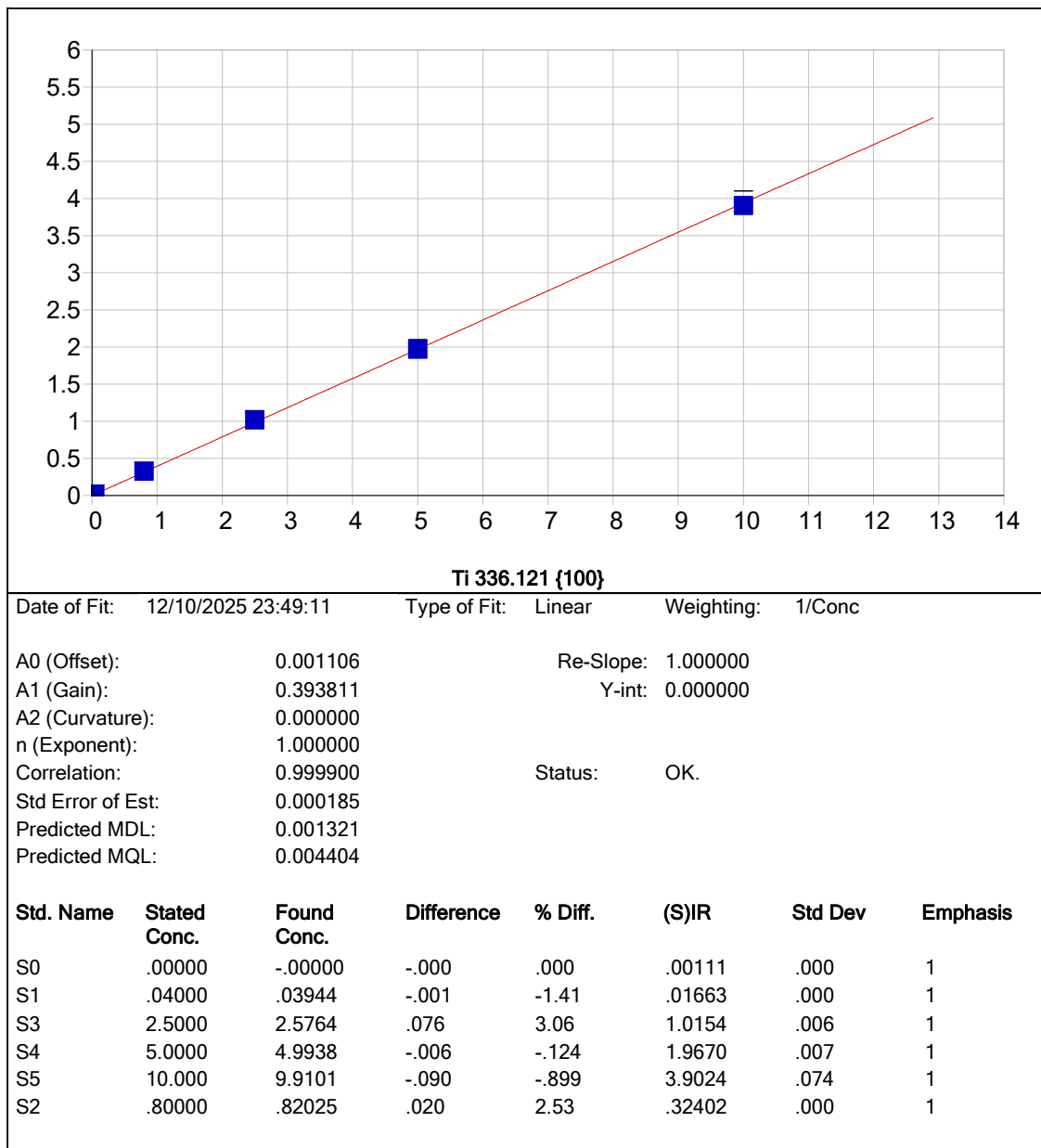


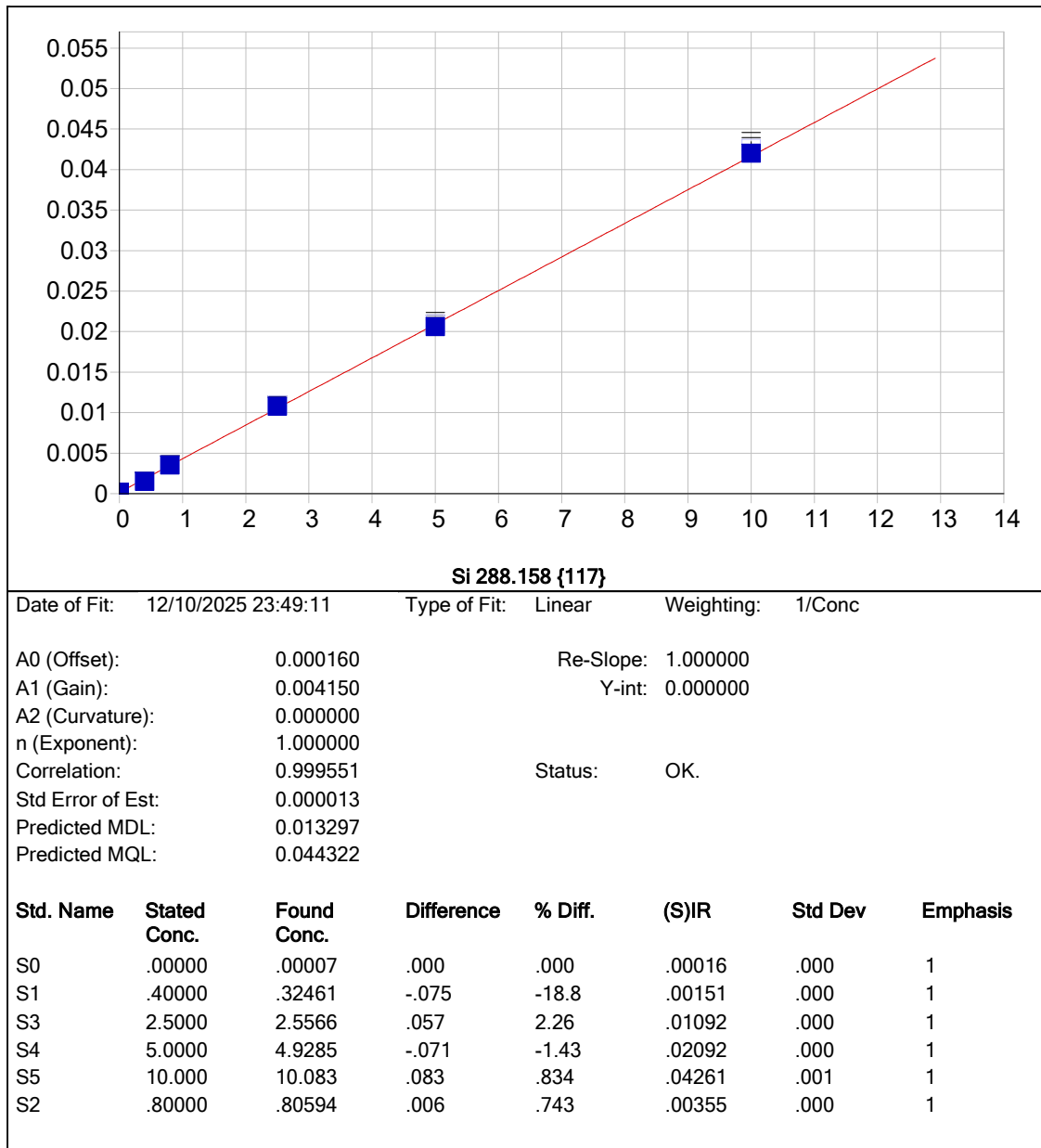


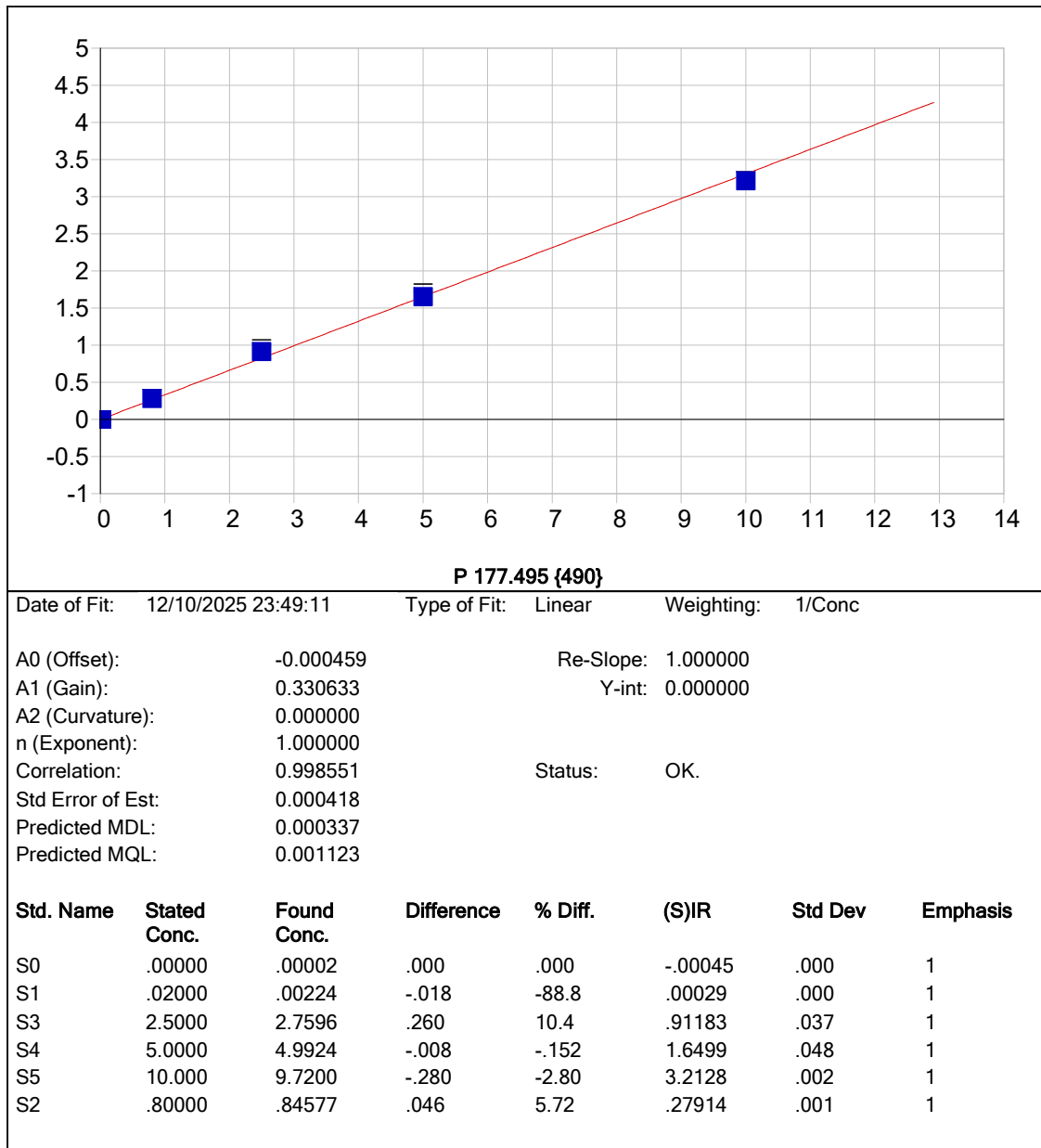


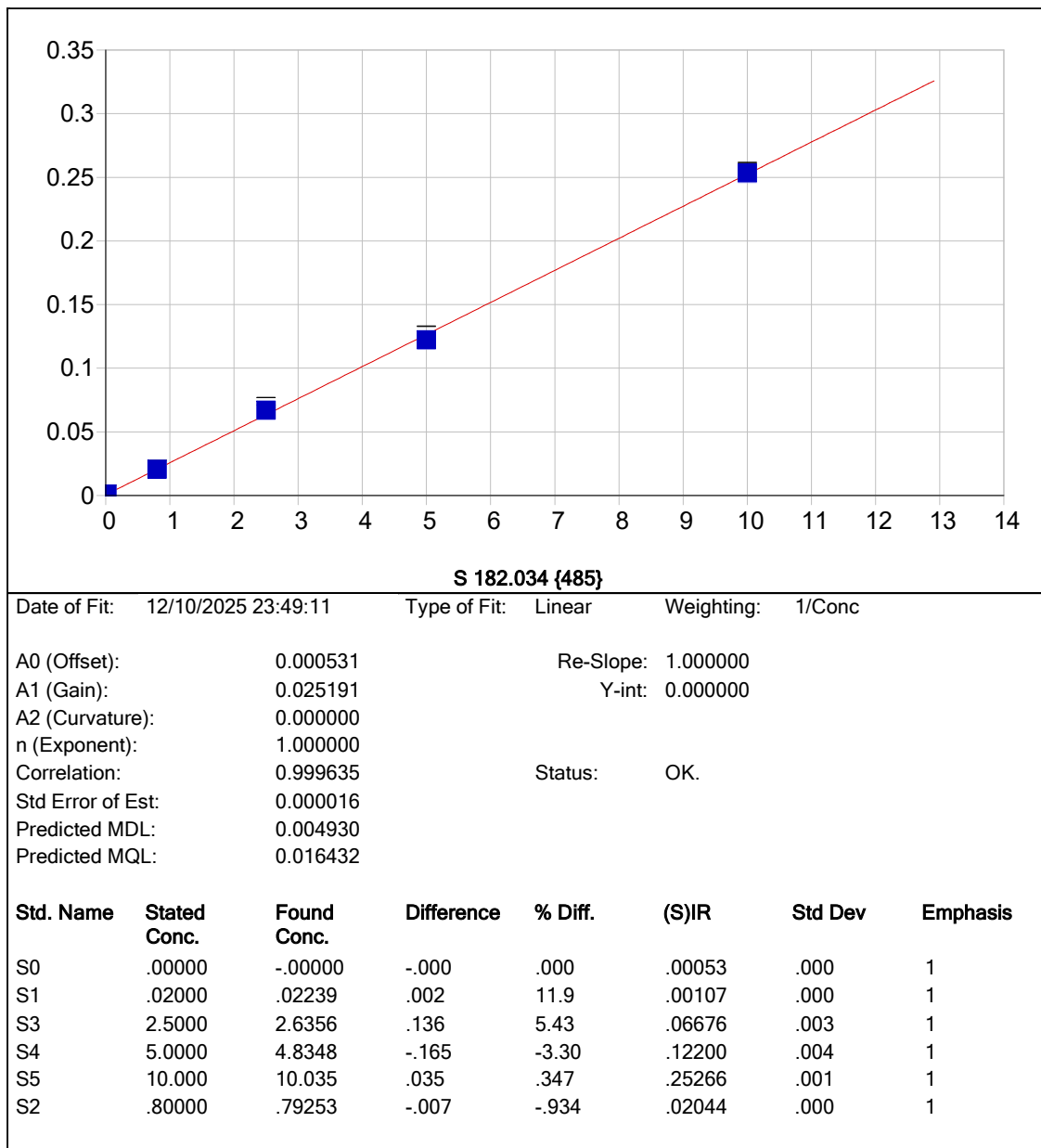


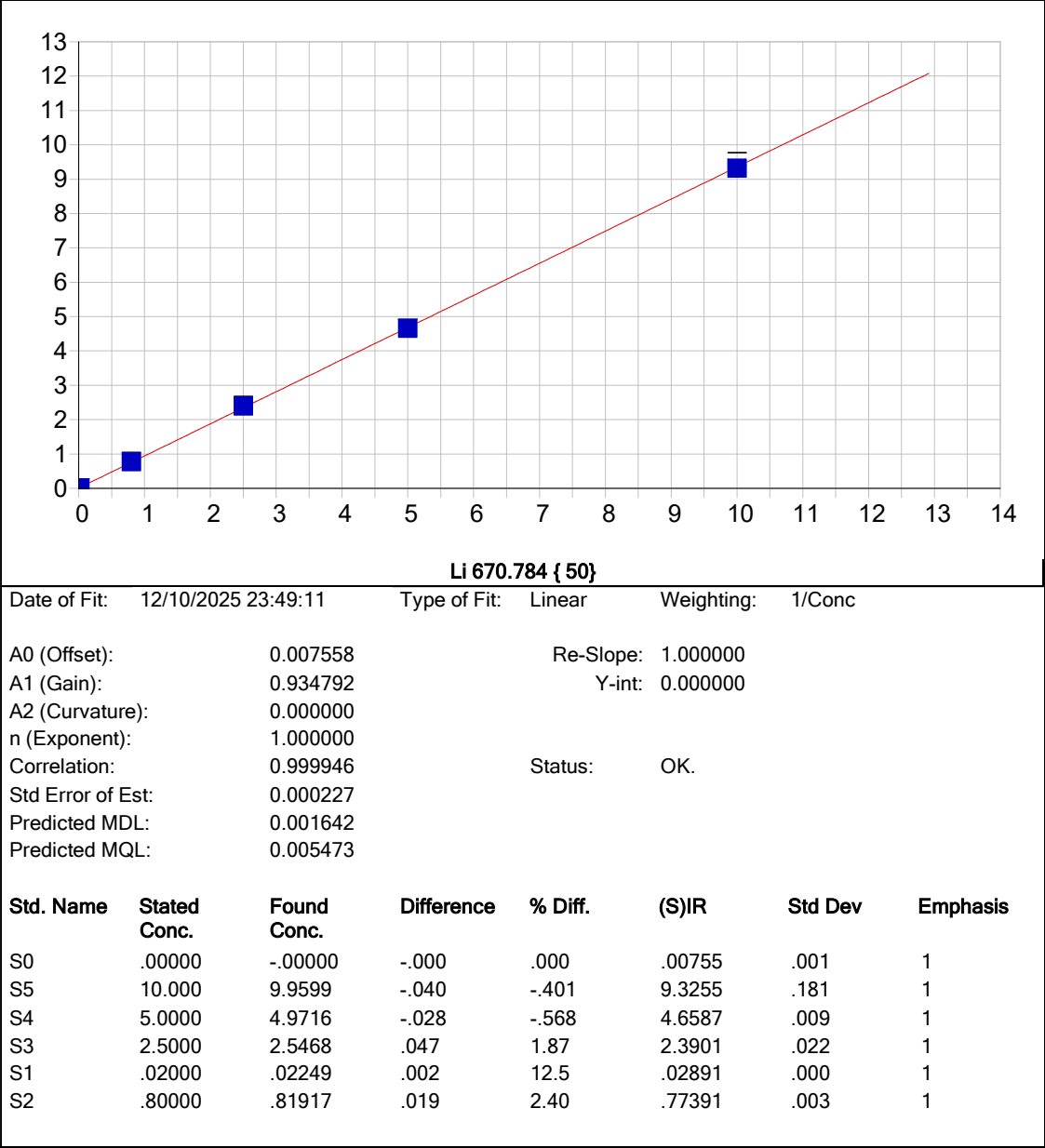


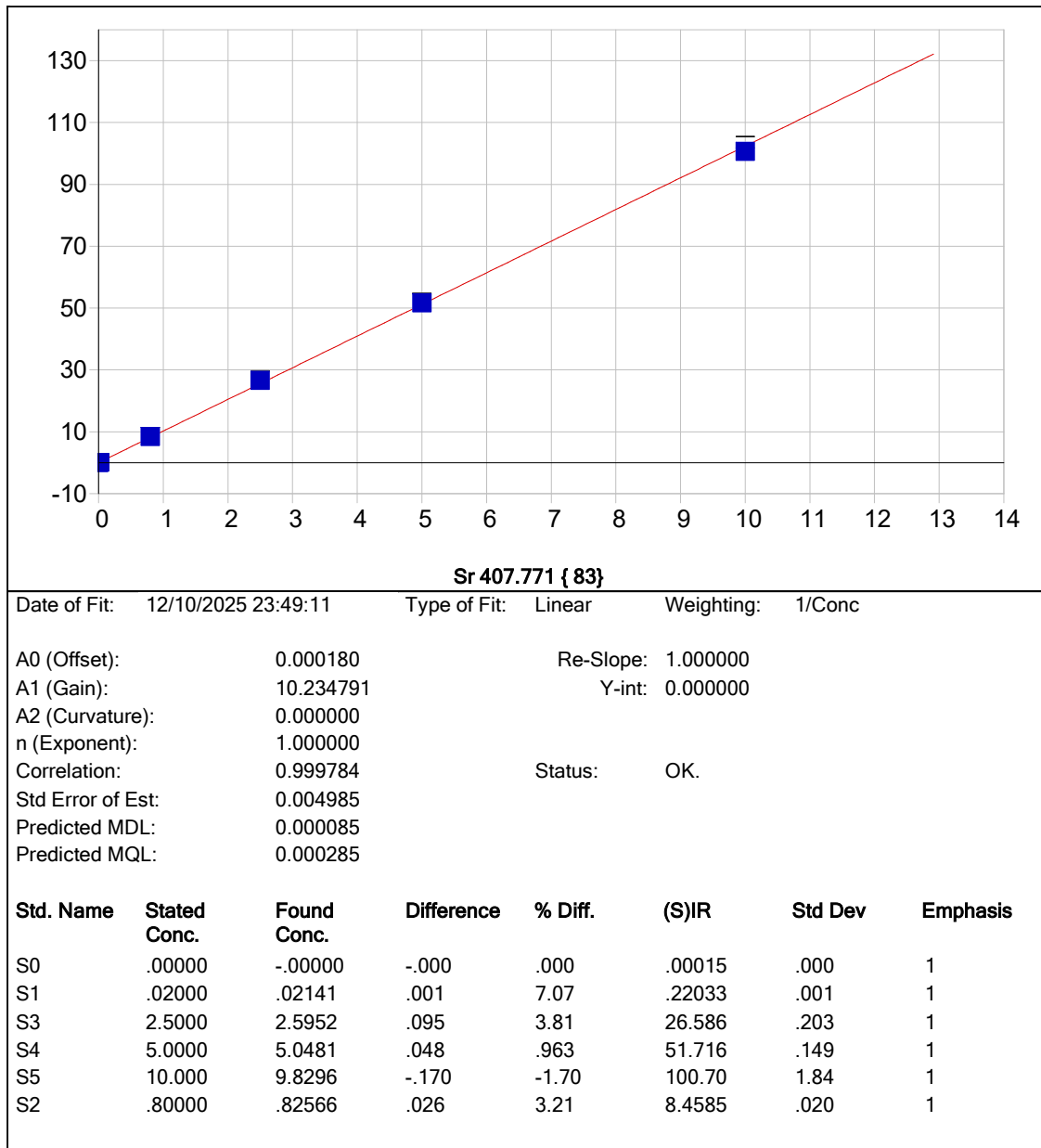


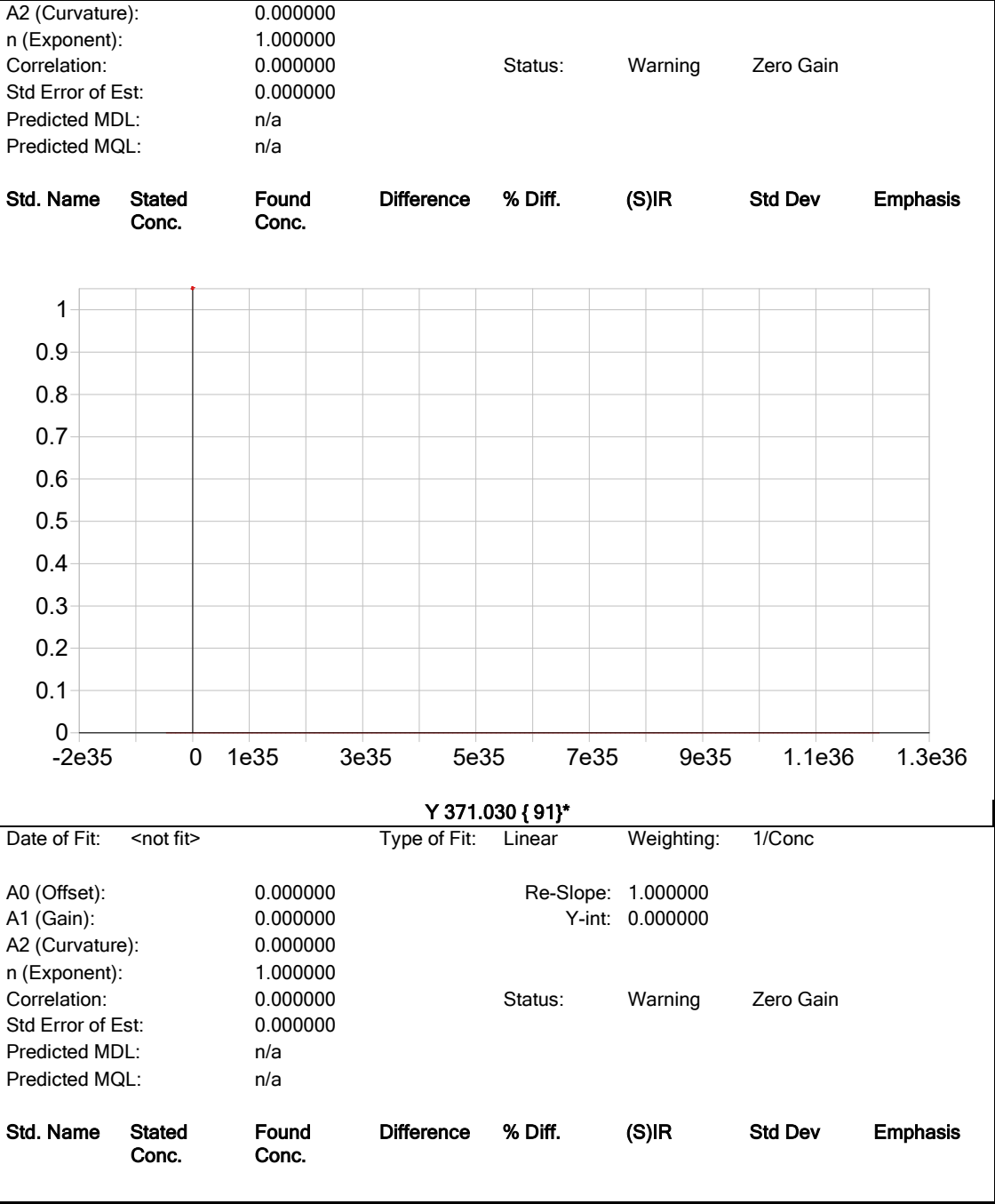


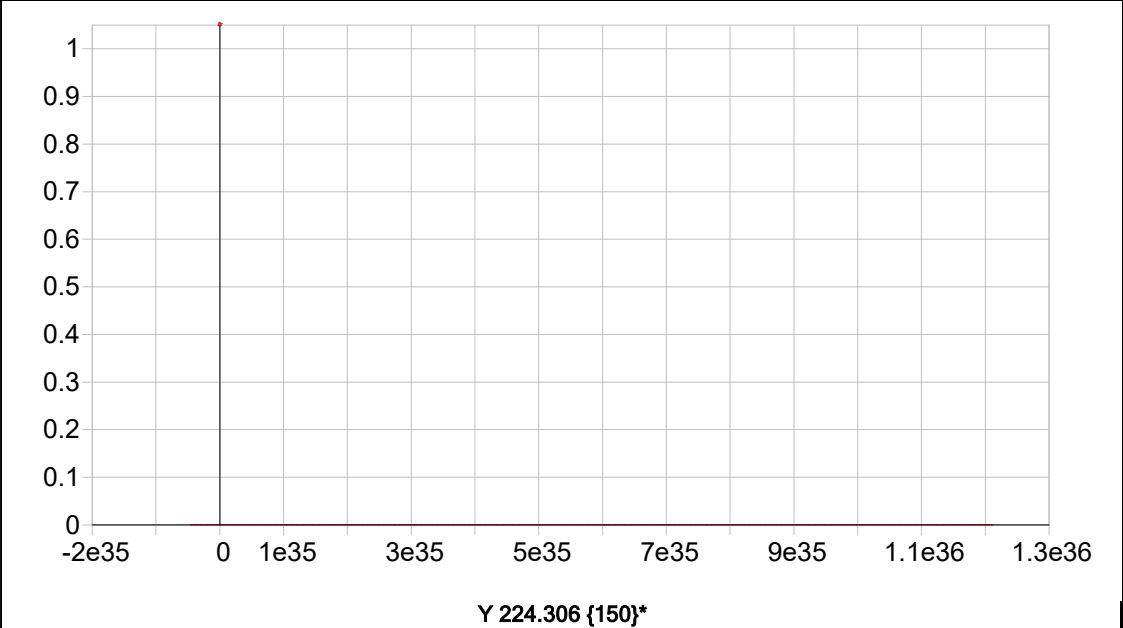






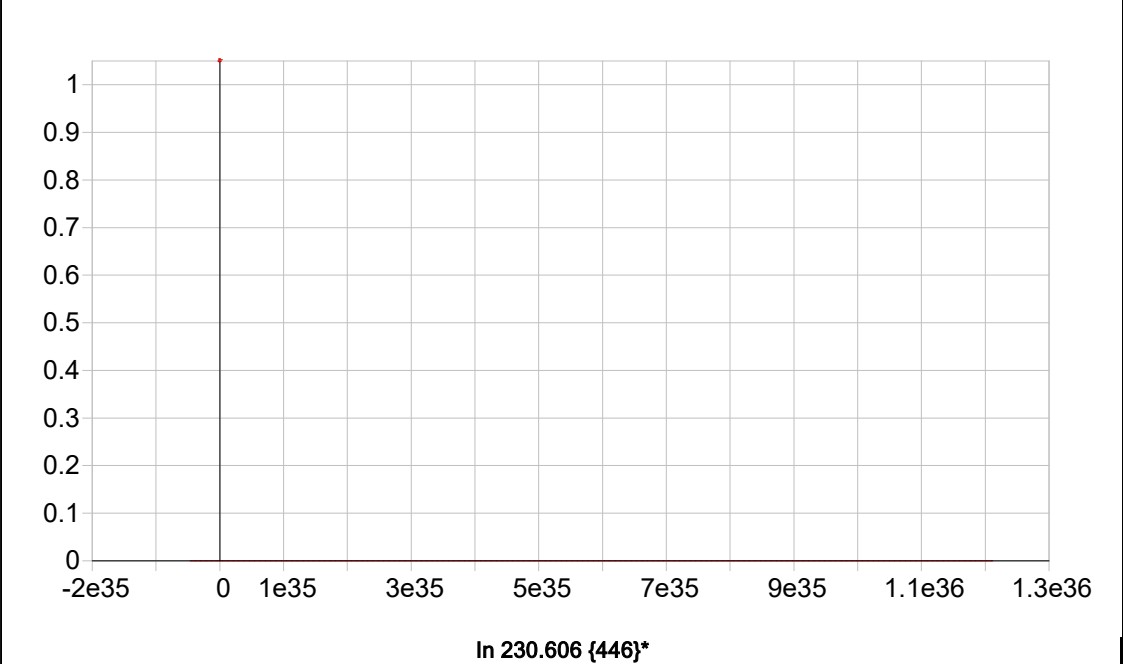






Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000		Re-Slope:	1.000000	
A1 (Gain):	0.000000		Y-int:	0.000000	
A2 (Curvature):	0.000000				
n (Exponent):	1.000000				
Correlation:	0.000000		Status:	Warning	Zero Gain
Std Error of Est:	0.000000				
Predicted MDL:	n/a				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

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
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Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000	Re-Slope:	1.000000		
A1 (Gain):	0.000000	Y-int:	0.000000		

A2 (Curvature):		0.000000					
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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
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- 14
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Sample Name: S0 Acquired: 12/10/2025 20:33:19 Type: Cal
Method: 6010-200.7 NEW(v398) Mode: IR Corr. Factor: 1.000000
User: Jaswal 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	.00005	.00049	.00013	.00057	.00070	.00021	.02207	-.00245
Stddev	.00006	.00016	.00033	.00007	.00006	.00073	.00124	.00010
%RSD	126.91	33.247	251.47	12.429	8.0155	353.09	5.6361	4.2389
#1	-.00002	.00052	.00001	.00050	.00075	-.00058	.02075	-.00256
#2	.00007	.00063	-.00012	.00057	.00072	.00088	.02225	-.00243
#3	.00009	.00031	.00050	.00064	.00064	.00033	.02322	-.00235
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	-.00075	.00129	.00014	-.00018	.00099	.00003	.00023	-.00013
Stddev	.00026	.00036	.00003	.00005	.00035	.00002	.00008	.00027
%RSD	35.152	27.651	18.479	29.661	35.300	88.078	33.568	203.13
#1	-.00093	.00090	.00017	-.00012	.00065	-.00000	.00028	.00017
#2	-.00045	.00160	.00012	-.00020	.00097	.00004	.00014	-.00034
#3	-.00087	.00135	.00015	-.00022	.00134	.00004	.00026	-.00022
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	-.00134	-.00021	.00181	-.00041	.00970	-.00107	.00278	.00043
Stddev	.00007	.00004	.00014	.00011	.00032	.00019	.00005	.00013
%RSD	5.2377	20.804	7.4739	27.595	3.2600	17.865	1.7871	29.185
#1	-.00139	-.00016	.00165	-.00052	.00968	-.00114	.00279	.00040
#2	-.00137	-.00022	.00189	-.00030	.00940	-.00121	.00273	.00032
#3	-.00126	-.00024	.00189	-.00040	.01003	-.00085	.00283	.00057
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	.00246	.00111	.00016	-.00045	.00053	.00755	.00015	
Stddev	.00013	.00044	.00003	.00001	.00003	.00113	.00039	
%RSD	5.2145	39.656	16.397	2.3681	6.4481	14.900	255.19	
#1	.00253	.00161	.00017	-.00047	.00053	.00638	-.00002	
#2	.00252	.00081	.00013	-.00044	.00050	.00765	-.00012	
#3	.00231	.00090	.00018	-.00045	.00057	.00863	.00060	

Sample Name: S0 Acquired: 12/10/2025 20:33:19 Type: Cal
Method: 6010-200.7 NEW(v398) Mode: IR Corr. Factor: 1.000000
User: Jaswal 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	2770.4	55475.	7660.9	1969.9	3970.3
Stddev	9.9	44.	39.1	7.9	17.0
%RSD	.35592	.07950	.50981	.39968	.42761
#1	2762.7	55427.	7664.9	1968.8	3962.1
#2	2767.1	55514.	7620.0	1962.7	3959.1
#3	2781.5	55485.	7697.8	1978.3	3989.8

Sample Name: S1 Acquired: 12/10/2025 20:37:44 Type: Cal
Method: 6010-200.7 NEW(v398) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348	Cd2265
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00083	.00205	.00250	.00168	.00759	.01037	.27468	.03977	.01410
Stddev	.00011	.00010	.00034	.00017	.00013	.00073	.00475	.00068	.00011
%RSD	13.065	4.8347	13.656	10.186	1.6548	7.0074	1.7295	1.7045	.77761
#1	.00079	.00194	.00278	.00166	.00768	.01063	.26945	.03952	.01406
#2	.00074	.00211	.00260	.00153	.00765	.00955	.27872	.04054	.01401
#3	.00095	.00211	.00212	.00187	.00745	.01094	.27588	.03926	.01422
Elem	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.11261	.00191	.02827	.01760	.00040	.01090	.02727	.02665	.00208
Stddev	.00064	.00004	.00015	.00021	.00002	.00029	.00049	.00015	.00001
%RSD	.56889	2.2933	.54515	1.1667	4.2864	2.6359	1.8145	.55012	.58990
#1	.11191	.00192	.02809	.01766	.00041	.01117	.02684	.02673	.00207
#2	.11317	.00195	.02837	.01777	.00038	.01060	.02716	.02673	.00207
#3	.11275	.00187	.02834	.01737	.00041	.01094	.02781	.02648	.00209
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02319	.00495	.09830	.01073	.05321	.13761	.00693	.01663	.00151
Stddev	.00024	.00038	.00103	.00030	.00065	.00020	.00008	.00015	.00004
%RSD	1.0430	7.6004	1.0467	2.7647	1.2150	.14646	1.1051	.92670	2.3615
#1	.02317	.00484	.09712	.01075	.05247	.13763	.00695	.01679	.00155
#2	.02296	.00537	.09896	.01042	.05365	.13739	.00684	.01660	.00151
#3	.02344	.00464	.09883	.01102	.05352	.13779	.00699	.01649	.00148
Elem	P_1774	S_1820	Li6707	Sr4077					
Units	Cts/S	Cts/S	Cts/S	Cts/S					
Avg	.00029	.00107	.02891	.22033					
Stddev	.00006	.00005	.00019	.00074					
%RSD	21.326	4.7011	.65953	.33714					
#1	.00022	.00104	.02910	.21953					
#2	.00031	.00113	.02872	.22100					
#3	.00034	.00104	.02891	.22046					

Sample Name: S1 Acquired: 12/10/2025 20:37:44 Type: Cal
Method: 6010-200.7 NEW(v398) Mode: IR Corr. Factor: 1.000000
User: Jaswal 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	2796.3	57936.	7644.3	2002.1	4035.3
Stddev	3.3	90.	25.7	8.9	3.4
%RSD	.11950	.15524	.33631	.44514	.08492
#1	2792.5	57927.	7664.4	2011.8	4031.3
#2	2798.7	57851.	7615.3	1994.2	4037.2
#3	2797.8	58030.	7653.1	2000.4	4037.4

Sample Name: S2 Acquired: 12/10/2025 20:42:09 Type: Cal
Method: 6010-200.7 NEW(v398) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348	Cd2265
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.03906	.03580	.17138	.04401	.11251	.14739	4.0818	.28211	1.0101
Stddev	.00031	.00077	.00039	.00006	.00020	.00096	.0121	.00116	.0012
%RSD	.78391	2.1603	.22580	.12610	.17910	.64924	.29600	.41007	.12112
#1	.03871	.03570	.17125	.04398	.11254	.14840	4.0764	.28333	1.0115
#2	.03928	.03662	.17108	.04407	.11270	.14650	4.0957	.28195	1.0097
#3	.03918	.03508	.17182	.04397	.11230	.14728	4.0734	.28104	1.0091
Elem	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.22775	.03059	.38632	.16430	.00310	.20839	.05251	.28242	.04625
Stddev	.00082	.00008	.00046	.00036	.00004	.00020	.00076	.00044	.00023
%RSD	.35896	.27526	.11820	.21776	1.4479	.09441	1.4492	.15594	.49935
#1	.22810	.03063	.38648	.16389	.00309	.20817	.05339	.28273	.04628
#2	.22833	.03049	.38667	.16448	.00315	.20855	.05203	.28192	.04646
#3	.22681	.03064	.38580	.16454	.00306	.20846	.05212	.28262	.04600
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.04673	.04981	.96647	.02425	.41384	.56357	.09769	.32402	.00355
Stddev	.00049	.00082	.00371	.00046	.00071	.00172	.00031	.00033	.00001
%RSD	1.0536	1.6422	.38378	1.8894	.17186	.30556	.31552	.10339	.14929
#1	.04692	.05074	.96957	.02373	.41347	.56526	.09794	.32378	.00356
#2	.04711	.04944	.96748	.02455	.41339	.56362	.09777	.32387	.00355
#3	.04618	.04924	.96236	.02448	.41466	.56182	.09734	.32440	.00355
Elem	P_1774	S_1820	Li6707	Sr4077					
Units	Cts/S	Cts/S	Cts/S	Cts/S					
Avg	.27914	.02044	.77391	8.4585					
Stddev	.00092	.00010	.00258	.0204					
%RSD	.32948	.50711	.33351	.24121					
#1	.27809	.02046	.77111	8.4755					
#2	.27955	.02054	.77619	8.4640					
#3	.27978	.02033	.77443	8.4359					

Sample Name: S2 Acquired: 12/10/2025 20:42:09 Type: Cal
Method: 6010-200.7 NEW(v398) Mode: IR Corr. Factor: 1.000000
User: Jaswal 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	2748.9	55225.	7690.2	1947.8	3856.7
Stddev	2.2	237.	12.7	17.3	7.2
%RSD	.08177	.42959	.16573	.88789	.18623
#1	2746.8	55100.	7676.9	1937.5	3848.4
#2	2748.7	55077.	7691.2	1938.1	3861.0
#3	2751.3	55499.	7702.3	1967.8	3860.6

Sample Name: S3 Acquired: 12/10/2025 20:46:21 Type: Cal
Method: 6010-200.7 NEW(v398) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348	Cd2265
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.12769	.11601	.56370	.13861	.36478	.45795	12.932	.86632	3.2962
Stddev	.00532	.00621	.02365	.00549	.01374	.00019	.115	.00485	.1354
%RSD	4.1675	5.3564	4.1958	3.9636	3.7659	.04228	.88970	.55928	4.1068
#1	.12453	.11215	.55082	.13540	.35697	.45813	12.810	.86344	3.2203
#2	.12470	.11270	.54927	.13546	.35673	.45775	13.038	.87191	3.2158
#3	.13383	.12318	.59099	.14495	.38064	.45797	12.949	.86360	3.4525
Elem	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.70305	.09562	1.2687	.53212	.01013	.65372	.16414	.92998	.14351
Stddev	.00385	.00021	.0532	.02060	.00008	.00514	.00077	.03853	.00053
%RSD	.54781	.21727	4.1934	3.8716	.77897	.78557	.47176	4.1427	.37015
#1	.69864	.09567	1.2405	.52156	.01007	.64820	.16333	.90750	.14315
#2	.70579	.09539	1.2356	.51894	.01010	.65835	.16421	.90798	.14326
#3	.70471	.09580	1.3301	.55586	.01022	.65462	.16488	.97447	.14412
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.14076	.15844	2.9216	.07738	1.2697	1.8218	.31725	1.0154	.01092
Stddev	.00086	.00002	.0049	.00087	.0080	.0720	.01328	.0061	.00002
%RSD	.60944	.01144	.16631	1.1186	.63306	3.9542	4.1872	.59879	.17621
#1	.14025	.15846	2.9170	.07650	1.2662	1.7824	.30952	1.0110	.01092
#2	.14028	.15842	2.9212	.07742	1.2790	1.7780	.30964	1.0223	.01094
#3	.14175	.15843	2.9267	.07823	1.2641	1.9049	.33259	1.0128	.01090
Elem	P_1774	S_1820	Li6707	Sr4077					
Units	Cts/S	Cts/S	Cts/S	Cts/S					
Avg	.91183	.06676	2.3901	26.586					
Stddev	.03723	.00292	.0224	.203					
%RSD	4.0827	4.3717	.93791	.76224					
#1	.88837	.06510	2.3665	26.371					
#2	.89236	.06505	2.4111	26.614					
#3	.95475	.07013	2.3927	26.774					

