

DATA PACKAGE

METALS

PROJECT NAME : NJ DRINKING WATER PT

ALLIANCE TECHNICAL GROUP, LLC - NEWARK

284 Sheffiled Stree

Suite 1

Mountainside, NJ - 07092

Phone No: 908-789-8900

ORDER ID : Q2552

ATTENTION : Mohammad Ahmed



Laboratory Certification ID # 20012



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Cover Page

Order ID : Q2552

Project ID : NJ Drinking Water PT

Client : Alliance Technical Group, LLC - Newark

Lab Sample Number

Q2552-01
Q2552-02
Q2552-03
Q2552-04
Q2552-05
Q2552-06
Q2552-07
Q2552-08
Q2552-09
Q2552-10
Q2552-11

Client Sample Number

WS0725-PT-TURB-WS
WS0725-PT-TURB-WS
WS0725-PT-MIN-WS
WS0725-PT-TM-WS
WS0725-PT-HG-WS
WS0725-PT-SIO2-WS
WS0725-PT-RVOA-WS
WS0725-PT-UNRVOA-WS
WS0725-PT-THM-WS
WS0725-PT-ADD-WS
WS0725-PT-EDBCP-WS

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: 8/29/2025

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 Drinking Water PT

Project # N/A

Order ID # Q2552

Test Name: Metals Group7

A. Number of Samples and Date of Receipt:

11 Water samples were received on 07/09/2025.

B. Parameters:

According to the Chain of Custody document, the following analyses were requested: Hardness, Calcium, Hardness, Total, Mercury, Metals Group3, Metals Group6, Metals Group7, Silica, Turbidity, VOCGC Group 1, VOCMS Group1, VOCMS Group2, VOCMS Group3, VOCMS Group4 and VOCMS Group5. This data package contains results for Metals Group7.

C. Analytical Techniques:

The analysis and digestion of Metals Group7 was based on method 200.8.

D. QA/ QC Samples:

The Holding Times were met for all analysis.

The Blank Spike met requirements for all compounds.

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

The Calibration met the requirements.

E. Additional Comments:

Collision cell is being used to remove potential interferences. The analytes Na, Mg, Al, K, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As are being analyzed with collision cell and analytes Be, B, Ca, Ti, Se, Sr, Zr, Mo, Ag, Cd, Sn, Sb, Ba, Tl, Pb, U are being analyzed with Non-Collision Cell. Helium gas is used for the Collision Cell analysis.

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: Q2552

MATRIX: Water

METHOD: 200.8

	NA	NO	YES
1. Calibration Summary met criteria.			✓
2. ICP Interference Check Sample Results Summary Submitted.			✓
3. Laboratory Control Sample Summary (if applicable) Submitted.			✓
4. Blank Contamination - If yes, list compounds and concentrations in each blank:		✓	
5. Digestion Holding Time Met			✓
If not met, list number of days exceeded for each sample:			
6. Analysis Holding Time Met			✓
If not met, list those compounds and their recoveries which fall outside the acceptable range.			

ADDITIONAL COMMENTS:

Collision cell is being used to remove potential interferences. The analytes Na, Mg, Al, K, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As are being analyzed with collision cell and analytes Be, B, Ca, Ti, Se, Sr, Zr, Mo, Ag, Cd, Sn, Sb, Ba, Tl, Pb, U are being analyzed with Non-Collision Cell. Helium gas is used for the Collision Cell analysis.

QA REVIEW_____
Date

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: Q2552

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: 08/29/2025

LAB CHRONICLE

OrderID:	Q2552	OrderDate:	7/9/2025 3:45:00 PM
Client:	Alliance Technical Group, LLC - Newark	Project:	NJ Drinking Water PT
Contact:	Mohammad Ahmed	Location:	QA Office,VOA Lab

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
Q2552-03	WS0725-PT-MIN-WS	Water	Metals Group3	200.7	07/07/25	08/18/25	08/19/25	07/09/25
Q2552-04	WS0725-PT-TM-WS	Water	Metals Group7	200.8	07/07/25	08/18/25	08/18/25	07/09/25

Hit Summary Sheet
SW-846

SDG No.: Q2552 **Order ID:** Q2552
Client: Alliance Technical Group, LLC - Newark **Project ID:** NJ Drinking Water PT

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
Client ID : WS0725-PT-TM-WS								
Q2552-04	WS0725-PT-TM-WS	Water	Aluminum	576		3.80	20.0	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Antimony	18.6		0.32	2.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Arsenic	26.0		0.14	1.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Barium	665		0.29	10.0	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Beryllium	9.77		0.26	1.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Cadmium	18.6		0.14	1.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Chromium	24.5		0.047	2.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Copper	962		0.65	2.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Iron	645		1.96	50.0	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Lead	47.2		0.27	1.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Manganese	99.2		0.19	1.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Nickel	474		0.15	1.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Molybdenum	92.6		0.67	5.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Selenium	80.2		2.86	5.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Silver	83.7		0.15	1.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Thallium	8.15		0.11	1.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Vanadium	332		0.11	5.00	ug/L
Q2552-04	WS0725-PT-TM-WS	Water	Zinc	944		0.62	5.00	ug/L



SAMPLE DATA

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Report of Analysis

Client:	Alliance Technical Group, LLC - Newark	Date Collected:	07/07/25
Project:	NJ Drinking Water PT	Date Received:	07/09/25
Client Sample ID:	WS0725-PT-TM-WS	SDG No.:	Q2552
Lab Sample ID:	Q2552-04	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7429-90-5	Aluminum	576		1	3.80	20.0	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-36-0	Antimony	18.6		1	0.32	2.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-38-2	Arsenic	26.0		1	0.14	1.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-39-3	Barium	665		1	0.29	10.0	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-41-7	Beryllium	9.77		1	0.26	1.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-43-9	Cadmium	18.6		1	0.14	1.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-47-3	Chromium	24.5		1	0.047	2.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-48-4	Cobalt	0.050	U	1	0.050	1.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-50-8	Copper	962		1	0.65	2.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7439-89-6	Iron	645		1	1.96	50.0	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7439-92-1	Lead	47.2		1	0.27	1.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7439-96-5	Manganese	99.2		1	0.19	1.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7439-98-7	Molybdenum	92.6		1	0.67	5.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-02-0	Nickel	474		1	0.15	1.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7782-49-2	Selenium	80.2		1	2.86	5.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-22-4	Silver	83.7		1	0.15	1.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-28-0	Thallium	8.15		1	0.11	1.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-62-2	Vanadium	332		1	0.11	5.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	
7440-66-6	Zinc	944		1	0.62	5.00	ug/L	08/18/25 07:40	08/18/25 16:41	200.8	

Color Before:	Colorless	Clarity Before:	Clear	Texture:
Color After:	Colorless	Clarity After:	Clear	Artifacts:
Comments:	Metals Group7			

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

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q2552

Contract: ALLI03

Lab Code: ACE

Initial Calibration Source: EPA

Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV01	Aluminum	1610	1600	100	90 - 110	P	08/18/2025	15:56	LB136878
	Antimony	424	400	106	90 - 110	P	08/18/2025	15:56	LB136878
	Arsenic	407	400	102	90 - 110	P	08/18/2025	15:56	LB136878
	Barium	1640	1600	103	90 - 110	P	08/18/2025	15:56	LB136878
	Beryllium	42.5	40.0	106	90 - 110	P	08/18/2025	15:56	LB136878
	Cadmium	208	200	104	90 - 110	P	08/18/2025	15:56	LB136878
	Chromium	168	160	105	90 - 110	P	08/18/2025	15:56	LB136878
	Cobalt	419	400	105	90 - 110	P	08/18/2025	15:56	LB136878
	Copper	185	200	92	90 - 110	P	08/18/2025	15:56	LB136878
	Iron	812	800	102	90 - 110	P	08/18/2025	15:56	LB136878
	Lead	387	400	97	90 - 110	P	08/18/2025	15:56	LB136878
	Manganese	414	400	104	90 - 110	P	08/18/2025	15:56	LB136878
	Molybdenum	5200	5000	104	90 - 110	P	08/18/2025	15:56	LB136878
	Nickel	406	400	101	90 - 110	P	08/18/2025	15:56	LB136878
	Selenium	414	400	104	90 - 110	P	08/18/2025	15:56	LB136878
	Silver	190	200	95	90 - 110	P	08/18/2025	15:56	LB136878
	Thallium	395	400	99	90 - 110	P	08/18/2025	15:56	LB136878
	Vanadium	412	400	103	90 - 110	P	08/18/2025	15:56	LB136878
	Zinc	372	400	93	90 - 110	P	08/18/2025	15:56	LB136878

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: PLASMA-PURE

SDG No.: Q2552
Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Aluminum	47800	50000	96	90 - 110	P	08/18/2025	16:13	LB136878
	Antimony	501	500	100	90 - 110	P	08/18/2025	16:13	LB136878
	Arsenic	480	500	96	90 - 110	P	08/18/2025	16:13	LB136878
	Barium	2510	2500	100	90 - 110	P	08/18/2025	16:13	LB136878
	Beryllium	518	500	104	90 - 110	P	08/18/2025	16:13	LB136878
	Cadmium	486	500	97	90 - 110	P	08/18/2025	16:13	LB136878
	Chromium	497	500	99	90 - 110	P	08/18/2025	16:13	LB136878
	Cobalt	482	500	96	90 - 110	P	08/18/2025	16:13	LB136878
	Copper	4730	5000	95	90 - 110	P	08/18/2025	16:13	LB136878
	Iron	125000	125000	100	90 - 110	P	08/18/2025	16:13	LB136878
	Lead	2490	2500	100	90 - 110	P	08/18/2025	16:13	LB136878
	Manganese	4880	5000	98	90 - 110	P	08/18/2025	16:13	LB136878
	Molybdenum	4870	5000	97	90 - 110	P	08/18/2025	16:13	LB136878
	Nickel	457	500	91	90 - 110	P	08/18/2025	16:13	LB136878
	Selenium	469	500	94	90 - 110	P	08/18/2025	16:13	LB136878
	Silver	492	500	98	90 - 110	P	08/18/2025	16:13	LB136878
	Thallium	498	500	100	90 - 110	P	08/18/2025	16:13	LB136878
	Vanadium	494	500	99	90 - 110	P	08/18/2025	16:13	LB136878
	Zinc	4790	5000	96	90 - 110	P	08/18/2025	16:13	LB136878
CCV02	Aluminum	46400	50000	93	90 - 110	P	08/18/2025	16:49	LB136878
	Antimony	507	500	102	90 - 110	P	08/18/2025	16:49	LB136878
	Arsenic	485	500	97	90 - 110	P	08/18/2025	16:49	LB136878
	Barium	2560	2500	103	90 - 110	P	08/18/2025	16:49	LB136878
	Beryllium	543	500	109	90 - 110	P	08/18/2025	16:49	LB136878
	Cadmium	492	500	98	90 - 110	P	08/18/2025	16:49	LB136878
	Chromium	523	500	104	90 - 110	P	08/18/2025	16:49	LB136878
	Cobalt	507	500	101	90 - 110	P	08/18/2025	16:49	LB136878
	Copper	4940	5000	99	90 - 110	P	08/18/2025	16:49	LB136878
	Iron	120000	125000	96	90 - 110	P	08/18/2025	16:49	LB136878
	Lead	2540	2500	102	90 - 110	P	08/18/2025	16:49	LB136878
	Manganese	5110	5000	102	90 - 110	P	08/18/2025	16:49	LB136878
	Molybdenum	5070	5000	101	90 - 110	P	08/18/2025	16:49	LB136878
	Nickel	478	500	96	90 - 110	P	08/18/2025	16:49	LB136878
	Selenium	478	500	96	90 - 110	P	08/18/2025	16:49	LB136878

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: PLASMA-PURE

SDG No.: Q2552
Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV02	Silver	498	500	100	90 - 110	P	08/18/2025	16:49	LB136878
	Thallium	516	500	103	90 - 110	P	08/18/2025	16:49	LB136878
	Vanadium	523	500	105	90 - 110	P	08/18/2025	16:49	LB136878
	Zinc	4920	5000	98	90 - 110	P	08/18/2025	16:49	LB136878

Metals

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CRDL STANDARD FOR AA & ICP

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q2552

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
CRI	Aluminum	19.7	20.0	98	70 - 130	P	08/18/2025	16:21	LB136878
	Antimony	2.10	2.0	105	70 - 130	P	08/18/2025	16:21	LB136878
	Arsenic	1.29	1.0	129	70 - 130	P	08/18/2025	16:21	LB136878
	Barium	9.88	10.0	99	70 - 130	P	08/18/2025	16:21	LB136878
	Beryllium	1.13	1.0	113	70 - 130	P	08/18/2025	16:21	LB136878
	Cadmium	0.81	1.0	81	70 - 130	P	08/18/2025	16:21	LB136878
	Chromium	2.03	2.0	102	70 - 130	P	08/18/2025	16:21	LB136878
	Cobalt	1.07	1.0	107	70 - 130	P	08/18/2025	16:21	LB136878
	Copper	2.04	2.0	102	70 - 130	P	08/18/2025	16:21	LB136878
	Iron	41.2	50.0	82	70 - 130	P	08/18/2025	16:21	LB136878
	Lead	0.84	1.0	84	70 - 130	P	08/18/2025	16:21	LB136878
	Manganese	0.94	1.0	94	70 - 130	P	08/18/2025	16:21	LB136878
	Molybdenum	5.10	5.0	102	70 - 130	P	08/18/2025	16:21	LB136878
	Nickel	0.92	1.0	92	70 - 130	P	08/18/2025	16:21	LB136878
	Selenium	4.91	5.0	98	70 - 130	P	08/18/2025	16:21	LB136878
	Silver	1.08	1.0	108	70 - 130	P	08/18/2025	16:21	LB136878
	Thallium	1.03	1.0	103	70 - 130	P	08/18/2025	16:21	LB136878
	Vanadium	5.06	5.0	101	70 - 130	P	08/18/2025	16:21	LB136878
	Zinc	4.78	5.0	96	70 - 130	P	08/18/2025	16:21	LB136878



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

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q2552

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	3.80	+/-10	U	20.0	P	08/18/2025	16:02	LB136878
	Antimony	0.32	+/-1	U	2.00	P	08/18/2025	16:02	LB136878
	Arsenic	0.17	+/-0.5	J	1.00	P	08/18/2025	16:02	LB136878
	Barium	0.29	+/-5	U	10.0	P	08/18/2025	16:02	LB136878
	Beryllium	0.26	+/-0.5	U	1.00	P	08/18/2025	16:02	LB136878
	Cadmium	0.14	+/-0.5	U	1.00	P	08/18/2025	16:02	LB136878
	Chromium	0.047	+/-1	U	2.00	P	08/18/2025	16:02	LB136878
	Cobalt	0.050	+/-0.5	U	1.00	P	08/18/2025	16:02	LB136878
	Copper	0.65	+/-1	U	2.00	P	08/18/2025	16:02	LB136878
	Iron	1.96	+/-25	U	50.0	P	08/18/2025	16:02	LB136878
	Lead	0.27	+/-0.5	U	1.00	P	08/18/2025	16:02	LB136878
	Manganese	0.19	+/-0.5	U	1.00	P	08/18/2025	16:02	LB136878
	Nickel	0.15	+/-0.5	U	1.00	P	08/18/2025	16:02	LB136878
	Molybdenum	0.67	+/-2.5	U	5.00	P	08/18/2025	16:02	LB136878
	Selenium	2.86	+/-2.5	U	5.00	P	08/18/2025	16:02	LB136878
	Silver	0.17	+/-0.5	J	1.00	P	08/18/2025	16:02	LB136878
	Thallium	0.11	+/-0.5	U	1.00	P	08/18/2025	16:02	LB136878
	Vanadium	0.11	+/-2.5	U	5.00	P	08/18/2025	16:02	LB136878
	Zinc	0.62	+/-2.5	U	5.00	P	08/18/2025	16:02	LB136878

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q2552

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	3.80	+/-10	U	20.0	P	08/18/2025	16:18	LB136878
	Antimony	0.32	+/-1	U	2.00	P	08/18/2025	16:18	LB136878
	Arsenic	0.47	+/-0.5	J	1.00	P	08/18/2025	16:18	LB136878
	Barium	0.29	+/-5	U	10.0	P	08/18/2025	16:18	LB136878
	Beryllium	0.26	+/-0.5	U	1.00	P	08/18/2025	16:18	LB136878
	Cadmium	0.14	+/-0.5	U	1.00	P	08/18/2025	16:18	LB136878
	Chromium	0.047	+/-1	U	2.00	P	08/18/2025	16:18	LB136878
	Cobalt	0.050	+/-0.5	U	1.00	P	08/18/2025	16:18	LB136878
	Copper	0.65	+/-1	U	2.00	P	08/18/2025	16:18	LB136878
	Iron	1.96	+/-25	U	50.0	P	08/18/2025	16:18	LB136878
	Lead	0.27	+/-0.5	U	1.00	P	08/18/2025	16:18	LB136878
	Manganese	0.19	+/-0.5	U	1.00	P	08/18/2025	16:18	LB136878
	Nickel	0.15	+/-0.5	U	1.00	P	08/18/2025	16:18	LB136878
	Selenium	2.86	+/-2.5	U	5.00	P	08/18/2025	16:18	LB136878
	Molybdenum	0.67	+/-2.5	U	5.00	P	08/18/2025	16:18	LB136878
	Silver	0.15	+/-0.5	U	1.00	P	08/18/2025	16:18	LB136878
	Thallium	0.11	+/-0.5	U	1.00	P	08/18/2025	16:18	LB136878
CCB02	Vanadium	0.11	+/-2.5	U	5.00	P	08/18/2025	16:18	LB136878
	Zinc	0.62	+/-2.5	U	5.00	P	08/18/2025	16:18	LB136878
	Aluminum	3.80	+/-10	U	20.0	P	08/18/2025	17:03	LB136878
	Antimony	0.32	+/-1	U	2.00	P	08/18/2025	17:03	LB136878
	Arsenic	0.14	+/-0.5	U	1.00	P	08/18/2025	17:03	LB136878
	Barium	0.29	+/-5	U	10.0	P	08/18/2025	17:03	LB136878
	Beryllium	0.26	+/-0.5	U	1.00	P	08/18/2025	17:03	LB136878
	Cadmium	0.14	+/-0.5	U	1.00	P	08/18/2025	17:03	LB136878
	Chromium	0.047	+/-1	U	2.00	P	08/18/2025	17:03	LB136878
	Cobalt	0.050	+/-0.5	U	1.00	P	08/18/2025	17:03	LB136878
	Copper	0.65	+/-1	U	2.00	P	08/18/2025	17:03	LB136878
	Iron	1.96	+/-25	U	50.0	P	08/18/2025	17:03	LB136878
	Lead	0.27	+/-0.5	U	1.00	P	08/18/2025	17:03	LB136878
	Manganese	0.19	+/-0.5	U	1.00	P	08/18/2025	17:03	LB136878
	Nickel	0.15	+/-0.5	U	1.00	P	08/18/2025	17:03	LB136878
	Molybdenum	0.67	+/-2.5	U	5.00	P	08/18/2025	17:03	LB136878
	Selenium	2.86	+/-2.5	U	5.00	P	08/18/2025	17:03	LB136878
	Silver	0.15	+/-0.5	U	1.00	P	08/18/2025	17:03	LB136878
	Thallium	0.11	+/-0.5	U	1.00	P	08/18/2025	17:03	LB136878
	Vanadium	0.11	+/-2.5	U	5.00	P	08/18/2025	17:03	LB136878
	Zinc	0.62	+/-2.5	U	5.00	P	08/18/2025	17:03	LB136878

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q2552

Instrument: P7

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB169290BL	WATER			Batch Number:	PB169290		Prep Date:	08/18/2025	
	Aluminum	3.80	<10	U	20.0	P	08/18/2025	16:24	LB136878
	Antimony	0.32	<1	U	2.00	P	08/18/2025	16:24	LB136878
	Arsenic	0.25	<0.5	J	1.00	P	08/18/2025	16:24	LB136878
	Barium	0.29	<5	U	10.0	P	08/18/2025	16:24	LB136878
	Beryllium	0.26	<0.5	U	1.00	P	08/18/2025	16:24	LB136878
	Cadmium	0.14	<0.5	U	1.00	P	08/18/2025	16:24	LB136878
	Chromium	0.047	<1	U	2.00	P	08/18/2025	16:24	LB136878
	Cobalt	0.050	<0.5	U	1.00	P	08/18/2025	16:24	LB136878
	Copper	0.65	<1	U	2.00	P	08/18/2025	16:24	LB136878
	Iron	1.96	<25	U	50.0	P	08/18/2025	16:24	LB136878
	Lead	0.27	<0.5	U	1.00	P	08/18/2025	16:24	LB136878
	Manganese	0.19	<0.5	U	1.00	P	08/18/2025	16:24	LB136878
	Nickel	0.15	<0.5	U	1.00	P	08/18/2025	16:24	LB136878
	Selenium	2.86	<2.5	U	5.00	P	08/18/2025	16:24	LB136878
	Molybdenum	0.67	<2.5	U	5.00	P	08/18/2025	16:24	LB136878
	Silver	0.15	<0.5	U	1.00	P	08/18/2025	16:24	LB136878
	Thallium	0.11	<0.5	U	1.00	P	08/18/2025	16:24	LB136878
	Vanadium	0.11	<2.5	U	5.00	P	08/18/2025	16:24	LB136878
	Zinc	0.62	<2.5	U	5.00	P	08/18/2025	16:24	LB136878

Metals
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INTERFERENCE CHECK SAMPLE

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q2552

Contract: ALLI03

Lab Code: ACE

ICS Source: EPA

Instrument ID: P7

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	89700	100000	90	0	0	08/18/2025	16:05	LB136878
	Antimony	1.06	1.5	71	-2.5	5.5	08/18/2025	16:05	LB136878
	Arsenic	1.54	0.1	1540	-1.9	2.1	08/18/2025	16:05	LB136878
	Barium	1.35	1.2	112	-18.8	21.2	08/18/2025	16:05	LB136878
	Beryllium	0.26			-2	2	08/18/2025	16:05	LB136878
	Cadmium	0.040	0.7	6	-1.3	2.7	08/18/2025	16:05	LB136878
	Chromium	19.5	21.0	93	17	25	08/18/2025	16:05	LB136878
	Cobalt	1.13	1.0	113	-1	3	08/18/2025	16:05	LB136878
	Copper	8.23	8.0	103	4	12	08/18/2025	16:05	LB136878
	Iron	95500	100000	96	0	0	08/18/2025	16:05	LB136878
	Lead	3.91	4.0	98	2	6	08/18/2025	16:05	LB136878
	Manganese	6.40	7.0	91	5	9	08/18/2025	16:05	LB136878
	Nickel	5.28	6.0	88	4	8	08/18/2025	16:05	LB136878
	Selenium	0	0.3		-9.7	10	08/18/2025	16:05	LB136878
	Molybdenum	1880	2000	94	-20	20	08/18/2025	16:05	LB136878
	Silver	0.040			-2	2	08/18/2025	16:05	LB136878
	Thallium	0.060			-2	2	08/18/2025	16:05	LB136878
	Vanadium	0.14	0.5	28	-9.5	10.5	08/18/2025	16:05	LB136878
	Zinc	10.5	11.0	96	7	15	08/18/2025	16:05	LB136878
ICSAB01	Aluminum	89200	100000	89	0	0	08/18/2025	16:10	LB136878
	Antimony	19.8	22.0	90	18	26	08/18/2025	16:10	LB136878
	Arsenic	20.8	19.0	110	16.2	21.9	08/18/2025	16:10	LB136878
	Barium	20.2	22.0	92	2	42	08/18/2025	16:10	LB136878
	Beryllium	20.4	19.0	107	16.2	21.9	08/18/2025	16:10	LB136878
	Cadmium	19.3	20.0	96	17	23	08/18/2025	16:10	LB136878
	Chromium	38.3	40.0	96	34	46	08/18/2025	16:10	LB136878
	Cobalt	20.0	20.0	100	17	23	08/18/2025	16:10	LB136878
	Copper	25.1	25.0	100	21	29	08/18/2025	16:10	LB136878
	Iron	95500	100000	96	0	0	08/18/2025	16:10	LB136878
	Lead	24.0	25.0	96	21.3	28.8	08/18/2025	16:10	LB136878
	Manganese	23.2	27.0	86	23	31.1	08/18/2025	16:10	LB136878
	Nickel	23.9	24.0	100	20.4	27.6	08/18/2025	16:10	LB136878
	Molybdenum	1890	2000	94	1600	2400	08/18/2025	16:10	LB136878
	Selenium	19.2	19.0	101	9	29	08/18/2025	16:10	LB136878
	Silver	18.6	18.0	103	15.3	20.7	08/18/2025	16:10	LB136878
	Thallium	21.6	21.0	103	17.9	24.2	08/18/2025	16:10	LB136878
	Vanadium	18.9	19.0	100	9	29	08/18/2025	16:10	LB136878
	Zinc	27.4	29.0	94	25	33	08/18/2025	16:10	LB136878



METAL QC DATA

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Metals

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Alliance Technical Group, LLC - Newark

SDG No.: Q2552

Contract: ALLI03

Lab Code: ACE

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB169290BS							
Aluminum	ug/L	10000	9980		100	85 - 115	P
Antimony	ug/L	500	502		100	85 - 115	P
Arsenic	ug/L	500	492		98	85 - 115	P
Barium	ug/L	2500	2530		101	85 - 115	P
Beryllium	ug/L	500	508		102	85 - 115	P
Cadmium	ug/L	500	501		100	85 - 115	P
Chromium	ug/L	500	510		102	85 - 115	P
Cobalt	ug/L	500	499		100	85 - 115	P
Copper	ug/L	5000	5040		101	85 - 115	P
Iron	ug/L	25000	25700		103	85 - 115	P
Lead	ug/L	2500	2480		99	85 - 115	P
Manganese	ug/L	5000	5050		101	85 - 115	P
Nickel	ug/L	500	484		97	85 - 115	P
Selenium	ug/L	500	497		99	85 - 115	P
Molybdenum	ug/L	5000	4930		99	85 - 115	P
Silver	ug/L	500	511		102	85 - 115	P
Thallium	ug/L	500	501		100	85 - 115	P
Vanadium	ug/L	500	498		100	85 - 115	P
Zinc	ug/L	5000	5120		102	85 - 115	P

FORM 8A

ICP-MS INTERNAL STANDARD RELATIVE INTENSITY SUMMARY

Client: Alliance Technical Group, LLC -

Contract: ALLI03

Lab Code: ACE

SDG No.: Q2552

Instrument ID: P7

Start Date : 08/18/2025

Run Number: LB136878

End Date : 08/18/2025

Lab SampleID	Client SampleID	Time	Internal Standard %RI For: Non-Collision Cell									
			Element 6Li	Q	Element 45Sc	Q	Element 89Y	Q	Element 103Rh	Q	Element 159Tb	Q
S0	S0	1322	100		100		100		100		100	
S2	S2	1328	100		98		100		99		98	
S3	S3	1331	102		99		99		98		98	
S4	S4	1334	103		99		101		99		99	
S5	S5	1337	106		99		100		99		103	
S6	S6	1340	107		100		102		102		105	
S7	S7	1343	110		104		105		105		108	
S8	S8	1346	109		104		107		101		110	
ICV01	ICV01	1556	99		100		103		102		104	
ICB01	ICB01	1602	99		99		101		101		102	
ICSA01	ICSA01	1605	101		101		103		101		105	
ICSAB01	ICSAB01	1610	102		105		108		105		109	
CCV01	CCV01	1613	105		111		113		108		113	
CCB01	CCB01	1618	99		102		106		105		106	
CRI	CRI	1621	100		102		104		104		105	
PB169290BL	PB169290BL	1624	99		100		101		102		102	
PB169290BS	PB169290BS	1627	107		106		109		106		110	
Q2552-04	WS0725-PT-T	1641	100		101		102		103		105	
CCV02	CCV02	1649	106		108		112		107		113	
CCB02	CCB02	1703	101		103		105		104		106	

Internal Standard %RI Limit: 70 - 130

FORM 8A

ICP-MS INTERNAL STANDARD RELATIVE INTENSITY SUMMARY

Client: Alliance Technical Group, LLC -

Contract: ALLI03

Lab Code: ACE

SDG No.: Q2552

Instrument ID: P7

Start Date : 08/18/2025

Run Number: LB136878

End Date : 08/18/2025

Lab SampleID	Client SampleID	Time	Internal Standard %RI For: Collision Cell									
			Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
S0	S0	1322										
S2	S2	1328										
S3	S3	1331										
S4	S4	1334										
S5	S5	1337										
S6	S6	1340										
S7	S7	1343										
S8	S8	1346										
ICV01	ICV01	1556										
ICB01	ICB01	1602										
ICSA01	ICSA01	1605										
ICSAB01	ICSAB01	1610										
CCV01	CCV01	1613										
CCB01	CCB01	1618										
CRI	CRI	1621										
PB169290BL	PB169290BL	1624										
PB169290BS	PB169290BS	1627										
Q2552-04	WS0725-PT-T	1641										
CCV02	CCV02	1649										
CCB02	CCB02	1703										

Internal Standard %RI Limit: 70 - 130

FORM 8B

ICP-MS INTERNAL STANDARD RELATIVE INTENSITY SUMMARY

Client: Alliance Technical Group, LLC -

Contract: ALLI03

Lab Code: ACE

SDG No.: Q2552

Instrument ID: P7

Start Date : 08/18/2025

Run Number: LB136878

End Date : 08/18/2025

Lab SampleID	Client SampleID	Time	Internal Standard %RI For: Non-Collision Cell									
			Element 165Ho	Q	Element 209Bi	Q	Element	Q	Element	Q	Element	Q
S0	S0	1322	100		100							
S2	S2	1328	99		100							
S3	S3	1331	99		100							
S4	S4	1334	100		102							
S5	S5	1337	103		103							
S6	S6	1340	105		106							
S7	S7	1343	108		109							
S8	S8	1346	111		106							
ICV01	ICV01	1556	104		105							
ICB01	ICB01	1602	103		105							
ICSA01	ICSA01	1605	106		105							
ICSAB01	ICSAB01	1610	110		108							
CCV01	CCV01	1613	114		112							
CCB01	CCB01	1618	104		109							
CRI	CRI	1621	106		107							
PB169290BL	PB169290BL	1624	104		105							
PB169290BS	PB169290BS	1627	112		113							
Q2552-04	WS0725-PT-TM	1641	104		108							
CCV02	CCV02	1649	114		113							
CCB02	CCB02	1703	105		108							

Internal Standard %RI Limit: 70 -130

FORM 8B

ICP-MS INTERNAL STANDARD RELATIVE INTENSITY SUMMARY

Client: Alliance Technical Group, LLC -

Contract: ALLI03

Lab Code: ACE

SDG No.: Q2552

Instrument ID: P7

Start Date : 08/18/2025

Run Number: LB136878

End Date : 08/18/2025

Lab SampleID	Client SampleID	Time	Internal Standard %RI For: Collision Cell									
			Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
S0	S0	1322										
S2	S2	1328										
S3	S3	1331										
S4	S4	1334										
S5	S5	1337										
S6	S6	1340										
S7	S7	1343										
S8	S8	1346										
ICV01	ICV01	1556										
ICB01	ICB01	1602										
ICSA01	ICSA01	1605										
ICSAB01	ICSAB01	1610										
CCV01	CCV01	1613										
CCB01	CCB01	1618										
CRI	CRI	1621										
PB169290BL	PB169290BL	1624										
PB169290BS	PB169290BS	1627										
Q2552-04	WS0725-PT-TM	1641										
CCV02	CCV02	1649										
CCB02	CCB02	1703										

Internal Standard %RI Limit: 70 -130



METAL PREPARATION & INSTRUMENT DATA

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METAL PREPARATION & ANALYICAL SUMMARY

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SAMPLE PREPARATION SUMMARY

Client: Alliance Technical Group, LLC - Newark **SDG No.:** Q2552
Contract: ALLI03 **Lab Code:** ACE **Method:** _____

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number: PB169290							
PB169290BL	PB169290BL	MB	WATER	08/18/2025	50.0	50.0	
PB169290BS	PB169290BS	LCS	WATER	08/18/2025	50.0	50.0	
Q2552-04	WS0725-PT-TM-WS	SAM	WATER	08/18/2025	50.0	50.0	

metals
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ANALYSIS RUN LOG

Client: Alliance Technical Group, LLC - Newark

Contract: ALLI03

Lab code: ACE

Sdg no.: Q2552

Instrument id number:

Method:

Run number: LB136878

Start date: 08/18/2025

End date: 08/18/2025

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1322	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
S2	S2	1	1328	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
S3	S3	1	1331	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
S4	S4	1	1334	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
S5	S5	1	1337	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
S6	S6	1	1340	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
S7	S7	1	1343	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
S8	S8	1	1346	Al,Fe
ICV01	ICV01	1	1556	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
ICB01	ICB01	1	1602	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
ICSA01	ICSA01	1	1605	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
ICSAB01	ICSAB01	1	1610	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
CCV01	CCV01	1	1613	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
CCB01	CCB01	1	1618	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
CRI	CRI	1	1621	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
PB169290BL	PB169290BL	1	1624	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
PB169290BS	PB169290BS	1	1627	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
Q2552-04	WS0725-PT-TM-WS	1	1641	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
CCV02	CCV02	1	1649	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn
CCB02	CCB02	1	1703	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Mo,Ni,Pb,Sb,Se,Tl,V,Zn



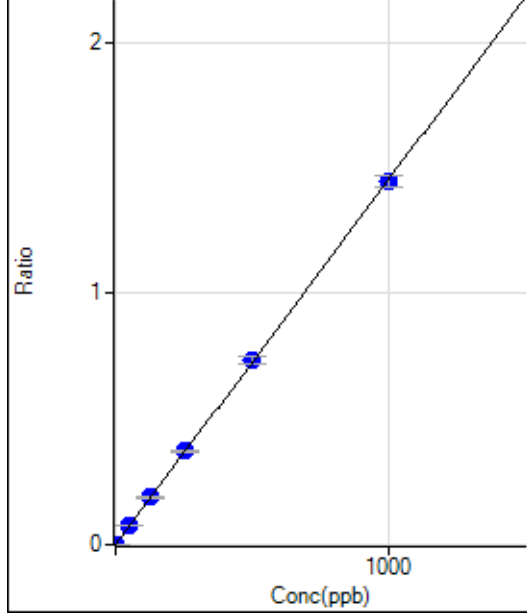
METAL RAW DATA

- 1
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Batch Folder: D:\Agilent\ICPMH\1\DATA\P7081825MS NO GAS.b\
Analysis File: P7081825MS NO GAS.batch.bin
DA Date-Time: 2025-08-19 09:28:08
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	004CALB.d	S00	2025-08-18 13:22:18
2	006CALS.d	S02	2025-08-18 13:28:14
3	007CALS.d	S03	2025-08-18 13:31:10
4	008CALS.d	S04	2025-08-18 13:34:10
5	009CALS.d	S05	2025-08-18 13:37:08
6	010CALS.d	S06	2025-08-18 13:40:07
7	011CALS.d	S07	2025-08-18 13:43:03
8	012CALS.d	S08	2025-08-18 13:46:01

9 Be [No Gas] ISTD:6 Li [No Gas]



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	13.11	0.0000	P	39.1
2	☐	1.000	1.115	589.58	0.0017	P	7.8
3	☐	50.000	52.604	27514.12	0.0764	P	2.4
4	☐	125.000	129.807	68811.80	0.1886	P	3.0
5	☐	250.000	257.060	139638.18	0.3734	P	2.2
6	☐	500.000	506.372	279893.39	0.7356	P	3.4
7	☐	1000.000	994.318	564120.54	1.4443	P	3.1
8	☐			88.02	0.0002	P	31.1

$$y = 0.0015 * x + 3.6876E-005$$

$$R = 0.9999$$

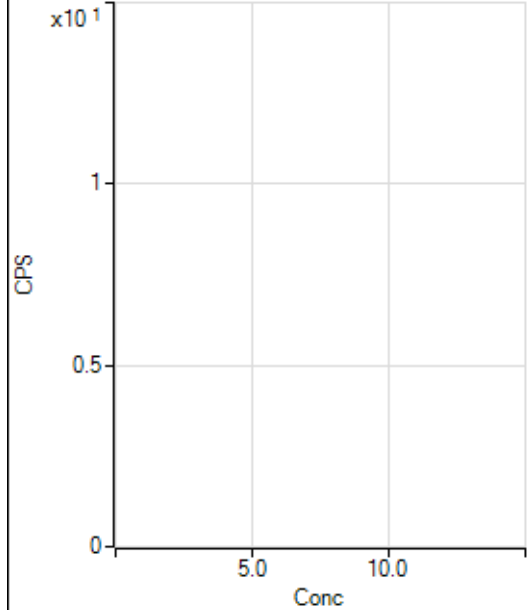
$$DL = 0.02975$$

$$BEC = 0.02539$$

Weight: <None>

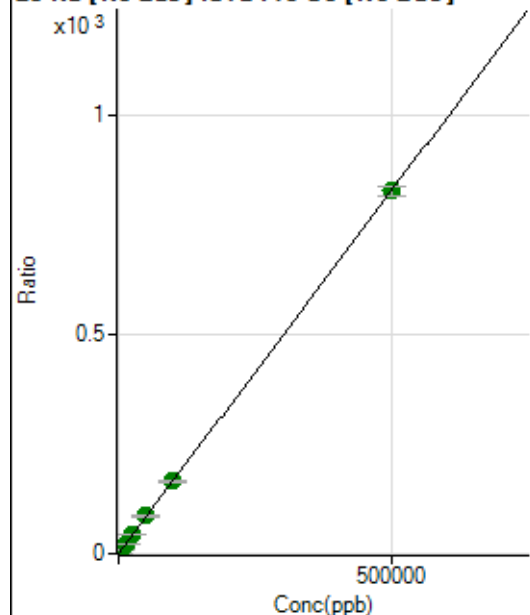
Min Conc: <None>

12 C [No Gas] No available calibration points



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐						
2	☐						
3	☐						
4	☐						
5	☐						
6	☐						
7	☐						
8	☐						

23 Na [No Gas] ISTD:45 Sc [No Gas]



	R _j t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	392444.67	0.1153	P	1.4
2	☐	500.000	513.465	3237766.34	0.9669	A	2.9
3	☐	5000.000	5064.277	28646208.18	8.5144	A	3.0
4	☐	12500.000	12721.604	71601839.49	21.2141	A	2.7
5	☐	25000.000	25883.150	145454348.95	43.0425	A	2.7
6	☐	50000.000	51696.785	293585131.18	85.8544	A	1.3
7	☐	100000.00	100106.55	587905720.13	166.142	A	2.8
8	☐	500000.00	499758.65	2947910213.8	828.965	A	2.4

$$y = 0.0017 * x + 0.1153$$

R = 1.0000

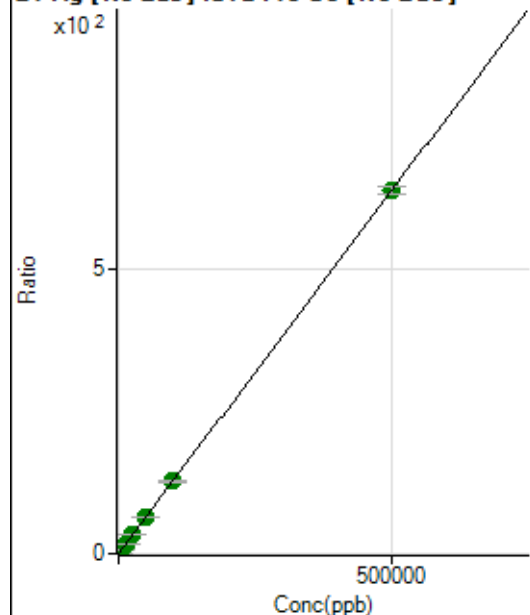
DL = 2.924

BEC = 69.53

Weight: <None>

Min Conc: <None>

24 Mg [No Gas] ISTD:45 Sc [No Gas]



	R _j t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	17262.03	0.0051	P	0.9
2	☐	500.000	497.701	2142976.34	0.6401	A	4.2
3	☐	5000.000	4934.848	21202049.82	6.3015	A	2.4
4	☐	12500.000	12426.307	53536168.09	15.8600	A	2.3
5	☐	25000.000	25349.066	109310223.93	32.3483	A	1.2
6	☐	50000.000	50933.090	222241403.36	64.9914	A	1.6
7	☐	100000.00	99675.121	450039815.52	127.182	A	2.8
8	☐	500000.00	499956.71	2268496872.8	637.907	A	2.0

$$y = 0.0013 * x + 0.0051$$

R = 1.0000

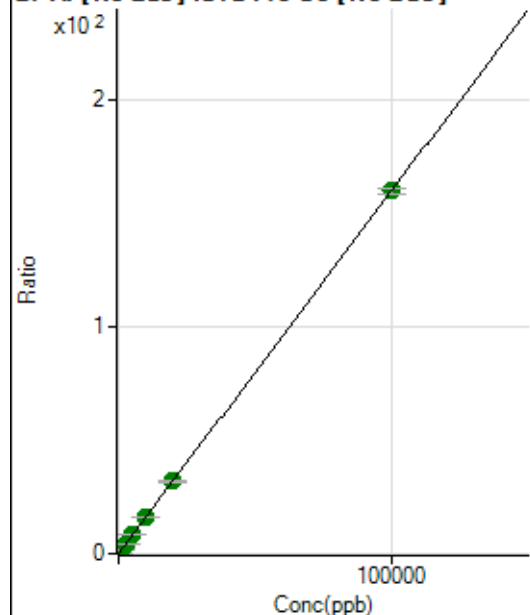
DL = 0.1048

BEC = 3.975

Weight: <None>

Min Conc: <None>

27 Al [No Gas] ISTD :45 Sc [No Gas]



	R _j t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	48416.39	0.0142	P	1.4
2	☐	20.000	19.780	153432.66	0.0458	P	3.2
3	☐	1000.000	985.950	5347225.65	1.5893	A	2.4
4	☐	2500.000	2492.991	13490331.05	3.9968	A	2.4
5	☐	5000.000	5108.632	27625196.81	8.1752	A	1.6
6	☐	10000.000	10058.875	54997630.85	16.0832	A	2.4
7	☐	20000.000	19920.690	112658413.88	31.8375	A	2.6
8	☐	100000.00	100004.85	568173244.87	159.771	A	1.8

$$y = 0.0016 * x + 0.0142$$

R = 1.0000

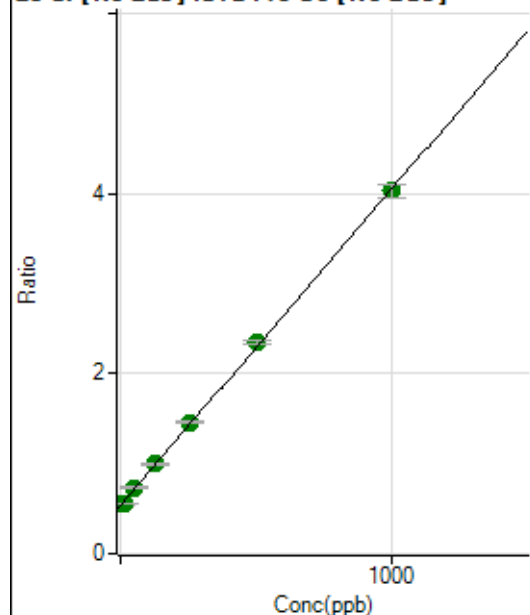
DL = 0.3671

BEC = 8.903

Weight: <None>

Min Conc: <None>

28 Si [No Gas] ISTD :45 Sc [No Gas]



	R _j t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	1862898.08	0.5474	A	1.8
2	☐	10.000	2.534	1862991.43	0.5563	A	2.2
3	☐	50.000	53.346	2473268.17	0.7350	A	1.1
4	☐	125.000	128.334	3371347.24	0.9988	A	2.1
5	☐	250.000	259.656	4935844.13	1.4607	A	1.4
6	☐	500.000	512.051	8031067.80	2.3485	A	2.2
7	☐	1000.000	991.051	14271008.12	4.0333	A	3.6
8	☐			1893601.71	0.5325	A	1.1

$$y = 0.0035 * x + 0.5474$$

R = 0.9998

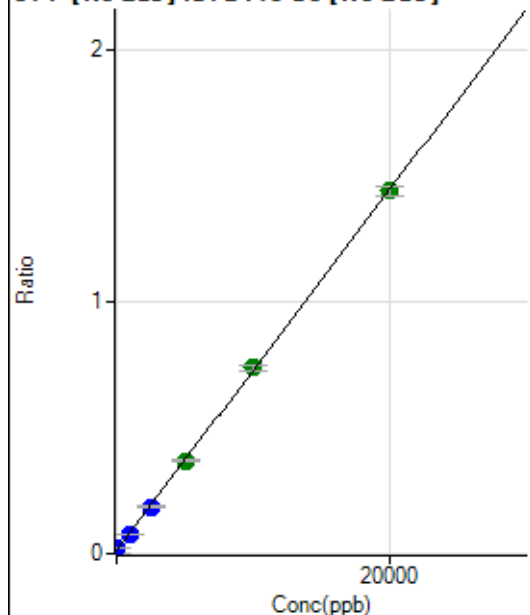
DL = 8.199

BEC = 155.6

Weight: <None>

Min Conc: <None>

31 P [No Gas] ISTD:45 Sc [No Gas]



	R _j t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	-127.053	10867.26	0.0032	P	1.2
2	☐	0.000	127.053	71545.55	0.0214	P	3.8
3	☐	1000.000	883.424	253937.18	0.0755	P	1.7
4	☐	2500.000	2403.919	621812.20	0.1842	P	2.8
5	☐	5000.000	4993.212	1248339.69	0.3694	A	1.4
6	☐	10000.000	10159.029	2526762.79	0.7389	A	3.0
7	☐	20000.000	19940.022	5090464.75	1.4386	A	2.5
8	☐			11760.14	0.0033	P	1.6

$$y = 7.1529E-005 * x + 0.0123$$

R = 0.9999

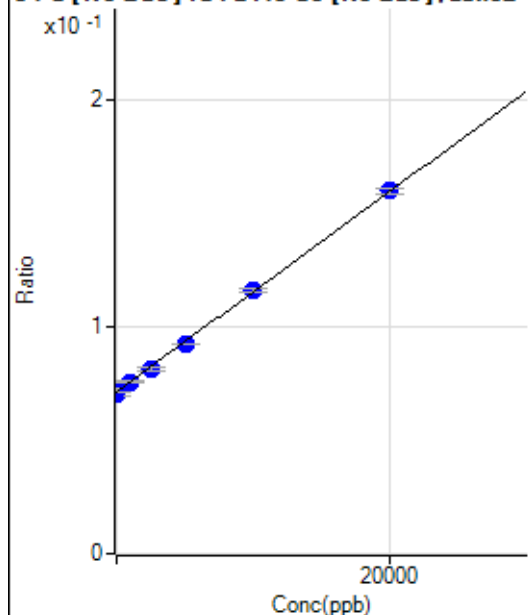
DL = 17.85

BEC = 171.7

Weight: <None>

Min Conc: <None>

34 S [No Gas] ISTD:45 Sc [No Gas]. abno_



	R _j t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	-200.758	240081.12	0.0705	P	1.9
2	☐	0.000	200.758	242186.95	0.0723	P	2.1
3	☐	1000.000	943.883	254380.44	0.0756	P	0.9
4	☐	2500.000	2253.100	274696.80	0.0814	P	1.9
5	☐	5000.000	4742.312	312109.35	0.0924	P	0.2
6	☐	10000.000	10089.222	396559.71	0.1160	P	1.1
7	☐	20000.000	20053.479	566048.18	0.1600	P	1.6
8	☐			219097.63	0.0616	P	0.6

$$y = 4.4142E-006 * x + 0.0714$$

R = 0.9997

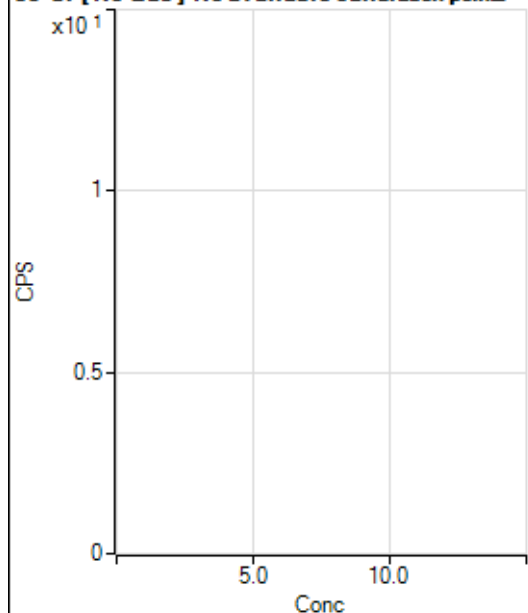
DL = 971

BEC = 1.618E+04

Weight: <None>

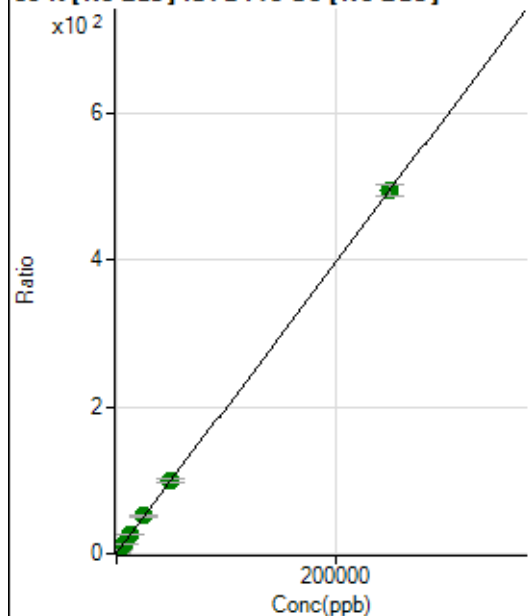
Min Conc: <None>

35 Cl [No Gas] No available calibration points



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐						
2	☐						
3	☐						
4	☐						
5	☐						
6	☐						
7	☐						
8	☐						