Sample Name: S3 Acquired: 12/10/2025 20:46:21 Type: Cal
Method: 6010-200.7 NEW(v398) Mode: IR Corr. Factor: 1.000000
User: Jaswal 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	2587.9	53981.	7627.4	1876.3	3547.0
Stddev	86.7	220.	27.5	5.8	125.4
%RSD	3.3499	.40773	.36076	.31015	3.5349
#1	2632.1	54059.	7648.6	1877.0	3609.8
#2	2643.7	54151.	7596.3	1881.8	3628.5
#3	2488.1	53732.	7637.2	1870.2	3402.6

Sample Name: S4 Acquired: 12/10/2025 20:50:33 Type: Cal
Method: 6010-200.7 NEW(v398) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348	Cd2265
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.23410	.20903	1.0403	.25019	.66908	.88380	25.048	1.6886	6.0928
Stddev	.00630	.00983	.0299	.00663	.01792	.00224	.075	.0182	.1751
%RSD	2.6915	4.7034	2.8770	2.6501	2.6781	.25390	.29921	1.0800	2.8740
#1	.23828	.21689	1.0574	.25461	.68060	.88391	25.072	1.7093	6.1914
#2	.23717	.21220	1.0578	.25339	.67820	.88598	25.108	1.6815	6.1963
#3	.22686	.19801	1.0058	.24257	.64843	.88150	24.964	1.6750	5.8906
Elem	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.3419	.18271	2.3508	.94982	.01854	1.2542	.31899	1.7048	.27678
Stddev	.0038	.00106	.0701	.02693	.00010	.0050	.00113	.0491	.00098
%RSD	.27999	.58287	2.9818	2.8348	.54641	.39731	.35371	2.8781	.35321
#1	1.3454	.18356	2.3903	.96697	.01853	1.2592	.32023	1.7327	.27645
#2	1.3426	.18152	2.3923	.96371	.01845	1.2541	.31874	1.7335	.27601
#3	1.3379	.18305	2.2699	.91879	.01865	1.2492	.31801	1.6481	.27788
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.26089	.30783	5.4336	.14796	2.4883	3.3521	.58653	1.9670	.02092
Stddev	.00094	.00130	.0085	.00143	.0215	.0964	.01818	.0066	.00030
%RSD	.36216	.42106	.15690	.96334	.86371	2.8756	3.0997	.33431	1.4246
#1	.26080	.30920	5.4392	.14642	2.5130	3.4117	.59747	1.9735	.02059
#2	.25999	.30766	5.4238	.14823	2.4781	3.4038	.59658	1.9672	.02097
#3	.26188	.30662	5.4377	.14924	2.4738	3.2409	.56554	1.9603	.02118
Elem	P_1774	S_1820	Li6707	Sr4077					
Units	Cts/S	Cts/S	Cts/S	Cts/S					
Avg	1.6499	.12200	4.6587	51.716					
Stddev	.0484	.00362	.0088	.149					
%RSD	2.9344	2.9698	.18820	.28792					
#1	1.6751	.12392	4.6674	51.827					
#2	1.6806	.12426	4.6588	51.547					
#3	1.5941	.11782	4.6499	51.773					

Sample Name: S4 Acquired: 12/10/2025 20:50:33 Type: Cal
Method: 6010-200.7 NEW(v398) Mode: IR Corr. Factor: 1.000000
User: Jaswal 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	2676.4	53715.	7516.1	1879.5	3620.4
Stddev	63.0	39.	74.0	3.2	92.9
%RSD	2.3552	.07211	.98425	.16920	2.5667
#1	2641.5	53757.	7440.9	1876.2	3570.9
#2	2638.5	53681.	7518.6	1879.8	3562.6
#3	2749.1	53708.	7588.8	1882.6	3727.5

Sample Name: S5 Acquired: 12/10/2025 20:54:46 Type: Cal
Method: 6010-200.7 NEW(v398) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348	Cd2265
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.46631	.41883	2.1046	.49366	1.3319	1.7304	50.421	3.1825	12.360
Stddev	.00097	.00779	.0069	.00212	.0031	.0338	.557	.0520	.030
%RSD	.20869	1.8607	.32701	.42941	.23558	1.9550	1.1041	1.6346	.24149
#1	.46742	.42689	2.1030	.49610	1.3339	1.7442	49.951	3.1969	12.371
#2	.46589	.41134	2.1122	.49228	1.3336	1.7552	51.036	3.2258	12.383
#3	.46562	.41824	2.0987	.49261	1.3283	1.6919	50.277	3.1248	12.326
Elem	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.6331	.35721	4.8149	1.8819	.03845	2.4916	.62450	3.4646	.55049
Stddev	.0505	.00548	.0133	.0040	.00068	.0448	.01297	.0087	.00905
%RSD	1.9170	1.5343	.27538	.21023	1.7579	1.7964	2.0767	.25017	1.6436
#1	2.6507	.35416	4.8143	1.8821	.03806	2.5041	.62933	3.4654	.54419
#2	2.6724	.36353	4.8284	1.8858	.03923	2.5287	.63436	3.4728	.56086
#3	2.5762	.35393	4.8019	1.8779	.03805	2.4419	.60981	3.4555	.54642
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.54985	.61215	10.569	.30806	4.7921	6.7045	1.1824	3.9024	.04261
Stddev	.01171	.01262	.204	.00574	.0780	.0139	.0030	.0743	.00081
%RSD	2.1293	2.0608	1.9255	1.8622	1.6280	.20743	.25188	1.9044	1.9007
#1	.54192	.61861	10.398	.30438	4.8138	6.7204	1.1856	3.9281	.04206
#2	.56330	.62024	10.794	.31467	4.8570	6.6979	1.1819	3.9605	.04354
#3	.54433	.59762	10.516	.30514	4.7056	6.6950	1.1797	3.8186	.04223
Elem	P_1774	S_1820	Li6707	Sr4077					
Units	Cts/S	Cts/S	Cts/S	Cts/S					
Avg	3.2128	.25266	9.3255	100.70					
Stddev	.0016	.00122	.1806	1.84					
%RSD	.04916	.48252	1.9370	1.8293					
#1	3.2146	.25406	9.3723	101.71					
#2	3.2115	.25207	9.4781	101.82					
#3	3.2122	.25185	9.1261	98.576					

Sample Name: S5 Acquired: 12/10/2025 20:54:46 Type: Cal
Method: 6010-200.7 NEW(v398) Mode: IR Corr. Factor: 1.000000
User: Jaswal 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	2561.2	52224.	7612.1	1829.7	3376.6
Stddev	2.0	742.	134.0	31.8	5.7
%RSD	.07765	1.4202	1.7600	1.7395	.16817
#1	2563.1	52549.	7545.5	1850.7	3376.5
#2	2559.2	51376.	7524.4	1793.1	3370.9
#3	2561.4	52748.	7766.3	1845.3	3382.3

Sample Name: ICV01 Acquired: 12/10/2025 20:58:56 Type: Unk
Method: 6010-200.7 NEW(v398) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.766165	4.004075	3.763043	3.793382	3.836914	7.874753	8.098469
Stddev	.005004	.046803	.007956	.009761	.005977	.042720	.035020
%RSD	.1328804	1.168888	.2114364	.2573088	.1557770	.5424915	.4324239
#1	3.765132	4.051642	3.771027	3.802743	3.836907	7.902026	8.134555
#2	3.761758	3.958075	3.755114	3.794139	3.830941	7.896713	8.064622
#3	3.771606	4.002508	3.762987	3.783265	3.842895	7.825520	8.096231
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2046541	1.893121	19.83238	.7626768	1.922723	.9781379	3.605417
Stddev	.0017897	.003881	.07699	.0016065	.004310	.0012680	.021888
%RSD	.8745213	.2049856	.3882193	.2106395	.2241794	.1296318	.6070771
#1	.2061854	1.897465	19.90238	.7623978	1.927684	.9777581	3.587937
#2	.2050901	1.891902	19.84485	.7612280	1.920586	.9795524	3.598349
#3	.2026866	1.889997	19.74992	.7644045	1.919899	.9771032	3.629965
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.020980	19.72020	1.926349	.9819540	18.04823	1.967332	1.922598
Stddev	.009238	.15555	.004291	.0009186	.06874	.011543	.007885
%RSD	.4571017	.7887735	.2227659	.0935519	.3808658	.5867363	.4101346
#1	2.031529	19.73383	1.930912	.9828623	18.08129	1.979730	1.930766
#2	2.017079	19.86849	1.922394	.9819744	18.09419	1.965372	1.921999
#3	2.014333	19.55829	1.925742	.9810254	17.96920	1.956895	1.915029
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.00592	4.079551	3.907472	3.853171	3.995798	3.487636	.0022546
Stddev	.11474	.031108	.003703	.009950	.014196	.024868	.0004673
%RSD	.6372140	.7625461	.0947620	.2582201	.3552744	.7130252	20.72822
#1	17.96493	4.111558	3.911667	3.864641	4.011414	3.460532	.0017152
#2	17.91731	4.077669	3.906087	3.846861	3.992308	3.492975	.0025093
#3	18.13552	4.049427	3.904661	3.848011	3.983673	3.509400	.0025391

Sample Name: ICV01 Acquired: 12/10/2025 20:58:56 Type: Unk
Method: 6010-200.7 NEW(v398) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICV01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0185345	3.978540	4.146156
Stddev	.0044630	.014188	.021726
%RSD	24.07937	.3566041	.5240043

#1	.0136329	3.994272	4.126166
#2	.0223633	3.966715	4.143025
#3	.0196073	3.974633	4.169278

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2707.745	56623.16	7298.366	2025.397	3658.860
Stddev	3.959	23.73	49.570	6.715	3.739
%RSD	.1461956	.0419062	.6791948	.3315248	.1021930

#1	2712.215	56648.66	7252.807	2017.776	3657.524
#2	2706.334	56619.08	7291.138	2030.442	3663.083
#3	2704.685	56601.73	7351.153	2027.974	3655.972

Sample Name: LLICV01 Acquired: 12/10/2025 21:26:26 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0203198	.0333412	.0119390	.0220213	.0522979	.1156185
Stddev	.0036339	.0013692	.0015984	.0018783	.0023395	.0025331
%RSD	17.88327	4.106478	13.38771	8.529527	4.473453	2.190875
#1	.0217560	.0333105	.0130836	.0206717	.0549792	.1174746
#2	.0161874	.0347254	.0101128	.0241664	.0506720	.1127327
#3	.0230161	.0319876	.0126205	.0212256	.0512425	.1166481
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0932579	.0059780	.0057844	1.973776	.0096563	.0285378
Stddev	.0003572	.0000995	.0001945	.020012	.0003148	.0008665
%RSD	.3829984	1.665053	3.362597	1.013908	3.260213	3.036357
#1	.0935387	.0059212	.0058890	1.952806	.0092987	.0289882
#2	.0933790	.0060929	.0059043	1.975854	.0098917	.0290864
#3	.0928559	.0059198	.0055600	1.992668	.0097784	.0275389
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0210831	.1070072	.0202956	2.038125	.0395377	.0100516
Stddev	.0008929	.0105197	.0003409	.003290	.0010570	.0006880
%RSD	4.235097	9.830836	1.679490	.1614100	2.673294	6.844640
#1	.0215532	.1133173	.0205076	2.035625	.0400573	.0106167
#2	.0216426	.0948632	.0199024	2.036898	.0402342	.0102527
#3	.0200533	.1128411	.0204769	2.041852	.0383215	.0092855
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.123915	.0338133	.0411908	2.059683	.0966408	.1961662
Stddev	.032100	.0018872	.0005049	.040126	.0008301	.0057342
%RSD	1.511381	5.581246	1.225819	1.948151	.8589306	2.923130
#1	2.088249	.0316382	.0408314	2.035249	.0960022	.1992438
#2	2.133010	.0347850	.0417681	2.105992	.0963410	.1997045
#3	2.150487	.0350167	.0409729	2.037807	.0975791	.1895502

Sample Name: LLICV01 Acquired: 12/10/2025 21:26:26 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal 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	.0360392	.0364862	.3672851	F .0022872	F .0114194	.0218777
Stddev	.0018939	.0008655	.0152331	.0002198	.0032773	.0006688
%RSD	5.255010	2.372082	4.147491	9.611340	28.69936	3.056812

#1	.0369676	.0369093	.3785261	.0025194	.0145954	.0224307
#2	.0372897	.0354906	.3499481	.0022598	.0116135	.0211344
#3	.0338603	.0370588	.3733813	.0020823	.0080494	.0220680

Elem	Sr4077
Units	ppm
Avg	.0213514
Stddev	.0000389
%RSD	.1821374

#1	.0213100
#2	.0213570
#3	.0213871

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2758.927	55615.19	7629.691	1966.253	3913.034
Stddev	70.852	59.86	42.333	7.715	97.564
%RSD	2.568100	.1076380	.5548432	.3923801	2.493315

#1	2709.527	55594.18	7620.473	1960.189	3851.469
#2	2727.150	55682.73	7675.873	1963.633	3862.110
#3	2840.105	55568.66	7592.726	1974.937	4025.524

Sample Name: ICB01 Acquired: 12/10/2025 21:34:43 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal 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	-.002298	-.002803	-.000120	-.002020	.0001110	.0104421	-.002857
Stddev	.003549	.003938	.000398	.003471	.0005862	.0023944	.000295
%RSD	154.4401	140.4985	331.2508	171.7977	528.0058	22.93062	10.31762

#1	.001273	-.004250	-.000546	-.000014	-.000538	.0078496	-.002761
#2	-.002343	-.005814	-.000057	-.000018	.000602	.0125705	-.002623
#3	-.005825	.001654	.000243	-.006028	.000269	.0109062	-.003188

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000025	.0000282	.0219017	-.000572	-.000202	.0000648	-.010255
Stddev	.000090	.0001130	.0086229	.000125	.000197	.0004246	.006186
%RSD	354.0761	400.9547	39.37086	21.89263	97.38799	655.3774	60.32673

#1	.000054	-.000051	.0132185	-.000588	-.000317	.0002113	-.009545
#2	-.000008	.000158	.0220237	-.000688	-.000315	.0003968	-.004454
#3	-.000123	-.000022	.0304629	-.000439	.000025	-.000414	-.016766

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007168	.0033075	.0002092	-.000362	.0498064	-.003793	.0009615
Stddev	.0005562	.0224532	.0002044	.000279	.0203240	.002702	.0004170
%RSD	77.59832	678.8620	97.69052	77.14758	40.80591	71.24324	43.37461

#1	.0006700	.0229405	.0004298	-.000488	.0283062	-.001415	.0006457
#2	.0001854	-.021174	.0000263	-.000042	.0524098	-.006731	.0008046
#3	.0012949	.008156	.0001715	-.000556	.0687032	-.003233	.0014342

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0381736	-.001283	-.000110	-.007430	-.000697	.0015559	.0003722
Stddev	.0145359	.000452	.000304	.000525	.001164	.0012913	.0002365
%RSD	38.07835	35.20005	276.1589	7.065032	167.0408	82.99472	63.52288

#1	.0358796	-.001126	.000100	-.006984	-.000181	.0005757	.0005794
#2	.0537201	-.001793	-.000459	-.007298	.000120	.0030190	.0001146
#3	.0249212	-.000932	.000029	-.008009	-.002029	.0010729	.0004227

Sample Name: ICB01 Acquired: 12/10/2025 21:34:43 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICB01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.003322	-.000828	.0000068
Stddev	.004981	.000315	.0000664
%RSD	149.9720	38.02257	968.9337

#1	-.005535	-.000701	-.000042
#2	-.006813	-.001186	.000082
#3	.002383	-.000596	-.000020

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2698.309	55957.73	7558.587	2011.228	3850.176
Stddev	68.275	794.63	27.585	42.632	103.012
%RSD	2.530285	1.420047	.3649426	2.119703	2.675526

#1	2741.234	55129.56	7584.149	1968.205	3914.163
#2	2619.579	56029.71	7562.264	2012.022	3731.345
#3	2734.113	56713.92	7529.349	2053.458	3905.020

Sample Name: CRI01 Acquired: 12/10/2025 21:39:02 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0171762	.0316123	.0136611	.0165349	.0504427	.1166399
Stddev	.0018637	.0026819	.0003455	.0035034	.0008882	.0010026
%RSD	10.85061	8.483634	2.528844	21.18795	1.760792	.8595607
#1	.0168202	.0338870	.0136648	.0205477	.0514123	.1163590
#2	.0155161	.0322949	.0133138	.0140850	.0502473	.1158077
#3	.0191922	.0286551	.0140048	.0149719	.0496685	.1177529
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0926850	.0058455	.0057090	1.936510	.0089540	.0285777
Stddev	.0007513	.0000428	.0000715	.014056	.0001004	.0003096
%RSD	.8106215	.7319496	1.251600	.7258622	1.121071	1.083231
#1	.0920812	.0058754	.0056646	1.922956	.0089801	.0282597
#2	.0924475	.0057965	.0057914	1.935553	.0090388	.0285952
#3	.0935264	.0058645	.0056709	1.951020	.0088432	.0288781
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0208869	.1042918	.0201548	2.015925	.0387546	.0100489
Stddev	.0000663	.0084272	.0000562	.014801	.0003135	.0002478
%RSD	.3174995	8.080373	.2789380	.7341980	.8089509	2.465715
#1	.0209124	.1023566	.0201556	2.000455	.0385768	.0097628
#2	.0208116	.1135183	.0202106	2.017371	.0385705	.0101955
#3	.0209367	.0970006	.0200982	2.029950	.0391166	.0101883
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.064623	.0346726	.0407253	1.984347	.0914364	.1956248
Stddev	.045233	.0007003	.0004934	.062373	.0012017	.0012912
%RSD	2.190862	2.019742	1.211547	3.143264	1.314300	.6600208
#1	2.016199	.0347805	.0410700	1.914013	.0927314	.1943142
#2	2.071883	.0339246	.0409457	2.006088	.0903571	.1956648
#3	2.105787	.0353127	.0401601	2.032941	.0912206	.1968956

Sample Name: CRI01 Acquired: 12/10/2025 21:39:02 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0371001	.0343997	.3651700	F .0021800	F .0132460	.0214570
Stddev	.0004371	.0011122	.0088475	.0003366	.0015771	.0007464
%RSD	1.178152	3.233191	2.422837	15.44089	11.90631	3.478621

#1	.0366009	.0342890	.3704925	.0020431	.0122757	.0213633
#2	.0372856	.0355632	.3700607	.0025635	.0150658	.0207620
#3	.0374139	.0333470	.3549569	.0019335	.0123965	.0222459

Elem	Sr4077
Units	ppm
Avg	.0207026
Stddev	.0002083
%RSD	1.005956

#1	.0205301
#2	.0206438
#3	.0209339

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2747.737	56455.70	7710.709	1984.470	3907.441
Stddev	14.004	96.34	11.666	6.851	16.760
%RSD	.5096670	.1706513	.1512955	.3452324	.4289352

#1	2757.831	56544.57	7697.433	1976.581	3921.170
#2	2753.631	56469.21	7719.324	1987.906	3912.388
#3	2731.749	56353.31	7715.371	1988.923	3888.763

Sample Name: ICSA01 Acquired: 12/10/2025 21:43:20 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSA01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0047181	.0148646	.0078311	.0025540	.0035706	234.4967	.0033584
Stddev	.0033086	.0026828	.0027586	.0061347	.0010972	1.5291	.0016928
%RSD	70.12527	18.04814	35.22661	240.1968	30.72962	.6520789	50.40402
#1	.0044132	.0151527	.0096791	-.004289	.0040055	232.7332	.0028563
#2	.0015725	.0120494	.0091540	.004391	.0043836	235.3017	.0052454
#3	.0081686	.0173917	.0046602	.007560	.0023225	235.4550	.0019734
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0011286	.0019791	218.2686	.0488444	.0023871	.0100241	89.09781
Stddev	.0000216	.0000622	1.1801	.0006699	.0001430	.0007933	.39593
%RSD	1.915817	3.140244	.5406697	1.371390	5.991295	7.914288	.4443724
#1	.0011128	.0019097	216.9120	.0495308	.0025490	.0093239	89.29040
#2	.0011532	.0020297	218.8360	.0488099	.0022777	.0098627	88.64243
#3	.0011197	.0019980	219.0579	.0481924	.0023348	.0108857	89.36059
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0074550	236.5453	.0056507	.0033298	.1511930	.0006972	.0051576
Stddev	.0003480	1.2185	.0004154	.0006689	.0304540	.0002014	.0004794
%RSD	4.668322	.5151136	7.351121	20.08877	20.14245	28.89034	9.295652
#1	.0073007	235.1863	.0060085	.0029225	.1200959	.0005060	.0057078
#2	.0078535	237.5405	.0057485	.0029651	.1525230	.0006781	.0049356
#3	.0072108	236.9089	.0051952	.0041018	.1809603	.0009075	.0048293
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1106605	.0382227	.0016130	-.003526	-.006120	.0370223	.0008519
Stddev	.0520436	.0007279	.0008020	.000269	.001056	.0110940	.0001462
%RSD	47.02998	1.904342	49.71783	7.623228	17.25595	29.96586	17.16205
#1	.0694135	.0384579	.0021219	-.003345	-.006703	.0453107	.0008316
#2	.0934350	.0374063	.0006886	-.003398	-.006756	.0413370	.0007168
#3	.1691331	.0388040	.0020286	-.003835	-.004901	.0244191	.0010071

Sample Name: ICSA01 Acquired: 12/10/2025 21:43:20 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSA01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.003311	F -.024323	.0095964
Stddev	.007120	.000284	.0006415
%RSD	215.0506	1.168607	6.684680

#1	-.005057	-.024219	.0089932
#2	-.009395	-.024644	.0102703
#3	.004520	-.024105	.0095255

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2534.501	52683.11	7115.870	1815.136	3275.476
Stddev	6.413	435.86	14.373	7.593	5.814
%RSD	.2530384	.8273260	.2019789	.4183068	.1774943

#1	2538.062	52182.10	7131.727	1806.372	3281.219
#2	2527.098	52892.20	7112.183	1819.327	3269.594
#3	2538.345	52975.04	7103.700	1819.711	3275.613

Sample Name: ICSAB01 Acquired: 12/10/2025 21:47:36 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSAB01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0994440	.1100336	.0541817	.0516219	.5803458	228.1324
Stddev	.0024054	.0097101	.0013583	.0074585	.0028537	1.4415
%RSD	2.418818	8.824657	2.506921	14.44836	.4917244	.6318768

#1	.0968494	.1089975	.0552863	.0491478	.5835454	226.8264
#2	.1015997	.1202202	.0545936	.0457148	.5794285	227.8916
#3	.0998830	.1008832	.0526651	.0600030	.5780636	229.6791

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4464244	.4368072	.9112791	213.8741	.5064865	.4593842
Stddev	.0021975	.0018903	.0038956	.8740	.0002660	.0019320
%RSD	.4922409	.4327432	.4274896	.4086379	.0525242	.4205641

#1	.4473327	.4370489	.9150859	213.5209	.5065844	.4612726
#2	.4439184	.4348078	.9073003	213.2320	.5066897	.4574114
#3	.4480222	.4385651	.9114511	214.8694	.5061854	.4594685

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4512049	95.41863	.4449887	230.7201	.9207787	.1756464
Stddev	.0029727	.22158	.0010130	1.2030	.0051732	.0007785
%RSD	.6588452	.2322232	.2276500	.5214112	.5618298	.4432198

#1	.4542165	95.65238	.4450862	229.8210	.9251372	.1751512
#2	.4482726	95.39186	.4439305	230.2525	.9150618	.1752442
#3	.4511255	95.21164	.4459495	232.0866	.9221370	.1765437

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1456552	.4410937	.9579122	.0963175	.8694672	.9127104
Stddev	.0306518	.0028344	.0038203	.0247932	.0020369	.0060684
%RSD	21.04409	.6425923	.3988195	25.74112	.2342747	.6648771

#1	.1133052	.4441016	.9538528	.0680639	.8702809	.9196921
#2	.1493947	.4407073	.9584467	.1144448	.8671492	.9087027
#3	.1742658	.4384724	.9614371	.1064438	.8709716	.9097364

Sample Name: ICSAB01 Acquired: 12/10/2025 21:47:36 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal 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	.8994085	.8680104	.9311677	F .0009215	F .0007495	.9003163
Stddev	.0045187	.0022741	.0050410	.0004009	.0036230	.0049414
%RSD	.5024091	.2619886	.5413662	43.50802	483.4009	.5488492

#1	.9045974	.8686709	.9272420	.0004864	-.001148	.8991688
#2	.8963394	.8654792	.9368526	.0010020	.004927	.8960497
#3	.8972887	.8698812	.9294085	.0012760	-.001531	.9057305

Elem	Sr4077
Units	ppm
Avg	1.027185
Stddev	.007568
%RSD	.7367761

#1	1.020523
#2	1.025619
#3	1.035414

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2488.314	51717.77	7544.393	1792.238	3205.357
Stddev	9.460	23.52	31.504	2.844	10.373
%RSD	.3801579	.0454739	.4175878	.1586777	.3236272

#1	2477.653	51707.49	7540.801	1792.388	3194.376
#2	2495.705	51744.67	7577.540	1789.322	3214.991
#3	2491.585	51701.14	7514.839	1795.004	3206.705

Sample Name: ICSA01DLX20 Acquired: 12/10/2025 21:51:40 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSA01DLX20 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000462	.0006462	.0010417	-.001758	-.000232	11.23455	-.001972
Stddev	.001270	.0049366	.0010128	.001640	.001302	.10578	.000577
%RSD	275.1933	763.9801	97.23142	93.29547	562.0657	.9415948	29.26363
#1	-.000119	.0060941	.0017678	-.001354	-.001719	11.11701	-.002536
#2	.000602	-.000625	.0014726	-.000357	.000706	11.26454	-.001998
#3	-.001868	-.003531	-.000115	-.003562	.000318	11.32210	-.001382
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001844	.0000275	10.92330	.0020044	-.000072	.0007887	4.653129
Stddev	.0000252	.0000816	.08556	.0002592	.000240	.0001640	.025612
%RSD	13.68073	296.4683	.7832687	12.93126	332.4496	20.79558	.5504352
#1	.0002131	-.000063	10.82821	.0021372	.000009	.0007888	4.642260
#2	.0001742	.000050	10.94763	.0017057	-.000342	.0009526	4.682383
#3	.0001658	.000096	10.99406	.0021703	.000116	.0006246	4.634742
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000584	11.39227	.0008946	-.000179	.0576622	-.001655	-.000720
Stddev	.0004201	.12139	.0002580	.000272	.0234341	.001394	.000223
%RSD	718.8853	1.065507	28.84515	152.3013	40.64031	84.21286	31.00347
#1	-.000091	11.25799	.0007719	-.000445	.0369449	-.001117	-.000481
#2	-.000266	11.49421	.0011911	-.000190	.0529460	-.003238	-.000756
#3	.000533	11.42462	.0007208	.000099	.0830957	-.000611	-.000922
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0989835	.0011565	.0005910	-.005442	-.001849	.0027277	.0003435
Stddev	.0487623	.0007879	.0002838	.000243	.001567	.0087745	.0001623
%RSD	49.26308	68.12523	48.03156	4.473521	84.73119	321.6796	47.24692
#1	.0490391	.0020531	.0002648	-.005545	-.002876	.0093571	.0005308
#2	.1464709	.0008422	.0007823	-.005617	-.000046	.0060485	.0002542
#3	.1014406	.0005744	.0007257	-.005164	-.002626	-.007222	.0002455

Sample Name: ICSA01DLX20 Acquired: 12/10/2025 21:51:40 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSA01DLX20 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.004698	-.000935	.0002072
Stddev	.003187	.000412	.0000360
%RSD	67.84139	44.08177	17.35244

#1	-.003003	-.001410	.0001670
#2	-.008375	-.000716	.0002181
#3	-.002717	-.000679	.0002364

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2672.741	55511.96	7624.101	1932.323	3732.683
Stddev	58.334	195.97	37.891	.713	86.354
%RSD	2.182565	.3530181	.4969910	.0368829	2.313469

#1	2718.497	55402.09	7661.264	1933.146	3795.714
#2	2607.053	55395.57	7625.518	1931.934	3634.254
#3	2692.673	55738.21	7585.521	1931.889	3768.081

Sample Name: ICSAB01DLX20 Acquired: 12/10/2025 21:55:58 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSAB01DLX20 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0053915	.0062975	.0038067	.0016985	.0288649	11.19845	.0202741
Stddev	.0031165	.0009401	.0007562	.0041071	.0011893	.02665	.0001763
%RSD	57.80390	14.92891	19.86488	241.8048	4.120175	.2379558	.8697351

#1	.0023045	.0062585	.0041657	.0007566	.0288044	11.22545	.0203414
#2	.0085366	.0072566	.0043166	.0061947	.0277070	11.17217	.0200740
#3	.0053333	.0053775	.0029379	-.001856	.0300832	11.19774	.0204068

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0226113	.0446514	10.94279	.0249685	.0220003	.0232570	4.688444
Stddev	.0001086	.0005730	.03080	.0004603	.0001154	.0002553	.042933
%RSD	.4802240	1.283328	.2814403	1.843478	.5245913	1.097817	.9157095

#1	.0227212	.0451727	10.97537	.0246924	.0218747	.0235498	4.672074
#2	.0225041	.0440379	10.91416	.0247132	.0221018	.0231408	4.656105
#3	.0226085	.0447436	10.93884	.0254999	.0220243	.0230804	4.737154

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0227957	11.38393	.0456347	.0079583	.0582277	.0183803	.0472890
Stddev	.0002087	.03850	.0003026	.0006031	.0262545	.0022599	.0004553
%RSD	.9156409	.3381907	.6631353	7.577552	45.08931	12.29525	.9628076

#1	.0228158	11.41408	.0459572	.0078040	.0281731	.0198945	.0472411
#2	.0225776	11.34056	.0453570	.0074475	.0698145	.0157826	.0468596
#3	.0229936	11.39715	.0455900	.0086236	.0766955	.0194637	.0477664

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0697155	.0437864	.0469134	.0372876	.0437532	.0446549	.0001621
Stddev	.0669217	.0005053	.0004040	.0005514	.0011352	.0072628	.0001535
%RSD	95.99252	1.154109	.8611398	1.478716	2.594562	16.26421	94.70967

#1	.0054552	.0441361	.0473336	.0368612	.0424523	.0526562	.0000379
#2	.0646775	.0432070	.0465278	.0379102	.0442643	.0428296	.0003338
#3	.1390138	.0440162	.0468789	.0370912	.0445431	.0384789	.0001147

Sample Name: ICSAB01DLX20 Acquired: 12/10/2025 21:55:58 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSAB01DLX20 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.010647	.0432422	.0519756
Stddev	.002300	.0011208	.0000914
%RSD	21.60404	2.591973	.1758868

#1	-.009075	.0419996	.0520629
#2	-.009579	.0441768	.0518805
#3	-.013287	.0435501	.0519833

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2740.577	55295.36	7710.016	1939.595	3809.945
Stddev	22.918	253.29	36.161	10.024	30.896
%RSD	.8362373	.4580691	.4690132	.5168164	.8109298

#1	2719.330	55411.41	7672.035	1939.007	3780.917
#2	2764.862	55469.84	7713.981	1949.901	3842.420
#3	2737.540	55004.84	7744.030	1929.879	3806.499

Sample Name: CCV01 Acquired: 12/10/2025 22:00:13 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal 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	5.013951	4.943936	4.935972	5.082248	5.110223	9.707718	9.591460
Stddev	.133433	.368184	.128264	.158862	.141272	.054612	.040848
%RSD	2.661243	7.447189	2.598548	3.125815	2.764489	.5625582	.4258755

#1	4.919818	4.635345	4.859666	4.985218	5.031376	9.769561	9.547262
#2	4.955382	4.844975	4.864195	4.995945	5.025974	9.687474	9.627823
#3	5.166652	5.351487	5.084055	5.265581	5.273320	9.666119	9.599294

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2329432	2.438440	23.96112	.9779983	2.448086	1.261589	5.196515
Stddev	.0013003	.064183	.17538	.0016144	.064621	.033269	.015190
%RSD	.5582017	2.632137	.7319244	.1650672	2.639669	2.637072	.2923132

#1	.2343396	2.403103	24.14514	.9787216	2.412402	1.242539	5.208906
#2	.2327230	2.399691	23.94232	.9761488	2.409175	1.242223	5.179568
#3	.2317671	2.512526	23.79590	.9791245	2.522681	1.300004	5.201070

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.393340	23.92713	2.464702	1.234155	25.64212	2.420580	2.455224
Stddev	.015776	.10878	.066888	.002319	.11192	.007748	.016056
%RSD	.6591522	.4546098	2.713839	.1879356	.4364658	.3201032	.6539662

#1	2.405055	24.04364	2.428291	1.233419	25.59648	2.427497	2.438245
#2	2.399564	23.82825	2.423918	1.232293	25.56023	2.422037	2.457264
#3	2.375402	23.90948	2.541896	1.236754	25.76965	2.412207	2.470163

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.15766	4.622402	5.000104	4.879245	4.833644	5.134194	5.092095
Stddev	.14065	.029146	.141217	.134989	.029345	.023865	.148140
%RSD	.5590668	.6305350	2.824272	2.766606	.6070897	.4648254	2.909207

#1	25.14406	4.650741	4.918845	4.800182	4.861854	5.119860	4.988639
#2	25.02431	4.623953	4.918299	4.802441	4.835796	5.120978	5.025848
#3	25.30462	4.592511	5.163166	5.035112	4.803283	5.161744	5.261797

Sample Name: CCV01 Acquired: 12/10/2025 22:00:13 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.869022	4.719299	4.995451
Stddev	.147849	.028446	.013647
%RSD	3.036532	.6027485	.2731910
#1	4.759734	4.746989	5.000768
#2	4.810082	4.720755	4.979945
#3	5.037252	4.690154	5.005639

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2577.149	53622.71	7545.259	1868.126	3476.396
Stddev	55.678	146.22	59.324	6.081	72.344
%RSD	2.160458	.2726919	.7862444	.3255254	2.081005
#1	2610.928	53546.07	7480.868	1872.610	3519.439
#2	2607.634	53791.33	7557.214	1870.564	3516.875
#3	2512.885	53530.74	7597.696	1861.204	3392.873

Sample Name: CCB01 Acquired: 12/10/2025 22:04:25 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal 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	-.000090	-.000127	.0008080	.0023499	-.001384	.0093450	-.002695
Stddev	.000642	.005045	.0011143	.0024077	.002536	.0063287	.000537
%RSD	713.4298	3980.418	137.9042	102.4591	183.2359	67.72253	19.93094

#1	-.000323	.003514	.0018440	.0014891	-.003190	.0166474	-.002890
#2	.000636	.001990	.0009509	.0004909	-.002477	.0059344	-.002088
#3	-.000583	-.005885	-.000371	.0050696	.001515	.0054531	-.003108

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000750	.0001148	.0028485	-.000601	-.000238	.0006377	-.009222
Stddev	.0000304	.0000730	.0170805	.000298	.000217	.0002455	.014581
%RSD	40.57035	63.59003	599.6325	49.52314	91.17889	38.50572	158.1024

#1	.0000828	.0000322	.0144801	-.000399	-.000288	.0004815	.005543
#2	.0000414	.0001416	.0108266	-.000943	-.000424	.0005108	-.023611
#3	.0001007	.0001707	-.016761	-.000460	-.000000	.0009207	-.009599

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000311	.0014254	.0001595	.0000590	.0670027	-.003967	-.000628
Stddev	.000524	.0285452	.0003681	.0000700	.0272874	.002806	.000507
%RSD	168.3940	2002.548	230.7910	118.6927	40.72588	70.74193	80.77482

#1	-.000817	-.029467	.0001321	-.000007	.0354966	-.004531	-.001213
#2	.000229	.026826	.0005405	.000051	.0823938	-.000921	-.000341
#3	-.000345	.006917	-.000194	.000133	.0831175	-.006448	-.000329

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0589187	.0036485	.0003648	-.004916	-.000888	-.000652	.0005131
Stddev	.0167661	.0002548	.0001870	.001380	.001162	.005866	.0000307
%RSD	28.45629	6.982907	51.25868	28.07633	130.9297	900.0091	5.977464

#1	.0396196	.0033620	.0005711	-.005109	.000028	.000227	.0004850
#2	.0698948	.0038496	.0002065	-.006189	-.002195	-.006907	.0005458
#3	.0672418	.0037340	.0003168	-.003449	-.000496	.004725	.0005084

Sample Name: CCB01 Acquired: 12/10/2025 22:04:25 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.007151	.0009344	.0001703
Stddev	.002585	.0004498	.0000490
%RSD	36.15362	48.13766	28.78167

#1	-.004327	.0006919	.0001328
#2	-.007725	.0006579	.0001523
#3	-.009401	.0014534	.0002258

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2644.125	56132.88	7502.696	2027.477	3755.173
Stddev	193.786	224.90	10.117	.639	283.964
%RSD	7.328932	.4006642	.1348454	.0315138	7.561933

#1	2762.144	56345.41	7493.509	2026.943	3929.709
#2	2749.757	56155.87	7501.041	2027.303	3908.298
#3	2420.475	55897.37	7513.539	2028.185	3427.514

Sample Name: PB170335BL Acquired: 12/10/2025 22:08:43 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000934	-.004505	.0003495	-.002013	.0004504	.0171515	-.002141
Stddev	.003319	.002272	.0011819	.002463	.0021686	.0111831	.000287
%RSD	355.3017	50.43652	338.2031	122.3443	481.4380	65.20203	13.40149

#1	-.004635	-.002483	-.000906	-.003872	.0029359	.0151242	-.002422
#2	.001781	-.004068	.000513	.000780	-.000528	.0071207	-.001848
#3	.000051	-.006964	.001441	-.002946	-.001056	.0292096	-.002154

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000317	-.000007	.0029211	-.000451	-.000213	.0001814	-.000704
Stddev	.0000768	.000088	.0159609	.000378	.000075	.0001776	.005976
%RSD	242.4813	1217.548	546.4104	83.83055	35.16521	97.90361	848.9978

#1	-.000050	.000056	.0137068	-.000885	-.000133	.0003251	-.002316
#2	.000102	.000030	.0104704	-.000191	-.000281	-.000017	.005913
#3	.000043	-.000108	-.015414	-.000277	-.000226	.000236	-.005708

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000749	.0090192	.0002054	-.000259	.0787884	-.004282	.0005185
Stddev	.0002835	.0173023	.0003411	.000381	.0229767	.000655	.0004414
%RSD	378.6195	191.8379	166.0692	147.3593	29.16258	15.30568	85.14460

#1	-.000183	-.008403	-.000028	-.000689	.0550219	-.004402	.0006232
#2	.000030	.009261	.000047	.000037	.0804590	-.003575	.0000341
#3	.000378	.026199	.000597	-.000125	.1008842	-.004869	.0008981

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0683236	-.000134	.0000864	-.011310	-.001440	-.005348	.0001697
Stddev	.0674389	.000263	.0004157	.000983	.000930	.005434	.0002470
%RSD	98.70510	196.2074	481.0820	8.689621	64.53739	101.6051	145.4889

#1	-.009322	-.000161	.0000709	-.010190	-.001647	-.007668	.0003344
#2	.102011	-.000382	-.000321	-.011715	-.000425	-.009237	-.000114
#3	.112281	.000141	.000510	-.012026	-.002249	.000861	.000289

Sample Name: PB170335BL Acquired: 12/10/2025 22:08:43 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.003159	.0011095	-.000017
Stddev	.001727	.0016563	.000037
%RSD	54.64828	149.2866	217.8100

#1	-.002642	-.000803	.000002
#2	-.001751	.002028	-.000059
#3	-.005085	.002103	.000006

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2759.475	55663.79	7292.756	2007.724	3993.281
Stddev	34.112	119.24	20.066	13.257	50.111
%RSD	1.236166	.2142064	.2751475	.6602986	1.254890

#1	2780.864	55796.53	7284.985	2019.982	4027.814
#2	2720.136	55565.75	7277.739	2009.536	3935.806
#3	2777.425	55629.11	7315.546	1993.655	4016.223

Sample Name: PB170335BS Acquired: 12/10/2025 22:13:03 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7614635	1.694882	.9264284	1.930656	.7911400	1.944473
Stddev	.0074026	.055485	.0105903	.024492	.0096327	.009286
%RSD	.9721526	3.273657	1.143128	1.268578	1.217574	.4775403

#1	.7549943	1.637344	.9183821	1.912102	.7822507	1.946136
#2	.7598597	1.699246	.9224769	1.921448	.7897947	1.934469
#3	.7695365	1.748056	.9384263	1.958417	.8013746	1.952815

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1903330	.1908761	.1854489	.9899127	.3818899	.1871483
Stddev	.0009644	.0004282	.0019245	.0044154	.0036951	.0017292
%RSD	.5066847	.2243234	1.037738	.4460394	.9675918	.9239614

#1	.1913666	.1910310	.1838724	.9933754	.3779367	.1855532
#2	.1901750	.1912053	.1848809	.9849405	.3824759	.1869059
#3	.1894573	.1903920	.1875935	.9914222	.3852569	.1889859

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3004727	2.889392	.1965910	1.958738	.4760472	.0699961
Stddev	.0024808	.061832	.0009845	.002647	.0044420	.0009646
%RSD	.8256377	2.139972	.5007649	.1351144	.9330967	1.378154

#1	.2984777	2.840591	.1956333	1.956471	.4720527	.0691759
#2	.2996898	2.868659	.1965394	1.958096	.4752580	.0710589
#3	.3032504	2.958926	.1976002	1.961647	.4808308	.0697534

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.940153	.2877715	.1981348	9.201448	.2830028	.3997132
Stddev	.067771	.0031017	.0016662	.139695	.0008826	.0039267
%RSD	2.305005	1.077844	.8409558	1.518185	.3118686	.9823679

#1	2.871340	.2905561	.1969872	9.055552	.2829211	.3960638
#2	2.942287	.2844285	.1973712	9.214812	.2839233	.3992076
#3	3.006831	.2883299	.2000460	9.333982	.2821638	.4038681

Sample Name: PB170335BS Acquired: 12/10/2025 22:13:03 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6399726	.1926021	.8294059	F .5915668	F -.000862	.2013152
Stddev	.0062352	.0003534	.0114591	.0049975	.001656	.0017600
%RSD	.9742946	.1834699	1.381608	.8447879	192.2316	.8742490

#1	.6349405	.1929617	.8169960	.5865794	.000408	.2013694
#2	.6380294	.1925892	.8316352	.5915465	-.000258	.1995287
#3	.6469481	.1922553	.8395866	.5965743	-.002735	.2030475

Elem	Sr4077
Units	ppm
Avg	.1946251
Stddev	.0003087
%RSD	.1586145

#1	.1947887
#2	.1942690
#3	.1948175

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2762.722	58261.58	7457.688	2020.859	3916.897
Stddev	19.333	401.67	40.074	10.931	28.778
%RSD	.6997659	.6894315	.5373524	.5408972	.7347018

#1	2779.564	58712.28	7434.048	2029.973	3942.113
#2	2766.991	58131.03	7435.059	2023.864	3923.030
#3	2741.612	57941.42	7503.958	2008.740	3885.547

Sample Name: Q3483-10 Acquired: 12/10/2025 22:17:09 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.212315	2.395503	3.245205	4.736702	.4262830	179.9059
Stddev	.007997	.033187	.010146	.016505	.0031087	1.5901
%RSD	.3614904	1.385405	.3126435	.3484542	.7292595	.8838626
#1	2.216343	2.387129	3.247235	4.746760	.4297448	178.1028
#2	2.203105	2.367305	3.234197	4.717653	.4237298	181.1075
#3	2.217497	2.432076	3.254181	4.745692	.4253744	180.5076
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.480082	F 1.251632	2.602613	201.6355	2.542449	F 5.840430
Stddev	.075361	.009652	.007514	1.6838	.011674	.018537
%RSD	1.162964	.7711858	.2887284	.8350805	.4591540	.3173922
#1	6.394265	1.244997	2.607196	199.7882	2.531672	5.853172
#2	6.535474	1.262705	2.593941	203.0844	2.554850	5.819165
#3	6.510507	1.247194	2.606703	202.0339	2.540825	5.848955
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.130255	228.1772	3.450240	165.2470	1.441577	1.379665
Stddev	.012349	2.2724	.039325	1.3292	.006197	.005503
%RSD	.2989908	.9958750	1.139785	.8043991	.4298844	.3988903
#1	4.139756	225.5712	3.405274	163.7945	1.446696	1.374140
#2	4.116295	229.2158	3.478203	166.4029	1.434687	1.379709
#3	4.134712	229.7447	3.467244	165.5437	1.443347	1.385146
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	221.8262	1.891482	3.168691	197.7881	1.855603	1.948769
Stddev	.7672	.011616	.006968	2.0849	.010526	.005798
%RSD	.3458491	.6141136	.2199148	1.054094	.5672292	.2975257
#1	220.9636	1.878100	3.160665	195.4284	1.845924	1.954227
#2	222.4323	1.897384	3.172208	198.5546	1.866808	1.942682
#3	222.0828	1.898962	3.173201	199.3812	1.854075	1.949398

Sample Name: Q3483-10 Acquired: 12/10/2025 22:17:09 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.137047	2.022944	F 41.68497	1.552888	8.006134	3.576503
Stddev	.009539	.018845	.28010	.005298	.044789	.041009
%RSD	.3040878	.9315681	.6719406	.3411631	.5594349	1.146622

#1	3.138567	2.001319	41.38670	1.556222	8.015739	3.529580
#2	3.126839	2.035849	41.72581	1.546779	7.957321	3.605478
#3	3.145735	2.031666	41.94241	1.555663	8.045341	3.594451

Elem	Sr4077
Units	ppm
Avg	1.190757
Stddev	.008458
%RSD	.7102947

#1	1.181064
#2	1.196640
#3	1.194567

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2873.932	60851.35	8679.964	2063.473	2990.600
Stddev	7.975	345.52	69.026	9.808	8.128
%RSD	.2775049	.5678064	.7952289	.4753257	.2717856

#1	2867.020	61229.40	8732.712	2074.691	2983.551
#2	2882.658	60551.92	8601.843	2059.212	2999.491
#3	2872.117	60772.72	8705.336	2056.516	2988.758

Sample Name: Q3483-10DLX5 Acquired: 12/10/2025 22:21:15 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4963133	.4824408	.6466486	1.080448	.0940153	40.04533	1.447246
Stddev	.0021000	.0246000	.0039561	.007530	.0011137	3.03756	.114462
%RSD	.4231105	5.099081	.6117858	.6969243	1.184624	7.585301	7.908952
#1	.4969915	.4782456	.6431298	1.080942	.0951181	40.13428	1.454871
#2	.4979903	.4602082	.6458854	1.072683	.0940368	36.96428	1.329162
#3	.4939580	.5088687	.6509308	1.087719	.0928910	43.03744	1.557705
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2931137	.5164418	46.93612	.6112147	1.146604	.9941026	53.14517
Stddev	.0164843	.0013309	3.50344	.0005320	.002390	.0028094	.95615
%RSD	5.623868	.2577092	7.464263	.0870445	.2084307	.2826011	1.799135
#1	.2952885	.5150835	47.14084	.6108592	1.144562	.9914522	53.24328
#2	.2756499	.5164985	43.33481	.6118263	1.146018	.9970476	52.14374
#3	.3084027	.5177435	50.33270	.6109585	1.149233	.9938080	54.04847
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8093280	37.57604	.2857325	.3101238	48.55035	.4358461	.7516054
Stddev	.0638946	2.84242	.0010323	.0003162	.75908	.0323308	.0016588
%RSD	7.894775	7.564448	.3612773	.1019682	1.563482	7.417942	.2207030
#1	.8133778	37.66695	.2845420	.3099377	48.43486	.4379343	.7531578
#2	.7435048	34.68925	.2863795	.3099449	47.85564	.4025218	.7498575
#3	.8711014	40.37191	.2862760	.3104890	49.36055	.4670821	.7518008
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	42.71281	.4457814	.4497433	.6077037	.4594741	9.329730	.2901232
Stddev	.73085	.0219479	.0006457	.0003863	.0333750	.210978	.0010082
%RSD	1.711086	4.923463	.1435735	.0635621	7.263741	2.261347	.3474965
#1	42.63759	.4462866	.4501544	.6081152	.4630091	9.261417	.2897277
#2	42.02247	.4235853	.4489991	.6073490	.4244723	9.161373	.2893728
#3	43.47836	.4674723	.4500764	.6076470	.4909409	9.566399	.2912692

Sample Name: Q3483-10DLX5 Acquired: 12/10/2025 22:21:15 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	1.440840	.7818623	.2693553
Stddev	.012641	.0598826	.0226761
%RSD	.8773382	7.658966	8.418652

#1	1.440122	.7870437	.2708968
#2	1.428573	.7195573	.2459479
#3	1.453825	.8389858	.2912214

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2706.926	55364.18	7796.252	1917.473	3458.673
Stddev	2.474	105.03	447.328	5.905	6.134
%RSD	.0914019	.1897003	5.737730	.3079603	.1773383

#1	2709.670	55405.36	7717.571	1919.345	3461.348
#2	2706.245	55244.80	8277.700	1922.215	3463.014
#3	2704.864	55442.37	7393.485	1910.859	3451.656

Sample Name: CCV02 Acquired: 12/10/2025 22:33:25 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal 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	5.030528	4.917187	4.930140	5.075695	5.126089	9.558996	9.395341
Stddev	.185217	.194255	.175612	.179622	.197325	.173885	.152849
%RSD	3.681866	3.950535	3.562014	3.538873	3.849433	1.819068	1.626861
#1	4.891562	4.812096	4.797944	4.937359	4.964855	9.695153	9.533741
#2	4.959219	4.798117	4.863072	5.011028	5.067278	9.618713	9.420994
#3	5.240801	5.141348	5.129402	5.278697	5.346133	9.363122	9.231289
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2329363	2.438107	23.54486	.9834854	2.443798	1.260579	5.076227
Stddev	.0029284	.085182	.44385	.0302628	.085471	.046266	.143109
%RSD	1.257171	3.493772	1.885125	3.077096	3.497468	3.670182	2.819202
#1	.2359962	2.373176	23.92365	.9635869	2.377374	1.222084	4.979242
#2	.2326526	2.406590	23.65444	.9685575	2.413794	1.247747	5.008850
#3	.2301601	2.534556	23.05648	1.018312	2.540226	1.311906	5.240589
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.339138	23.56247	2.460468	1.235460	25.35090	2.380021	2.463321
Stddev	.043636	.46268	.085902	.035024	.67331	.045718	.072618
%RSD	1.865463	1.963648	3.491295	2.834904	2.655974	1.920922	2.947971
#1	2.371176	23.93798	2.394528	1.211800	24.83437	2.419664	2.413006
#2	2.356797	23.70384	2.429265	1.218885	25.10592	2.390389	2.430387
#3	2.289440	23.04560	2.557611	1.275695	26.11240	2.330009	2.546571
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.79900	4.631095	5.006943	4.882048	4.741049	5.273258	5.105284
Stddev	.68053	.058186	.178605	.167762	.087366	.169614	.171164
%RSD	2.744173	1.256412	3.567149	3.436303	1.842761	3.216490	3.352687
#1	24.20911	4.693384	4.865322	4.757136	4.811001	5.149808	4.975582
#2	24.64434	4.621762	4.947917	4.816278	4.769025	5.203306	5.040983
#3	25.54355	4.578140	5.207590	5.072729	4.643122	5.466661	5.299287

Sample Name: CCV02 Acquired: 12/10/2025 22:33:25 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV02 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.861838	4.663955	4.905894
Stddev	.169320	.082067	.041637
%RSD	3.482630	1.759598	.8487127

#1	4.746089	4.729209	4.939853
#2	4.783255	4.690838	4.918388
#3	5.056171	4.571818	4.859440

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2571.007	53480.07	7536.344	1853.433	3473.999
Stddev	81.953	1316.06	129.606	40.376	103.240
%RSD	3.187598	2.460834	1.719750	2.178427	2.971781

#1	2634.926	54469.27	7421.718	1885.060	3550.060
#2	2599.481	53984.52	7510.330	1867.285	3515.463
#3	2478.615	51986.41	7676.984	1807.955	3356.473

Sample Name: CCB02 Acquired: 12/10/2025 22:37:37 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal 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	.0011562	-.003184	.0003027	-.000282	-.001671	.0122111	-.002636
Stddev	.0023129	.001446	.0007522	.000911	.001692	.0071143	.000410
%RSD	200.0491	45.41799	248.4886	323.1063	101.2599	58.26104	15.56828
#1	.0020190	-.004829	.0011205	.000670	.000282	.0199968	-.002598
#2	.0029136	-.002114	.0001471	-.000370	-.002686	.0060489	-.003065
#3	-.001464	-.002609	-.000360	-.001145	-.002609	.0105875	-.002246
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001194	.0001234	-.016269	-.000153	-.000110	.0000622	-.004029
Stddev	.0000341	.0001023	.005272	.000185	.000037	.0005294	.006880
%RSD	28.59093	82.89175	32.40527	121.0030	34.16371	851.6928	170.7509
#1	.0001417	.0000159	-.020036	-.000089	-.000119	-.000243	-.003961
#2	.0001365	.0001347	-.010244	-.000362	-.000142	.000673	-.010943
#3	.0000801	.0002196	-.018528	-.000008	-.000068	-.000244	.002816
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002092	-.001140	.0003833	-.000534	.1041058	-.004242	.0002073
Stddev	.0001512	.012554	.0002475	.000317	.0254672	.003226	.0002216
%RSD	72.26430	1101.683	64.56971	59.36100	24.46281	76.05777	106.9348
#1	.0003789	.001942	.0001743	-.000175	.0788354	-.001983	.0004572
#2	.0001600	-.014947	.0003190	-.000774	.1037164	-.007937	.0000347
#3	.0000888	.009586	.0006565	-.000654	.1297654	-.002805	.0001299
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1320484	.0064187	.0003710	-.004895	-.000944	.0026208	.0005362
Stddev	.0138587	.0002104	.0002281	.000394	.000547	.0081598	.0002556
%RSD	10.49519	3.277965	61.48244	8.058450	57.93922	311.3455	47.66473
#1	.1218911	.0065318	.0004350	-.005105	-.001553	.0107349	.0002804
#2	.1478362	.0065484	.0005603	-.004440	-.000497	-.005584	.0005367
#3	.1264179	.0061760	.0001178	-.005141	-.000781	.002712	.0007916

Sample Name: CCB02 Acquired: 12/10/2025 22:37:37 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.008759	.0015385	.0000293
Stddev	.002322	.0012472	.0000346
%RSD	26.50605	81.06602	118.3266

#1	-.007805	.0013058	.0000501
#2	-.011406	.0004241	.0000484
#3	-.007067	.0028857	-.000011

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2767.342	55961.12	7552.003	1972.758	3959.981
Stddev	2.364	28.99	87.114	7.428	4.384
%RSD	.0854276	.0518037	1.153519	.3765373	.1107155

#1	2769.949	55952.29	7451.979	1970.717	3960.124
#2	2766.741	55937.56	7592.781	1966.564	3955.526
#3	2765.337	55993.49	7611.247	1980.993	3964.291

Sample Name: CCV03 Acquired: 12/10/2025 23:52:25 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal 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	5.003395	4.663750	4.867654	5.049085	5.084571	9.792879	9.690704
Stddev	.026608	.078367	.014971	.040265	.035695	.044550	.117018
%RSD	.5318071	1.680333	.3075542	.7974633	.7020271	.4549184	1.207530

#1	5.029824	4.607900	4.868145	5.088292	5.117106	9.767753	9.583960
#2	5.003750	4.753335	4.882373	5.051124	5.090218	9.766569	9.672328
#3	4.976611	4.630015	4.852444	5.007840	5.046389	9.844316	9.815822

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2356734	2.413799	24.21724	.9875958	2.425053	1.249713	5.145554
Stddev	.0009966	.008206	.11791	.0039859	.007158	.004379	.058522
%RSD	.4228903	.3399527	.4868693	.4035910	.2951807	.3503937	1.137327

#1	.2351846	2.418259	24.14092	.9830174	2.429942	1.252628	5.119227
#2	.2350155	2.418810	24.15776	.9894782	2.428380	1.251835	5.212615
#3	.2368201	2.404330	24.35304	.9902919	2.416836	1.244678	5.104819

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.420991	24.10368	2.433766	1.244015	25.77255	2.446726	2.531154
Stddev	.006847	.14071	.005726	.004393	.15117	.008628	.007416
%RSD	.2828354	.5837765	.2352599	.3531450	.5865434	.3526290	.2929891

#1	2.420384	23.99294	2.437662	1.239075	25.62090	2.449842	2.523126
#2	2.414468	24.05608	2.436444	1.245486	25.92323	2.436973	2.537749
#3	2.428122	24.26202	2.427192	1.247484	25.77351	2.453363	2.532588

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.29401	4.686007	5.049233	4.891203	4.888289	5.194032	4.990995
Stddev	.21876	.023582	.034380	.025242	.013658	.056764	.010190
%RSD	.8648690	.5032385	.6809040	.5160793	.2794057	1.092873	.2041630

#1	25.05164	4.682354	5.082127	4.911340	4.879752	5.129299	4.999530
#2	25.47682	4.664465	5.052033	4.899385	4.881074	5.217488	4.993743
#3	25.35357	4.711202	5.013538	4.862885	4.904042	5.235308	4.979713

Sample Name: CCV03 Acquired: 12/10/2025 23:52:25 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV03 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.792642	4.794743	5.042764
Stddev	.010195	.017755	.051512
%RSD	.2127172	.3702931	1.021501

#1	4.795597	4.786000	4.987833
#2	4.801034	4.783056	5.050472
#3	4.781297	4.815174	5.089988

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2598.098	53199.56	7428.187	1835.419	3514.083
Stddev	11.143	108.34	33.455	8.633	12.172
%RSD	.4288879	.2036535	.4503781	.4703299	.3463878

#1	2589.014	53299.63	7430.335	1844.210	3507.142
#2	2594.748	53084.50	7460.515	1826.954	3506.968
#3	2610.532	53214.55	7393.709	1835.093	3528.138

Sample Name: CCB03 Acquired: 12/10/2025 23:56:38 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal 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	.0019683	-.001964	-.000006	-.002473	-.000753	.0157514	-.002939
Stddev	.0020906	.002127	.001366	.003927	.001401	.0089242	.000779
%RSD	106.2146	108.3032	21316.62	158.7852	185.9778	56.65626	26.49266

#1	.0037829	-.004272	.001537	-.004057	-.002293	.0122254	-.003169
#2	-.000318	-.001536	-.001063	-.005361	-.000413	.0091290	-.003576
#3	.002440	-.000083	-.000493	.001998	.000446	.0258999	-.002071

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000903	.0001231	.0065244	-.000194	-.000131	.0003539	-.007813
Stddev	.0000659	.0000747	.0044031	.000208	.000196	.0001952	.004659
%RSD	72.92161	60.70157	67.48736	107.1558	149.6423	55.15991	59.63548

#1	.0000154	.0001441	.0060127	-.000097	.000041	.0001874	-.010246
#2	.0001164	.0000401	.0111610	-.000432	-.000090	.0003056	-.002441
#3	.0001392	.0001851	.0023995	-.000052	-.000343	.0005687	-.010753

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000149	.0186547	.0003679	-.000283	.1246296	-.004424	.0001974
Stddev	.000199	.0092933	.0001601	.000350	.0308051	.001279	.0001550
%RSD	133.5697	49.81750	43.51516	123.8065	24.71728	28.90878	78.52599

#1	-.000342	.0293759	.0004876	-.000233	.0896567	-.005778	.0002328
#2	-.000158	.0128979	.0004301	.000040	.1364925	-.004260	.0003316
#3	.000055	.0136902	.0001861	-.000655	.1477396	-.003235	.0000277

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1654212	.0029134	.0005693	-.006780	-.001613	-.001480	.0004057
Stddev	.0247586	.0004322	.0001116	.001139	.000485	.009631	.0001941
%RSD	14.96702	14.83560	19.59462	16.80004	30.05784	650.5754	47.83100

#1	.1406889	.0026933	.0005136	-.008095	-.002099	.008590	.0003241
#2	.1653689	.0034114	.0004967	-.006132	-.001613	-.010602	.0006273
#3	.1902060	.0026356	.0006978	-.006113	-.001129	-.002430	.0002658

Sample Name: CCB03 Acquired: 12/10/2025 23:56:38 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB03 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.004275	.0000925	.0001150
Stddev	.000858	.0009912	.0000296
%RSD	20.07115	1071.489	25.76015

#1	-.004844	.0012370	.0001487
#2	-.004693	-.000479	.0001030
#3	-.003288	-.000481	.0000932

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2711.662	55218.89	7630.214	1920.143	3890.986
Stddev	6.766	260.81	83.604	12.086	9.408
%RSD	.2494990	.4723155	1.095699	.6294418	.2417920

#1	2708.567	55017.90	7633.515	1909.475	3883.446
#2	2706.997	55125.17	7712.118	1917.685	3887.985
#3	2719.421	55513.61	7545.008	1933.270	3901.529

Sample Name: LR-1 Acquired: 12/11/2025 0:04:08 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0049028	.0173892	.0089497	-.010618	.0034401	.2486885	-.001391
Stddev	.0022355	.0063736	.0014718	.006638	.0013506	.0163028	.000103
%RSD	45.59709	36.65254	16.44529	62.51222	39.25977	6.555507	7.420859
#1	.0049039	.0129731	.0092811	-.013560	.0045473	.2325645	-.001322
#2	.0071377	.0246959	.0073404	-.003018	.0019354	.2483366	-.001510
#3	.0026667	.0144987	.0102275	-.015277	.0038376	.2651644	-.001340
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002764	.0008619	2093.009	.0291475	.0001978	.0103736	.5808803
Stddev	.0000408	.0000268	15.337	.0005628	.0001713	.0002214	.0213223
%RSD	14.75260	3.108244	.7327721	1.930833	86.60479	2.133927	3.670685
#1	.0003229	.0008677	2109.048	.0285259	.0001732	.0106206	.5703496
#2	.0002596	.0008327	2091.492	.0292942	.0000401	.0101932	.5668722
#3	.0002467	.0008854	2078.487	.0296224	.0003801	.0103069	.6054192
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0207576	2252.147	.0222210	-.001832	2083.407	-.001461	.0291490
Stddev	.0007192	5.531	.0003313	.000348	30.823	.003073	.0008422
%RSD	3.464902	.2455868	1.490957	18.97626	1.479436	210.4061	2.889299
#1	.0199799	2257.945	.0225899	-.001793	2049.454	.000518	.0288425
#2	.0208942	2251.569	.0221243	-.001505	2091.142	-.005001	.0301015
#3	.0213988	2246.929	.0219488	-.002197	2109.626	.000101	.0285030
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.751318	.0085084	.0060073	-.018601	-.092324	-.053940	.0010076
Stddev	.441958	.0004927	.0005879	.001218	.002050	.006344	.0006529
%RSD	25.23575	5.790573	9.786341	6.549944	2.220581	11.76049	64.79567
#1	1.311809	.0083351	.0063388	-.017824	-.094494	-.060346	.0004536
#2	1.746459	.0081258	.0053285	-.020005	-.090420	-.053815	.0008419
#3	2.195686	.0090643	.0063546	-.017973	-.092058	-.047660	.0017274

Sample Name: LR-1 Acquired: 12/11/2025 0:04:08 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.2106471	-.332014	.0574930
Stddev	.0044119	.003155	.0001917
%RSD	2.094430	.9502745	.3333968

#1	.2125540	-.335313	.0575667
#2	.2137848	-.331702	.0576368
#3	.2056026	-.329027	.0572754

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1868.802	41424.25	6416.714	1378.826	2230.263
Stddev	5.408	362.33	7.956	16.208	2.527
%RSD	.2893659	.8746732	.1239955	1.175492	.1133198

#1	1864.984	41806.72	6407.965	1396.433	2228.613
#2	1874.990	41379.90	6418.664	1375.517	2233.172
#3	1866.431	41086.15	6423.515	1364.528	2229.003

Sample Name: LR-2 Acquired: 12/11/2025 0:08:42 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0134266	.0103780	.1735718	-.234432	.0691423	1766.897	.0295445
Stddev	.0031406	.0050381	.0049459	.017772	.0100926	19.157	.0009136
%RSD	23.39117	48.54590	2.849463	7.580740	14.59683	1.084199	3.092201
#1	.0167436	.0141628	.1750215	-.233843	.0639482	1748.269	.0296669
#2	.0130375	.0046595	.1680631	-.252491	.0807741	1765.881	.0285759
#3	.0104986	.0123116	.1776308	-.216963	.0627047	1786.542	.0303907
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0299702	.0353447	-2.42380	-.417097	.0986262	.5401740	2681.506
Stddev	.0000273	.0003850	.15678	.000436	.0005566	.0060500	6.223
%RSD	.0909953	1.089306	6.468467	.1045059	.5643138	1.120002	.2320629
#1	.0299398	.0350861	-2.24542	-.417301	.0989573	.5457194	2681.070
#2	.0299926	.0357872	-2.53975	-.416597	.0989377	.5337219	2675.512
#3	.0299782	.0351609	-2.48624	-.417394	.0979837	.5410808	2687.935
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.238341	1.499932	.0659147	.0857666	4.427150	.1102180	.1690469
Stddev	.002589	.039618	.0014291	.0044707	.060445	.0050909	.0004920
%RSD	1.086401	2.641305	2.168152	5.212623	1.365334	4.618928	.2910715
#1	-.235472	1.471749	.0652495	.0909102	4.361958	.1043505	.1685093
#2	-.240504	1.482818	.0675552	.0835754	4.481337	.1128412	.1691562
#3	-.239046	1.545231	.0649394	.0828143	4.438155	.1134623	.1694750
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1752.963	^ *****	-.013741	.0420124	.0027324	1.611462	.0088679
Stddev	11.038	-----	.001033	.0015511	.0002946	.012562	.0011973
%RSD	.6296873	-----	7.514930	3.692033	10.78137	.7795202	13.50086
#1	1740.257	^ -----	-.012994	.0422525	.0028648	1.625356	.0076835
#2	1760.179	^ -----	-.013309	.0434295	.0023948	1.600907	.0088428
#3	1758.455	^ -----	-.014919	.0403552	.0029375	1.608124	.0100776

Sample Name: LR-2 Acquired: 12/11/2025 0:08:42 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.525672	.2695038	-2.57017
Stddev	.007006	.0011870	.00599
%RSD	1.332678	.4404445	.2330622

#1	-.527273	.2693356	-2.56979
#2	-.518005	.2684098	-2.56439
#3	-.531739	.2707659	-2.57635

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2309.072	47908.68	7041.414	1724.018	2603.615
Stddev	1.748	6.03	32.957	7.453	1.130
%RSD	.0756956	.0125800	.4680425	.4323257	.0434177

#1	2310.949	47904.45	7052.455	1731.657	2604.817
#2	2308.774	47906.02	7067.433	1723.632	2602.573
#3	2307.492	47915.58	7004.354	1716.765	2603.456

Sample Name: LR-3 Acquired: 12/11/2025 0:13:13 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0735115	.0356079	229.8946	-.004484	.0001821	.1733963	-.001362
Stddev	.0017755	.0060720	.4598	.003446	.0011987	.0036654	.000061
%RSD	2.415286	17.05235	.1999909	76.83558	658.4375	2.113887	4.509532

#1	.0715979	.0412931	229.3678	-.001771	-.000567	.1769793	-.001320
#2	.0738312	.0363190	230.2149	-.003322	.001565	.1696537	-.001334
#3	.0751055	.0292117	230.1011	-.008361	-.000451	.1735559	-.001432

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003839	-.000330	.2767905	22.73908	.0056591	52.49029	.4397539
Stddev	.000112	.000059	.0027665	.12111	.0004048	.17711	.0096598
%RSD	2.911770	17.96382	.9994878	.5326220	7.153839	.3374063	2.196647

#1	-.003859	-.000369	.2795437	22.71582	.0055965	52.31662	.4487380
#2	-.003719	-.000262	.2768169	22.63129	.0060916	52.67064	.4409871
#3	-.003940	-.000359	.2740109	22.87014	.0052892	52.48361	.4295367

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	46.44572	-.108302	23.70184	.0013789	.3556471	-.012776	29.86845
Stddev	.61114	.012098	.05120	.0002466	.0521993	.002530	.17831
%RSD	1.315810	11.17045	.2160317	17.88026	14.67729	19.80371	.5969714

#1	47.15074	-.099404	23.64322	.0012142	.2998411	-.015636	29.90988
#2	46.11974	-.103425	23.73780	.0012601	.3638258	-.011860	29.67307
#3	46.06669	-.122077	23.72451	.0016623	.4032743	-.010831	30.02239

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6324552	-.004639	-.010167	-.009190	-.031243	-.173748	-.026319
Stddev	.0896614	.000765	.000448	.000897	.001472	.005581	.000627
%RSD	14.17672	16.49918	4.408384	9.758435	4.712907	3.211965	2.383639

#1	.5289422	-.005372	-.010250	-.008409	-.032367	-.178708	-.025602
#2	.6824931	-.004700	-.010568	-.010169	-.031787	-.174832	-.026588
#3	.6859304	-.003845	-.009683	-.008992	-.029576	-.167705	-.026768

Sample Name: LR-3 Acquired: 12/11/2025 0:13:13 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0338151	.0020674	.0004600
Stddev	.0066585	.0003911	.0000629
%RSD	19.69101	18.91759	13.67567

#1	.0262562	.0018179	.0004283
#2	.0388124	.0025182	.0005325
#3	.0363768	.0018663	.0004193

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2472.738	57035.64	7490.734	1875.029	3747.988
Stddev	4.942	193.86	78.274	6.710	4.905
%RSD	.1998699	.3399008	1.044948	.3578749	.1308575

#1	2476.995	56998.87	7410.149	1873.467	3753.130
#2	2467.318	57245.25	7495.581	1882.382	3747.474
#3	2473.899	56862.79	7566.472	1869.237	3743.361

Sample Name: CCV04 Acquired: 12/11/2025 0:17:43 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.893555	4.942786	4.807611	4.961760	4.996895	9.794976	9.535450
Stddev	.066738	.158126	.054263	.068409	.061574	.053330	.128734
%RSD	1.363789	3.199130	1.128685	1.378731	1.232251	.5444634	1.350058
#1	4.969441	5.106946	4.869439	5.037269	5.066639	9.782286	9.407450
#2	4.867226	4.929935	4.785497	4.944096	4.973989	9.749136	9.533993
#3	4.843998	4.791478	4.767898	4.903915	4.950056	9.853507	9.664906
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2381095	2.368277	24.01188	.9772168	2.380711	1.232648	5.136309
Stddev	.0009608	.024447	.07816	.0069342	.024948	.013544	.098454
%RSD	.4035008	1.032274	.3255131	.7095836	1.047902	1.098740	1.916828
#1	.2385239	2.396044	23.98153	.9769435	2.409260	1.248152	5.087048
#2	.2387936	2.358800	23.95344	.9704233	2.369768	1.226672	5.072208
#3	.2370111	2.349988	24.10067	.9842836	2.363106	1.223121	5.249671
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.400311	24.01427	2.396329	1.241355	25.51908	2.416993	2.419460
Stddev	.010243	.14276	.026318	.007823	.38800	.011643	.015887
%RSD	.4267242	.5944796	1.098269	.6301703	1.520436	.4817112	.6566216
#1	2.389419	23.89584	2.426523	1.241948	25.31941	2.409097	2.425267
#2	2.401765	23.97417	2.384208	1.233252	25.27159	2.411518	2.401487
#3	2.409749	24.17278	2.378255	1.248864	25.96626	2.430364	2.431627
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.10945	4.719752	4.898432	4.758779	4.850982	5.113785	4.992802
Stddev	.37042	.009453	.063748	.061378	.022871	.088942	.058733
%RSD	1.475233	.2002840	1.301395	1.289776	.4714775	1.739267	1.176350
#1	24.90201	4.726643	4.970736	4.828291	4.841736	5.063746	5.059698
#2	24.88922	4.723637	4.874237	4.735997	4.834181	5.061134	4.969009
#3	25.53711	4.708976	4.850324	4.712051	4.877029	5.216476	4.949699

Sample Name: CCV04 Acquired: 12/11/2025 0:17:43 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV04 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.755064	4.795225	4.997322
Stddev	.077243	.017678	.038843
%RSD	1.624429	.3686526	.7772746

#1	4.840946	4.787161	4.953474
#2	4.732974	4.783017	5.011075
#3	4.691274	4.815497	5.027417

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2610.643	53031.24	7318.043	1841.643	3529.366
Stddev	25.633	423.20	8.800	16.854	35.485
%RSD	.9818475	.7980229	.1202561	.9151429	1.005435

#1	2581.469	53106.48	7309.756	1832.105	3489.216
#2	2620.904	53411.78	7317.093	1861.103	3542.357
#3	2629.555	52575.47	7327.280	1831.722	3556.526

Sample Name: CCB04 Acquired: 12/11/2025 0:42:26 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal 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	.0003519	-.002107	.0013436	-.003213	-.001435	.0194822	-.002426
Stddev	.0010731	.002714	.0018353	.003189	.000365	.0044557	.000255
%RSD	304.9134	128.8401	136.5963	99.26839	25.45182	22.87055	10.50213

#1	.0014837	-.003132	.0020653	-.002860	-.001132	.0233044	-.002674
#2	.0002229	.000971	.0027084	-.006563	-.001840	.0205538	-.002165
#3	-.000651	-.004159	-.000743	-.000215	-.001332	.0145884	-.002439

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000352	.0000766	.0193047	-.000333	-.000068	.0001640	.0044704
Stddev	.0000409	.0000635	.0039778	.000344	.000024	.0000594	.0036512
%RSD	116.4863	82.83524	20.60556	103.2589	36.07135	36.22541	81.67563

#1	.0000027	.0000811	.0161423	-.000024	-.000051	.0002202	.0002954
#2	.0000216	.0001378	.0180010	-.000704	-.000057	.0001018	.0070665
#3	.0000812	.0000110	.0237708	-.000273	-.000096	.0001701	.0060493

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001423	.0112714	.0003168	-.000287	.1540995	-.004741	.0082222
Stddev	.0004063	.0141185	.0002660	.000276	.0354746	.001631	.0003159
%RSD	285.5206	125.2588	83.96691	96.34621	23.02057	34.40054	3.841854

#1	.0002220	.0251673	.0006107	-.000575	.1179530	-.006618	.0085092
#2	-.000298	.0117066	.0000922	-.000261	.1554839	-.003671	.0082736
#3	.000503	-.003060	.0002477	-.000024	.1888616	-.003934	.0078837

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1617490	-.000505	.0003124	-.009097	-.000396	-.008667	.0006288
Stddev	.0657333	.000354	.0003188	.000673	.000457	.007878	.0000350
%RSD	40.63907	70.10177	102.0539	7.402580	115.5151	90.89562	5.570882

#1	.0874837	-.000712	.0006223	-.008529	-.000703	-.017714	.0006667
#2	.2124599	-.000096	-.000015	-.008921	.000130	-.003325	.0006220
#3	.1853035	-.000706	.000330	-.009841	-.000613	-.004962	.0005976

Sample Name: CCB04 Acquired: 12/11/2025 0:42:26 Type: Unk
Method: 6010-200.7 NEW(v399) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0049675	.0039745	.0000636
Stddev	.0045085	.0006641	.0000614
%RSD	90.76110	16.70753	96.62644

#1	.0025860	.0033715	.0000574
#2	.0101674	.0046862	.0000055
#3	.0021491	.0038659	.0001278

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2703.181	55953.20	7496.898	1942.736	3870.231
Stddev	6.372	372.43	34.625	10.917	6.326
%RSD	.2357351	.6656106	.4618546	.5619287	.1634497

#1	2703.827	56382.99	7460.851	1952.437	3870.271
#2	2696.510	55751.18	7499.942	1944.858	3863.885
#3	2709.205	55725.44	7529.900	1930.915	3876.536

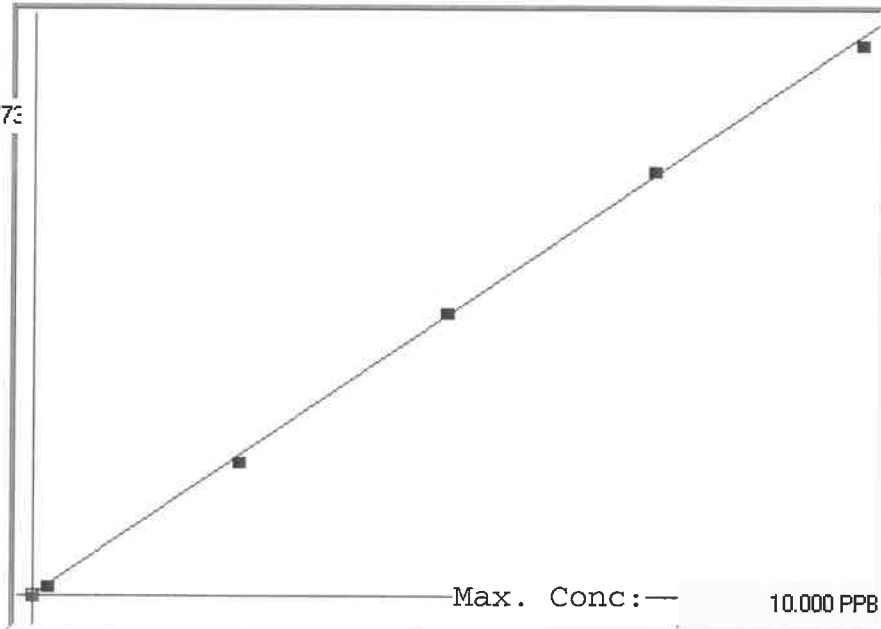
LB137779

7471B

INSTRUMENT ID: CV1

μ Abs.:

46773



A= 0.0000e+000

B= 2.1141e-004

C= 3.5985e-004

Rho= 0.9997698

Accept=Accepted

Std ID	Conc.	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0.0	0.000	-0.000	-0.000	-4	0.000	-4				
0.2	0.200	0.183	-0.017	862	0.0 %	862				
2.5	2.500	2.429	-0.071	11489	0.0 %	11489				
5.0	5.000	5.098	0.098	24110	0.0 %	24110				
7.5	7.500	7.602	0.102	35957	0.0 %	35957				
10.0	10.000	9.889	-0.111	46773	0.0 %	46773				

LB137779 INSTRUMENT ID : CV1

Method: 7471B

Operator: Admin

Date of Analysis: 05 Nov 2025 09:46:21

Type	Sample ID	Extended ID	Conc.	µ Abs.	Units	Type	Std Conc	Method	Date
S	0.0 - 1	50	-	-4	PPB	Std	0.0000	7471B	05 Nov 2025 10:39:57
S	0.2 - 1	50.2	-	862	PPB	Std	0.2000	7471B	05 Nov 2025 10:42:14
S	2.5 - 1	52.5	-	11489	PPB	Std	2.5000	7471B	05 Nov 2025 10:44:31
S	5.0 - 1	55	-	24110	PPB	Std	5.0000	7471B	05 Nov 2025 10:46:48
S	7.5 - 1	57.5	-	35957	PPB	Std	7.5000	7471B	05 Nov 2025 10:49:17
S	10.0 - 1	511	-	46773	PPB	Std	10.0000	7471B	05 Nov 2025 10:51:56
U	ICV99 - 1	ICV99	4.1399	19580	PPB	SMPL	-7471B		05 Nov 2025 10:55:36
U	ICB99 - 1	ICB99	-0.0442	-211	PPB	SMPL	-7471B		05 Nov 2025 10:57:52
U	CCV28 - 1	CCV28	5.1094	24166	PPB	SMPL	-7471B		05 Nov 2025 11:00:28
U	CCB28 - 1	CCB28	-0.0622	-296	PPB	SMPL	-7471B		05 Nov 2025 11:02:43
U	CRA - 1	CRA	0.1820	859	PPB	SMPL	-7471B		05 Nov 2025 11:05:21
U	HighStd - 1	HighStd	9.7844	46279	PPB	SMPL	-7471B		05 Nov 2025 11:07:36
U	ChkStd - 1	ChkStd	6.8741	32513	PPB	SMPL	-7471B		05 Nov 2025 11:12:41
U	PB170393BL - 1	PB170393BL	-0.0396	-189	PPB	SMPL	-7471B		05 Nov 2025 11:14:57
U	PB170393BS - 1	PB170393BS	4.1339	19552	PPB	SMPL	-7471B		05 Nov 2025 11:17:38
X	Q3483-10 - 1	HW1025-PT-MET-SOIL	HIGH	861797	PPB		-7471B		05 Nov 2025 11:19:54
U	Q3532-01 - 1	TP-1	-0.0043	-22	PPB	SMPL	-7471B		05 Nov 2025 11:22:02
U	Q3532-05 - 1	TP-2	0.0048	21	PPB	SMPL	-7471B		05 Nov 2025 11:25:19
U	Q3532-05DUP - 1	TP-2DUP	0.0526	247	PPB	SMPL	-7471B		05 Nov 2025 11:27:40
U	Q3532-05MS - 1	TP-2MS	4.0553	19180	PPB	SMPL	-7471B		05 Nov 2025 11:38:54
U	CCV29 - 1	CCV29	4.9914	23608	PPB	SMPL	-7471B		05 Nov 2025 11:41:09
U	CCB29 - 1	CCB29	-0.0489	-233	PPB	SMPL	-7471B		05 Nov 2025 11:43:45
U	Q3532-05MSD - 1	TP-2MSD	4.0198	19012	PPB	SMPL	-7471B		05 Nov 2025 11:46:25
U	Q3536-01 - 1	FILTER-COMP	0.1811	855	PPB	SMPL	-7471B		05 Nov 2025 11:48:40
U	Q3536-03 - 1	2061	0.0596	280	PPB	SMPL	-7471B		05 Nov 2025 11:51:17
U	Q3536-04 - 1	2052	0.2234	1055	PPB	SMPL	-7471B		05 Nov 2025 11:53:32
U	Q3537-01 - 1	MW-17-SOIL	0.0851	401	PPB	SMPL	-7471B		05 Nov 2025 11:55:49
U	Q3532-05LX5 - 1		-0.2768	-1311	PPB	SMPL	-7471B		05 Nov 2025 12:02:43
U	Q3532-05A - 1		3.9445	18656	PPB	SMPL	-7471B		05 Nov 2025 12:05:58
U	Q3483-10DLX25 - 1		14.4717	68450	PPB	SMPL	-7471B		05 Nov 2025 12:08:16
U	CCV30 - 1	CCV30	4.8866	23112	PPB	SMPL	-7471B		05 Nov 2025 12:10:51
U	CCB30 - 1	CCB30	-0.0588	-280	PPB	SMPL	-7471B		05 Nov 2025 12:13:41
U	Q3483-10DLX50 - 1		7.6345	36110	PPB	SMPL	-7471B		05 Nov 2025 12:54:08
U	CCV32 - 1 CCB 31	CCV32 CCB 31	4.9889	23596	PPB	SMPL	-7471B		05 Nov 2025 12:59:46
U	CCB32 - 1 CCB 31	CCB32 CCB 31	-0.0519	-247	PPB	SMPL	-7471B		05 Nov 2025 13:02:33

ms

11/5/25

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SOP ID : M3050B-Digestion-20