39 K [No Gas] ISTD :45 Sc [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	3230578.88	0.9492	A	1.0
2	☐	500.000	515.044	6581663.45	1.9652	A	1.9
3	☐	2500.000	2553.822	20144443.03	5.9871	A	2.0
4	☐	6250.000	6403.781	45844148.21	13.5819	A	2.6
5	☐	12500.000	12752.035	88210876.46	26.1051	A	0.3
6	☐	25000.000	25558.401	175653267.38	51.3681	A	2.5
7	☐	50000.000	50003.777	352412714.75	99.5914	A	3.3
8	☐	250000.00	249926.39	1756635564.9	493.977	A	3.3

$$y = 0.0020 * x + 0.9492$$

$$R = 1.0000$$

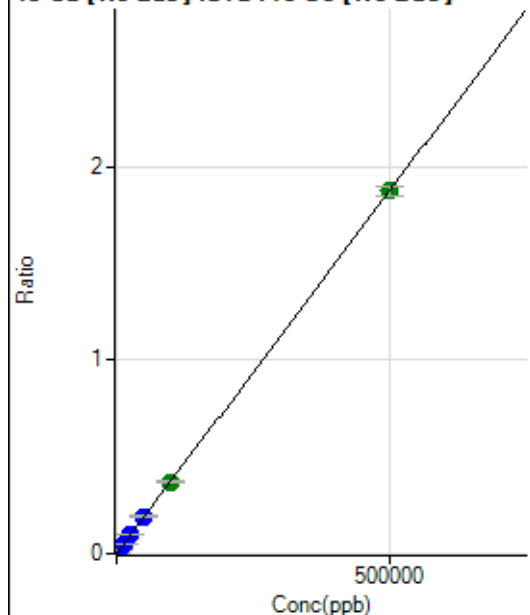
$$DL = 13.93$$

$$BEC = 481.2$$

Weight: <None>

Min Conc: <None>

43 Ca [No Gas] ISTD:45 Sc [No Gas]



	R _{jt}	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	646.69	0.0002	P	5.8
2	☐	500.000	509.171	7022.80	0.0021	P	3.4
3	☐	5000.000	5208.765	66294.59	0.0197	P	1.0
4	☐	12500.000	12957.881	164470.43	0.0487	P	3.0
5	☐	25000.000	25853.918	327899.10	0.0970	P	1.6
6	☐	50000.000	51287.456	657595.58	0.1923	P	1.9
7	☐	100000.00	98604.550	1307701.28	0.3696	A	2.5
8	☐	500000.00	500094.10	6662474.14	1.8735	A	2.5

$$y = 3.7459E-006 * x + 1.8997E-004$$

R = 1.0000

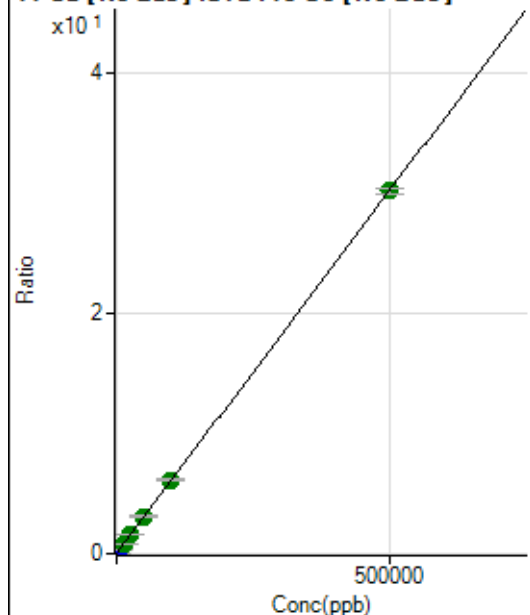
DL = 8.886

BEC = 50.71

Weight: <None>

Min Conc: <None>

44 Ca [No Gas] ISTD:45 Sc [No Gas]



	R _{jt}	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	75926.50	0.0223	P	1.8
2	☐	500.000	521.591	180106.94	0.0538	P	2.7
3	☐	5000.000	5204.592	1131794.33	0.3364	P	2.1
4	☐	12500.000	12606.460	2643015.78	0.7830	A	2.6
5	☐	25000.000	25434.910	5262005.30	1.5572	A	2.2
6	☐	50000.000	50894.161	10578402.76	3.0935	A	2.7
7	☐	100000.00	100774.78	21598161.34	6.1036	A	2.7
8	☐	500000.00	499729.15	107319686.18	30.1785	A	1.7

$$y = 6.0345E-005 * x + 0.0223$$

R = 1.0000

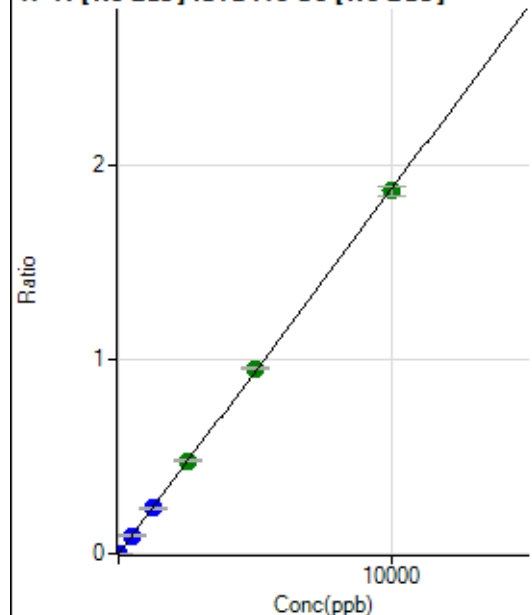
DL = 20.43

BEC = 369.7

Weight: <None>

Min Conc: <None>

47 Ti [No Gas] ISTD:45 Sc [No Gas]



	R _{jt}	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	118.89	0.0000	P	21.6
2	☐	5.000	5.264	3424.87	0.0010	P	6.3
3	☐	500.000	497.435	314353.45	0.0934	P	2.3
4	☐	1250.000	1244.308	788638.16	0.2337	P	2.9
5	☐	2500.000	2539.749	1611394.86	0.4769	A	2.2
6	☐	5000.000	5078.685	3260883.21	0.9536	A	0.6
7	☐	10000.000	9951.560	6611723.86	1.8684	A	2.8
8	☐			555.57	0.0002	P	11.0

$$y = 1.8775E-004 * x + 3.4977E-005$$

R = 0.9999

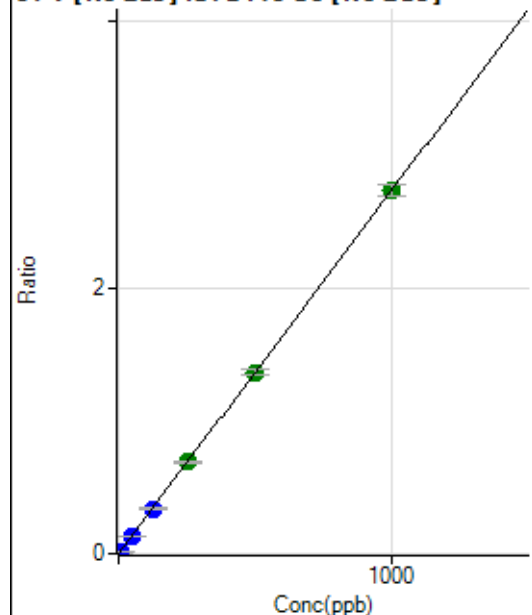
DL = 0.1206

BEC = 0.1863

Weight: <None>

Min Conc: <None>

51 V [No Gas] ISTD:45 Sc [No Gas]



	R _{jt}	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	450.01	0.0001	P	27.1
2	☐	5.000	5.055	46588.75	0.0139	P	2.7
3	☐	50.000	49.457	454049.78	0.1349	P	2.2
4	☐	125.000	123.332	1135140.77	0.3363	P	3.2
5	☐	250.000	252.426	2325518.96	0.6882	A	2.3
6	☐	500.000	500.306	4664078.30	1.3639	A	3.1
7	☐	1000.000	999.476	9640922.98	2.7246	A	3.2
8	☐			4456.27	0.0013	P	4.3

$$y = 0.0027 * x + 1.3189E-004$$

R = 1.0000

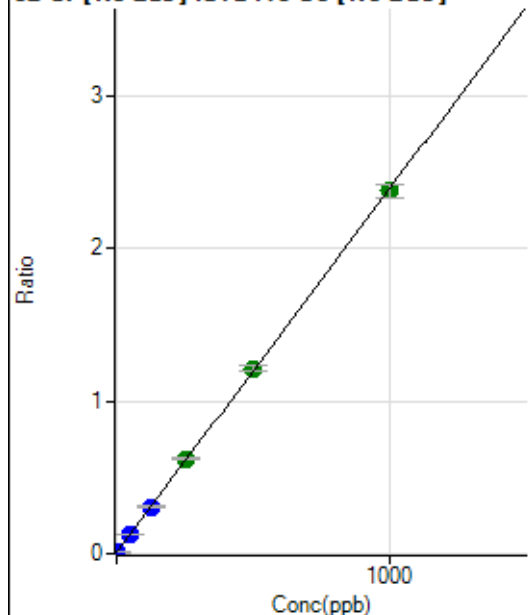
DL = 0.0393

BEC = 0.04838

Weight: <None>

Min Conc: <None>

52 Cr [No Gas] ISTD:45 Sc [No Gas]



	R _j t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	21509.94	0.0063	P	2.0
2	☐	2.000	2.106	37977.82	0.0113	P	3.1
3	☐	50.000	50.246	424455.77	0.1262	P	2.4
4	☐	125.000	125.867	1034577.22	0.3065	P	2.7
5	☐	250.000	257.326	2095195.60	0.6200	A	1.5
6	☐	500.000	507.008	4156446.43	1.2155	A	3.0
7	☐	1000.000	994.544	8414944.74	2.3783	A	3.8
8	☐			57851.77	0.0163	P	0.9

$$y = 0.0024 * x + 0.0063$$

R = 0.9999

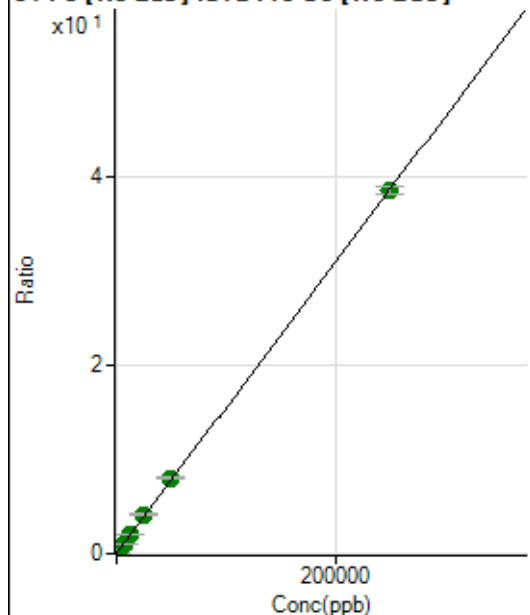
DL = 0.1604

BEC = 2.65

Weight: <None>

Min Conc: <None>

54 Fe [No Gas] ISTD:45 Sc [No Gas]



	R _j t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	183644.64	0.0540	P	0.9
2	☐	50.000	54.480	208755.07	0.0623	P	2.6
3	☐	2500.000	2731.705	1595571.23	0.4743	A	3.6
4	☐	6250.000	6662.373	3642225.43	1.0791	A	2.9
5	☐	12500.000	13208.138	7049663.65	2.0862	A	1.0
6	☐	25000.000	26361.006	14054818.96	4.1100	A	4.2
7	☐	50000.000	51668.335	28321047.91	8.0039	A	3.5
8	☐	250000.00	249482.19	136700136.85	38.4406	A	2.2

$$y = 1.5387E-004 * x + 0.0540$$

R = 1.0000

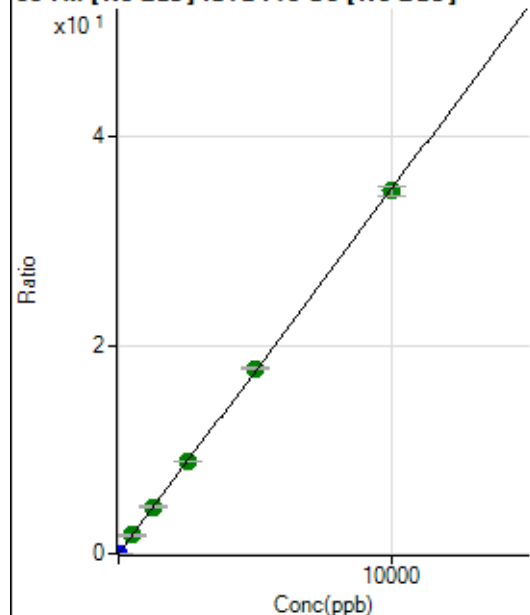
DL = 9.684

BEC = 350.7

Weight: <None>

Min Conc: <None>

55 Mn [No Gas] ISTD:45 Sc [No Gas]



	R _{jt}	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	10681.65	0.0031	P	3.4
2	☐	1.000	0.953	21674.64	0.0065	P	3.0
3	☐	500.000	506.900	5978212.96	1.7769	A	2.8
4	☐	1250.000	1277.097	15092736.58	4.4719	A	3.9
5	☐	2500.000	2523.037	29843057.33	8.8317	A	0.8
6	☐	5000.000	5083.013	60832054.65	17.7895	A	1.8
7	☐	10000.000	9949.002	123203460.39	34.8165	A	2.6
8	☐			52761.10	0.0148	P	2.1

$$y = 0.0035 * x + 0.0031$$

$$R = 0.9999$$

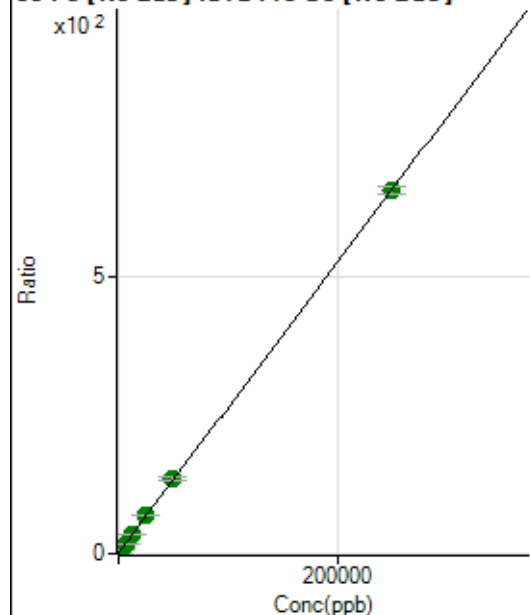
$$DL = 0.09172$$

$$BEC = 0.8966$$

Weight: <None>

Min Conc: <None>

56 Fe [No Gas] ISTD:45 Sc [No Gas]



	R _{jt}	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	5078922.32	1.4922	A	0.7
2	☐	50.000	59.707	5521573.94	1.6486	A	1.7
3	☐	2500.000	2620.095	28112410.14	8.3557	A	2.8
4	☐	6250.000	6532.725	62797220.73	18.6051	A	2.8
5	☐	12500.000	13058.484	120638433.76	35.6996	A	1.6
6	☐	25000.000	26147.787	239324645.33	69.9877	A	2.2
7	☐	50000.000	51363.421	481334068.38	136.041	A	4.1
8	☐	250000.00	249576.34	2330235431.9	655.270	A	2.1

$$y = 0.0026 * x + 1.4922$$

$$R = 1.0000$$

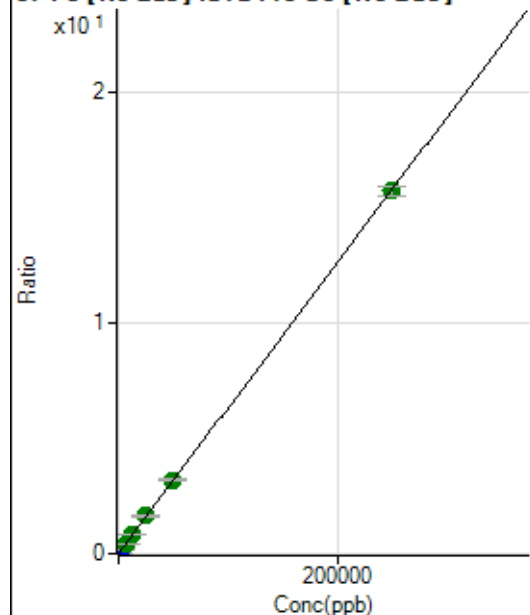
$$DL = 12.65$$

$$BEC = 569.7$$

Weight: <None>

Min Conc: <None>

57 Fe [No Gas] ISTD:45 Sc [No Gas]



	R _j t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	29687.15	0.0087	P	1.6
2	☐	50.000	54.807	40759.65	0.0122	P	2.8
3	☐	2500.000	2604.233	580783.17	0.1726	P	2.3
4	☐	6250.000	6484.517	1406802.01	0.4168	A	3.5
5	☐	12500.000	12880.710	2768681.42	0.8193	A	1.7
6	☐	25000.000	25875.913	5598177.56	1.6372	A	2.5
7	☐	50000.000	50807.294	11344788.44	3.2062	A	3.8
8	☐	250000.00	249725.00	55918850.84	15.7246	A	2.5

$$y = 6.2933E-005 * x + 0.0087$$

R = 1.0000

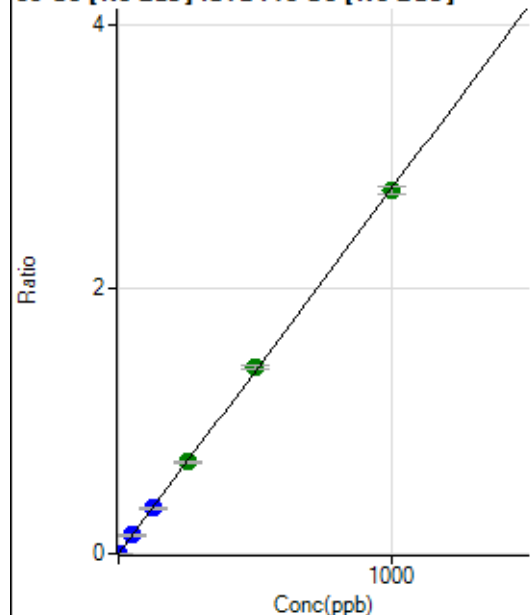
DL = 6.687

BEC = 138.6

Weight: <None>

Min Conc: <None>

59 Co [No Gas] ISTD:45 Sc [No Gas]



	R _j t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	364.46	0.0001	P	41.2
2	☐	1.000	1.057	10112.37	0.0030	P	4.8
3	☐	50.000	50.225	466235.86	0.1386	P	1.8
4	☐	125.000	124.593	1159626.70	0.3436	P	3.3
5	☐	250.000	252.143	2349132.33	0.6952	A	1.6
6	☐	500.000	510.834	4816045.80	1.4084	A	2.3
7	☐	1000.000	994.087	9698310.55	2.7406	A	2.0
8	☐			14791.85	0.0042	P	0.5

$$y = 0.0028 * x + 1.0667E-004$$

R = 0.9999

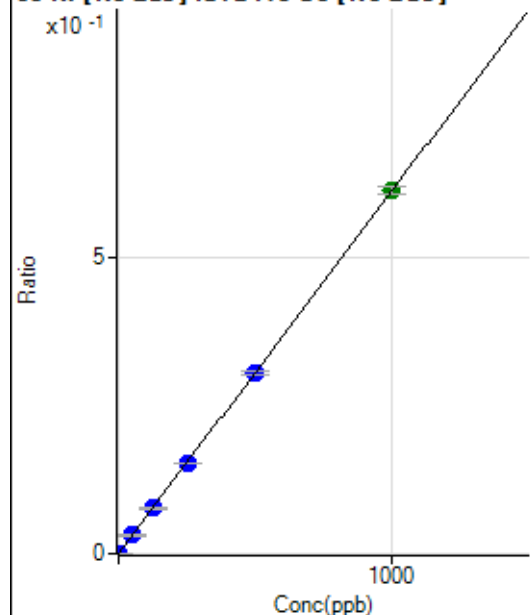
DL = 0.04779

BEC = 0.03869

Weight: <None>

Min Conc: <None>

60 Ni [No Gas] ISTD :45 Sc [No Gas]



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	1112.27	0.0003	P	4.7
2	☐	1.000	0.941	3018.11	0.0009	P	1.5
3	☐	50.000	50.050	103950.46	0.0309	P	2.3
4	☐	125.000	126.040	260926.31	0.0773	P	2.9
5	☐	250.000	249.116	515229.18	0.1525	P	1.6
6	☐	500.000	496.919	1038939.98	0.3038	P	2.0
7	☐	1000.000	1001.629	2165943.77	0.6121	A	2.3
8	☐			8876.04	0.0025	P	3.0

$$y = 6.1076E-004 * x + 3.2665E-004$$

R = 1.0000

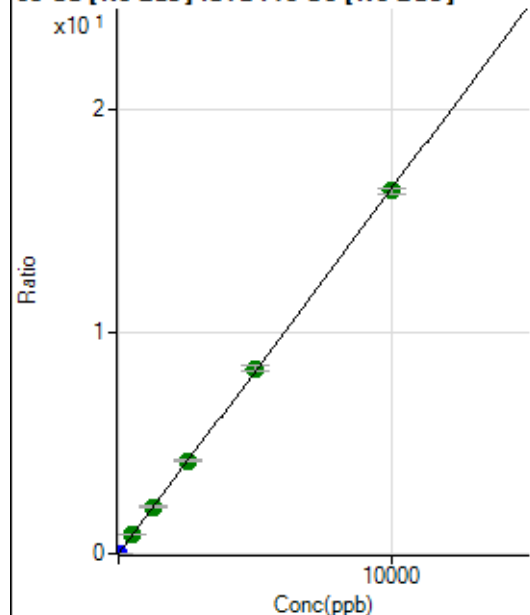
DL = 0.07523

BEC = 0.5348

Weight: <None>

Min Conc: <None>

63 Cu [No Gas] ISTD :45 Sc [No Gas]



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	3012.55	0.0009	P	1.6
2	☐	2.000	1.884	13342.73	0.0040	P	4.1
3	☐	500.000	511.436	2835413.22	0.8427	A	1.1
4	☐	1250.000	1274.730	7083924.55	2.0989	A	3.1
5	☐	2500.000	2546.032	14163347.98	4.1914	A	2.9
6	☐	5000.000	5082.404	28608842.91	8.3660	A	2.9
7	☐	10000.000	9943.627	57920381.91	16.3670	A	1.8
8	☐			48617.87	0.0137	P	4.5

$$y = 0.0016 * x + 8.8496E-004$$

R = 0.9999

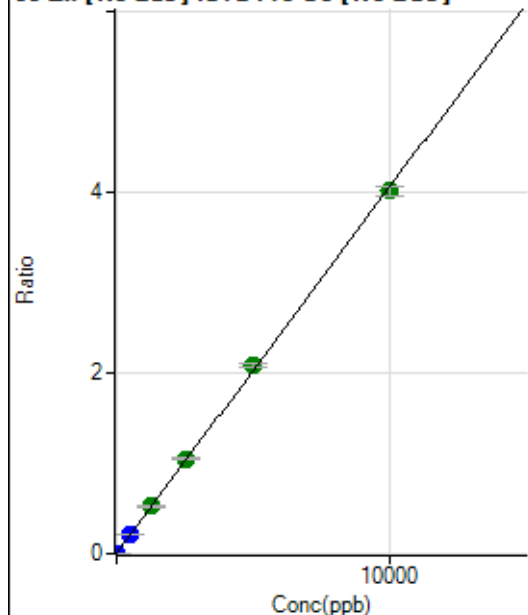
DL = 0.02637

BEC = 0.5377

Weight: <None>

Min Conc: <None>

66 Zn [No Gas] ISTD:45 Sc [No Gas]



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	8868.26	0.0026	P	1.9
2	☐	5.000	5.142	15705.05	0.0047	P	3.9
3	☐	500.000	509.112	703273.28	0.2090	P	2.0
4	☐	1250.000	1291.745	1776532.11	0.5263	A	2.9
5	☐	2500.000	2569.643	3529389.04	1.0444	A	1.9
6	☐	5000.000	5157.383	7159312.60	2.0936	A	2.1
7	☐	10000.000	9898.224	14209488.82	4.0157	A	3.0
8	☐			21097.25	0.0059	P	1.1

$$y = 4.0544\text{E-}004 * x + 0.0026$$

R = 0.9998

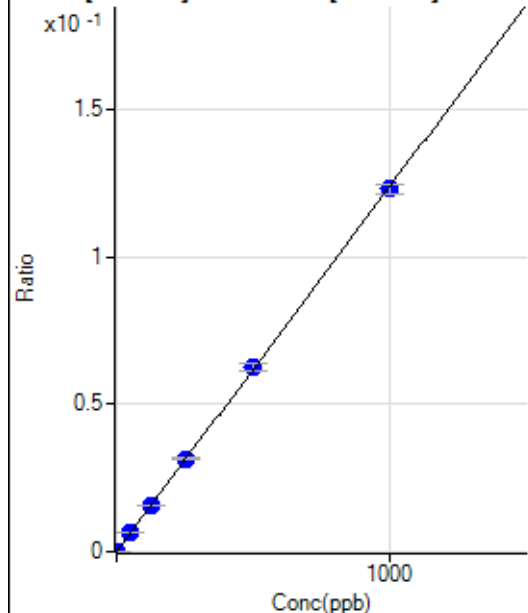
DL = 0.3625

BEC = 6.427

Weight: <None>

Min Conc: <None>

75 As [No Gas] ISTD:89 Y [No Gas]



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	-1157.47	-0.0001	P	-22.3
2	☐	1.000	0.952	-148.97	0.0000	P	-19.2
3	☐	50.000	51.172	52588.49	0.0062	P	1.5
4	☐	125.000	126.754	134752.50	0.0156	P	3.1
5	☐	250.000	254.593	268210.05	0.0314	P	1.9
6	☐	500.000	507.103	547715.94	0.0626	P	4.2
7	☐	1000.000	995.022	1104331.24	0.1231	P	2.4
8	☐			229.95	0.0000	P	75.2

$$y = 1.2381\text{E-}004 * x - 1.3544\text{E-}004$$

R = 1.0000

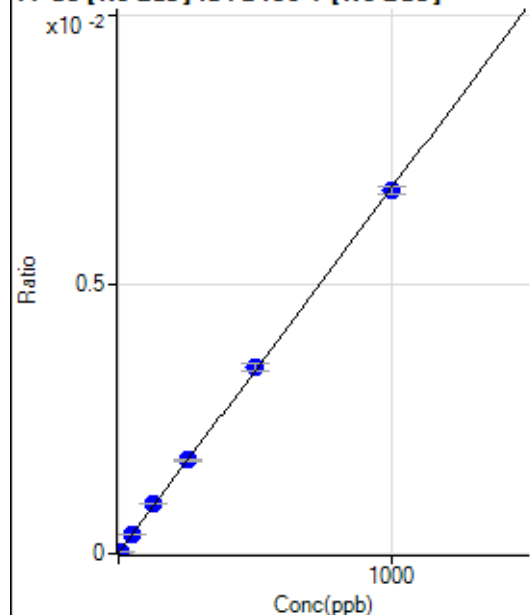
DL = 0.7318

BEC = -1.094

Weight: <None>

Min Conc: <None>

77 Se [No Gas] ISTD:89 Y [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	123.34	0.0000	P	38.9
2	☐	5.000	4.715	394.46	0.0000	P	9.2
3	☐	50.000	52.402	3138.14	0.0004	P	2.6
4	☐	125.000	133.387	7963.33	0.0009	P	1.3
5	☐	250.000	253.900	14842.03	0.0017	P	2.1
6	☐	500.000	510.493	30403.61	0.0035	P	4.1
7	☐	1000.000	992.612	60558.18	0.0067	P	2.3
8	☐			245.56	0.0000	P	12.7

$$y = 6.7839E-006 * x + 1.4405E-005$$

R = 0.9999

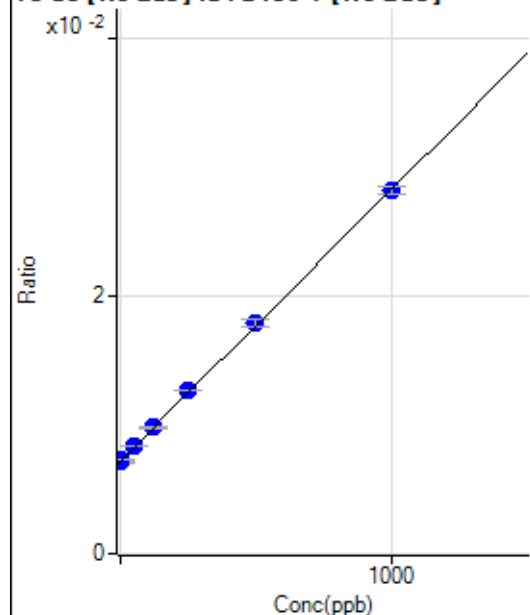
DL = 2.478

BEC = 2.123

Weight: <None>

Min Conc: <None>

78 Se [No Gas] ISTD:89 Y [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	60947.95	0.0071	P	1.6
2	☐	5.000	8.441	62187.73	0.0073	P	1.6
3	☐	50.000	58.045	70908.67	0.0084	P	1.6
4	☐	125.000	127.077	85079.32	0.0098	P	1.9
5	☐	250.000	262.027	108361.29	0.0127	P	0.7
6	☐	500.000	508.898	156587.65	0.0179	P	2.8
7	☐	1000.000	991.865	252500.38	0.0281	P	2.0
8	☐			58949.98	0.0065	P	0.7

$$y = 2.1178E-005 * x + 0.0071$$

R = 0.9999

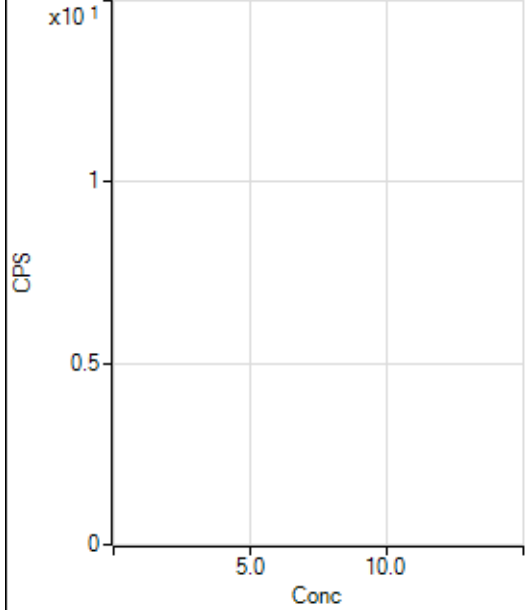
DL = 15.83

BEC = 336.7

Weight: <None>

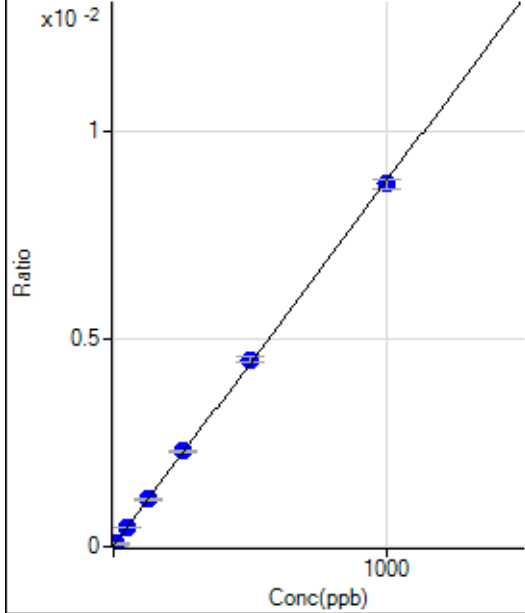
Min Conc: <None>

81 Br [No Gas] No available calibration points



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐			7484.20		P	2.4
2	☐			7544.21		P	1.3
3	☐			7204.04		P	2.7
4	☐			7506.44		P	1.5
5	☐			7205.17		P	3.5
6	☐			7210.73		P	5.5
7	☐			7127.35		P	1.4
8	☐			7284.07		P	0.8

82 Se [No Gas] ISTD:89 Y [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	196.35	0.0000	P	35.7
2	☐	5.000	5.397	597.32	0.0001	P	5.4
3	☐	50.000	51.692	4037.83	0.0005	P	0.8
4	☐	125.000	128.235	9933.99	0.0011	P	3.3
5	☐	250.000	258.643	19570.42	0.0023	P	1.9
6	☐	500.000	511.062	39370.94	0.0045	P	3.1
7	☐	1000.000	991.817	78226.28	0.0087	P	2.3
8	☐			317.83	0.0000	P	8.2

$$y = 8.7658E-006 * x + 2.2925E-005$$

$$R = 0.9999$$

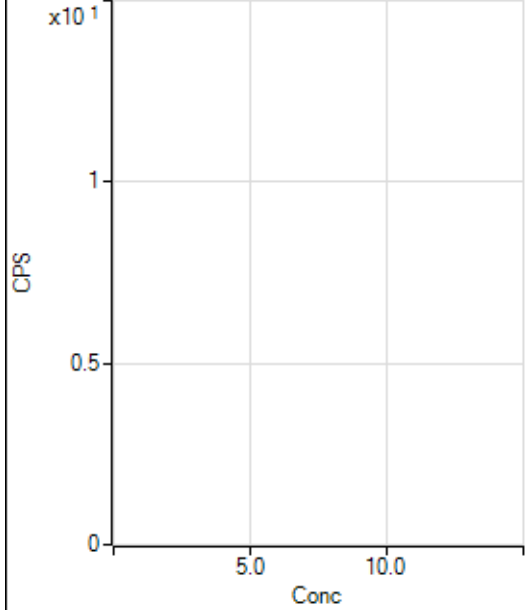
$$DL = 2.799$$

$$BEC = 2.615$$

Weight: <None>

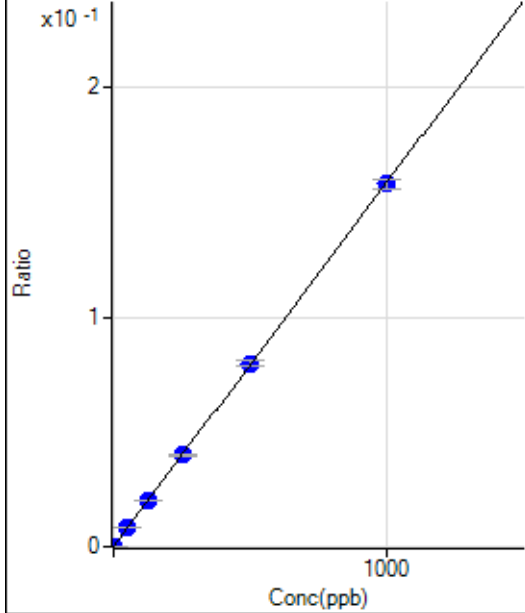
Min Conc: <None>

83 Kr [No Gas] No available calibration points



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐			541.12		P	5.8
2	☐			520.01		P	4.8
3	☐			560.02		P	6.3
4	☐			583.35		P	3.7
5	☐			525.57		P	9.2
6	☐			568.91		P	4.7
7	☐			563.35		P	11.3
8	☐			556.68		P	2.4

86 Sr [No Gas] ISTD : 89 Y [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	858.92	0.0001	P	6.9
2	☐	1.000	1.002	2204.63	0.0003	P	6.2
3	☐	50.000	51.133	69576.09	0.0082	P	2.5
4	☐	125.000	125.895	173668.91	0.0201	P	2.6
5	☐	250.000	252.720	343096.45	0.0401	P	1.8
6	☐	500.000	504.090	699330.37	0.0800	P	3.6
7	☐	1000.000	997.106	1418888.78	0.1581	P	2.6
8	☐			18757.63	0.0021	P	1.9

$$y = 1.5847E-004 * x + 1.0038E-004$$

$$R = 1.0000$$

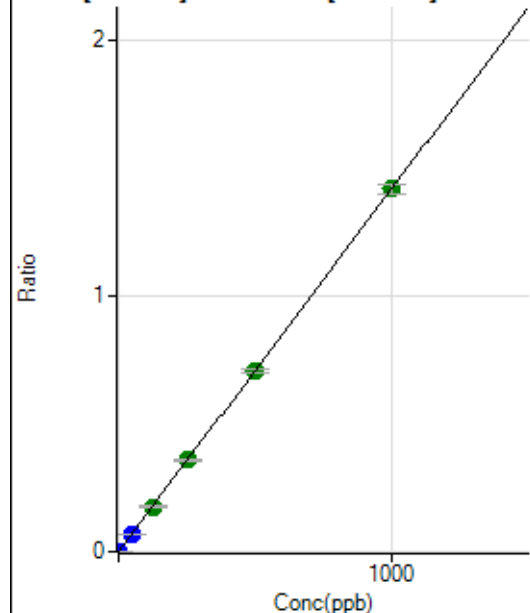
$$DL = 0.1308$$

$$BEC = 0.6334$$

Weight: <None>

Min Conc: <None>

88 Sr [No Gas] ISTD:89 Y [No Gas]



	R _j t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	568.91	0.0001	P	8.7
2	☐	1.000	0.971	12268.57	0.0014	P	3.8
3	☐	50.000	49.438	594690.94	0.0701	P	1.5
4	☐	125.000	124.495	1528356.68	0.1765	A	3.0
5	☐	250.000	252.135	3053435.82	0.3573	A	2.5
6	☐	500.000	498.434	6175788.80	0.7063	A	2.9
7	☐	1000.000	1000.341	12719990.09	1.4175	A	2.7
8	☐			155326.38	0.0170	P	2.0

$$y = 0.0014 * x + 6.6571E-005$$

R = 1.0000

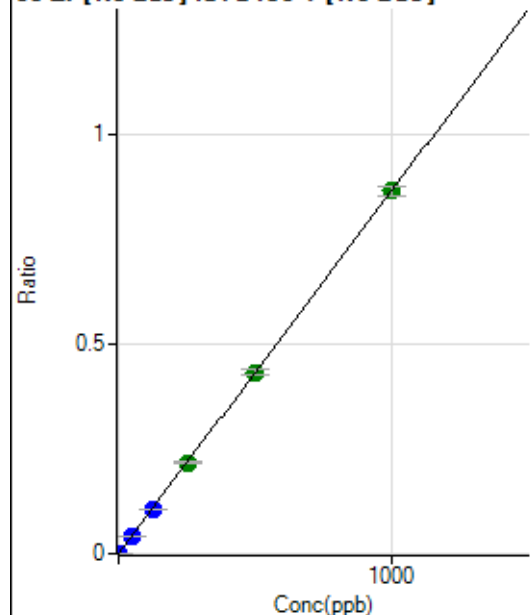
DL = 0.01221

BEC = 0.04698

Weight: <None>

Min Conc: <None>

90 Zr [No Gas] ISTD:89 Y [No Gas]



	R _j t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	314.45	0.0000	P	3.9
2	☐	1.000	1.019	7794.36	0.0009	P	3.1
3	☐	50.000	48.842	357961.47	0.0422	P	2.4
4	☐	125.000	121.191	906586.83	0.1047	P	2.7
5	☐	250.000	249.602	1841842.73	0.2155	A	2.4
6	☐	500.000	500.867	3781265.22	0.4325	A	3.6
7	☐	1000.000	1000.200	7749553.98	0.8636	A	3.0
8	☐			6962.83	0.0008	P	1.8

$$y = 8.6337E-004 * x + 3.6804E-005$$

R = 1.0000

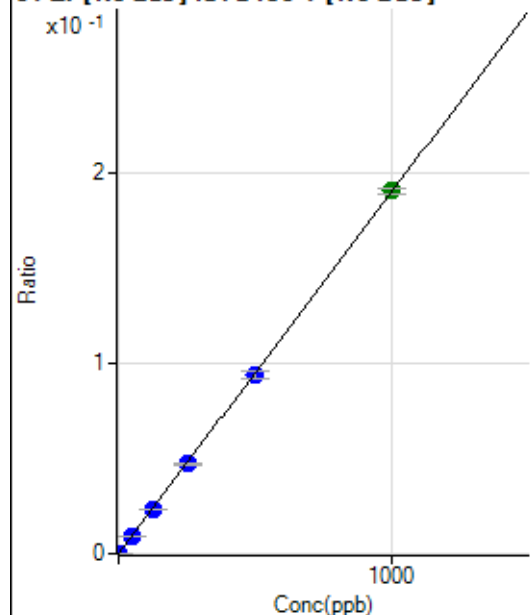
DL = 0.004944

BEC = 0.04263

Weight: <None>

Min Conc: <None>

91 Zr [No Gas] ISTD:89 Y [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	78.89	0.0000	P	31.7
2	☐	1.000	1.031	1745.68	0.0002	P	8.7
3	☐	50.000	49.446	79875.55	0.0094	P	2.1
4	☐	125.000	122.551	202044.43	0.0233	P	2.8
5	☐	250.000	248.656	404394.80	0.0473	P	1.7
6	☐	500.000	494.346	822492.96	0.0941	P	3.5
7	☐	1000.000	1003.497	1713630.10	0.1909	A	1.9
8	☐			1574.55	0.0002	P	6.4

$$y = 1.9028\text{E-}004 * x + 9.1803\text{E-}006$$

$$R = 1.0000$$

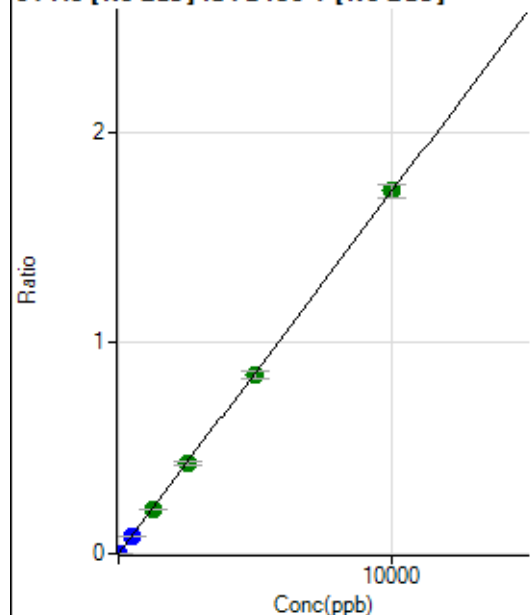
$$DL = 0.04587$$

$$BEC = 0.04825$$

Weight: <None>

Min Conc: <None>

94 Mo [No Gas] ISTD:89 Y [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	247.78	0.0000	P	13.4
2	☐	5.000	6.040	9075.11	0.0011	P	1.6
3	☐	500.000	496.777	724137.01	0.0854	P	1.7
4	☐	1250.000	1222.116	1818586.57	0.2100	A	3.8
5	☐	2500.000	2492.073	3658839.56	0.4282	A	3.8
6	☐	5000.000	4964.395	7457265.51	0.8529	A	4.3
7	☐	10000.000	10023.430	15453718.38	1.7221	A	3.4
8	☐			4825.28	0.0005	P	2.1

$$y = 1.7180\text{E-}004 * x + 2.8927\text{E-}005$$

$$R = 1.0000$$

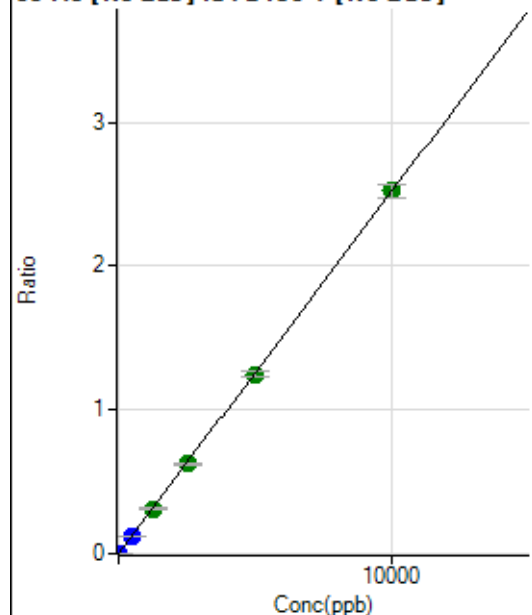
$$DL = 0.06744$$

$$BEC = 0.1684$$

Weight: <None>

Min Conc: <None>

95 Mo [No Gas] ISTD:89 Y [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	238.89	0.0000	P	7.0
2	☐	5.000	4.950	10835.22	0.0013	P	1.4
3	☐	500.000	491.519	1049172.78	0.1237	P	2.1
4	☐	1250.000	1238.647	2699547.67	0.3117	A	3.1
5	☐	2500.000	2491.051	5356514.16	0.6268	A	2.2
6	☐	5000.000	4963.337	10919558.86	1.2489	A	3.6
7	☐	10000.000	10022.412	22630229.94	2.5219	A	3.4
8	☐			3844.99	0.0004	P	4.5

$$y = 2.5162E-004 * x + 2.7915E-005$$

R = 1.0000

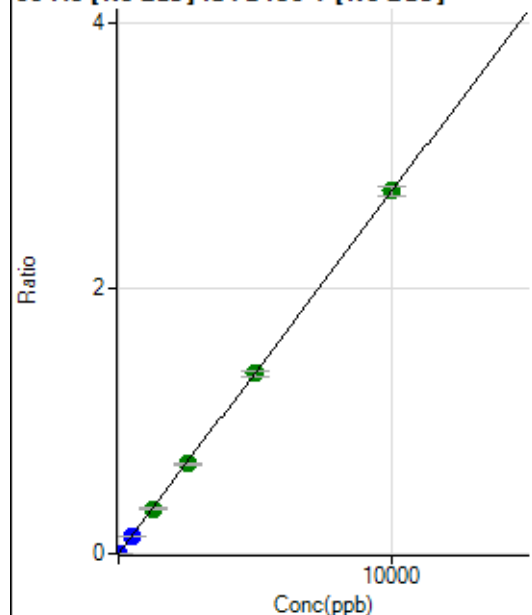
DL = 0.02316

BEC = 0.1109

Weight: <None>

Min Conc: <None>

96 Mo [No Gas] ISTD:89 Y [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	262.23	0.0000	P	20.8
2	☐	5.000	5.073	12023.93	0.0014	P	2.8
3	☐	500.000	488.427	1129483.64	0.1332	P	1.9
4	☐	1250.000	1228.510	2900569.30	0.3349	A	3.8
5	☐	2500.000	2481.490	5780809.63	0.6765	A	1.5
6	☐	5000.000	4978.583	11866548.85	1.3572	A	3.2
7	☐	10000.000	10018.601	24508022.97	2.7310	A	2.4
8	☐			6646.02	0.0007	P	3.8

$$y = 2.7259E-004 * x + 3.0617E-005$$

R = 1.0000

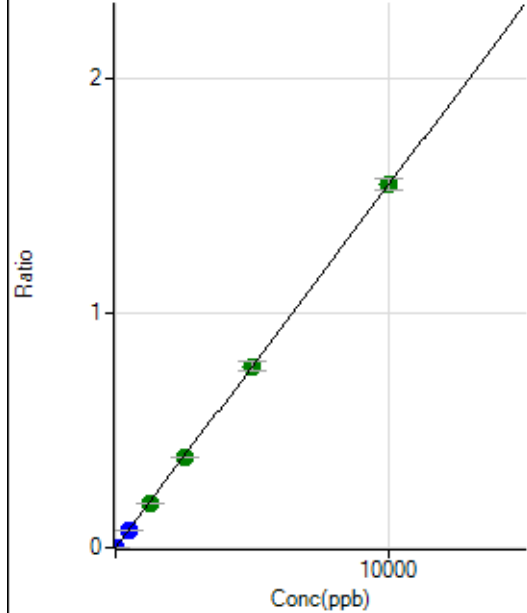
DL = 0.07

BEC = 0.1123

Weight: <None>

Min Conc: <None>

97 Mo [No Gas] ISTD:89 Y [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	264.45	0.0000	P	5.9
2	☐	5.000	4.895	6689.37	0.0008	P	1.2
3	☐	500.000	493.094	645421.91	0.0761	P	2.2
4	☐	1250.000	1222.104	1633271.02	0.1886	A	2.2
5	☐	2500.000	2503.124	3300206.96	0.3862	A	1.1
6	☐	5000.000	4997.885	6740643.58	0.7710	A	4.9
7	☐	10000.000	10004.109	13849703.82	1.5434	A	3.1
8	☐			2499.12	0.0003	P	1.4

$$y = 1.5427E-004 * x + 3.0915E-005$$

R = 1.0000

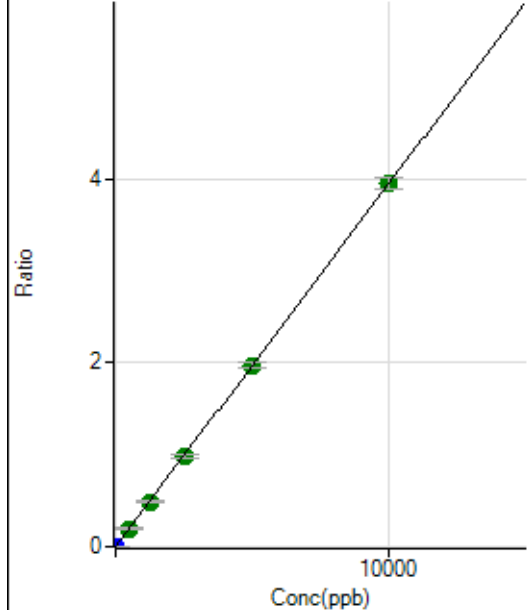
DL = 0.0354

BEC = 0.2004

Weight: <None>

Min Conc: <None>

98 Mo [No Gas] ISTD:89 Y [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	332.23	0.0000	P	16.4
2	☐	5.000	4.977	17026.73	0.0020	P	2.1
3	☐	500.000	498.792	1668702.84	0.1968	A	2.2
4	☐	1250.000	1234.186	4216159.10	0.4868	A	2.7
5	☐	2500.000	2496.545	8414010.71	0.9846	A	2.6
6	☐	5000.000	4995.206	17225581.55	1.9700	A	3.1
7	☐	10000.000	10005.298	35409391.41	3.9459	A	3.1
8	☐			5997.96	0.0007	P	6.5

$$y = 3.9438E-004 * x + 3.8773E-005$$

R = 1.0000

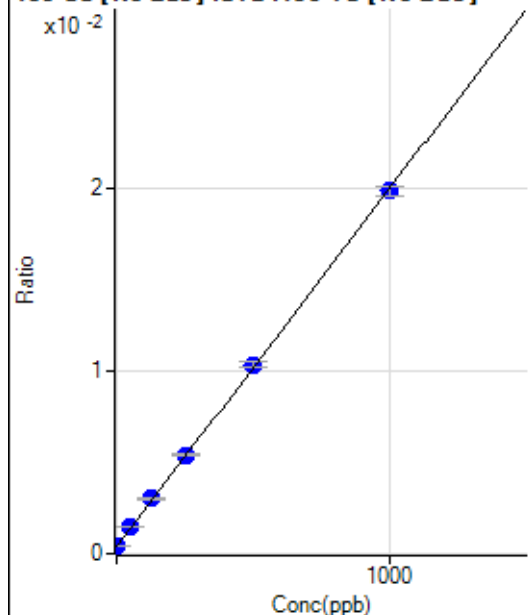
DL = 0.04835

BEC = 0.09831

Weight: <None>

Min Conc: <None>

106 Cd [No Gas] ISTD :159 Tb [No Gas]



	R _{jt}	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	1969.04	0.0004	P	2.8
2	☐	1.000	1.329	2053.50	0.0004	P	2.7
3	☐	50.000	52.814	6953.96	0.0014	P	1.1
4	☐	125.000	133.862	14743.16	0.0030	P	5.0
5	☐	250.000	255.210	27284.69	0.0054	P	2.7
6	☐	500.000	508.704	53694.77	0.0104	P	2.2
7	☐	1000.000	993.097	105184.56	0.0199	P	2.5
8	☐			2281.31	0.0004	P	2.4

$$y = 1.9595E-005 * x + 3.9998E-004$$

R = 0.9999

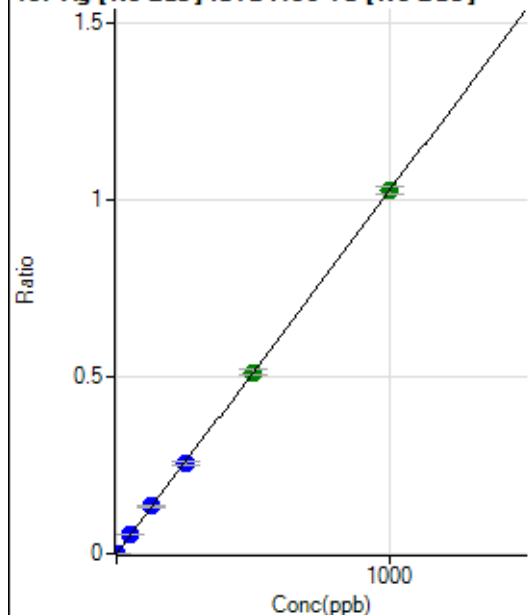
DL = 1.718

BEC = 20.41

Weight: <None>

Min Conc: <None>

107 Ag [No Gas] ISTD :159 Tb [No Gas]



	R _{jt}	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	103.33	0.0000	P	2.4
2	☐	1.000	1.104	5555.57	0.0012	P	4.7
3	☐	50.000	51.654	256649.32	0.0530	P	1.4
4	☐	125.000	129.808	649073.46	0.1331	P	3.0
5	☐	250.000	248.934	1289041.29	0.2551	P	2.4
6	☐	500.000	499.698	2652223.07	0.5121	A	3.8
7	☐	1000.000	999.734	5426874.81	1.0246	A	2.2
8	☐			1432.32	0.0003	P	48.7

$$y = 0.0010 * x + 2.0991E-005$$

R = 1.0000

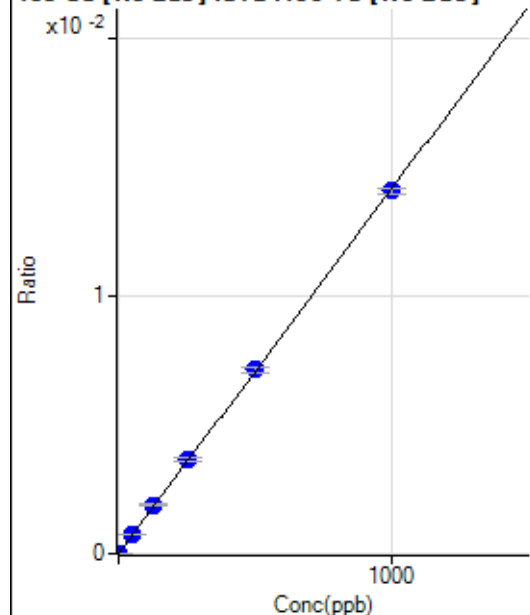
DL = 0.00149

BEC = 0.02048

Weight: <None>

Min Conc: <None>

108 Cd [No Gas] ISTD :159 Tb [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	15.56	0.0000	P	33.8
2	☐	1.000	0.965	81.11	0.0000	P	13.5
3	☐	50.000	52.567	3622.71	0.0007	P	7.2
4	☐	125.000	133.339	9226.36	0.0019	P	3.1
5	☐	250.000	258.279	18493.06	0.0037	P	2.9
6	☐	500.000	503.871	36968.38	0.0071	P	2.7
7	☐	1000.000	994.824	74631.38	0.0141	P	1.8
8	☐			62.22	0.0000	P	19.5

$$y = 1.4161\text{E-}005 * x + 3.1703\text{E-}006$$

$$R = 0.9999$$

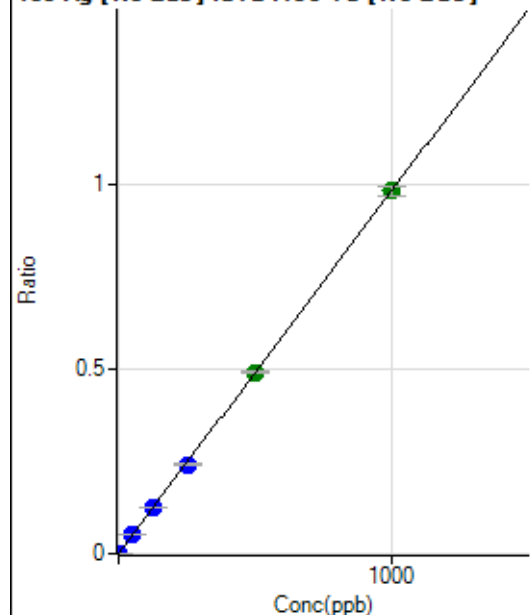
$$DL = 0.2273$$

$$BEC = 0.2239$$

Weight: <None>

Min Conc: <None>

109 Ag [No Gas] ISTD :159 Tb [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	86.67	0.0000	P	16.3
2	☐	1.000	1.085	5224.33	0.0011	P	3.2
3	☐	50.000	51.069	243265.38	0.0502	P	1.9
4	☐	125.000	127.968	613483.83	0.1258	P	2.9
5	☐	250.000	246.086	1221734.33	0.2418	P	2.3
6	☐	500.000	500.604	2547723.35	0.4919	A	1.6
7	☐	1000.000	1000.252	5205612.63	0.9829	A	2.4
8	☐			1415.65	0.0003	P	51.3

$$y = 9.8260\text{E-}004 * x + 1.7599\text{E-}005$$

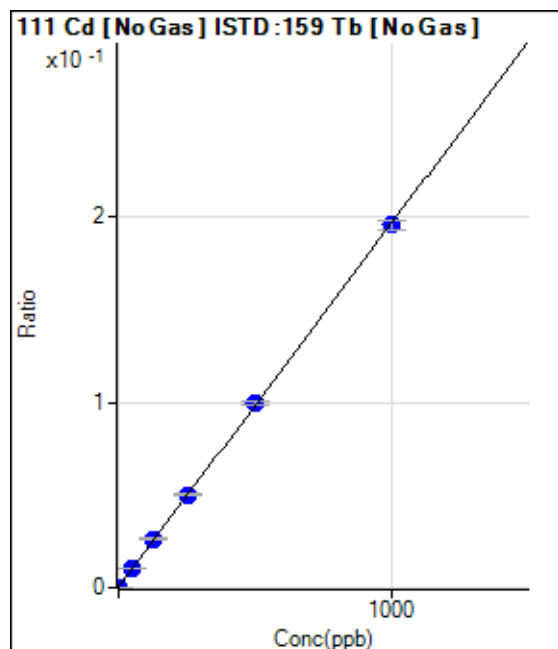
$$R = 1.0000$$

$$DL = 0.008766$$

$$BEC = 0.01791$$

Weight: <None>

Min Conc: <None>



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	1386.33	0.0003	P	1.7
2	☐	1.000	0.986	2291.82	0.0005	P	1.5
3	☐	50.000	52.859	51711.71	0.0107	P	1.4
4	☐	125.000	132.594	128506.47	0.0263	P	2.3
5	☐	250.000	253.834	253475.02	0.0502	P	2.2
6	☐	500.000	504.566	515058.65	0.0994	P	2.5
7	☐	1000.000	995.666	1037934.97	0.1960	P	2.6
8	☐			2130.05	0.0004	P	4.5

$$y = 1.9654E-004 * x + 2.8162E-004$$

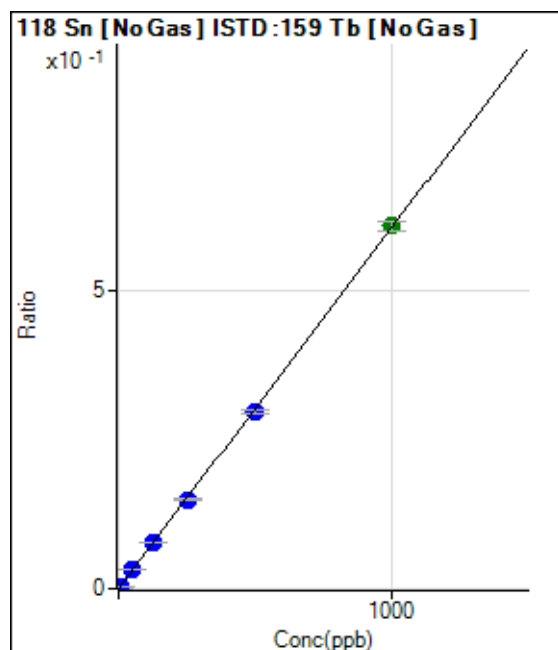
R = 1.0000

DL = 0.07443

BEC = 1.433

Weight: <None>

Min Conc: <None>



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	1310.09	0.0003	P	7.4
2	☐	5.000	5.216	16527.41	0.0034	P	2.2
3	☐	50.000	51.163	151626.84	0.0313	P	2.7
4	☐	125.000	127.461	378348.37	0.0776	P	2.1
5	☐	250.000	247.083	758241.80	0.1501	P	2.5
6	☐	500.000	489.481	1538563.09	0.2971	P	2.5
7	☐	1000.000	1005.622	3230839.12	0.6100	A	3.0
8	☐			1360.08	0.0003	P	6.4

$$y = 6.0635E-004 * x + 2.6627E-004$$

R = 0.9999

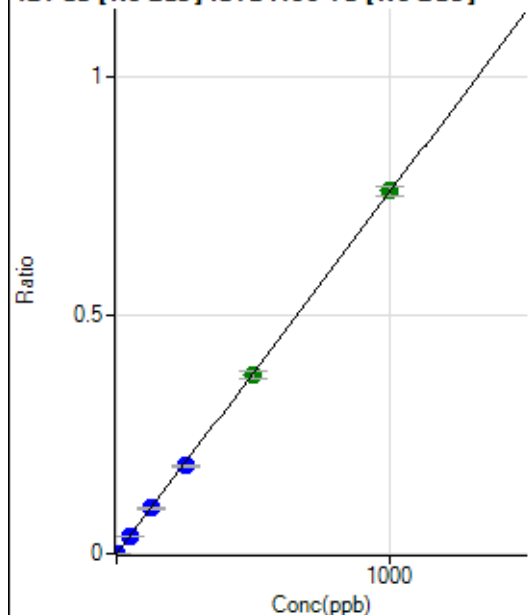
DL = 0.09717

BEC = 0.4391

Weight: <None>

Min Conc: <None>

121 Sb [No Gas] ISTD :159 Tb [No Gas]



	R _{jt}	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	58.89	0.0000	P	8.9
2	☐	2.000	2.073	7638.76	0.0016	P	1.8
3	☐	50.000	50.040	184069.42	0.0380	P	1.6
4	☐	125.000	125.806	465761.69	0.0955	P	2.6
5	☐	250.000	243.863	934952.49	0.1851	P	2.3
6	☐	500.000	495.063	1945702.80	0.3757	A	3.3
7	☐	1000.000	1003.900	4034619.28	0.7618	A	2.7
8	☐			3233.73	0.0006	P	6.7

$$y = 7.5881E-004 * x + 1.1965E-005$$

$$R = 1.0000$$

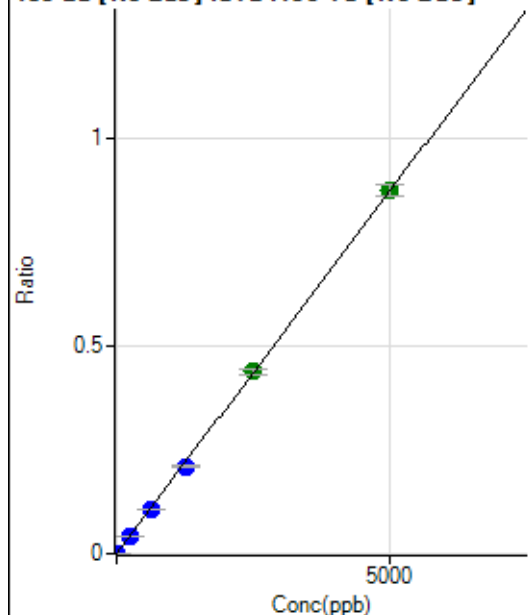
$$DL = 0.004207$$

$$BEC = 0.01577$$

Weight: <None>

Min Conc: <None>

135 Ba [No Gas] ISTD :159 Tb [No Gas]



	R _{jt}	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	94.45	0.0000	P	29.1
2	☐	10.000	10.039	8530.41	0.0018	P	3.2
3	☐	250.000	246.170	208126.81	0.0429	P	1.4
4	☐	625.000	614.580	522911.93	0.1072	P	2.6
5	☐	1250.000	1198.142	1055732.85	0.2090	P	2.4
6	☐	2500.000	2512.199	2269067.02	0.4381	A	2.6
7	☐	5000.000	5008.359	4625620.76	0.8734	A	3.1
8	☐			2838.09	0.0005	P	2.6

$$y = 1.7438E-004 * x + 1.9228E-005$$

$$R = 0.9999$$

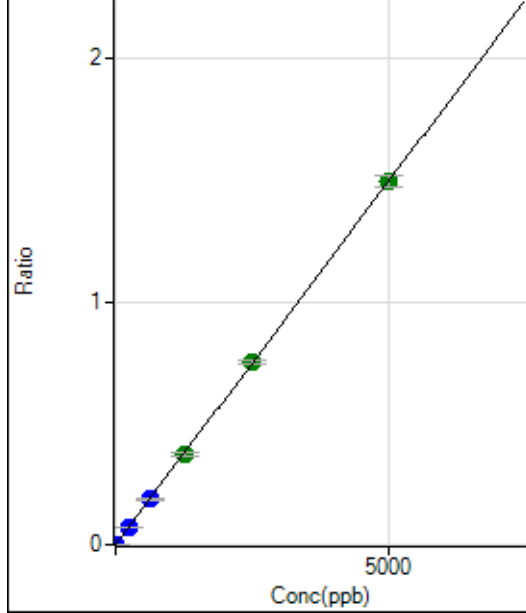
$$DL = 0.09638$$

$$BEC = 0.1103$$

Weight: <None>

Min Conc: <None>

137 Ba [No Gas] ISTD :159 Tb [No Gas]



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	174.45	0.0000	P	25.2
2	☐	10.000	10.169	14814.49	0.0031	P	2.7
3	☐	250.000	248.083	359371.93	0.0742	P	1.6
4	☐	625.000	623.122	908466.91	0.1862	P	1.8
5	☐	1250.000	1245.396	1880130.32	0.3721	A	3.5
6	☐	2500.000	2514.294	3890739.70	0.7512	A	2.8
7	☐	5000.000	4994.334	7903158.01	1.4922	A	3.0
8	☐			4619.68	0.0009	P	1.4

$$y = 2.9877E-004 * x + 3.5448E-005$$

R = 1.0000

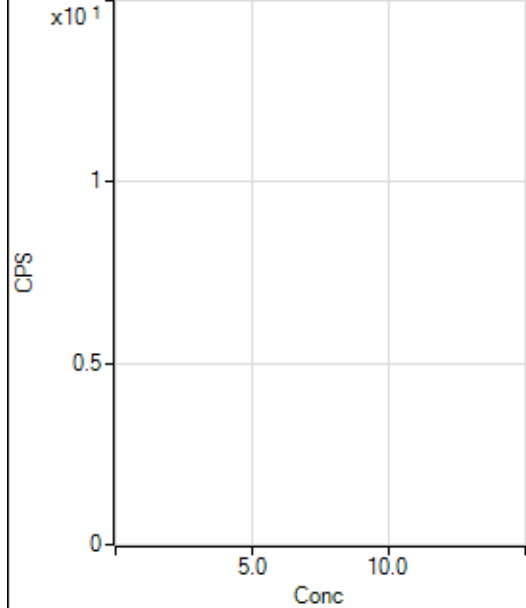
DL = 0.08957

BEC = 0.1186

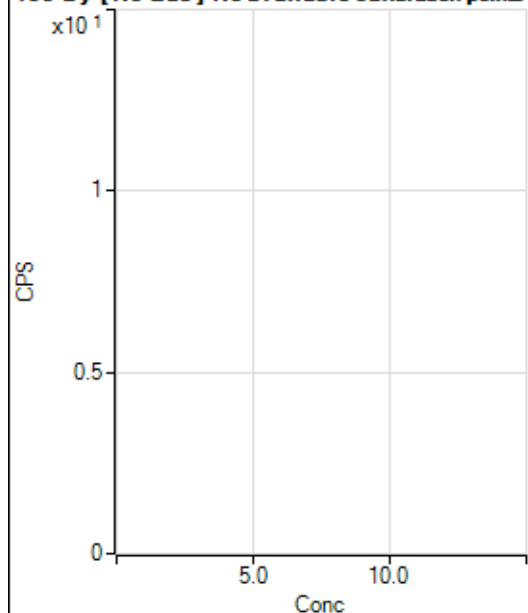
Weight: <None>

Min Conc: <None>

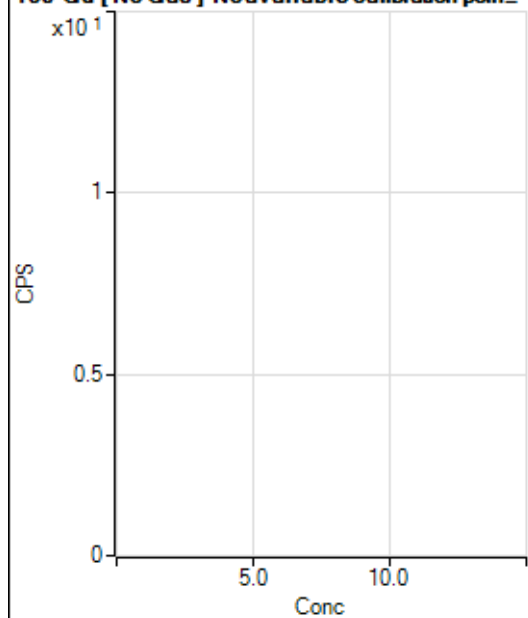
150 Nd [No Gas] No available calibration points



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐			4.44		P	114.
2	☐			6.67		P	50.0
3	☐			15.55		P	44.6
4	☐			33.33		P	30.0
5	☐			37.78		P	48.6
6	☐			68.89		P	10.1
7	☐			116.67		P	4.9
8	☐			103.34		P	3.2

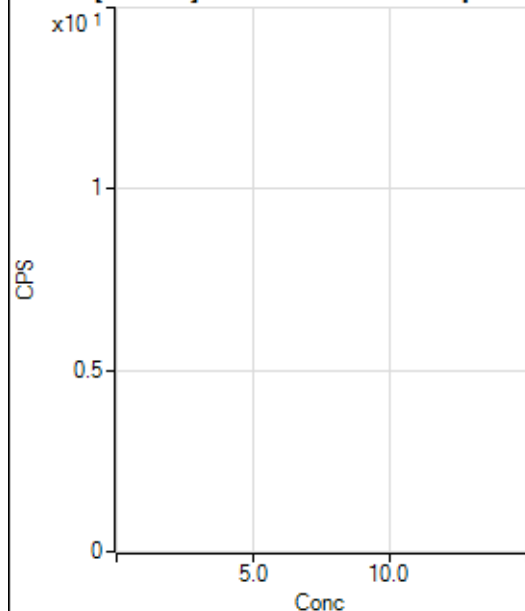
156 Dy [No Gas] No available calibration points

	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det .	RSD
1	☐			11.11		P	45.8
2	☐			3.33		P	0.0
3	☐			13.33		P	43.3
4	☐			20.00		P	50.0
5	☐			26.67		P	45.1
6	☐			35.56		P	14.3
7	☐			67.78		P	10.2
8	☐			173.34		P	17.3

160 Gd [No Gas] No available calibration points

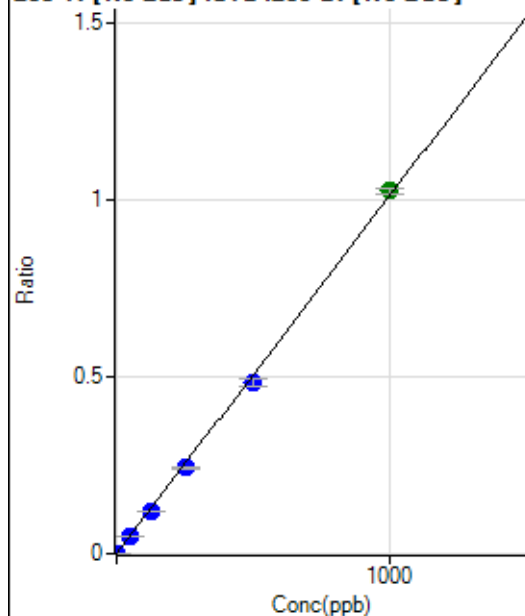
	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det .	RSD
1	☐			47.78		P	21.3
2	☐			33.33		P	36.1
3	☐			40.00		P	50.0
4	☐			37.78		P	22.2
5	☐			64.45		P	20.9
6	☐			84.44		P	9.1
7	☐			95.56		P	10.1
8	☐			214.45		P	5.5

164 Er [No Gas] No available calibration points



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			33.33		P	10.0
2	☐			34.45		P	20.1
3	☐			45.56		P	40.3
4	☐			47.78		P	4.0
5	☐			55.56		P	56.7
6	☐			98.89		P	14.0
7	☐			115.56		P	21.3
8	☐			435.57		P	8.7

203 Tl [No Gas] ISTD :209 Bi [No Gas]



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	138.89	0.0001	P	13.6
2	☐	1.000	1.013	2953.69	0.0011	P	4.9
3	☐	50.000	47.819	133562.37	0.0483	P	1.0
4	☐	125.000	119.538	339509.02	0.1207	P	0.6
5	☐	250.000	241.087	691992.52	0.2433	P	1.8
6	☐	500.000	477.602	1403595.24	0.4820	P	3.9
7	☐	1000.000	1014.219	3086655.65	1.0236	A	1.6
8	☐			4470.78	0.0015	P	0.5

$$y = 0.0010 * x + 5.0377E-005$$

$$R = 0.9996$$

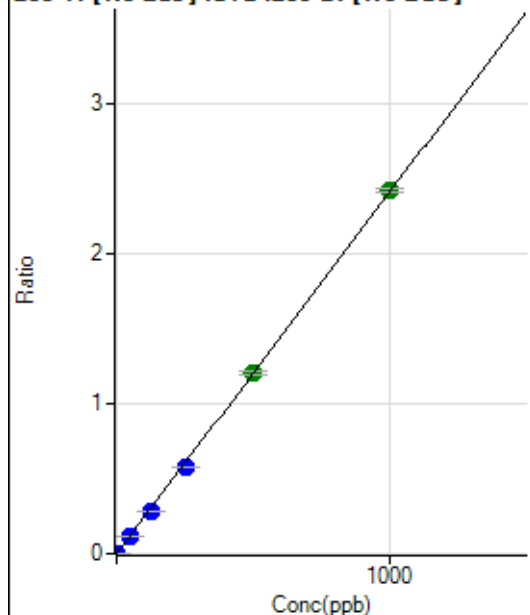
$$DL = 0.02043$$

$$BEC = 0.04992$$

Weight: <None>

Min Conc: <None>

205 Tl [No Gas] ISTD :209 Bi [No Gas]



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	385.56	0.0001	P	6.3
2	☐	1.000	0.981	6896.28	0.0025	P	2.1
3	☐	50.000	47.563	317184.47	0.1147	P	0.8
4	☐	125.000	118.354	802434.73	0.2853	P	1.7
5	☐	250.000	239.059	1637962.54	0.5760	P	1.7
6	☐	500.000	499.067	3501971.65	1.2024	A	2.4
7	☐	1000.000	1004.154	7295636.83	2.4191	A	1.2
8	☐			10086.06	0.0035	P	2.2

$$y = 0.0024 * x + 1.3996E-004$$

$$R = 0.9999$$

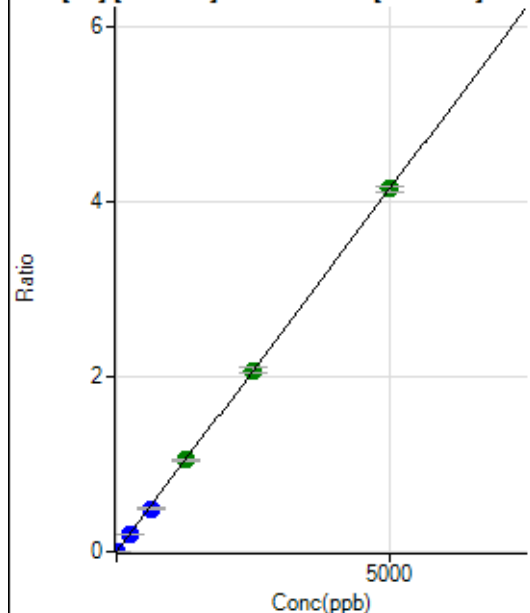
$$DL = 0.01103$$

$$BEC = 0.0581$$

Weight: <None>

Min Conc: <None>

206 [Pb] [No Gas] ISTD :209 Bi [No Gas]



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	478.90	0.0002	P	16.4
2	☐	1.000	0.840	2401.35	0.0009	P	2.6
3	☐	250.000	239.795	550845.96	0.1992	P	1.4
4	☐	625.000	594.181	1388104.18	0.4934	P	1.6
5	☐	1250.000	1264.332	2984926.24	1.0497	A	1.7
6	☐	2500.000	2497.871	6039169.91	2.0737	A	3.1
7	☐	5000.000	5001.844	12522669.81	4.1524	A	1.4
8	☐			3440.47	0.0012	P	3.0

$$y = 8.3014E-004 * x + 1.7410E-004$$

$$R = 1.0000$$

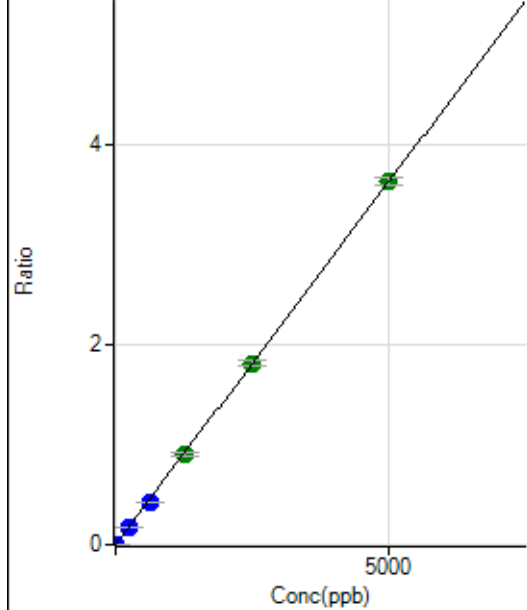
$$DL = 0.1032$$

$$BEC = 0.2097$$

Weight: <None>

Min Conc: <None>

207 [Pb] [No Gas] ISTD :209 Bi [No Gas]



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	360.01	0.0001	P	8.7
2	☐	1.000	0.816	1987.95	0.0007	P	8.0
3	☐	250.000	233.045	466866.34	0.1689	P	1.1
4	☐	625.000	582.949	1187722.26	0.4222	P	1.9
5	☐	1250.000	1258.797	2592257.95	0.9115	A	4.1
6	☐	2500.000	2501.538	5275326.73	1.8113	A	2.8
7	☐	5000.000	5003.136	10924295.95	3.6225	A	2.2
8	☐			2907.00	0.0010	P	1.6

$$y = 7.2403E-004 * x + 1.3078E-004$$

$$R = 1.0000$$

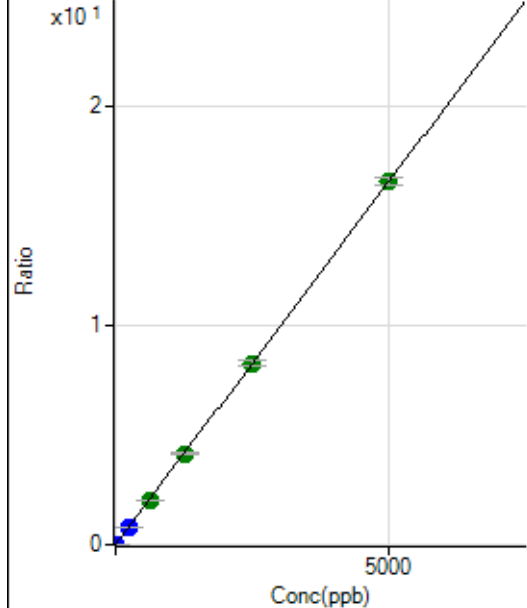
$$DL = 0.04711$$

$$BEC = 0.1806$$

Weight: <None>

Min Conc: <None>

208 Pb [No Gas] ISTD :209 Bi [No Gas]



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	1723.39	0.0006	P	8.6
2	☐	1.000	0.823	9238.00	0.0034	P	1.7
3	☐	250.000	236.125	2165575.74	0.7833	P	1.0
4	☐	625.000	605.188	5645030.25	2.0065	A	1.2
5	☐	1250.000	1257.384	11853764.65	4.1682	A	2.4
6	☐	2500.000	2495.966	24093627.83	8.2735	A	3.3
7	☐	5000.000	5003.341	50012843.70	16.5841	A	2.2
8	☐			13531.67	0.0046	P	1.5

$$y = 0.0033 * x + 6.2596E-004$$

$$R = 1.0000$$

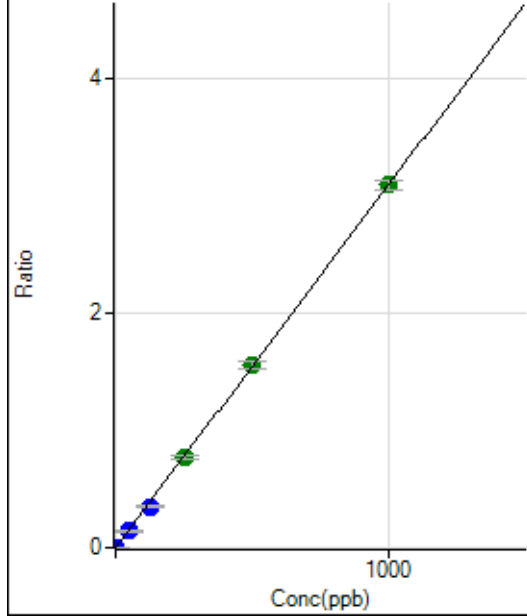
$$DL = 0.04856$$

$$BEC = 0.1889$$

Weight: <None>

Min Conc: <None>

238 U [No Gas] ISTD :209 Bi [No Gas]



	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	0.000	0.000	78.89	0.0000	P	140.
2	☐	1.000	0.932	8022.49	0.0029	P	3.6
3	☐	50.000	45.301	387570.12	0.1402	P	1.3
4	☐	125.000	113.760	990178.86	0.3520	P	1.8
5	☐	250.000	249.306	2193630.90	0.7713	A	2.4
6	☐	500.000	503.435	4535520.94	1.5575	A	4.4
7	☐	1000.000	1000.096	9330791.18	3.0941	A	2.6
8	☐			377.79	0.0001	P	43.3

$$y = 0.0031 * x + 2.8638E-005$$

$$R = 0.9999$$

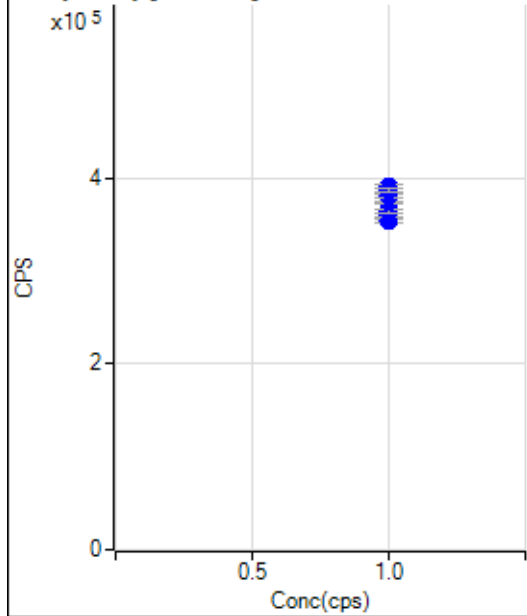
$$DL = 0.03893$$

$$BEC = 0.009257$$

Weight: <None>

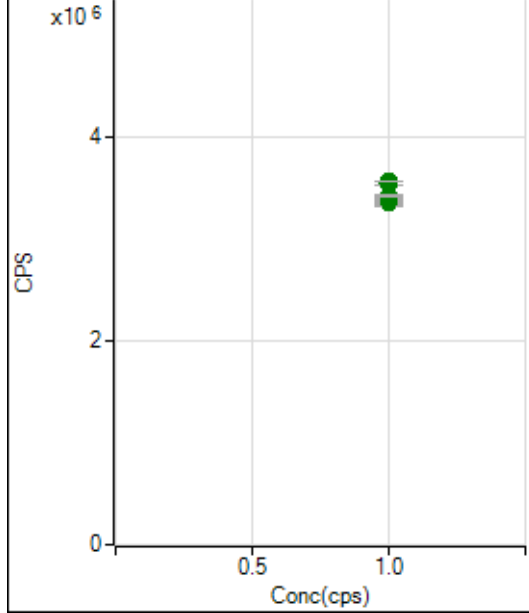
Min Conc: <None>

6 Li (ISTD) [No Gas]



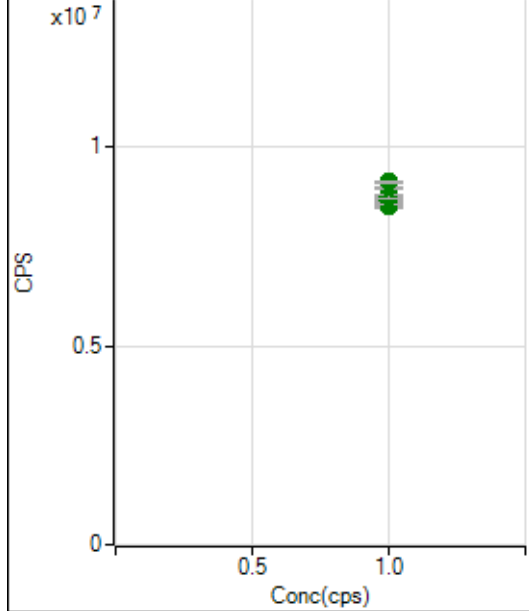
	R _{jc} t	Conc.	Calc Conc.	CPS	Ratio	Det	RSD
1	☐	1.000		354297.39		P	1.4
2	☐	1.000		355940.69		P	0.3
3	☐	1.000		359966.95		P	0.9
4	☐	1.000		364963.81		P	1.1
5	☐	1.000		373924.54		P	1.0
6	☐	1.000		380597.69		P	1.1
7	☐	1.000		390658.59		P	1.0
8	☐	1.000		386839.62		P	0.9

45 Sc (ISTD) [No Gas]



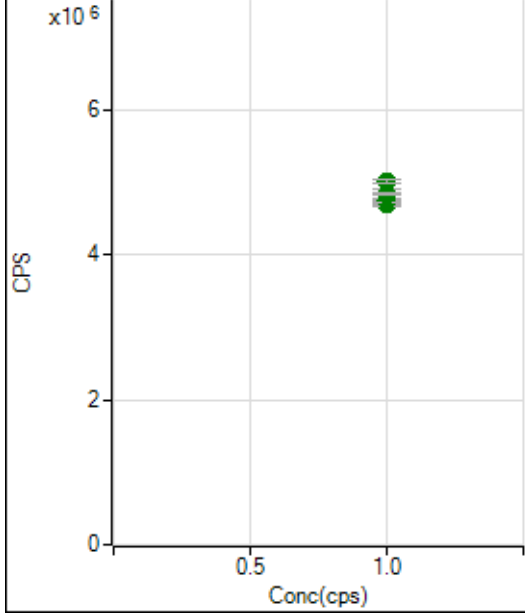
	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det .	RSD
1	☐	1.000		3403771.68		A	1.4
2	☐	1.000		3349897.17		A	2.1
3	☐	1.000		3365092.97		A	1.0
4	☐	1.000		3376294.88		A	1.9
5	☐	1.000		3379041.69		A	0.6
6	☐	1.000		3419710.23		A	0.8
7	☐	1.000		3539268.35		A	1.2
8	☐	1.000		3556215.95		A	0.1

89 Y (ISTD) [No Gas]



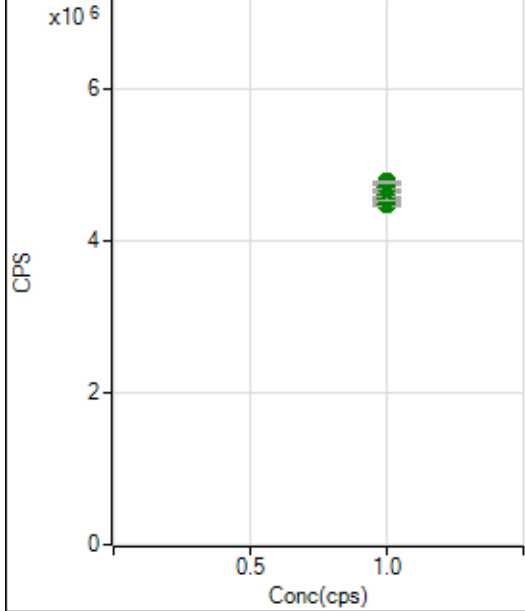
	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det .	RSD
1	☐	1.000		8549208.83		A	2.5
2	☐	1.000		8508616.89		A	1.3
3	☐	1.000		8482533.69		A	1.0
4	☐	1.000		8663795.70		A	1.7
5	☐	1.000		8545877.79		A	0.3
6	☐	1.000		8746289.18		A	1.6
7	☐	1.000		8974837.71		A	0.6
8	☐	1.000		9118018.20		A	0.5

103 Rh (ISTD) [No Gas]



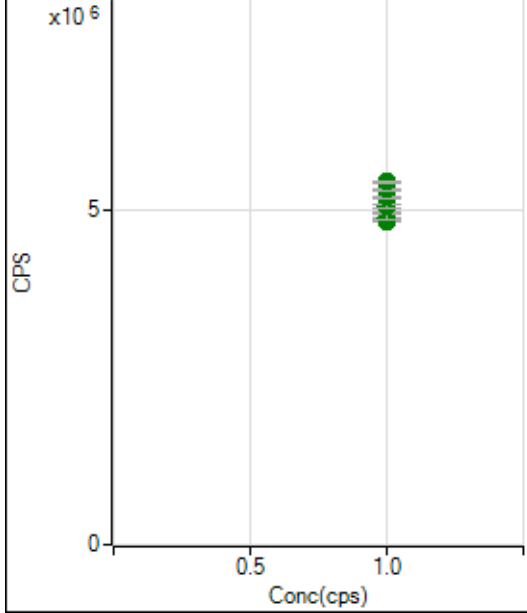
	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det .	RSD
1	☐	1.000		4793966.49		A	1.8
2	☐	1.000		4735927.64		A	0.7
3	☐	1.000		4696199.86		A	0.5
4	☐	1.000		4743700.07		A	2.0
5	☐	1.000		4761098.82		A	1.0
6	☐	1.000		4871638.16		A	1.4
7	☐	1.000		5012852.01		A	1.1
8	☐	1.000		4848911.56		A	0.3

115 In (ISTD) [No Gas]



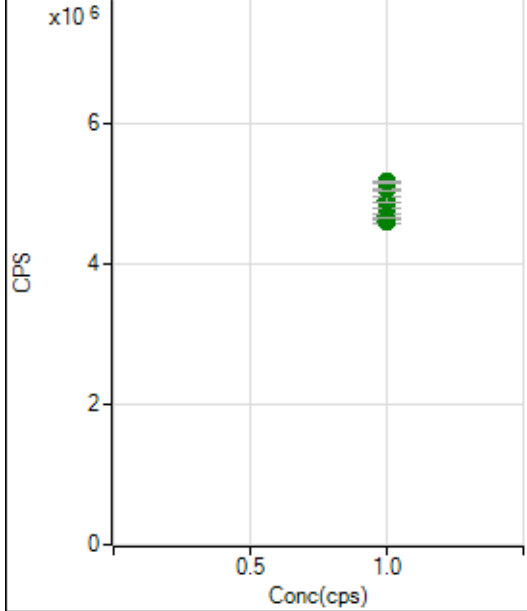
	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det .	RSD
1	☐	1.000		4595055.74		A	2.1
2	☐	1.000		4529713.73		A	2.1
3	☐	1.000		4478803.25		A	1.1
4	☐	1.000		4589149.34		A	3.3
5	☐	1.000		4551834.07		A	1.2
6	☐	1.000		4688373.75		A	2.3
7	☐	1.000		4715572.81		A	1.3
8	☐	1.000		4775422.15		A	0.4

159 Tb (ISTD) [No Gas]

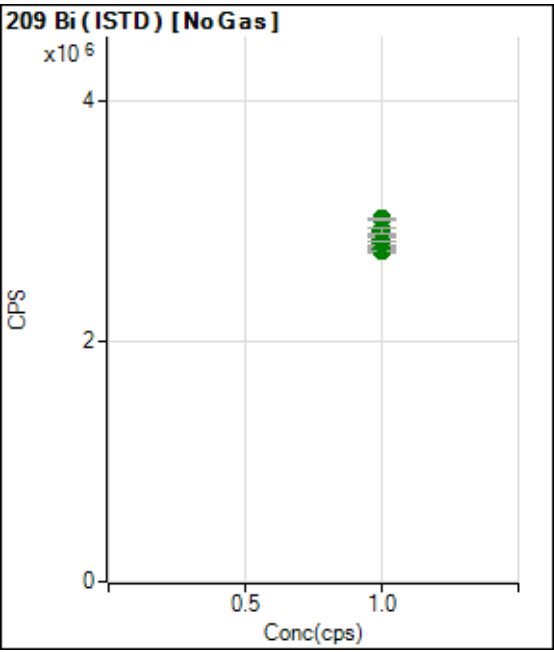


	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det .	RSD
1	☐	1.000		4922340.41		A	1.4
2	☐	1.000		4819893.09		A	0.4
3	☐	1.000		4846381.18		A	0.5
4	☐	1.000		4879722.88		A	1.7
5	☐	1.000		5052953.19		A	1.1
6	☐	1.000		5179541.45		A	0.9
7	☐	1.000		5296929.02		A	0.7
8	☐	1.000		5413265.02		A	0.8

165 Ho (ISTD) [No Gas]



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det .	RSD
1	☐	1.000		4665160.83		A	1.9
2	☐	1.000		4598611.91		A	1.2
3	☐	1.000		4631546.43		A	0.4
4	☐	1.000		4677030.76		A	1.0
5	☐	1.000		4793728.09		A	0.4
6	☐	1.000		4903727.95		A	1.7
7	☐	1.000		5056168.36		A	0.6
8	☐	1.000		5164458.98		A	0.8



	Rjc t	Conc.	Calc Conc.	CPS	Ratio	Det .	RSD
1	☐	1.000		2754328.40		A	1.8
2	☐	1.000		2754036.76		A	1.2
3	☐	1.000		2764881.14		A	0.7
4	☐	1.000		2813345.31		A	1.1
5	☐	1.000		2843786.28		A	1.4
6	☐	1.000		2913520.41		A	2.3
7	☐	1.000		3015804.40		A	0.8
8	☐	1.000		2919215.93		A	1.6

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US EPA Tune Check Report

Reviewed By:MOH
On:8/21/2025 1:51
PM
Inst Id :P7
LB :LB136878

Operator Name Jaswal

Acq/Data Batch D:\Agilent\ICPMH\1\DATA\P7081825MS NO GAS.b

Acq. Date-Time 2025-08-18 12:44:51

Report Comment ---

Instrument Name G8403A JP14410463

[No Gas]

Sensitivity

Mass	Conc. [ug/l]	Count	CPS	Resp (Required) [cps/ug/l]	Resp (Flag)	RSD%	RSD% (Required)
9		4408	44076.05			0.919	5.000
24		122548	1225482.23			0.775	5.000
25		15623	156227.02			0.856	5.000
26		18759	187585.29			1.168	5.000
59		73416	734164.08			0.845	5.000
113		7611	76113.52			0.477	5.000
115		89991	899908.79			0.627	5.000
206		14516	145163.17			2.382	5.000
207		12487	124870.70			2.648	5.000
208		30127	301273.71			2.861	5.000
220		1	6.80			23.598	

Mass	RSD% (Flag)
9	
24	
25	
26	
59	
113	
115	
206	
207	
208	
220	

Mass	Rep#1 Count	Rep#2 Count	Rep#3 Count	Rep#4 Count	Rep#5 Count
9	4384	4364	4398	4424	4469
24	122293	121251	122351	123804	123042
25	15484	15501	15622	15794	15713
26	18542	18564	18718	18945	19024
59	72635	72898	73672	74093	73783
113	7610	7619	7551	7647	7630
115	89806	89170	90241	90697	90040
206	14257	14250	14287	14931	14857
207	12287	12163	12331	12961	12694
208	29446	29408	29702	31307	30774

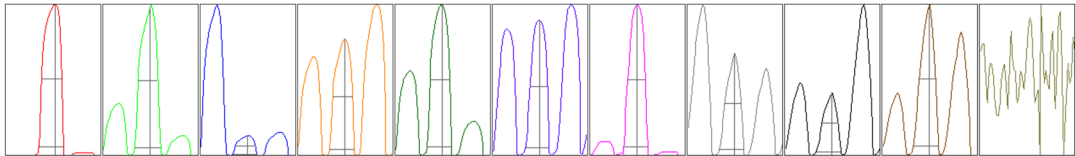
US EPA Tune Check Report

Reviewed By:MOH
On:8/21/2025 1:51
PM
Inst Id :P7
LB :LB136878

Mass	Rep#1 Count	Rep#2 Count	Rep#3 Count	Rep#4 Count	Rep#5 Count
220	1	0	1	1	1

Integration Time [sec] 0.1

Resolution/Axis



Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)
9	7318.69	9.10	8.90 - 9.10	
24	209103.62	24.00	23.90 - 24.10	
25	26945.23	25.00	24.90 - 25.10	
26	31847.75	26.00	25.90 - 26.10	
59	124686.85	59.00	58.90 - 59.10	
113	14127.14	113.00	112.90 - 113.10	
115	168647.30	115.00	114.90 - 115.10	
206	29367.89	206.00	205.90 - 206.10	
207	25185.29	207.00	206.90 - 207.10	
208	60749.86	208.00	207.90 - 208.10	
220			-	

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
9	0.63	0.777	0.900	
24	0.63	0.824	0.900	
25	0.62	0.766	0.900	
26	0.63	0.783	0.900	
59	0.62	0.779	0.900	
113	0.55	0.743	0.900	
115	0.54	0.767	0.900	
206	0.52	0.777	0.900	
207	0.51	0.787	0.900	
208	0.51	0.800	0.900	
220				

Integration Time [sec] 0.1
Acquisition Time [sec] 256.770000000002
Y Axis Linear

Tune Parameters

Plasma Parameters

Plasma Mode --- Nebulizer Gas 0.82 L/min Dilution Gas 0.40 L/min

US EPA Tune Check Report

Reviewed By:MOH
On:8/21/2025 1:51
PM
Inst Id :P7
LB :LB136878

RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90
RF Matching	1.80 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0
Sample Depth	9.0 mm	S/C Temp	2 °C		
Lens Parameters					
Extract 1	0.0 V	Omega Lens	7.6 V	Deflect	15.2 V
Extract 2	-175.0 V	Cell Entrance	-30 V	Plate Bias	-35 V
Omega Bias	-90 V	Cell Exit	-50 V		
Cell Parameters					
Use Gas	No	3rd Gas Flow	---	Energy Discrimination	5.0 V
He Flow	0.0 mL/min	OctP Bias	-8.0 V		
H2 Flow	---	OctP RF	190 V		
QP Parameters					
Mass Gain	138	Axis Gain	0.9974	QP Bias	-3.0 V
Mass Offset	129	Axis Offset	0.16		
Hardware Settings					
Torch					
Torch H	-1.8 mm	Torch V	0.2 mm		
EM					
Discriminator	4.7 mV	Analog HV	2292 V	Pulse HV	1180 V