SDG No : N/A

Matrix : SOIL

Pipette ID: ICP A

Balance ID : M SC-2

Filter paper ID : N/A

pH Strip ID : N/A

Hood ID : #3

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

Start Digest Date: 10/30/2025 Time : 10:30 Temp : 96 °C

End Digest Date: 10/30/2025 Time : 13:32 Temp : 96 °C

Digestion tube ID: M6054

Block thermometer ID: MET-DIG. #2

Dig Technician Signature: *[Signature]*

Supervisor Signature: *[Signature]*

Temp : 1. 96°C 2. N/A

Standard Name	MLS USED	STD REF. # FROM LOG
LFS-1	1.00	M6209
LFS-2	1.00	M6201
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	5.00	M6158
1:1 HNO3	10.00	MP86978
30% H2O2	3.00	M6170
Conc. HCL	10.00	M6151
PTFE Boiling Stones	N/A	M5581
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#2 CELL#35 96C

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
10/30/25 14:32	<i>[Signature]</i> Preparation Group	<i>[Signature]</i> Analysis Group

Lab Sample ID	Client Sample ID	pH	Initial Weight (g)	Final Vol (ml)	Color Before	Color After	Texture	Artifact	Comment	Prep Pos
PB170335BL	PBS335	N/A	2.00	100	Colorless	Colorless	Fine	No	N/A	1
PB170335BS	LCS335	N/A	2.00	100	Colorless	Colorless	Fine	No	M6209,M6201	2
Q3483-10	HW1025-PT-MET-SOIL	N/A	2.29	100	Light Gray	Light Yellow	Fine	No	N/A	3

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WORKLIST(Hardcopy Internal Chain)

WorkList Name : PB170335 WorkList ID : 192828 Department : Digestion Date : 10-30-2025 10:03:55

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q3483-10	HW1025-PT-MET-SOIL	Solid	Metals ICP-Group1	Cool 4 deg C	ALL103	QA 01	10/27/2025	6010D

Date/Time 10/30/25 10:10

Raw Sample Received by: S/mctd-g

Raw Sample Relinquished by: S/mctd-g

Date/Time 10/30/25 11:10

Raw Sample Received by: S/mctd-g

Raw Sample Relinquished by: S/mctd-g

SOP ID : M7471B-Mercury-19

SDG No : N/A

Matrix : SOIL

Pipette ID: HG A

Balance ID : M SC-3

Filter paper ID : N/A

pH Strip ID : N/A

Hood ID : #1

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

Start Digest Date: 11/05/2025 Time : 08:40 Temp : 96 °C

End Digest Date: 11/05/2025 Time : 09:10 Temp : 96 °C

Digestion tube ID: M5595

Block thermometer ID: HG -DIG. #3

Dig Technician Signature:

Supervisor Signature:

Temp : 1. 96°C 2. N/A

Standard Name	MLS USED	STD REF. # FROM LOG
ICV	30mL	MP87855
CCV	30mL	MP87857
CRA	30mL	MP87859
Blank Spike	0.48mL	MP87848
Matrix Spike	0.48mL	MP87848

Chemical Used	ML/SAMPLE USED	Lot Number
AQUA REGIA	1.5mL	MP87861
KMnO4 (5%)	4.5mL	MP87634
Hydroxylamine HCL (12%)	2.0mL	MP87636
PTFE Boiling Stones	-----	M5582
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

LAB SAMPLE ID	CLIENT SAMPLE ID	Wt(g)/Vol(ml)	Comment
0.0 ppb	S0	30mL	MP87849
0.05 ppb	S0.05	N/A	N/A
0.2 ppb	S0.2	30mL	MP87850
2.5 ppb	S2.5	30mL	MP87851
5.0 ppb	S5.0	30mL	MP87852
7.5 ppb	S7.5	30mL	MP87853
10.0 ppb	S10.0	30mL	MP87854
ICV	ICV	30mL	MP87855
ICB	ICB	30mL	MP87856
CCV	CCV	30mL	MP87857
CCB	CCB	30mL	MP87858
CRI	CRI	30mL	MP87859
CHK STD	CHK STD	30mL	MP87860

Extraction Conformance/Non-Conformance Comments:

N/A		
Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
11/05/2025 9:45	MB ~ 30g, LBS	MB-metal LBS
	Preparation Group	Analysis Group

Lab Sample ID	Client Sample ID	Initial Weight (g)	Final Vol (ml)	pH	Comment	Prep Pos
PB170393BL	PBS393	0.57	35	NA	N/A	3-1
PB170393BS	LCS393	0.55	35	NA	MP87848	2
Q3483-10	HW1025-PT-MET-SOIL	0.54	35	NA	N/A	3
Q3532-01	TP-1	0.51	35	NA	N/A	4
Q3532-05	TP-2	0.58	35	NA	N/A	5
Q3532-05DUP	TP-2DUP	0.60	35	NA	N/A	6
Q3532-05MS	TP-2MS	0.58	35	NA	MP87848	7
Q3532-05MSD	TP-2MSD	0.60	35	NA	MP87848	8
Q3536-01	FILTER-COMP	0.56	35	NA	N/A	9
Q3536-03	2061	0.57	35	NA	N/A	10
Q3536-04	2052	0.50	35	NA	N/A	11
Q3537-01	MW-17-SOIL	0.51	35	NA	N/A	12

WORKLIST(Hardcopy Internal Chain)

WorkList Name : 110525_7471 WorkList ID : 192878 Department : Digestion Date : 11-05-2025 07:05:08

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q3483-10	HW1025-PT-MET-SOIL	Solid	Mercury	Cool 4 deg C	ALLI03	QA Of	10/27/2025	7471B
Q3532-01	TP-1	Solid	Mercury	Cool 4 deg C	PSEG03	D31	11/04/2025	7471B
Q3532-05	TP-2	Solid	Mercury	Cool 4 deg C	PSEG03	D31	11/04/2025	7471B
Q3536-01	FILTER-COMP	Solid	Mercury	Cool 4 deg C	PSEG03	D41	11/04/2025	7471B
Q3536-03	2061	Solid	Mercury	Cool 4 deg C	PSEG03	D41	11/04/2025	7471B
Q3536-04	2052	Solid	Mercury	Cool 4 deg C	PSEG03	D41	11/04/2025	7471B
Q3537-01	MW-17-SOIL	Solid	Mercury	Cool 4 deg C	PSEG03	D41	11/04/2025	7471B

Date/Time 11/5/25 8:16
 Raw Sample Received by: [Signature]
 Raw Sample Relinquished by: [Signature]

Date/Time 11/5/25 8:55
 Raw Sample Received by: [Signature]
 Raw Sample Relinquished by: [Signature]

PERCENT SOLID

Supervisor: Iwona
Analyst: jignesh
Date: 10/30/2025

OVENTEMP IN Celsius(°C): 107
Time IN: 17:15
In Date: 10/29/2025
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
OvenID: M OVEN#1

OVENTEMP OUT Celsius(°C): 104
Time OUT: 08:20
Out Date: 10/30/2025
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
BalanceID: M SC-4
Thermometer ID: % SOLID-OVEN

QC:LB137700

Lab ID	Client SampleID	Dish #	Dish Wt(g) (A)	Sample Wt(g)	Dish + Sample Wt(g) (B)	Dish+Dry Sample Wt(g) (C)	% Solid	Comments
Q3368-13	OUTSIDE-DUMPSTER	1	1.12	10.63	11.75	8.28	67.4	
Q3368-14	PRESS-SLUDGE	2	1.18	10.30	11.48	7.89	65.1	
Q3482-01	WC-1	37	1.00	1.00	2.00	2.00	100.0	Concrete sample
Q3482-02	WC-2	38	1.00	1.00	2.00	2.00	100.0	Concrete sample
Q3482-03	WC-3	39	1.00	1.00	2.00	2.00	100.0	Concrete sample
Q3482-04	WC-4	40	1.00	1.00	2.00	2.00	100.0	Concrete sample
Q3482-05	WC-5	41	1.00	1.00	2.00	2.00	100.0	Concrete sample
Q3482-06	WC-6	42	1.00	1.00	2.00	2.00	100.0	Concrete sample
Q3482-07	WC-7	43	1.00	1.00	2.00	2.00	100.0	Concrete sample
Q3483-01	HW1025-PT-AN-SOIL	3	1.00	1.00	2.00	2.00	100.0	
Q3483-02	HW1025-PT-CORR-SOIL	4	1.00	1.00	2.00	2.00	100.0	
Q3483-03	HW1025-PT-CN-SOIL	5	1.00	1.00	2.00	2.00	100.0	
Q3483-04	HW1025-PT-CN-SOIL	6	1.00	1.00	2.00	2.00	100.0	
Q3483-05	HW1025-PT-FP-SOIL	7	1.00	1.00	2.00	2.00	100.0	
Q3483-06	HW1025-PT-CR6-SOIL	8	1.00	1.00	2.00	2.00	100.0	
Q3483-07	HW1025-PT-NUT-SOIL	9	1.00	1.00	2.00	2.00	100.0	
Q3483-08	HW1025-PT-NUT-SOIL	10	1.00	1.00	2.00	2.00	100.0	
Q3483-09	HW1025-PT-OGF-SOIL	11	1.00	1.00	2.00	2.00	100.0	
Q3483-10	HW1025-PT-MET-SOIL	12	1.00	1.00	2.00	2.00	100.0	
Q3483-11	HW1025-PT-BNA-SOIL	13	1.00	1.00	2.00	2.00	100.0	
Q3483-12	HW1025-PT-TRIAZINE-SOIL	14	1.00	1.00	2.00	2.00	100.0	
Q3483-13	HW1025-PT-PAH-SOIL	15	1.00	1.00	2.00	2.00	100.0	
Q3483-14	HW1025-PT-DIES-SOIL	16	1.00	1.00	2.00	2.00	100.0	
Q3483-15	HW1025-PT-GAS-SOIL	17	1.00	1.00	2.00	2.00	100.0	
Q3483-16	HW1025-PT-NJEPH-SOIL	18	1.00	1.00	2.00	2.00	100.0	
Q3483-17	HW1025-PT-HERB-SOIL	19	1.00	1.00	2.00	2.00	100.0	
Q3483-18	HW1025-PT-PCB-SOIL	20	1.00	1.00	2.00	2.00	100.0	
Q3483-19	HW1025-PT-PCBO-SOIL	21	1.00	1.00	2.00	2.00	100.0	

PERCENT SOLID

Supervisor: Iwona
Analyst: jignesh
Date: 10/30/2025

OVENTEMP IN Celsius(°C): 107
Time IN: 17:15
In Date: 10/29/2025
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
OvenID: M OVEN#1

OVENTEMP OUT Celsius(°C): 104
Time OUT: 08:20
Out Date: 10/30/2025
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
BalanceID: M SC-4
Thermometer ID: % SOLID-OVEN

QC:LB137700

Lab ID	Client SampleID	Dish #	Dish Wt (g) (A)	Sample Wt (g)	Dish + Sample Wt (g) (B)	Dish+Dry Sample Wt (g) (C)	% Solid	Comments
Q3483-20	HW1025-PT-PEST-SOIL	22	1.00	1.00	2.00	2.00	100.0	
Q3483-21	HW1025-PT-CHLOR-SOIL	23	1.00	1.00	2.00	2.00	100.0	
Q3483-22	HW1025-PT-TXP-SOIL	24	1.00	1.00	2.00	2.00	100.0	
Q3483-23	HW1025-PT-VOA-SOIL	25	1.00	1.00	2.00	2.00	100.0	
Q3483-25	HW1025-PT-NO2-SOIL	26	1.00	1.00	2.00	2.00	100.0	
Q3485-01	TR-04-102924	27	1.15	10.30	11.45	10.84	94.1	
Q3485-02	TR-04-102924-E2	28	1.19	10.30	11.49	10.77	93.0	
Q3486-01	TP3	29	1.17	10.45	11.62	11.07	94.7	
Q3486-02	TP3-E2	30	1.18	10.40	11.58	11.11	95.5	
Q3486-03	TP4	31	1.19	10.23	11.42	9.93	85.4	
Q3486-04	TP4-E2	32	1.17	10.52	11.69	10.09	84.8	
Q3486-05	TP5	33	1.17	10.65	11.82	10.02	83.1	
Q3486-06	TP5-E2	34	1.17	10.15	11.32	9.39	81.0	
Q3486-07	TP6	35	1.13	10.25	11.38	10.16	88.1	
Q3486-08	TP6-E2	36	1.16	10.48	11.64	10.32	87.4	

$$\% \text{ Solid} = \frac{(C-A) * 100}{(B-A)}$$

WORKLIST(Hardcopy Internal Chain)

b 137100

WorkList Name : %1-102925 WorkList ID : 192745 Department : Wet-Chemistry Date : 10-29-2025 07:47:12

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q3368-13	OUTSIDE-DUMPSTER	Solid	Percent Solids	Cool 4 deg C	ARAM01	D41	10/16/2025	Chemtech -SO
Q3368-14	PRESS-SLUDGE	Solid	Percent Solids	Cool 4 deg C	ARAM01	D41	10/16/2025	Chemtech -SO
Q3482-01	WC-1	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/24/2025	Chemtech -SO
Q3482-02	WC-2	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/24/2025	Chemtech -SO
Q3482-03	WC-3	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/24/2025	Chemtech -SO
Q3482-04	WC-4	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/24/2025	Chemtech -SO
Q3482-05	WC-5	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/24/2025	Chemtech -SO
Q3482-06	WC-6	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/24/2025	Chemtech -SO
Q3482-07	WC-7	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/24/2025	Chemtech -SO
Q3483-01	HW1025-PT-AN-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-02	HW1025-PT-CORR-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-03	HW1025-PT-CN-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-04	HW1025-PT-CN-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-05	HW1025-PT-FP-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-06	HW1025-PT-CR6-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-07	HW1025-PT-NUT-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-08	HW1025-PT-NUT-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-09	HW1025-PT-OGR-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-10	HW1025-PT-MET-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-11	HW1025-PT-BNA-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-12	HW1025-PT-TRIAZINE-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO

Date/Time 10/29/25 15:00
Raw Sample Received by: SWC
Raw Sample Relinquished by: ACSM

Date/Time 10/29/25 17:30
Raw Sample Received by: ACSM
Raw Sample Relinquished by: SWC

WORKLIST(Hardcopy Internal Chain)

8137700

WorkList Name : %1-102925

WorkList ID : 192745

Department : Wet-Chemistry

Date : 10-29-2025 07:47:12

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q3483-13	HW1025-PT-PAH-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-14	HW1025-PT-DIES-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-15	HW1025-PT-GAS-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-16	HW1025-PT-NJEPH-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-17	HW1025-PT-HERB-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-18	HW1025-PT-PCB-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-19	HW1025-PT-PCBO-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-20	HW1025-PT-PEST-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-21	HW1025-PT-CHLOR-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-22	HW1025-PT-TXP-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-23	HW1025-PT-VOA-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3483-25	HW1025-PT-NO2-SOIL	Solid	Percent Solids	Cool 4 deg C	ALLI03	QA Of	10/27/2025	Chemtech -SO
Q3485-01	TR-04-102924	Solid	Percent Solids	Cool 4 deg C	PSEG05	D41	10/29/2025	Chemtech -SO
Q3485-02	TR-04-102924-E2	Solid	Percent Solids	Cool 4 deg C	PSEG05	D41	10/29/2025	Chemtech -SO
Q3486-01	TP3	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3486-02	TP3-E2	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3486-03	TP4	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3486-04	TP4-E2	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3486-05	TP5	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3486-06	TP5-E2	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3486-07	TP6	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO

Date/Time

10/29/25 13:00

Raw Sample Received by:

SB WVC

Raw Sample Relinquished by:

CH(SM)

Date/Time

10/29/25

Raw Sample Received by:

CH(SM)

Raw Sample Relinquished by:

SB COC

WORKLIST(Hardcopy Internal Chain)

10/29/25

WorkList Name : %1-102925

WorkList ID : 192745

Department : Wet-Chemistry

Date : 10-29-2025 07:47:12

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q3486-08	TP6-E2	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO

10/29/25 15:00

Date/Time

Raw Sample Received by:

SA WWC

Raw Sample Relinquished by:

CPLSM

Date/Time

10/29/25

Raw Sample Received by:

CPLSM

Raw Sample Relinquished by:

SA ADC

PERCENT SOLID

Supervisor: Iwona
Analyst: jignesh
Date: 10/31/2025

OVENTEMP IN Celsius(°C): 107
Time IN: 17:15
In Date: 10/30/2025
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
OvenID: M OVEN#1

OVENTEMP OUT Celsius(°C): 104
Time OUT: 08:20
Out Date: 10/31/2025
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
BalanceID: M SC-4
Thermometer ID: % SOLID-OVEN

QC:LB137714

Lab ID	Client SampleID	Dish #	Dish Wt(g) (A)	Sample Wt(g)	Dish + Sample Wt(g) (B)	Dish+Dry Sample Wt(g) (C)	% Solid	Comments
Q3483-24	HW1025-PT-SOL-SOIL	1	1.16	10.70	11.86	9.24	75.5	
Q3487-01	KZZ294Z-A	2	1.00	1.00	2.00	2.00	100.0	PILC
Q3487-02	KZZ294Z-B	3	1.00	1.00	2.00	2.00	100.0	PILC
Q3487-03	KZZ256R-A	4	1.00	1.00	2.00	2.00	100.0	PILC
Q3487-04	KZZ256R-B	5	1.00	1.00	2.00	2.00	100.0	PILC
Q3487-05	JEH623H-A	6	1.00	1.00	2.00	2.00	100.0	PILC
Q3487-06	JEH623H-B	7	1.00	1.00	2.00	2.00	100.0	PILC
Q3487-07	M3-A	8	1.00	1.00	2.00	2.00	100.0	PILC
Q3487-08	M3-B	9	1.00	1.00	2.00	2.00	100.0	PILC
Q3488-01	MOO-25-0294-0298	10	1.00	1.00	2.00	2.00	100.0	Concrete sample
Q3488-02	MOO-25-0299	11	1.15	10.33	11.48	10.88	94.2	
Q3488-04	MOO-25-0302-0310	12	1.18	10.45	11.63	10.08	85.2	
Q3488-05	MOO-25-0302-0310	13	1.15	10.46	11.61	10.7	91.3	
Q3488-06	MOO-25-0311-0313	46	1.15	10.37	11.52	10.64	91.5	
Q3489-01	245F72-A	14	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-02	245F72-B	15	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-03	L54-A	16	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-04	L54-B	17	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-05	L55-A	18	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-06	L55-A	19	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-07	L56-A	20	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-08	L56-B	21	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-09	L57-A	22	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-10	L57-B	23	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-11	L58-A	24	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-12	L58-2	25	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-13	L59-A	26	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-14	L59-B	27	1.00	1.00	2.00	2.00	100.0	PILC

PERCENT SOLID

Supervisor: Iwona
Analyst: jignesh
Date: 10/31/2025

OVENTEMP IN Celsius(°C): 107
Time IN: 17:15
In Date: 10/30/2025
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
OvenID: M OVEN#1

OVENTEMP OUT Celsius(°C): 104
Time OUT: 08:20
Out Date: 10/31/2025
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
BalanceID: M SC-4
Thermometer ID: % SOLID-OVEN

QC:LB137714

Lab ID	Client SampleID	Dish #	Dish Wt(g) (A)	Sample Wt(g)	Dish + Sample Wt(g) (B)	Dish+Dry Sample Wt(g) (C)	% Solid	Comments
Q3489-15	L60-A	28	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-16	L60-B	29	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-17	L61-A	30	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-18	L61-B	31	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-19	L62-A	32	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-20	L62-B	33	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-21	L63-A	34	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-22	L63-B	35	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-23	L64-A	36	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-24	L64-B	37	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-25	L65-A	38	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-26	L65-B	39	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-27	STC21-A	40	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-28	STC21-B	41	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-29	STF24-A	42	1.00	1.00	2.00	2.00	100.0	PILC
Q3489-30	STF24-B	43	1.00	1.00	2.00	2.00	100.0	PILC
Q3490-01	LAW-25-0151	44	1.00	1.00	2.00	2.00	100.0	oily-debris
Q3491-01	SOIL-CUTTINGS-COMP	45	1.18	10.80	11.98	9.13	73.6	
Q3495-01	SB-1025-1	47	1.19	10.24	11.43	8.99	76.2	
Q3495-02	SB-1025-2	48	1.14	10.43	11.57	8.97	75.1	
Q3496-01	DRILL-CUTTINGS	49	1.19	10.61	11.8	10.33	86.1	
Q3496-02	DRILL-CUTTINGS-E2	50	1.13	10.49	11.62	10.11	85.6	
Q3497-01	OK-01-103025	51	1.13	10.93	12.06	10.37	84.5	
Q3497-02	OK-01-103025-E2	52	1.19	10.59	11.78	10.25	85.6	

$$\% \text{ Solid} = \frac{(C-A) * 100}{(B-A)}$$

4/27/12

Date : 10-30-2025 10:50:32

date/time 10/30/25 15:00

Date/Time 10/30/25

Raw Sample Received by:

How sample relinquished by: $K \rightarrow (1 - \alpha) \dots (K - 1)$

Page 1 of 3

WORKLIST(Hardcopy Internal Chain)

WB 137714

WorkList Name : %1-103025 WorkList ID : 192793 Department : Wet-Chemistry Date : 10-30-2025 10:50:32

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q3489-08	L56-B	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-09	L57-A	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-10	L57-B	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-11	L58-A	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-12	L58-2	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-13	L59-A	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-14	L59-B	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-15	L60-A	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-16	L60-B	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-17	L61-A	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-18	L61-B	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-19	L62-A	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-20	L62-B	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-21	L63-A	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-22	L63-B	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-23	L64-A	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-24	L64-B	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-25	L65-A	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-26	L65-B	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-27	STC21-A	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-28	STC21-B	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO

Date/Time 10/30/25 15:10
Raw Sample Received by: sg wvc
Raw Sample Relinquished by: RS C EIT-1266

Date/Time 10/30/25 17:30
Raw Sample Received by: RS C EIT-1266
Raw Sample Relinquished by: sg wvc

WORKLIST(Hardcopy Internal Chain)

UB 13FF14

WorkList Name : %1-103025 WorkList ID : 192793 Department : Wet-Chemistry Date : 10-30-2025 10:50:32

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q3489-29	STF24-A	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3489-30	STF24-B	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3490-01	LAW-25-0151	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3491-01	SOIL-CUTTINGS-COMP	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/29/2025	Chemtech -SO
Q3495-01	SB-1025-1	Solid	Percent Solids	Cool 4 deg C	REMI02	D51	10/27/2025	Chemtech -SO
Q3495-02	SB-1025-2	Solid	Percent Solids	Cool 4 deg C	REMI02	D51	10/27/2025	Chemtech -SO
Q3496-01	DRILL-CUTTINGS	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/30/2025	Chemtech -SO
Q3496-02	DRILL-CUTTINGS-E2	Solid	Percent Solids	Cool 4 deg C	PSEG03	D41	10/30/2025	Chemtech -SO
Q3497-01	OK-01-103025	Solid	Percent Solids	Cool 4 deg C	PSEG05	D41	10/30/2025	Chemtech -SO
Q3497-02	OK-01-103025-E2	Solid	Percent Solids	Cool 4 deg C	PSEG05	D41	10/30/2025	Chemtech -SO

Date/Time 10/30/25 15:00
Raw Sample Received by: SB WWC
Raw Sample Relinquished by: RJ C (EIT-1066)

Date/Time 10/30/25 17:30
Raw Sample Received by: RJ C (EIT-1066)
Raw Sample Relinquished by: SB WWC

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QC Batch ID # LB137779

Review By	mohan	Review On	11/10/2025 8:14:21 AM
Supervise By	jaswal	Supervise On	11/10/2025 10:00:16 AM

STD. NAME	STD REF.#
ICAL Standard	MP87849,MP87850,MP87851,MP87852,MP87853,MP87854
ICV Standard	MP87855
CCV Standard	MP87857
ICSA Standard	
CRI Standard	MP87859
LCS Standard	
Chk Standard	MP87856,MP87858,MP87860,MP87864

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	11/05/25 10:39		mohan	OK
2	S0.2	S0.2	CAL2	11/05/25 10:42		mohan	OK
3	S2.5	S2.5	CAL3	11/05/25 10:44		mohan	OK
4	S5	S5	CAL4	11/05/25 10:46		mohan	OK
5	S7.5	S7.5	CAL5	11/05/25 10:49		mohan	OK
6	S10	S10	CAL6	11/05/25 10:51		mohan	OK
7	ICV99	ICV99	ICV	11/05/25 10:55		mohan	OK
8	ICB99	ICB99	ICB	11/05/25 10:57		mohan	OK
9	CCV28	CCV28	CCV	11/05/25 11:00		mohan	OK
10	CCB28	CCB28	CCB	11/05/25 11:02		mohan	OK
11	CRA	CRA	CRDL	11/05/25 11:05		mohan	OK
12	HighStd	HighStd	HIGH STD	11/05/25 11:07		mohan	OK
13	ChkStd	ChkStd	SAM	11/05/25 11:12		mohan	OK
14	PB170393BL	PB170393BL	MB	11/05/25 11:14		mohan	OK
15	PB170393BS	PB170393BS	LCS	11/05/25 11:17		mohan	OK
16	Q3483-10	HW1025-PT-MET-SO	SAM	11/05/25 11:19	Hg High	mohan	Dilution
17	Q3532-01	TP-1	SAM	11/05/25 11:22		mohan	OK
18	Q3532-05	TP-2	SAM	11/05/25 11:25		mohan	OK

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QC Batch ID # LB137779

Review By	mohan	Review On	11/10/2025 8:14:21 AM
Supervise By	jaswal	Supervise On	11/10/2025 10:00:16 AM
STD. NAME	STD REF.#		
ICAL Standard	MP87849,MP87850,MP87851,MP87852,MP87853,MP87854		
ICV Standard	MP87855		
CCV Standard	MP87857		
ICSA Standard			
CRI Standard	MP87859		
LCS Standard			
Chk Standard	MP87856,MP87858,MP87860,MP87864		

19	Q3532-05DUP	TP-2DUP	DUP	11/05/25 11:27		mohan	OK
20	Q3532-05MS	TP-2MS	MS	11/05/25 11:38		mohan	OK
21	CCV29	CCV29	CCV	11/05/25 11:41		mohan	OK
22	CCB29	CCB29	CCB	11/05/25 11:43		mohan	OK
23	Q3532-05MSD	TP-2MSD	MSD	11/05/25 11:46		mohan	OK
24	Q3536-01	FILTER-COMP	SAM	11/05/25 11:48		mohan	OK
25	Q3536-03	2061	SAM	11/05/25 11:51		mohan	OK
26	Q3536-04	2052	SAM	11/05/25 11:53		mohan	OK
27	Q3537-01	MW-17-SOIL	SAM	11/05/25 11:55		mohan	OK
28	Q3532-05L	TP-2L	SD	11/05/25 12:02		mohan	OK
29	Q3532-05A	TP-2A	PS	11/05/25 12:05		mohan	OK
30	Q3483-10DLRE	HW1025-PT-MET-SO	SAM	11/05/25 12:08	Not Use	mohan	Not Ok
31	CCV30	CCV30	CCV	11/05/25 12:10		mohan	OK
32	CCB30	CCB30	CCB	11/05/25 12:13		mohan	OK
33	Q3483-10DL	HW1025-PT-MET-SO	SAM	11/05/25 12:54	50X for Hg	mohan	Confirms
34	CCV31	CCV31	CCV	11/05/25 12:59		mohan	OK
35	CCB31	CCB31	CCB	11/05/25 13:02		mohan	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB138188

Review By	Janvi	Review On	12/11/2025 4:31:42 PM
Supervise By	jaswal	Supervise On	12/12/2025 1:53:32 PM

STD. NAME	STD REF.#
ICAL Standard	MP88101,MP88123,MP88121,MP88120,MP88119,MP88118
ICV Standard	MP88124,MP88123
CCV Standard	MP88127
ICSA Standard	MP88125,MP88126
CRI Standard	MP88123
LCS Standard	
Chk Standard	MP88128,MP88129,MP88130,MP88131,MP88132

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	12/10/25 20:33		Jaswal	OK
2	S1	S1	CAL2	12/10/25 20:37		Jaswal	OK
3	S2	S2	CAL3	12/10/25 20:42		Jaswal	OK
4	S3	S3	CAL4	12/10/25 20:46		Jaswal	OK
5	S4	S4	CAL5	12/10/25 20:50		Jaswal	OK
6	S5	S5	CAL6	12/10/25 20:54		Jaswal	OK
7	ICV01	ICV01	ICV	12/10/25 20:58		Jaswal	OK
8	LLICV01	LLICV01	LLICV	12/10/25 21:26		Jaswal	OK
9	ICB01	ICB01	ICB	12/10/25 21:34		Jaswal	OK
10	CRI01	CRI01	CRDL	12/10/25 21:39		Jaswal	OK
11	ICSA01	ICSA01	ICSA	12/10/25 21:43		Jaswal	OK
12	ICSAB01	ICSAB01	ICSAB	12/10/25 21:47		Jaswal	OK
13	ICSADL	ICSADL	ICSA	12/10/25 21:51		Jaswal	OK
14	ICSABDL	ICSABDL	ICSAB	12/10/25 21:55		Jaswal	OK
15	CCV01	CCV01	CCV	12/10/25 22:00		Jaswal	OK
16	CCB01	CCB01	CCB	12/10/25 22:04		Jaswal	OK
17	PB170335BL	PB170335BL	MB	12/10/25 22:08		Jaswal	OK
18	PB170335BS	PB170335BS	LCS	12/10/25 22:13		Jaswal	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB138188

Review By	Janvi	Review On	12/11/2025 4:31:42 PM
Supervise By	jaswal	Supervise On	12/12/2025 1:53:32 PM

STD. NAME	STD REF.#
ICAL Standard	MP88101,MP88123,MP88121,MP88120,MP88119,MP88118
ICV Standard	MP88124,MP88123
CCV Standard	MP88127
ICSA Standard	MP88125,MP88126
CRI Standard	MP88123
LCS Standard	
Chk Standard	MP88128,MP88129,MP88130,MP88131,MP88132

19	Q3483-10	HW1025-PT-MET-SO	SAM	12/10/25 22:17		Jaswal	OK
20	Q3483-10DL	HW1025-PT-MET-SO	SAM	12/10/25 22:21	Not Required	Jaswal	Not Ok
21	CCV02	CCV02	CCV	12/10/25 22:33		Jaswal	OK
22	CCB02	CCB02	CCB	12/10/25 22:37		Jaswal	OK
23	CCV03	CCV03	CCV	12/10/25 23:52		Jaswal	OK
24	CCB03	CCB03	CCB	12/10/25 23:56		Jaswal	OK
25	LR-1	LR-1	HIGH STD	12/11/25 00:04		Jaswal	OK
26	LR-2	LR-2	HIGH STD	12/11/25 00:08		Jaswal	OK
27	LR-3	LR-3	HIGH STD	12/11/25 00:13		Jaswal	OK
28	CCV04	CCV04	CCV	12/11/25 00:17		Jaswal	OK
29	CCB04	CCB04	CCB	12/11/25 00:42		Jaswal	OK

Prep Standard - Chemical Standard Summary

Order ID : Q3483
Test : Mercury, Metals ICP-Group1
Prepbatch ID : PB170335, PB170393,
Sequence ID/Qc Batch ID: LB137779, LB138188,

Standard ID :
MP86978, MP87634, MP87636, MP87848, MP87849, MP87850, MP87851, MP87852, MP87853, MP87854, MP87855, MP87856, MP87857, MP87858, MP87859, MP87860, MP87861, MP87864, MP88101, MP88118, MP88119, MP88120, MP88121, MP88122, MP88123, MP88124, MP88125, MP88126, MP88127, MP88128, MP88129, MP88130, MP88131, MP88132,

Chemical ID :
M4916, M5062, M5467, M5501, M5581, M5582, M5658, M5697, M5798, M5799, M5800, M5801, M5814, M5816, M5820, M5882, M5962, M5971, M5979, M5985, M5998, M6021, M6023, M6026, M6027, M6028, M6030, M6032, M6058, M6077, M6086, M6128, M6137, M6140, M6142, M6145, M6146, M6151, M6156, M6158, M6159, M6161, M6162, M6163, M6164, M6165, M6170, M6171, M6172, M6174, M6176, M6177, M6179, M6182, M6184, M6187, M6196, M6200, M6201, M6209, W 3112,

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
169	1:1HNO3	MP86978	08/28/2025	11/27/2025	Sagar Kanani	None	None	Sarabjit Jaswal
								08/28/2025

FROM 1250.00000ml of M6162 + 1250.00000ml of W3112 = Final Quantity: 2500.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
65	POTASSIUM PERMANGANATE SOLUTION 5 %	MP87634	10/17/2025	03/31/2026	Sagar Kanani	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal
								10/28/2025

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

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
67	SODIUM CHLORIDE - HYDROXYL- CHLORIDE SOLUTION	MP87636	10/17/2025	02/03/2026	Sagar Kanani	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal
FROM 2000.00000ml of W3112 + 240.00000gram of M5501 + 240.00000ml of M6196 = Final Quantity: 2000.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
871	MERCURY INTERMEDIATE B 250PPB WORKING STD.	MP87848	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal
FROM 1.00000ml of M6187 + 2.50000ml of M5062 + 96.50000ml of W3112 = Final Quantity: 100.000 ml								

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1340	Hg 0.00 PPB STD	MP87849	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/04/2025

FROM 2.50000ml of M6187 + 247.50000ml of W3112 = Final Quantity: 250.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1341	Hg 0.2 PPB STD	MP87850	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/04/2025

FROM 2.50000ml of M6187 + 247.30000ml of W3112 + 0.20000ml of MP87848 = Final Quantity: 250.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1342	Hg 2.5 PPB STD	MP87851	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/04/2025
FROM 2.50000ml of M6187 + 245.00000ml of W3112 + 2.50000ml of MP87848 = Final Quantity: 250.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1343	Hg 5.0 PPB STD	MP87852	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/04/2025
FROM 2.50000ml of M6187 + 242.50000ml of W3112 + 5.00000ml of MP87848 = Final Quantity: 250.000 ml								

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1344	Hg 7.5 PPB STD	MP87853	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/04/2025

FROM 2.50000ml of M6187 + 240.00000ml of W3112 + 7.50000ml of MP87848 = Final Quantity: 250.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1345	Hg 10.0 PPB STD	MP87854	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/04/2025

FROM 2.50000ml of M6187 + 237.50000ml of W3112 + 10.00000ml of MP87848 = Final Quantity: 250.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1346	Hg ICV SOLUTION	MP87855	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/04/2025

FROM 2.50000ml of M6161 + 2.50000ml of M6187 + 245.00000ml of W3112 = Final Quantity: 250.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1351	ICB (Hg 0.00 PPB SOLUTION)	MP87856	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/04/2025

FROM 2.50000ml of M6187 + 247.50000ml of W3112 = Final Quantity: 250.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1358	CCV (Hg 5.0 PPB SOLUTION)	MP87857	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/04/2025
FROM 485.00000ml of W3112 + 5.00000ml of M6187 + 10.00000ml of MP87848 = Final Quantity: 500.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1352	CCB (Hg 0.00 PPB SOLUTION)	MP87858	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/04/2025
FROM 495.00000ml of W3112 + 5.00000ml of M6187 = Final Quantity: 500.000 ml								

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1349	CRA/CRI (Hg 0.2 PPB SOLUTION)	MP87859	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/04/2025
FROM 2.50000ml of M6187 + 247.50000ml of W3112 + 0.20000ml of MP87848 = Final Quantity: 250.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1350	CHK STD (Hg 7.0 PPB SOLUTION)	MP87860	11/05/2025	11/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/04/2025
FROM 2.50000ml of M6187 + 240.50000ml of W3112 + 7.00000ml of MP87848 = Final Quantity: 250.000 ml								

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
887	AQUA REGIA FOR HG ON 7471A	MP87861	11/05/2025	11/06/2025	Mohan Bera	None	None	Sarabjit Jaswal
								12/04/2025

FROM 150.00000ml of M6151 + 50.00000ml of M6187 = Final Quantity: 200.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
68	STANNOUS CHLORIDE SOLUTION	MP87864	11/06/2025	11/07/2025	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal
								12/04/2025

FROM 450.00000ml of W3112 + 50.00000gram of M5882 + 50.00000ml of M6200 = Final Quantity: 500.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
902	ICP AES CAL BLK (SO/ICB/CCB)	MP88101	11/25/2025	01/25/2026	Sarabjit Jaswal	None	None	Mohan Bera
								12/09/2025

FROM 125.00000ml of M6200 + 2350.00000ml of W3112 + 25.00000ml of M6187 = Final Quantity: 2500.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
907	ICP AES STD S (S5)	MP88118	11/25/2025	01/25/2026	Sarabjit Jaswal	None	None	Mohan Bera
								12/09/2025

FROM 5.00000ml of M5467 + 5.00000ml of M5816 + 5.00000ml of M5820 + 5.00000ml of M5971 + 5.00000ml of M5998 + 5.00000ml of M6077 + 5.00000ml of M6146 + 5.00000ml of M6174 + 5.00000ml of M6176 + 455.00000ml of MP88101 = Final Quantity: 500.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
910	ICP AES STD S4	MP88119	11/25/2025	01/25/2026	Sarabjit Jaswal	None	Glass Pipette-A	Mohan Bera 12/09/2025

FROM 50.00000ml of MP88101 + 50.00000ml of MP88118 = Final Quantity: 100.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
909	ICP AES STD S3	MP88120	11/25/2025	01/25/2026	Sarabjit Jaswal	None	None	Mohan Bera 12/09/2025

FROM 25.00000ml of MP88118 + 75.00000ml of MP88101 = Final Quantity: 100.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
908	ICP AES S2/CRI MINERALS ONLY STD	MP88121	11/25/2025	01/25/2026	Sarabjit Jaswal	None	None	Mohan Bera
								12/09/2025

FROM 4.00000ml of MP88118 + 96.00000ml of MP88101 = Final Quantity: 100.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
2950	ICP AES S1/CRI STOCK STD	MP88122	11/25/2025	01/25/2026	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Mohan Bera
								12/09/2025

FROM 0.03000ml of M5798 + 0.03000ml of M6028 + 0.04000ml of M6137 + 0.05000ml of M5658 + 0.05000ml of M6030 + 0.05000ml of M6140 + 0.05000ml of M6159 + 0.06000ml of M6177 + 0.10000ml of M5697 + 0.10000ml of M5801 + 0.10000ml of M5820 + 0.10000ml of M5962 + 0.10000ml of M5971 + 0.10000ml of M6128 + 0.10000ml of M6176 + 0.15000ml of M5800 + 0.20000ml of M5799 + 0.20000ml of M6021 + 0.20000ml of M6023 + 0.20000ml of M6027 + 0.20000ml of M6145 + 0.25000ml of M5467 + 0.25000ml of M6146 + 0.50000ml of M5814 + 0.50000ml of M6032 + 1.00000ml of M5979 + 1.00000ml of M6086 + 1.00000ml of M6142 + 1.00000ml of M6156 + 1.00000ml of M6171 + 1.00000ml of M6172 + 2.00000ml of M5816 + 88.47000ml of MP88101 = Final Quantity: 100.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
2951	ICP AES S1/CRI WORK STD	MP88123	11/25/2025	01/25/2026	Sarabjit Jaswal	None	None	Mohan Bera
								12/09/2025

FROM 2.00000ml of MP88122 + 98.00000ml of MP88101 = Final Quantity: 100.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
4163	NEW ICV-060925	MP88124	11/25/2025	01/25/2026	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Mohan Bera
								12/09/2025

FROM 0.20000ml of M6058 + 0.40000ml of M6163 + 0.40000ml of M6164 + 0.40000ml of M6165 + 48.60000ml of MP88101 = Final Quantity: 50.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
904	ICP AES ICSA SOLN	MP88125	11/25/2025	01/25/2026	Sarabjit Jaswal	None	None	Mohan Bera
								12/09/2025

FROM 5.00000ml of M6182 + 45.00000ml of MP88101 = Final Quantity: 250.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
905	ICP AES ICSAB SOLN	MP88126	11/25/2025	01/25/2026	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Mohan Bera
								12/09/2025

FROM 0.05000ml of M6077 + 5.00000ml of M6182 + 5.00000ml of M6184 + 39.95000ml of MP88101 = Final Quantity: 50.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
911	ICP AES CCV SOLN	MP88127	11/25/2025	01/25/2026	Sarabjit Jaswal	None	None	Mohan Bera
								12/09/2025

FROM 50.00000ml of MP88101 + 50.00000ml of MP88118 = Final Quantity: 100.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
919	ICP AES INTERNAL STD	MP88128	11/25/2025	01/25/2026	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Mohan Bera
								12/09/2025

FROM 1.00000ml of M6179 + 10.00000ml of M5985 + 1969.00000ml of W3112 + 20.00000ml of M6187 = Final Quantity: 2000.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
903	ICP AES RINSE SOLN	MP88129	11/25/2025	01/25/2026	Sarabjit Jaswal	None	None	Mohan Bera
								12/09/2025