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LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S0 Instrumnet Name : P7
Client Sample ID : S0 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:22:18 DataFile Name : 004CALB.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	0.08	0.06	-0.14	0.00	N/A	ppb
Antimony	121-1	0.00	0.00	0.00	0.00	N/A	ppb
Arsenic	75-1	0.01	0.24	-0.25	0.00	N/A	ppb
Barium	135-1	0.03	0.00	-0.03	0.00	N/A	ppb
Barium	137-1	0.03	-0.02	-0.01	0.00	N/A	ppb
Beryllium	9-1	0.01	-0.01	-0.01	0.00	N/A	ppb
Bismuth	209-1				100		%
Bromine	81-1						cps
Cadmium	106-1	-0.66	0.28	0.38	0.00	N/A	ppb
Cadmium	108-1	0.02	0.07	-0.08	0.00	N/A	ppb
Cadmium	111-1	-0.03	0.01	0.02	0.00	N/A	ppb
Calcium	43-1	0.75	2.51	-3.27	0.00	N/A	ppb
Calcium	44-1	-6.45	-0.68	7.12	0.00	N/A	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	-0.05	0.06	-0.01	0.00	N/A	ppb
Cobalt	59-1	0.02	-0.01	-0.01	0.00	N/A	ppb
Copper	63-1	0.01	-0.01	0.00	0.00	N/A	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				100		%
Indium	115-1				100		%
Iron	56-1	-4.64	1.03	3.61	0.00	N/A	ppb
Iron	57-1	-2.52	1.73	0.79	0.00	N/A	ppb
Iron	54-1	-3.36	0.28	3.08	0.00	N/A	ppb
Krypton	83-1						cps
Lead	206-1	0.03	-0.04	0.01	0.00	N/A	ppb
Lead	207-1	0.01	-0.02	0.00	0.00	N/A	ppb
Lead	208-1	0.02	-0.02	0.00	0.00	N/A	ppb
Lithium	6-1				100		%
Magnesium	24-1	-0.03	-0.01	0.04	0.00	N/A	ppb
Manganese	55-1	0.04	-0.01	-0.02	0.00	N/A	ppb
Molybdenum	94-1	0.02	-0.02	0.00	0.00	N/A	ppb
Molybdenum	95-1	0.01	-0.01	0.00	0.00	N/A	ppb
Molybdenum	96-1	0.02	-0.03	0.01	0.00	N/A	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S0 Instrumnet Name : P7
Client Sample ID : S0 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:22:18 DataFile Name : 004CALB.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	0.01	-0.01	0.01	0.00	N/A	ppb
Molybdenum	98-1	0.02	-0.02	0.00	0.00	N/A	ppb
Neodymium	150-1						cps
Nickel	60-1	0.03	-0.02	0.00	0.00	N/A	ppb
Phosphorus	31-1	-127.67	-126.72	-126.77	-127.05		ppb
Potassium	39-1	-5.32	2.08	3.24	0.00	N/A	ppb
Rhodium	103-1				100		%
Scandium	45-1				100		%
Selenium	77-1	0.17	0.73	-0.90	0.00	N/A	ppb
Selenium	78-1	-6.04	3.73	2.31	0.00	N/A	ppb
Selenium	82-1	0.39	-1.06	0.67	0.00	N/A	ppb
Silicon	28-1	-3.13	1.94	1.18	0.00	N/A	ppb
Silver	109-1	0.00	0.00	0.00	0.00	N/A	ppb
Silver	107-1	0.00	0.00	0.00	0.00	N/A	ppb
Sodium	23-1	-1.09	0.31	0.78	0.00	N/A	ppb
Strontium	86-1	0.04	0.01	-0.05	0.00	N/A	ppb
Strontium	88-1	0.00	0.00	0.00	0.00	N/A	ppb
Sulfur	34-1	-540.97	-95.13	33.83	-200.76		ppb
Terbium	159-1				100		%
Thallium	203-1	0.01	0.00	-0.01	0.00	N/A	ppb
Thallium	205-1	0.00	0.00	0.00	0.00	N/A	ppb
Tin	118-1	0.03	0.00	-0.03	0.00	N/A	ppb
Titanium	47-1	-0.03	0.05	-0.01	0.00	N/A	ppb
Uranium	238-1	0.01	-0.01	-0.01	0.00	N/A	ppb
Vanadium	51-1	0.01	-0.01	-0.01	0.00	N/A	ppb
Yttrium	89-1				100		%
Zinc	66-1	-0.12	0.00	0.12	0.00	N/A	ppb
Zirconium	90-1	0.00	0.00	0.00	0.00	N/A	ppb
Zirconium	91-1	0.02	-0.01	-0.01	0.00	N/A	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S2 Instrumnet Name : P7
Client Sample ID : S2 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:28:14 DataFile Name : 006CAL.S.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	19.24	20.83	19.27	19.78	4.61	ppb
Antimony	121-1	2.04	2.11	2.06	2.07	1.81	ppb
Arsenic	75-1	0.98	0.95	0.92	0.95	2.86	ppb
Barium	135-1	10.14	9.68	10.30	10.04	3.19	ppb
Barium	137-1	9.90	10.15	10.46	10.17	2.76	ppb
Beryllium	9-1	1.04	1.21	1.10	1.12	8.01	ppb
Bismuth	209-1				100		%
Bromine	81-1						cps
Cadmium	106-1	2.00	1.02	0.96	1.33	43.79	ppb
Cadmium	108-1	0.85	0.90	1.15	0.96	16.63	ppb
Cadmium	111-1	1.03	0.98	0.95	0.99	3.76	ppb
Calcium	43-1	488.11	524.61	514.79	509.17	3.71	ppb
Calcium	44-1	502.82	548.42	513.53	521.59	4.57	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	2.01	2.28	2.03	2.11	7.05	ppb
Cobalt	59-1	1.02	1.12	1.04	1.06	4.99	ppb
Copper	63-1	1.80	1.99	1.85	1.88	5.27	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				99		%
Indium	115-1				99		%
Iron	56-1	55.28	72.02	51.82	59.71	18.09	ppb
Iron	57-1	51.09	61.14	52.19	54.81	10.05	ppb
Iron	54-1	45.88	66.48	51.08	54.48	19.66	ppb
Krypton	83-1						cps
Lead	206-1	0.85	0.81	0.86	0.84	3.30	ppb
Lead	207-1	0.78	0.76	0.91	0.82	9.77	ppb
Lead	208-1	0.83	0.80	0.84	0.82	2.11	ppb
Lithium	6-1				100		%
Magnesium	24-1	481.27	521.75	490.08	497.70	4.28	ppb
Manganese	55-1	0.95	1.01	0.90	0.95	5.90	ppb
Molybdenum	94-1	6.03	6.15	5.94	6.04	1.69	ppb
Molybdenum	95-1	4.90	4.92	5.03	4.95	1.41	ppb
Molybdenum	96-1	4.93	5.21	5.08	5.07	2.83	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S2 Instrumnet Name : P7
Client Sample ID : S2 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:28:14 DataFile Name : 006CALS.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	4.94	4.92	4.83	4.90	1.26	ppb
Molybdenum	98-1	4.86	5.00	5.07	4.98	2.13	ppb
Neodymium	150-1						cps
Nickel	60-1	0.94	0.96	0.92	0.94	2.42	ppb
Phosphorus	31-1	117.75	139.73	123.69	127.05	8.95	ppb
Potassium	39-1	495.23	533.02	516.89	515.04	3.68	ppb
Rhodium	103-1				99		%
Scandium	45-1				98		%
Selenium	77-1	4.02	5.25	4.87	4.72	13.36	ppb
Selenium	78-1	2.51	13.70	9.11	8.44	66.69	ppb
Selenium	82-1	4.94	5.44	5.80	5.40	7.99	ppb
Silicon	28-1	-0.80	6.24	2.16	2.53	139.54	ppb
Silver	109-1	1.05	1.12	1.08	1.09	3.21	ppb
Silver	107-1	1.07	1.17	1.07	1.10	4.78	ppb
Sodium	23-1	495.17	529.18	516.05	513.46	3.34	ppb
Strontium	86-1	0.97	0.92	1.11	1.00	10.06	ppb
Strontium	88-1	0.93	0.99	0.99	0.97	4.02	ppb
Sulfur	34-1	-70.76	589.92	83.11	200.76	172.19	ppb
Terbium	159-1				98		%
Thallium	203-1	0.96	1.06	1.02	1.01	5.18	ppb
Thallium	205-1	0.96	1.00	0.99	0.98	2.26	ppb
Tin	118-1	5.24	5.08	5.32	5.22	2.36	ppb
Titanium	47-1	4.91	5.60	5.28	5.26	6.55	ppb
Uranium	238-1	0.94	0.96	0.89	0.93	3.60	ppb
Vanadium	51-1	4.93	5.20	5.03	5.06	2.71	ppb
Yttrium	89-1				100		%
Zinc	66-1	4.96	5.66	4.81	5.14	8.82	ppb
Zirconium	90-1	0.98	1.03	1.04	1.02	3.27	ppb
Zirconium	91-1	0.93	1.04	1.12	1.03	9.06	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S3 Instrumnet Name : P7
Client Sample ID : S3 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:31:10 DataFile Name : 007CALS.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	957.93	997.69	1002.23	985.95	2.47	ppb
Antimony	121-1	49.11	50.64	50.37	50.04	1.63	ppb
Arsenic	75-1	50.30	51.69	51.52	51.17	1.48	ppb
Barium	135-1	242.68	249.37	246.47	246.17	1.36	ppb
Barium	137-1	243.59	250.21	250.45	248.08	1.57	ppb
Beryllium	9-1	51.40	52.45	53.96	52.60	2.45	ppb
Bismuth	209-1				100		%
Bromine	81-1						cps
Cadmium	106-1	52.98	51.96	53.51	52.81	1.50	ppb
Cadmium	108-1	51.17	49.67	56.86	52.57	7.21	ppb
Cadmium	111-1	52.07	52.96	53.54	52.86	1.40	ppb
Calcium	43-1	5199.20	5161.10	5266.00	5208.77	1.02	ppb
Calcium	44-1	5073.49	5240.82	5299.47	5204.59	2.25	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	49.05	50.09	51.60	50.25	2.55	ppb
Cobalt	59-1	49.22	50.51	50.94	50.22	1.78	ppb
Copper	63-1	504.92	514.83	514.55	511.44	1.10	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				99		%
Indium	115-1				97		%
Iron	56-1	2523.72	2638.03	2698.55	2620.10	3.39	ppb
Iron	57-1	2531.73	2640.23	2640.75	2604.23	2.41	ppb
Iron	54-1	2619.93	2732.84	2842.35	2731.70	4.07	ppb
Krypton	83-1						cps
Lead	206-1	237.97	243.72	237.70	239.80	1.42	ppb
Lead	207-1	232.19	235.88	231.07	233.05	1.08	ppb
Lead	208-1	234.29	238.94	235.14	236.12	1.05	ppb
Lithium	6-1				102		%
Magnesium	24-1	4799.70	4996.75	5008.09	4934.85	2.37	ppb
Manganese	55-1	491.28	510.62	518.80	506.90	2.79	ppb
Molybdenum	94-1	487.65	503.95	498.73	496.78	1.68	ppb
Molybdenum	95-1	480.99	501.46	492.11	491.52	2.09	ppb
Molybdenum	96-1	479.91	498.48	486.89	488.43	1.92	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S3 Instrumnet Name : P7
Client Sample ID : S3 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:31:10 DataFile Name : 007CAL.S.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	481.43	503.34	494.51	493.09	2.24	ppb
Molybdenum	98-1	486.66	508.64	501.07	498.79	2.24	ppb
Neodymium	150-1						cps
Nickel	60-1	48.71	50.85	50.60	50.05	2.34	ppb
Phosphorus	31-1	865.59	882.70	901.99	883.42	2.06	ppb
Potassium	39-1	2487.95	2566.72	2606.80	2553.82	2.37	ppb
Rhodium	103-1				98		%
Scandium	45-1				99		%
Selenium	77-1	52.98	50.79	53.44	52.40	2.70	ppb
Selenium	78-1	50.99	62.52	60.62	58.04	10.65	ppb
Selenium	82-1	51.25	52.16	51.67	51.69	0.88	ppb
Silicon	28-1	50.99	53.52	55.53	53.35	4.26	ppb
Silver	109-1	49.96	51.73	51.52	51.07	1.90	ppb
Silver	107-1	50.90	51.71	52.35	51.65	1.40	ppb
Sodium	23-1	4889.94	5126.86	5176.03	5064.28	3.02	ppb
Strontium	86-1	49.71	52.15	51.54	51.13	2.49	ppb
Strontium	88-1	48.61	50.12	49.59	49.44	1.55	ppb
Sulfur	34-1	807.69	902.13	1121.83	943.88	17.08	ppb
Terbium	159-1				98		%
Thallium	203-1	47.37	48.32	47.77	47.82	0.99	ppb
Thallium	205-1	47.21	47.93	47.54	47.56	0.76	ppb
Tin	118-1	49.74	52.48	51.27	51.16	2.69	ppb
Titanium	47-1	484.35	504.77	503.19	497.43	2.28	ppb
Uranium	238-1	44.94	45.98	44.99	45.30	1.29	ppb
Vanadium	51-1	48.22	49.83	50.33	49.46	2.23	ppb
Yttrium	89-1				99		%
Zinc	66-1	497.73	511.46	518.14	509.11	2.04	ppb
Zirconium	90-1	47.47	49.63	49.42	48.84	2.44	ppb
Zirconium	91-1	48.22	50.11	50.00	49.45	2.14	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S4 Instrumnet Name : P7
Client Sample ID : S4 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:34:10 DataFile Name : 008CAL.S.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	2428.68	2505.90	2544.40	2492.99	2.36	ppb
Antimony	121-1	122.12	127.28	128.03	125.81	2.56	ppb
Arsenic	75-1	122.68	130.48	127.11	126.75	3.09	ppb
Barium	135-1	596.12	622.30	625.33	614.58	2.61	ppb
Barium	137-1	610.17	628.05	631.14	623.12	1.82	ppb
Beryllium	9-1	125.35	132.58	131.48	129.81	3.00	ppb
Bismuth	209-1				102		%
Bromine	81-1						cps
Cadmium	106-1	126.72	132.79	142.07	133.86	5.78	ppb
Cadmium	108-1	130.45	131.47	138.10	133.34	3.11	ppb
Cadmium	111-1	129.22	133.14	135.42	132.59	2.37	ppb
Calcium	43-1	12512.60	13210.57	13150.48	12957.88	2.99	ppb
Calcium	44-1	12215.34	12794.28	12809.76	12606.46	2.69	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	121.93	128.21	127.46	125.87	2.73	ppb
Cobalt	59-1	119.91	126.93	126.94	124.59	3.26	ppb
Copper	63-1	1231.84	1282.28	1310.07	1274.73	3.11	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				100		%
Indium	115-1				100		%
Iron	56-1	6302.67	6666.13	6629.37	6532.73	3.06	ppb
Iron	57-1	6226.02	6663.87	6563.66	6484.52	3.54	ppb
Iron	54-1	6434.32	6824.83	6727.97	6662.37	3.05	ppb
Krypton	83-1						cps
Lead	206-1	583.13	598.46	600.95	594.18	1.62	ppb
Lead	207-1	570.54	587.35	590.96	582.95	1.87	ppb
Lead	208-1	597.38	611.53	606.65	605.19	1.19	ppb
Lithium	6-1				103		%
Magnesium	24-1	12107.57	12652.39	12518.97	12426.31	2.29	ppb
Manganese	55-1	1220.65	1315.86	1294.78	1277.10	3.92	ppb
Molybdenum	94-1	1189.59	1274.65	1202.10	1222.12	3.76	ppb
Molybdenum	95-1	1221.14	1283.03	1211.77	1238.65	3.13	ppb
Molybdenum	96-1	1180.37	1273.22	1231.94	1228.51	3.79	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S4 Instrumnet Name : P7
Client Sample ID : S4 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:34:10 DataFile Name : 008CAL.S.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	1207.69	1253.53	1205.09	1222.10	2.23	ppb
Molybdenum	98-1	1203.09	1268.68	1230.79	1234.19	2.67	ppb
Neodymium	150-1						cps
Nickel	60-1	121.83	128.28	128.01	126.04	2.89	ppb
Phosphorus	31-1	2319.74	2442.36	2449.66	2403.92	3.04	ppb
Potassium	39-1	6201.10	6526.81	6483.44	6403.78	2.76	ppb
Rhodium	103-1				99		%
Scandium	45-1				99		%
Selenium	77-1	132.19	135.48	132.50	133.39	1.36	ppb
Selenium	78-1	122.49	137.07	121.68	127.08	6.82	ppb
Selenium	82-1	124.56	132.90	127.24	128.24	3.32	ppb
Silicon	28-1	121.50	130.37	133.12	128.33	4.73	ppb
Silver	109-1	123.61	130.13	130.16	127.97	2.95	ppb
Silver	107-1	125.31	131.82	132.30	129.81	3.01	ppb
Sodium	23-1	12333.25	12849.47	12982.10	12721.60	2.69	ppb
Strontium	86-1	123.27	129.66	124.76	125.90	2.66	ppb
Strontium	88-1	121.21	128.62	123.65	124.50	3.03	ppb
Sulfur	34-1	1850.96	2449.35	2458.99	2253.10	15.46	ppb
Terbium	159-1				99		%
Thallium	203-1	118.86	119.37	120.38	119.54	0.65	ppb
Thallium	205-1	116.51	118.06	120.49	118.35	1.70	ppb
Tin	118-1	124.34	128.80	129.24	127.46	2.13	ppb
Titanium	47-1	1203.22	1266.84	1262.86	1244.31	2.86	ppb
Uranium	238-1	111.45	114.80	115.03	113.76	1.76	ppb
Vanadium	51-1	118.80	125.83	125.37	123.33	3.19	ppb
Yttrium	89-1				101		%
Zinc	66-1	1249.19	1320.58	1305.46	1291.74	2.91	ppb
Zirconium	90-1	118.12	124.55	120.90	121.19	2.66	ppb
Zirconium	91-1	120.01	126.40	121.24	122.55	2.77	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S5 Instrumnet Name : P7
Client Sample ID : S5 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:37:08 DataFile Name : 009CAL.S.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	5019.34	5135.19	5171.37	5108.63	1.55	ppb
Antimony	121-1	238.38	243.62	249.59	243.86	2.30	ppb
Arsenic	75-1	249.42	258.66	255.70	254.59	1.85	ppb
Barium	135-1	1164.91	1213.16	1216.35	1198.14	2.41	ppb
Barium	137-1	1194.97	1270.45	1270.77	1245.40	3.51	ppb
Beryllium	9-1	250.47	260.10	260.62	257.06	2.22	ppb
Bismuth	209-1				103		%
Bromine	81-1						cps
Cadmium	106-1	252.29	249.68	263.65	255.21	2.91	ppb
Cadmium	108-1	251.91	256.30	266.63	258.28	2.93	ppb
Cadmium	111-1	248.19	254.08	259.23	253.83	2.18	ppb
Calcium	43-1	25388.63	26020.20	26152.92	25853.92	1.58	ppb
Calcium	44-1	24774.30	25674.54	25855.89	25434.91	2.28	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	252.85	259.38	259.75	257.33	1.51	ppb
Cobalt	59-1	249.19	250.40	256.84	252.14	1.63	ppb
Copper	63-1	2463.65	2564.43	2610.02	2546.03	2.94	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				103		%
Indium	115-1				99		%
Iron	56-1	12878.95	13303.37	12993.14	13058.48	1.68	ppb
Iron	57-1	12629.55	12975.46	13037.11	12880.71	1.71	ppb
Iron	54-1	13055.47	13303.31	13265.64	13208.14	1.01	ppb
Krypton	83-1						cps
Lead	206-1	1242.68	1263.50	1286.82	1264.33	1.75	ppb
Lead	207-1	1199.61	1297.86	1278.92	1258.80	4.14	ppb
Lead	208-1	1223.03	1281.69	1267.43	1257.38	2.43	ppb
Lithium	6-1				106		%
Magnesium	24-1	24990.23	25570.64	25486.32	25349.07	1.24	ppb
Manganese	55-1	2500.06	2529.23	2539.82	2523.04	0.82	ppb
Molybdenum	94-1	2387.21	2573.77	2515.24	2492.07	3.83	ppb
Molybdenum	95-1	2428.30	2510.86	2533.99	2491.05	2.23	ppb
Molybdenum	96-1	2442.47	2484.93	2517.06	2481.49	1.51	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S5 Instrumnet Name : P7
Client Sample ID : S5 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:37:08 DataFile Name : 009CAL.S.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	2474.25	2526.14	2508.99	2503.12	1.06	ppb
Molybdenum	98-1	2428.36	2504.03	2557.25	2496.55	2.59	ppb
Neodymium	150-1						cps
Nickel	60-1	245.08	249.43	252.84	249.12	1.56	ppb
Phosphorus	31-1	4931.84	4974.22	5073.58	4993.21	1.46	ppb
Potassium	39-1	12710.33	12780.25	12765.52	12752.03	0.29	ppb
Rhodium	103-1				99		%
Scandium	45-1				99		%
Selenium	77-1	247.94	255.95	257.82	253.90	2.07	ppb
Selenium	78-1	258.89	260.63	266.55	262.03	1.53	ppb
Selenium	82-1	252.91	261.25	261.78	258.64	1.92	ppb
Silicon	28-1	253.83	260.10	265.04	259.66	2.16	ppb
Silver	109-1	240.51	245.77	251.99	246.09	2.34	ppb
Silver	107-1	243.19	248.48	255.13	248.93	2.40	ppb
Sodium	23-1	25076.57	26412.77	26160.12	25883.15	2.74	ppb
Strontium	86-1	247.54	254.77	255.85	252.72	1.79	ppb
Strontium	88-1	245.55	252.95	257.91	252.13	2.47	ppb
Sulfur	34-1	4695.07	4763.54	4768.33	4742.31	0.86	ppb
Terbium	159-1				103		%
Thallium	203-1	236.26	242.92	244.08	241.09	1.75	ppb
Thallium	205-1	234.77	239.46	242.95	239.06	1.72	ppb
Tin	118-1	241.67	245.59	254.00	247.08	2.55	ppb
Titanium	47-1	2482.64	2541.67	2594.94	2539.75	2.21	ppb
Uranium	238-1	243.00	255.04	249.88	249.31	2.42	ppb
Vanadium	51-1	247.66	250.59	259.03	252.43	2.34	ppb
Yttrium	89-1				100		%
Zinc	66-1	2514.56	2602.96	2591.41	2569.64	1.87	ppb
Zirconium	90-1	242.73	253.42	252.66	249.60	2.39	ppb
Zirconium	91-1	243.86	249.79	252.32	248.66	1.75	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S6 Instrumnet Name : P7
Client Sample ID : S6 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:40:07 DataFile Name : 010CAL.S.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	9813.73	10305.11	10057.78	10058.88	2.44	ppb
Antimony	121-1	476.72	508.71	499.76	495.06	3.33	ppb
Arsenic	75-1	488.85	530.38	502.08	507.10	4.18	ppb
Barium	135-1	2440.56	2564.21	2531.84	2512.20	2.55	ppb
Barium	137-1	2446.11	2586.75	2510.02	2514.29	2.80	ppb
Beryllium	9-1	487.85	522.11	509.15	506.37	3.42	ppb
Bismuth	209-1				106		%
Bromine	81-1						cps
Cadmium	106-1	503.27	522.13	500.72	508.70	2.30	ppb
Cadmium	108-1	494.66	519.43	497.53	503.87	2.69	ppb
Cadmium	111-1	492.23	517.66	503.80	504.57	2.52	ppb
Calcium	43-1	50533.88	52406.39	50922.10	51287.46	1.93	ppb
Calcium	44-1	49535.74	52300.32	50846.42	50894.16	2.72	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	492.74	523.16	505.13	507.01	3.02	ppb
Cobalt	59-1	499.57	522.63	510.31	510.83	2.26	ppb
Copper	63-1	4918.83	5199.24	5129.14	5082.40	2.87	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				105		%
Indium	115-1				102		%
Iron	56-1	25602.94	26788.58	26051.84	26147.79	2.29	ppb
Iron	57-1	25392.89	26603.14	25631.71	25875.91	2.48	ppb
Iron	54-1	25117.69	27246.95	26718.37	26361.01	4.21	ppb
Krypton	83-1						cps
Lead	206-1	2422.73	2576.45	2494.43	2497.87	3.08	ppb
Lead	207-1	2424.42	2561.91	2518.29	2501.54	2.81	ppb
Lead	208-1	2409.05	2574.18	2504.67	2495.97	3.32	ppb
Lithium	6-1				107		%
Magnesium	24-1	50283.87	51814.41	50700.99	50933.09	1.55	ppb
Manganese	55-1	5002.36	5183.73	5062.94	5083.01	1.82	ppb
Molybdenum	94-1	4738.48	5160.14	4994.56	4964.40	4.28	ppb
Molybdenum	95-1	4791.08	5143.69	4955.25	4963.34	3.55	ppb
Molybdenum	96-1	4817.32	5135.98	4982.46	4978.58	3.20	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S6 Instrumnet Name : P7
Client Sample ID : S6 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:40:07 DataFile Name : 010CAL.S.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	4755.31	5249.48	4988.87	4997.89	4.95	ppb
Molybdenum	98-1	4841.78	5148.74	4995.10	4995.21	3.07	ppb
Neodymium	150-1						cps
Nickel	60-1	487.70	507.65	495.41	496.92	2.02	ppb
Phosphorus	31-1	9889.42	10498.73	10088.93	10159.03	3.06	ppb
Potassium	39-1	24978.73	26248.77	25447.70	25558.40	2.51	ppb
Rhodium	103-1				102		%
Scandium	45-1				100		%
Selenium	77-1	489.34	531.84	510.30	510.49	4.16	ppb
Selenium	78-1	487.35	533.92	505.42	508.90	4.61	ppb
Selenium	82-1	495.44	527.57	510.17	511.06	3.15	ppb
Silicon	28-1	495.84	523.76	516.55	512.05	2.83	ppb
Silver	109-1	493.24	509.23	499.35	500.60	1.61	ppb
Silver	107-1	485.09	521.03	492.97	499.70	3.78	ppb
Sodium	23-1	51162.88	52462.17	51465.30	51696.78	1.32	ppb
Strontium	86-1	486.11	522.29	503.86	504.09	3.59	ppb
Strontium	88-1	484.49	513.21	497.60	498.43	2.88	ppb
Sulfur	34-1	9969.58	10406.38	9891.70	10089.22	2.75	ppb
Terbium	159-1				105		%
Thallium	203-1	459.51	496.50	476.79	477.60	3.88	ppb
Thallium	205-1	493.07	512.64	491.49	499.07	2.36	ppb
Tin	118-1	476.23	501.02	491.20	489.48	2.55	ppb
Titanium	47-1	5042.58	5106.21	5087.27	5078.69	0.64	ppb
Uranium	238-1	478.12	519.59	512.60	503.43	4.41	ppb
Vanadium	51-1	483.95	514.83	502.14	500.31	3.10	ppb
Yttrium	89-1				102		%
Zinc	66-1	5042.66	5264.03	5165.46	5157.38	2.15	ppb
Zirconium	90-1	482.48	518.63	501.49	500.87	3.61	ppb
Zirconium	91-1	477.45	512.35	493.24	494.35	3.54	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S7 Instrumnet Name : P7
Client Sample ID : S7 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:43:03 DataFile Name : 011CAL.S.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	19327.55	20113.50	20321.02	19920.69	2.63	ppb
Antimony	121-1	978.75	1031.97	1000.98	1003.90	2.66	ppb
Arsenic	75-1	967.76	1011.00	1006.31	995.02	2.38	ppb
Barium	135-1	4849.36	5154.08	5021.63	5008.36	3.05	ppb
Barium	137-1	4831.90	5128.25	5022.86	4994.33	3.01	ppb
Beryllium	9-1	958.73	1012.45	1011.78	994.32	3.10	ppb
Bismuth	209-1				109		%
Bromine	81-1						cps
Cadmium	106-1	964.92	1013.62	1000.75	993.10	2.54	ppb
Cadmium	108-1	974.04	1008.55	1001.88	994.82	1.84	ppb
Cadmium	111-1	965.67	1014.55	1006.78	995.67	2.64	ppb
Calcium	43-1	95735.23	99849.89	100228.54	98604.55	2.53	ppb
Calcium	44-1	97616.96	102605.34	102102.06	100774.79	2.73	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	951.81	1009.75	1022.08	994.54	3.77	ppb
Cobalt	59-1	971.50	1002.10	1008.66	994.09	1.99	ppb
Copper	63-1	9743.14	10071.63	10016.11	9943.63	1.77	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				108		%
Indium	115-1				103		%
Iron	56-1	48934.41	52186.63	52969.23	51363.42	4.17	ppb
Iron	57-1	48642.42	52302.74	51476.72	50807.29	3.78	ppb
Iron	54-1	49589.92	52755.84	52659.24	51668.34	3.48	ppb
Krypton	83-1						cps
Lead	206-1	4923.57	5060.43	5021.54	5001.84	1.41	ppb
Lead	207-1	4899.00	5120.44	4989.97	5003.14	2.22	ppb
Lead	208-1	4886.20	5108.30	5015.53	5003.34	2.23	ppb
Lithium	6-1				110		%
Magnesium	24-1	96430.78	101284.68	101309.91	99675.12	2.82	ppb
Manganese	55-1	9655.79	10123.77	10067.44	9949.00	2.57	ppb
Molybdenum	94-1	9677.50	10031.07	10361.71	10023.43	3.41	ppb
Molybdenum	95-1	9630.84	10189.25	10247.14	10022.41	3.40	ppb
Molybdenum	96-1	9738.48	10170.84	10146.48	10018.60	2.42	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S7 Instrumnet Name : P7
Client Sample ID : S7 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:43:03 DataFile Name : 011CAL.S.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	9664.25	10063.17	10284.91	10004.11	3.14	ppb
Molybdenum	98-1	9647.95	10188.11	10179.83	10005.30	3.09	ppb
Neodymium	150-1						cps
Nickel	60-1	975.46	1012.00	1017.43	1001.63	2.28	ppb
Phosphorus	31-1	19409.28	20021.84	20388.94	19940.02	2.48	ppb
Potassium	39-1	48159.64	51451.33	50400.35	50003.78	3.36	ppb
Rhodium	103-1				105		%
Scandium	45-1				104		%
Selenium	77-1	968.35	1012.84	996.64	992.61	2.27	ppb
Selenium	78-1	963.16	1015.18	997.25	991.86	2.66	ppb
Selenium	82-1	965.18	1003.96	1006.31	991.82	2.33	ppb
Silicon	28-1	945.59	1002.54	1025.02	991.05	4.13	ppb
Silver	109-1	977.32	1025.76	997.67	1000.25	2.43	ppb
Silver	107-1	974.55	1014.33	1010.32	999.73	2.19	ppb
Sodium	23-1	96885.33	101841.60	101592.73	100106.56	2.79	ppb
Strontium	86-1	966.84	1009.87	1014.62	997.11	2.64	ppb
Strontium	88-1	968.83	1014.83	1017.36	1000.34	2.73	ppb
Sulfur	34-1	19371.99	20353.80	20434.65	20053.48	2.95	ppb
Terbium	159-1				108		%
Thallium	203-1	1005.07	1032.96	1004.63	1014.22	1.60	ppb
Thallium	205-1	990.84	1012.60	1009.03	1004.15	1.16	ppb
Tin	118-1	977.47	1037.38	1002.01	1005.62	2.99	ppb
Titanium	47-1	9636.62	10158.41	10059.65	9951.56	2.79	ppb
Uranium	238-1	973.51	1025.02	1001.76	1000.10	2.58	ppb
Vanadium	51-1	962.14	1016.09	1020.20	999.48	3.24	ppb
Yttrium	89-1				105		%
Zinc	66-1	9558.99	10022.21	10113.47	9898.22	3.00	ppb
Zirconium	90-1	965.67	1017.95	1016.97	1000.20	2.99	ppb
Zirconium	91-1	983.74	1004.80	1021.95	1003.50	1.91	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S8 Instrumnet Name : P7
Client Sample ID : S8 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:46:01 DataFile Name : 012CAL.S.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	97978.45	100771.52	101264.61	100004.86	1.77	ppb
Antimony	121-1	0.83	0.73	0.75	0.77	6.85	ppb
Arsenic	75-1	1.47	1.17	1.26	1.30	11.80	ppb
Barium	135-1	2.97	2.82	2.90	2.90	2.74	ppb
Barium	137-1	2.69	2.75	2.77	2.74	1.43	ppb
Beryllium	9-1	0.18	0.14	0.08	0.13	37.18	ppb
Bismuth	209-1				106		%
Bromine	81-1						cps
Cadmium	106-1	1.69	0.83	0.77	1.10	46.63	ppb
Cadmium	108-1	0.52	0.77	0.47	0.59	26.90	ppb
Cadmium	111-1	0.67	0.51	0.53	0.57	15.66	ppb
Calcium	43-1	488512.87	513038.40	498731.04	500094.10	2.46	ppb
Calcium	44-1	490126.72	503838.75	505221.98	499729.15	1.67	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	4.12	4.24	4.15	4.17	1.41	ppb
Cobalt	59-1	1.46	1.47	1.47	1.47	0.46	ppb
Copper	63-1	7.37	7.84	8.10	7.77	4.78	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				111		%
Indium	115-1				104		%
Iron	56-1	243550.00	251405.44	253773.59	249576.34	2.14	ppb
Iron	57-1	242484.61	253109.96	253580.45	249725.01	2.51	ppb
Iron	54-1	243585.27	250378.26	254483.06	249482.20	2.21	ppb
Krypton	83-1						cps
Lead	206-1	1.26	1.18	1.19	1.21	3.47	ppb
Lead	207-1	1.17	1.21	1.20	1.19	1.79	ppb
Lead	208-1	1.23	1.22	1.19	1.21	1.78	ppb
Lithium	6-1				109		%
Magnesium	24-1	488244.84	506258.08	505367.21	499956.71	2.03	ppb
Manganese	55-1	3.24	3.39	3.40	3.34	2.72	ppb
Molybdenum	94-1	2.94	2.84	2.95	2.91	2.20	ppb
Molybdenum	95-1	1.65	1.55	1.50	1.56	4.83	ppb
Molybdenum	96-1	2.66	2.57	2.46	2.56	3.95	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S8 Instrumnet Name : P7
Client Sample ID : S8 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:46:01 DataFile Name : 012CALS.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	1.60	1.55	1.57	1.58	1.53	ppb
Molybdenum	98-1	1.69	1.53	1.49	1.57	6.86	ppb
Neodymium	150-1						cps
Nickel	60-1	3.45	3.52	3.69	3.55	3.40	ppb
Phosphorus	31-1	-124.89	-125.19	-126.31	-125.46		ppb
Potassium	39-1	240365.07	253383.08	256031.02	249926.39	3.36	ppb
Rhodium	103-1				101		%
Scandium	45-1				104		%
Selenium	77-1	2.28	1.96	1.29	1.84	27.41	ppb
Selenium	78-1	-33.56	-29.27	-31.46	-31.43		ppb
Selenium	82-1	1.42	1.66	1.01	1.36	24.05	ppb
Silicon	28-1	-5.60	-4.83	-2.28	-4.24		ppb
Silver	109-1	0.41	0.18	0.16	0.25	55.03	ppb
Silver	107-1	0.38	0.19	0.14	0.24	52.93	ppb
Sodium	23-1	486884.82	502211.04	510180.11	499758.66	2.37	ppb
Strontium	86-1	12.23	12.19	12.63	12.35	1.95	ppb
Strontium	88-1	11.71	12.15	12.07	11.98	1.96	ppb
Sulfur	34-1	-2329.31	-2171.61	-2174.29	-2225.07		ppb
Terbium	159-1				110		%
Thallium	203-1	1.46	1.47	1.47	1.47	0.47	ppb
Thallium	205-1	1.34	1.40	1.39	1.38	2.24	ppb
Tin	118-1	-0.03	-0.05	0.00	-0.02		ppb
Titanium	47-1	0.75	0.60	0.59	0.65	14.12	ppb
Uranium	238-1	0.05	0.02	0.02	0.03	55.62	ppb
Vanadium	51-1	0.43	0.39	0.41	0.41	4.80	ppb
Yttrium	89-1				107		%
Zinc	66-1	8.31	8.03	8.27	8.21	1.88	ppb
Zirconium	90-1	0.86	0.83	0.83	0.84	1.91	ppb
Zirconium	91-1	0.84	0.92	0.81	0.86	6.81	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICV01 Instrumnet Name : P7
Client Sample ID : ICV01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 15:56:42 DataFile Name : 017ICV.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	1521.06	1622.55	1676.21	1606.61	4.90	ppb
Antimony	121-1	409.75	416.20	446.10	424.02	4.57	ppb
Arsenic	75-1	391.13	404.27	425.61	407.00	4.27	ppb
Barium	135-1	1478.12	1535.94	1647.97	1554.01	5.56	ppb
Barium	137-1	1583.57	1628.47	1711.68	1641.24	3.96	ppb
Beryllium	9-1	41.07	42.65	43.81	42.51	3.23	ppb
Bismuth	209-1				105		%
Bromine	81-1						cps
Cadmium	106-1	181.58	186.97	199.27	189.27	4.79	ppb
Cadmium	108-1	199.85	204.62	221.96	208.81	5.57	ppb
Cadmium	111-1	198.72	205.33	218.53	207.53	4.86	ppb
Calcium	43-1	3980.22	4012.67	4244.70	4079.20	3.54	ppb
Calcium	44-1	3986.28	4060.49	4325.46	4124.08	4.32	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	163.76	165.43	174.63	167.94	3.49	ppb
Cobalt	59-1	405.52	415.05	436.39	418.99	3.77	ppb
Copper	63-1	179.11	182.49	192.67	184.76	3.82	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				104		%
Indium	115-1				102		%
Iron	56-1	747.53	791.83	865.04	801.47	7.40	ppb
Iron	57-1	781.39	805.12	849.80	812.10	4.28	ppb
Iron	54-1	876.02	886.63	972.47	911.71	5.80	ppb
Krypton	83-1						cps
Lead	206-1	372.78	377.54	401.12	383.81	3.95	ppb
Lead	207-1	359.83	367.36	389.77	372.32	4.18	ppb
Lead	208-1	372.12	386.26	404.10	387.49	4.14	ppb
Lithium	6-1				99		%
Magnesium	24-1	3719.13	3730.80	3946.56	3798.83	3.37	ppb
Manganese	55-1	405.57	410.01	426.10	413.90	2.61	ppb
Molybdenum	94-1	4093.22	4118.84	4414.30	4208.79	4.24	ppb
Molybdenum	95-1	4989.82	5055.48	5396.41	5147.24	4.24	ppb
Molybdenum	96-1	4887.66	4978.69	5223.96	5030.10	3.46	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICV01 Instrumnet Name : P7
Client Sample ID : ICV01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 15:56:42 DataFile Name : 017ICV.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	4966.02	5103.28	5289.38	5119.56	3.17	ppb
Molybdenum	98-1	5044.31	5135.34	5417.50	5199.05	3.74	ppb
Neodymium	150-1						cps
Nickel	60-1	393.44	402.22	421.22	405.63	3.50	ppb
Phosphorus	31-1	-128.07	-129.62	-125.47	-127.72		ppb
Potassium	39-1	4045.15	4053.89	4243.29	4114.11	2.72	ppb
Rhodium	103-1				102		%
Scandium	45-1				100		%
Selenium	77-1	386.89	413.50	437.61	412.67	6.15	ppb
Selenium	78-1	402.72	410.10	453.45	422.09	6.49	ppb
Selenium	82-1	396.95	407.37	439.07	414.46	5.29	ppb
Silicon	28-1	-5.80	-8.28	-0.77	-4.95		ppb
Silver	109-1	184.79	175.55	184.10	181.48	2.84	ppb
Silver	107-1	186.66	177.97	206.55	190.39	7.70	ppb
Sodium	23-1	3892.37	4021.97	4187.71	4034.01	3.67	ppb
Strontium	86-1	-0.01	0.02	0.08	0.03	157.59	ppb
Strontium	88-1	0.05	0.05	0.06	0.05	6.71	ppb
Sulfur	34-1	-2950.28	-3324.19	-2774.67	-3016.38		ppb
Terbium	159-1				104		%
Thallium	203-1	360.90	368.34	392.30	373.85	4.39	ppb
Thallium	205-1	378.70	393.65	412.96	395.10	4.35	ppb
Tin	118-1	0.12	0.11	0.25	0.16	51.00	ppb
Titanium	47-1	0.49	0.61	0.70	0.60	16.88	ppb
Uranium	238-1	0.03	-0.01	-0.01	0.00	574.94	ppb
Vanadium	51-1	400.14	406.06	429.74	411.98	3.80	ppb
Yttrium	89-1				103		%
Zinc	66-1	359.96	368.19	387.62	371.92	3.82	ppb
Zirconium	90-1	0.01	0.01	0.00	0.01	47.33	ppb
Zirconium	91-1	0.05	0.07	0.07	0.07	16.57	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICB01 Instrumnet Name : P7
Client Sample ID : ICB01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:02:16 DataFile Name : 018CCBE.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	0.17	0.20	0.08	0.15	39.77	ppb
Antimony	121-1	0.04	0.05	0.04	0.04	18.56	ppb
Arsenic	75-1	0.09	0.06	0.36	0.17	96.10	ppb
Barium	135-1	0.03	0.03	-0.04	0.01	498.17	ppb
Barium	137-1	0.02	0.00	-0.02	0.00		ppb
Beryllium	9-1	0.00	-0.02	-0.02	-0.01		ppb
Bismuth	209-1				105		%
Bromine	81-1						cps
Cadmium	106-1	-1.54	-2.80	-2.16	-2.17		ppb
Cadmium	108-1	-0.03	0.06	-0.08	-0.02		ppb
Cadmium	111-1	-0.09	-0.17	-0.15	-0.14		ppb
Calcium	43-1	-4.78	-10.19	3.61	-3.79		ppb
Calcium	44-1	-12.93	-7.29	-2.39	-7.54		ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	-0.11	0.01	0.00	-0.03		ppb
Cobalt	59-1	0.03	0.00	-0.01	0.01	277.20	ppb
Copper	63-1	-0.01	0.01	-0.01	0.00		ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				103		%
Indium	115-1				100		%
Iron	56-1	-25.22	-1.96	-15.25	-14.14		ppb
Iron	57-1	-13.25	-9.70	-10.94	-11.30		ppb
Iron	54-1	-9.53	13.91	-3.93	0.15	8050.13	ppb
Krypton	83-1						cps
Lead	206-1	0.00	-0.03	-0.02	-0.02		ppb
Lead	207-1	0.02	-0.02	-0.01	-0.01		ppb
Lead	208-1	0.02	-0.01	-0.02	-0.01		ppb
Lithium	6-1				99		%
Magnesium	24-1	-0.10	0.00	-0.24	-0.11		ppb
Manganese	55-1	0.00	-0.02	-0.06	-0.03		ppb
Molybdenum	94-1	0.07	0.04	0.05	0.05	30.22	ppb
Molybdenum	95-1	0.11	0.08	0.07	0.09	24.24	ppb
Molybdenum	96-1	0.09	0.05	0.08	0.08	26.30	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICB01 Instrumnet Name : P7
Client Sample ID : ICB01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:02:16 DataFile Name : 018CCBE.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	0.11	0.09	0.06	0.08	30.44	ppb
Molybdenum	98-1	0.10	0.08	0.07	0.08	15.62	ppb
Neodymium	150-1						cps
Nickel	60-1	0.01	0.03	-0.01	0.01	195.20	ppb
Phosphorus	31-1	-130.35	-127.47	-126.73	-128.18		ppb
Potassium	39-1	-23.30	-11.56	-22.11	-18.99		ppb
Rhodium	103-1				101		%
Scandium	45-1				99		%
Selenium	77-1	0.41	0.52	0.93	0.62	43.72	ppb
Selenium	78-1	-11.99	-5.38	-9.93	-9.10		ppb
Selenium	82-1	1.53	-0.50	-0.63	0.13	913.62	ppb
Silicon	28-1	-6.10	-3.78	-7.45	-5.78		ppb
Silver	109-1	0.49	0.09	0.06	0.21	112.64	ppb
Silver	107-1	0.40	0.09	0.04	0.17	112.81	ppb
Sodium	23-1	-2.67	-0.89	-2.02	-1.86		ppb
Strontium	86-1	0.01	0.05	-0.08	0.00		ppb
Strontium	88-1	0.00	0.00	0.00	0.00	315.82	ppb
Sulfur	34-1	-3201.32	-2690.55	-2799.06	-2896.98		ppb
Terbium	159-1				102		%
Thallium	203-1	0.04	0.03	0.02	0.03	39.74	ppb
Thallium	205-1	0.03	0.02	0.01	0.02	35.14	ppb
Tin	118-1	0.01	-0.02	-0.01	0.00		ppb
Titanium	47-1	0.05	0.01	-0.04	0.01	788.89	ppb
Uranium	238-1	0.02	-0.01	-0.01	0.00	2053.26	ppb
Vanadium	51-1	0.00	-0.01	-0.01	-0.01		ppb
Yttrium	89-1				101		%
Zinc	66-1	0.05	-0.01	0.11	0.05	115.55	ppb
Zirconium	90-1	0.00	0.00	0.00	0.00	204.09	ppb
Zirconium	91-1	-0.02	0.00	0.01	0.00		ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICSA01 Instrumnet Name : P7
Client Sample ID : ICSA01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:05:41 DataFile Name : 019ICSA.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	84823.08	92510.50	91660.76	89664.78	4.70	ppb
Antimony	121-1	1.03	1.08	1.08	1.06	2.51	ppb
Arsenic	75-1	1.08	1.71	1.82	1.54	26.05	ppb
Barium	135-1	1.26	1.29	1.32	1.29	2.24	ppb
Barium	137-1	1.31	1.32	1.43	1.35	4.84	ppb
Beryllium	9-1	0.30	0.26	0.22	0.26	15.29	ppb
Bismuth	209-1				105		%
Bromine	81-1						cps
Cadmium	106-1	-3.53	-2.49	-2.49	-2.84		ppb
Cadmium	108-1	7.14	8.00	6.91	7.35	7.78	ppb
Cadmium	111-1	-0.01	0.05	0.07	0.04	106.12	ppb
Calcium	43-1	93787.16	97425.96	97190.61	96134.58	2.12	ppb
Calcium	44-1	93878.58	97399.36	97794.19	96357.37	2.24	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	18.71	20.09	19.83	19.54	3.75	ppb
Cobalt	59-1	1.13	1.16	1.10	1.13	2.85	ppb
Copper	63-1	8.00	8.33	8.35	8.23	2.41	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				106		%
Indium	115-1				101		%
Iron	56-1	94276.16	98135.17	96643.39	96351.58	2.02	ppb
Iron	57-1	92630.21	97019.01	96758.77	95469.33	2.58	ppb
Iron	54-1	95756.98	99834.22	98453.73	98014.98	2.12	ppb
Krypton	83-1						cps
Lead	206-1	4.25	4.30	4.19	4.25	1.30	ppb
Lead	207-1	3.52	3.92	3.68	3.71	5.37	ppb
Lead	208-1	3.82	4.04	3.86	3.91	2.99	ppb
Lithium	6-1				101		%
Magnesium	24-1	86234.68	89246.96	88038.71	87840.12	1.73	ppb
Manganese	55-1	6.25	6.48	6.47	6.40	1.99	ppb
Molybdenum	94-1	1498.80	1577.08	1563.68	1546.52	2.71	ppb
Molybdenum	95-1	1852.32	1909.87	1925.52	1895.90	2.03	ppb
Molybdenum	96-1	1776.11	1830.72	1894.23	1833.69	3.22	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICSA01 Instrumnet Name : P7
Client Sample ID : ICSA01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:05:41 DataFile Name : 019ICSA.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	1836.10	1938.05	1897.69	1890.61	2.72	ppb
Molybdenum	98-1	1816.63	1889.45	1923.94	1876.67	2.92	ppb
Neodymium	150-1						cps
Nickel	60-1	5.19	5.42	5.24	5.28	2.34	ppb
Phosphorus	31-1	96958.85	100432.03	98606.74	98665.87	1.76	ppb
Potassium	39-1	95278.58	99169.58	99247.95	97898.71	2.32	ppb
Rhodium	103-1				101		%
Scandium	45-1				101		%
Selenium	77-1	2.55	3.45	3.93	3.31	21.17	ppb
Selenium	78-1	-23.47	-12.60	-8.25	-14.77		ppb
Selenium	82-1	-0.11	-0.98	-1.71	-0.94		ppb
Silicon	28-1	-5.42	-3.23	-2.87	-3.84		ppb
Silver	109-1	0.07	0.04	0.04	0.05	33.75	ppb
Silver	107-1	0.06	0.04	0.03	0.04	36.16	ppb
Sodium	23-1	93027.86	94738.80	96071.21	94612.62	1.61	ppb
Strontium	86-1	30.98	32.05	31.53	31.52	1.70	ppb
Strontium	88-1	29.98	30.75	31.41	30.71	2.32	ppb
Sulfur	34-1	113659.77	116827.54	112427.32	114304.88	1.99	ppb
Terbium	159-1				105		%
Thallium	203-1	0.06	0.05	0.07	0.06	19.69	ppb
Thallium	205-1	0.05	0.06	0.06	0.06	13.03	ppb
Tin	118-1	0.17	0.33	0.38	0.29	36.41	ppb
Titanium	47-1	1840.27	1992.20	1901.66	1911.37	4.00	ppb
Uranium	238-1	0.03	0.01	0.01	0.02	65.70	ppb
Vanadium	51-1	0.15	0.14	0.14	0.14	1.19	ppb
Yttrium	89-1				103		%
Zinc	66-1	9.64	11.03	10.88	10.52	7.25	ppb
Zirconium	90-1	0.01	0.01	0.01	0.01	32.08	ppb
Zirconium	91-1	0.00	0.01	0.00	0.00	179.49	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICSAB01 Instrumnet Name : P7
Client Sample ID : ICSAB01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:10:10 DataFile Name : 020ICSB.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	89437.57	88569.92	89512.60	89173.37	0.59	ppb
Antimony	121-1	18.98	20.05	20.33	19.79	3.58	ppb
Arsenic	75-1	20.10	20.69	21.73	20.84	3.95	ppb
Barium	135-1	19.47	20.25	20.33	20.01	2.37	ppb
Barium	137-1	19.78	20.62	20.10	20.17	2.09	ppb
Beryllium	9-1	20.29	20.60	20.27	20.39	0.90	ppb
Bismuth	209-1				108		%
Bromine	81-1						cps
Cadmium	106-1	14.07	14.52	16.28	14.96	7.84	ppb
Cadmium	108-1	24.43	27.19	27.25	26.29	6.14	ppb
Cadmium	111-1	18.75	19.27	19.99	19.34	3.22	ppb
Calcium	43-1	93373.01	94025.02	96065.20	94487.74	1.49	ppb
Calcium	44-1	95012.89	96523.94	96954.18	96163.67	1.06	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	38.12	37.94	38.95	38.34	1.41	ppb
Cobalt	59-1	19.78	19.91	20.18	19.96	1.02	ppb
Copper	63-1	24.70	25.00	25.47	25.06	1.55	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				110		%
Indium	115-1				106		%
Iron	56-1	95954.09	96164.54	95878.59	95999.07	0.15	ppb
Iron	57-1	95053.18	95215.66	96273.54	95514.13	0.69	ppb
Iron	54-1	95362.91	96223.47	96729.56	96105.31	0.72	ppb
Krypton	83-1						cps
Lead	206-1	24.67	25.19	24.54	24.80	1.40	ppb
Lead	207-1	23.70	23.87	23.96	23.84	0.56	ppb
Lead	208-1	23.80	24.35	23.94	24.03	1.20	ppb
Lithium	6-1				102		%
Magnesium	24-1	85825.79	86410.18	86744.11	86326.69	0.54	ppb
Manganese	55-1	23.23	23.04	23.20	23.16	0.45	ppb
Molybdenum	94-1	1507.16	1558.63	1545.32	1537.04	1.74	ppb
Molybdenum	95-1	1857.36	1891.31	1957.45	1902.04	2.68	ppb
Molybdenum	96-1	1823.18	1862.43	1890.79	1858.80	1.83	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICSAB01 Instrumnet Name : P7
Client Sample ID : ICSAB01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:10:10 DataFile Name : 020ICSB.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	1845.79	1876.21	1927.28	1883.10	2.19	ppb
Molybdenum	98-1	1841.90	1915.95	1926.72	1894.85	2.44	ppb
Neodymium	150-1						cps
Nickel	60-1	23.66	23.89	24.03	23.86	0.78	ppb
Phosphorus	31-1	98799.46	99228.38	98609.37	98879.07	0.32	ppb
Potassium	39-1	98449.63	96344.23	97940.34	97578.06	1.13	ppb
Rhodium	103-1				105		%
Scandium	45-1				105		%
Selenium	77-1	22.78	23.28	25.21	23.76	5.40	ppb
Selenium	78-1	-6.61	-5.70	3.19	-3.04		ppb
Selenium	82-1	18.91	19.36	19.20	19.16	1.20	ppb
Silicon	28-1	-8.17	-9.79	-9.53	-9.16		ppb
Silver	109-1	17.63	18.72	18.99	18.45	3.91	ppb
Silver	107-1	17.88	18.82	19.02	18.57	3.29	ppb
Sodium	23-1	93824.40	93259.26	93575.81	93553.15	0.30	ppb
Strontium	86-1	30.48	31.50	31.89	31.29	2.34	ppb
Strontium	88-1	30.03	30.75	30.84	30.54	1.45	ppb
Sulfur	34-1	113306.96	112804.18	111465.80	112525.65	0.85	ppb
Terbium	159-1				109		%
Thallium	203-1	21.73	22.00	21.69	21.81	0.78	ppb
Thallium	205-1	21.42	21.82	21.44	21.56	1.05	ppb
Tin	118-1	0.14	0.24	0.38	0.25	48.18	ppb
Titanium	47-1	1929.41	1953.55	1960.91	1947.96	0.85	ppb
Uranium	238-1	0.02	0.00	0.00	0.01	134.79	ppb
Vanadium	51-1	18.85	18.77	19.02	18.88	0.68	ppb
Yttrium	89-1				108		%
Zinc	66-1	27.44	27.41	27.41	27.42	0.06	ppb
Zirconium	90-1	0.01	0.01	0.01	0.01	46.46	ppb
Zirconium	91-1	0.01	-0.01	0.01	0.00	221.52	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCV01 Instrumnet Name : P7
Client Sample ID : CCV01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:13:10 DataFile Name : 021CCV.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	46155.71	48319.44	48930.82	47801.99	3.05	ppb
Antimony	121-1	481.83	508.34	511.38	500.52	3.25	ppb
Arsenic	75-1	468.19	485.96	486.92	480.35	2.20	ppb
Barium	135-1	2489.92	2538.35	2533.35	2520.54	1.06	ppb
Barium	137-1	2428.30	2585.83	2521.82	2511.99	3.15	ppb
Beryllium	9-1	499.91	527.86	527.66	518.48	3.10	ppb
Bismuth	209-1				112		%
Bromine	81-1						cps
Cadmium	106-1	466.27	502.77	498.55	489.20	4.08	ppb
Cadmium	108-1	474.69	502.42	498.71	491.94	3.06	ppb
Cadmium	111-1	474.47	492.88	490.02	485.79	2.04	ppb
Calcium	43-1	241823.47	248321.05	253193.54	247779.35	2.30	ppb
Calcium	44-1	239398.27	252001.69	250050.75	247150.24	2.74	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	477.59	500.25	512.54	496.79	3.57	ppb
Cobalt	59-1	466.77	488.74	491.67	482.39	2.82	ppb
Copper	63-1	4605.22	4799.83	4781.69	4728.91	2.27	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				114		%
Indium	115-1				110		%
Iron	56-1	120624.96	126449.60	125903.23	124325.93	2.59	ppb
Iron	57-1	121612.03	126749.35	125724.38	124695.25	2.18	ppb
Iron	54-1	121290.55	126482.81	128602.73	125458.70	3.00	ppb
Krypton	83-1						cps
Lead	206-1	2361.19	2524.39	2447.69	2444.42	3.34	ppb
Lead	207-1	2402.17	2533.03	2512.20	2482.47	2.83	ppb
Lead	208-1	2427.67	2542.12	2491.74	2487.18	2.31	ppb
Lithium	6-1				105		%
Magnesium	24-1	223504.85	239696.48	240196.12	234465.81	4.05	ppb
Manganese	55-1	4801.15	4906.53	4936.80	4881.49	1.46	ppb
Molybdenum	94-1	4742.35	4921.43	5029.12	4897.63	2.96	ppb
Molybdenum	95-1	4799.72	4979.44	4992.47	4923.88	2.19	ppb
Molybdenum	96-1	4691.22	5023.81	4906.60	4873.88	3.46	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCV01 Instrumnet Name : P7
Client Sample ID : CCV01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:13:10 DataFile Name : 021CCV.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	4794.60	4990.71	4917.87	4901.06	2.02	ppb
Molybdenum	98-1	4771.43	4911.11	4932.81	4871.78	1.80	ppb
Neodymium	150-1						cps
Nickel	60-1	442.66	464.30	463.39	456.78	2.68	ppb
Phosphorus	31-1	9603.29	9661.14	9964.33	9742.92	1.99	ppb
Potassium	39-1	120172.40	123878.33	125109.15	123053.29	2.09	ppb
Rhodium	103-1				108		%
Scandium	45-1				111		%
Selenium	77-1	457.51	476.45	476.27	470.08	2.31	ppb
Selenium	78-1	443.37	453.86	460.22	452.48	1.88	ppb
Selenium	82-1	457.89	472.77	475.09	468.58	1.99	ppb
Silicon	28-1	461.73	495.42	499.41	485.52	4.26	ppb
Silver	109-1	482.44	492.61	503.46	492.84	2.13	ppb
Silver	107-1	476.49	497.16	503.21	492.28	2.85	ppb
Sodium	23-1	227786.62	237914.52	239746.80	235149.31	2.74	ppb
Strontium	86-1	481.87	494.49	498.43	491.59	1.76	ppb
Strontium	88-1	480.54	497.87	498.21	492.21	2.05	ppb
Sulfur	34-1	6503.09	7370.25	7365.92	7079.76	7.05	ppb
Terbium	159-1				113		%
Thallium	203-1	454.39	486.04	471.38	470.60	3.37	ppb
Thallium	205-1	492.30	502.83	500.35	498.49	1.10	ppb
Tin	118-1	481.17	515.30	511.39	502.62	3.72	ppb
Titanium	47-1	4863.79	4936.04	5067.94	4955.92	2.09	ppb
Uranium	238-1	510.84	518.68	506.55	512.02	1.20	ppb
Vanadium	51-1	474.08	503.19	504.09	493.79	3.46	ppb
Yttrium	89-1				113		%
Zinc	66-1	4609.28	4800.53	4957.61	4789.14	3.64	ppb
Zirconium	90-1	477.64	496.12	510.00	494.59	3.28	ppb
Zirconium	91-1	467.64	485.54	489.98	481.05	2.46	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCB01 Instrumnet Name : P7
Client Sample ID : CCB01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:18:22 DataFile Name : 022CCBE.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	2.22	0.29	0.58	1.03	100.66	ppb
Antimony	121-1	0.06	0.06	0.06	0.06	3.40	ppb
Arsenic	75-1	0.45	0.53	0.43	0.47	10.62	ppb
Barium	135-1	0.05	0.00	0.02	0.02	89.77	ppb
Barium	137-1	0.04	-0.01	0.02	0.02	152.41	ppb
Beryllium	9-1	0.03	-0.01	-0.02	0.00		ppb
Bismuth	209-1				109		%
Bromine	81-1						cps
Cadmium	106-1	-2.35	-2.59	-1.92	-2.29		ppb
Cadmium	108-1	0.09	0.00	-0.13	-0.01		ppb
Cadmium	111-1	-0.15	-0.13	-0.10	-0.13		ppb
Calcium	43-1	-3.82	-3.00	-7.93	-4.91		ppb
Calcium	44-1	-1.09	12.41	18.26	9.86	100.65	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	0.06	0.02	-0.05	0.01	672.42	ppb
Cobalt	59-1	0.03	0.00	-0.01	0.01	335.39	ppb
Copper	63-1	0.26	0.18	0.17	0.21	21.51	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				104		%
Indium	115-1				105		%
Iron	56-1	-6.13	-8.60	-2.21	-5.65		ppb
Iron	57-1	-14.98	-11.97	-13.17	-13.37		ppb
Iron	54-1	-7.60	-3.64	-4.36	-5.20		ppb
Krypton	83-1						cps
Lead	206-1	0.03	0.02	-0.02	0.01	284.02	ppb
Lead	207-1	0.04	0.04	0.03	0.04	9.97	ppb
Lead	208-1	0.04	0.02	0.01	0.02	74.74	ppb
Lithium	6-1				99		%
Magnesium	24-1	1.98	1.48	1.34	1.60	21.27	ppb
Manganese	55-1	0.02	-0.06	-0.05	-0.03		ppb
Molybdenum	94-1	0.13	0.07	0.08	0.09	40.27	ppb
Molybdenum	95-1	0.08	0.10	0.06	0.08	27.77	ppb
Molybdenum	96-1	0.11	0.09	0.06	0.09	25.75	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCB01 Instrumnet Name : P7
Client Sample ID : CCB01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:18:22 DataFile Name : 022CCBE.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	0.09	0.10	0.05	0.08	31.62	ppb
Molybdenum	98-1	0.10	0.09	0.07	0.09	14.23	ppb
Neodymium	150-1						cps
Nickel	60-1	-0.03	0.01	0.04	0.01	401.20	ppb
Phosphorus	31-1	-128.74	-129.79	-128.66	-129.06		ppb
Potassium	39-1	-6.56	-7.62	-0.68	-4.95		ppb
Rhodium	103-1				105		%
Scandium	45-1				102		%
Selenium	77-1	0.81	1.96	1.14	1.30	45.44	ppb
Selenium	78-1	-19.95	-15.62	-4.05	-13.21		ppb
Selenium	82-1	-0.39	-0.43	-1.15	-0.66		ppb
Silicon	28-1	-11.82	-8.36	-11.16	-10.45		ppb
Silver	109-1	0.02	0.02	0.01	0.02	30.10	ppb
Silver	107-1	0.02	0.02	0.02	0.02	11.31	ppb
Sodium	23-1	21.46	21.49	19.11	20.69	6.60	ppb
Strontium	86-1	-0.09	0.08	-0.01	-0.01		ppb
Strontium	88-1	0.00	0.01	0.00	0.00	596.14	ppb
Sulfur	34-1	-2120.81	-2119.03	-1831.07	-2023.64		ppb
Terbium	159-1				106		%
Thallium	203-1	0.06	0.04	0.05	0.05	16.57	ppb
Thallium	205-1	0.06	0.05	0.05	0.05	11.37	ppb
Tin	118-1	0.05	0.04	0.00	0.03	88.60	ppb
Titanium	47-1	0.03	0.03	0.03	0.03	14.59	ppb
Uranium	238-1	0.01	-0.01	0.00	0.00	1132.33	ppb
Vanadium	51-1	0.01	0.00	0.00	0.00	418.20	ppb
Yttrium	89-1				106		%
Zinc	66-1	0.49	0.23	0.29	0.34	41.49	ppb
Zirconium	90-1	0.01	0.01	0.01	0.01	30.34	ppb
Zirconium	91-1	0.01	-0.02	0.01	0.00	1664.61	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CRI Instrumnet Name : P7
Client Sample ID : CRI Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:21:21 DataFile Name : 023LLCC.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	18.63	20.00	20.44	19.69	4.79	ppb
Antimony	121-1	2.03	2.07	2.20	2.10	4.13	ppb
Arsenic	75-1	1.31	1.19	1.37	1.29	7.32	ppb
Barium	135-1	9.85	9.87	9.64	9.79	1.28	ppb
Barium	137-1	10.00	9.63	10.01	9.88	2.20	ppb
Beryllium	9-1	1.15	1.13	1.12	1.13	1.68	ppb
Bismuth	209-1				107		%
Bromine	81-1						cps
Cadmium	106-1	-1.10	-1.06	-1.69	-1.28		ppb
Cadmium	108-1	1.64	1.24	1.24	1.37	16.80	ppb
Cadmium	111-1	0.77	0.84	0.81	0.81	4.39	ppb
Calcium	43-1	485.96	524.49	494.06	501.50	4.05	ppb
Calcium	44-1	474.96	521.24	524.75	506.98	5.48	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	1.90	2.04	2.17	2.03	6.73	ppb
Cobalt	59-1	1.04	1.07	1.10	1.07	2.84	ppb
Copper	63-1	1.98	2.07	2.06	2.04	2.58	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				106		%
Indium	115-1				106		%
Iron	56-1	30.92	51.85	65.43	49.40	35.19	ppb
Iron	57-1	33.99	42.53	46.96	41.16	16.01	ppb
Iron	54-1	40.32	50.17	60.91	50.47	20.41	ppb
Krypton	83-1						cps
Lead	206-1	0.83	0.88	0.92	0.88	5.16	ppb
Lead	207-1	0.83	0.89	0.86	0.86	3.35	ppb
Lead	208-1	0.82	0.84	0.85	0.84	1.84	ppb
Lithium	6-1				100		%
Magnesium	24-1	464.47	503.51	504.98	490.99	4.68	ppb
Manganese	55-1	0.96	0.93	0.93	0.94	1.51	ppb
Molybdenum	94-1	5.82	5.93	6.01	5.92	1.63	ppb
Molybdenum	95-1	4.80	5.09	5.18	5.02	3.90	ppb
Molybdenum	96-1	5.08	5.05	5.20	5.11	1.54	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CRI Instrumnet Name : P7
Client Sample ID : CRI Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:21:21 DataFile Name : 023LLCC.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	4.97	5.18	5.35	5.17	3.69	ppb
Molybdenum	98-1	5.02	5.14	5.15	5.10	1.41	ppb
Neodymium	150-1						cps
Nickel	60-1	0.86	0.98	0.92	0.92	6.86	ppb
Phosphorus	31-1	112.91	123.47	125.41	120.60	5.58	ppb
Potassium	39-1	460.39	505.17	516.99	494.18	6.04	ppb
Rhodium	103-1				104		%
Scandium	45-1				102		%
Selenium	77-1	5.16	5.94	6.51	5.87	11.57	ppb
Selenium	78-1	-7.05	-9.19	4.22	-4.01		ppb
Selenium	82-1	4.56	5.16	5.02	4.91	6.35	ppb
Silicon	28-1	-12.74	-9.61	-7.78	-10.04		ppb
Silver	109-1	1.00	1.09	1.09	1.06	4.64	ppb
Silver	107-1	1.07	1.07	1.11	1.08	1.91	ppb
Sodium	23-1	490.38	530.81	550.71	523.97	5.87	ppb
Strontium	86-1	1.04	1.05	0.99	1.03	3.22	ppb
Strontium	88-1	0.95	0.98	1.01	0.98	3.22	ppb
Sulfur	34-1	-2048.42	-1405.03	-1071.60	-1508.35		ppb
Terbium	159-1				105		%
Thallium	203-1	1.05	1.07	1.07	1.06	1.21	ppb
Thallium	205-1	1.03	1.04	1.03	1.03	0.71	ppb
Tin	118-1	5.01	5.22	5.24	5.16	2.44	ppb
Titanium	47-1	4.71	5.25	5.11	5.02	5.60	ppb
Uranium	238-1	0.96	0.87	0.95	0.93	5.08	ppb
Vanadium	51-1	4.87	5.10	5.21	5.06	3.40	ppb
Yttrium	89-1				104		%
Zinc	66-1	4.86	4.33	5.15	4.78	8.69	ppb
Zirconium	90-1	1.01	1.01	1.05	1.03	2.49	ppb
Zirconium	91-1	0.93	0.96	1.10	1.00	9.03	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : PB169290BL Instrumnet Name : P7
Client Sample ID : PB169290BL Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:24:29 DataFile Name : 024CCBE.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	-0.12	0.09	-0.05	-0.03		ppb
Antimony	121-1	0.01	0.02	0.01	0.01	7.27	ppb
Arsenic	75-1	0.28	0.09	0.38	0.25	58.32	ppb
Barium	135-1	0.03	0.02	0.02	0.02	41.00	ppb
Barium	137-1	0.01	-0.02	-0.04	-0.02		ppb
Beryllium	9-1	0.02	-0.01	-0.01	0.00	962.73	ppb
Bismuth	209-1				105		%
Bromine	81-1						cps
Cadmium	106-1	-0.63	-1.85	-2.30	-1.60		ppb
Cadmium	108-1	-0.04	-0.03	0.28	0.07	258.85	ppb
Cadmium	111-1	-0.01	-0.12	-0.15	-0.10		ppb
Calcium	43-1	-9.26	-3.61	-3.61	-5.49		ppb
Calcium	44-1	-30.42	-8.21	-25.25	-21.29		ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	-0.15	0.08	0.01	-0.02		ppb
Cobalt	59-1	0.02	0.00	-0.01	0.00	511.60	ppb
Copper	63-1	0.05	0.08	0.10	0.08	36.05	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				104		%
Indium	115-1				102		%
Iron	56-1	-23.12	26.18	3.07	2.04	1208.07	ppb
Iron	57-1	-13.89	-2.20	-8.96	-8.35		ppb
Iron	54-1	-10.05	28.78	2.79	7.17	275.81	ppb
Krypton	83-1						cps
Lead	206-1	0.03	-0.01	-0.02	0.00	899.79	ppb
Lead	207-1	0.01	0.04	-0.02	0.01	262.25	ppb
Lead	208-1	0.01	0.01	-0.02	0.00	575.13	ppb
Lithium	6-1				99		%
Magnesium	24-1	0.08	0.54	0.32	0.31	73.70	ppb
Manganese	55-1	-0.02	-0.04	-0.05	-0.04		ppb
Molybdenum	94-1	0.03	0.04	0.00	0.02	87.69	ppb
Molybdenum	95-1	0.05	0.04	0.01	0.03	58.19	ppb
Molybdenum	96-1	0.04	0.02	0.04	0.03	31.28	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : PB169290BL Instrumnet Name : P7
Client Sample ID : PB169290BL Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:24:29 DataFile Name : 024CCBE.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	0.04	0.03	0.02	0.03	30.16	ppb
Molybdenum	98-1	0.04	0.04	0.02	0.03	32.85	ppb
Neodymium	150-1						cps
Nickel	60-1	-0.01	0.02	0.01	0.01	227.88	ppb
Phosphorus	31-1	-130.36	-125.70	-128.40	-128.15		ppb
Potassium	39-1	-28.78	8.28	-10.13	-10.21		ppb
Rhodium	103-1				102		%
Scandium	45-1				100		%
Selenium	77-1	0.87	0.37	1.48	0.91	61.26	ppb
Selenium	78-1	-11.51	11.83	-9.21	-2.96		ppb
Selenium	82-1	-0.14	-1.02	-0.09	-0.42		ppb
Silicon	28-1	-16.69	-6.40	-12.99	-12.03		ppb
Silver	109-1	0.01	0.01	0.01	0.01	23.95	ppb
Silver	107-1	0.01	0.01	0.01	0.01	39.43	ppb
Sodium	23-1	5.34	12.48	8.14	8.65	41.62	ppb
Strontium	86-1	0.11	0.10	-0.01	0.07	101.99	ppb
Strontium	88-1	0.00	0.01	0.01	0.00	79.98	ppb
Sulfur	34-1	-2136.56	-942.08	-1595.74	-1558.12		ppb
Terbium	159-1				102		%
Thallium	203-1	0.03	0.03	0.04	0.04	11.35	ppb
Thallium	205-1	0.04	0.02	0.01	0.02	66.27	ppb
Tin	118-1	0.00	-0.04	-0.07	-0.04		ppb
Titanium	47-1	0.01	-0.03	0.00	-0.01		ppb
Uranium	238-1	0.02	-0.01	-0.01	0.00	21321.56	ppb
Vanadium	51-1	0.01	0.00	-0.01	0.00		ppb
Yttrium	89-1				101		%
Zinc	66-1	-0.25	0.00	0.17	-0.03		ppb
Zirconium	90-1	0.01	0.00	0.00	0.00	118.10	ppb
Zirconium	91-1	0.01	0.01	-0.03	0.00		ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : PB169290BS Instrumnet Name : P7
Client Sample ID : PB169290BS Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:27:28 DataFile Name : 025LCS6.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	9626.84	10159.58	10140.89	9975.77	3.03	ppb
Antimony	121-1	484.07	507.26	514.33	501.88	3.15	ppb
Arsenic	75-1	479.05	489.43	508.42	492.30	3.03	ppb
Barium	135-1	2447.61	2536.21	2581.10	2521.64	2.69	ppb
Barium	137-1	2404.74	2565.17	2626.56	2532.15	4.52	ppb
Beryllium	9-1	496.57	511.83	514.75	507.72	1.92	ppb
Bismuth	209-1				113		%
Bromine	81-1						cps
Cadmium	106-1	486.59	503.88	515.14	501.87	2.87	ppb
Cadmium	108-1	483.41	510.52	515.90	503.27	3.46	ppb
Cadmium	111-1	479.84	504.13	517.86	500.61	3.85	ppb
Calcium	43-1	49311.74	51049.38	51071.03	50477.39	2.00	ppb
Calcium	44-1	49111.65	49673.51	50756.03	49847.06	1.68	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	489.30	511.57	528.18	509.69	3.83	ppb
Cobalt	59-1	479.01	507.49	510.65	499.05	3.49	ppb
Copper	63-1	4892.66	5113.58	5111.99	5039.41	2.52	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				112		%
Indium	115-1				108		%
Iron	56-1	24534.72	25944.25	26723.81	25734.26	4.31	ppb
Iron	57-1	24713.02	26061.79	26278.56	25684.46	3.30	ppb
Iron	54-1	25598.53	26752.41	27014.82	26455.25	2.85	ppb
Krypton	83-1						cps
Lead	206-1	2386.88	2501.95	2500.56	2463.13	2.68	ppb
Lead	207-1	2411.16	2527.73	2542.79	2493.89	2.89	ppb
Lead	208-1	2400.65	2507.01	2527.45	2478.37	2.75	ppb
Lithium	6-1				107		%
Magnesium	24-1	47408.88	50001.99	50649.17	49353.35	3.47	ppb
Manganese	55-1	4878.91	5040.34	5236.47	5051.91	3.54	ppb
Molybdenum	94-1	4837.18	4905.71	5027.76	4923.55	1.96	ppb
Molybdenum	95-1	4867.38	4942.74	5145.62	4985.25	2.89	ppb
Molybdenum	96-1	4763.46	4873.88	5103.75	4913.70	3.53	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : PB169290BS Instrumnet Name : P7
Client Sample ID : PB169290BS Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:27:28 DataFile Name : 025LCS6.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	4706.22	4879.82	5066.44	4884.16	3.69	ppb
Molybdenum	98-1	4815.16	4879.10	5082.57	4925.61	2.84	ppb
Neodymium	150-1						cps
Nickel	60-1	469.77	485.57	496.86	484.07	2.81	ppb
Phosphorus	31-1	9602.75	10032.87	10174.18	9936.60	3.00	ppb
Potassium	39-1	24603.16	25498.28	25792.56	25298.00	2.45	ppb
Rhodium	103-1				106		%
Scandium	45-1				106		%
Selenium	77-1	482.73	480.05	518.85	493.87	4.39	ppb
Selenium	78-1	466.30	466.18	504.37	478.95	4.60	ppb
Selenium	82-1	486.01	494.91	508.87	496.60	2.32	ppb
Silicon	28-1	460.66	496.41	505.55	487.54	4.87	ppb
Silver	109-1	468.88	511.33	515.94	498.72	5.20	ppb
Silver	107-1	485.03	519.32	529.45	511.27	4.55	ppb
Sodium	23-1	47724.73	50241.39	50907.59	49624.57	3.38	ppb
Strontium	86-1	479.02	489.21	506.46	491.56	2.82	ppb
Strontium	88-1	476.85	491.30	504.64	490.93	2.83	ppb
Sulfur	34-1	8623.10	9111.70	9092.74	8942.51	3.10	ppb
Terbium	159-1				110		%
Thallium	203-1	454.66	473.91	479.81	469.46	2.80	ppb
Thallium	205-1	484.84	501.33	517.56	501.24	3.26	ppb
Tin	118-1	467.64	517.16	519.17	501.32	5.82	ppb
Titanium	47-1	4848.30	5035.18	5147.62	5010.37	3.02	ppb
Uranium	238-1	472.34	505.66	501.45	493.15	3.68	ppb
Vanadium	51-1	480.86	504.44	509.43	498.24	3.06	ppb
Yttrium	89-1				109		%
Zinc	66-1	4975.86	5161.08	5223.14	5120.03	2.51	ppb
Zirconium	90-1	475.24	490.93	509.35	491.84	3.47	ppb
Zirconium	91-1	470.49	479.39	499.76	483.21	3.11	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : Q2552-04 Instrumnet Name : P7
Client Sample ID : WS0725-PT-TM-WS Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:41:59 DataFile Name : 027SMPL.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	553.31	584.00	591.23	576.18	3.49	ppb
Antimony	121-1	17.95	18.68	19.05	18.56	3.01	ppb
Arsenic	75-1	25.39	26.14	26.59	26.04	2.33	ppb
Barium	135-1	637.99	652.34	667.70	652.68	2.28	ppb
Barium	137-1	646.22	668.09	681.78	665.36	2.70	ppb
Beryllium	9-1	9.58	9.76	9.96	9.77	1.96	ppb
Bismuth	209-1				108		%
Bromine	81-1						cps
Cadmium	106-1	14.49	14.04	16.90	15.15	10.16	ppb
Cadmium	108-1	18.23	18.76	18.94	18.64	1.98	ppb
Cadmium	111-1	18.05	18.51	19.19	18.58	3.08	ppb
Calcium	43-1	-1.93	2.00	-8.49	-2.81		ppb
Calcium	44-1	-49.53	-36.80	-32.36	-39.56		ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	23.51	24.88	25.21	24.53	3.68	ppb
Cobalt	59-1	0.04	0.01	0.01	0.02	95.32	ppb
Copper	63-1	934.80	974.68	977.21	962.23	2.47	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				104		%
Indium	115-1				103		%
Iron	56-1	615.01	646.13	670.88	644.00	4.35	ppb
Iron	57-1	618.42	654.55	662.54	645.17	3.64	ppb
Iron	54-1	650.36	690.36	701.67	680.80	3.96	ppb
Krypton	83-1						cps
Lead	206-1	47.07	49.19	49.32	48.52	2.60	ppb
Lead	207-1	44.96	47.02	46.58	46.19	2.35	ppb
Lead	208-1	45.88	47.93	47.90	47.24	2.49	ppb
Lithium	6-1				100		%
Magnesium	24-1	0.61	0.50	0.63	0.58	12.29	ppb
Manganese	55-1	96.16	100.06	101.47	99.23	2.77	ppb
Molybdenum	94-1	74.88	77.13	77.55	76.52	1.87	ppb
Molybdenum	95-1	89.57	91.74	93.40	91.57	2.10	ppb
Molybdenum	96-1	87.80	90.51	90.91	89.74	1.88	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : Q2552-04 Instrumnet Name : P7
Client Sample ID : WS0725-PT-TM-WS Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:41:59 DataFile Name : 027SMPL.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	89.47	92.10	92.68	91.42	1.87	ppb
Molybdenum	98-1	90.78	92.81	94.14	92.58	1.83	ppb
Neodymium	150-1						cps
Nickel	60-1	457.79	480.83	483.62	474.08	2.99	ppb
Phosphorus	31-1	-129.05	-128.57	-126.85	-128.15		ppb
Potassium	39-1	-26.98	-15.13	-10.67	-17.59		ppb
Rhodium	103-1				103		%
Scandium	45-1				101		%
Selenium	77-1	79.88	82.02	82.57	81.49	1.74	ppb
Selenium	78-1	74.42	77.65	83.01	78.36	5.53	ppb
Selenium	82-1	79.94	81.50	79.25	80.23	1.44	ppb
Silicon	28-1	29.91	35.33	39.43	34.89	13.69	ppb
Silver	109-1	81.10	83.98	85.83	83.64	2.85	ppb
Silver	107-1	80.93	83.66	86.40	83.66	3.27	ppb
Sodium	23-1	31.27	34.56	35.97	33.93	7.10	ppb
Strontium	86-1	0.04	0.01	0.06	0.04	69.13	ppb
Strontium	88-1	0.01	0.01	0.01	0.01	17.42	ppb
Sulfur	34-1	-2676.76	-2300.05	-2152.78	-2376.53		ppb
Terbium	159-1				105		%
Thallium	203-1	8.18	8.44	8.32	8.32	1.58	ppb
Thallium	205-1	7.92	8.20	8.34	8.15	2.63	ppb
Tin	118-1	-0.01	-0.05	-0.05	-0.04		ppb
Titanium	47-1	0.16	0.20	0.16	0.17	12.73	ppb
Uranium	238-1	0.02	-0.01	0.00	0.00	535.64	ppb
Vanadium	51-1	323.32	332.56	341.30	332.40	2.71	ppb
Yttrium	89-1				102		%
Zinc	66-1	913.69	956.00	961.31	943.67	2.77	ppb
Zirconium	90-1	0.19	0.19	0.21	0.19	6.08	ppb
Zirconium	91-1	0.19	0.16	0.21	0.18	14.39	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCV02 Instrumnet Name : P7
Client Sample ID : CCV02 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:49:37 DataFile Name : 028CRI.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	45405.24	47069.48	46589.89	46354.87	1.85	ppb
Antimony	121-1	488.04	520.54	513.35	507.31	3.36	ppb
Arsenic	75-1	477.72	486.27	492.28	485.42	1.51	ppb
Barium	135-1	2463.08	2578.18	2592.93	2544.73	2.79	ppb
Barium	137-1	2472.28	2610.61	2608.38	2563.76	3.09	ppb
Beryllium	9-1	532.60	547.99	549.56	543.38	1.72	ppb
Bismuth	209-1				113		%
Bromine	81-1						cps
Cadmium	106-1	485.06	494.91	507.15	495.71	2.23	ppb
Cadmium	108-1	479.91	496.47	503.30	493.23	2.44	ppb
Cadmium	111-1	482.06	497.40	495.82	491.76	1.72	ppb
Calcium	43-1	242839.07	251600.88	243875.77	246105.24	1.95	ppb
Calcium	44-1	244561.07	247629.81	248548.60	246913.16	0.85	ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	521.45	522.01	524.48	522.64	0.31	ppb
Cobalt	59-1	489.70	521.16	509.55	506.80	3.14	ppb
Copper	63-1	4860.28	5004.89	4952.58	4939.25	1.48	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				114		%
Indium	115-1				108		%
Iron	56-1	118029.72	121874.01	120869.95	120257.89	1.66	ppb
Iron	57-1	118709.69	120964.50	121374.30	120349.50	1.19	ppb
Iron	54-1	118373.01	124367.26	121642.60	121460.96	2.47	ppb
Krypton	83-1						cps
Lead	206-1	2454.61	2616.27	2578.67	2549.85	3.32	ppb
Lead	207-1	2459.59	2587.28	2612.41	2553.09	3.21	ppb
Lead	208-1	2457.13	2549.97	2609.44	2538.85	3.02	ppb
Lithium	6-1				106		%
Magnesium	24-1	235793.61	244302.92	238431.23	239509.26	1.82	ppb
Manganese	55-1	5051.40	5200.47	5087.20	5113.02	1.52	ppb
Molybdenum	94-1	4938.07	5088.67	5098.71	5041.82	1.78	ppb
Molybdenum	95-1	4938.32	5069.12	5094.08	5033.84	1.66	ppb
Molybdenum	96-1	4975.06	4993.54	5136.51	5035.04	1.75	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCV02 Instrumnet Name : P7
Client Sample ID : CCV02 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:49:37 DataFile Name : 028CRI.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	4921.50	4970.60	5146.58	5012.89	2.36	ppb
Molybdenum	98-1	5018.34	5051.14	5140.80	5070.09	1.25	ppb
Neodymium	150-1						cps
Nickel	60-1	472.78	483.13	478.79	478.23	1.09	ppb
Phosphorus	31-1	10050.85	10358.08	10305.41	10238.11	1.60	ppb
Potassium	39-1	122517.60	123984.77	120721.67	122408.01	1.34	ppb
Rhodium	103-1				107		%
Scandium	45-1				108		%
Selenium	77-1	465.64	475.94	485.66	475.75	2.10	ppb
Selenium	78-1	447.25	444.61	462.05	451.31	2.08	ppb
Selenium	82-1	469.47	476.91	488.56	478.31	2.01	ppb
Silicon	28-1	627.31	638.76	650.72	638.93	1.83	ppb
Silver	109-1	490.73	506.48	503.41	500.21	1.67	ppb
Silver	107-1	483.06	502.00	510.27	498.44	2.80	ppb
Sodium	23-1	240017.92	245912.11	246938.80	244289.61	1.53	ppb
Strontium	86-1	490.89	500.96	507.85	499.90	1.71	ppb
Strontium	88-1	499.48	499.37	514.28	504.38	1.70	ppb
Sulfur	34-1	9141.16	9137.61	8803.78	9027.51	2.15	ppb
Terbium	159-1				113		%
Thallium	203-1	471.27	485.13	486.92	481.11	1.78	ppb
Thallium	205-1	508.00	519.19	520.12	515.77	1.31	ppb
Tin	118-1	492.30	511.63	521.67	508.53	2.94	ppb
Titanium	47-1	5116.45	5271.82	5275.30	5221.19	1.74	ppb
Uranium	238-1	511.42	519.68	539.92	523.67	2.80	ppb
Vanadium	51-1	517.59	527.29	523.79	522.89	0.94	ppb
Yttrium	89-1				112		%
Zinc	66-1	4801.75	4977.76	4970.13	4916.55	2.02	ppb
Zirconium	90-1	504.14	510.51	505.58	506.74	0.66	ppb
Zirconium	91-1	485.82	485.52	496.00	489.11	1.22	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCB02 Instrumnet Name : P7
Client Sample ID : CCB02 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 17:03:30 DataFile Name : 030CCBE.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Aluminium	27-1	0.01	-0.22	-0.05	-0.09		ppb
Antimony	121-1	0.01	0.01	0.01	0.01	16.80	ppb
Arsenic	75-1	0.16	0.01	0.13	0.10	75.63	ppb
Barium	135-1	0.03	-0.03	-0.05	-0.02		ppb
Barium	137-1	0.02	-0.04	-0.01	-0.01		ppb
Beryllium	9-1	0.03	0.00	-0.01	0.00	646.75	ppb
Bismuth	209-1				108		%
Bromine	81-1						cps
Cadmium	106-1	-2.68	-1.73	-2.26	-2.22		ppb
Cadmium	108-1	0.14	0.13	-0.13	0.05	338.26	ppb
Cadmium	111-1	-0.17	-0.13	-0.15	-0.15		ppb
Calcium	43-1	-6.21	-2.34	-7.64	-5.40		ppb
Calcium	44-1	-55.17	-50.47	-44.63	-50.09		ppb
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	-0.02	-0.07	-0.10	-0.06		ppb
Cobalt	59-1	0.04	0.00	-0.01	0.01	227.65	ppb
Copper	63-1	0.02	-0.03	0.01	0.00	5829.41	ppb
Dysprosium	156-1						cps
Erbium	164-1						cps
Gadolinium	160-1						cps
Holmium	165-1				105		%
Indium	115-1				105		%
Iron	56-1	-8.24	0.09	-4.51	-4.22		ppb
Iron	57-1	-11.57	-10.77	-6.46	-9.60		ppb
Iron	54-1	-4.63	-3.89	-0.73	-3.08		ppb
Krypton	83-1						cps
Lead	206-1	0.02	-0.04	-0.01	-0.01		ppb
Lead	207-1	-0.01	0.01	-0.02	-0.01		ppb
Lead	208-1	0.03	0.00	0.00	0.01	169.60	ppb
Lithium	6-1				101		%
Magnesium	24-1	0.19	0.26	0.27	0.24	18.94	ppb
Manganese	55-1	-0.02	-0.05	-0.06	-0.04		ppb
Molybdenum	94-1	-0.02	0.04	0.00	0.01	352.02	ppb
Molybdenum	95-1	0.03	-0.02	-0.01	0.00	964.16	ppb
Molybdenum	96-1	0.01	0.00	0.01	0.01	101.12	ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCB02 Instrumnet Name : P7
Client Sample ID : CCB02 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 17:03:30 DataFile Name : 030CCBE.d

Parameter	Mass	ConRep1	ConRep2	ConRep3	Avg. Conc.	ConcRSD	Units
Molybdenum	97-1	0.06	0.00	-0.02	0.01	303.62	ppb
Molybdenum	98-1	0.01	0.00	0.01	0.01	87.69	ppb
Neodymium	150-1						cps
Nickel	60-1	-0.01	-0.02	-0.05	-0.03		ppb
Phosphorus	31-1	-127.90	-127.70	-127.02	-127.54		ppb
Potassium	39-1	-28.27	-23.26	-18.70	-23.41		ppb
Rhodium	103-1				104		%
Scandium	45-1				103		%
Selenium	77-1	-0.13	-0.19	-0.03	-0.12		ppb
Selenium	78-1	-14.66	-12.76	-11.80	-13.07		ppb
Selenium	82-1	-0.15	-1.10	-0.85	-0.70		ppb
Silicon	28-1	-14.06	-12.49	-11.79	-12.78		ppb
Silver	109-1	0.01	0.01	0.01	0.01	7.82	ppb
Silver	107-1	0.00	0.00	0.00	0.00	140.80	ppb
Sodium	23-1	3.64	4.53	4.88	4.35	14.65	ppb
Strontium	86-1	-0.01	0.04	0.02	0.02	128.58	ppb
Strontium	88-1	0.00	0.00	0.00	0.00		ppb
Sulfur	34-1	-1497.31	-1286.11	-1147.88	-1310.43		ppb
Terbium	159-1				106		%
Thallium	203-1	0.04	0.02	0.03	0.03	27.76	ppb
Thallium	205-1	0.03	0.01	0.01	0.02	68.49	ppb
Tin	118-1	-0.03	-0.09	0.06	-0.02		ppb
Titanium	47-1	0.01	0.03	0.03	0.02	50.42	ppb
Uranium	238-1	0.02	-0.01	-0.01	0.00	493.89	ppb
Vanadium	51-1	0.00	-0.01	-0.01	-0.01		ppb
Yttrium	89-1				105		%
Zinc	66-1	-0.10	-0.15	-0.11	-0.12		ppb
Zirconium	90-1	0.00	0.00	0.00	0.00	4724.64	ppb
Zirconium	91-1	-0.01	-0.01	-0.01	-0.01		ppb