FROM 200.00000ml of M6187 + 9800.00000ml of W3112 = Final Quantity: 10000.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
4225	LR-1	MP88130	11/25/2025	01/25/2026	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Mohan Bera
								12/09/2025

FROM 11.50000ml of M6086 + 11.50000ml of M6171 + 11.50000ml of M6172 + 15.50000ml of MP88101 = Final Quantity: 50.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
4226	LR-2	MP88131	11/25/2025	01/25/2026	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Mohan Bera 12/09/2025

FROM 13.50000ml of M6140 + 9.00000ml of M6142 + 9.50000ml of M6159 + 18.00000ml of MP88101 = Final Quantity: 50.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
4227	LR-3	MP88132	11/25/2025	01/25/2026	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Mohan Bera 12/09/2025

FROM 1.15000ml of M6026 + 1.25000ml of M5658 + 1.25000ml of M6027 + 1.50000ml of M6145 + 2.50000ml of M5697 + 2.50000ml of M6128 + 39.85000ml of MP88101 = Final Quantity: 50.000 ml

CHEMICAL RECEIPT LOG BOOK

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 #
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.	57058 / Cerium, 1000PPM, 100ML	020623	02/06/2026	03/06/2023 / bin	03/01/2023 / bin	M5467

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-3624-05 / Sodium Chloride, Crystal (cs/4x2.5kg)	0000281938	07/06/2026	07/24/2023 / mohan	04/14/2023 / mohan	M5501

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	26397-103 / PTFE BOILING STONES	W126678	03/19/2026	03/20/2025 / jaswal	06/12/2023 / jaswal	M5581

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	26397-103 / PTFE BOILING STONES	W126678	12/31/2025	06/17/2023 / Al-Terek	06/12/2023 / jaswal	M5582

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.	58029 / Cu, 1000 PPM, 500 ml	102523	10/25/2026	04/03/2024 / jaswal	10/27/2023 / jaswal	M5697

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

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

CHEMICAL RECEIPT LOG BOOK

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

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 #
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 #
Absolute Standards, Inc.	57034 / Se, 1000 PPM, 125 ml	060624	06/06/2027	07/02/2024 / Jaswal	06/14/2024 / Jaswal	M5962

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57003 / Li, 1000 PPM, 125 ml	061224	06/21/2027	06/06/2025 / Janvi	07/01/2024 / Jaswal	M5971

CHEMICAL RECEIPT LOG BOOK

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	08/05/2026	08/06/2025 / Janvi	02/22/2024 / Jaswal	M5979

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	CLPP-CAL-3 / CLP CAL SOLUTION #3, 125mL	T2-MEB727800	07/30/2026	07/30/2025 / Janvi	02/22/2024 / kareem	M5998

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57023 / V, 1000 PPM, 125 ml	062424	06/24/2027	09/28/2024 / jaswal	08/05/2024 / Jaswal	M6021

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57182 / Pb, 10000 PPM, 125 ml	110923	11/09/2026	12/05/2024 / janvi	08/05/2024 / Jaswal	M6026

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57028 / Ni, 1000 PPM, 125 ml	062024	06/20/2027	06/04/2025 / Janvi	08/05/2024 / Jaswal	M6027

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 #
Absolute Standards, Inc.	57056 / Ba, 1000 PPM, 125 ml	010924	01/09/2027	01/14/2025 / Jaswal	08/05/2024 / Jaswal	M6032

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	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	09/06/2029	01/23/2025 / kareem	09/19/2024 / kareem	M6077

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58120 / Calcium, 500 ml, 10000 PPM	082324	08/23/2027	03/06/2025 / JANVI	10/14/2024 / jaswal	M6086

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 #
Absolute Standards, Inc.	58126 / Fe, 10000 PPM, 500 ml	011025	01/10/2028	06/25/2025 / Janvi	01/13/2025 / Jaswal	M6140

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	103024	10/30/2027	05/06/2025 / JANVI	01/13/2025 / Jaswal	M6142

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58030 / Zinc, Zn, 500 ml, 1000 PPM	121724	12/17/2027	02/04/2025 / jaswal	01/13/2025 / Jaswal	M6145

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57051 / Sb, 1000 PPM, 125 ml	071724	07/17/2027	01/31/2025 / kareem	10/18/2024 / kareem	M6146

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9530-33 / Hydrochloric Acid, Instra-Analyzed (cs/6x2.5L)	22G2862015	02/17/2026	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 #
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	10/30/2025	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.	58113 / Al, 10000 PPM, 500 ml	011325	03/18/2026	03/18/2025 / kareem	02/09/2025 / kareem	M6159

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	ICV-5 / ICV (HG) STOCK SOLN	ICV 5 0415	12/31/2025	05/01/2025 / mohan	03/30/2024 / mohan	M6161

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)	24H0162012	11/27/2025	05/27/2025 / Sagar	04/27/2025 / Sagar	M6162

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	QCP-CICV-1-125ML / EPA CLP ICP Verification Standard1	V2-MEB744107	06/08/2026	06/09/2025 / jaswal	06/06/2025 / jaswal	M6163

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	QCP-CICV-2-125ML / EPA CLP ICP Verification Standard2	U2-MEB733713	06/08/2026	06/09/2025 / jaswal	06/09/2025 / jaswal	M6164

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	QCP-CICV-3-125ML / EPA CLP ICP Verification Standard3	V2-MEB749572	06/08/2026	06/09/2025 / jaswal	06/09/2025 / jaswal	M6165

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-2186-03 / Hydrogen Peroxide (cs/4x4L)	24D1961001	12/24/2025	06/25/2025 / jaswal	05/20/2025 / Sagar	M6170

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	011525	01/15/2028	07/15/2025 / jaswal	02/13/2025 / Janvi	M6171

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGNA10-5 / Sodium, 500 ml, 10000 PPM	V2-NA740547	07/29/2026	07/29/2025 / Janvi	01/25/2025 / Janvi	M6172

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	V2-MEB742428	07/31/2026	07/31/2025 / Janvi	05/05/2025 / Janvi	M6174

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	092724	09/27/2027	08/06/2025 / Janvi	08/06/2025 / Janvi	M6176

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	/ Lead (Pb) 1000PPM	031525	03/15/2028	08/06/2025 / Janvi	08/06/2025 / Janvi	M6177

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	08/05/2026	08/06/2025 / Janvi	06/02/2024 / Janvi	M6179

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	PART A / ICSA (ICP) STOCK SOLN	ICSA-1211	02/05/2026	08/06/2025 / Janvi	03/06/2024 / Janvi	M6182

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	02/05/2026	08/06/2025 / Janvi	03/06/2024 / Janvi	M6184

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9598-34 / Nitric Acid, Insta-Analyzed (cs/4x2.5L)	24H0162012	01/28/2026	08/29/2025 / Sagar	08/08/2025 / Sagar	M6187

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	H330-500 / HYDROXYLAMINE HYDROCHLORIDE ACS 500G	243373	02/03/2026	09/04/2025 / mohan	08/04/2025 / mohan	M6196

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9530-33 / Hydrochloric Acid, Insta-Analyzed (cs/6x2.5L)	24D1562005	02/10/2026	09/11/2025 / Sagar	08/25/2025 / Sagar	M6200

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	V2-MEB743480	10/15/2026	10/15/2025 / jaswal	07/20/2025 / janvi	M6201

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	V2-MEB752149	10/15/2026	10/15/2025 / Janvi	07/20/2025 / Janvi	M6209

CHEMICAL RECEIPT LOG BOOK

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

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 M3

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 – 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.



M6032

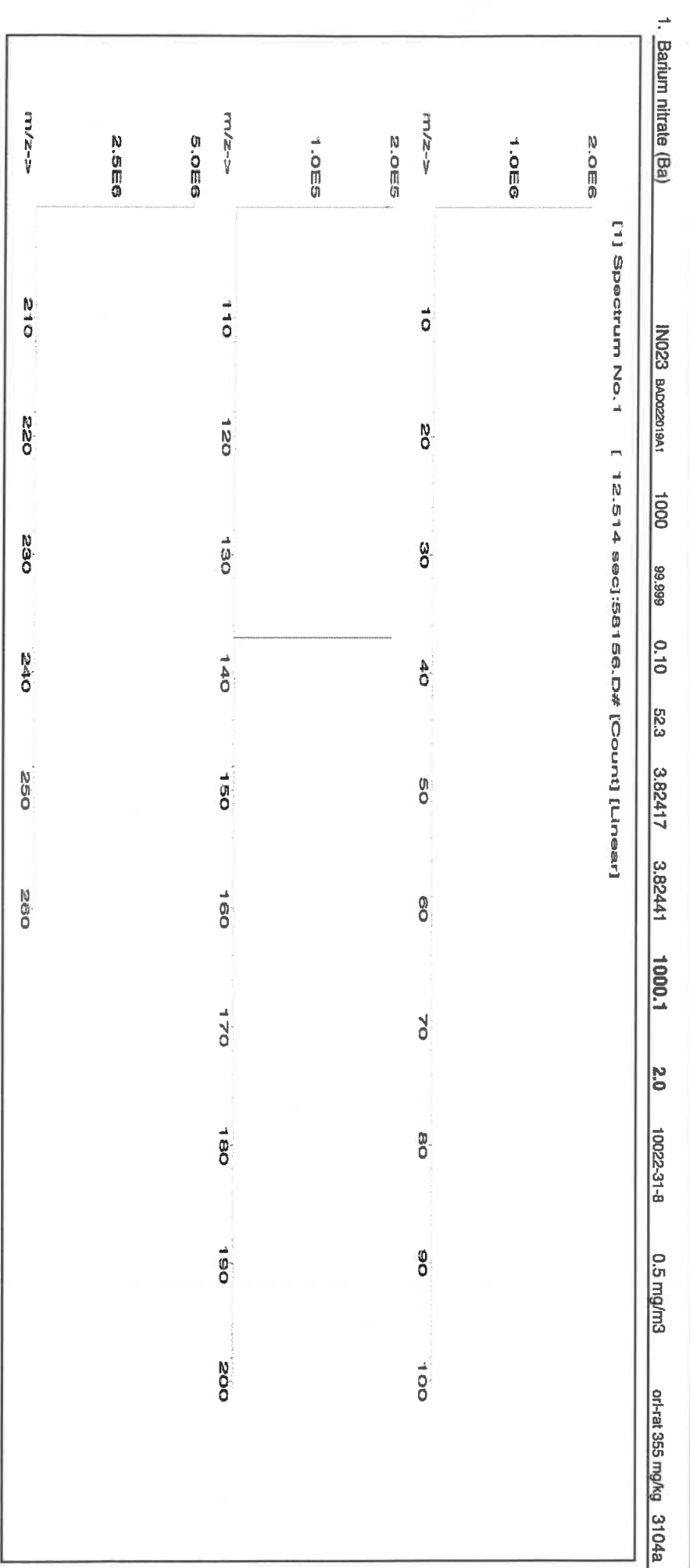


CERTIFIED WEIGHT REPORT:

Part Number: 57056
Lot Number: 010924
Description: Barium (Ba)
Solvent: Nitric Acid
Lot #
Expiration Date: 010927
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 2000.02
Balance Uncertainty: 5E-05
Flask Uncertainty: 0.058

<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
010924	
<i>Pedro L. Renteria</i>	
Reviewed By:	Pedro L. Renteria
010924	

SDS Information									
Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)
1. Barium nitrate (Ba)	IN023	BA0022019A1	1000	99.999	0.10	52.3	3.82417	3.82441	1000.1





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



Rev'd 2/10/14/2024 M6085 / M6086 / M6087

CERTIFIED WEIGHT REPORT:

Part Number: 58120
Lot Number: 082324
Description: Calcium (Ca)

Solvent: 24002546 Nitric Acid

Lot #

2% 80.0 Nitric Acid (mL)

Expiration Date: 082327

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 10000

NIST Test Number: 6UTB

5E-05 Balance Uncertainty

Weight shown below was diluted to (mL): 4000.1 0.15 Flask Uncertainty

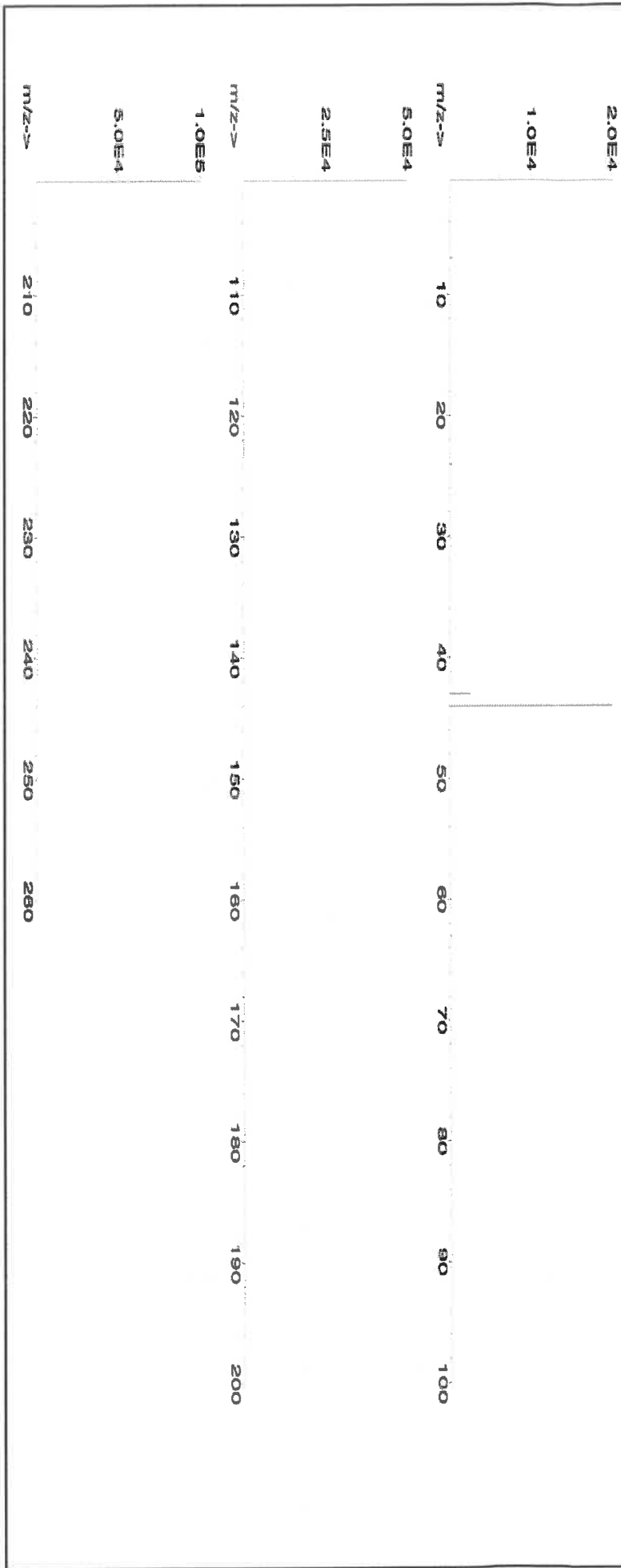
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	Pedro L. Rentas
	082324

SDS Information

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

1. Calcium carbonate (Ca) IN014 CAD03202383 10000 99.999 0.10 39.9 100.2537 100.2656 10001.2 20.0 471-34-1 5 mg/m3 or-rat >2000mg/kg 3109a

[1] Spectrum No. 1 [12.514 sec]: 58120.D* [Count] [Linear]





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<0.02	Se	<0.2	Tb	<0.02	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	30	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	Su	<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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- * Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- * All standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).



CERTIFIED WEIGHT REPORT:

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

Lot #
Solvent: 24002546 Nitric Acid

Expiration Date:

070127

2% 40.0 (mL) Nitric Acid

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL):

2000.07

SE-05 Balance Uncertainty
0.100 Flask Uncertainty

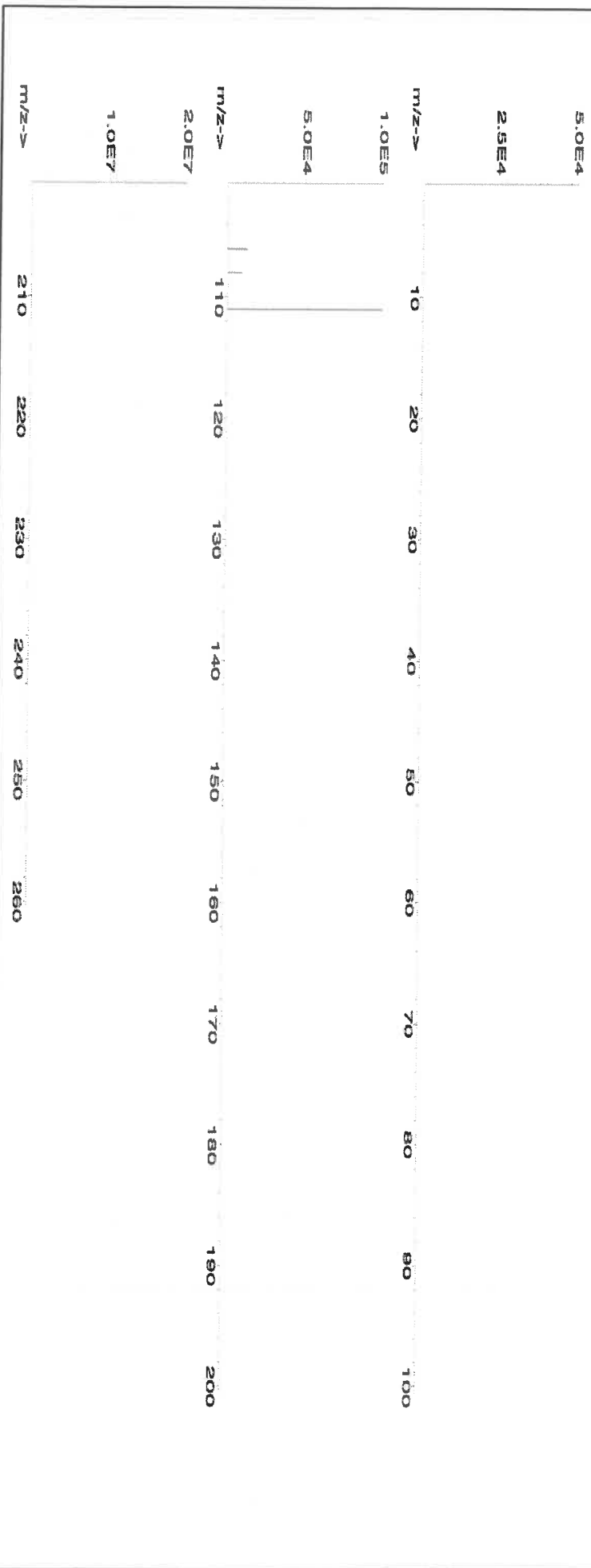
Aleah O'Brady	
Formulated By:	Aleah O'Brady
	070124
Pedro L. Rentas	
Reviewed By:	Pedro L. Rentas
	070124

SDS Information

Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Cadmium nitrate tetrahydrate (Cd) IN024 CDM09221A1 1000 99.999 0.10 36.5 5.4797 5.4804 1000.1 2.0 10022-68-1 0.01 mg/m3 or-rat 60.2mg/kg 3108

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



MC026



CERTIFIED WEIGHT REPORT:

Part Number: **57182**
Lot Number: **110923**
Description: **Lead (Pb)**

Lot #
Solvent: **24002546 Nitric Acid**

Expiration Date: **110926**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **10000**
NIST Test Number: **6UTB**

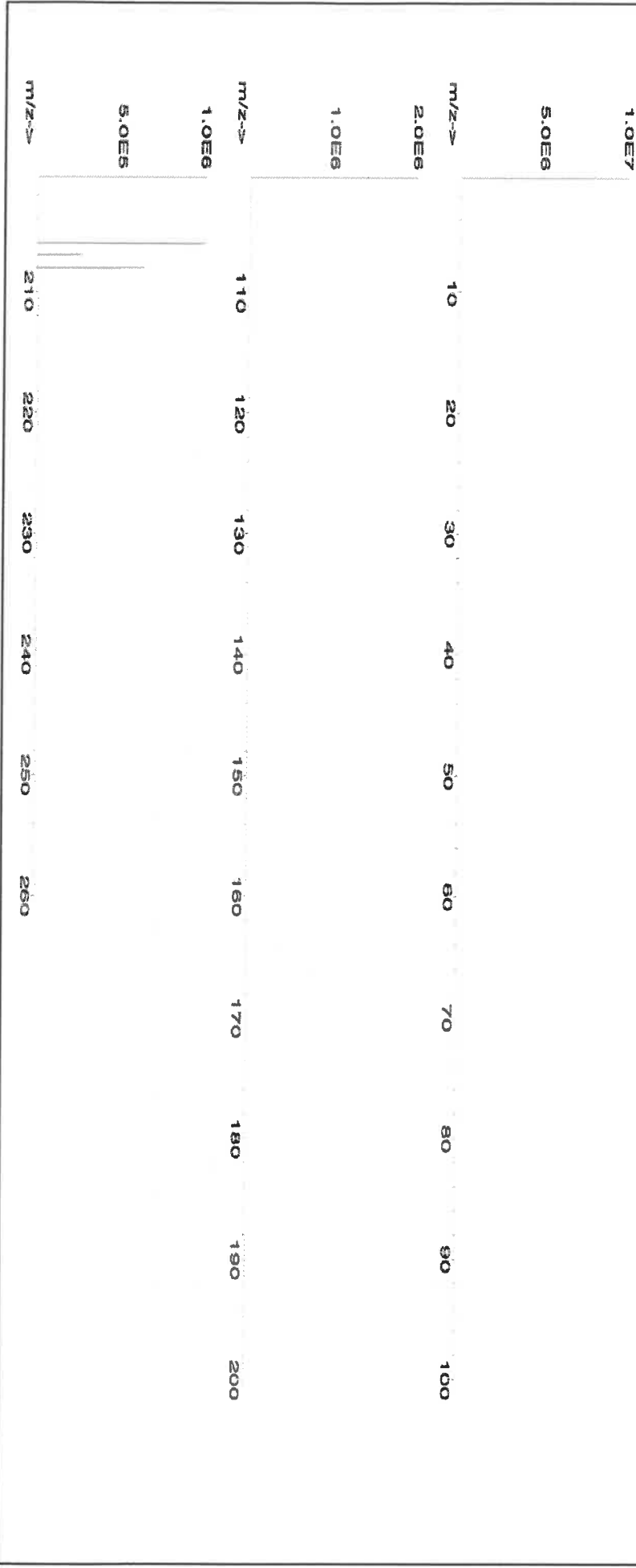
2% **40.0** **Nitric Acid**
(mL)

Weight shown below was diluted to (mL): **2000.02** **0.058** **Flask Uncertainty**

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

SDS Information									
Compound	Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Expanded
	Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Weight (g)	Conc. (µg/mL)	+/- (µg/mL)
1. Lead(II) nitrate (Pb)	IN029	PED12016A1	10000	99.999	0.10	62.5	32.0006	32.0040	10001.1
									20.0
									10099-74-8
									0.05 mg/m3
									intrinsic 83 mg/kg
									3128

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





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

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

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

Physical Characterization:

(T)= Target analyte

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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- * Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- * All Standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

M4913-16

MS

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.

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

MS062
MS063
MB

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10.001 ± 0.053 µg/mL
Density: 1.020 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Hg	ICP Assay	3133	160921
Hg	EDTA	928	928
Hg	Calculated		See Sec. 4.2

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

O	Ag	0.000011	M	Eu	<	0.000201	O	Na	0.000004	M	Se	<	0.015915	O	Zn	<	0.001510
O	Al	0.000001	O	Fe	0.000001	M	Nb	<	0.000201	O	Si	0.000005	M	Zr	<	0.000201	
M	As	<	0.000402	M	Ga	<	0.000201	M	Nd	<	0.000201	M	Sm	<	0.000201		
M	Au	<	0.003631	M	Gd	<	0.000201	M	Ni	<	0.000402	M	Sn	<	0.001007		
M	B	<	0.001208	M	Ge	<	0.000201	M	Os	<	0.000605	M	Sr	<	0.000201		
M	Ba	<	0.000201	M	Hf	<	0.000201	O	P	<	0.032370	M	Ta	<	0.000201		
M	Be	<	0.000201	s	Hg	<		M	Pb	<	0.000201	M	Tb	<	0.000201		
M	Bi	<	0.000201	M	Ho	<	0.000201	M	Pd	<	0.000403	M	Te	<	0.002216		
O	Ca	0.000007	M	In	<	0.000201	M	Pr	<	0.000201	M	Th	<	0.000201			
M	Cd	<	0.000201	M	Ir	<	0.000201	M	Pt	<	0.000402	M	Ti	<	0.000402		
M	Ce	<	0.000201	O	K	0.000020	M	Rb	<	0.000201	O	Tl	<	0.016508			
M	Co	<	0.000201	M	La	<	0.000201	M	Re	<	0.000201	M	Tm	<	0.000201		
O	Cr	<	0.003021	O	Li	<	0.000107	M	Rh	<	0.000201	M	U	<	0.008058		
M	Cs	<	0.001208	M	Lu	<	0.000201	M	Ru	<	0.000201	M	V	<	0.000201		
M	Cu	<	0.000402	O	Mg	0.000001	O	S	<	0.053950	M	W	<	0.000604			
M	Dy	<	0.000201	M	Mn	<	0.000604	M	Sb	<	0.001208	M	Y	<	0.000201		
M	Er	<	0.000201	M	Mo	0.000009	M	Sc	<	0.000201	M	Yb	<	0.000201			

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 200.59 +2 4 Hg(OH)(aq) 1+

Chemical Compatibility - Stable in HNO₃. Avoid basic media forming insoluble carbonate. The sulfide, basic carbonate, oxalate, phosphate, arsenite, arsenate and iodide are insoluble in water.

Stability - 2-100 ppb levels not stable in 1% HNO₃ / LDPE container, stable in 10% HNO₃ packaged in borosilicate glass. 1-100 ppm levels stable in 7% HNO₃ packaged in borosilicate glass. 1000-10,000 ppm solutions are chemically stable for years in 5-10% HNO₃ / LDPE container.

Hg Containing Samples (Preparation and Solution) - Metal (soluble in HNO₃); Oxide (Soluble in HNO₃); Ores and Organic based (The literature has more references to the preparation of Hg containing samples than any other element. Please consult the literature for your specific sample type, since such preparations are prone to error. Or e-mail our technical staff and we will contact you to discuss your particular sample preparation questions in further detail.).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 202 amu	9 ppt	n/a	186W16O
ICP-OES 184.950 nm	0.03 / 0.005 µg/mL	1	
ICP-OES 194.227 nm	0.03 / 0.005 µg/mL	1	V
ICP-OES 253.652 nm	0.1 / 0.03 µg/mL	1	Ta, Co, Th ,Rh , Fe, U

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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





Certified Reference Material CRM



M5467 R: 03/01/23 (14)

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57058
020623
Cerium (Ce)

Expiration Date:
Recommended Storage:
Nominal Concentration (µg/mL):
NIST Test Number:

020626
Ambient (20 °C)
1000
6UTB

Weight shown below was diluted to (mL):

1000.12 **0.058** **Balance Uncertainty**
Flask Uncertainty

Lot #

Solvent: 21110221 Nitric Acid

2% **20.0** **Nitric Acid**
(mL)

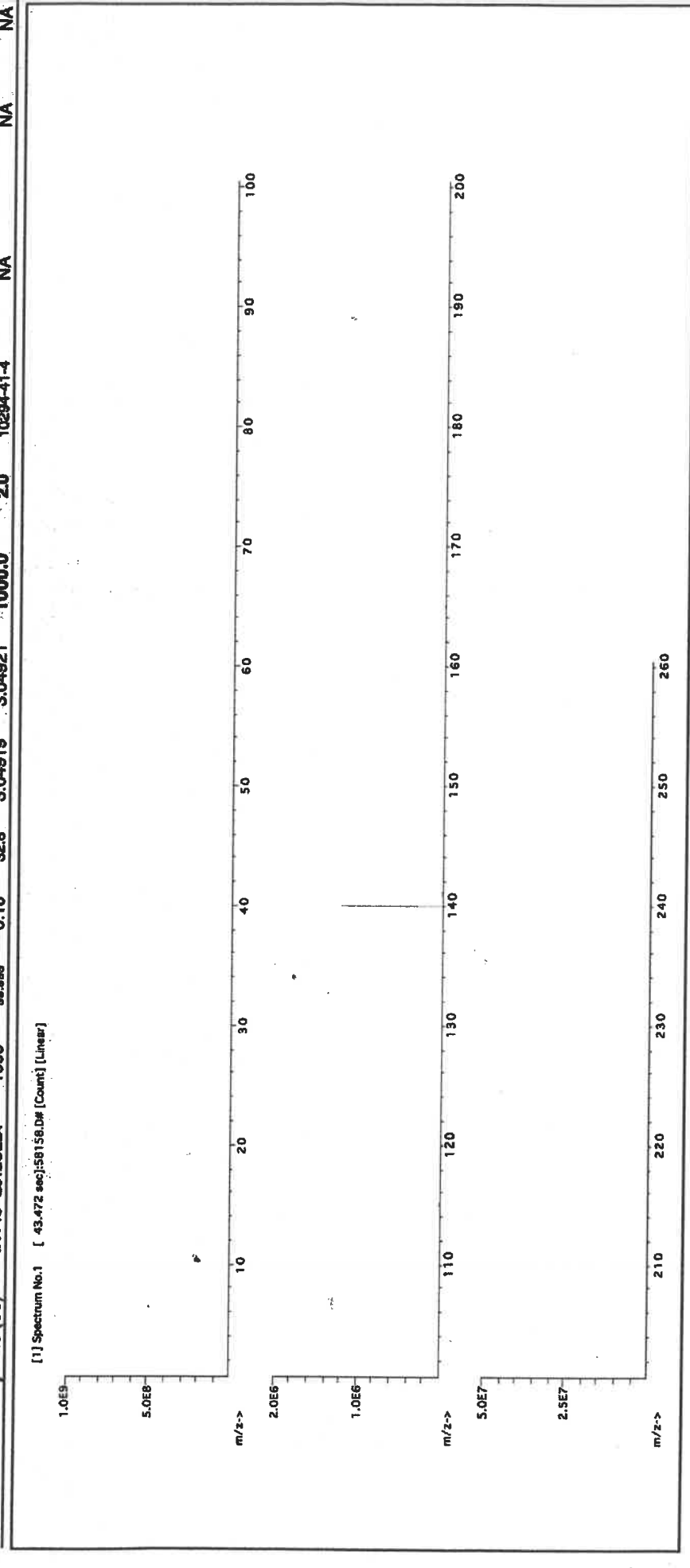
Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas

SDS Information

Expanded Uncertainty
Actual Conc. (µg/mL)
Actual Weight (g)
Target Weight (g)
Purity (%)
Nominal Conc. (µg/mL)
Lot Number
RM#

(Solvent Safety Info. On Attached pg.)
LD50
CAS#
OSHA PEL (TWA)
NA
NA
10294-41-4
2.0
1000.0
3.04921
3.04919
32.8
0.10
99.999
1000
Z512CEB1
IN146

1. Cerium nitrate hexahydrate (Ce) [1] Spectrum No.1 [43.472 sec] 58158.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

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



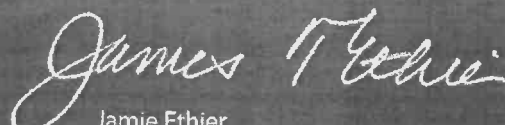
M5497 - M5508
And on 4/14/23
063

Material No.: 3624-01
Batch No.: 0000281938
Manufactured Date: 2021-06-07
Retest Date: 2026-06-07
Revision No.: 2

Certificate of Analysis

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

For Laboratory, Research, or Manufacturing Use
Meets Reagent Specifications for testing USP/NF monographs
Country of Origin: USA
Packaging Site: Paris Mfg Ctr & DC


Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700

Avantor Performance Materials, LLC

100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone 610.386.1700



MATERIAL CERTIFICATE OF COMPLIANCE

DATE: JUNE 12, 2023

CUSTOMER: PCI SCIENTIFIC SUPPLY, INC

PURCHASE ORDER NO. 6054931

CATALOG NO. BOI5021-450L

PRODUCT DESCRIPTION: BOILING STONES, TFE, 454GMS

QUANTITY: 10 EACH

LOT NO. W126678

SPECIFICATION (S): Made from Virgin PTFE Resin

We certify that we have complied with the terms and conditions of the above Purchase Order and the Part Specifications in the manufacturing of the above product.



Laura Valencia
Quality Assurance Inspector

F:\J:\A\CF\PCISCI\COC-55118-BOI5021-061223



MATERIAL CERTIFICATE OF COMPLIANCE

DATE: JUNE 12, 2023

CUSTOMER: PCI SCIENTIFIC SUPPLY, INC

PURCHASE ORDER NO. 6054931

CATALOG NO. BOI5021-450L

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QUANTITY: 10 EACH

LOT NO. W126678

SPECIFICATION (S): Made from Virgin PTFE Resin

We certify that we have complied with the terms and conditions of the above Purchase Order and the Part Specifications in the manufacturing of the above product.



Laura Valencia
Quality Assurance Inspector

F:\J:\A\CF\PCISCI\COC-55118-BOI5021-061223



CERTIFIED WEIGHT REPORT:

Part Number: 58024
Lot Number: 060523
Description: Chromium (Cr)

Lot # 2110221 **Solvent:** Nitric Acid

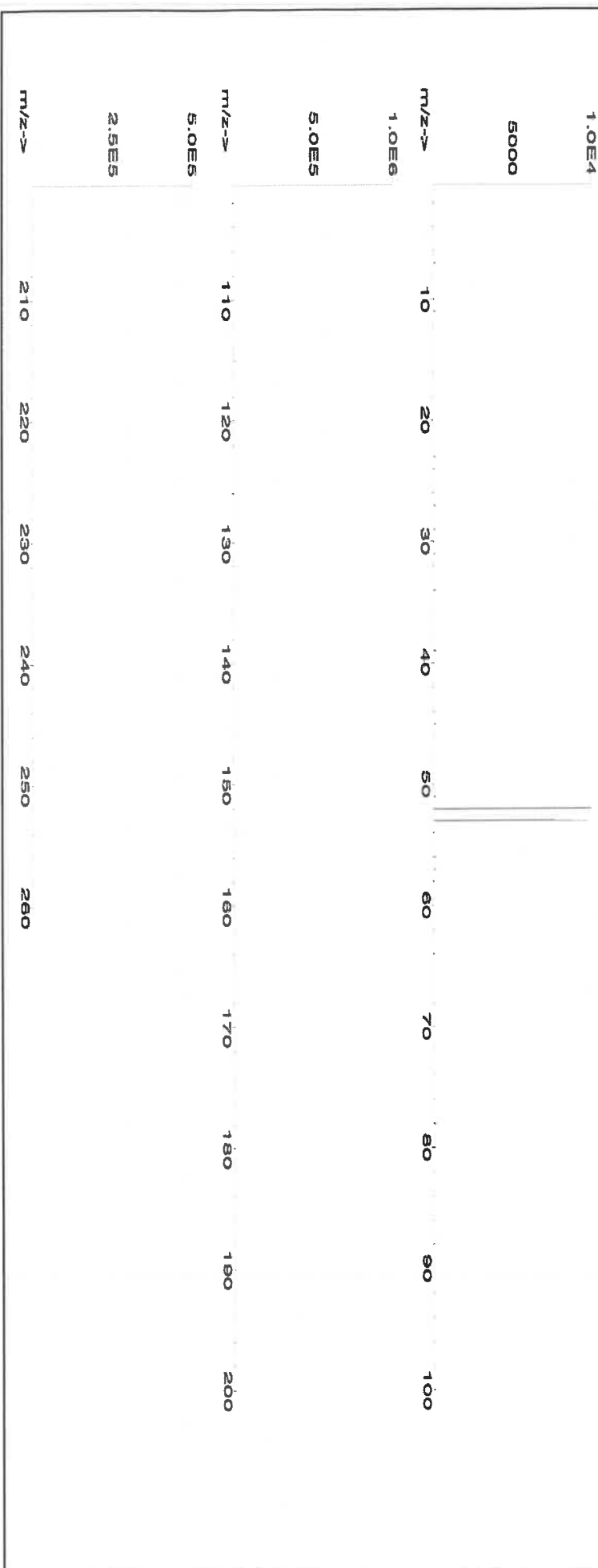
Formulated By:	<i>Lawrence Barry</i>	060523
Reviewed By:	<i>Pedro L. Renteria</i>	060523

Expiration Date: 060526
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 2000.02 0.058 Balance Uncertainty
Flask Uncertainty

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
----------	-------------	------------	-----------------	-------------------	------------------	-----------------------	-----------------------	---------------------	----------------------------------	------	----------------	------	----------

1. Chromium(III) nitrate nonahydrate (Cr) 58124 071122 0.1000 200.0 0.084 1000 10000.1 1000.0 2.2 7789-02-8 0.5 mg(Cr)/m3 or rat 3250 mg/kg 3112a

[1] Spectrum No.1 [31.393 sec]:57024.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

Part Number: **58029**
Lot Number: **102523**
Description: **Copper (Cu)**

Lot # **24002546**
Solvent: **Nitric Acid**

Expiration Date: **102526**

2.0%
(mL)

Nitric Acid

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

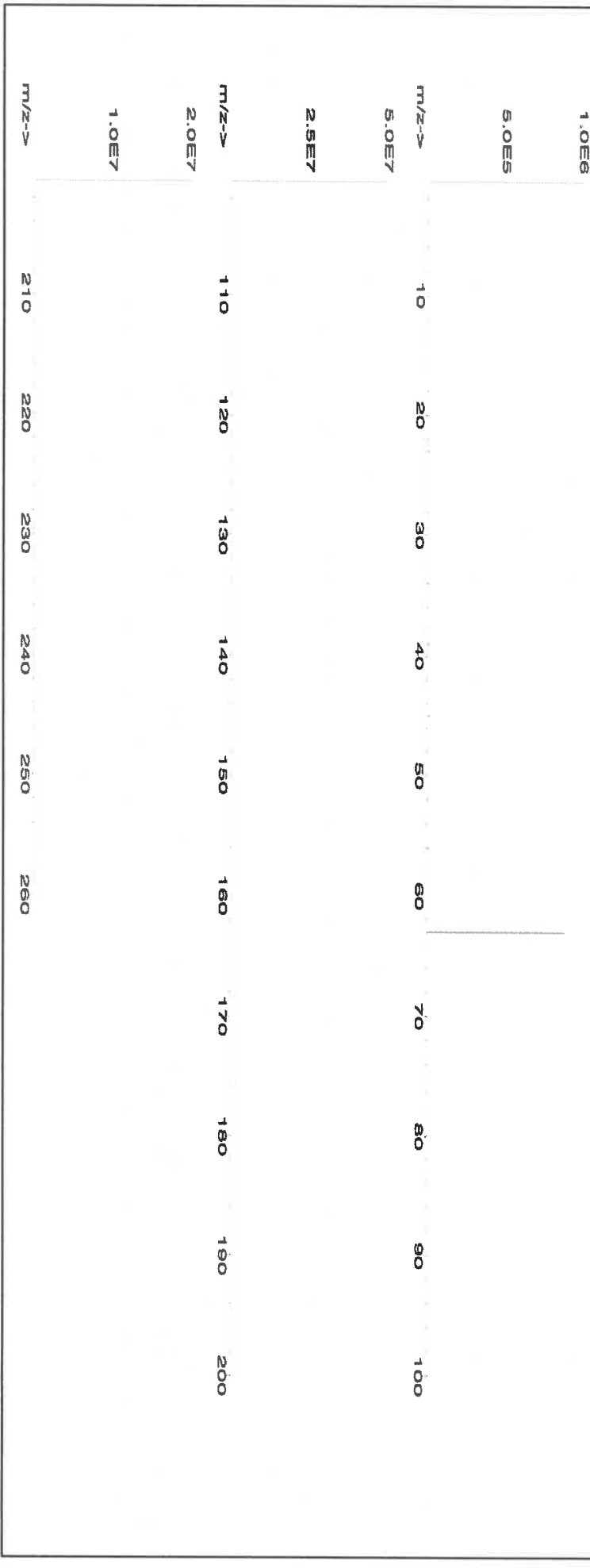
Formulated By:	Benson Chan	102523
Reviewed By:	Pedro L. Rentas	102523

SDS Information

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
----------	-------------	------------	-----------------	-------------------	--------------------------	-----------------------	-----------------------	---------------------	----------------------------------	------	----------------	------	----------

1. Copper(II) nitrate trihydrate (Cu) 58129 100223 0.1000 200.0 0.084 1000 10000.1 1000.0 2.2 10031-43-3 1 mg/m3 or-rat 794 mg/kg 3114

[1] Spectrum No.1 [33.422 sec]:58029.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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CERTIFIED WEIGHT REPORT:

Part Number: 57004
Lot Number: 102523
Description: Beryllium (Be)

Lot # 24002546
Solvent: Nitric Acid

Expiration Date:

102526

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL): 2000.02

Balance Uncertainty 5E-05

Flask Uncertainty 0.058

2.0%

40.0 (mL)

Nitric Acid

Formulated By: Benson Chan

102523

Reviewed By:

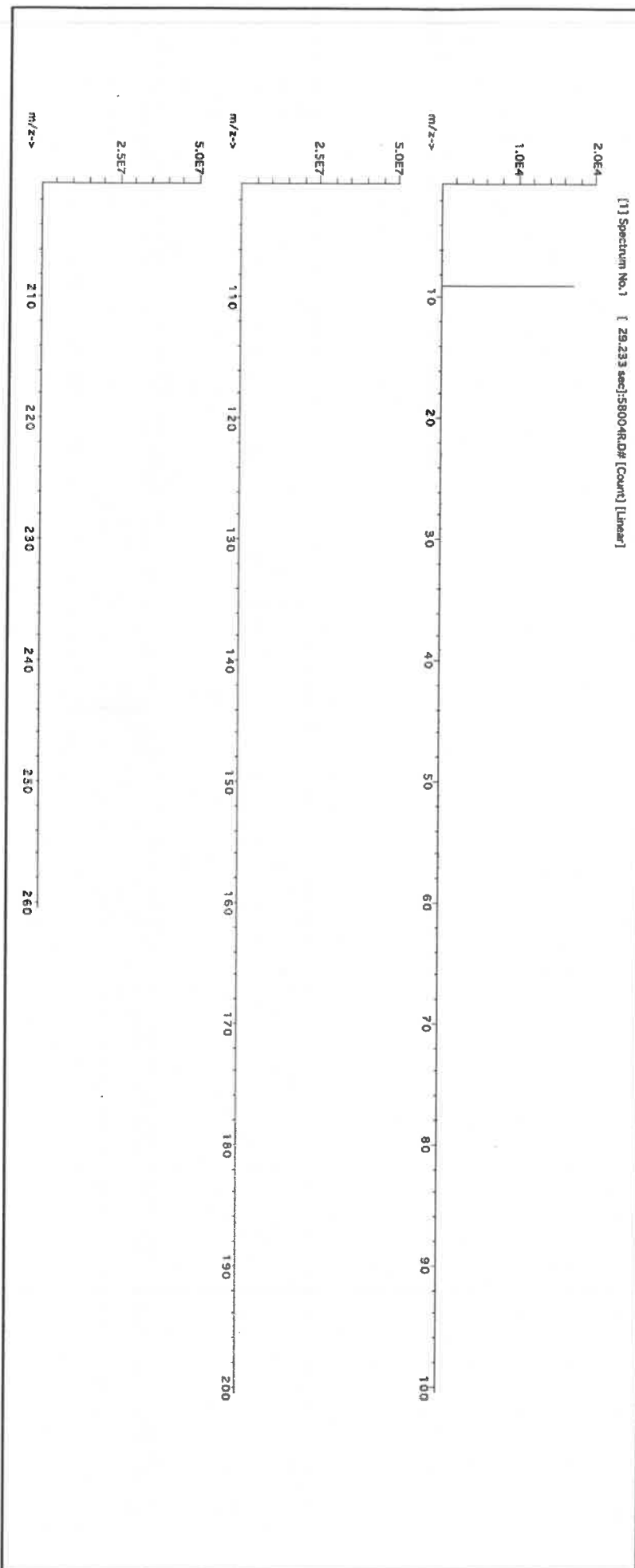
Pedro L. Rentas

102523

SDS Information

Compound	Part Number	Lot	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
----------	-------------	-----	-----------------	-------------------	--------------------------	-----------------------	-----------------------	---------------------	----------------------------------	------	----------------	------	----------

1. Beryllium nitrate (Be)	58104	091423	0.1000	200.0	0.084	1000	10001.5	1000.0	2.2	13597-99-4	0.2µg/m3	intrinsc-rat 3.16mg/kg	NA
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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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Certified Reference Material CRM

CERTIFIED WEIGHT REPORT:

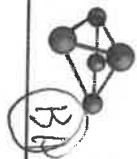
Part Number: 57050
Lot Number: 071123
Description: Tin (Sn)

Solvents: 21110221 Nitric Acid
22D0562008 Hydrochloric acid

Lot #

R-02509124

M599



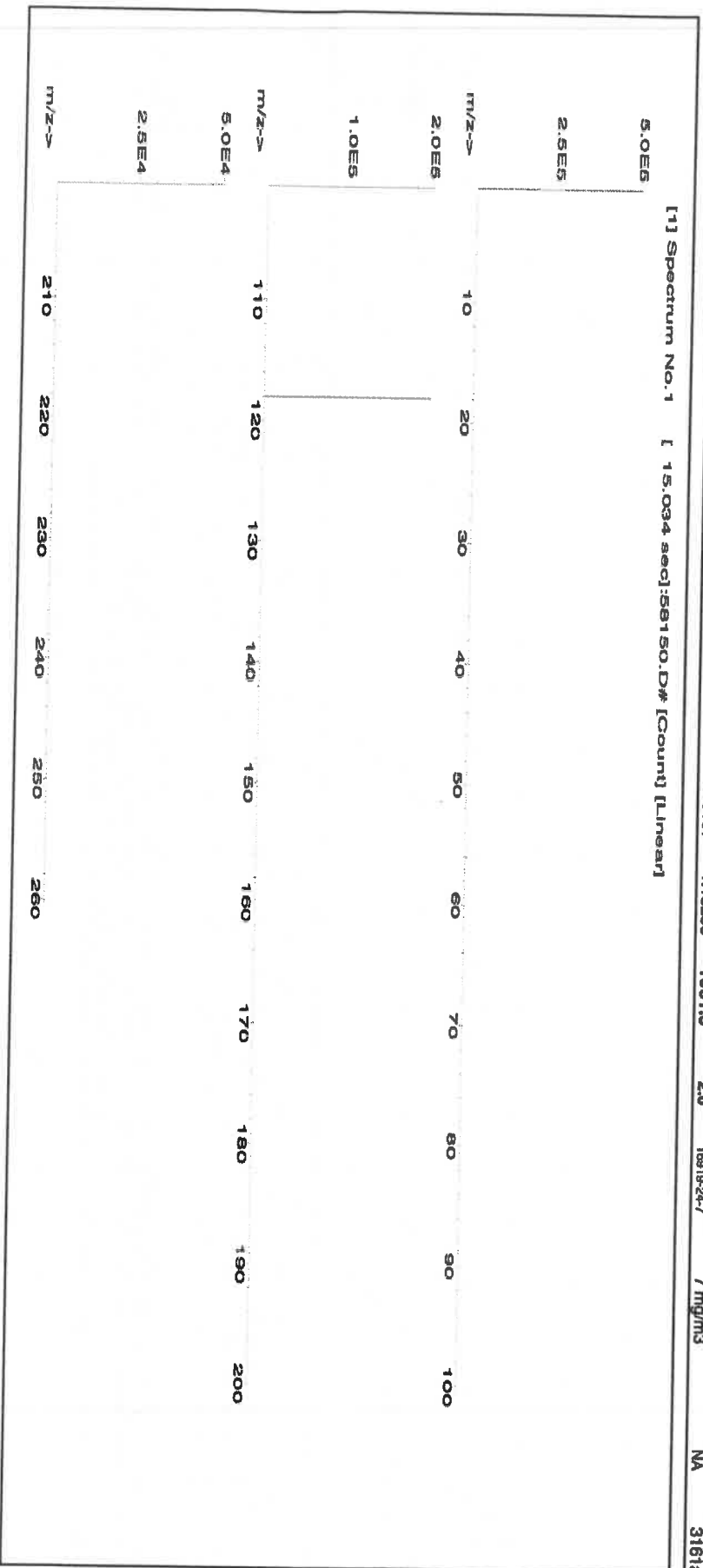
Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 499.93
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By: Benson Chan	
071123	
Reviewed By: Pedro L. Rientas	
071123	

SDS Information												
Compound		Lot		Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Expanded	SDS Info. On Attached pg.)
RM#	Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Weight (g)	Conc. (µg/mL)	Conc. (µg/mL)	Uncertainty		
NIST												

1. Ammonium hexafluoroantimonate(V) (Sn) INO10 SMD042023A1 1000 99.999 0.10 44.2 1.13107 1.13286 1001.6 2.0 16919-24-7 7 mg/m3 NA 3161a

[1] Spectrum No. 1 [15.034 sec]:56150.D# [Count] [Linear]





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<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	Ta	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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- * Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- * All standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).



R: 02/09/24 115800 (54)

CERTIFIED WEIGHT REPORT:

Part Number: 57027
Lot Number: 091923
Description: Cobalt (Co)

Expiration Date: 091926
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

Volume shown below was diluted to (mL): 2000.02

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Lot # 24002546
Solvent: Nitric Acid

2.0% Nitric Acid
40.0 (mL)

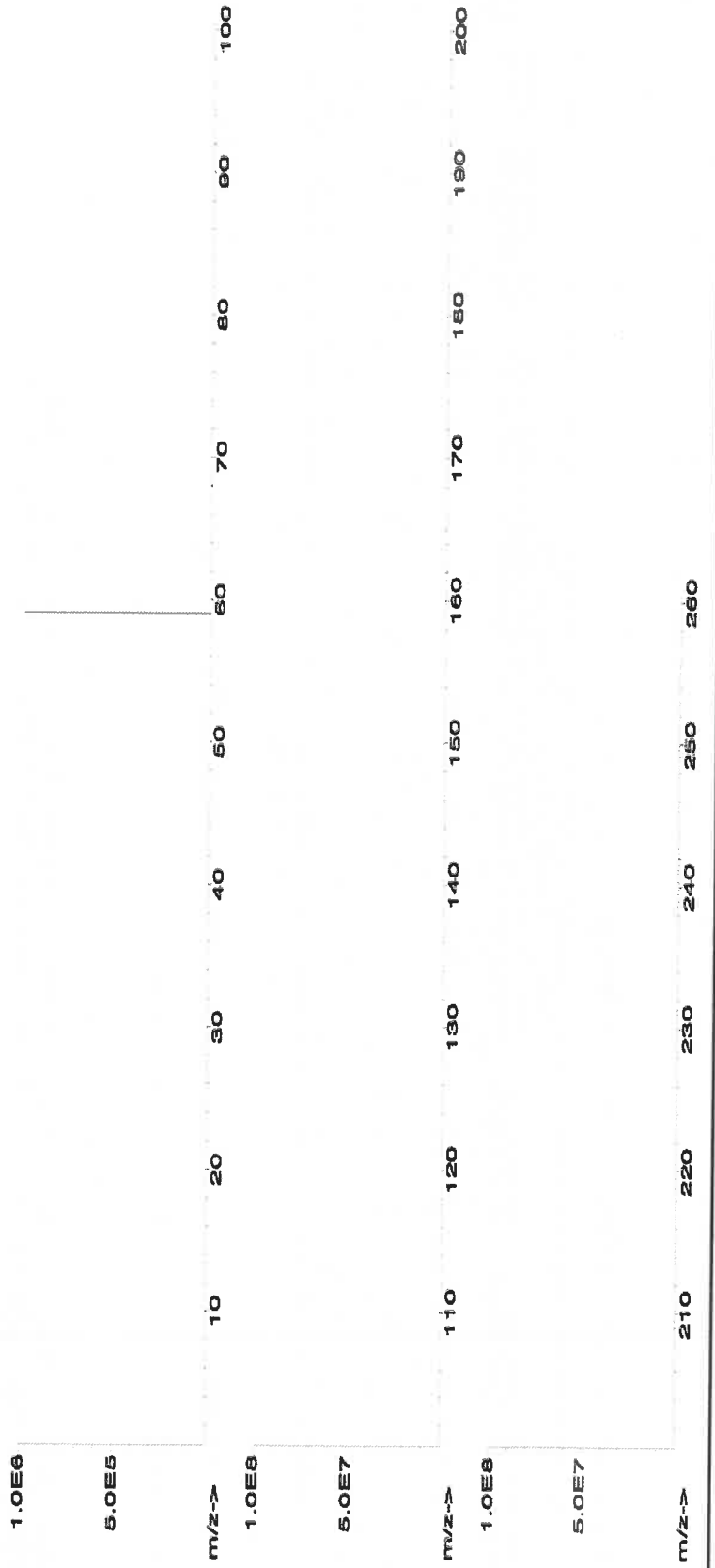
Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas

SDS Information

Expanded Uncertainty +/- (µg/mL)
(Solvent Safety Info. On Attached pg.)
NIST SRM
CAS# OSHA PEL (TWA) LD50

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

[1] Spectrum No.1 [34.243 sec]:58027.D# [Count] [Linear]





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

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

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

(T)= Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM

AR: 02/09/24

M5801

BA



CERTIFIED WEIGHT REPORT:

Part Number: 57033
Lot Number: 111323
Description: Arsenic (As)

Lot # 24002546
Solvent: Nitric Acid

Expiration Date: 111326
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6LUTB
Volume shown below was diluted to (mL): 4000.0

Balance Uncertainty: 5E-05
Flask Uncertainty: 0.06

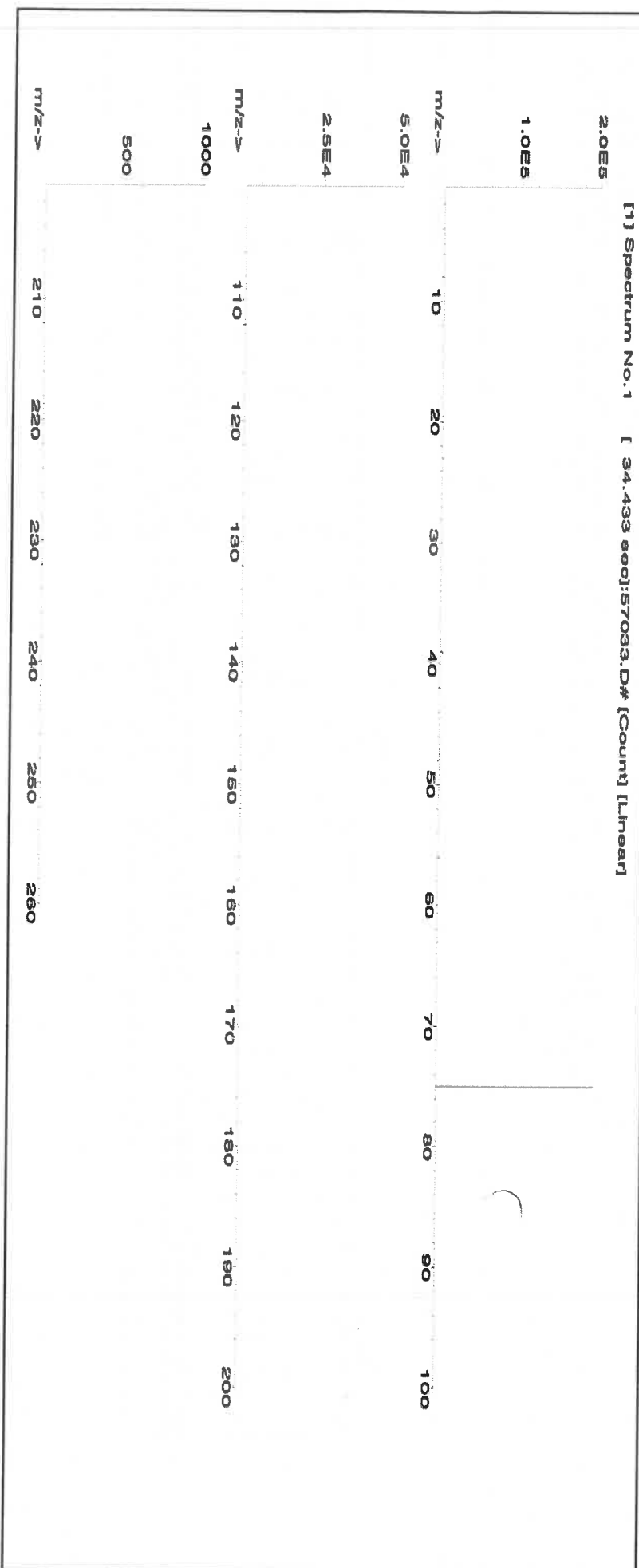
2.0% 80.0 (mL) Nitric Acid

Formulated By:	Lawrence Barry	111323
Reviewed By:	Pedro L. Rendas	111323

SDS Information									
Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)
1. Arsenic (As)	57033	020522	0.1000	400.0	0.084	1000	10001.0	1000.0	2.0

7440-38-2 0.5 mg/m3 or-lat 500 mg/kg 3103a

[1] Spectrum No.1 [34.433 sec]:57033.D# [Count] [Linear]





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Tc	<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	Ti	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Bc	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge*	<0.02	La	<0.02	Mo	<0.02	Pr	<0.02	Sm	<0.02	S	<0.02	Sa	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Tl	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

Part Number: **57005**
Lot Number: **071123**
Description: **Boron (B)**

Solvent: MKB0857V Ammonium hydroxide

Lot #

AI: 021009124 M5814

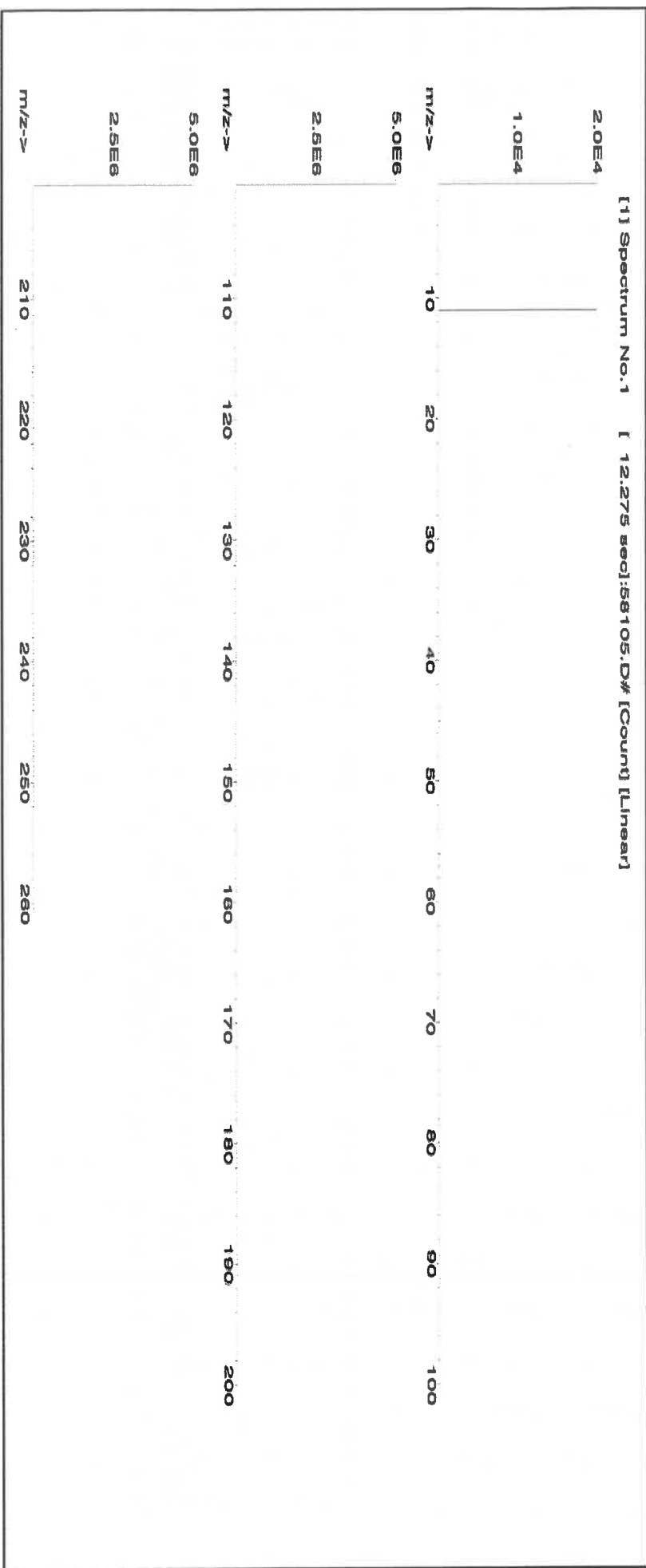
Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

2.0% 40.0 (mL) Ammonium hydroxide

Weight shown below was diluted to (mL): 1999.48 0.058 Balance Uncertainty Flask Uncertainty

Formulated By:	Benson Chan
071123	
Reviewed By:	Pedro L. Rientas
071123	

SDS Information									
Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)
1. Boric acid (B)	IN018	BV082018A1	1000	99.999	0.10	17.3	11.55772	11.56201	1000.4
							2.0	10043-35-3	2 mg/m3
									ort-nat 2660 mg/kg 3107





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
- * All standard containers are meticulously cleaned prior to use.
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- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).



CERTIFIED WEIGHT REPORT:

Part Number: 57016
Lot Number: 122923
Description: Sulfur (S)

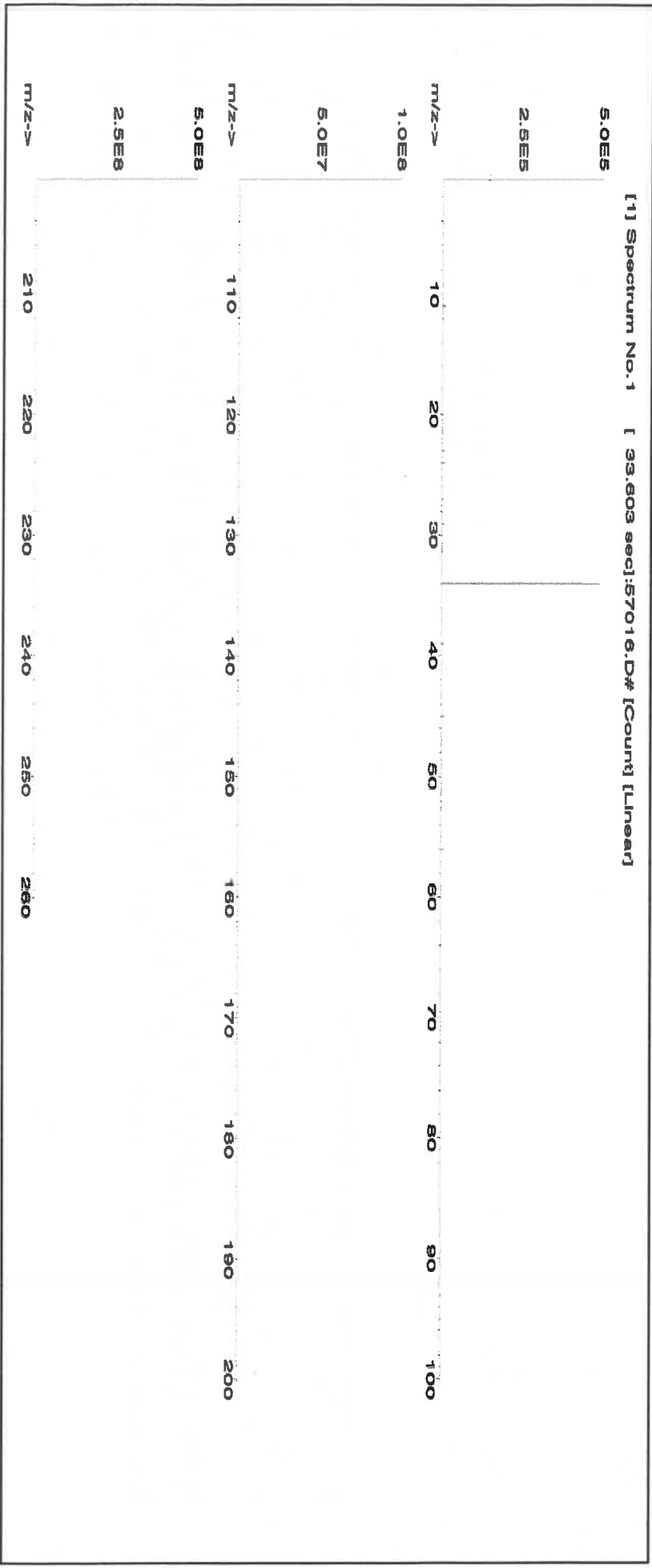
Solvent: 122923
ASTM Type 1 Water

Formulated By:	Benson Chan
Reviewed By:	Pedro L. Rentas
Lot #	122923

Expiration Date: 122926
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6L7B
Weight shown below was diluted to (mL): 4000.0
SE-05 Balance Uncertainty 0.06
Flask Uncertainty

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

1. Ammonium sulfate (S) IN117 SLBR725V 1000 99.9 0.10 24.3 16.4979 16.4980 1000.0 2.0 7783-20-2 NA or-rel 4250mg/kg 3181





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

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

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

(T) = Target analyte

Physical Characterization:

Certified by:

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

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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- * Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
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- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

Part Number: 57015
Lot Number: 091123
Description: Phosphorous (P)

Solvent: 24002546 Nitric Acid

Lot #

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

Expiration Date: 091126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6LUTB

2% 40.0 (mL) Nitric Acid

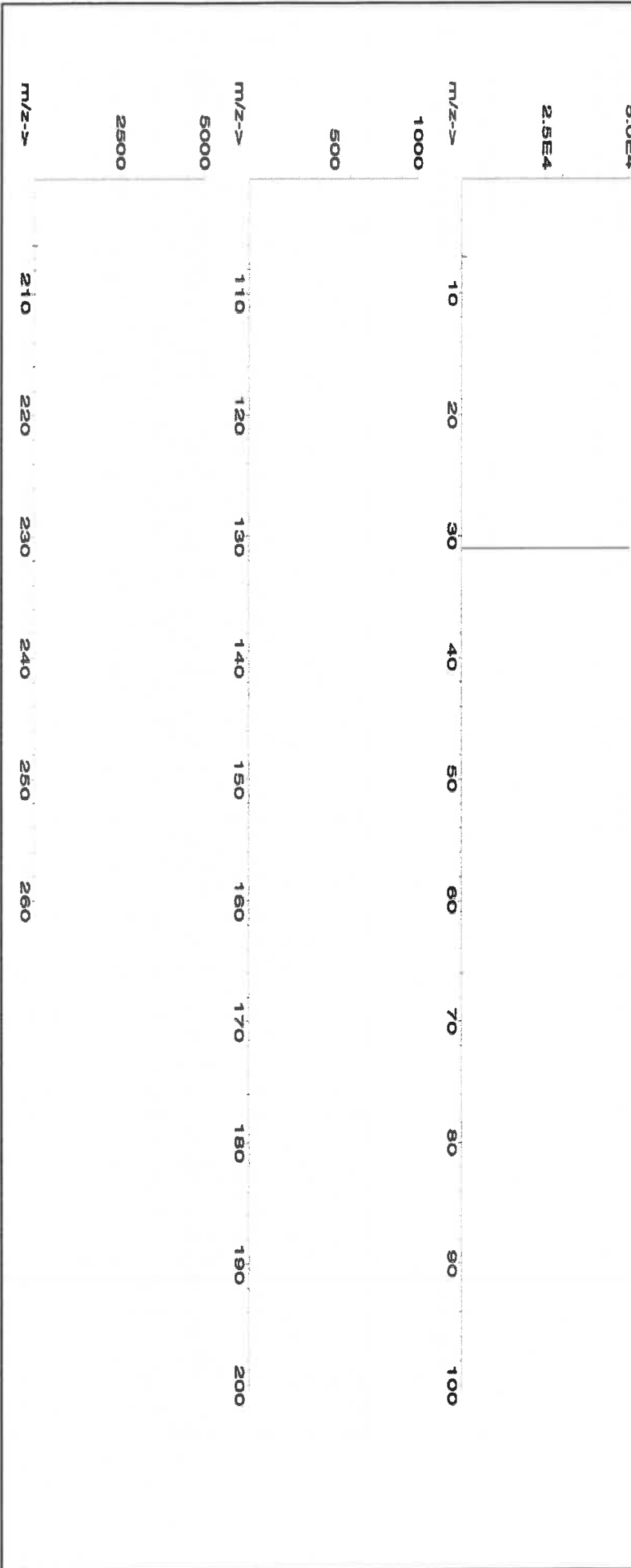
Weight shown below was diluted to (mL): 2000.02
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

SDS Information

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

1. Ammonium dihydrogen phosphate (P) IN008 PVO62019A1 1000 99.999 0.10 27.5 7.2729 7.2730 1000.0 2.0 7722-76-1 5 mg/m3 xH-rat >2000mg/kg 3186

[1] Spectrum No.1 [12.074 sec]:58115.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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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



ANAB ISO 17034 Accredited
AR-1539 Certificate Number
<https://AbsoluteStandards.com>

CERTIFIED WEIGHT REPORT:

Part Number:

57034

Lot Number:

060624

Description:

Selenium (Se)

Lot #

24002546

Solvent:

Nitric Acid

2.0%

40.0

(mL)

Nitric Acid

(mL)

Formulated By:

Benson Chan

060624

Expiration Date:

060627

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

2000.07

SE-05 Balance Uncertainty

0.100 Flask Uncertainty

Reviewed By:

Pedro L. Rantas

060624

SDS Information

Compound

Part Number

Lot Number

Dilution Factor

Initial Vol. (mL)

Pipette (mL)

Uncertainty

Nominal Conc. (µg/mL)

Initial Conc. (µg/mL)

Final Conc. (µg/mL)

Expanded Uncertainty

+/- (µg/mL)

CAS#

OSHA PEL (TWA)

LDSO

NIST SRM

1. Selenium (Se)

58134 071223

0.1000

200.0

0.084

1000

10002.5

1000.0

2.2

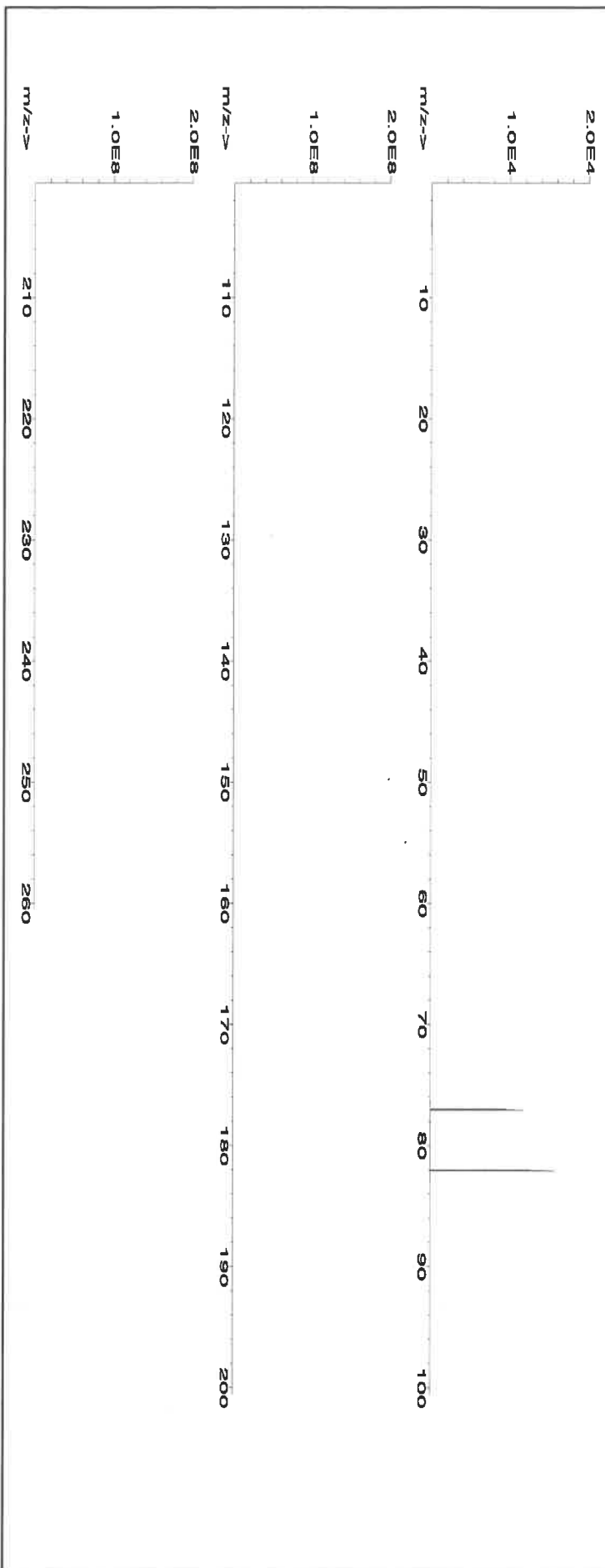
7782-49-2

0.2 mg/m3

or-tral 6700 mg/kg

3149

[1] Spectrum No.1 [33.702 sec]:58034.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

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Certified Reference Material CRM
M5970 M5971 R1 710124



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AR-1539 Certificate Number
https://AbsoluteStandards.com

CERTIFIED WEIGHT REPORT:

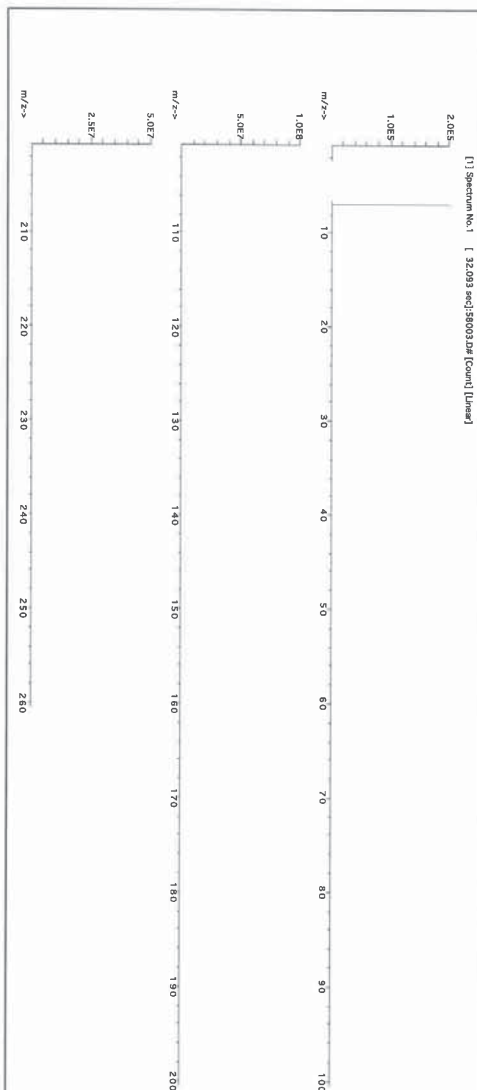
Part Number: 57003
Lot Number: 062124
Description: Lithium (Li)
Expiration Date: 06/21/27
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 250.11

Lot # 24002546
Solvent: Nitric Acid
Conc. (µg/mL) 2.0%
Initial 5.0 (mL)
Final Nitric Acid
SE-05 Balance Uncertainty 0.016
Fisk Uncertainty

Microvite Capable	
Formulated By:	062124
Reviewed By: <i>[Signature]</i>	
Petro L. Parias	

Compound		SDS Information												NEST	
		(Solvent Safety Info. On Attachment pg.)													
Part	Lot	Dilution	Initial	Uncertainty	Nominal	Initial	Final	Expanded	CAS#	OSHA PEL (TWA)	LD50	SM			
Number	Number	Factor	Vol. (mL)	Pipette (mL)	Conc. (µg/mL)	Conc. (µg/mL)	Conc. (µg/mL)	+/- (µg/mL)							

1. Lithium nitrate (Li) 58103 070622 0.1000 25.0 0.004 1000 10000.4 1000.0 2.0 7790-68-4 5 mg/m3 or-hal 1428 mg/kg NA



Part # 57003 Lot # 062124

1 of 2

Printed: 6/24/2024, 11:20:08 PM

Absolute Standards, Inc.
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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	Ca	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.02
Sb	<0.02	Ce	<0.2	Er	<0.02	In	<0.02	La	<0.02	Nb	<0.02	Rb	<0.02	Si	<0.2
As	<0.2	Ce	<0.02	Ba	<0.02	Ir	<0.02	Mg	<0.02	Os	<0.02	Rh	<0.02	Ag	<0.02
Ba	<0.02	Cr	<0.02	Gd	<0.02	Te	<0.2	Mn	<0.02	Pd	<0.02	Ru	<0.02	Nd	<0.2
Be	<0.01	Co	<0.02	Ga	<0.02	Ta	<0.02	Hg	<0.2	P	<0.02	Sr	<0.02	Sr	<0.02
Bi	<0.02	Cu	<0.02	Ge	<0.02	Tb	<0.02	Ko	<0.02	K	<0.2	Sm	<0.02	S	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Ti	<0.02	Nd	<0.02	La	<0.2	Sc	<0.02	Ta	<0.02
(T) = Target analyte															
Br	<0.02	Fe	<0.02	Ag	<0.02	Mo	<0.02	Co	<0.02	Cr	<0.02	Y	<0.02	W	<0.02
Cd	<0.02	Mn	<0.02	Ce	<0.02	Se	<0.02	Fe	<0.02	As	<0.02	Sc	<0.02	U	<0.02
Ce	<0.02	Ni	<0.02	Er	<0.02	Te	<0.02	La	<0.02	Os	<0.02	Rh	<0.02	V	<0.02
Co	<0.02	Pb	<0.02	Gd	<0.02	Ta	<0.02	Mn	<0.02	Pd	<0.02	Ru	<0.02	Yb	<0.02
Cr	<0.02	Sr	<0.02	Ga	<0.02	Tb	<0.02	Hg	<0.02	P	<0.02	Sm	<0.02	Y	<0.02
Cu	<0.02	Ti	<0.02	Ge	<0.02	Ti	<0.02	Ko	<0.02	K	<0.2	Sc	<0.02	Zn	<0.02
Dy	<0.02	U	<0.02	Au	<0.02	La	<0.02	Nd	<0.02	La	<0.2	Sc	<0.02	Zr	<0.02

Physical Characterization:

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

Certified by:

[Signature]

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



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Certificate of Analysis

M5978, M5979

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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).

1.0 ACCREDITATION / REGISTRATION

2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution

Catalog Number: CGT1

Lot Number: T2-T1719972

Matrix: 2% (v/v) HNO₃

Value / Analyte(s): tr. HF

Starting Material: 1 000 µg/mL ea.

Starting Material: Titanium

Starting Material Lot#: T1 Metal

Starting Material Purity: 99.9975%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 5 µg/mL

Density: 1.012 g/mL (measured at 20 ± 4 °C)

Assay Method #1: 1002 ± 4 µg/mL

ICP Assay NIST SRM 3162a Lot Number: 130925

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

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

Characterization of CRM/RM by Two or More Methods

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

$X_{CRM/RM} = (k_p) / (k_p + 1)$

k_p = mean of Assay Method A with

$U_{A,HR}$ = the standard uncertainty of characterization Method A

$U_{A,HR}$ = long term stability standard uncertainty (storage)

$U_{A,HR}$ = bottle to bottle homogeneity standard uncertainty

$U_{A,HR}$ = the known error from characterization

k = coverage factor = 2

$U_{CRM/RM} = k \sqrt{U_{A,HR}^2 + U_{B,HR}^2 + U_{C,HR}^2 + U_{D,HR}^2 + U_{E,HR}^2}$

$U_{CRM/RM}$ = Expanded Uncertainty (2) = $U_{CRM/RM}$

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)

$U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty

$U_{CRM/RM}$ = the known error from characterization method

k = coverage factor = 2

$U_{CRM/RM} = k \sqrt{U_{A,HR}^2 + U_{B,HR}^2 + U_{C,HR}^2 + U_{D,HR}^2 + U_{E,HR}^2}$

$U_{CRM/RM}$ = Expanded Uncertainty (2) = $U_{CRM/RM}$

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)

$U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty

$U_{CRM/RM}$ = the known error from characterization method

k = coverage factor = 2

$U_{CRM/RM} = k \sqrt{U_{A,HR}^2 + U_{B,HR}^2 + U_{C,HR}^2 + U_{D,HR}^2 + U_{E,HR}^2}$

$U_{CRM/RM}$ = Expanded Uncertainty (2) = $U_{CRM/RM}$

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)

$U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty

$U_{CRM/RM}$ = the known error from characterization method

k = coverage factor = 2

$U_{CRM/RM} = k \sqrt{U_{A,HR}^2 + U_{B,HR}^2 + U_{C,HR}^2 + U_{D,HR}^2 + U_{E,HR}^2}$

$U_{CRM/RM}$ = Expanded Uncertainty (2) = $U_{CRM/RM}$

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)

$U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty

$U_{CRM/RM}$ = the known error from characterization method

k = coverage factor = 2

$U_{CRM/RM} = k \sqrt{U_{A,HR}^2 + U_{B,HR}^2 + U_{C,HR}^2 + U_{D,HR}^2 + U_{E,HR}^2}$

$U_{CRM/RM}$ = Expanded Uncertainty (2) = $U_{CRM/RM}$

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)

$U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty

$U_{CRM/RM}$ = the known error from characterization method

k = coverage factor = 2

$U_{CRM/RM} = k \sqrt{U_{A,HR}^2 + U_{B,HR}^2 + U_{C,HR}^2 + U_{D,HR}^2 + U_{E,HR}^2}$

$U_{CRM/RM}$ = Expanded Uncertainty (2) = $U_{CRM/RM}$

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)

$U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty

$U_{CRM/RM}$ = the known error from characterization method

k = coverage factor = 2

$U_{CRM/RM} = k \sqrt{U_{A,HR}^2 + U_{B,HR}^2 + U_{C,HR}^2 + U_{D,HR}^2 + U_{E,HR}^2}$

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

5.0

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

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an UHPA-filtered Clean Room. An UHPA-filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000536	M	Eu	<	0.000268	O	Na	<	0.032670	M	Se	<	0.001204	O	Zn	<	0.003267
M	Al	<	0.000872	O	Fe	<	0.003225	O	Nb	<	0.043560	O	Si	<	0.004735	O	Zr	<	0.043560
M	As	<	0.008586	M	Ga	<	0.000268	M	Nd	<	0.000268	M	Sm	<	0.000268				
M	Au	<	0.004577	M	Gd	<	0.000268	O	Ni	<	0.010890	M	Sn	<	0.000986				
O	B	<	0.008929	M	Ge	<	0.002146	M	Os	<	0.000269	O	Sr	<	0.000986				
M	Ba	<	0.002683	M	Hf	<	0.002161	O	P	<	0.054450	M	Ta	<	0.010560				
M	Be	<	0.005366	M	Hg	<	0.003231	M	Pb	<	0.001073	M	Tb	<	0.000268				
M	Bi	<	0.001609	M	Ho	<	0.000268	M	Pd	<	0.000268	M	Td	<	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	<	0.000268				
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	<	0.006976	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				

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

- 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: Soluble in concentrated HCl, HF, H₃PO₄, H₂SO₄ and HNO₃. Avoid neutral to basic media. Unstable at ppm levels with metals that would pull F⁻ away (i.e. Do not mix with Alkaline or Rare Earths or high levels of transition elements unless they are fluorinated). Stable with most inorganic anions with a tendency to hydrolyze forming the hydrated oxide in all dilute acids except HF.