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S0 Instrumnet Name : P7
Client Sample ID : S0 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:22:18 DataFile Name : 004CALB.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	49624	48369	47256	48416	2.45	cps
Antimony	121-1	53	63	60	59	8.65	cps
Arsenic	75-1	-1178	-895	-1400	-1157	-21.86	cps
Barium	135-1	120	97	67	94	28.31	cps
Barium	137-1	223	140	160	174	24.94	cps
Beryllium	9-1	19	10	10	13	40.66	cps
Bismuth	209-1	2755863	2804227	2702896	2754328	1.84	cps
Bromine	81-1	7409	7689	7355	7484	2.39	cps
Cadmium	106-1	1897	1973	2037	1969	3.56	cps
Cadmium	108-1	17	20	10	16	32.73	cps
Cadmium	111-1	1353	1381	1425	1386	2.64	cps
Calcium	43-1	667	673	600	647	6.27	cps
Calcium	44-1	75808	75205	76766	75927	1.04	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	21469	21813	21249	21510	1.32	cps
Cobalt	59-1	543	260	290	364	42.71	cps
Copper	63-1	3107	2937	2994	3013	2.87	cps
Dysprosium	156-1	17	7	10	11	45.82	cps
Erbium	164-1	30	37	33	33	10.01	cps
Gadolinium	160-1	57	37	50	48	21.31	cps
Holmium	165-1	4730045	4698705	4566732	4665161	1.86	cps
Indium	115-1	4694478	4592175	4498515	4595056	2.13	cps
Iron	56-1	5118596	5048643	5069528	5078922	0.71	cps
Iron	57-1	29619	29826	29616	29687	0.41	cps
Iron	54-1	184813	182367	183754	183645	0.67	cps
Krypton	83-1	530	577	517	541	5.82	cps
Lead	206-1	547	400	490	479	15.44	cps
Lead	207-1	390	333	357	360	7.91	cps
Lead	208-1	1880	1613	1677	1723	8.08	cps
Lithium	6-1	360112	350731	352049	354297	1.43	cps
Magnesium	24-1	17400	17103	17283	17262	0.87	cps
Manganese	55-1	11274	10424	10347	10682	4.82	cps
Molybdenum	94-1	290	213	240	248	15.71	cps
Molybdenum	95-1	263	220	233	239	9.29	cps
Molybdenum	96-1	307	197	283	262	22.10	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S0 Instrumnet Name : P7
Client Sample ID : S0 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:22:18 DataFile Name : 004CALB.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	283	243	267	264	7.60	cps
Molybdenum	98-1	397	273	327	332	18.62	cps
Neodymium	150-1	0	10	3	4	114.60	cps
Nickel	60-1	1187	1057	1093	1112	6.03	cps
Phosphorus	31-1	10891	10864	10847	10867	0.20	cps
Potassium	39-1	3246298	3219466	3225972	3230579	0.43	cps
Rhodium	103-1	4853052	4834279	4694568	4793966	1.81	cps
Scandium	45-1	3458277	3377150	3375888	3403772	1.39	cps
Selenium	77-1	137	163	70	123	38.98	cps
Selenium	78-1	61594	60844	60406	60948	0.99	cps
Selenium	82-1	232	115	243	196	36.12	cps
Silicon	28-1	1855014	1871679	1862000	1862898	0.45	cps
Silver	109-1	70	93	97	87	16.77	cps
Silver	107-1	100	103	107	103	3.23	cps
Sodium	23-1	392509	391187	393638	392445	0.31	cps
Strontium	86-1	933	863	780	859	8.94	cps
Strontium	88-1	573	520	613	569	8.23	cps
Sulfur	34-1	238774	239819	241651	240081	0.61	cps
Terbium	159-1	4900328	4867731	4998963	4922340	1.39	cps
Thallium	203-1	157	143	117	139	14.66	cps
Thallium	205-1	413	383	360	386	6.93	cps
Tin	118-1	1407	1283	1240	1310	6.60	cps
Titanium	47-1	100	147	110	119	20.67	cps
Uranium	238-1	207	13	17	79	140.29	cps
Vanadium	51-1	597	357	397	450	28.58	cps
Yttrium	89-1	8795304	8439024	8413299	8549209	2.50	cps
Zinc	66-1	8839	8806	8959	8868	0.91	cps
Zirconium	90-1	310	313	320	314	1.62	cps
Zirconium	91-1	110	60	67	79	34.41	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S2 Instrumnet Name : P7
Client Sample ID : S2 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:28:14 DataFile Name : 006CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	153149	155365	151784	153433	1.18	cps
Antimony	121-1	7555	7772	7589	7639	1.53	cps
Arsenic	75-1	-123	-147	-177	-149	-18.10	cps
Barium	135-1	8653	8212	8726	8530	3.26	cps
Barium	137-1	14494	14758	15192	14814	2.38	cps
Beryllium	9-1	550	638	581	590	7.53	cps
Bismuth	209-1	2776883	2717194	2768034	2754037	1.17	cps
Bromine	81-1	7579	7619	7435	7544	1.28	cps
Cadmium	106-1	2127	2020	2014	2054	3.10	cps
Cadmium	108-1	73	77	93	81	13.21	cps
Cadmium	111-1	2341	2280	2254	2292	1.94	cps
Calcium	43-1	6875	7048	7145	7023	1.95	cps
Calcium	44-1	179344	181201	179775	180107	0.54	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	37871	38429	37634	37978	1.08	cps
Cobalt	59-1	9923	10420	9993	10112	2.66	cps
Copper	63-1	13119	13630	13279	13343	1.96	cps
Dysprosium	156-1	3	3	3	3	0.00	cps
Erbium	164-1	40	27	37	34	20.14	cps
Gadolinium	160-1	43	37	20	33	36.05	cps
Holmium	165-1	4662886	4555085	4577865	4598612	1.24	cps
Indium	115-1	4592709	4419304	4577128	4529714	2.12	cps
Iron	56-1	5576117	5497438	5491167	5521574	0.86	cps
Iron	57-1	40665	41113	40501	40760	0.78	cps
Iron	54-1	207837	209924	208504	208755	0.51	cps
Krypton	83-1	517	547	497	520	4.84	cps
Lead	206-1	2450	2297	2457	2401	3.77	cps
Lead	207-1	1933	1850	2180	1988	8.63	cps
Lead	208-1	9365	8938	9411	9238	2.82	cps
Lithium	6-1	357287	354947	355588	355941	0.34	cps
Magnesium	24-1	2108873	2193836	2126220	2142976	2.09	cps
Manganese	55-1	22043	21813	21168	21675	2.09	cps
Molybdenum	94-1	9196	9180	8849	9075	2.16	cps
Molybdenum	95-1	10894	10707	10904	10835	1.02	cps
Molybdenum	96-1	11862	12285	11925	12024	1.90	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S2 Instrumnet Name : P7
Client Sample ID : S2 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:28:14 DataFile Name : 006CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	6852	6682	6535	6689	2.37	cps
Molybdenum	98-1	16893	17007	17180	17027	0.85	cps
Neodymium	150-1	7	10	3	7	50.03	cps
Nickel	60-1	3074	2990	2990	3018	1.59	cps
Phosphorus	31-1	70519	72853	71265	71546	1.67	cps
Potassium	39-1	6560757	6543332	6640902	6581663	0.79	cps
Rhodium	103-1	4752572	4696761	4758450	4735928	0.72	cps
Scandium	45-1	3406187	3270545	3372960	3349897	2.11	cps
Selenium	77-1	360	423	400	394	8.12	cps
Selenium	78-1	62039	62796	61728	62188	0.88	cps
Selenium	82-1	572	598	622	597	4.16	cps
Silicon	28-1	1854948	1862094	1871933	1862991	0.46	cps
Silver	109-1	5091	5384	5198	5224	2.84	cps
Silver	107-1	5428	5845	5394	5556	4.52	cps
Sodium	23-1	3190058	3247494	3275748	3237766	1.35	cps
Strontium	86-1	2200	2080	2334	2205	5.75	cps
Strontium	88-1	11905	12465	12435	12269	2.57	cps
Sulfur	34-1	242247	242139	242175	242187	0.02	cps
Terbium	159-1	4842983	4809747	4806950	4819893	0.42	cps
Thallium	203-1	2820	3044	2997	2954	3.99	cps
Thallium	205-1	6785	6912	6992	6896	1.51	cps
Tin	118-1	16680	16102	16800	16527	2.26	cps
Titanium	47-1	3260	3554	3460	3425	4.38	cps
Uranium	238-1	8196	8133	7739	8022	3.09	cps
Vanadium	51-1	46244	46819	46702	46589	0.65	cps
Yttrium	89-1	8635773	8461781	8428297	8508617	1.31	cps
Zinc	66-1	15725	16025	15365	15705	2.11	cps
Zirconium	90-1	7629	7862	7892	7794	1.85	cps
Zirconium	91-1	1613	1750	1873	1746	7.45	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S3 Instrumnet Name : P7
Client Sample ID : S3 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:31:10 DataFile Name : 007CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	5252463	5408852	5380363	5347226	1.56	cps
Antimony	121-1	181680	185734	184794	184069	1.15	cps
Arsenic	75-1	52162	52539	53064	52588	0.86	cps
Barium	135-1	206335	210203	207842	208127	0.94	cps
Barium	137-1	354871	361375	361870	359372	1.09	cps
Beryllium	9-1	27111	27456	27976	27514	1.58	cps
Bismuth	209-1	2753303	2752782	2788558	2764881	0.74	cps
Bromine	81-1	7289	6978	7345	7204	2.74	cps
Cadmium	106-1	7008	6852	7002	6954	1.27	cps
Cadmium	108-1	3547	3414	3907	3623	7.05	cps
Cadmium	111-1	51249	51657	52229	51712	0.95	cps
Calcium	43-1	66877	65668	66338	66295	0.91	cps
Calcium	44-1	1117035	1138824	1139525	1131794	1.13	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	419321	423106	430940	424456	1.40	cps
Cobalt	59-1	461833	468773	468102	466236	0.82	cps
Copper	63-1	2829170	2853197	2823873	2835413	0.55	cps
Dysprosium	156-1	10	10	20	13	43.30	cps
Erbium	164-1	37	33	67	46	40.30	cps
Gadolinium	160-1	20	40	60	40	50.00	cps
Holmium	165-1	4636617	4648837	4609186	4631546	0.44	cps
Indium	115-1	4533424	4442140	4460846	4478803	1.08	cps
Iron	56-1	27556884	28263736	28516610	28112410	1.77	cps
Iron	57-1	571497	588235	582617	580783	1.47	cps
Iron	54-1	1554378	1595876	1636460	1595571	2.57	cps
Krypton	83-1	563	523	593	560	6.27	cps
Lead	206-1	544383	557427	550729	550846	1.18	cps
Lead	207-1	463217	470493	466889	466866	0.78	cps
Lead	208-1	2139770	2181868	2175089	2165576	1.04	cps
Lithium	6-1	362953	360188	356760	359967	0.86	cps
Magnesium	24-1	20843286	21461819	21301044	21202050	1.51	cps
Manganese	55-1	5856806	6020568	6057264	5978213	1.79	cps
Molybdenum	94-1	717531	726331	728549	724137	0.80	cps
Molybdenum	95-1	1036397	1058399	1052723	1049173	1.09	cps
Molybdenum	96-1	1120266	1139802	1128383	1129484	0.87	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S3 Instrumnet Name : P7
Client Sample ID : S3 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:31:10 DataFile Name : 007CALS.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	636125	651450	648691	645422	1.27	cps
Molybdenum	98-1	1643525	1682590	1679994	1668703	1.31	cps
Neodymium	150-1	13	10	23	16	44.60	cps
Nickel	60-1	102277	105556	104019	103950	1.58	cps
Phosphorus	31-1	252317	253684	255810	253937	0.69	cps
Potassium	39-1	19918562	20224161	20290606	20144443	0.98	cps
Rhodium	103-1	4683778	4721184	4683638	4696200	0.46	cps
Scandium	45-1	3400721	3363654	3330903	3365093	1.04	cps
Selenium	77-1	3200	3010	3204	3138	3.53	cps
Selenium	78-1	70296	70905	71525	70909	0.87	cps
Selenium	82-1	4042	4027	4044	4038	0.24	cps
Silicon	28-1	2471486	2474459	2473859	2473268	0.06	cps
Silver	109-1	239323	245690	244783	243265	1.42	cps
Silver	107-1	254340	256178	259430	256649	1.00	cps
Sodium	23-1	27971900	28988685	28978040	28646208	2.04	cps
Strontium	86-1	68302	70150	70277	69576	1.59	cps
Strontium	88-1	590235	596090	597747	594691	0.66	cps
Sulfur	34-1	255045	253668	254428	254380	0.27	cps
Terbium	159-1	4873627	4831791	4833725	4846381	0.49	cps
Thallium	203-1	131765	134363	134559	133562	1.17	cps
Thallium	205-1	313547	318250	319757	317184	1.02	cps
Tin	118-1	148285	155049	151547	151627	2.23	cps
Titanium	47-1	309372	318891	314798	314353	1.52	cps
Uranium	238-1	382841	391627	388242	387570	1.14	cps
Vanadium	51-1	447434	457300	457415	454050	1.26	cps
Yttrium	89-1	8561452	8386271	8499879	8482534	1.05	cps
Zinc	66-1	695127	706275	708418	703273	1.01	cps
Zirconium	90-1	351226	359662	362997	357961	1.69	cps
Zirconium	91-1	78637	80041	80949	79876	1.46	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S4 Instrumnet Name : P7
Client Sample ID : S4 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:34:10 DataFile Name : 008CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	13403611	13541821	13525561	13490331	0.56	cps
Antimony	121-1	460228	470634	466423	465762	1.12	cps
Arsenic	75-1	131769	136126	136363	134752	1.92	cps
Barium	135-1	516324	528838	523574	522912	1.20	cps
Barium	137-1	905516	914473	905411	908467	0.57	cps
Beryllium	9-1	67331	69961	69144	68812	1.96	cps
Bismuth	209-1	2824813	2838008	2777216	2813345	1.14	cps
Bromine	81-1	7402	7492	7625	7506	1.50	cps
Cadmium	106-1	14317	14627	15285	14743	3.35	cps
Cadmium	108-1	9190	9086	9403	9226	1.75	cps
Cadmium	111-1	127521	128875	129123	128506	0.67	cps
Calcium	43-1	161988	167446	163977	164470	1.68	cps
Calcium	44-1	2614082	2677704	2637261	2643016	1.22	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	1022707	1052005	1029019	1034577	1.49	cps
Cobalt	59-1	1138205	1179909	1160767	1159627	1.80	cps
Copper	63-1	6981779	7117007	7152988	7083925	1.27	cps
Dysprosium	156-1	30	20	10	20	50.00	cps
Erbium	164-1	50	47	47	48	4.02	cps
Gadolinium	160-1	30	47	37	38	22.21	cps
Holmium	165-1	4677927	4721123	4632042	4677031	0.95	cps
Indium	115-1	4704806	4641890	4420752	4589149	3.25	cps
Iron	56-1	61965982	63891956	62533724	62797221	1.58	cps
Iron	57-1	1378709	1443037	1398660	1406802	2.34	cps
Iron	54-1	3593463	3721571	3611642	3642225	1.90	cps
Krypton	83-1	603	560	587	583	3.75	cps
Lead	206-1	1367933	1410427	1385953	1388104	1.54	cps
Lead	207-1	1167262	1207257	1188648	1187722	1.69	cps
Lead	208-1	5594964	5754168	5585958	5645030	1.68	cps
Lithium	6-1	369712	363205	361974	364964	1.14	cps
Magnesium	24-1	53191669	54433196	52983639	53536168	1.46	cps
Manganese	55-1	14712869	15531231	15034110	15092737	2.73	cps
Molybdenum	94-1	1789253	1861158	1805349	1818587	2.08	cps
Molybdenum	95-1	2689861	2743588	2665194	2699548	1.48	cps
Molybdenum	96-1	2816775	2949548	2935385	2900569	2.51	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S4 Instrumnet Name : P7
Client Sample ID : S4 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:34:10 DataFile Name : 008CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	1631110	1643552	1625151	1633271	0.57	cps
Molybdenum	98-1	4153595	4252035	4242848	4216159	1.29	cps
Neodymium	150-1	43	23	33	33	30.00	cps
Nickel	60-1	257254	265188	260337	260926	1.53	cps
Phosphorus	31-1	613411	630271	621755	621812	1.36	cps
Potassium	39-1	45373889	46599994	45558561	45844148	1.44	cps
Rhodium	103-1	4835156	4748361	4647583	4743700	1.98	cps
Scandium	45-1	3442091	3370801	3315993	3376295	1.87	cps
Selenium	77-1	7976	7932	7982	7963	0.34	cps
Selenium	78-1	85126	85264	84848	85079	0.25	cps
Selenium	82-1	9758	10094	9949	9934	1.70	cps
Silicon	28-1	3355238	3390927	3367877	3371347	0.54	cps
Silver	109-1	603265	623116	614071	613484	1.62	cps
Silver	107-1	637862	658361	650998	649073	1.60	cps
Sodium	23-1	70803809	72223334	71778376	71601839	1.01	cps
Strontium	86-1	171868	175455	173683	173669	1.03	cps
Strontium	88-1	1503975	1549230	1531865	1528357	1.49	cps
Sulfur	34-1	274000	277229	272862	274697	0.82	cps
Terbium	159-1	4966085	4872462	4800622	4879723	1.70	cps
Thallium	203-1	338966	342029	337532	339509	0.68	cps
Thallium	205-1	793236	807560	806508	802435	0.99	cps
Tin	118-1	375723	381838	377484	378348	0.83	cps
Titanium	47-1	777707	801862	786345	788638	1.55	cps
Uranium	238-1	974095	1008001	988441	990179	1.72	cps
Vanadium	51-1	1115120	1156618	1133685	1135141	1.83	cps
Yttrium	89-1	8753440	8497678	8740268	8663796	1.66	cps
Zinc	66-1	1752287	1813565	1763745	1776532	1.83	cps
Zirconium	90-1	893040	914109	912611	906587	1.30	cps
Zirconium	91-1	199959	204459	201715	202044	1.12	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S5 Instrumnet Name : P7
Client Sample ID : S5 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:37:08 DataFile Name : 009CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	27028244	27964888	27882459	27625197	1.88	cps
Antimony	121-1	919163	940778	944917	934952	1.48	cps
Arsenic	75-1	263779	271916	268935	268210	1.53	cps
Barium	135-1	1032279	1076623	1058297	1055733	2.11	cps
Barium	137-1	1814297	1931736	1894357	1880130	3.19	cps
Beryllium	9-1	135568	142875	140472	139638	2.67	cps
Bismuth	209-1	2850245	2881005	2800109	2843786	1.44	cps
Bromine	81-1	7005	7125	7485	7205	3.47	cps
Cadmium	106-1	27152	26932	27770	27285	1.59	cps
Cadmium	108-1	18141	18485	18852	18493	1.92	cps
Cadmium	111-1	249286	255546	255592	253475	1.43	cps
Calcium	43-1	320645	332336	330717	327899	1.93	cps
Calcium	44-1	5105497	5348330	5332188	5262005	2.58	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	2050352	2126669	2108566	2095196	1.90	cps
Cobalt	59-1	2311903	2349489	2386005	2349132	1.58	cps
Copper	63-1	13646930	14366366	14476748	14163348	3.18	cps
Dysprosium	156-1	13	37	30	27	45.08	cps
Erbium	164-1	20	67	80	56	56.71	cps
Gadolinium	160-1	67	50	77	64	20.91	cps
Holmium	165-1	4813312	4782106	4785766	4793728	0.36	cps
Indium	115-1	4607477	4546910	4501115	4551834	1.17	cps
Iron	56-1	118540235	123669491	119705575	120638434	2.23	cps
Iron	57-1	2703752	2808529	2793763	2768681	2.05	cps
Iron	54-1	6940749	7149319	7058923	7049664	1.48	cps
Krypton	83-1	477	527	573	526	9.20	cps
Lead	206-1	2940794	3022325	2991660	2984926	1.38	cps
Lead	207-1	2475961	2707620	2593193	2592258	4.47	cps
Lead	208-1	11555865	12240733	11764697	11853765	2.96	cps
Lithium	6-1	372596	378141	371037	373925	1.00	cps
Magnesium	24-1	107305688	111044075	109580908	109310224	1.72	cps
Manganese	55-1	29446495	30128210	29954466	29843057	1.19	cps
Molybdenum	94-1	3518981	3770599	3686939	3658840	3.50	cps
Molybdenum	95-1	5242391	5387229	5439923	5356514	1.91	cps
Molybdenum	96-1	5712476	5775990	5853963	5780810	1.23	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S5 Instrumnet Name : P7
Client Sample ID : S5 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:37:08 DataFile Name : 009CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	3275047	3323135	3302439	3300207	0.73	cps
Molybdenum	98-1	8216836	8420683	8604514	8414011	2.30	cps
Neodymium	150-1	47	17	50	38	48.59	cps
Nickel	60-1	504766	519531	521391	515229	1.77	cps
Phosphorus	31-1	1228321	1252584	1264114	1248340	1.46	cps
Potassium	39-1	87561972	89025492	88045165	88210876	0.85	cps
Rhodium	103-1	4817155	4730623	4735518	4761099	1.02	cps
Scandium	45-1	3364817	3403020	3369288	3379042	0.62	cps
Selenium	77-1	14554	14928	15044	14842	1.73	cps
Selenium	78-1	108219	107867	108998	108361	0.53	cps
Selenium	82-1	19217	19722	19773	19570	1.57	cps
Silicon	28-1	4846049	4976182	4985301	4935844	1.58	cps
Silver	109-1	1200879	1228963	1235361	1221734	1.50	cps
Silver	107-1	1266534	1295989	1304600	1289041	1.55	cps
Sodium	23-1	140329048	149463651	146570348	145454349	3.21	cps
Strontium	86-1	337420	345103	346766	343096	1.45	cps
Strontium	88-1	2985497	3056556	3118254	3053436	2.18	cps
Sulfur	34-1	310092	314642	311594	312109	0.74	cps
Terbium	159-1	5081188	5088698	4988974	5052953	1.10	cps
Thallium	203-1	679709	706419	689850	691993	1.95	cps
Thallium	205-1	1612365	1662302	1639220	1637963	1.53	cps
Tin	118-1	745921	759118	769686	758242	1.57	cps
Titanium	47-1	1568512	1624038	1641635	1611395	2.37	cps
Uranium	238-1	2142830	2273305	2164759	2193631	3.18	cps
Vanadium	51-1	2272034	2324994	2379529	2325519	2.31	cps
Yttrium	89-1	8579498	8526663	8531472	8545878	0.34	cps
Zinc	66-1	3439200	3600212	3548755	3529389	2.33	cps
Zirconium	90-1	1798260	1865920	1861348	1841843	2.05	cps
Zirconium	91-1	398166	405342	409676	404395	1.44	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S6 Instrumnet Name : P7
Client Sample ID : S6 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:40:07 DataFile Name : 010CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	53575296	55953858	55463739	54997631	2.28	cps
Antimony	121-1	1872900	1980983	1983226	1945703	3.24	cps
Arsenic	75-1	532991	562384	547774	547716	2.68	cps
Barium	135-1	2203494	2294749	2308958	2269067	2.52	cps
Barium	137-1	3783961	3966276	3921982	3890740	2.44	cps
Beryllium	9-1	271627	284877	283177	279893	2.58	cps
Bismuth	209-1	2966022	2838590	2935949	2913520	2.29	cps
Bromine	81-1	7008	7669	6955	7211	5.51	cps
Cadmium	106-1	53127	54556	53401	53695	1.41	cps
Cadmium	108-1	36282	37763	36860	36968	2.02	cps
Cadmium	111-1	502331	523557	519289	515059	2.18	cps
Calcium	43-1	646951	667303	658533	657596	1.55	cps
Calcium	44-1	10282208	10793635	10659365	10578403	2.51	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	4033910	4258665	4176764	4156446	2.74	cps
Cobalt	59-1	4702532	4893208	4852397	4816046	2.08	cps
Copper	63-1	27644343	29063440	29118745	28608843	2.92	cps
Dysprosium	156-1	40	37	30	36	14.32	cps
Erbium	164-1	83	103	110	99	14.04	cps
Gadolinium	160-1	80	80	93	84	9.11	cps
Holmium	165-1	4958877	4810605	4941701	4903728	1.65	cps
Indium	115-1	4794036	4582888	4688198	4688374	2.25	cps
Iron	56-1	234083250	243375770	240514916	239324645	1.99	cps
Iron	57-1	5485922	5715166	5593445	5598178	2.05	cps
Iron	54-1	13379453	14420311	14364692	14054819	4.17	cps
Krypton	83-1	553	553	600	569	4.74	cps
Lead	206-1	5965773	6071701	6080036	6039170	1.05	cps
Lead	207-1	5206787	5265658	5353535	5275327	1.40	cps
Lead	208-1	23684799	24220901	24375183	24093628	1.50	cps
Lithium	6-1	383295	375621	382877	380598	1.13	cps
Magnesium	24-1	219069177	224526630	223128403	222241403	1.28	cps
Manganese	55-1	59774512	61609296	61112356	60832055	1.56	cps
Molybdenum	94-1	7185368	7608339	7578090	7457266	3.16	cps
Molybdenum	95-1	10640175	11107323	11011179	10919559	2.26	cps
Molybdenum	96-1	11590138	12015061	11994448	11866549	2.02	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S6 Instrumnet Name : P7
Client Sample ID : S6 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:40:07 DataFile Name : 010CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	6474928	6950104	6796898	6740644	3.60	cps
Molybdenum	98-1	16853379	17426169	17397196	17225582	1.87	cps
Neodymium	150-1	63	67	77	69	10.08	cps
Nickel	60-1	1018114	1054027	1044678	1038940	1.79	cps
Phosphorus	31-1	2457098	2591934	2531256	2526763	2.67	cps
Potassium	39-1	171479834	179068837	176411131	175653267	2.19	cps
Rhodium	103-1	4898195	4791925	4924794	4871638	1.44	cps
Scandium	45-1	3414259	3395957	3448915	3419710	0.79	cps
Selenium	77-1	29426	31086	30699	30404	2.86	cps
Selenium	78-1	154030	158233	157499	156588	1.43	cps
Selenium	82-1	38533	39884	39695	39371	1.86	cps
Silicon	28-1	7823617	8115228	8154358	8031068	2.25	cps
Silver	109-1	2509299	2567867	2566003	2547723	1.31	cps
Silver	107-1	2574046	2740404	2642219	2652223	3.15	cps
Sodium	23-1	290105996	295868776	294780622	293585131	1.04	cps
Strontium	86-1	680794	711166	706032	699330	2.32	cps
Strontium	88-1	6059398	6241055	6226913	6175789	1.64	cps
Sulfur	34-1	394143	398578	396958	396560	0.57	cps
Terbium	159-1	5177326	5131754	5229545	5179541	0.94	cps
Thallium	203-1	1375546	1422423	1412816	1403595	1.76	cps
Thallium	205-1	3523457	3505897	3476560	3501972	0.68	cps
Tin	118-1	1496401	1560346	1558942	1538563	2.37	cps
Titanium	47-1	3232557	3255792	3294301	3260883	0.96	cps
Uranium	238-1	4387373	4563090	4656100	4535521	3.01	cps
Vanadium	51-1	4504567	4766354	4721314	4664078	3.00	cps
Yttrium	89-1	8825935	8581846	8831087	8746289	1.63	cps
Zinc	66-1	6989314	7256647	7231977	7159313	2.06	cps
Zirconium	90-1	3676852	3842994	3823950	3781265	2.40	cps
Zirconium	91-1	801886	836699	828894	822493	2.22	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S7 Instrumnet Name : P7
Client Sample ID : S7 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:43:03 DataFile Name : 011CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	110693398	113641615	113640228	112658414	1.51	cps
Antimony	121-1	3957590	4118510	4027758	4034619	2.00	cps
Arsenic	75-1	1081712	1117757	1113525	1104331	1.78	cps
Barium	135-1	4506221	4727100	4643542	4625621	2.41	cps
Barium	137-1	7692935	8058579	7957960	7903158	2.39	cps
Beryllium	9-1	550222	571767	570373	564121	2.14	cps
Bismuth	209-1	3012287	2994764	3040363	3015804	0.76	cps
Bromine	81-1	7102	7235	7045	7127	1.37	cps
Cadmium	106-1	102883	106565	106105	105185	1.91	cps
Cadmium	108-1	73516	75130	75248	74631	1.30	cps
Cadmium	111-1	1012851	1050203	1050751	1037935	2.09	cps
Calcium	43-1	1285769	1322946	1314389	1307701	1.49	cps
Calcium	44-1	21189161	21968046	21637276	21598161	1.81	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	8157275	8535947	8551613	8414945	2.65	cps
Cobalt	59-1	9597847	9766833	9730252	9698311	0.92	cps
Copper	63-1	57468249	58605784	57687112	57920382	1.04	cps
Dysprosium	156-1	70	73	60	68	10.24	cps
Erbium	164-1	107	143	97	116	21.26	cps
Gadolinium	160-1	90	90	107	96	10.07	cps
Holmium	165-1	5089573	5045538	5033394	5056168	0.58	cps
Indium	115-1	4780804	4705171	4660743	4715573	1.29	cps
Iron	56-1	464699953	488560873	490741379	481334068	3.00	cps
Iron	57-1	11001011	11667242	11366113	11344788	2.94	cps
Iron	54-1	27535895	28887235	28540013	28321048	2.48	cps
Krypton	83-1	520	533	637	563	11.34	cps
Lead	206-1	12312457	12581069	12674484	12522670	1.50	cps
Lead	207-1	10685012	11103009	10984867	10924296	1.97	cps
Lead	208-1	48786589	50707383	50544559	50012844	2.13	cps
Lithium	6-1	395098	388784	388095	390659	0.99	cps
Magnesium	24-1	440920340	456877767	452321340	450039816	1.83	cps
Manganese	55-1	121087562	125246231	123276588	123203460	1.69	cps
Molybdenum	94-1	15027303	15406232	15927621	15453718	2.93	cps
Molybdenum	95-1	21902350	22919219	23069121	22630230	2.81	cps
Molybdenum	96-1	23993047	24784647	24746375	24508023	1.82	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S7 Instrumnet Name : P7
Client Sample ID : S7 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:43:03 DataFile Name : 011CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	13475073	13878069	14195970	13849704	2.61	cps
Molybdenum	98-1	34389704	35918529	35919942	35409391	2.49	cps
Neodymium	150-1	123	113	113	117	4.95	cps
Nickel	60-1	2136103	2186240	2175488	2165944	1.22	cps
Phosphorus	31-1	5019020	5106339	5146036	5090465	1.28	cps
Potassium	39-1	343847155	362173381	351217608	352412715	2.62	cps
Rhodium	103-1	5076330	4986254	4975972	5012852	1.10	cps
Scandium	45-1	3583478	3535228	3499100	3539268	1.20	cps
Selenium	77-1	59503	61551	60621	60558	1.69	cps
Selenium	78-1	248806	255938	252758	252500	1.42	cps
Selenium	82-1	76675	78876	79128	78226	1.73	cps
Silicon	28-1	13880319	14401626	14531080	14271008	2.41	cps
Silver	109-1	5117334	5301099	5198405	5205613	1.77	cps
Silver	107-1	5322319	5467545	5490760	5426875	1.68	cps
Sodium	23-1	576221991	597522898	589972271	587905720	1.84	cps
Strontium	86-1	1385684	1431515	1439467	1418889	2.05	cps
Strontium	88-1	12407578	12854665	12897727	12719990	2.13	cps
Sulfur	34-1	562408	570157	565579	566048	0.69	cps
Terbium	159-1	5328687	5259400	5302700	5296929	0.66	cps
Thallium	203-1	3055442	3121951	3082574	3086656	1.08	cps
Thallium	205-1	7190499	7305646	7390766	7295637	1.38	cps
Tin	118-1	3159692	3309662	3223164	3230839	2.33	cps
Titanium	47-1	6483631	6742664	6608876	6611724	1.96	cps
Uranium	238-1	9072502	9497024	9422848	9330791	2.43	cps
Vanadium	51-1	9398965	9792342	9731463	9640923	2.20	cps
Yttrium	89-1	9038089	8939397	8947027	8974838	0.61	cps
Zinc	66-1	13897425	14374234	14356807	14209489	1.90	cps
Zirconium	90-1	7535692	7856919	7856051	7749554	2.39	cps
Zirconium	91-1	1691848	1709194	1739849	1713630	1.42	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S8 Instrumnet Name : P7
Client Sample ID : S8 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:46:01 DataFile Name : 012CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	557524672	572489245	574505818	568173245	1.63	cps
Antimony	121-1	3457	3107	3137	3234	6.00	cps
Arsenic	75-1	422	85	183	230	75.54	cps
Barium	135-1	2890	2787	2837	2838	1.82	cps
Barium	137-1	4514	4687	4657	4620	2.01	cps
Beryllium	9-1	114	92	58	88	31.91	cps
Bismuth	209-1	2971433	2879548	2906666	2919216	1.62	cps
Bromine	81-1	7352	7232	7269	7284	0.84	cps
Cadmium	106-1	2327	2274	2244	2281	1.85	cps
Cadmium	108-1	57	77	53	62	20.29	cps
Cadmium	111-1	2222	2081	2086	2130	3.76	cps
Calcium	43-1	6518258	6834399	6634765	6662474	2.40	cps
Calcium	44-1	105422148	108194015	108342895	107319686	1.53	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	57549	58409	57596	57852	0.84	cps
Cobalt	59-1	14737	14827	14811	14792	0.32	cps
Copper	63-1	46332	49057	50465	48618	4.32	cps
Dysprosium	156-1	143	173	203	173	17.31	cps
Erbium	164-1	393	447	467	436	8.70	cps
Gadolinium	160-1	213	203	227	214	5.46	cps
Holmium	165-1	5212415	5131702	5149259	5164459	0.82	cps
Indium	115-1	4759104	4795349	4771814	4775422	0.39	cps
Iron	56-1	2277633086	2347122365	2365950845	2330235432	2.00	cps
Iron	57-1	54383009	56672839	56700704	55918851	2.38	cps
Iron	54-1	133681241	137181711	139237458	136700137	2.06	cps
Krypton	83-1	543	557	570	557	2.40	cps
Lead	206-1	3621	3334	3367	3440	4.56	cps
Lead	207-1	2907	2900	2914	2907	0.23	cps
Lead	208-1	13950	13403	13243	13532	2.74	cps
Lithium	6-1	389931	387513	383075	386840	0.90	cps
Magnesium	24-1	2218793940	2296932552	2289764126	2268496873	1.90	cps
Manganese	55-1	51538	53348	53398	52761	2.01	cps
Molybdenum	94-1	4891	4721	4864	4825	1.90	cps
Molybdenum	95-1	4044	3824	3667	3845	4.92	cps
Molybdenum	96-1	6912	6675	6351	6646	4.23	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : S8 Instrumnet Name : P7
Client Sample ID : S8 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 13:46:01 DataFile Name : 012CAL.S.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	2544	2474	2480	2499	1.55	cps
Molybdenum	98-1	6455	5875	5664	5998	6.82	cps
Neodymium	150-1	100	103	107	103	3.23	cps
Nickel	60-1	8676	8796	9156	8876	2.82	cps
Phosphorus	31-1	11925	11828	11528	11760	1.76	cps
Potassium	39-1	1692207761	1780788987	1796909947	1756635565	3.21	cps
Rhodium	103-1	4841648	4864421	4840665	4848912	0.28	cps
Scandium	45-1	3561672	3555912	3551063	3556216	0.15	cps
Selenium	77-1	273	253	210	246	13.19	cps
Selenium	78-1	58732	59502	58615	58950	0.82	cps
Selenium	82-1	323	342	288	318	8.64	cps
Silicon	28-1	1879479	1886025	1915302	1893602	1.01	cps
Silver	109-1	2240	1067	940	1416	50.64	cps
Silver	107-1	2214	1170	913	1432	48.08	cps
Sodium	23-1	2876455957	2962190249	3005084435	2947910214	2.22	cps
Strontium	86-1	18645	18575	19053	18758	1.37	cps
Strontium	88-1	152367	157903	155710	155326	1.79	cps
Sulfur	34-1	217796	219919	219577	219098	0.52	cps
Terbium	159-1	5373545	5462248	5404002	5413265	0.83	cps
Thallium	203-1	4531	4431	4451	4471	1.18	cps
Thallium	205-1	10020	10121	10117	10086	0.56	cps
Tin	118-1	1347	1287	1447	1360	5.94	cps
Titanium	47-1	627	523	517	556	11.10	cps
Uranium	238-1	573	293	267	378	44.97	cps
Vanadium	51-1	4667	4281	4421	4456	4.39	cps
Yttrium	89-1	9148112	9138738	9067205	9118018	0.49	cps
Zinc	66-1	21285	20841	21165	21097	1.09	cps
Zirconium	90-1	7132	6915	6842	6963	2.17	cps
Zirconium	91-1	1553	1690	1480	1575	6.77	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICV01 Instrumnet Name : P7
Client Sample ID : ICV01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 15:56:42 DataFile Name : 017ICV.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	8485158	9083996	8834528	8801227	3.42	cps
Antimony	121-1	1627288	1647083	1641320	1638564	0.62	cps
Arsenic	75-1	434898	445999	438972	439956	1.28	cps
Barium	135-1	1349075	1396918	1393433	1379808	1.93	cps
Barium	137-1	2476347	2537593	2479747	2497896	1.38	cps
Beryllium	9-1	21020	21891	21870	21594	2.30	cps
Bismuth	209-1	2943837	2970601	2781295	2898577	3.53	cps
Bromine	81-1	7269	7292	7202	7254	0.64	cps
Cadmium	106-1	20715	21192	20872	20926	1.16	cps
Cadmium	108-1	14828	15128	15255	15070	1.46	cps
Cadmium	111-1	205881	211929	209612	209141	1.46	cps
Calcium	43-1	52420	53053	52805	52759	0.60	cps
Calcium	44-1	912572	931810	929836	924739	1.14	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	1377828	1397188	1387563	1387526	0.70	cps
Cobalt	59-1	3881477	3988490	3948551	3939506	1.37	cps
Copper	63-1	1026525	1049994	1043609	1040043	1.17	cps
Dysprosium	156-1	30	10	7	16	81.11	cps
Erbium	164-1	40	30	57	42	31.91	cps
Gadolinium	160-1	37	50	47	44	15.61	cps
Holmium	165-1	4998090	4917930	4653583	4856534	3.71	cps
Indium	115-1	4856600	4739538	4473316	4689818	4.19	cps
Iron	56-1	11978767	12430890	12333918	12247858	1.94	cps
Iron	57-1	201005	207007	204139	204050	1.47	cps
Iron	54-1	655265	663564	668135	662321	0.99	cps
Krypton	83-1	490	453	540	494	8.80	cps
Lead	206-1	911510	931540	926615	923222	1.13	cps
Lead	207-1	767324	790513	785263	781033	1.56	cps
Lead	208-1	3632690	3805011	3726986	3721562	2.32	cps
Lithium	6-1	352140	353177	343500	349605	1.52	cps
Magnesium	24-1	16491739	16609207	16542138	16547695	0.36	cps
Manganese	55-1	4937798	5011607	4903485	4950963	1.12	cps
Molybdenum	94-1	6333353	6322742	6334267	6330121	0.10	cps
Molybdenum	95-1	11307248	11365694	11340782	11337908	0.26	cps
Molybdenum	96-1	11998895	12125973	11893415	12006094	0.97	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICV01 Instrumnet Name : P7
Client Sample ID : ICV01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 15:56:42 DataFile Name : 017ICV.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	6899556	7034331	6815280	6916389	1.60	cps
Molybdenum	98-1	17915936	18095428	17844481	17951948	0.72	cps
Neodymium	150-1	33	73	33	47	49.49	cps
Nickel	60-1	835364	857384	845366	846038	1.30	cps
Phosphorus	31-1	10834	10490	10851	10725	1.90	cps
Potassium	39-1	30998772	31182093	30586240	30922368	0.99	cps
Rhodium	103-1	5088050	4889002	4678216	4885089	4.20	cps
Scandium	45-1	3471674	3485478	3281812	3412988	3.33	cps
Selenium	77-1	23766	25192	24914	24624	3.07	cps
Selenium	78-1	141026	141311	139760	140699	0.59	cps
Selenium	82-1	31542	32110	32336	31996	1.28	cps
Silicon	28-1	1829510	1806433	1787563	1807835	1.16	cps
Silver	109-1	950352	899693	877180	909075	4.12	cps
Silver	107-1	1001285	951333	1026469	993029	3.85	cps
Sodium	23-1	22811698	23651563	23171638	23211633	1.82	cps
Strontium	86-1	887	927	950	921	3.48	cps
Strontium	88-1	1230	1253	1223	1236	1.28	cps
Sulfur	34-1	202776	197830	194231	198279	2.16	cps
Terbium	159-1	5233563	5215161	4848540	5099088	4.26	cps
Thallium	203-1	1072321	1104378	1101236	1092645	1.62	cps
Thallium	205-1	2686043	2817421	2767275	2756913	2.40	cps
Tin	118-1	1763	1733	2037	1845	9.08	cps
Titanium	47-1	443	520	543	502	10.42	cps
Uranium	238-1	333	3	13	117	160.90	cps
Vanadium	51-1	3787176	3858487	3844875	3830179	0.99	cps
Yttrium	89-1	9005697	8934686	8351889	8764091	4.09	cps
Zinc	66-1	515714	529390	524304	523136	1.32	cps
Zirconium	90-1	380	420	343	381	10.06	cps
Zirconium	91-1	173	207	187	189	8.88	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICB01 Instrumnet Name : P7
Client Sample ID : ICB01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:02:16 DataFile Name : 018CCBE.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	49152	48206	48446	48601	1.01	cps
Antimony	121-1	193	247	197	212	14.08	cps
Arsenic	75-1	-1082	-1090	-786	-986	-17.56	cps
Barium	135-1	120	127	63	103	33.68	cps
Barium	137-1	200	173	143	172	16.46	cps
Beryllium	9-1	13	5	5	8	60.13	cps
Bismuth	209-1	2894013	2847373	2902587	2881324	1.03	cps
Bromine	81-1	7362	7105	7239	7235	1.78	cps
Cadmium	106-1	1840	1743	1790	1791	2.70	cps
Cadmium	108-1	13	20	10	14	35.26	cps
Cadmium	111-1	1309	1250	1259	1273	2.49	cps
Calcium	43-1	583	503	687	591	15.55	cps
Calcium	44-1	72998	72519	74803	73440	1.64	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	20554	21028	21362	20981	1.93	cps
Cobalt	59-1	597	357	293	416	38.51	cps
Copper	63-1	2947	2980	2934	2954	0.81	cps
Dysprosium	156-1	7	10	7	8	24.71	cps
Erbium	164-1	30	47	47	41	23.41	cps
Gadolinium	160-1	63	43	47	51	20.96	cps
Holmium	165-1	4739500	4758735	4857138	4785124	1.32	cps
Indium	115-1	4605177	4576051	4655229	4612152	0.87	cps
Iron	56-1	4835684	4931154	4901130	4889323	1.00	cps
Iron	57-1	26751	26901	27114	26922	0.68	cps
Iron	54-1	177978	186017	180053	181350	2.30	cps
Krypton	83-1	427	593	517	512	16.29	cps
Lead	206-1	510	430	453	464	8.86	cps
Lead	207-1	420	327	350	366	13.29	cps
Lead	208-1	1957	1643	1667	1756	9.94	cps
Lithium	6-1	351153	346342	349931	349142	0.72	cps
Magnesium	24-1	16776	16816	16095	16562	2.45	cps
Manganese	55-1	10677	10157	9840	10225	4.13	cps
Molybdenum	94-1	350	300	320	323	7.78	cps
Molybdenum	95-1	483	400	400	428	11.25	cps
Molybdenum	96-1	477	383	467	442	11.59	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICB01 Instrumnet Name : P7
Client Sample ID : ICB01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:02:16 DataFile Name : 018CCBE.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	417	377	347	380	9.24	cps
Molybdenum	98-1	677	603	587	622	7.70	cps
Neodymium	150-1	20	0	7	9	114.55	cps
Nickel	60-1	1120	1153	1087	1120	2.98	cps
Phosphorus	31-1	10027	10490	10854	10457	3.97	cps
Potassium	39-1	3062577	3071863	3056112	3063518	0.26	cps
Rhodium	103-1	4835069	4828016	4886177	4849754	0.65	cps
Scandium	45-1	3390631	3315937	3374725	3360431	1.17	cps
Selenium	77-1	150	153	180	161	10.20	cps
Selenium	78-1	59974	59924	60175	60024	0.22	cps
Selenium	82-1	317	159	151	209	44.74	cps
Silicon	28-1	1783243	1771036	1758824	1771034	0.69	cps
Silver	109-1	2460	530	380	1123	103.27	cps
Silver	107-1	2147	557	293	999	100.38	cps
Sodium	23-1	375945	377497	377814	377085	0.27	cps
Strontium	86-1	893	930	763	862	10.16	cps
Strontium	88-1	613	557	580	583	4.88	cps
Sulfur	34-1	194285	197482	199366	197045	1.30	cps
Terbium	159-1	4975173	5051482	5005516	5010724	0.77	cps
Thallium	203-1	257	227	193	226	14.04	cps
Thallium	205-1	623	567	510	567	10.00	cps
Tin	118-1	1353	1287	1317	1319	2.53	cps
Titanium	47-1	150	120	93	121	23.41	cps
Uranium	238-1	233	17	17	89	140.72	cps
Vanadium	51-1	483	350	357	397	18.94	cps
Yttrium	89-1	8720967	8539966	8695096	8652009	1.13	cps
Zinc	66-1	8906	8629	8939	8825	1.93	cps
Zirconium	90-1	357	303	330	330	8.08	cps
Zirconium	91-1	50	83	90	74	28.79	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICSA01 Instrumnet Name : P7
Client Sample ID : ICSA01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:05:41 DataFile Name : 019ICSA.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	471840940	503501019	502090446	492477468	3.63	cps
Antimony	121-1	4117	4244	4277	4213	2.00	cps
Arsenic	75-1	-18	669	789	480	90.62	cps
Barium	135-1	1240	1253	1283	1259	1.76	cps
Barium	137-1	2207	2200	2374	2260	4.35	cps
Beryllium	9-1	171	149	127	149	14.82	cps
Bismuth	209-1	2921387	2805437	2966834	2897886	2.87	cps
Bromine	81-1	8269	9810	9673	9251	9.22	cps
Cadmium	106-1	1713	1800	1807	1773	2.94	cps
Cadmium	108-1	540	597	520	552	7.20	cps
Cadmium	111-1	1451	1496	1521	1489	2.36	cps
Calcium	43-1	1223857	1243898	1248888	1238881	1.07	cps
Calcium	44-1	19802106	20098837	20310006	20070316	1.27	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	177332	184722	183784	181946	2.21	cps
Cobalt	59-1	11241	11298	10761	11100	2.66	cps
Copper	63-1	48910	49722	50161	49598	1.28	cps
Dysprosium	156-1	23	20	27	23	14.29	cps
Erbium	164-1	43	53	57	51	13.58	cps
Gadolinium	160-1	27	47	33	36	28.64	cps
Holmium	165-1	4928453	4939852	4988368	4952224	0.64	cps
Indium	115-1	4636239	4681422	4636181	4651280	0.56	cps
Iron	56-1	865049854	880831560	873107774	872996396	0.90	cps
Iron	57-1	20327072	20829613	20907648	20688111	1.52	cps
Iron	54-1	51486644	52513433	52123464	52041180	1.00	cps
Krypton	83-1	553	537	613	568	7.10	cps
Lead	206-1	10818	10504	10838	10720	1.75	cps
Lead	207-1	7826	8319	8303	8149	3.44	cps
Lead	208-1	38849	39333	39810	39330	1.22	cps
Lithium	6-1	359952	356838	353536	356776	0.90	cps
Magnesium	24-1	383106648	387937728	385151261	385398545	0.63	cps
Manganese	55-1	87107	87945	88338	87797	0.72	cps
Molybdenum	94-1	2302223	2389980	2355863	2349355	1.88	cps
Molybdenum	95-1	4166830	4238700	4248534	4218021	1.06	cps
Molybdenum	96-1	4328435	4401698	4527857	4419330	2.28	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICSA01 Instrumnet Name : P7
Client Sample ID : ICSA01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:05:41 DataFile Name : 019ICSA.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	2532450	2637228	2567264	2578980	2.07	cps
Molybdenum	98-1	6405036	6572499	6653469	6543668	1.94	cps
Neodymium	150-1	17	23	17	19	20.36	cps
Nickel	60-1	12165	12395	12095	12218	1.29	cps
Phosphorus	31-1	24189762	24514406	24224690	24309620	0.73	cps
Potassium	39-1	657716510	669680843	674525043	667307466	1.30	cps
Rhodium	103-1	4874317	4815015	4837420	4842250	0.62	cps
Scandium	45-1	3481736	3406649	3428595	3438994	1.12	cps
Selenium	77-1	283	333	360	326	11.96	cps
Selenium	78-1	59305	60540	60995	60280	1.45	cps
Selenium	82-1	196	126	69	131	48.59	cps
Silicon	28-1	1839456	1826057	1842202	1835905	0.47	cps
Silver	109-1	447	287	303	346	25.46	cps
Silver	107-1	427	323	260	337	24.99	cps
Sodium	23-1	537587179	535660272	546687565	539978339	1.09	cps
Strontium	86-1	44792	45688	44688	45056	1.22	cps
Strontium	88-1	380333	384888	390769	385330	1.36	cps
Sulfur	34-1	1995571	2000171	1946461	1980735	1.50	cps
Terbium	159-1	5180405	5125896	5144748	5150350	0.54	cps
Thallium	203-1	330	277	363	323	13.52	cps
Thallium	205-1	743	810	820	791	5.27	cps
Tin	118-1	1927	2380	2557	2288	14.21	cps
Titanium	47-1	1203097	1274326	1224255	1233893	2.96	cps
Uranium	238-1	333	160	180	224	42.25	cps
Vanadium	51-1	1850	1790	1790	1810	1.91	cps
Yttrium	89-1	8939642	8819822	8768438	8842634	0.99	cps
Zinc	66-1	22681	24106	24063	23617	3.43	cps
Zirconium	90-1	433	437	380	417	7.63	cps
Zirconium	91-1	77	103	87	89	15.16	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICSAB01 Instrumnet Name : P7
Client Sample ID : ICSAB01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:10:10 DataFile Name : 020ICSB.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	504749952	513915526	511726899	510130792	0.94	cps
Antimony	121-1	78900	82245	81734	80959	2.23	cps
Arsenic	75-1	21734	22571	23376	22560	3.64	cps
Barium	135-1	18682	19173	18869	18908	1.31	cps
Barium	137-1	32541	33469	31986	32665	2.29	cps
Beryllium	9-1	10829	10865	10546	10747	1.63	cps
Bismuth	209-1	2965106	2991163	3003276	2986515	0.65	cps
Bromine	81-1	8563	9073	9060	8898	3.27	cps
Cadmium	106-1	3697	3697	3807	3734	1.70	cps
Cadmium	108-1	1910	2097	2060	2022	4.89	cps
Cadmium	111-1	21712	21975	22295	21994	1.33	cps
Calcium	43-1	1236194	1279840	1288316	1268117	2.21	cps
Calcium	44-1	20332187	21235333	21015138	20860886	2.26	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	343465	351598	355042	350035	1.70	cps
Cobalt	59-1	192989	199719	199438	197382	1.93	cps
Copper	63-1	146735	152668	153184	150862	2.38	cps
Dysprosium	156-1	7	23	20	17	52.90	cps
Erbium	164-1	63	87	77	76	15.50	cps
Gadolinium	160-1	33	60	50	48	28.20	cps
Holmium	165-1	5109704	5127051	5129758	5122171	0.21	cps
Indium	115-1	4834215	4852116	4929202	4871844	1.04	cps
Iron	56-1	893170040	920298653	904049427	905839373	1.51	cps
Iron	57-1	21161641	21794091	21710981	21555571	1.59	cps
Iron	54-1	52022023	53966383	53449336	53145914	1.89	cps
Krypton	83-1	433	517	533	494	10.84	cps
Lead	206-1	61245	63080	61697	62007	1.54	cps
Lead	207-1	51271	52083	52502	51952	1.20	cps
Lead	208-1	235720	243303	240210	239745	1.59	cps
Lithium	6-1	367034	362708	357723	362488	1.29	cps
Magnesium	24-1	386841168	400431687	396052234	394441696	1.76	cps
Manganese	55-1	298229	304145	301705	301360	0.99	cps
Molybdenum	94-1	2391376	2491434	2429485	2437432	2.07	cps
Molybdenum	95-1	4315913	4427513	4506889	4416772	2.17	cps
Molybdenum	96-1	4589616	4723308	4716267	4676397	1.61	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : ICSAB01 Instrumnet Name : P7
Client Sample ID : ICSAB01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:10:10 DataFile Name : 020ICSB.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	2629744	2692979	2720716	2681146	1.74	cps
Molybdenum	98-1	6708211	7029824	6952929	6896988	2.44	cps
Neodymium	150-1	30	27	10	22	48.22	cps
Nickel	60-1	52204	54181	53683	53356	1.93	cps
Phosphorus	31-1	25006993	25821906	25282752	25370550	1.63	cps
Potassium	39-1	689388910	693698670	694737323	692608301	0.41	cps
Rhodium	103-1	4957234	5102998	5050065	5036766	1.46	cps
Scandium	45-1	3532425	3631798	3578251	3580824	1.39	cps
Selenium	77-1	1560	1603	1697	1620	4.31	cps
Selenium	78-1	64557	65216	65866	65213	1.00	cps
Selenium	82-1	1742	1792	1750	1761	1.53	cps
Silicon	28-1	1832123	1862987	1838749	1844620	0.88	cps
Silver	109-1	94899	99466	98895	97754	2.55	cps
Silver	107-1	100372	104285	103339	102665	1.99	cps
Sodium	23-1	550080125	562150805	555741005	555990645	1.09	cps
Strontium	86-1	45524	47376	47165	46688	2.17	cps
Strontium	88-1	393580	406001	400410	399997	1.56	cps
Sulfur	34-1	2019122	2067864	2016235	2034407	1.43	cps
Terbium	159-1	5472331	5401505	5294513	5389450	1.66	cps
Thallium	203-1	65183	66573	65896	65884	1.05	cps
Thallium	205-1	153419	157635	155507	155520	1.36	cps
Tin	118-1	1913	2220	2627	2254	15.88	cps
Titanium	47-1	1279737	1332197	1317500	1309812	2.07	cps
Uranium	238-1	303	103	107	171	66.93	cps
Vanadium	51-1	181994	186264	185971	184743	1.29	cps
Yttrium	89-1	9234349	9303078	9149889	9229105	0.83	cps
Zinc	66-1	48506	49823	49094	49141	1.34	cps
Zirconium	90-1	380	457	440	426	9.48	cps
Zirconium	91-1	97	73	110	93	19.89	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCV01 Instrumnet Name : P7
Client Sample ID : CCV01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:13:10 DataFile Name : 021CCV.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	280521429	293073296	294097636	289230787	2.61	cps
Antimony	121-1	2045091	2133621	2148232	2108981	2.65	cps
Arsenic	75-1	560819	584876	581296	575664	2.25	cps
Barium	135-1	2428708	2448425	2445702	2440945	0.44	cps
Barium	137-1	4058272	4273476	4171291	4167680	2.58	cps
Beryllium	9-1	272516	284655	280395	279189	2.21	cps
Bismuth	209-1	3105983	3073974	3105025	3094994	0.59	cps
Bromine	81-1	7665	7906	8089	7887	2.69	cps
Cadmium	106-1	53342	56704	56296	55447	3.31	cps
Cadmium	108-1	37616	39370	39113	38700	2.45	cps
Cadmium	111-1	523172	537364	534719	531751	1.42	cps
Calcium	43-1	3446377	3531775	3568503	3515551	1.78	cps
Calcium	44-1	55036396	57811794	56846246	56564812	2.49	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	4356670	4552985	4622156	4510604	3.05	cps
Cobalt	59-1	4895084	5115117	5099254	5036485	2.44	cps
Copper	63-1	28834855	29992225	29608776	29478619	2.00	cps
Dysprosium	156-1	123	103	110	112	9.08	cps
Erbium	164-1	297	227	240	254	14.61	cps
Gadolinium	160-1	163	140	143	149	8.48	cps
Holmium	165-1	5320693	5390959	5277744	5329799	1.07	cps
Indium	115-1	5076821	4985319	5066609	5042916	0.99	cps
Iron	56-1	1207611235	1263080088	1246276541	1238989288	2.30	cps
Iron	57-1	29145057	30313187	29796475	29751573	1.97	cps
Iron	54-1	71193159	74081352	74638597	73304369	2.52	cps
Krypton	83-1	540	607	613	587	6.91	cps
Lead	206-1	6088621	6442314	6309689	6280208	2.85	cps
Lead	207-1	5402458	5638027	5648144	5562876	2.50	cps
Lead	208-1	24994146	25902676	25645873	25514231	1.84	cps
Lithium	6-1	375277	371235	365820	370777	1.28	cps
Magnesium	24-1	1084758971	1160980516	1152882143	1132873876	3.70	cps
Manganese	55-1	63916031	65185999	64995157	64699062	1.06	cps
Molybdenum	94-1	7901306	8238053	8350248	8163202	2.86	cps
Molybdenum	95-1	11711884	12207305	12140302	12019830	2.24	cps
Molybdenum	96-1	12401235	13342611	12925943	12889930	3.66	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCV01 Instrumnet Name : P7
Client Sample ID : CCV01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:13:10 DataFile Name : 021CCV.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	7173061	7501400	7332159	7335540	2.24	cps
Molybdenum	98-1	18248461	18870603	18800726	18639930	1.83	cps
Neodymium	150-1	110	127	113	117	7.56	cps
Nickel	60-1	1029628	1077710	1065881	1057739	2.37	cps
Phosphorus	31-1	2659578	2669888	2727328	2685598	1.36	cps
Potassium	39-1	905350573	931264546	931978626	922864582	1.64	cps
Rhodium	103-1	5230515	5162669	5141334	5178173	0.90	cps
Scandium	45-1	3803792	3796070	3761750	3787204	0.59	cps
Selenium	77-1	30238	31631	31363	31077	2.38	cps
Selenium	78-1	160206	163120	163103	162143	1.03	cps
Selenium	82-1	39145	40600	40468	40071	2.01	cps
Silicon	28-1	8259841	8692931	8667120	8539964	2.84	cps
Silver	109-1	2651624	2677401	2738736	2689254	1.66	cps
Silver	107-1	2731561	2818362	2855119	2801681	2.26	cps
Sodium	23-1	1437450965	1498296031	1496181204	1477309400	2.34	cps
Strontium	86-1	741490	764446	764298	756745	1.75	cps
Strontium	88-1	6603412	6873506	6822678	6766532	2.12	cps
Sulfur	34-1	380905	394663	391023	388864	1.83	cps
Terbium	159-1	5593368	5531178	5535948	5553498	0.62	cps
Thallium	203-1	1424408	1507905	1477203	1469839	2.87	cps
Thallium	205-1	3683996	3723976	3743003	3716992	0.81	cps
Tin	118-1	1633382	1729713	1718086	1693727	3.10	cps
Titanium	47-1	3473668	3518113	3579460	3523747	1.51	cps
Uranium	238-1	4908872	4932783	4866171	4902609	0.69	cps
Vanadium	51-1	4916200	5207467	5169621	5097763	3.11	cps
Yttrium	89-1	9697424	9742825	9664054	9701434	0.41	cps
Zinc	66-1	7118362	7398270	7570947	7362526	3.10	cps
Zirconium	90-1	3999397	4173558	4255617	4142857	3.16	cps
Zirconium	91-1	862976	900194	901074	888081	2.45	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCB01 Instrumnet Name : P7
Client Sample ID : CCB01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:18:22 DataFile Name : 022CCBE.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	61698	50958	52008	54888	10.79	cps
Antimony	121-1	283	287	293	288	1.77	cps
Arsenic	75-1	-733	-632	-725	-697	-8.09	cps
Barium	135-1	143	103	120	122	16.44	cps
Barium	137-1	250	167	220	212	19.89	cps
Beryllium	9-1	27	6	4	12	102.00	cps
Bismuth	209-1	3024608	2983234	2962942	2990261	1.05	cps
Bromine	81-1	7058	7625	7582	7422	4.25	cps
Cadmium	106-1	1853	1827	1867	1849	1.10	cps
Cadmium	108-1	23	17	7	16	53.90	cps
Cadmium	111-1	1321	1337	1349	1336	1.04	cps
Calcium	43-1	610	620	550	593	6.38	cps
Calcium	44-1	77245	79986	80341	79191	2.14	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	22464	22050	21265	21926	2.78	cps
Cobalt	59-1	653	347	283	428	46.26	cps
Copper	63-1	4534	4124	4024	4227	6.39	cps
Dysprosium	156-1	7	3	13	8	65.47	cps
Erbium	164-1	40	23	37	33	26.47	cps
Gadolinium	160-1	50	40	57	49	17.16	cps
Holmium	165-1	5024225	4785061	4783154	4864147	2.85	cps
Indium	115-1	4874482	4764443	4831096	4823340	1.15	cps
Iron	56-1	5126263	5098156	5101039	5108486	0.30	cps
Iron	57-1	27018	27646	27091	27251	1.26	cps
Iron	54-1	183312	185226	182864	183800	0.68	cps
Krypton	83-1	550	577	570	566	2.45	cps
Lead	206-1	597	573	463	544	13.08	cps
Lead	207-1	480	473	457	470	2.56	cps
Lead	208-1	2310	2023	1953	2096	9.02	cps
Lithium	6-1	354096	349515	349896	351169	0.72	cps
Magnesium	24-1	26400	24136	23254	24597	6.60	cps
Manganese	55-1	11104	10190	10147	10480	5.16	cps
Molybdenum	94-1	480	363	373	406	15.94	cps
Molybdenum	95-1	443	483	377	434	12.40	cps
Molybdenum	96-1	553	487	427	489	12.96	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCB01 Instrumnet Name : P7
Client Sample ID : CCB01 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:18:22 DataFile Name : 022CCBE.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	410	413	343	389	10.15	cps
Molybdenum	98-1	707	677	600	661	8.32	cps
Neodymium	150-1	7	7	3	6	34.70	cps
Nickel	60-1	1080	1160	1197	1146	5.21	cps
Phosphorus	31-1	10670	10397	10564	10544	1.31	cps
Potassium	39-1	3251319	3240468	3252709	3248165	0.21	cps
Rhodium	103-1	5211795	5047451	4913144	5057463	2.96	cps
Scandium	45-1	3472641	3468829	3431664	3457711	0.65	cps
Selenium	77-1	183	250	197	210	16.80	cps
Selenium	78-1	61791	61356	62591	61913	1.01	cps
Selenium	82-1	180	173	114	155	23.22	cps
Silicon	28-1	1756571	1796754	1743772	1765699	1.57	cps
Silver	109-1	217	207	157	193	16.63	cps
Silver	107-1	240	213	227	227	5.88	cps
Sodium	23-1	524003	523640	504471	517371	2.16	cps
Strontium	86-1	787	1023	873	894	13.39	cps
Strontium	88-1	590	700	553	614	12.42	cps
Sulfur	34-1	215548	215339	217394	216093	0.52	cps
Terbium	159-1	5236473	5230033	5152221	5206242	0.90	cps
Thallium	203-1	333	283	287	301	9.28	cps
Thallium	205-1	863	777	770	803	6.48	cps
Tin	118-1	1567	1517	1373	1486	6.76	cps
Titanium	47-1	143	143	137	141	2.73	cps
Uranium	238-1	203	37	43	94	99.91	cps
Vanadium	51-1	583	437	413	478	19.29	cps
Yttrium	89-1	9210972	9022847	8884362	9039394	1.81	cps
Zinc	66-1	9743	9356	9346	9482	2.39	cps
Zirconium	90-1	450	390	423	421	7.14	cps
Zirconium	91-1	100	57	97	84	28.55	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CRI Instrumnet Name : P7
Client Sample ID : CRI Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:21:21 DataFile Name : 023LLCC.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	156493	158919	158402	157938	0.81	cps
Antimony	121-1	8046	8146	8613	8268	3.66	cps
Arsenic	75-1	245	102	301	216	47.49	cps
Barium	135-1	8996	8980	8733	8903	1.66	cps
Barium	137-1	15652	15021	15539	15404	2.18	cps
Beryllium	9-1	618	598	583	600	2.97	cps
Bismuth	209-1	2949393	2958946	2901430	2936590	1.05	cps
Bromine	81-1	7375	7472	7449	7432	0.68	cps
Cadmium	106-1	1960	1957	1883	1933	2.24	cps
Cadmium	108-1	137	107	107	117	14.85	cps
Cadmium	111-1	2240	2302	2264	2268	1.38	cps
Calcium	43-1	7152	7415	6895	7154	3.64	cps
Calcium	44-1	181331	185028	182373	182911	1.04	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	38569	38463	38837	38623	0.50	cps
Cobalt	59-1	10537	10564	10564	10555	0.15	cps
Copper	63-1	14714	14757	14470	14647	1.06	cps
Dysprosium	156-1	7	3	3	4	43.40	cps
Erbium	164-1	17	43	43	34	44.69	cps
Gadolinium	160-1	53	50	30	44	28.39	cps
Holmium	165-1	4989988	4934171	4940977	4955046	0.61	cps
Indium	115-1	4844915	4881941	4819178	4848678	0.65	cps
Iron	56-1	5596879	5602936	5621061	5606959	0.22	cps
Iron	57-1	38643	39231	39458	39111	1.08	cps
Iron	54-1	214023	212262	213974	213420	0.47	cps
Krypton	83-1	593	543	533	557	5.77	cps
Lead	206-1	2537	2687	2710	2645	3.56	cps
Lead	207-1	2157	2287	2180	2208	3.14	cps
Lead	208-1	9852	10138	9955	9982	1.45	cps
Lithium	6-1	360698	355382	351335	355805	1.32	cps
Magnesium	24-1	2126337	2228372	2194109	2182939	2.38	cps
Manganese	55-1	23084	22030	21639	22251	3.36	cps
Molybdenum	94-1	9236	9310	9310	9285	0.46	cps
Molybdenum	95-1	11091	11628	11658	11459	2.78	cps
Molybdenum	96-1	12706	12502	12682	12630	0.88	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CRI Instrumnet Name : P7
Client Sample ID : CRI Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:21:21 DataFile Name : 023LLCC.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	7162	7382	7509	7351	2.39	cps
Molybdenum	98-1	18111	18372	18125	18203	0.81	cps
Neodymium	150-1	10	20	7	12	56.76	cps
Nickel	60-1	3024	3190	3010	3075	3.26	cps
Phosphorus	31-1	72421	72658	71805	72295	0.61	cps
Potassium	39-1	6607780	6696280	6653009	6652356	0.67	cps
Rhodium	103-1	5033502	4950111	4949585	4977733	0.97	cps
Scandium	45-1	3557538	3441488	3378775	3459267	2.62	cps
Selenium	77-1	443	487	513	481	7.34	cps
Selenium	78-1	62655	61678	63278	62537	1.29	cps
Selenium	82-1	565	606	586	586	3.53	cps
Silicon	28-1	1787994	1767557	1757051	1770867	0.89	cps
Silver	109-1	5201	5598	5598	5466	4.19	cps
Silver	107-1	5811	5775	5941	5842	1.50	cps
Sodium	23-1	3303538	3426553	3475613	3401901	2.61	cps
Strontium	86-1	2380	2374	2254	2336	3.05	cps
Strontium	88-1	12692	12939	13179	12937	1.88	cps
Sulfur	34-1	221954	224488	225370	223938	0.79	cps
Terbium	159-1	5179842	5158906	5133763	5157504	0.45	cps
Thallium	203-1	3264	3347	3267	3293	1.43	cps
Thallium	205-1	7732	7836	7586	7718	1.63	cps
Tin	118-1	17120	17704	17671	17499	1.87	cps
Titanium	47-1	3267	3510	3357	3378	3.64	cps
Uranium	238-1	8820	8089	8653	8521	4.49	cps
Vanadium	51-1	47719	48264	48434	48139	0.78	cps
Yttrium	89-1	8974316	8891975	8763988	8876760	1.19	cps
Zinc	66-1	16276	15014	15865	15718	4.09	cps
Zirconium	90-1	8156	8089	8302	8182	1.33	cps
Zirconium	91-1	1677	1713	1920	1770	7.41	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : PB169290BL Instrumnet Name : P7
Client Sample ID : PB169290BL Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:24:29 DataFile Name : 024CCBE.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	49988	46691	48610	48430	3.42	cps
Antimony	121-1	113	113	117	114	1.68	cps
Arsenic	75-1	-898	-1027	-786	-903	-13.34	cps
Barium	135-1	127	107	113	116	8.81	cps
Barium	137-1	200	147	120	156	26.19	cps
Beryllium	9-1	24	9	9	14	64.36	cps
Bismuth	209-1	2930434	2756457	2975721	2887537	4.01	cps
Bromine	81-1	7382	7642	7652	7559	2.03	cps
Cadmium	106-1	1990	1747	1837	1858	6.62	cps
Cadmium	108-1	13	13	37	21	63.83	cps
Cadmium	111-1	1437	1237	1300	1325	7.73	cps
Calcium	43-1	553	573	607	578	4.66	cps
Calcium	44-1	72961	70885	71467	71771	1.49	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	21222	21138	21809	21390	1.71	cps
Cobalt	59-1	613	330	260	401	46.65	cps
Copper	63-1	3434	3284	3620	3446	4.90	cps
Dysprosium	156-1	10	7	10	9	21.63	cps
Erbium	164-1	37	17	43	32	43.06	cps
Gadolinium	160-1	53	33	20	36	47.19	cps
Holmium	165-1	4934019	4646740	4998433	4859730	3.85	cps
Indium	115-1	4837590	4550993	4663625	4684069	3.08	cps
Iron	56-1	5101852	5071812	5158250	5110638	0.86	cps
Iron	57-1	27969	27896	28053	27973	0.28	cps
Iron	54-1	186769	189719	186994	187827	0.87	cps
Krypton	83-1	553	607	533	564	6.72	cps
Lead	206-1	590	460	480	510	13.73	cps
Lead	207-1	403	450	350	401	12.47	cps
Lead	208-1	1953	1830	1710	1831	6.65	cps
Lithium	6-1	359218	338361	356929	351503	3.25	cps
Magnesium	24-1	18431	18705	18829	18655	1.09	cps
Manganese	55-1	10891	9730	10184	10268	5.70	cps
Molybdenum	94-1	303	293	257	284	8.64	cps
Molybdenum	95-1	357	320	273	317	13.19	cps
Molybdenum	96-1	367	300	360	342	10.73	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : PB169290BL Instrumnet Name : P7
Client Sample ID : PB169290BL Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:24:29 DataFile Name : 024CCBE.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	327	290	303	307	6.05	cps
Molybdenum	98-1	497	440	420	452	8.79	cps
Neodymium	150-1	3	3	7	4	43.40	cps
Nickel	60-1	1143	1093	1147	1128	2.65	cps
Phosphorus	31-1	10537	10690	10647	10625	0.74	cps
Potassium	39-1	3180190	3137459	3194875	3170841	0.94	cps
Rhodium	103-1	5057732	4710657	4958691	4909027	3.64	cps
Scandium	45-1	3563564	3249426	3438209	3417066	4.63	cps
Selenium	77-1	180	140	217	179	21.44	cps
Selenium	78-1	61085	61082	61507	61225	0.40	cps
Selenium	82-1	192	116	196	168	27.09	cps
Silicon	28-1	1741466	1705576	1724912	1723984	1.04	cps
Silver	109-1	120	123	140	128	8.38	cps
Silver	107-1	140	153	137	143	6.15	cps
Sodium	23-1	442454	441971	442884	442436	0.10	cps
Strontium	86-1	1050	967	873	963	9.17	cps
Strontium	88-1	600	647	653	633	4.59	cps
Sulfur	34-1	220944	218600	221380	220308	0.68	cps
Terbium	159-1	5135246	4802293	5175842	5037794	4.07	cps
Thallium	203-1	243	233	270	249	7.62	cps
Thallium	205-1	677	503	487	556	18.94	cps
Tin	118-1	1353	1173	1160	1229	8.79	cps
Titanium	47-1	133	97	120	117	15.91	cps
Uranium	238-1	237	7	10	84	156.12	cps
Vanadium	51-1	573	393	347	438	27.34	cps
Yttrium	89-1	8869445	8275009	8868109	8670854	3.95	cps
Zinc	66-1	8929	8469	9190	8863	4.12	cps
Zirconium	90-1	387	297	363	349	13.39	cps
Zirconium	91-1	97	97	30	74	51.70	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : PB169290BS Instrumnet Name : P7
Client Sample ID : PB169290BS Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:27:28 DataFile Name : 025LCS6.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	55968801	58335237	57896444	57400161	2.19	cps
Antimony	121-1	2026679	2082540	2055998	2055072	1.36	cps
Arsenic	75-1	552668	569963	571901	564844	1.87	cps
Barium	135-1	2355009	2392892	2371150	2373017	0.80	cps
Barium	137-1	3964286	4146675	4134165	4081709	2.50	cps
Beryllium	9-1	272367	281967	281524	278619	1.95	cps
Bismuth	209-1	3125172	3110749	3087460	3107793	0.61	cps
Bromine	81-1	7349	6975	6878	7067	3.51	cps
Cadmium	106-1	54813	55583	55282	55226	0.70	cps
Cadmium	108-1	37786	39130	38501	38472	1.75	cps
Cadmium	111-1	521890	537585	537649	532375	1.71	cps
Calcium	43-1	672317	687405	683781	681168	1.16	cps
Calcium	44-1	10856866	10844803	11016314	10905994	0.88	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	4266081	4404243	4520563	4396962	2.90	cps
Cobalt	59-1	4801894	5024642	5027110	4951215	2.61	cps
Copper	63-1	29282896	30227730	30046260	29852295	1.68	cps
Dysprosium	156-1	30	33	47	37	24.06	cps
Erbium	164-1	80	93	87	87	7.69	cps
Gadolinium	160-1	67	60	67	64	5.98	cps
Holmium	165-1	5214779	5192609	5223796	5210394	0.31	cps
Indium	115-1	4958475	4965385	4927799	4950553	0.40	cps
Iron	56-1	239109743	249422316	255293923	247941994	3.30	cps
Iron	57-1	5686598	5921331	5936328	5848086	2.39	cps
Iron	54-1	14517294	14975936	15034840	14842690	1.91	cps
Krypton	83-1	657	550	583	597	9.15	cps
Lead	206-1	6192878	6461448	6409518	6354615	2.24	cps
Lead	207-1	5456166	5693541	5684579	5611429	2.40	cps
Lead	208-1	24868690	25850527	25866193	25528470	2.24	cps
Lithium	6-1	377596	379247	376505	377783	0.37	cps
Magnesium	24-1	219957503	229127970	230771917	226619130	2.57	cps
Manganese	55-1	62085457	63348749	65438629	63624278	2.66	cps
Molybdenum	94-1	7761784	7945527	7865001	7857437	1.17	cps
Molybdenum	95-1	11438532	11724504	11788769	11650602	1.60	cps
Molybdenum	96-1	12127351	12524768	12667421	12439847	2.25	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : PB169290BS Instrumnet Name : P7
Client Sample ID : PB169290BS Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:27:28 DataFile Name : 025LCS6.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	6780913	7096942	7116621	6998159	2.69	cps
Molybdenum	98-1	17735852	18139833	18250745	18042143	1.50	cps
Neodymium	150-1	93	50	67	70	31.22	cps
Nickel	60-1	1044418	1066185	1084742	1065115	1.89	cps
Phosphorus	31-1	2542100	2621253	2642420	2601924	2.03	cps
Potassium	39-1	179921537	184045111	185070104	183012251	1.49	cps
Rhodium	103-1	5153651	5126508	5002290	5094150	1.58	cps
Scandium	45-1	3635974	3591158	3570711	3599281	0.93	cps
Selenium	77-1	30719	30836	32179	31244	2.60	cps
Selenium	78-1	158828	160293	162181	160434	1.05	cps
Selenium	82-1	40003	41113	40823	40646	1.42	cps
Silicon	28-1	7881838	8236149	8304169	8140719	2.79	cps
Silver	109-1	2542058	2718427	2670730	2643738	3.45	cps
Silver	107-1	2742745	2879662	2858565	2826991	2.61	cps
Sodium	23-1	288212016	299648576	301887789	296582793	2.47	cps
Strontium	86-1	709896	731782	731663	724447	1.74	cps
Strontium	88-1	6310789	6563017	6510897	6461568	2.06	cps
Sulfur	34-1	398127	400965	398383	399158	0.39	cps
Terbium	159-1	5517377	5410292	5267906	5398525	2.32	cps
Thallium	203-1	1434056	1487867	1495111	1472345	2.27	cps
Thallium	205-1	3650550	3757273	3849895	3752572	2.66	cps
Tin	118-1	1565940	1697997	1659739	1641225	4.14	cps
Titanium	47-1	3309843	3395050	3451098	3385330	2.10	cps
Uranium	238-1	4566915	4866541	4789856	4741104	3.28	cps
Vanadium	51-1	4766471	4938588	4959028	4888029	2.16	cps
Yttrium	89-1	9339432	9426974	9104928	9290444	1.79	cps
Zinc	66-1	7344714	7523860	7570878	7479817	1.60	cps
Zirconium	90-1	3832355	3996022	4004298	3944225	2.46	cps
Zirconium	91-1	836175	859978	865889	854014	1.84	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : Q2552-04 Instrumnet Name : P7
Client Sample ID : WS0725-PT-TM-WS Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:41:59 DataFile Name : 027SMPL.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	3128994	3230149	3232954	3197366	1.85	cps
Antimony	121-1	71300	73333	73213	72615	1.57	cps
Arsenic	75-1	26447	27258	27403	27036	1.91	cps
Barium	135-1	581986	588204	589371	586520	0.68	cps
Barium	137-1	1010021	1032149	1031089	1024420	1.22	cps
Beryllium	9-1	4980	5047	5075	5034	0.98	cps
Bismuth	209-1	3016158	2959674	2933784	2969872	1.42	cps
Bromine	81-1	7112	7092	7162	7122	0.51	cps
Cadmium	106-1	3577	3490	3701	3589	2.94	cps
Cadmium	108-1	1367	1390	1373	1377	0.87	cps
Cadmium	111-1	20033	20259	20515	20269	1.19	cps
Calcium	43-1	637	673	533	614	11.81	cps
Calcium	44-1	67312	68511	68648	68157	1.08	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	217341	223904	224066	221770	1.73	cps
Cobalt	59-1	713	447	420	527	30.80	cps
Copper	63-1	5363351	5473924	5426757	5421344	1.02	cps
Dysprosium	156-1	20	10	10	13	43.30	cps
Erbium	164-1	53	53	27	44	34.63	cps
Gadolinium	160-1	43	40	27	37	24.04	cps
Holmium	165-1	4899401	4854488	4790837	4848242	1.13	cps
Indium	115-1	4757973	4715534	4760915	4744807	0.54	cps
Iron	56-1	10811574	10861256	10958427	10877086	0.69	cps
Iron	57-1	165981	170230	170021	168744	1.42	cps
Iron	54-1	536611	546269	546026	542969	1.01	cps
Krypton	83-1	590	603	630	608	3.35	cps
Lead	206-1	118374	121362	120626	120121	1.30	cps
Lead	207-1	98574	101139	99336	99683	1.32	cps
Lead	208-1	460518	472082	467572	466724	1.25	cps
Lithium	6-1	357048	354959	349999	354002	1.02	cps
Magnesium	24-1	20380	19462	19813	19885	2.33	cps
Manganese	55-1	1183220	1204707	1207963	1198630	1.12	cps
Molybdenum	94-1	113356	116732	115908	115332	1.53	cps
Molybdenum	95-1	198387	203148	204270	201935	1.55	cps
Molybdenum	96-1	210696	217121	215397	214405	1.55	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : Q2552-04 Instrumnet Name : P7
Client Sample ID : WS0725-PT-TM-WS Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:41:59 DataFile Name : 027SMPL.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	121620	125152	124395	123722	1.50	cps
Molybdenum	98-1	315101	322078	322656	319945	1.31	cps
Neodymium	150-1	50	50	10	37	62.98	cps
Nickel	60-1	975227	1002633	997159	991673	1.46	cps
Phosphorus	31-1	10627	10520	10817	10655	1.41	cps
Potassium	39-1	3121478	3135299	3129914	3128897	0.22	cps
Rhodium	103-1	5043784	4928338	4867264	4946462	1.81	cps
Scandium	45-1	3483908	3410335	3372189	3422144	1.66	cps
Selenium	77-1	4891	5018	4988	4965	1.33	cps
Selenium	78-1	76550	77133	77166	76950	0.45	cps
Selenium	82-1	6362	6481	6230	6358	1.98	cps
Silicon	28-1	2273613	2290598	2313622	2292611	0.88	cps
Silver	109-1	416886	426699	426929	423505	1.35	cps
Silver	107-1	433933	443377	448245	441852	1.65	cps
Sodium	23-1	582414	588745	589999	587053	0.69	cps
Strontium	86-1	943	897	960	933	3.52	cps
Strontium	88-1	690	697	720	702	2.24	cps
Sulfur	34-1	207698	208982	208837	208506	0.34	cps
Terbium	159-1	5230315	5169928	5060984	5153742	1.67	cps
Thallium	203-1	25053	25367	24786	25069	1.16	cps
Thallium	205-1	57940	58881	59326	58716	1.21	cps
Tin	118-1	1353	1210	1200	1255	6.84	cps
Titanium	47-1	227	247	220	231	6.01	cps
Uranium	238-1	237	33	50	107	105.84	cps
Vanadium	51-1	3071001	3092085	3137828	3100305	1.10	cps
Yttrium	89-1	8791685	8789745	8681288	8754239	0.72	cps
Zinc	66-1	1299677	1330729	1323108	1317838	1.23	cps
Zirconium	90-1	1730	1730	1860	1773	4.23	cps
Zirconium	91-1	393	343	427	388	10.82	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCV02 Instrumnet Name : P7
Client Sample ID : CCV02 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:49:37 DataFile Name : 028CRI.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	264489729	276432376	274437383	271786496	2.35	cps
Antimony	121-1	2075503	2194318	2146333	2138718	2.79	cps
Arsenic	75-1	562257	583766	571489	572504	1.88	cps
Barium	135-1	2407206	2497656	2491428	2465430	2.05	cps
Barium	137-1	4139803	4333191	4294130	4255708	2.40	cps
Beryllium	9-1	290344	300618	297477	296146	1.78	cps
Bismuth	209-1	3128418	3113350	3092934	3111567	0.57	cps
Bromine	81-1	7402	7299	7219	7306	1.26	cps
Cadmium	106-1	55509	56095	56958	56187	1.30	cps
Cadmium	108-1	38104	39073	39287	38821	1.62	cps
Cadmium	111-1	532547	544636	538482	538555	1.12	cps
Calcium	43-1	3316984	3464842	3368557	3383461	2.22	cps
Calcium	44-1	53884396	55007281	55376739	54756139	1.42	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	4556920	4599240	4634764	4596975	0.85	cps
Cobalt	59-1	4922088	5281273	5179131	5127498	3.61	cps
Copper	63-1	29166660	30280871	30054360	29833964	1.97	cps
Dysprosium	156-1	133	140	127	133	5.00	cps
Erbium	164-1	217	283	200	233	18.90	cps
Gadolinium	160-1	137	193	147	159	19.04	cps
Holmium	165-1	5296635	5291298	5343035	5310323	0.54	cps
Indium	115-1	4941838	5003177	4949967	4964994	0.67	cps
Iron	56-1	1132627396	1178937182	1172778249	1161447609	2.17	cps
Iron	57-1	27267635	28012993	28192125	27824251	1.76	cps
Iron	54-1	66597157	70533741	69199841	68776913	2.91	cps
Krypton	83-1	497	543	590	543	8.59	cps
Lead	206-1	6375218	6762312	6621437	6586322	2.97	cps
Lead	207-1	5571537	5832544	5850552	5751544	2.71	cps
Lead	208-1	25480175	26315440	26752586	26182734	2.47	cps
Lithium	6-1	375289	377657	372640	375195	0.67	cps
Magnesium	24-1	1096828624	1145736730	1121555317	1121373557	2.18	cps
Manganese	55-1	64451461	66897654	65637262	65662126	1.86	cps
Molybdenum	94-1	8083596	8496381	8232079	8270685	2.53	cps
Molybdenum	95-1	11839480	12395642	12045404	12093509	2.33	cps
Molybdenum	96-1	12921693	13228581	13158074	13102783	1.23	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCV02 Instrumnet Name : P7
Client Sample ID : CCV02 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 16:49:37 DataFile Name : 028CRI.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	7234213	7452213	7461305	7382577	1.74	cps
Molybdenum	98-1	18857308	19359400	19052544	19089751	1.33	cps
Neodymium	150-1	117	83	97	99	16.97	cps
Nickel	60-1	1053896	1085770	1079274	1072980	1.57	cps
Phosphorus	31-1	2665732	2768384	2762802	2732306	2.11	cps
Potassium	39-1	884582253	902480200	881457027	889506493	1.28	cps
Rhodium	103-1	5147212	5221216	4989763	5119397	2.31	cps
Scandium	45-1	3645672	3675592	3686621	3669295	0.58	cps
Selenium	77-1	30234	31517	31096	30949	2.11	cps
Selenium	78-1	158190	160804	158966	159320	0.84	cps
Selenium	82-1	39429	40849	40461	40246	1.82	cps
Silicon	28-1	10039809	10270293	10456181	10255428	2.03	cps
Silver	109-1	2702435	2764774	2725560	2730923	1.15	cps
Silver	107-1	2774621	2858197	2881523	2838113	1.98	cps
Sodium	23-1	1451652192	1499496671	1510273524	1487140796	2.10	cps
Strontium	86-1	742151	772479	757232	757287	2.00	cps
Strontium	88-1	6743701	6876827	6848326	6822951	1.03	cps
Sulfur	34-1	407526	410813	406613	408317	0.54	cps
Terbium	159-1	5604258	5555232	5509866	5556452	0.85	cps
Thallium	203-1	1487990	1524366	1519969	1510775	1.31	cps
Thallium	205-1	3828918	3894361	3875732	3866337	0.87	cps
Tin	118-1	1674384	1724866	1744316	1714522	2.11	cps
Titanium	47-1	3502216	3638172	3651504	3597298	2.30	cps
Uranium	238-1	4949949	5005602	5166497	5040683	2.23	cps
Vanadium	51-1	5144215	5283643	5264346	5230735	1.44	cps
Yttrium	89-1	9527932	9718111	9397271	9547772	1.69	cps
Zinc	66-1	7106955	7427569	7438459	7324328	2.57	cps
Zirconium	90-1	4147443	4283709	4102283	4177812	2.26	cps
Zirconium	91-1	880853	897865	886967	888562	0.97	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCB02 Instrumnet Name : P7
Client Sample ID : CCB02 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 17:03:30 DataFile Name : 030CCBE.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Aluminium	27-1	50118	48483	49119	49240	1.67	cps
Antimony	121-1	97	103	90	97	6.89	cps
Arsenic	75-1	-1058	-1192	-1065	-1105	-6.82	cps
Barium	135-1	123	77	57	86	39.99	cps
Barium	137-1	210	130	170	170	23.53	cps
Beryllium	9-1	27	11	6	15	72.49	cps
Bismuth	209-1	2976324	2998967	2918915	2964735	1.39	cps
Bromine	81-1	7275	7535	7689	7500	2.79	cps
Cadmium	106-1	1810	1933	1843	1862	3.43	cps
Cadmium	108-1	27	27	7	20	57.73	cps
Cadmium	111-1	1295	1355	1306	1319	2.41	cps
Calcium	43-1	587	633	560	593	6.26	cps
Calcium	44-1	66800	67339	68089	67409	0.96	cps
Carbon	12-1						cps
Chlorine	35-1						cps
Chromium	52-1	22053	21529	21132	21571	2.14	cps
Cobalt	59-1	717	373	313	468	46.52	cps
Copper	63-1	3220	2917	3150	3096	5.13	cps
Dysprosium	156-1	13	0	17	10	88.20	cps
Erbium	164-1	67	50	27	48	42.05	cps
Gadolinium	160-1	47	37	47	43	13.32	cps
Holmium	165-1	4972831	4885675	4862761	4907089	1.18	cps
Indium	115-1	4866977	4826927	4741988	4811964	1.33	cps
Iron	56-1	5175792	5217056	5138561	5177137	0.76	cps
Iron	57-1	28136	28123	28868	28376	1.50	cps
Iron	54-1	187391	186517	186895	186934	0.23	cps
Krypton	83-1	507	610	563	560	9.24	cps
Lead	206-1	557	413	477	482	14.90	cps
Lead	207-1	360	403	337	367	9.23	cps
Lead	208-1	2127	1853	1857	1946	8.06	cps
Lithium	6-1	359078	356354	358932	358121	0.43	cps
Magnesium	24-1	18702	18908	18815	18808	0.55	cps
Manganese	55-1	10837	10334	10194	10455	3.24	cps
Molybdenum	94-1	240	313	260	271	13.98	cps
Molybdenum	95-1	320	213	237	257	21.85	cps
Molybdenum	96-1	307	270	303	293	6.91	cps