Stability: 2-100 ppb levels stable (Alone or mixed with all other metals) as the Ti(F)₆-2 for months in 1% HNO₃ / LDPE container. 1-10,000 ppm single element solutions as the Ti(F)₆-2 chemically stable for years in 2-5% HNO₃ / trace HF in an LDPE container.

Ti Containing Samples (Preparation and Solution) - Metal (Soluble in H₂O / HF caution - powder reacts violently): Oxide - low temperature history anatase or rutile (Dissolved by heating in 1:1:1 H₂O / HF / H₂SO₄); K₂SiO₇ - no KF if silica not present); Organic Matrices (Dry ash at 450°C in P10 and dissolve by heating with 1:1:1 H₂O / HF / H₂SO₄ or fuse ash with pyrosulfate if oxide is as plastic pigment and likely in brookite crystalline form).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	14 ppt	N/A	Order	Interferences (underlined indicates severe)
ICP-MS 48 amu					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 / 0.00028 µg/mL	1			Nb, Ta, Cr, U
ICP-OES 336.121 nm	0.0053 / 0.00034 µg/mL	1			W, Mo, Co

HAZARDOUS INFORMATION

HF Note: This standard should not be prepared or stored in glass.

9.0 HOMOGENEITY

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.
- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous.

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"

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY
Inorganic Ventures, 300 Technology Drive, Chesapeake, VA 24073, USA; Telephone: 800.868.6786; 540.565.3030; Fax: 540.565.3012; info@inorganicventures.com
- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

11.1 Certification Issue Date

June 17, 2022

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

11.2 Lot Expiration Date

- June 17, 2027

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date:

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminum 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

Thomas Kozlikowski
Manager, Quality Control

80978

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul Gaines

Certificate of Analysis

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R: 6/14/24

1.0 ACCREDITATION / REGISTRATION

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



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:

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000760	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 PtO 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



Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

R: 2/22/24
MS997

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: CLPP-CAL-3
Lot Number: T2-MEB727800
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 ± 7 µg/mL	Cadmium, Cd	500.0 ± 2.2 µg/mL
Lead, Pb	1 000 ± 4 µg/mL	Selenium, Se	1 000 ± 6 µg/mL
Thallium, Tl	1 000 ± 7 µg/mL		

Density: 1.042 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
As	ICP Assay	3103a	100818
As	Calculated		See Sec. 4.2
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Tl	ICP Assay	3158	151215

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale. <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

December 21, 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

- **December 21, 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



Certificate of Analysis

R: 08/22/24 M6058, M6059

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: CHEM-CLP-4
Lot Number: 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, $X_{\text{CRM/RM}}$, where two or more methods of characterization are used is the weighted mean of the results:

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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).

<https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

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



300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

Certificate of Analysis

M6074
M6075
M6076
M6077

P: 800-669-6799/540-585-3030

F: 540-585-3012

info@inorganicventures.com

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).



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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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





Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58025
101124
Manganese (Mn)

Lot #
Solvent: Nitric Acid

2% 80.0 (mL) Nitric Acid

R-71113128
MN6928

<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
	101124
Reviewed By:	<i>Pedro L. Renteria</i>
	Pedro L. Renteria
	101124

Expiration Date: 101127
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 4000.2 0.10 Flask Uncertainty

Compound

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

1. Manganese(II) nitrate hydrate (Mn) IN031 MNM02020A1 1000 99.999 0.10 20.8 19.2322 19.2344 1000.1 2.0 15710-66-4 5 mg/m3 or-rel >300mg/kg 3132

[1] Spectrum No.1 [34.243 sec]:57025.D# [Count] [Linear]

5.0E6													
2.5E6													
m/z->	10	20	30	40	50	60	70	80	90	100			
1.0E6													
5.0E7													
m/z->	110	120	130	140	150	160	170	180	190	200			
1.0E6													
5.0E7													
m/z->	210	220	230	240	250	260							



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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

Certificate of Analysis

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-71013124

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution
Catalog Number: 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:

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000310	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, amorphous (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





CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58126
011025
Iron (Fe)

R-1113125
M6140

Lot #
Solvent: 24012496 Nitric Acid

Expiration Date:

011028

2% 40.0 (mL)

Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

10000

NIST Test Number:

6U7B

5E-05 Balance Uncertainty

Weight shown below was diluted to (mL): 2000.07

0.100 Flask Uncertainty

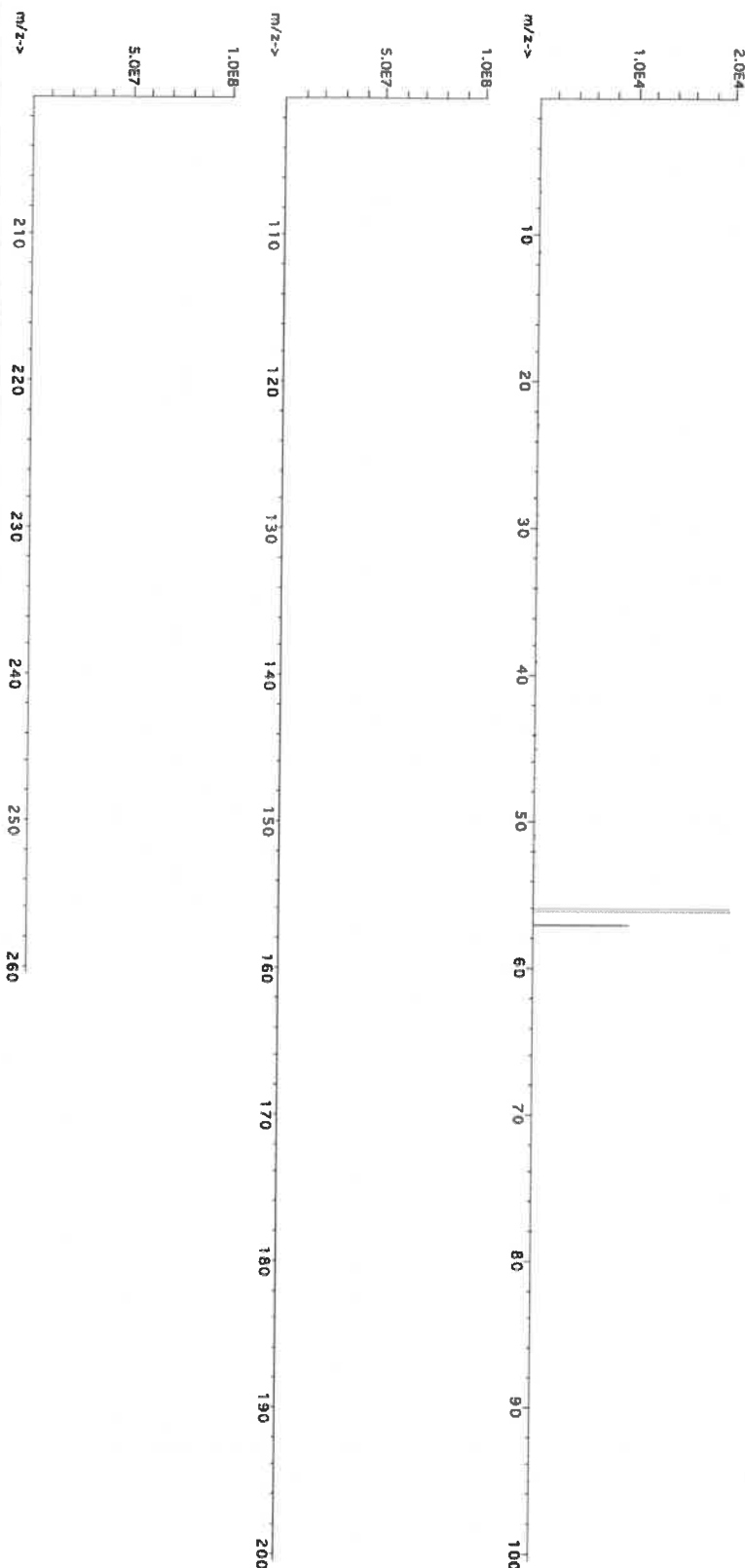
Formulated By:	Benson Chan	011025
Reviewed By:	Pedro L. Renteria	011025

Compound

Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Expanded	SDS Information	NIST
Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Weight (g)	Conc. (µg/mL)	± (µg/mL)	(Solvent Safety Info. On Attached pg.)	SFM
RM#										

1. Iron(III) nitrate nonahydrate (Fe) IN028 FED082023A1 10000 99.999 0.10 13.0 153.8534 ##### 10000.2 20.0 7782-61-8 1 mg/m³ or-rel 3250mg/kg 3126A

[1] Spectrum No.1 [30.763 sec]58126.D# [Count] [Linear]





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Ru	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	T	Hg	<0.2	P	<0.02	Sr	<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:

Har P. D.

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



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57119
103024
Potassium (K)

R-21113125

Solvent: 24002546 Nitric Acid
Lot #

<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	Pedro L. Renteria
	103024

Expiration Date:
Recommended Storage:
Nominal Concentration (µg/mL):

103027
Ambient (20 °C)
10000

M6141
M6142
M6143

2%
80.0
(mL)
Nitric Acid

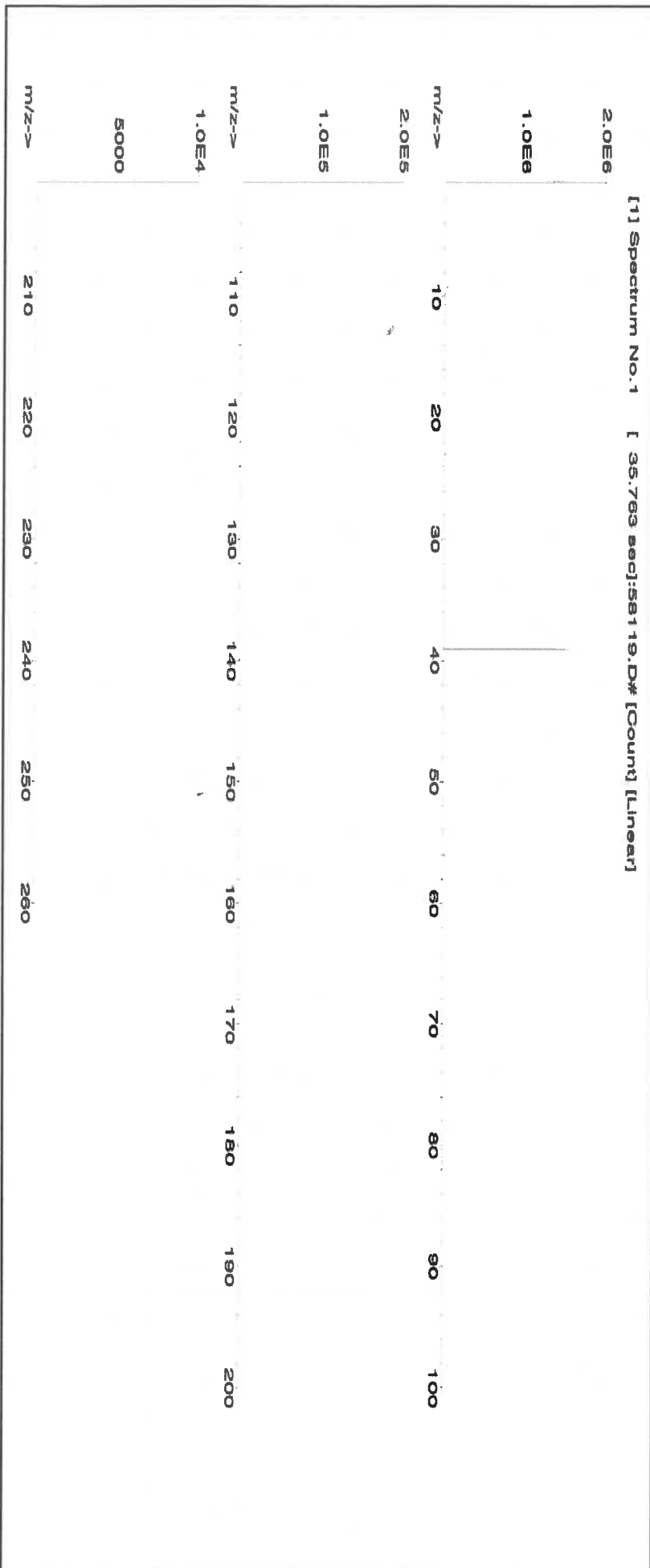
Weight shown below was diluted to (mL):

4000.1
0.15
Flask Uncertainty

Compound	Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Expanded	SDS Information	NIST
	Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Weight (g)	Conc. (µg/mL)	+/- (µg/mL)	(Solvent Safety Info. On Attached pg.)	SRM

1. Potassium nitrate (K) IN034 KD062022A1 10000 99.999 0.10 37.7 106.1040 ##### 10001.1 20.0 7757-79-1 5 mg/m3 orl-rat 3750 mg/kg 3141a

[1] Spectrum No. 1 [35.763 sec]:58119.D# [Count] [Linear]





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	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 certified (+/-) 0.5% of the stated value, unless otherwise stated.
- * All standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).



CERTIFIED WEIGHT REPORT:

Part Number: **58030** Lot # **24012496**
Lot Number: **121724** Nitric Acid
Description: **Zinc (Zn)**

Expiration Date: **121727** 2%
Recommended Storage: **Ambient (20 °C)** 40.0 (mL)

Nominal Concentration (µg/mL): **1000** Nitric Acid

NIST Test Number: **6UTB**

Weight shown below was diluted to (mL): **2000.1** 0.10 Balance Uncertainty
Flask Uncertainty

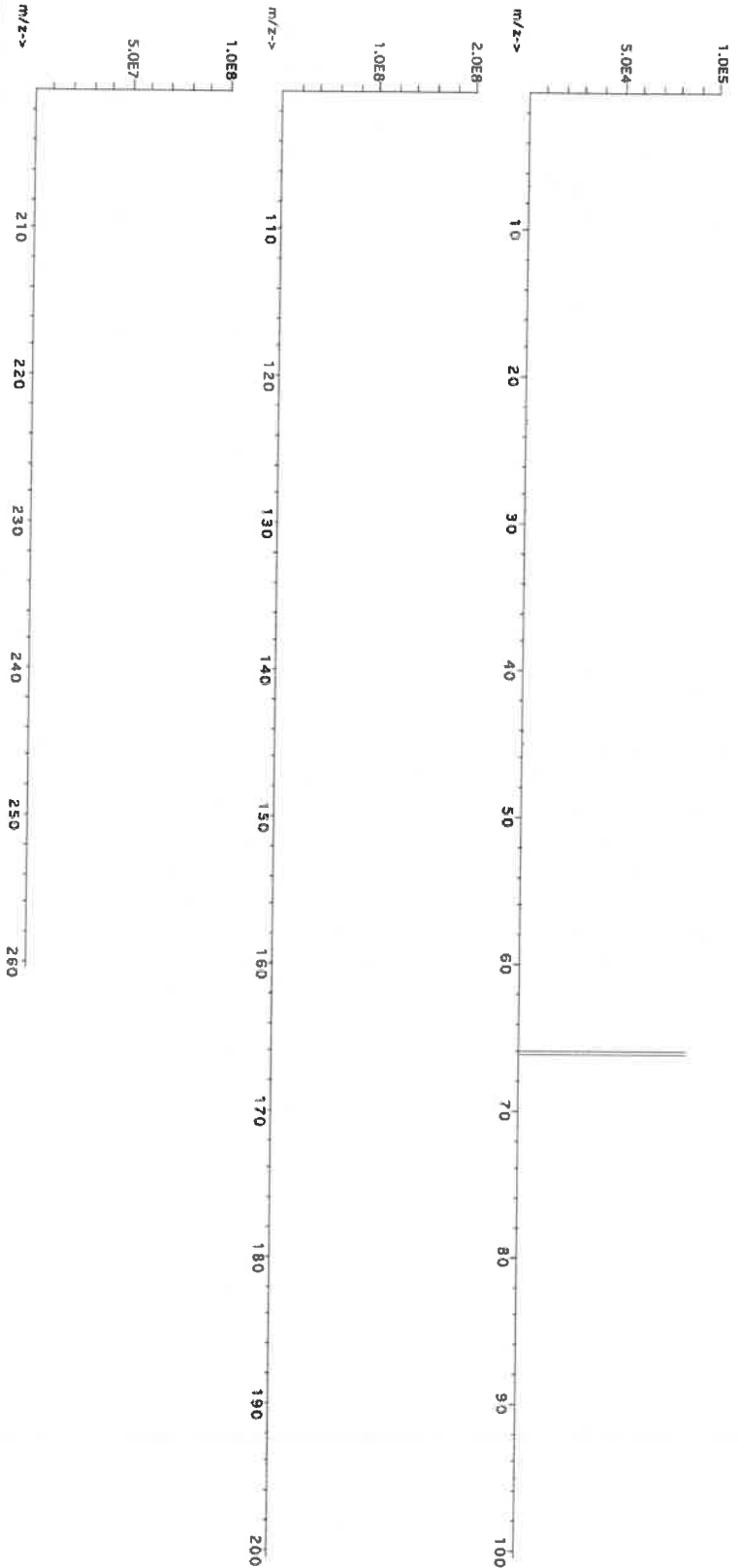
<i>Aleah O'Brady</i>	
Formulated By:	Aleah O'Brady
Reviewed By:	<i>Pedro L. Rentias</i>
	Pedro L. Rentias
	121724

Compound

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

1. Zinc nitrate hexahydrate (Zn) IN016 ZNE032021A1 1000 99.999 0.10 24.3 8.2308 8.2311 1000.0 2.0 10196-18-6 1 mg/m3 or-rat 1190mg/kg 3168

[1] Spectrum No.1 [31.103 sec;58130.D# [Count] [Lines]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

avantor™



M6151

R → 11/15/25

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

 **avantorsm**



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**™

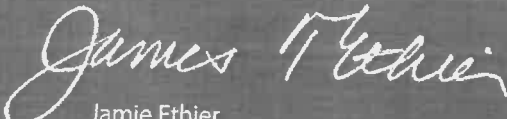


Material No.: 9530-33
Batch No.: 22G2862015

Test	Specification	Result
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For Laboratory, Research, or Manufacturing Use
Product Information (not specifications):
Appearance (clear, fuming liquid)
Meets ACS Specifications
Storage Condition: Store below 25 °C.

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC


Jamie Ethier
Vice President Global Quality



M6156

Certified Reference Material CRM

R → 6/12/24



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

CERTIFIED WEIGHT REPORT:

Part Number:

Lot Number:

Description:

Lot #

Solvent:

57042
032123
Molybdenum (Mo)

0.5%

15.0 (mL)
Ammonium hydroxide

Expiration Date:

Recommended Storage:

Nominal Concentration (µg/mL):

NIST Test Number:

Volume shown below was diluted to (mL):

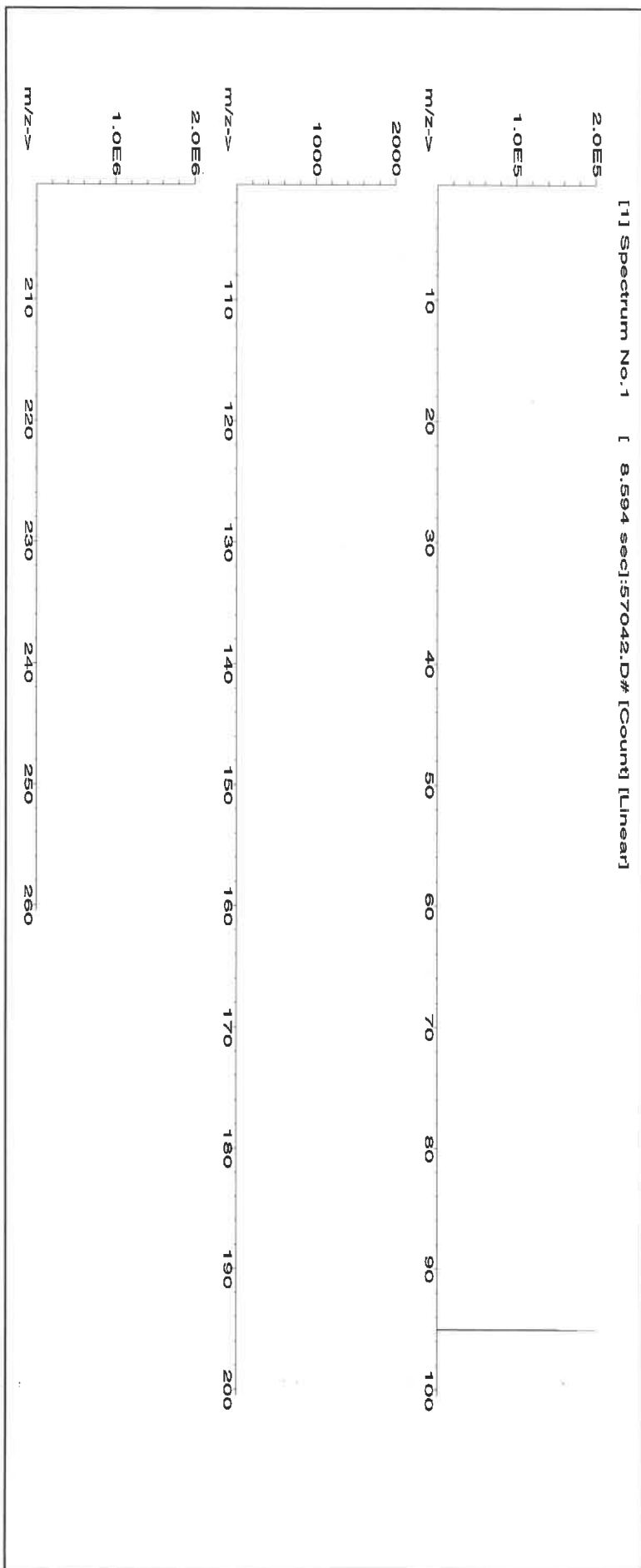
0.058 Balance Uncertainty
Flask Uncertainty

Compound

Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. 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 or-hal 333 mg/kg 3134

[1] Spectrum No.1 [8.594 sec]:57042.D# [Count] [Linear]



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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Tc	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Ti	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	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	Tl	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

Nitric Acid 69%
CMOS

avantor™



R-0210212025

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™



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	16 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	10 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	3 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

 **avantorsTM**



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
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For Microelectronic Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC



Jamie Croak
Director Quality Operations, Bioscience Division

Nitric Acid 69%
CMOS



m-6162

Material No.: 9606-03
Batch No.: 24H0162012
Manufactured Date: 2024-06-28
Retest Date: 2029-06-27
Revision No.: 0

R. Date :- 04/27/2025

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	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	0.1 ppb
Trace Impurities – Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	0.3 ppb
Trace Impurities – Chromium (Cr)	≤ 30.0 ppb	0.1 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	< 1 ppb
Trace Impurities – Gold (Au)	≤ 20 ppb	< 1 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities – Lead (Pb)	≤ 20.0 ppb	< 1.0 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	< 1.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

avantor™



Material No.: 9606-03
Batch No.: 24H0162012

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	< 1 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	1 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 1.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 1.0 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	13 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	5 par/ml

>>> Continued on page 3 >>>



Test	Specification	Result

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Joak

Jamie Croak
Director Quality Operations, Bioscience Production

300 Technology Drive
 Christiansburg, VA 24073 USA
 inorganicventures.com

P: 800-669-6799/540-585-3030
 F: 540-585-3012
 info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution		
Catalog Number:	QCP-CICV-1		
Lot Number:	V2-MEB744107		
Matrix:	7% (v/v) HNO ₃		
Value / Analyte(s):	2 500 µg/mL ea:		
	Calcium,	Potassium,	
	Magnesium,	Sodium,	
	1 000 µg/mL ea:		
	Aluminum,	Barium,	
	500 µg/mL ea:		
	Iron,		
	250 µg/mL ea:		
	Nickel,	Vanadium,	
	Zinc,	Cobalt,	
	Manganese,		
	125 µg/mL ea:		
	Silver,	Copper,	
	100 µg/mL ea:		
	Chromium,		
	25 µg/mL ea:		
	Beryllium		

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	1 000 ± 4 µg/mL	Barium, Ba	1 000 ± 6 µg/mL
Beryllium, Be	24.98 ± 0.12 µg/mL	Calcium, Ca	2 500 ± 8 µg/mL
Chromium, Cr	99.9 ± 0.6 µg/mL	Cobalt, Co	250.2 ± 1.2 µg/mL
Copper, Cu	125.0 ± 0.5 µg/mL	Iron, Fe	500.0 ± 2.2 µg/mL
Magnesium, Mg	2 500 ± 11 µg/mL	Manganese, Mn	249.9 ± 1.1 µg/mL
Nickel, Ni	250.0 ± 1.2 µg/mL	Potassium, K	2 500 ± 11 µg/mL
Silver, Ag	125.0 ± 0.6 µg/mL	Sodium, Na	2 500 ± 11 µg/mL
Vanadium, V	250.0 ± 1.1 µg/mL	Zinc, Zn	249.9 ± 1.1 µg/mL

Density: 1.081 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Be	Calculated		See Sec. 4.2
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	120618
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	200413
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
V	ICP Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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), <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

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

May 22, 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

- **May 22, 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:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: QCP-CICV-2
Lot Number: U2-MEB733713
Matrix: 3% (w/v) Tartaric acid
1% (v/v) HNO₃
Value / Analyte(s): 500 µg/mL ea:
Antimony

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	500.0 ± 2.8 µg/mL		

Density: 1.017 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Sb	ICP Assay	3102a	140911

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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). <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

June 01, 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

- June 01, 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



300 Technology Drive
Christiansburg, VA 24073 USA
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1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution		
Catalog Number:	QCP-CICV-3		
Lot Number:	V2-MEB749572		
Matrix:	7% (v/v) HNO3		
Value / Analyte(s):	500 µg/mL ea:		
	Arsenic,		Lead,
	Selenium,		Thallium,
	250 µg/mL ea:		
	Cadmium		

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Arsenic, As	500.0 ± 3.1 µg/mL	Cadmium, Cd	250.1 ± 1.1 µg/mL
Lead, Pb	500.0 ± 2.3 µg/mL	Selenium, Se	500.0 ± 3.2 µg/mL
Thallium, Tl	500.0 ± 3.0 µg/mL		

Density: 1.040 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
As	ICP Assay	3103a	100818
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Tl	ICP Assay	3158	151215

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (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), <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 02, 2025

- 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 02, 2030**

- 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:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



Hydrogen Peroxide, 30%

CMOS

(Stabilized)

M-6170

avantor™



R.Date . 8-05/20/2025

Material No.: 2190-03

Batch No.: 24D1961001

Test	Specification	Result
Trace Impurities – Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Molybdenum (Mo)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Nickel (Ni)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Niobium (Nb)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 600.0 ppb	176.7 ppb
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	< 10.0 ppb
Trace Impurities – Silver (Ag)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 100.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 50.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	190.0 – 500.0 ppb	272.3 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)	≤ 50 ppb	< 1 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.2 µm and greater	≤ 1175 par/ml	202 par/ml
Particle Count – 0.5 µm and greater	≤ 100 par/ml	33 par/ml

>>> Continued on page 3 >>>

Hydrogen Peroxide, 30%
CMOS
(Stabilized)

avantor™



Material No.: 2190-03
Batch No.: 24D1961001

Test	Specification	Result
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For Microelectronic Use

Country of Origin: USA
Packaging Site: Paris Mfg Ctr & DC

Michelle Bales

Michelle Bales
Sr. Manager, Quality Assurance

Hydrogen Peroxide, 30%
CMOS
(Stabilized)

avantor™



Material No.: 2190-03
Batch No.: 24D1961001
Manufactured Date: 2024-04-17
Expiration Date: 2025-10-16
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (H ₂ O ₂)	30.0 – 32.0 %	31.6 %
Color (APHA)	≤ 10	< 5
Free Acid (μeq/g)	≤ 0.2	0.1
Residue after Evaporation	≤ 10 ppm	2 ppm
Ammonium (NH ₄)	≤ 3 ppm	< 3 ppm
Chloride (Cl)	≤ 0.2 ppm	< 0.2 ppm
Nitrate (NO ₃)	≤ 2 ppm	< 2 ppm
Phosphate (PO ₄)	≤ 1 ppm	1 ppm
Sulfate (SO ₄)	≤ 3 ppm	< 3 ppm
Trace Impurities – Aluminum (Al)	≤ 70.0 ppb	< 5.0 ppb
Arsenic and Antimony (as As)	≤ 10.0 ppb	< 10.0 ppb
Trace Impurities – Barium (Ba)	≤ 20.0 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)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Chromium (Cr)	≤ 20.0 ppb	1.5 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)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Germanium (Ge)	≤ 10.0 ppb	< 10.0 ppb
Trace Impurities – Gold (Au)	≤ 10.0 ppb	< 5.0 ppb
Heavy Metals (as Pb)	≤ 500.0 ppb	< 250.0 ppb
Trace Impurities – Iron (Fe)	≤ 50.0 ppb	4.6 ppb
Trace Impurities – Lead (Pb)	≤ 10.0 ppb	< 10.0 ppb
Trace Impurities – Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Magnesium (Mg)	≤ 10.0 ppb	< 1.0 ppb

>>> Continued on page 2 >>>



Certified Reference Material CRM



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

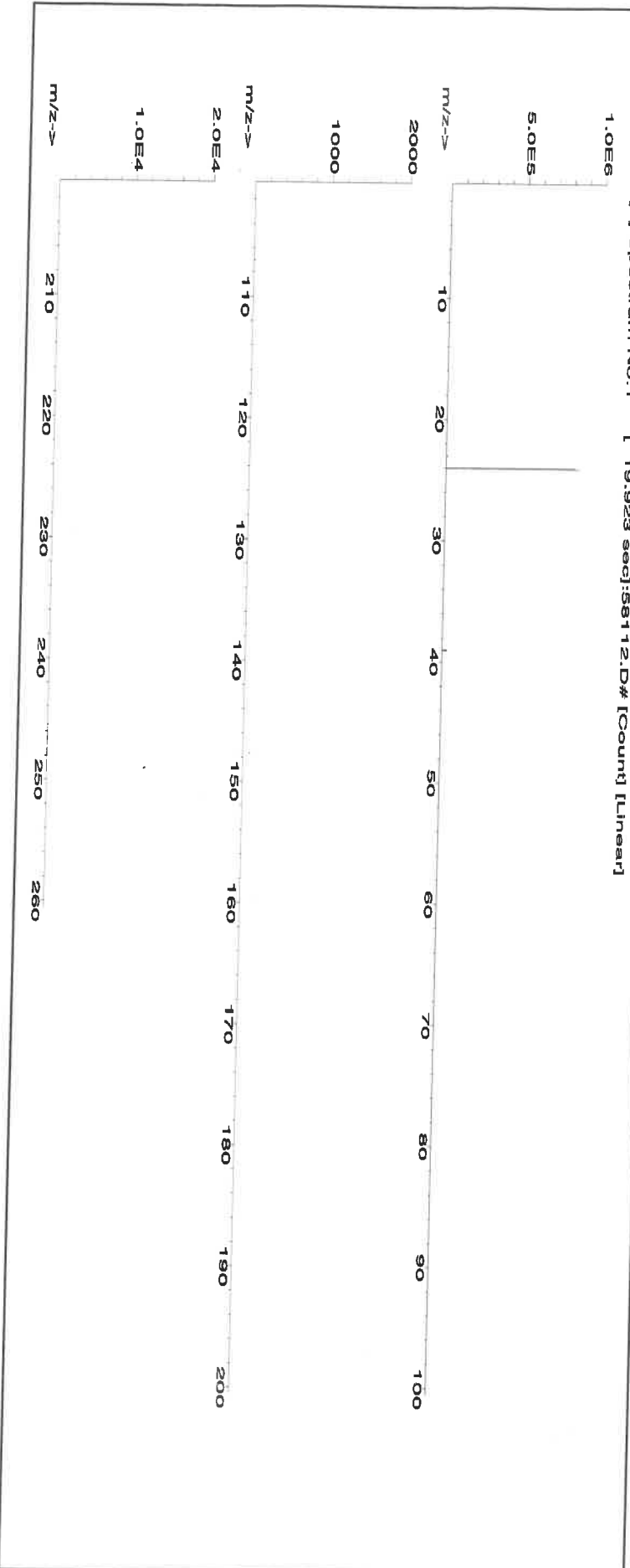
CERTIFIED WEIGHT REPORT:

Part Number: 58112 **Lot #** M 6171
Lot Number: 011525 **Solvent:** 24012496 Nitric Acid
Description: Magnesium (Mg)
Expiration Date: 011528 2% 40.0 Nitric Acid
Recommended Storage: Ambient (20 °C) (mL)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB 5E-05 Balance Uncertainty
Weight shown below was diluted to (mL): 2000.07 0.100 Flask Uncertainty

Formulated By:	Benson Chan	011525
Reviewed By:	Pedro L. Rentas	011525

Compound

1. Magnesium nitrate hexahydrate (Mg) IN030 MGD05023A1 10000 99.999 0.10 8.51 234.9183 234.9195 10000.1 20.0 13446-18-9 NA off-ret 5440 mg/kg 3131a





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

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

Trace metals verification by ICP-MS (µg/mL)																			
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Bu	<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

Physical Characterization:

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

Certified by:

Har P. [Signature]

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

R → 1/25/25 M 6/7/2 Certificate of Analysis

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution
Catalog Number: CGNA10
Lot Number: V2-NA740547
Matrix: 2% (v/v) HNO₃
Value / Analyte(s): 10 000 µg/mL ea:
Sodium
Starting Material: Sodium Carbonate
Starting Material Lot#: 2453 and 2606
Starting Material Purity: 99.9976%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10018 ± 30 µg/mL
Density: 1.033 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	10026 ± 18 µg/mL Gravimetric NIST SRM Lot Number: See Sec. 4.2
Assay Method #2	9986 ± 66 µg/mL ICP Assay NIST SRM 3152a Lot Number: 200413
Assay Method #3	10002 ± 31 µg/mL Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty errors 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	<	0.000860	M	Eu	<	0.000860	s	Na	<		O	Se	<	0.034000	O	Zn	<	0.000387
O	Al	<	0.003121	O	Fe	<	0.001622	M	Nb	<	0.000860	O	Si	<	0.044943	M	Zr	<	0.001800
M	As	<	0.001800	M	Ga	<	0.000860	M	Nd	<	0.000860	M	Sm	<	0.000860				
M	Au	<	0.005700	M	Gd	<	0.000860	O	Ni	<	0.000980	M	Sn	<	0.000860				
O	B	<	0.025000	M	Ge	<	0.003500	M	Os	<	0.029000	M	Sr	<	0.000436				
M	Ba	<	0.004494	M	Hf	<	0.000860	O	P	<	0.005742	M	Ta	<	0.000086				
O	Be	<	0.000160	M	Hg	<	0.002900	M	Pb	<	0.002600	M	Tb	<	0.000860				
M	Bi	<	0.000860	M	Ho	<	0.000860	M	Pd	<	0.004300	M	Te	<	0.004300				
O	Ca	<	0.112358	M	In	<	0.000860	M	Pr	<	0.000860	M	Th	<	0.003500				
O	Cd	<	0.000730	M	Ir	<	0.000940	M	Pt	<	0.000860	O	Ti	<	0.000399				
M	Ce	<	0.000860	O	K	<	0.349560	M	Rb	<	0.000436	M	Tl	<	0.000860				
M	Co	<	0.000860	M	La	<	0.000860	M	Re	<	0.000860	M	Tm	<	0.000860				
O	Cr	<	0.002000	O	Li	<	0.000224	M	Rh	<	0.000860	M	U	<	0.000860				
M	Cs	<	0.000287	M	Lu	<	0.000860	M	Ru	<	0.000940	O	V	<	0.001500				
O	Cu	<	0.004100	M	Mg	<	0.097377	O	S	<	0.018726	M	W	<	0.007700				
M	Dy	<	0.000860	M	Mn	<	0.007700	M	Sb	<	0.000860	M	Y	<	0.000860				
M	Er	<	0.000860	O	Mo	<	0.002800	O	Sc	<	0.000610	M	Yb	<	0.000860				

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). <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 - 22.99 +1 (6) Na+(aq) largely ionic in nature

Chemical Compatibility -Soluble in HCl, HNO₃, H₂SO₄ and HF aqueous matrices. Stable with all metals and inorganic anions.

Stability - 2-100 ppb levels stable for months in 1% HNO₃ / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO₃ / LDPE container.

Na Containing Samples (Preparation and Solution) - Metal (Dissolves very rapidly in water); Ores (Lithium carbonate fusion in graphite crucible followed by HCl dissolution - blank levels of Na in lithium carbonate critical); Organic Matrices (Sulfuric / peroxide digestion or nitric/sulfuric/perchloric acid decomposition).

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 23 amu	310 ppt	n/a	46Ti+2, 46Ca+2
ICP-OES 330.237 nm	2.0 / 0.09 µg/mL	1	Pd, Zn
ICP-OES 588.995 nm	0.03 / 0.006 µg/mL	1	2nd order radiation from R.E.s on some optical designs
ICP-OES 589.595 nm	0.07 / 0.00009 µg/mL	1	2nd order radiation from R.E.s on some optical designs

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 23, 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 23, 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



Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
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P: 800-669-6799/540-585-3030

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info@inorganicventures.com

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R → S1/S124

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution	
Catalog Number:	CLPP-CAL-1	
Lot Number:	V2-MEB742428	
Matrix:	5% (v/v) HNO ₃	
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	50.03 ± 0.30 µg/mL	Calcium, Ca	5 000 ± 16 µg/mL
Chromium, Cr	200.0 ± 1.1 µg/mL	Cobalt, Co	500.0 ± 2.3 µg/mL
Copper, Cu	250.0 ± 1.1 µg/mL	Iron, Fe	1 000 ± 4 µg/mL
Magnesium, Mg	5 000 ± 22 µg/mL	Manganese, Mn	499.9 ± 2.2 µg/mL
Nickel, Ni	500.1 ± 2.3 µg/mL	Potassium, K	5 000 ± 22 µg/mL
Silver, Ag	250.0 ± 1.1 µg/mL	Sodium, Na	5 000 ± 22 µg/mL
Vanadium, V	500.0 ± 2.2 µg/mL	Zinc, Zn	500.0 ± 2.2 µg/mL

Density: 1.117 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	120618
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	200413
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
V	ICP Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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). <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

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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www.inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 22, 2024

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

11.2 Lot Expiration Date

- **March 22, 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:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





CERTIFIED WEIGHT REPORT:

Part Number: **57038** Lot # **24002546** Nitric Acid
Lot Number: **092724**
Description: **Strontium (Sr)**

Expiration Date: **092727** 2% 40.0 Nitric Acid (mL)

Recommended Storage: **Ambient (20 °C)**

Nominal Concentration (µg/mL): **1000**

NIST Test Number: **8UTB**

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

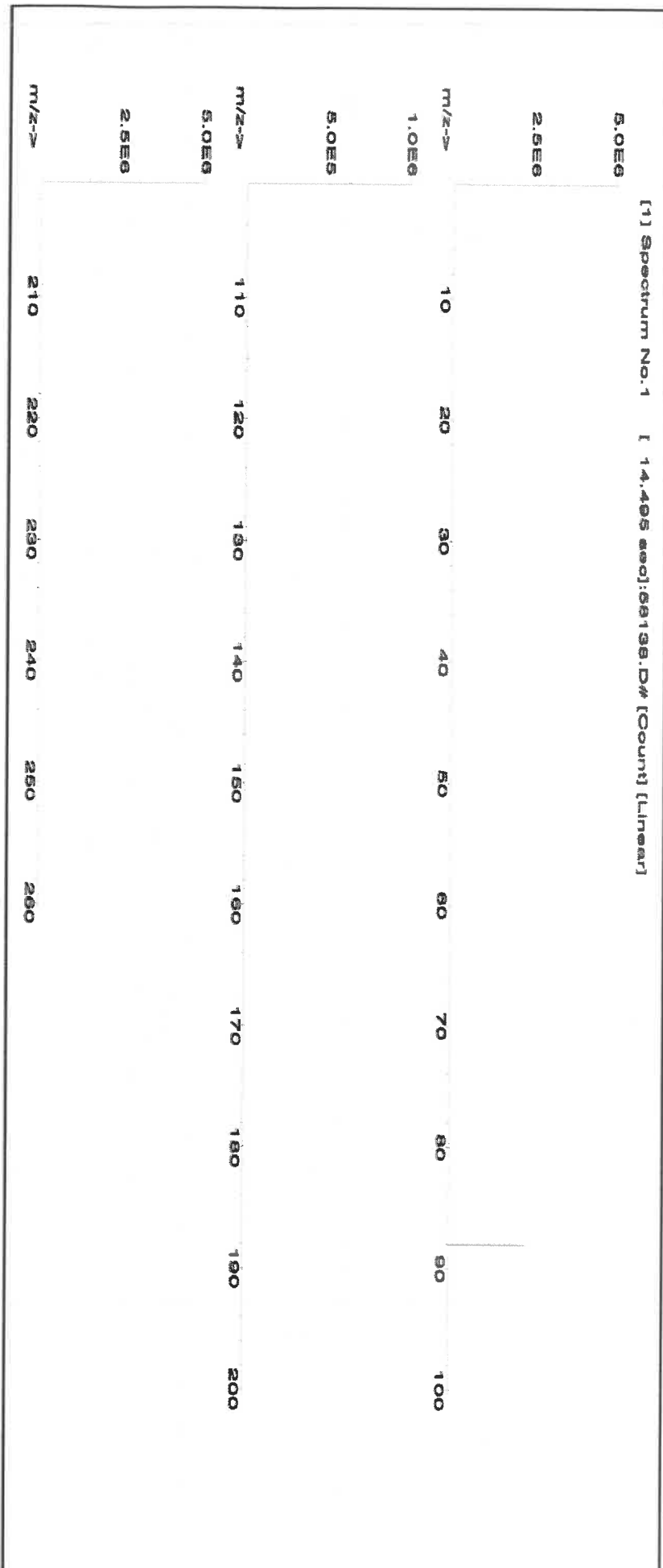
<i>[Signature]</i>	
Formulated By:	Benson Chan
	092724
<i>[Signature]</i>	
Reviewed By:	Pedro L. Rentas
	092724

SDS Information

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

1. Strontium nitrate (Sr) IN017 SR2022018A1 1000 99.997 0.10 41.2 4.85470 4.85481 1000.0 2.0 10042-76-9 NA or-rel >2000mg/kg 3153a

[1] Spectrum No.1 [14.465 sec]:68138.D# [Count] [Linear]





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<0.02	Se	<0.2	Th	<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	Ta	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	T	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

Har. P. D.