LB Number : LB136878 Operator : Jaswal
Lab Sample ID : CCB02 Instrumnet Name : P7
Client Sample ID : CCB02 Dilution Factor : 1
Date & Time Acquired : 2025-08-18 17:03:30 DataFile Name : 030CCBE.d

Parameter	Mass	CPS1	CPS2	CPS3	CPSMean	CPSRSD	Units
Molybdenum	97-1	363	280	247	297	20.26	cps
Molybdenum	98-1	387	347	367	367	5.45	cps
Neodymium	150-1	3	10	0	4	114.60	cps
Nickel	60-1	1137	1090	1037	1088	4.60	cps
Phosphorus	31-1	11024	11001	11091	11039	0.42	cps
Potassium	39-1	3144342	3157596	3166666	3156201	0.36	cps
Rhodium	103-1	5059996	5005237	4920723	4995319	1.40	cps
Scandium	45-1	3519364	3495540	3471002	3495302	0.69	cps
Selenium	77-1	123	117	127	122	4.17	cps
Selenium	78-1	62193	61162	61366	61574	0.89	cps
Selenium	82-1	197	118	138	151	27.10	cps
Silicon	28-1	1752425	1759891	1756104	1756140	0.21	cps
Silver	109-1	120	123	117	120	2.78	cps
Silver	107-1	103	137	123	121	13.86	cps
Sodium	23-1	427095	429335	428349	428259	0.26	cps
Strontium	86-1	907	953	923	928	2.55	cps
Strontium	88-1	560	640	587	596	6.84	cps
Sulfur	34-1	228134	229849	230353	229446	0.51	cps
Terbium	159-1	5209622	5282590	5181494	5224569	1.00	cps
Thallium	203-1	270	227	223	240	10.85	cps
Thallium	205-1	610	463	503	526	14.43	cps
Tin	118-1	1280	1130	1567	1326	16.75	cps
Titanium	47-1	130	140	143	138	5.04	cps
Uranium	238-1	297	27	27	117	133.61	cps
Vanadium	51-1	447	373	353	391	12.57	cps
Yttrium	89-1	9118638	8914993	8918286	8983972	1.30	cps
Zinc	66-1	9033	8903	8889	8942	0.89	cps
Zirconium	90-1	310	320	363	331	8.56	cps
Zirconium	91-1	67	63	60	63	5.27	cps

SOP ID : M200.8-Trace Elements-22

SDG No : N/A

Matrix : WATER

Pipette ID: ICP A

Balance ID : N/A

Filter paper ID : N/A

pH Strip ID : M6069

Hood ID : #3

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

Start Digest Date: 08/18/2025 Time : 07:40 Temp : 96 °C

End Digest Date: 08/18/2025 Time : 09:58 Temp : 96 °C

Digestion tube ID: M5595

Block thermometer ID: MET-DIG. #1

Dig Technician Signature: *SJS*

Supervisor Signature: *[Signature]*

Temp : 1. 96°C 2. N/A

Standard Name	MLS USED	STD REF. # FROM LOG
Spike Sol 1	0.50	MP86790
Spike Sol 2	1.00	MP86791
Spike Sol 3	1.00	MP86792
Spike Sol 4	1.00	MP86793
N/A	N/A	N/A

Chemical Used	ML/SAMPLE USED	Lot Number
Conc. HNO3	3.00	M6158
1:1 HCL	5.00	MP85156
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Extraction Conformance/Non-Conformance Comments:

HOT BLOCK#1 CELL#50 96 C
MP86792,MP86793,X*

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
08/18/25 10:55	<i>SJS met dig</i>	<i>[Signature]</i>
	Preparation Group	Analysis Group

Lab Sample ID	Client Sample ID	pH	Initial Vol (ml)	Final Vol (ml)	Color Before	Color After	Clarity Before	Clarity After	Comment	Prep Pos
PB169290BL	PBW290	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	1
PB169290BS	LCS290	<2	50	50	Colorless	Colorless	Clear	Clear	MP86790,MP86791,X*	2
Q2552-04	WS0725-PT-TM-WS	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	3

WORKLIST(Hardcopy Internal Chain)

Worklist Name : PB169290

Worklist ID : 191328

Department : Digestion

Date : 08-17-2025 12:00:32

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q2552-04	WS0725-PT-TM-WS	Water	Metals Group7	1:1 HNO3 to pH < 2	ALLI03	QA Of	07/07/2025	200.8

Date/Time 08/17/25 12:15

Raw Sample Received by: S/Smelt d.19

Raw Sample Relinquished by: CP com

Date/Time 08/17/25 13:15

Raw Sample Received by: CP com

Raw Sample Relinquished by: 3 hrs mct d.19

Instrument ID: P7

Daily Analysis Runlog For Sequence/QC Batch ID # LB136878

Review By	Janvi	Review On	8/20/2025 9:30:40 AM
Supervise By	MOHAN	Supervise On	8/21/2025 1:51:04 PM
STD. NAME	STD REF.#		
ICAL Standard	MP86739,MP86789,MP86788,MP86745,MP86744,MP86743,MP86742,MP86741,MP86740		
ICV Standard	MP86863,MP86788		
CCV Standard	MP86794		
ICSA Standard	MP86746,MP86747		
CRI Standard	MP86788		
LCS Standard			
Chk Standard	MP86750,MP86748		

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	TUNE	TUNE	TUNE	08/18/25 12:47		Jaswal	OK
2	S0	S0	CAL1	08/18/25 13:22		Jaswal	OK
3	S2	S2	CAL3	08/18/25 13:28		Jaswal	OK
4	S3	S3	CAL4	08/18/25 13:31		Jaswal	OK
5	S4	S4	CAL5	08/18/25 13:34		Jaswal	OK
6	S5	S5	CAL6	08/18/25 13:37		Jaswal	OK
7	S6	S6	CAL7	08/18/25 13:40		Jaswal	OK
8	S7	S7	CAL8	08/18/25 13:43		Jaswal	OK
9	S8	S8	CAL9	08/18/25 13:46		Jaswal	OK
10	ICV01	ICV01	ICV	08/18/25 15:56		Jaswal	OK
11	ICB01	ICB01	ICB	08/18/25 16:02		Jaswal	OK
12	ICSA01	ICSA01	ICSA	08/18/25 16:05		Jaswal	OK
13	ICSAB01	ICSAB01	ICSAB	08/18/25 16:10		Jaswal	OK
14	CCV01	CCV01	CCV	08/18/25 16:13		Jaswal	OK
15	CCB01	CCB01	CCB	08/18/25 16:18		Jaswal	OK
16	CRI	CRI	CRDL	08/18/25 16:21		Jaswal	OK
17	PB169290BL	PB169290BL	MB	08/18/25 16:24		Jaswal	OK
18	PB169290BS	PB169290BS	LCS	08/18/25 16:27		Jaswal	OK

Instrument ID: P7

Daily Analysis Runlog For Sequence/QC Batch ID # LB136878

Review By	Janvi	Review On	8/20/2025 9:30:40 AM
Supervise By	MOHAN	Supervise On	8/21/2025 1:51:04 PM

STD. NAME	STD REF.#
ICAL Standard	MP86739,MP86789,MP86788,MP86745,MP86744,MP86743,MP86742,MP86741,MP86740
ICV Standard	MP86863,MP86788
CCV Standard	MP86794
ICSA Standard	MP86746,MP86747
CRI Standard	MP86788
LCS Standard	
Chk Standard	MP86750,MP86748

19	Q2552-04	WS0725-PT-TM-WS	SAM	08/18/25 16:41		Jaswal	OK
20	CCV02	CCV02	CCV	08/18/25 16:49		Jaswal	OK
21	CCB02	CCB02	CCB	08/18/25 17:03		Jaswal	OK

Prep Standard - Chemical Standard Summary

Order ID : Q2552
Test : Metals Group7
Prepbatch ID : PB169290,
Sequence ID/Qc Batch ID: LB136878,

Standard ID :
MP85156,MP86739,MP86740,MP86741,MP86742,MP86743,MP86744,MP86745,MP86746,MP86747,MP86748,MP86750,MP86787,MP86788,MP86789,MP86790,MP86791,MP86792,MP86793,MP86794,MP86863,

Chemical ID :
M5245,M5305,M5658,M5697,M5798,M5799,M5800,M5801,M5815,M5817,M5962,M5979,M5981,M6021,M6023,M6025,M6026,M6027,M6028,M6030,M6032,M6055,M6058,M6079,M6086,M6128,M6137,M6140,M6142,M6144,M6145,M6146,M6151,M6153,M6156,M6158,M6159,M6160,M6162,M6163,M6164,M6165,M6171,M6172,M6175,M6176,M6178,M6185,W3112,

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
170	1:1HCL	MP85156	04/07/2025	09/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal
								04/07/2025

FROM 1250.00000ml of M6151 + 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>
1122	ICPMS CALIB BLANK(S0/ICB/CCB)	MP86739	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIP ETTE_1 (ICP A)	Sarabjit Jaswal
								08/14/2025

FROM 25.00000ml of M6151 + 4925.00000ml of W3112 + 50.00000ml of M6162 = Final Quantity: 5000.000 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>
2902	S8 ICPMS	MP86740	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/14/2025
FROM 1.00000ml of M6159 + 2.50000ml of M6140 + 2.50000ml of M6142 + 5.00000ml of M6086 + 5.00000ml of M6171 + 5.00000ml of M6172 + 79.00000ml of MP86739 = 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>
3947	S7(SFAM,6020,200.8)	MP86741	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/14/2025
FROM 0.10000ml of M6153 + 0.40000ml of M6026 + 1.00000ml of M5799 + 1.00000ml of M5981 + 1.00000ml of M6079 + 1.00000ml of M6137 + 1.90000ml of M6159 + 10.00000ml of M5979 + 10.00000ml of M6162 + 10.00000ml of M6178 + 2.00000ml of M5815 + 2.00000ml of M5817 + 4.00000ml of M6032 + 4.90000ml of M6140 + 4.90000ml of M6142 + 47.00000ml of M5305 + 47.00000ml of M6175 + 5.00000ml of M6151 + 834.10000ml of W3112 + 9.00000ml of M5697 + 9.00000ml of M6128 + 9.00000ml of M6145 + 9.90000ml of M6086 + 9.90000ml of M6171 + 9.90000ml of M6172 = Final Quantity: 1000.000 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>
3948	S6(SFAM,6020,200.8)	MP86742	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/14/2025
FROM 0.50000ml of M6151 + 1.00000ml of M6162 + 48.50000ml of W3112 + 50.00000ml of MP86741 = 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>
3949	S5(SFAM,6020,200.8)	MP86743	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/14/2025
FROM 0.50000ml of M6151 + 1.00000ml of M6162 + 73.50000ml of W3112 + 25.00000ml of MP86741 = 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>
3954	S4(SFAM,6020,200.8)	MP86744	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/14/2025
FROM 0.50000ml of M6151 + 1.00000ml of M6162 + 86.00000ml of W3112 + 12.50000ml of MP86741 = 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>
3951	S3(SFAM, 6020,200.8)	MP86745	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/14/2025
FROM 0.50000ml of M6151 + 1.00000ml of M6162 + 88.50000ml of W3112 + 10.00000ml of MP86742 = 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>
1142	ICSA ICPMS	MP86746	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP	Sarabjit Jaswal

A)

FROM 10.00000ml of M6185 + 90.00000ml of MP86739 = 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>
1143	ICSAB ICPMS	MP86747	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP	Sarabjit Jaswal

A)

FROM 10.00000ml of M5245 + 10.00000ml of M6185 + 80.00000ml of MP86739 = 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>
3962	MG 10PPM FOR TUNE	MP86748	08/12/2025	08/26/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP	Sarabjit Jaswal

A)

FROM 0.01000ml of M6171 + 9.99000ml of MP86739 = 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>
3894	TUNE 200PPB	MP86750	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP	Sarabjit Jaswal

A)

FROM 2.00000ml of M6055 + 2.00000ml of MP86748 + 96.00000ml of MP86739 = 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>
3955	S2CONC(SFAM,6020,200.8)	MP86787	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/18/2025
FROM 0.05000ml of M5798 + 0.05000ml of M5800 + 0.05000ml of M5801 + 0.05000ml of M5981 + 0.05000ml of M6023 + 0.05000ml of M6025 + 0.05000ml of M6027 + 0.05000ml of M6028 + 0.05000ml of M6030 + 0.05000ml of M6079 + 0.05000ml of M6128 + 0.05000ml of M6176 + 0.10000ml of M5658 + 0.10000ml of M5697 + 0.10000ml of M6146 + 0.10000ml of M6159 + 0.25000ml of M5799 + 0.25000ml of M5962 + 0.25000ml of M5979 + 0.25000ml of M6021 + 0.25000ml of M6140 + 0.25000ml of M6145 + 0.25000ml of M6178 + 0.50000ml of M6032 + 0.50000ml of M6137 + 1.25000ml of M5815 + 1.25000ml of M5817 + 1.25000ml of M6151 + 2.50000ml of M6086 + 2.50000ml of M6142 + 2.50000ml of M6162 + 2.50000ml of M6171 + 2.50000ml of M6172 + 230.00000ml 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>
3956	S2(SFAM,6020,200.8)	MP86788	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/18/2025
FROM 0.25000ml of M6151 + 0.50000ml of M6162 + 49.00000ml of W3112 + 0.25000ml of MP86787 = 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>
3957	S1(SFAM,6020,200.8)	MP86789	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/18/2025

FROM 0.25000ml of M6151 + 0.50000ml of M6162 + 44.25000ml of W3112 + 5.00000ml of MP86788 = 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>
3880	M&B SPIKE-1	MP86790	08/12/2025	09/02/2025	Janvi Patel	None	None	Sarabjit Jaswal 08/18/2025

FROM 5.00000ml of M5658 + 5.00000ml of M5798 + 5.00000ml of M5800 + 5.00000ml of M5962 + 5.00000ml of M5981 + 5.00000ml of M6021 + 5.00000ml of M6023 + 5.00000ml of M6027 + 5.00000ml of M6028 + 5.00000ml of M6030 + 5.00000ml of M6079 + 5.00000ml of M6160 + 5.00000ml of M6176 + 32.50000ml of MP86739 = 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>
3881	M&B SPIKE-2	MP86791	08/12/2025	09/02/2025	Janvi Patel	None	None	Sarabjit Jaswal
								08/18/2025

FROM 10.00000ml of M5979 + 10.00000ml of M6178 + 12.50000ml of M6032 + 12.50000ml of M6140 + 12.50000ml of M6142 + 2.50000ml of M5799 + 2.50000ml of M6137 + 5.00000ml of M6159 + 32.50000ml of MP86739 = 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>
3882	M&B SPIKE-3	MP86792	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal
								08/18/2025

FROM 0.62500ml of M6026 + 12.50000ml of M5697 + 12.50000ml of M6128 + 12.50000ml of M6145 + 11.87500ml of MP86739 = 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>
3900	M&B SPIKE-4	MP86793	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/18/2025
FROM 6.25000ml of M6086 + 6.25000ml of M6171 + 6.25000ml of M6172 + 6.25000ml of MP86739 = Final Quantity: 25.000 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>
3961	CCV	MP86794	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/18/2025
FROM 0.20000ml of M6026 + 0.50000ml of M5799 + 0.50000ml of M5981 + 0.50000ml of M6079 + 0.50000ml of M6137 + 0.50000ml of M6176 + 1.00000ml of M5815 + 1.00000ml of M5817 + 10.00000ml of M6162 + 12.45000ml of M6140 + 12.45000ml of M6142 + 2.00000ml of M6032 + 24.95000ml of M6086 + 24.95000ml of M6144 + 24.95000ml of M6171 + 25.00000ml of M6175 + 4.50000ml of M5697 + 4.50000ml of M6128 + 4.50000ml of M6145 + 4.95000ml of M6159 + 5.00000ml of M6151 + 5.50000ml of M5979 + 5.50000ml of M6178 + 824.10000ml of W3112 = Final Quantity: 1000.000 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>
4213	NEW ICV-6020B	MP86863	08/12/2025	09/02/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/25/2025
FROM	0.00800ml of M6164 + 0.00800ml of M6165 + 0.01600ml of M6163 + 0.02500ml of M6058 + 0.22500ml of M6156 + 49.71800ml of MP86739 = 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 #
EPA	PART B / ICSB (ICPMS) STOCK SOLUTION	CP-MS ICSB-0803	07/01/2026	07/02/2025 / jaswal	02/20/2020 / jaswal	M5245

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	6020CAL-1 / Calibration Standard Method 6020	S2-MEB711244	10/20/2026	03/07/2025 / JANVI	04/01/2022 / jaswal	M5305

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

CHEMICAL RECEIPT LOG BOOK

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57115 / P, 10000 PPM, 125 ml	041723	04/17/2026	05/21/2024 / Jaswal	02/09/2024 / jaswal	M5815

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57116 / S, 10000 PPM, 125 ml	071123	07/11/2026	03/01/2024 / jaswal	02/09/2024 / jaswal	M5817

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57034 / Se, 1000 PPM, 125 ml	060624	06/06/2027	07/02/2024 / Jaswal	06/14/2024 / Jaswal	M5962

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGTI1-1 / TITANIUM 125mL 1000ug/mL	T2-TI719972	08/05/2026	08/06/2025 / Janvi	02/22/2024 / Jaswal	M5979

CHEMICAL RECEIPT LOG BOOK

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

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57082 / Pb, 1000 PPM, 125 ml	061224	11/09/2026	08/05/2024 / Jaswal	08/05/2024 / Jaswal	M6025

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

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

CHEMICAL RECEIPT LOG BOOK

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	IV-STOCK-12 / ICP-MS TUNING SOLUTION, 125mL	U2-MEB734294	06/21/2028	08/21/2024 / Jaswal	08/19/2024 / Jaswal	M6055

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 #
Absolute Standards, Inc.	57040 / Zr, 1000 PPM, 125 ml	071423	07/14/2026	01/15/2025 / Jaswal	09/30/2024 / Jaswal	M6079

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.	58111 / Na, 10000 PPM, 500 ml	072424	07/24/2027	01/23/2025 / kareem	01/13/2025 / Jaswal	M6144

CHEMICAL RECEIPT LOG BOOK

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
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 #
Inorganic Ventures	CGSR10 / Strontium (SR), 125mL 10,000ppm	V2-SR754329	02/28/2026	02/28/2025 / JANVI	01/07/2025 / JANVI	M6153

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	09/09/2025	03/10/2025 / Eman	02/02/2025 / Sagar	M6158

CHEMICAL RECEIPT LOG BOOK

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 #
Absolute Standards, Inc.	57051 / Sb, 1000 PPM, 125 ml	071724	07/17/2027	03/24/2025 / kareem	10/18/2024 / kareem	M6160

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	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

CHEMICAL RECEIPT LOG BOOK

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 / Janvi	02/13/2025 / Janvi	M6171

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	6020CAL-1 / Calibration Standard Method 6020	V2-MEB742014	07/17/2026	07/17/2025 / Janvi	01/27/2025 / Janvi	M6175

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.	57042 / Mo, 1000 PPM, 125 ml	080528	08/05/2028	08/06/2025 / Janvi	08/06/2025 / Janvi	M6178

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	PART A / ICSA (ICPMS) STOCK SOLN	MS ICSA-0803	07/01/2026	07/02/2025 / Janvi	07/14/2022 / Janvi	M6185

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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Certified Reference Material CRM

M6032



CERTIFIED WEIGHT REPORT:

Part Number:	57056	Lot #	
Lot Number:	010924	Solvent:	Nitric Acid
Description:	Barium (Ba)		
Expiration Date:	010927	2%	40.0 (mL)
Recommended Storage:	Ambient (20 °C)		Nitric Acid
Nominal Concentration (µg/mL):	1000		
NIST Test Number:	6UTB	5E-05	Balance Uncertainty
Weight shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty

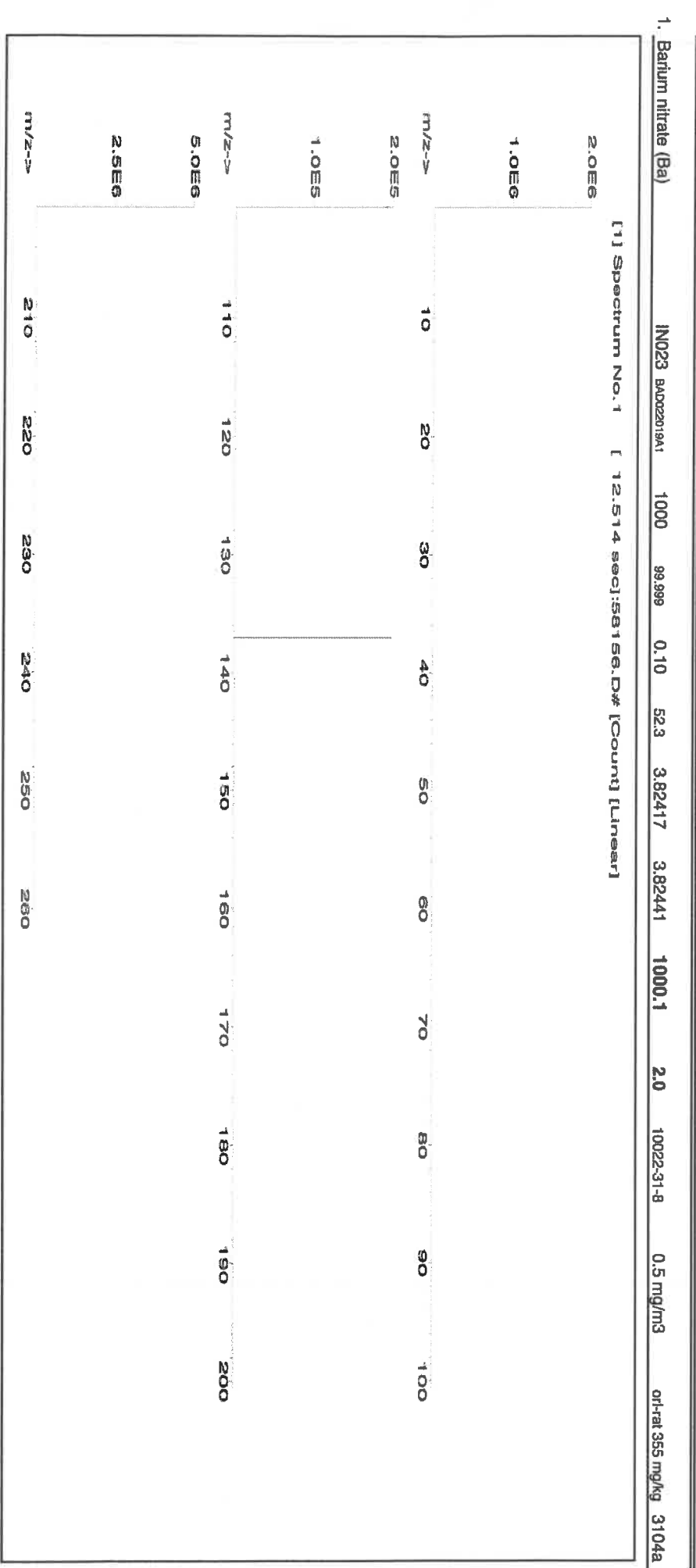
Formulated By: Giovanni Esposito

010924

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 2/10/14/2021 M6085 / M6086 / M6087

CERTIFIED WEIGHT REPORT:

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

Solvent: 24002546 Nitric Acid

Lot #

2% 80.0 (mL) Nitric Acid

Expiration Date: 082327

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 10000

NIST Test Number: 6UTB

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

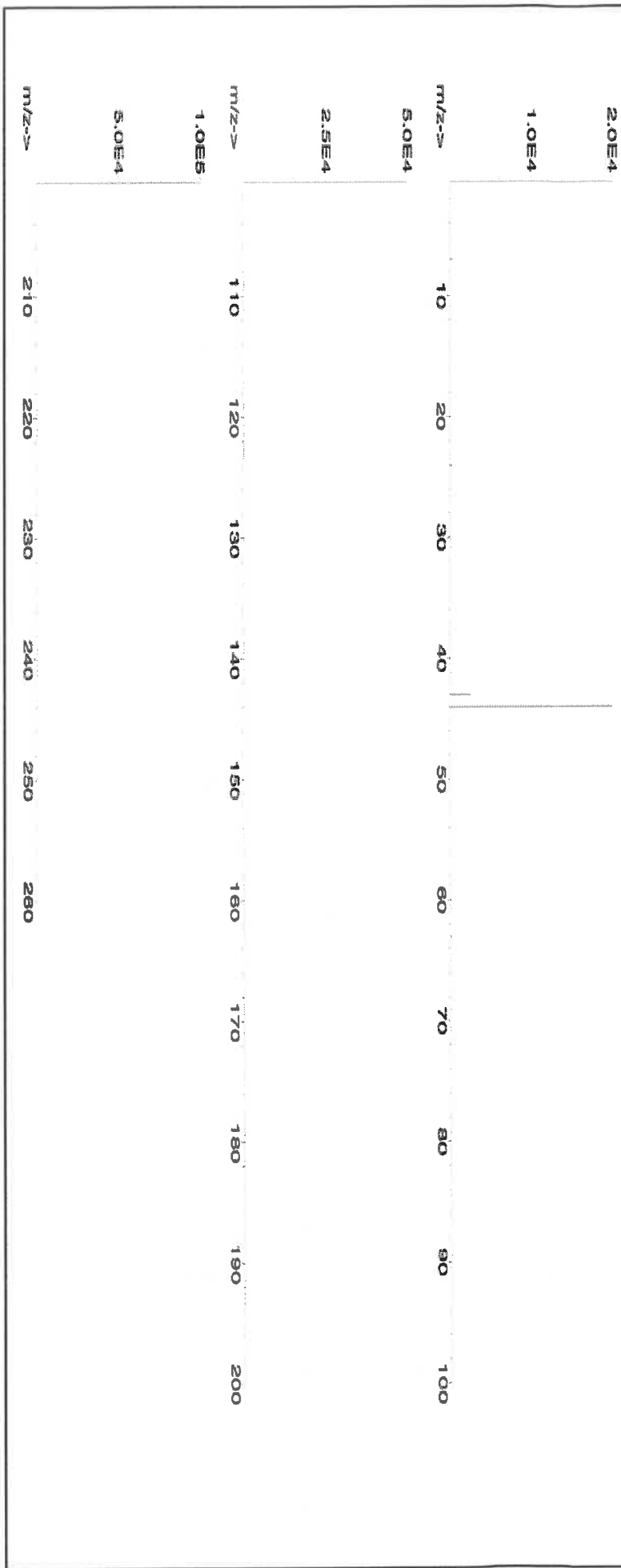
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	Pedro L. Rentas
	082324

SDS Information

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	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	Ba	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	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	Sa	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



M6028



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57048
070124
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

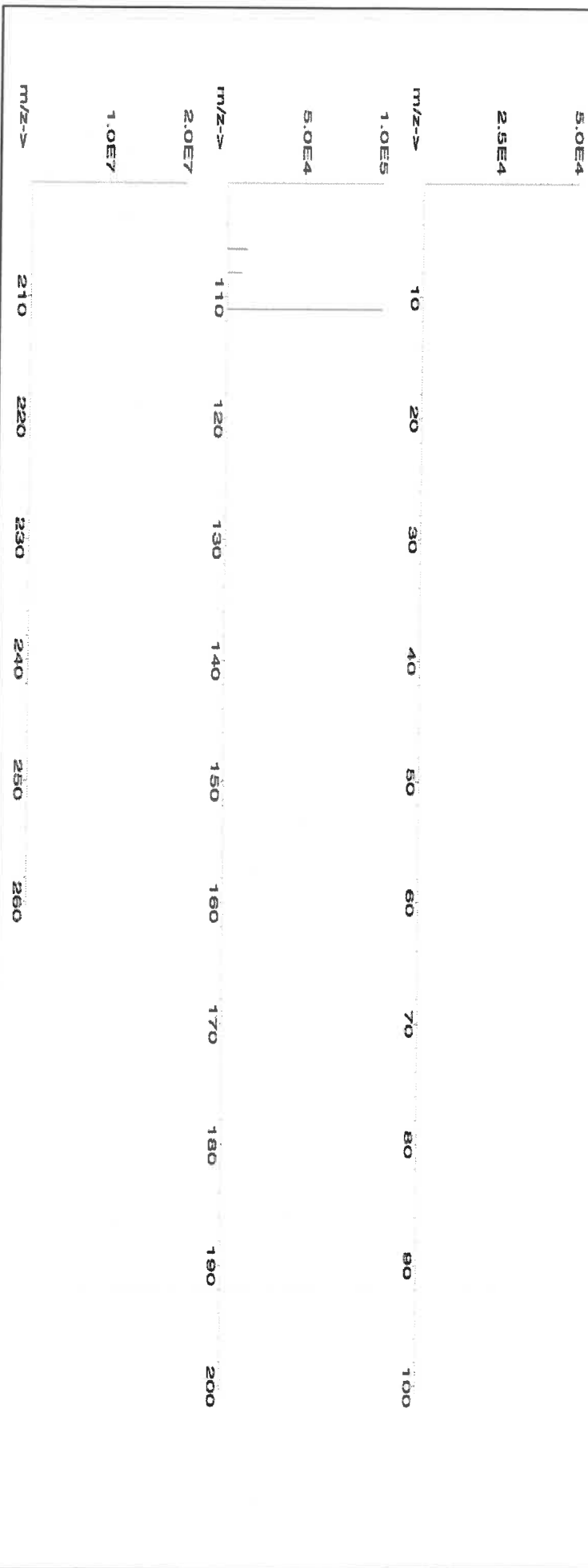
<i>Aleah O'Brady</i>	
Formulated By:	Aleah O'Brady
	070124
<i>Pedro L. Rentas</i>	
Reviewed By:	Pedro L. Rentas
	070124

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. 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 ref rat 60.2mg/kg 3108

[T1 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).



Instructions for QATS Reference Material: *ICP-MS ICS*

**QATS LABORATORY INORGANIC REFERENCE MATERIAL
INTERFERENCE CHECK SAMPLE SET FOR ICP-MS (ICSA WITH ICSB)**

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.