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



Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57042
080525
Molybdenum (Mo)

Solvent

Ammonium hydroxide
ASTM Type 1 Water

Expiration Date:

080528

Recommended Storage:
Ambient (15 - 30 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

1999.41

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

R → 8/6/25
M6177

0.5%

10.0 (mL)

Ammonium hydroxide

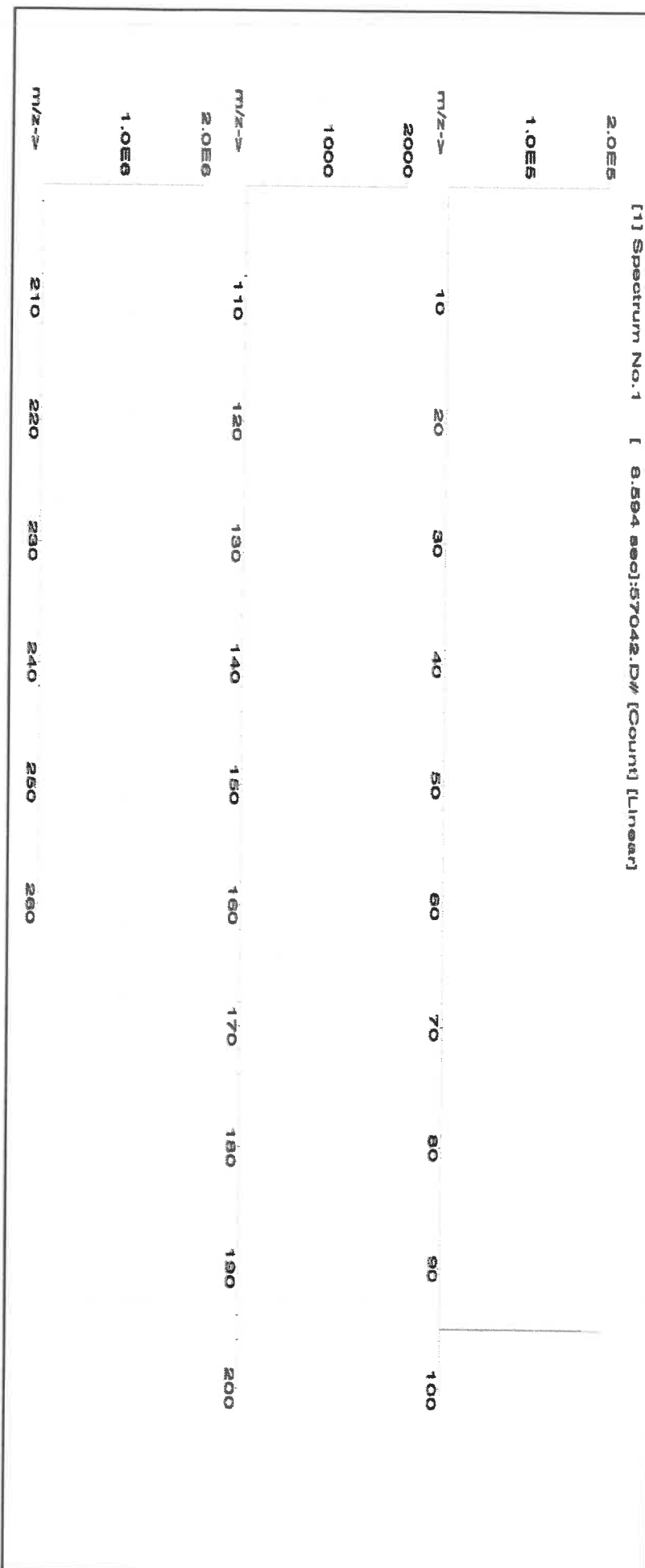
Formulated By:	Benson Chan	080525
Reviewed By:	Pedro L. Renteria	080525

SDS Information

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
----------	-------------	------------	-----------------	-------------------	--------------------------	-----------------------	-----------------------	---------------------	----------------------------------	------	----------------	------	----------

1. Ammonium molybdate (Mo) 58142 112322 0.1000 200.0 0.084 1000 10001.4 1000.5 2.2 13106-76-8 5 mg(Mo)/mL 0.1-0.3 333 mg/kg 3134

[1] Spectrum No. 1 [8.594 sec]:57042.D# [Count] [Linear]





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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware, and the highest purity raw materials are used in the preparation of all standards.
- * All standard containers are meticulously cleaned prior to use.
- * Standards are prepared gravimetrically using balances that are calibrated by an ISO17025 certified organization with weights traceable through NIST to the SI kilogram (see above).
- * Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- * All standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).
- Rev 1.0, 2/25/2025

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

M6179
R → 612/24

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution
Catalog Number: CGY10
Lot Number: V2-Y740548
Matrix: 2% (v/v) HNO₃
Value / Analyte(s): 10 000 µg/mL ea:
Yttrium
Starting Material: Yttrium Oxide
Starting Material Lot#: 2661 and 06230520YL
Starting Material Purity: 99.9984%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10000 ± 30 µg/mL
Density: 1.032 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	10011 ± 25 µg/mL EDTA NIST SRM 928 Lot Number: 928
Assay Method #2	9997 ± 50 µg/mL ICP Assay NIST SRM 3167a Lot Number: 190730
Assay Method #3	9984 ± 31 µg/mL Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.004600	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). <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.
- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.
- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

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

Atomic Weight; Valence; Coordination Number; Chemical Form In Solution - 88.91 +3 6 Y(OH)(H₂O)_{x+2}

Chemical Compatibility -Soluble in HCl, H₂SO₄ and HNO₃. Avoid HF, H₃PO₄ and neutral to basic media. Stable with most metals and inorganic anions forming an insoluble carbonate, oxide, oxalate, and fluoride. Avoid mixing with elements / solutions containing moderate amounts of fluoride.

Stability - 2-100 ppb levels stable for months in 1% HNO₃ / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO₃ / LDPE container.

Y Containing Samples (Preparation and Solution) - Metal (Soluble in acids); Oxide (Dissolve by heating in H₂O / HNO₃); Ores (Carbonate fusion in PtO followed by HCl dissolution); Organic Matrices (Dry ash and dissolve in 1:1 H₂O / HCl or HNO₃).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 89 amu	0.8 ppt	N/A	73Ge16O, 178Hf+2
ICP-OES 360.073 nm	0.005 / 0.000036 µg/mL	1	Ce, Th
ICP-OES 371.030 nm	0.004 / 0.00007 µg/mL	1	Ce
ICP-OES 377.433 nm	0.005 / 0.0009 µg/mL	1	Ta, Th

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 20, 2024

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

11.2 Lot Expiration Date

- February 20, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Muzzammil Khan
Stock Laboratory Supervisor



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





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.



M6182

(A) **SAMPLE DESCRIPTION**

Enclosed is a set of one (1) or more bottles of Aqueous Reference Material, each composed of metals at various concentrations and prepared with nitrate salts and oxy-acids of the respective elements in a 5% nitric acid matrix. **For the reference material source in reporting ICSA and ICSAB mixture use "USEPA". For the reference material lot number for the ICSA use "ICSA-1211" and for the ICSAB mixture use "ICSA-1211+ICSB-0710".**

CAUTION: The bottle(s) should be protected from light during storage to ensure the stability of silver which is contained in the ICSB solution. The bottle(s) should be stored at room temperature. **Do not allow the solution(s) to freeze.**

(B) **BREAKAGE OR MISSING ITEMS**

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) **ANALYSIS OF SAMPLES**

The interference check sample set is to be used to verify inter-element and background correction factors of inductively-coupled plasma (ICP) spectrometers. This reference material set consists of two (2) concentrated solutions. The ICSA solution contains the four (4) interferent elements: Al, Ca, Fe, and Mg. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be,





Instructions for QATS Reference Material: ICP-AES ICS

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSAB solution by ICP-AES.

(D) "CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.



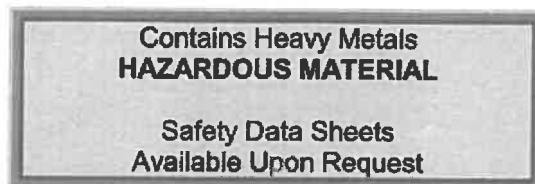
Instructions for QATS Reference Material: ICP-AES ICS

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.



M6184

(A) **SAMPLE DESCRIPTION**

Enclosed is a set of one (1) or more bottles of Aqueous Reference Material, each composed of metals at various concentrations and prepared with nitrate salts and oxy-acids of the respective elements in a 5% nitric acid matrix. **For the reference material source in reporting ICSA and ICSAB mixture use "USEPA". For the reference material lot number for the ICSA use "ICSA-1211" and for the ICSAB mixture use "ICSA-1211+ICSB-0710".**

CAUTION: The bottle(s) should be protected from light during storage to ensure the stability of silver which is contained in the ICSB solution. The bottle(s) should be stored at room temperature. **Do not allow the solution(s) to freeze.**

(B) **BREAKAGE OR MISSING ITEMS**

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) **ANALYSIS OF SAMPLES**

The interference check sample set is to be used to verify inter-element and background correction factors of inductively-coupled plasma (ICP) spectrometers. This reference material set consists of two (2) concentrated solutions. The ICSA solution contains the four (4) interferent elements: Al, Ca, Fe, and Mg. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be,





Instructions for QATS Reference Material: ICP-AES ICS

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSAB solution by ICP-AES.

(D) "CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.

Nitric Acid 69%
CMOS



M6187

R.D :- 08/08/25

Material No.: 9606-03
Batch No.: 24H0162012
Manufactured Date: 2024-06-28
Retest Date: 2029-06-27
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	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	0.1 ppb
Trace Impurities – Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	0.3 ppb
Trace Impurities – Chromium (Cr)	≤ 30.0 ppb	0.1 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	< 1 ppb
Trace Impurities – Gold (Au)	≤ 20 ppb	< 1 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities – Lead (Pb)	≤ 20.0 ppb	< 1.0 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	< 1.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS



Material No.: 9606-03
Batch No.: 24H0162012

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	< 1 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	1 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 1.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 1.0 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	13 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	5 par/ml

>>> Continued on page 3 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis



M6200
R.O → 08/25/25

Material No.: 9530-33
Batch No.: 24D1562005
Manufactured Date: 2024-03-18
Retest Date: 2029-03-17
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
ACS – Assay (as HCl) (by acid-base titrn)	36.5 – 38.0 %	37.6 %
ACS – Color (APHA)	≤ 10	5
ACS – Residue after Ignition	≤ 3 ppm	< 1 ppm
ACS – Specific Gravity at 60°/60°F	1.185 – 1.192	1.192
ACS – Bromide (Br)	≤ 0.005 %	< 0.005 %
ACS – Extractable Organic Substances	≤ 5 ppm	< 1 ppm
ACS – Free Chlorine (as Cl ₂)	≤ 0.5 ppm	< 0.5 ppm
Phosphate (PO ₄)	≤ 0.05 ppm	0.03 ppm
Sulfate (SO ₄)	≤ 0.5 ppm	< 0.3 ppm
Sulfite (SO ₃)	≤ 0.8 ppm	0.3 ppm
Ammonium (NH ₄)	≤ 3 ppm	< 1 ppm
Trace Impurities – Arsenic (As)	≤ 0.010 ppm	< 0.003 ppm
Trace Impurities – Aluminum (Al)	≤ 10.0 ppb	< 5.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 3.0 ppb
Trace Impurities – Barium (Ba)	≤ 1.0 ppb	< 1.0 ppb
Trace Impurities – Beryllium (Be)	≤ 1.0 ppb	< 1.0 ppb
Trace Impurities – Bismuth (Bi)	≤ 10.0 ppb	< 10.0 ppb
Trace Impurities – Boron (B)	≤ 20.0 ppb	2.2 ppb
Trace Impurities – Cadmium (Cd)	≤ 1.0 ppb	< 1.0 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	31.0 ppb
Trace Impurities – Chromium (Cr)	≤ 1.0 ppb	0.5 ppb
Trace Impurities – Cobalt (Co)	≤ 1.0 ppb	0.2 ppb
Trace Impurities – Copper (Cu)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Gallium (Ga)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Germanium (Ge)	≤ 3.0 ppb	< 2.0 ppb
Trace Impurities – Gold (Au)	≤ 4.0 ppb	< 0.2 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 15 ppb	3 ppb

>>> Continued on page 2 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis



Material No.: 9530-33
Batch No.: 24D1562005

Test	Specification	Result
Trace Impurities – Lead (Pb)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Lithium (Li)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Magnesium (Mg)	≤ 10.0 ppb	2.2 ppb
Trace Impurities – Manganese (Mn)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Mercury (Hg)	≤ 0.5 ppb	< 0.1 ppb
Trace Impurities – Molybdenum (Mo)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Nickel (Ni)	≤ 4.0 ppb	0.2 ppb
Trace Impurities – Niobium (Nb)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Potassium (K)	≤ 9.0 ppb	< 1.0 ppb
Trace Impurities – Selenium (Se), For Information Only		< 1.0 ppb
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	< 10.0 ppb
Trace Impurities – Silver (Ag)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Sodium (Na)	≤ 100.0 ppb	2.0 ppb
Trace Impurities – Strontium (Sr)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Tantalum (Ta)	≤ 1.0 ppb	< 0.9 ppb
Trace Impurities – Thallium (Tl)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Tin (Sn)	≤ 5.0 ppb	< 0.4 ppb
Trace Impurities – Titanium (Ti)	≤ 1.0 ppb	0.2 ppb
Trace Impurities – Vanadium (V)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Zinc (Zn)	≤ 5.0 ppb	< 0.2 ppb
Trace Impurities – Zirconium (Zr)	≤ 1.0 ppb	< 0.1 ppb

>>> Continued on page 3 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis



Material No.: 9530-33
Batch No.: 24D1562005

Test	Specification	Result
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For Laboratory, Research, or Manufacturing Use
Product Information (not specifications):
Appearance (clear, fuming liquid)
Meets ACS Specifications
Storage Condition: Store below 25 °C.

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Jamie Croak
Director Quality Operations, Bioscience Production

300 Technology Drive
Christiansburg, VA 24073 USA
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1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution

Catalog Number: WW-LFS-2

Lot Number: V2-MEB743480

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

R-7/20/28

M6201

M6202

M6203

M6204

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	80.1 ± 0.5 µg/mL	Molybdenum, Mo	40.05 ± 0.22 µg/mL
Silica, SiO ₂	200.3 ± 1.4 µg/mL	Tin, Sn	70.1 ± 0.4 µg/mL
Titanium, Ti	20.03 ± 0.12 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
Sb	ICP Assay	3102a	140911
SiO ₂	Calculated		See Sec. 4.2
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	traceable to 3162a	T2-T1725816

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

May 07, 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

- May 07, 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:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Thomas Kozikowski
Stock VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



300 Technology Drive
Christiansburg, VA 24073 USA
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1.0 ACCREDITATION / REGISTRATION

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2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: WW-LFS-1
Lot Number: W2-MEB752149
Matrix: 5% (v/v) HNO₃

R → 7/20/28

M6209
M6210
M6211
M6212

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	200.2 ± 0.7 µg/mL	Arsenic, As	80.1 ± 0.5 µg/mL
Barium, Ba	20.02 ± 0.12 µg/mL	Beryllium, Be	20.02 ± 0.11 µg/mL
Boron, B	30.02 ± 0.15 µg/mL	Cadmium, Cd	20.04 ± 0.09 µg/mL
Calcium, Ca	100.1 ± 0.3 µg/mL	Cerium, Ce	200.2 ± 1.0 µg/mL
Chromium, Cr	40.02 ± 0.26 µg/mL	Cobalt, Co	20.03 ± 0.09 µg/mL
Copper, Cu	30.03 ± 0.13 µg/mL	Iron, Fe	300.3 ± 1.3 µg/mL
Lead, Pb	100.1 ± 0.5 µg/mL	Lithium, Li	20.03 ± 0.09 µg/mL
Magnesium, Mg	200.2 ± 0.9 µg/mL	Manganese, Mn	19.99 ± 0.09 µg/mL
Mercury, Hg	70.0 ± 0.3 µg/mL	Nickel, Ni	50.05 ± 0.22 µg/mL
Phosphorus, P	600.5 ± 2.9 µg/mL	Potassium, K	1 001 ± 4 µg/mL
Selenium, Se	200.2 ± 1.1 µg/mL	Silver, Ag	7.52 ± 0.03 µg/mL
Sodium, Na	300.3 ± 1.3 µg/mL	Strontium, Sr	20.02 ± 0.10 µg/mL
Thallium, Tl	200.2 ± 1.0 µg/mL	Vanadium, V	30.02 ± 0.13 µg/mL
Zinc, Zn	20.05 ± 0.09 µg/mL		

Density: 1.037 g/mL (measured at 20 ± 5 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
As	ICP Assay	3103a	100818
B	ICP Assay	3107	190605
B	Calculated		See Sec. 4.2
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	160830
Ce	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	120618
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	14Q110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	200413
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	ICP Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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). <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° - 25° C to minimize the effects of transpiration. Use at 20° ± 5° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

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

Note: This solution contains Silver (Ag), please refer to our Sample Preparation Guide for more information (<https://www.inorganicventures.com/sample-preparation-guide/samples-containing-silver>)

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

April 08, 2025

- 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

- April 08, 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:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





Certified Reference Material CRM

M6027



CERTIFIED WEIGHT REPORT:

Part Number: **57028**
Lot Number: **062024**
Description: **Nickel (NI)**

Lot # **24002546**
Solvent: **Nitric Acid**

Expiration Date:

062027

Recommended Storage: **Ambient (20 °C)**

Nominal Concentration (µg/mL): **1000**

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

2000.07

0.100

Balance Uncertainty
Flask Uncertainty

2.0%

40.0 (mL)

Nitric Acid

Formulated By:

Benson Chan

062024

Reviewed By:

Pedro L. Rentes

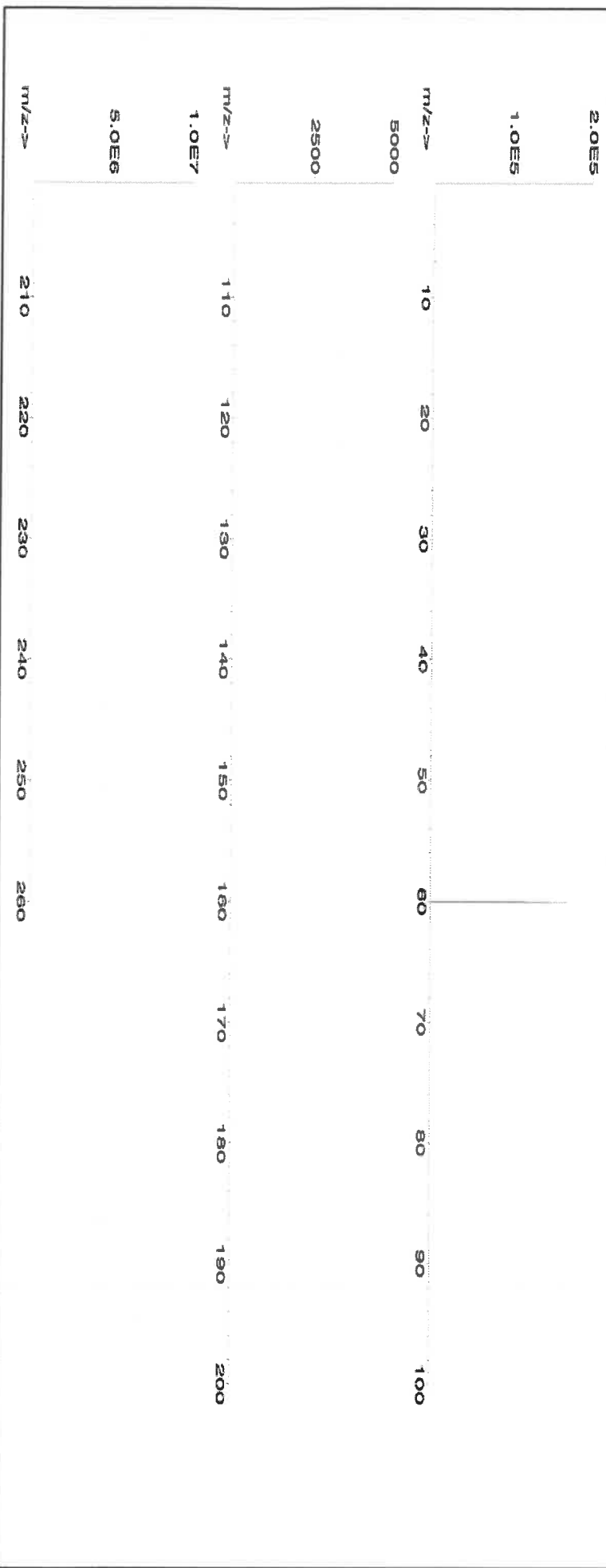
062024

SDS Information

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pippet (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
----------	-------------	------------	-----------------	-------------------	-------------------------	-----------------------	-----------------------	---------------------	----------------------------------	------	----------------	------	----------

1. Nickel(II) nitrate hexahydrate (NI)	58128	062023	0.1000	200.0	0.084	1000	10000.4	1000.0	2.2	13478-00-7	1 mg/m3	orl-rat 1620 mg/kg	3136
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[T1] Spectrum No.1 [9.136 sec]:58028.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM

M6030



ANAB ISO 17034 Accredited
AR-1539 Certificate Number
<https://absolutestandards.com>

CERTIFIED WEIGHT REPORT:

Part Number: **57047**
Lot Number: **122823**
Description: **Silver (Ag)**

Lot #
Solvent: 24002546 Nitric Acid

Expiration Date:

122826

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL):

4000.30

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

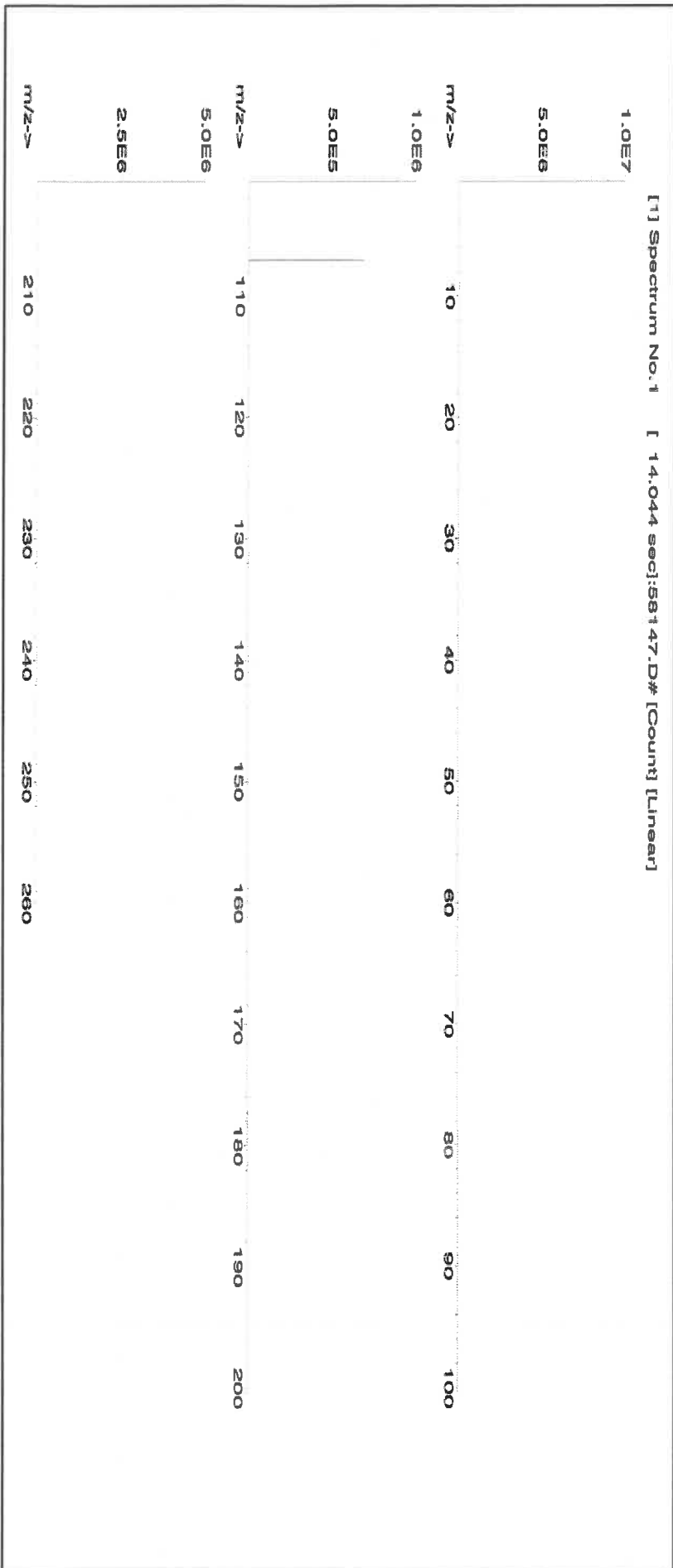
Formulated By:	Benson Chan
Reviewed By:	
	Pedro L. Rentas
	122823

Compound

RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Silver nitrate (Ag) IN035 J0612AGA1 1000.0 99.999 0.10 63.7 6.27992 6.27998 1000.0 2.0 7761-88-8 10 µg/m³ NA 3151

[1] Spectrum No. 1 [14.044 sec]:58147.D# [Count] [Linear]





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

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

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

(T)= Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM
R: 10/18/24



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

CERTIFIED WEIGHT REPORT:

Part Number:

57051

Lot #

24002546

Solvent:

Nitric Acid

Lot Number:

071724

Description:

Antimony (Sb)

Expiration Date:

071727

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6U7B

Volume shown below was diluted to (mL):

2000.26

Balance Uncertainty

0.058

Flask Uncertainty

Formulated By:

Giovanni Esposito

071724

Reviewed By:

Pedro L. Rentas

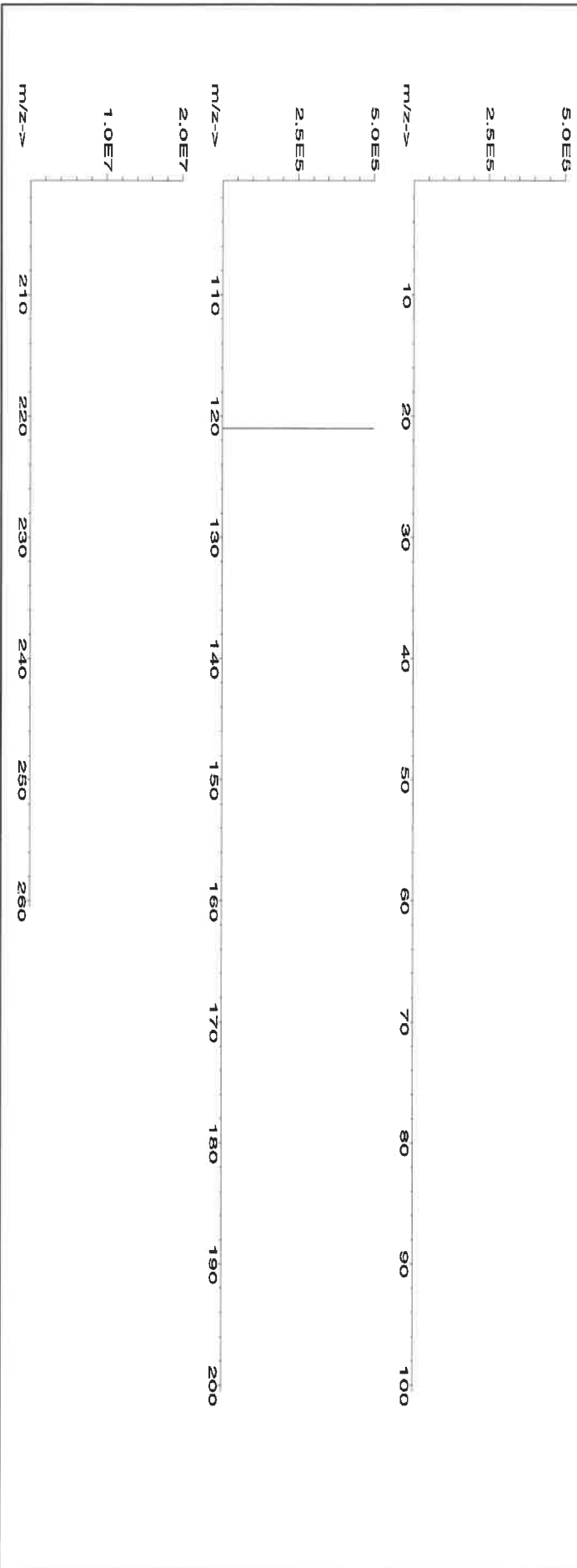
071724

SDS Information

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. 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

[1] Spectrum No.1 [17.964 sec]:58051.D# [Count] [Linear]





CERTIFIED WEIGHT REPORT:

Part Number: 57081
Lot Number: 062724
Description: Thallium (TI)

Lot #

Solvent: 24002546 Nitric Acid

Aleah O'Brady
Formulated By: Aleah O'Brady 062724

Expiration Date:

062727

2% 40.0 Nitric Acid (mL)

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test Number: 6U7B

5E-05 Balance Uncertainty

Pedro L. Renteria
Reviewed By: Pedro L. Renterias 062724

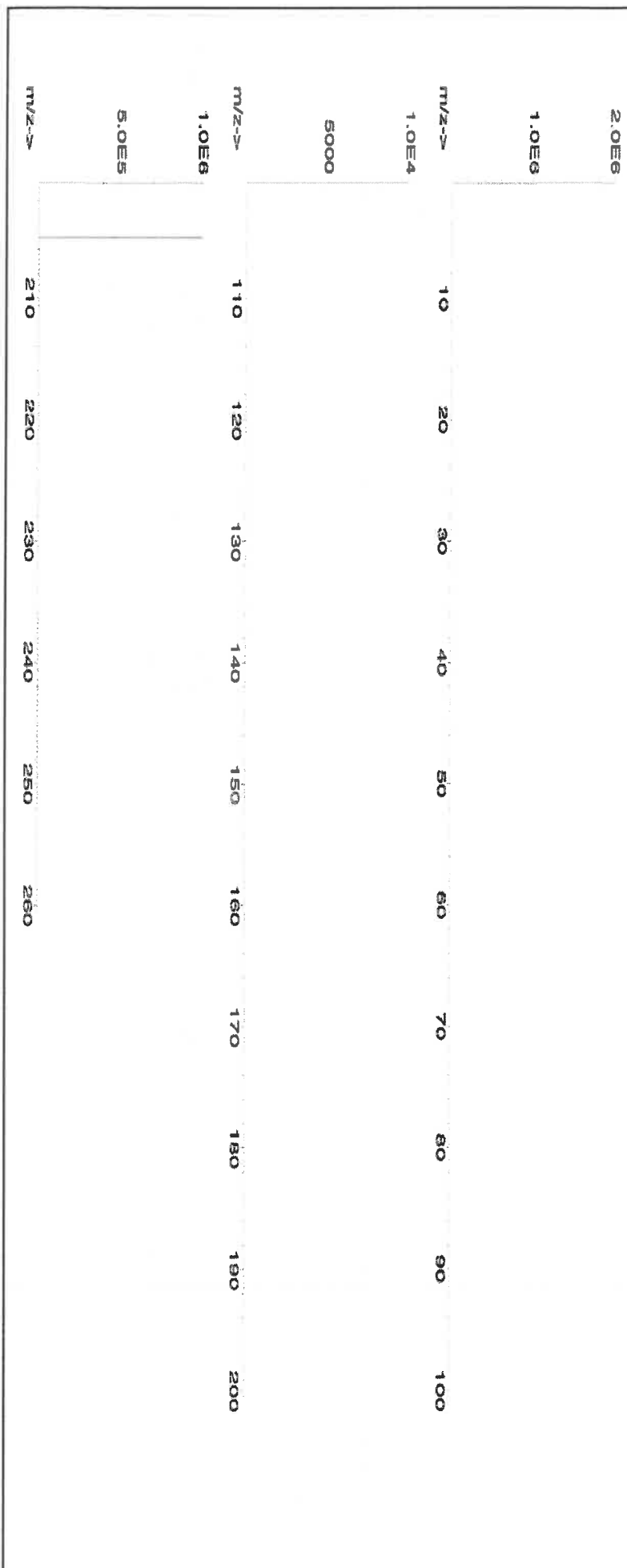
Weight shown below was diluted to (mL): 2000.1 0.10 Flask Uncertainty

SDS Information

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

1. Thallium nitrate (TI) IN037 BCCF4399 1000 99.999 0.10 77.0 2.5975 2.5977 1000.1 2.0 10102-45-1 0.1 mg/m3 orl-mus 15mg/kg 3158

[1] Spectrum No.1 [14.044 sec]:57081.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM

M6021



CERTIFIED WEIGHT REPORT:

Part Number: 57023
Lot Number: 062424
Description: Vanadium (V)

Lot # 24002546
Solvent: Nitric Acid

<i>Aleah O'Brady</i>	
Formulated By:	Aleah O'Brady
Reviewed By:	<i>Pedro L. Rantas</i>
	Pedro L. Rantas
	062424

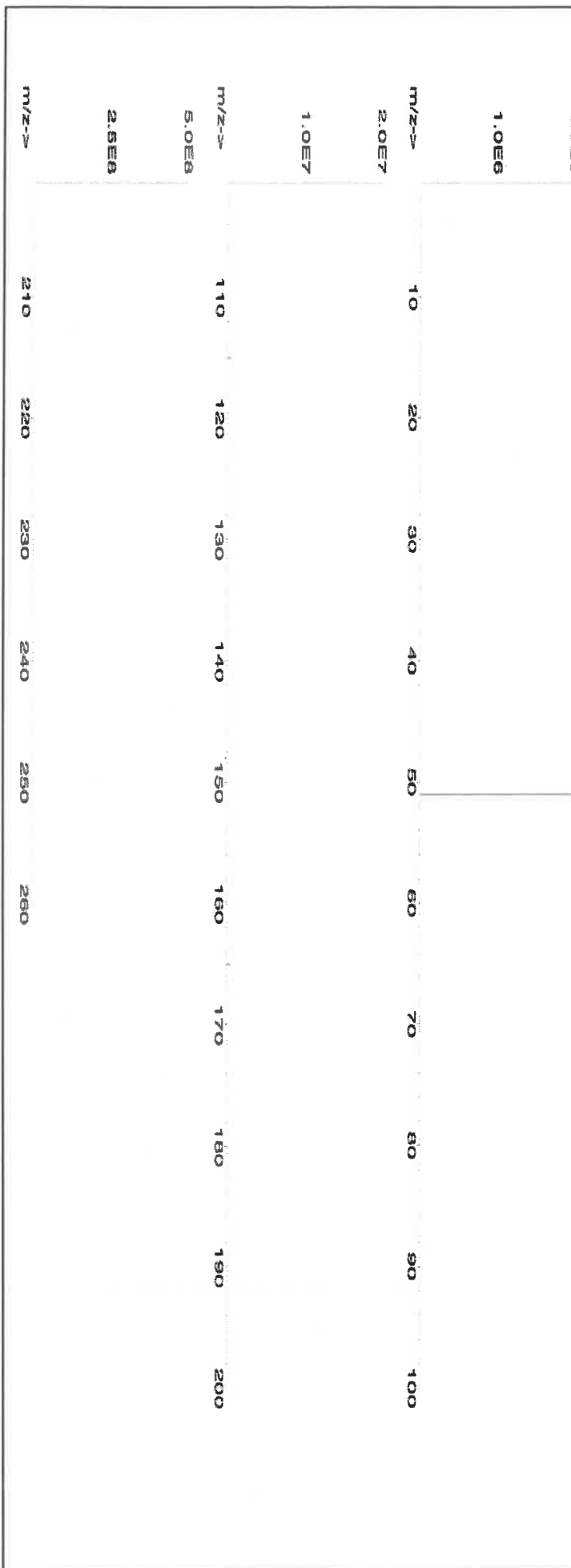
Expiration Date: 062427
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

Volume shown below was diluted to (mL): 2000.3
5E-05 Balance Uncertainty
0.06 Flask Uncertainty

2.0%
40.0 (mL)
Nitric Acid

SDS Information									
(Solvent Safety Info. On Attached pg.)									
Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)
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	or -rat 58.1mg/kg
									3165

[1] Spectrum No.1 [34.243 sec]:58023.D# [Count] [Linear]





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

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

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



SHIPPING DOCUMENTS

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Packing List

6390 Joyce Dr., #100
Golden, CO 80403

Tel: +1-303-940-0033
Fax: +1-303-940-0043
info@phenova.com
www.phenova.com

For terms and conditions of your order, please visit:
www.phenova.com/home/termsandsale

Date	Order #
10/27/2025	333294



Ship To

Alliance Tech Group - Newark
ATTN: Sohil Jodhani
284 Sheffield St., #1
Mountainside, NJ 07092
USA

Received by: SJ
10/29/2025 12:30

Customer PO #	Terms	PT Acct #	Customer #	Ship Via	F.O.B.
PO2-3469	Net 30	ZCM-100	1500470	FedEx 2nd Day	Golden, CO

Qty Ordered	Qty Shipped	Qty Backorder	Part Number	Part Description	Study Number	Lot Number
1	1	0	PT-MET-SOIL	SOIL/HW Trace Metals	HW1025	7102-04B
1	1	0	PT-CR6-SOIL	SOIL/HW Hexavalent Chromium	HW1025	7102-05A2
1	1	0	PT-CN-SOIL	SOIL/HW Cyanide	HW1025	7102-06
1	1	0	PT-CORR-SOIL	SOIL/HW Corrosivity/pH	HW1025	7102-11
1	1	0	PT-FP-SOIL	SOIL/HW Flash Point	HW1025	7102-10
1	1	0	PT-AN-SOIL	SOIL/HW Anions	HW1025	7102-08
1	1	0	PT-NUT-SOIL	SOIL/HW Nutrients	HW1025	7102-09
1	1	0	PT-SOL-SOIL	SOIL/HW Solids	HW1025	7102-31
1	1	0	PT-NO2-SOIL	SOIL/HW Nitrite as N	HW1025	7102-71
1	1	0	PT-GAS-SOIL	SOIL/HW Gasoline	HW1025	7102-96
1	1	0	PT-DIES-SOIL	SOIL/HW Diesel in Soil	HW1025	7102-100
1	1	0	PT-OGR-SOIL	SOIL/HW Oil and Grease	HW1025	7102-94B
1	1	0	PT-VOA-SOIL	SOIL/HW Volatiles	HW1025	7102-12
1	1	0	PT-BNA-SOIL	SOIL/HW BNAs	HW1025	7102-13
1	1	0	PT-PEST-SOIL	SOIL/HW Pesticides	HW1025	7102-14
1	1	0	PT-CHLR-SOIL	SOIL/HW Chlordane	HW1025	7102-15
1	1	0	PT-TXP-SOIL	SOIL/HW Toxaphene	HW1025	7102-16
1	1	0	PT-PCB-SOIL	SOIL/HW PCBs	HW1025	7102-17
1	1	0	PT-PCBO-SOIL	SOIL/HW PCBs in Oil	HW1025	7102-88
1	1	0	PT-HERB-SOIL	SOIL/HW Herbicides	HW1025	7102-18
1	1	0	PT-PAH-SOIL	SOIL/HW PAHs	HW1025	7102-22
1	1	0	PT-TRIAZINE-SOIL	SOIL/HW Triazine Pesticides	HW1025	7102-106

6390 Joyce Dr., #100
Golden, CO 80403

Tel: +1-303-940-0033
Fax: +1-303-940-0043
info@phenova.com
www.phenova.com

For terms and conditions of your order, please visit:
www.phenova.com/home/termsandsale

Packing List

Date	Order #
10/27/2025	333294



Ship To

Alliance Tech Group - Newark
ATTN: Sohil Jodhani
284 Sheffield St., #1
Mountainside, NJ 07092
USA

Received by: SJ
10/29/2025 12:30

Customer PO #		Terms	PT Acct #	Customer #	Ship Via	F.O.B.
PO2-3469		Net 30	ZCM-100	1500470	FedEx 2nd Day	Golden, CO
Qty Ordered	Qty Shipped	Qty Backorder	Part Number	Part Description	Study Number	Lot Number
1	1	0	PT-NJEPH-SOIL	NJ EPH in SOIL	HW1025	7102-105

Laboratory Certification

Certified By	License No.
Connecticut	PH-0830
DOD ELAP (ANAB)	L2219
Maine	2024021
Maryland	296
New Hampshire	255425
New Jersey	20012
New York	11376
Pennsylvania	68-00548
Soil Permit	525-24-234-08441
Texas	TX-C25-00189
Virginia	460312