Contains Heavy Metals
HAZARDOUS MATERIAL

Safety Data Sheets
Available Upon Request

(A) SAMPLE DESCRIPTION

Enclosed is a set of one (1) or more bottles of an 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-0803" and for the ICSAB mixture use "ICSA-0803+ICSB-0803".**

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

This interference check sample set is to be used to verify elemental isobaric correction factors of inductively coupled plasma-mass spectrometers (ICP-MS). This reference material set consists of two (2) concentrated solutions. The ICSA solution contains several interferent elements and species; for a complete listing refer to the CLP SOW. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for the ICP-MS ICS 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-0803, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 1% v/v HNO₃. Analyze this solution by ICP-MS.

ICSB-0803, Analytes, mixed with ICSA-0803, 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 1% v/v HNO₃. Analyze this ICSAB solution by ICP-MS.

(D) "CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-MS 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-MS ICSA-0803, AND ICSA-0803 MIXED WITH ICSB-0803							
Element	CRQL	Part A (µg/L)	Lower Limit (µg/L)	Upper Limit (µg/L)	Part A +Part B (µg/L)	Lower Limit (µg/L)	Upper Limit (µg/L)
Al	20	[100000]			[100000]		
Sb	2.0	(1.5)	-2.5	5.5	(22.0)	18.0	26.0
As	1.0	(0.10)	-1.9	2.1	19.0	16.2	21.9
Ba	10	(1.2)	-18.8	21.2	(22.0)	2.0	42.0
Be	1.0	(0.0)	-2.0	2.0	19.0	16.2	21.9
Cd	1.0	(0.70)	-1.3	2.7	20.0	17.0	23.0
Ca	500	[100000]			[100000]		
C		[200000]			[200000]		
Cl		[1000000]			[1000000]		
Cr	2.0	(21.0)	17.0	25.0	40.0	34.0	46.0
Co	1.0	(1.0)	-1.0	3.0	20.0	17.0	23.0
Cu	2.0	(8.0)	4.0	12.0	(25.0)	21.0	29.0
Fe	200	[100000]			[100000]		
Pb	1.0	(4.0)	2.0	6.0	25.0	21.3	28.8
Mg	500	[100000]			[100000]		
Mn	1.0	(7.0)	5.0	9.0	27.0	23.0	31.1
Mo		[2000]			[2000]		
Ni	1.0	(6.0)	4.0	8.0	24.0	20.4	27.6
P		[100000]			[100000]		
K	500	[100000]			[100000]		
Se	5.0	(0.30)	-9.7	10.0	(19.0)	9.0	29.0
Ag	1.0	(0.0)	-2.0	2.0	18.0	15.3	20.7
Na	500	[100000]			[100000]		
S		[100000]			[100000]		
Tl	1.0	(0.0)	-2.0	2.0	21.0	17.9	24.2
Ti		[2000]			[2000]		
V	5.0	(0.50)	-9.5	10.5	(19.0)	9.0	29.0
Zn	5.0	(11.0)	1.0	21.0	(29.0)	19.0	39.0

[] Indicates analytes that do not require ICP-MS determination in the ICS.

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 2 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.

ICSA:
M5244

ICSB:
M5245



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

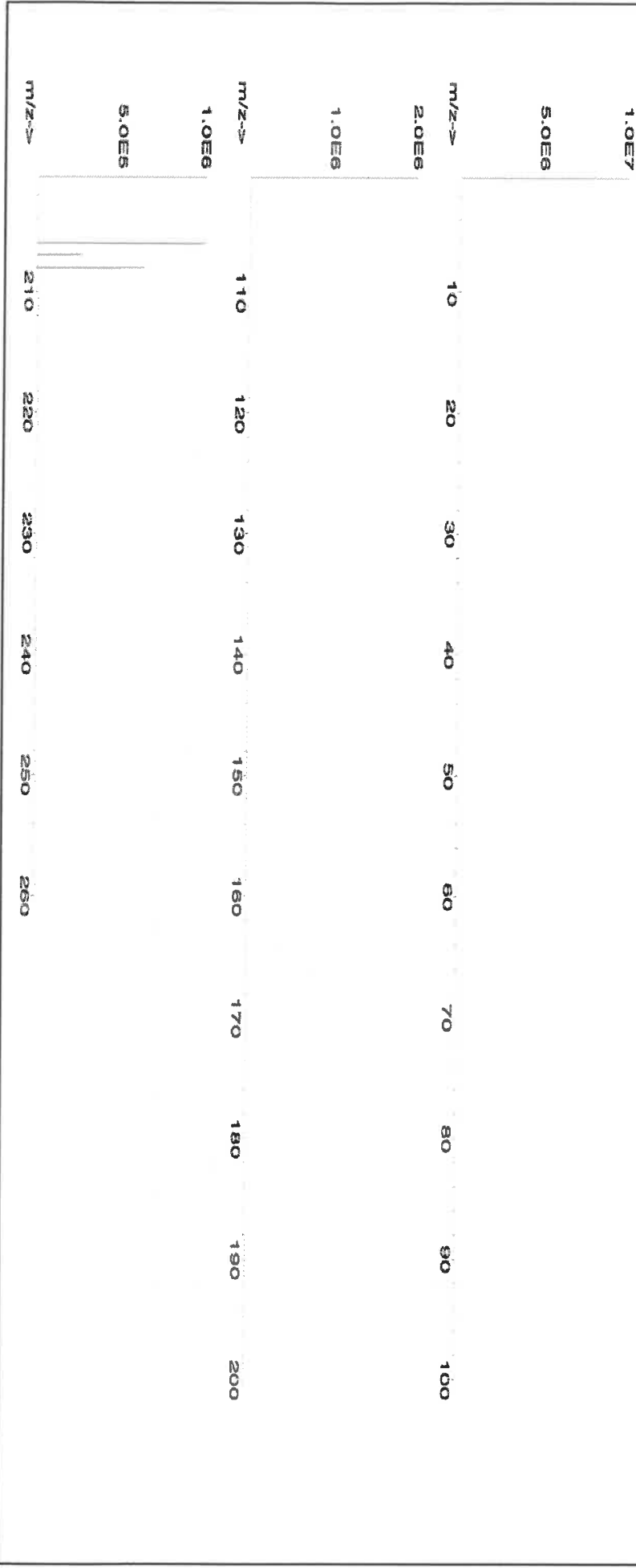
Part Number: **57182**
Lot Number: **110923**
Description: **Lead (Pb)**
Solvent: **24002546 Nitric Acid**
Lot #: **M6025**

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

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

SDS Information									
Compound	Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Expanded
	Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Weight (g)	Conc. (µg/mL)	Uncertainty +/- (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	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

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.
- * 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**

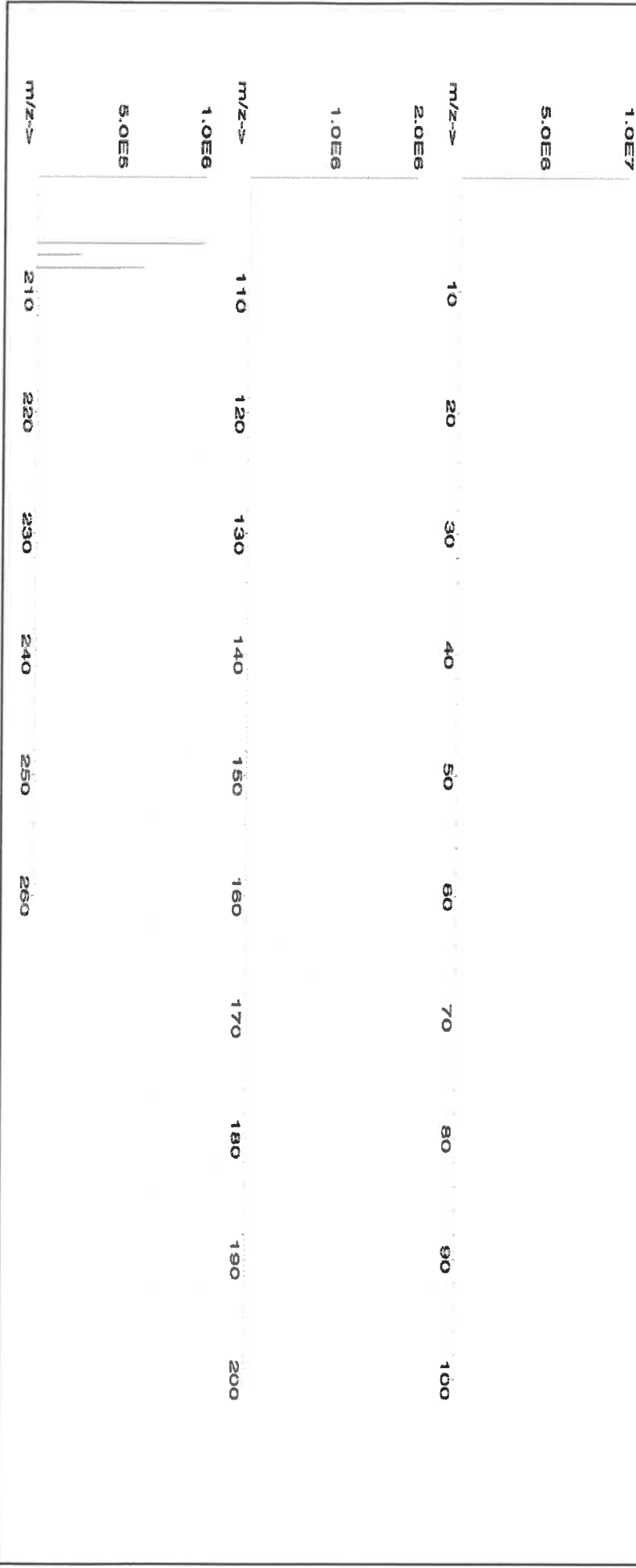
2%
40.0 (mL)
Nitric Acid

Weight shown below was diluted to (mL): **2000.02** 5E-05 Balance Uncertainty 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.
- * All standard containers are meticulously cleaned prior to use.
- * Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- * Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- * All Standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).



Refine your results. Redefine your industry.

Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: 6020CAL-1
Lot Number: S2-MEB711244
Matrix: 5% (v/v) HNO₃
tr. HF
Value / Analyte(s): 20 µg/mL ea:
Silver, Aluminum,
Arsenic, Barium,
Beryllium, Calcium,
Cadmium, Cobalt,
Chromium, Copper,
Iron, Potassium,
Magnesium, Manganese,
Sodium, Nickel,
Lead, Antimony,
Selenium, Thallium,
Vanadium, Zinc

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	20.01 ± 0.08 µg/mL	Antimony, Sb	20.01 ± 0.12 µg/mL
Arsenic, As	20.01 ± 0.18 µg/mL	Barium, Ba	20.01 ± 0.11 µg/mL
Beryllium, Be	20.01 ± 0.14 µg/mL	Cadmium, Cd	20.01 ± 0.11 µg/mL
Calcium, Ca	20.01 ± 0.10 µg/mL	Chromium, Cr	20.01 ± 0.16 µg/mL
Cobalt, Co	20.01 ± 0.11 µg/mL	Copper, Cu	20.01 ± 0.10 µg/mL
Iron, Fe	20.01 ± 0.09 µg/mL	Lead, Pb	20.01 ± 0.11 µg/mL
Magnesium, Mg	19.99 ± 0.10 µg/mL	Manganese, Mn	20.01 ± 0.10 µg/mL
Nickel, Ni	20.01 ± 0.11 µg/mL	Potassium, K	20.01 ± 0.10 µg/mL
Selenium, Se	20.02 ± 0.14 µg/mL	Silver, Ag	20.02 ± 0.09 µg/mL
Sodium, Na	20.01 ± 0.10 µg/mL	Thallium, Tl	20.01 ± 0.13 µg/mL
Vanadium, V	20.01 ± 0.11 µg/mL	Zinc, Zn	20.01 ± 0.11 µg/mL

Density: 1.026 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
As	ICP Assay	3103a	100818
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
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
Fe	Calculated		See Sec. 4.2
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Tl	ICP Assay	3158	151215
Tl	Calculated		See Sec. 4.2
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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

October 20, 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

- **October 20, 2026**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Director, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





CERTIFIED WEIGHT REPORT:

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

Lot # 21110221
Solvent: Nitric Acid

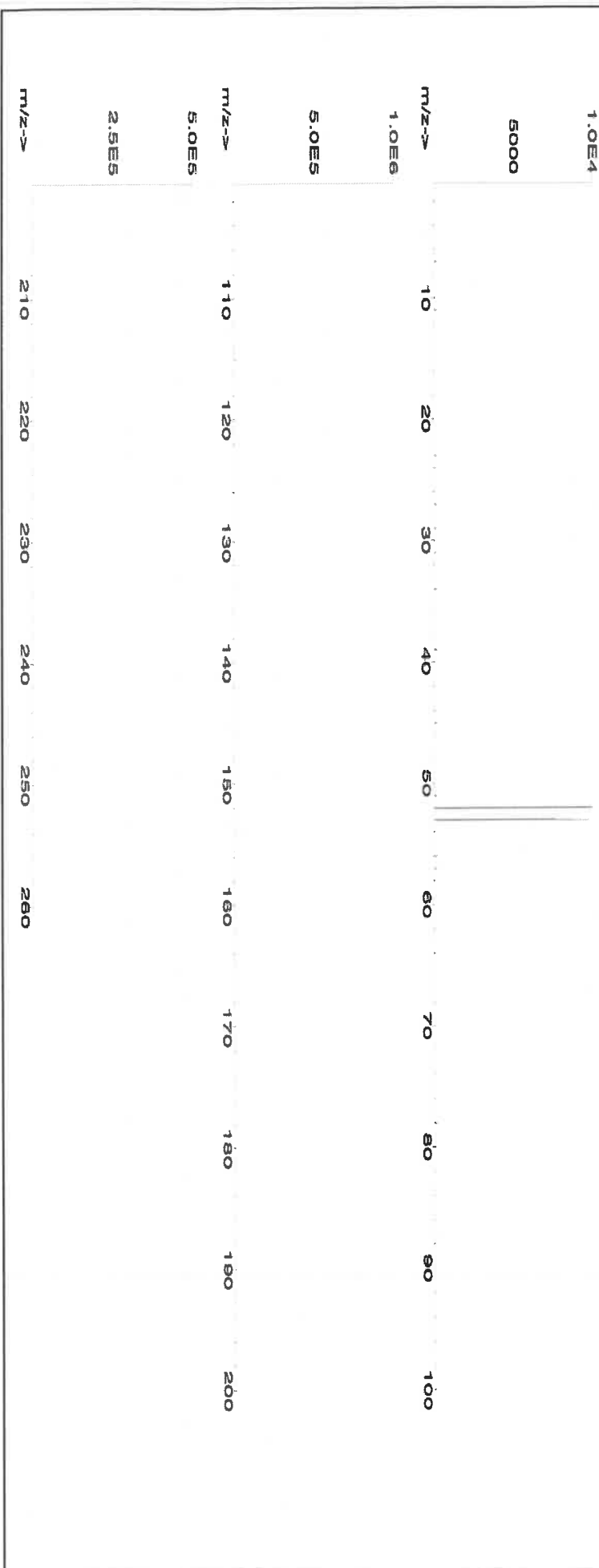
Formulated By:	Lawrence Barry
	060523
Reviewed By:	Pedro L. Ruelas
	060523

Expiration Date: 060526
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 2000.02
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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

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]





Certified Reference Material CRM



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

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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	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 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

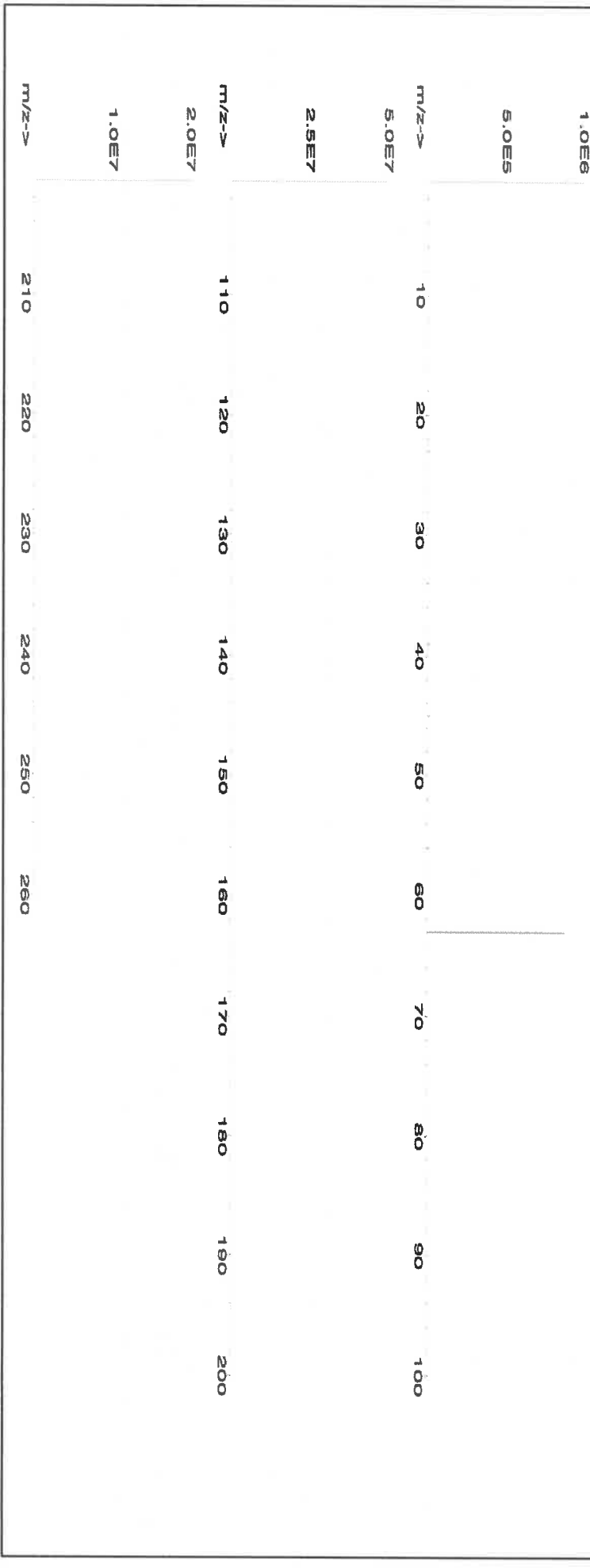
Formulated By:		Benson Chan	102523
Reviewed By:		Pedro L. Rentas	102523

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	Pt	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Si	<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	T	<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:

John P. Jones

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



CERTIFIED WEIGHT REPORT:

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

Lot # 24002546
Solvent: Nitric Acid

Expiration Date:

102526

2.0%

40.0 (mL)

Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL): 2000.02

5E-05 Balance Uncertainty

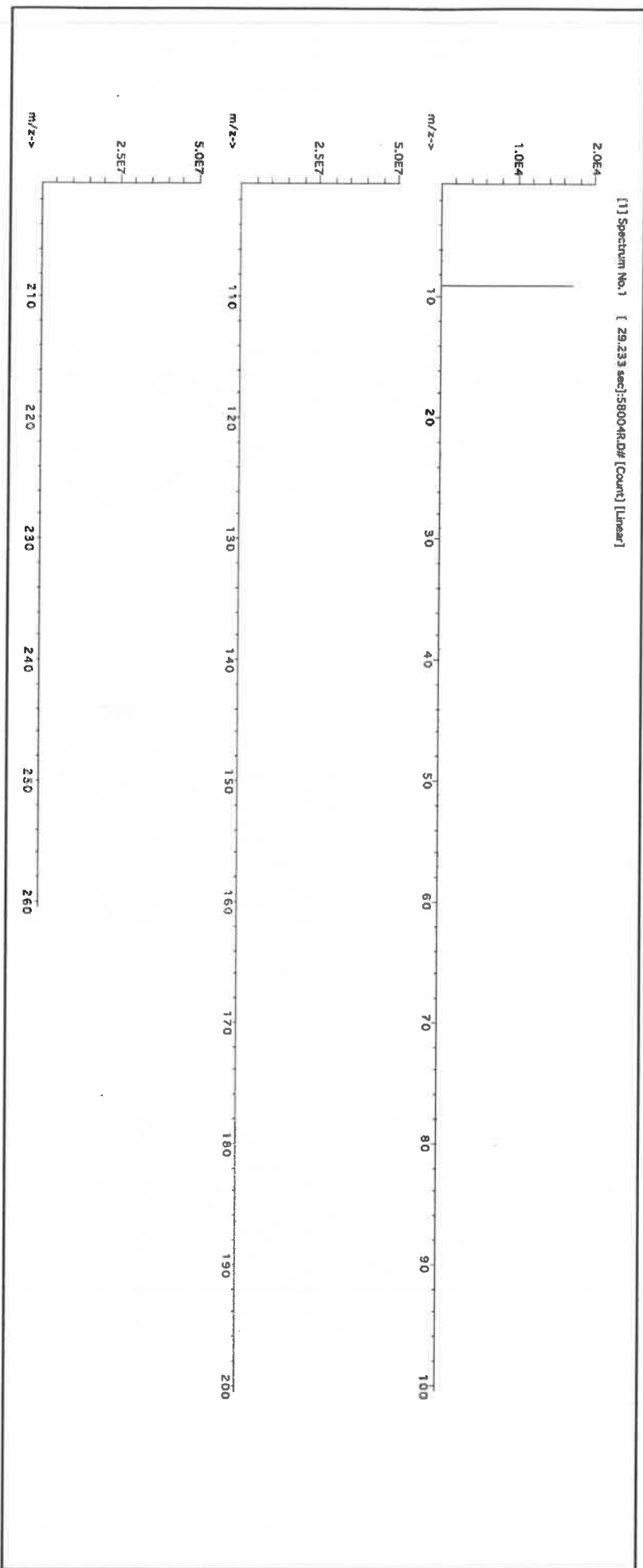
0.058 Flask Uncertainty

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

SDS Information

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

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:

- * 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).



Certified Reference Material CRM

CERTIFIED WEIGHT REPORT:

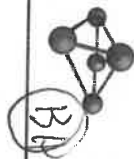
Part Number: 57050
Lot Number: 071123
Description: Tin (Sn)

Solvents: 21110221 Nitric Acid
22D0562008 Hydrochloric acid

Lot #

R-02509124

M599



Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000

2% 10.0 Nitric Acid
6% 30.0 Hydrochloric acid
(mL)

NIST Test Number: 6UTB

Weight shown below was diluted to (mL):

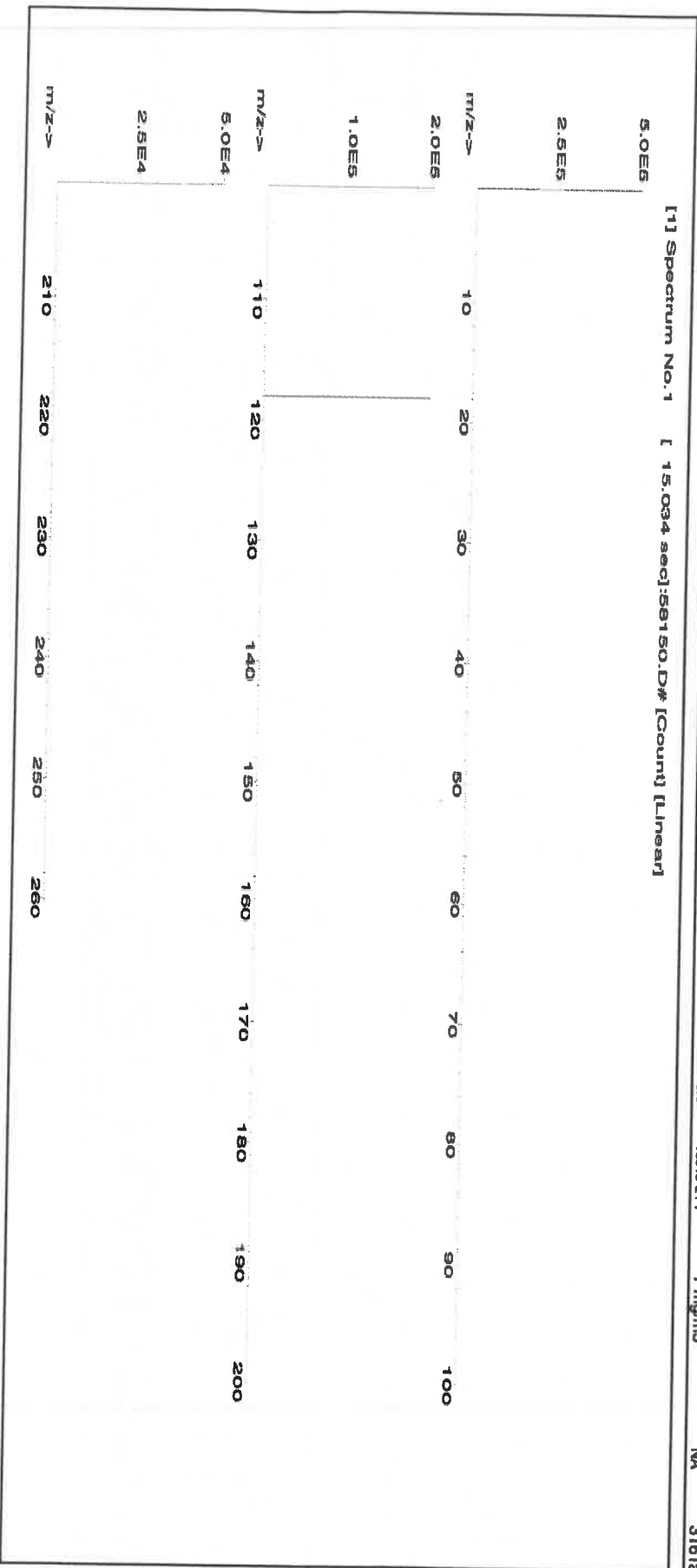
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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

Compound	Lot										NIST
	RM#	Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Actual	Actual	Uncertainty	

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	Ti	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<500	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Ta	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	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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- * 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)

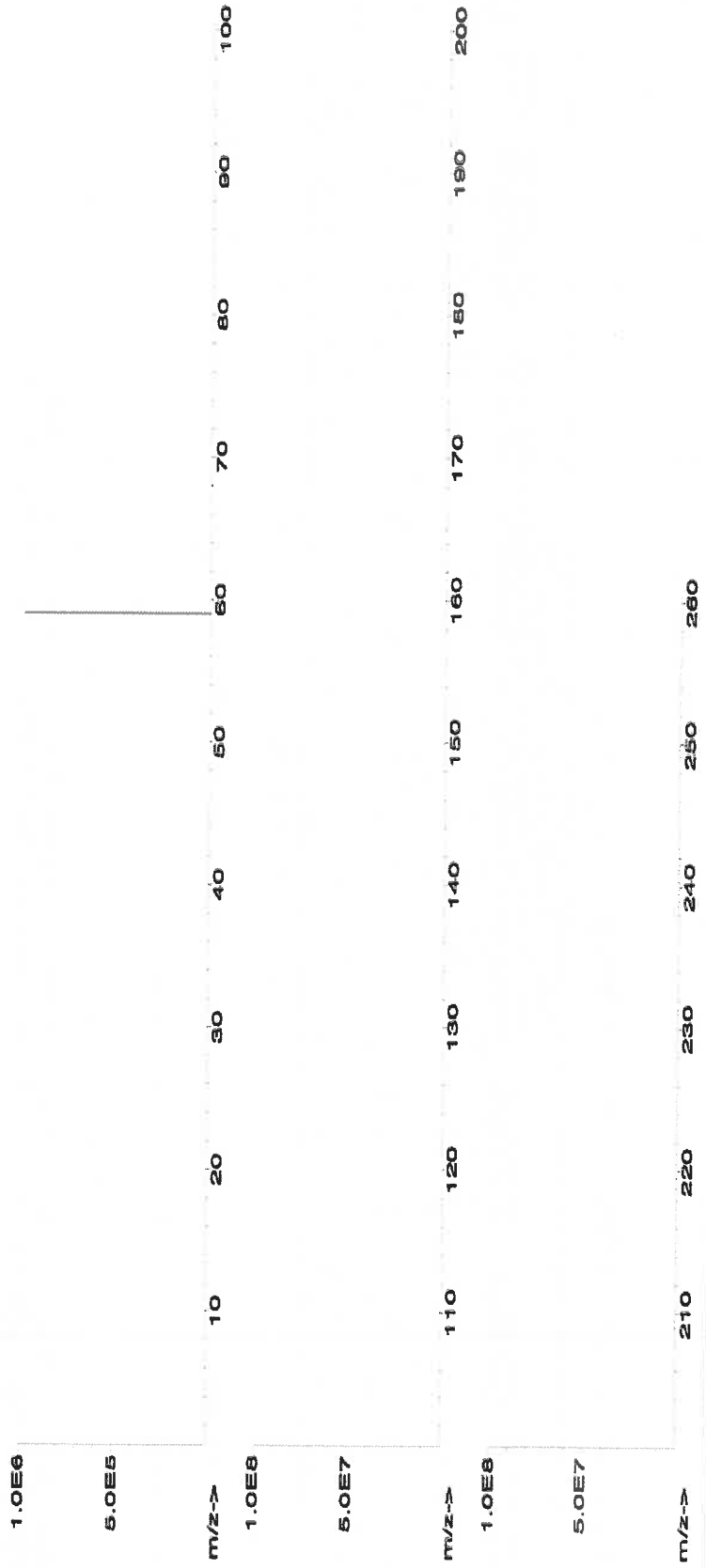
Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas

SDS Information

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

1. Cobalt(II) nitrate hexahydrate (Co) 58127 050923 0.1000 200.0 0.084 1000 10000.0 1000.0 2.2 10026-22-9 0.02 mg/m3 orl-rat 691 mg/kg 3113

[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:

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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: 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

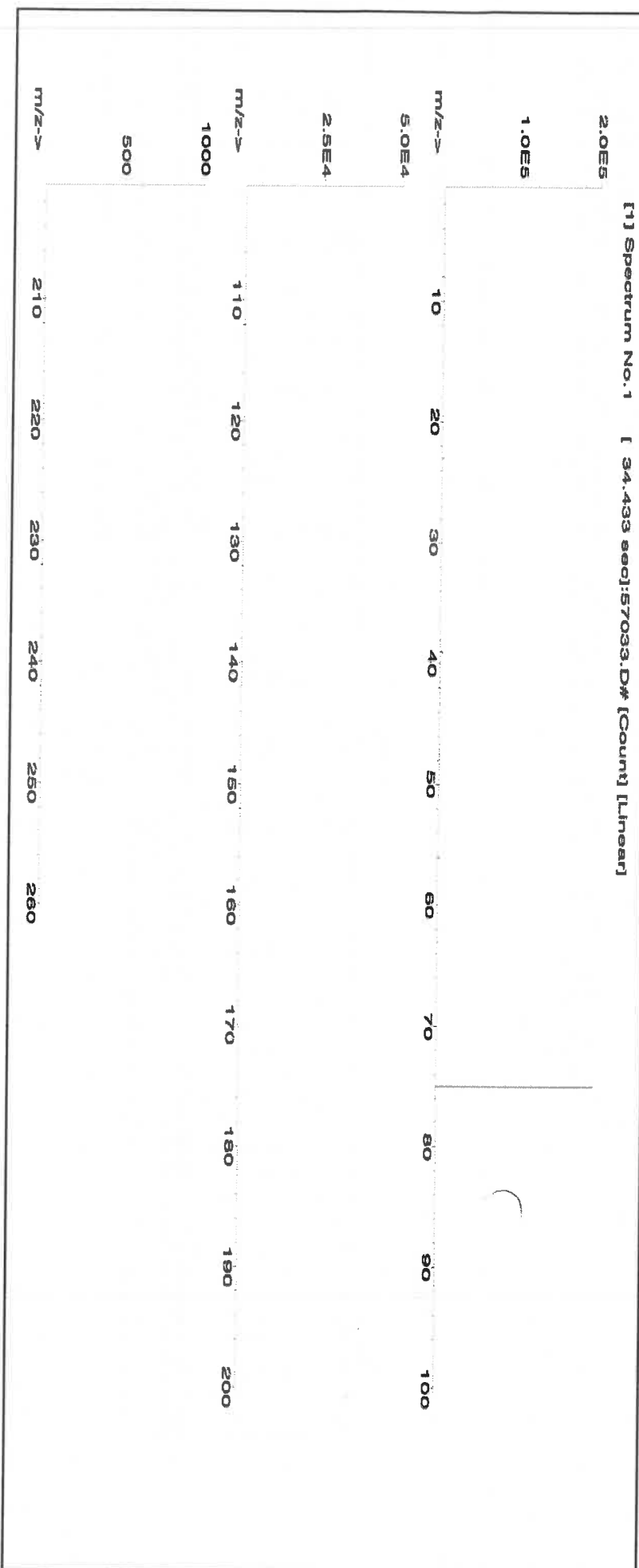
Balance Uncertainty: 5E-05
Flask Uncertainty: 0.06

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)	58133	020522	0.1000	400.0	0.084	1000	10001.0	1000.0	2.0
						7440-38-2	0.5 mg/m3	or rat 500 mg/kg	3103a

[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	Ru	<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	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	Pr	<0.02	Sm	<0.02	Ta	<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			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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- * 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:
Lot Number:
Description:

57115
041723
Phosphorous (P)

Solvent: 21110221 Nitric Acid

Lot #

R102109124 M5815

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

041726
Ambient (20 °C)
10000
6UTB

2% 40.0 (mL) Nitric Acid

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

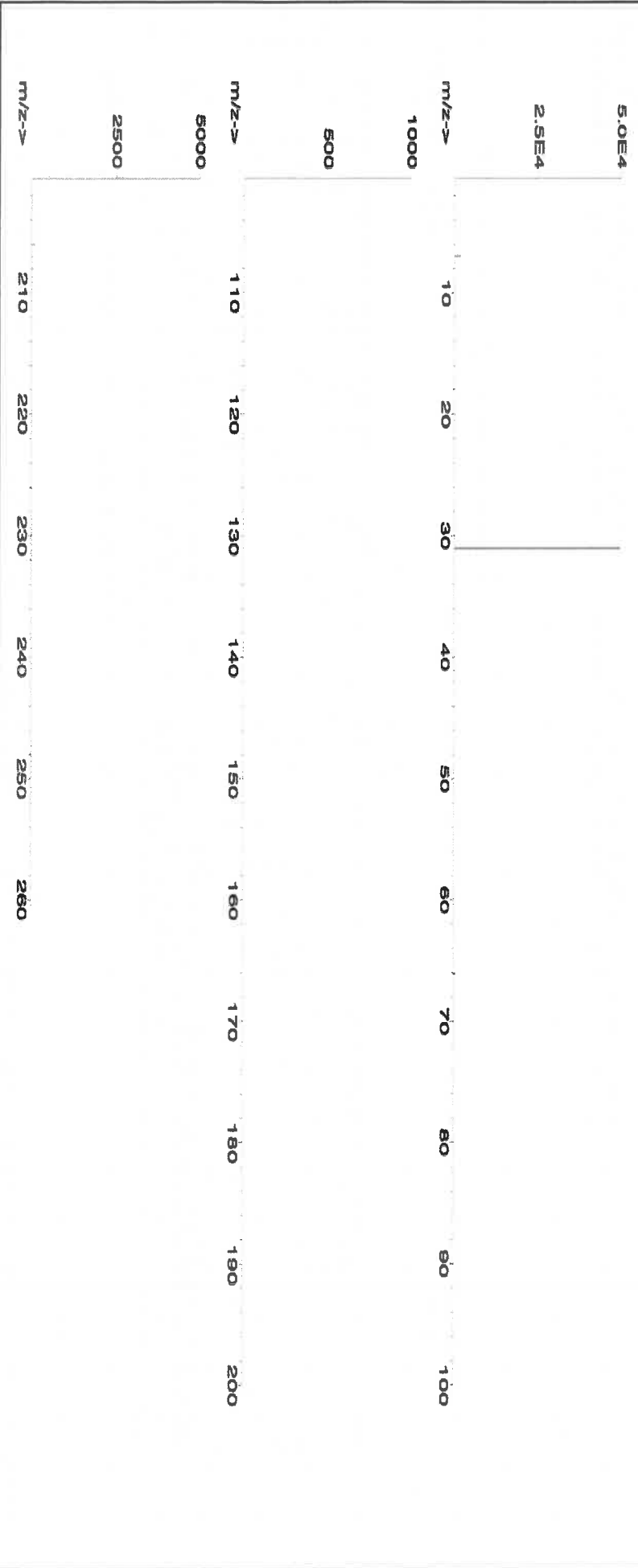
Formulated By:	Lawrence Barry
	041723
Reviewed By:	Pedro L. Rentas
	041723

Compound

RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Ammonium dihydrogen phosphate (P) IN008 PVR2019A1 10000 99.999 0.10 27.5 72.7287 72.7289 10000.0 20.0 7722-76-1 5 mg/m3 or-hal->2000mg/kg 3186

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





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	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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CERTIFIED WEIGHT REPORT:

Part Number: **57116**
Lot Number: **071123**
Description: **Sulfur (S)**

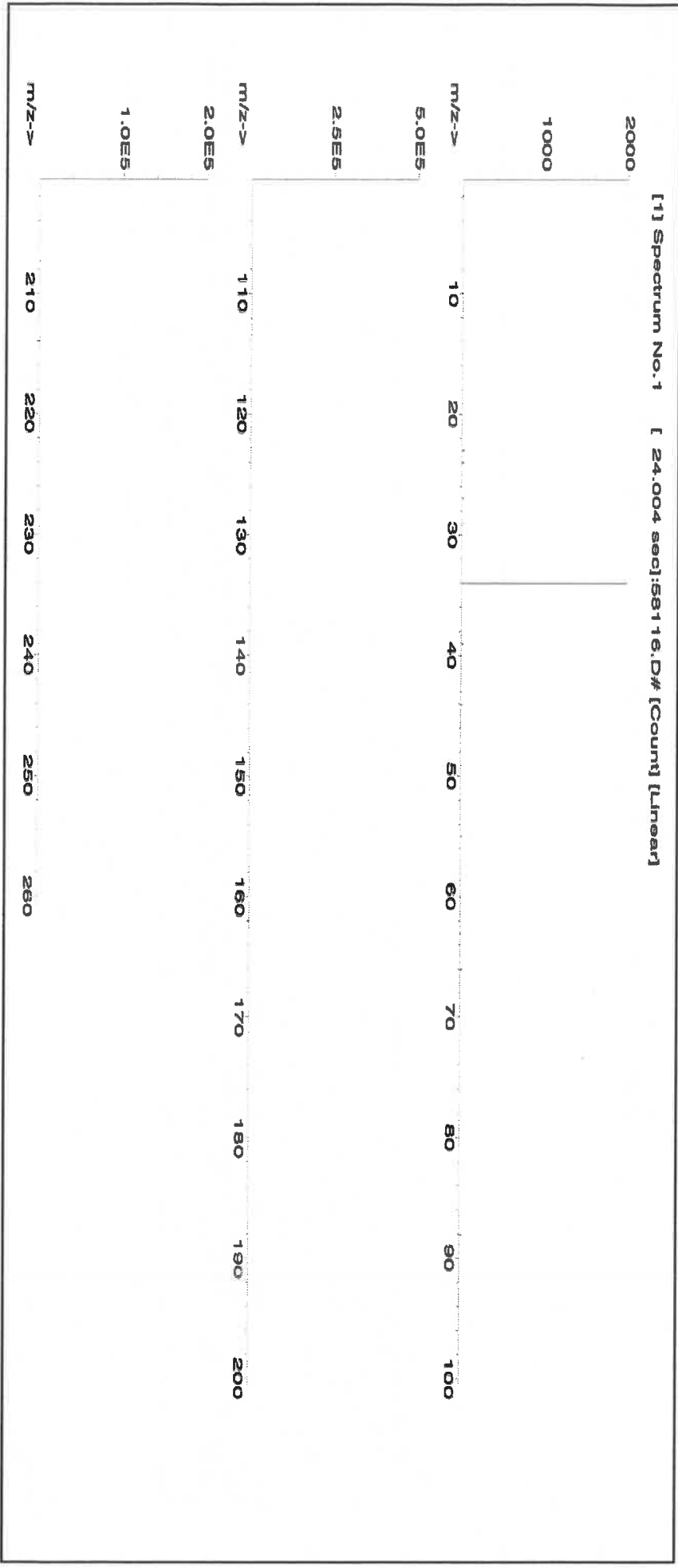
Solvent: **071123** Lot #
ASTM Type 1 Water

Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas
071123	

Expiration Date: **071126**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **10000**
NIST Test Number: **6UTB**
Weight shown below was diluted to (mL): **1999.48**
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

SDS Information									
Compound	Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Expanded
	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	10000	99.9	0.10	24.3	82.4675	82.4692	10000.1	20.0	7783-20-2	NA	oral 4250mg/kg	3181
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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	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	T	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

Physical Characterization:

(T)= Target analyte

Certified by:

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

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Absolute Standards, Inc.

800-368-1131
www.absolutestandards.com



Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

MS962 R10611424

Lot # 24002546 Solvent: Nitric Acid

Part Number: **57034**
Lot Number: **060624**
Description: **Selenium (Se)**

Expiration Date: 060627

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test Number: 6LUB

Volume shown below was diluted to (mL): 2000.07

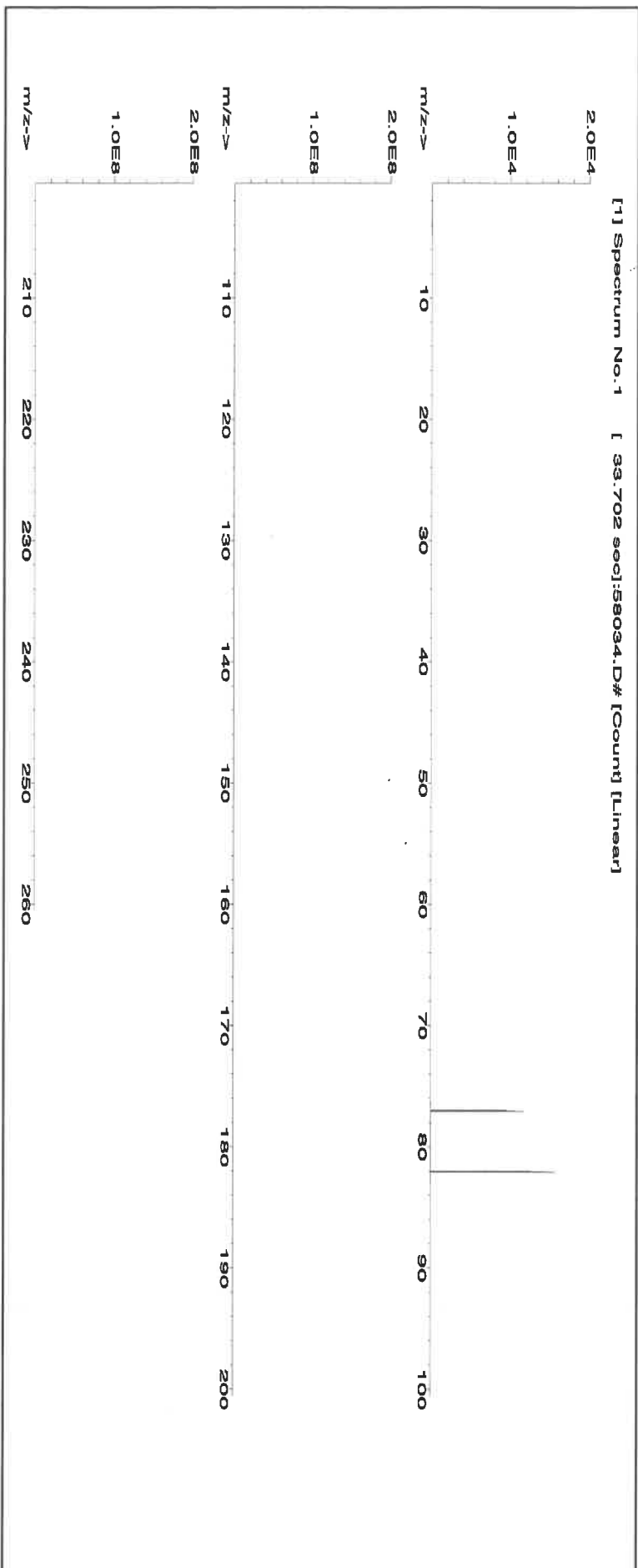
SE-05 Balance Uncertainty

0.100 Flask Uncertainty

2.0% 40.0 (mL) Nitric Acid

Formulated By:	Benson Chan	060624
Reviewed By:	Pedro L. Rantas	060624

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. 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





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.
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Certificate of Analysis

MS978, MS979

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



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: 2094

Certified Value: 99.9975%

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

Assay Method #1: 1002 ± 4 µg/mL

ICP Assay NIST SRM 3162a Lot Number: 130925

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

$u_{CRM} = \sqrt{u_{CRM,A}^2 + u_{CRM,B}^2 + u_{CRM,C}^2 + \dots + u_{CRM,N}^2}$

$u_{CRM} = \sqrt{u_{CRM,A}^2 + u_{CRM,B}^2 + u_{CRM,C}^2 + \dots + u_{CRM,N}^2}$

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$u_{CRM} = \sqrt{u_{CRM,A}^2 + u_{CRM,B}^2 + u_{CRM,C}^2 + \dots + u_{CRM,N}^2}$

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-MS and ICP-OES. 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 Te	<	0.001341			
O Ca	<	0.000676	M In	<	0.002683	M Pr	<	0.000268	M Th	<	0.053663			
M Cd	<	0.000268	M Ir	<	0.000269	M Pt	<	0.000536	S Ti	<	0.000268			
M Co	<	0.000268	M K	<	0.001172	M Rb	<	0.000268	M Tl	<	0.000268			
M Cr	<	0.000752	O Li	<	0.000268	M Re	<	0.000268	M Tm	<	0.000268			
M Cs	<	0.000268	M Lu	<	0.000268	M Rh	<	0.000268	M U	<	0.000268			
O Cu	<	0.010890	O Mg	<	0.005445	I S	<	0.006976	M Y	<	0.002146			
M Dy	<	0.000268	O Mn	<	0.003267	M Sb	<	0.004900	M Yb	<	0.000536			
M Er	<	0.000268	M Mo	<	0.000774	O Sc	<	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); K₂SiO₃ - no KF if silica not present); Organic Matrices (Dry ash at 450°C in P10 and dissolve by heating with 1:1:1 H₂O / HF / H₂SO₄ or fuse ash with pyrosulfate if oxide is as plastic pigment and likely in brookite crystaline form).

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

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 48 amu	14 ppt	N/A	32S16O, 32S14N, 14N16O18O, 14N17N2, 36Ar12C, 48Ca, [96X=2 (where X = Zr, Mo, Ru)]
ICP-OES 323.452 nm	0.0054 / 0.00092 µg/mL	1	Ce, Ar, Ni
ICP-OES 334.941 nm	0.0038 / 0.00028 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.

8.0

HOMOGENEITY

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

10.0

QUALITY STANDARD DOCUMENTATION

- 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.

10.1 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: _____

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS
- 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.

Certificate Approved By:

Thomas Kozlikowski
Manager, Quality Control

TD978L

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul R. Gaines



MS981

R: 6/11/24



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57092
060724
Uranium (U)

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

060727
Ambient (20 °C)
1000
6UTB

Volume shown below was diluted to (mL): 2000.07

5E-05 Balance Uncertainty
0.100 Flask Uncertainty

Lot # Solvent:
24002546 Nitric Acid

2.0% Nitric Acid
40.0 (mL)

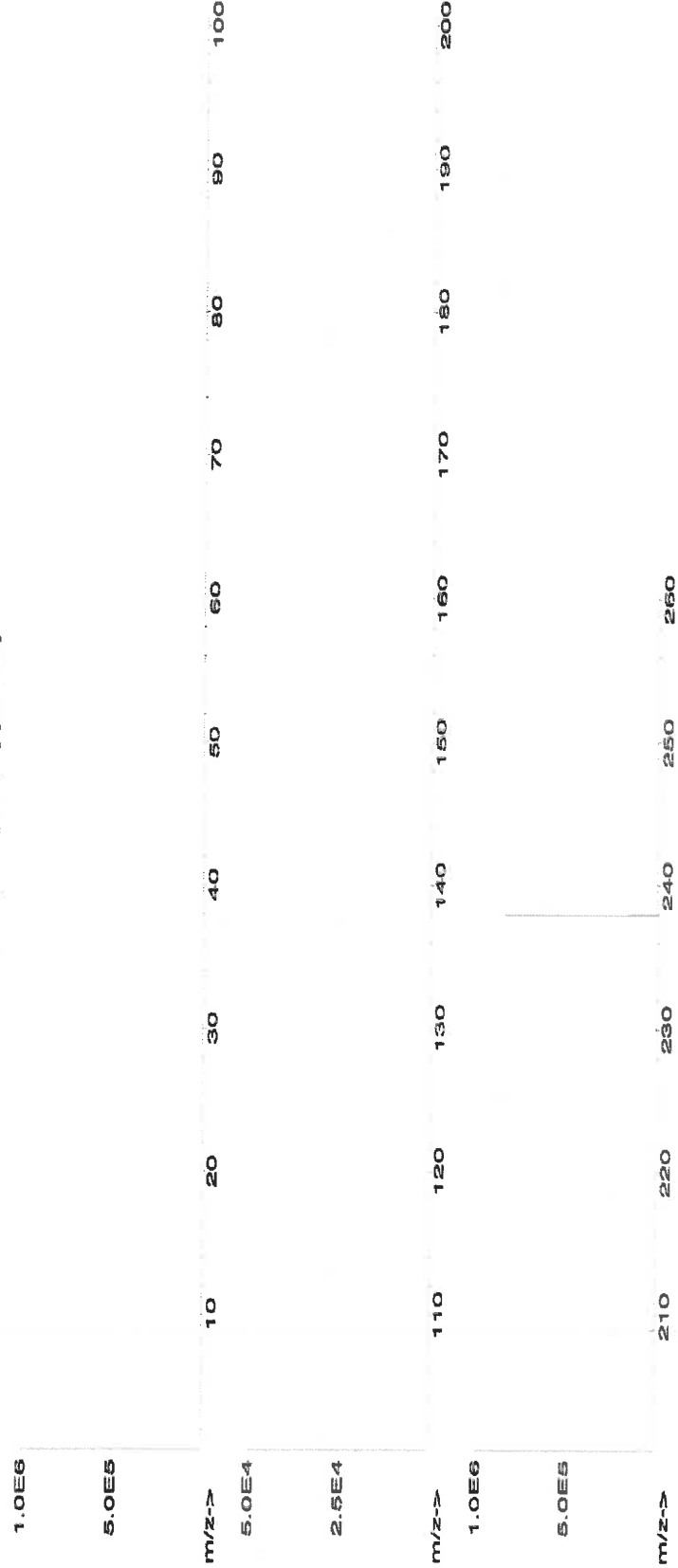
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
<i>Pedro L. Rentas</i>	
Reviewed By:	Pedro L. Rentas

SDS Information

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

1. Uranyl nitrate hexahydrate (U)	58192	041524	0.1000	200.0	0.084	1000	10001.5	1000.0	2.2	13620-83-7	0.05 mg/m3	orl-rat 1040 mg/kg	3164
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[1] Spectrum No.1 [23.264 sec]:57092.D# [Count] [Linear]





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

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

[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).

4236.673 ± 0.021 µg/mL

R: 8/19/24, M6055

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Christiansburg, VA 24073 USA
inorganicventures.com

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F: 540-585-3012

info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

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2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution

Catalog Number: IV-STOCK-12

Lot Number: U2-MEB734294

Matrix: 5% (v/v) HNO₃

Value / Analyte(s): 10 µg/mL ea:

Barium,	Beryllium,
Bismuth,	Cerium,
Cobalt,	Indium,
Lithium,	Nickel,
Lead,	Uranium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Barium, Ba	10.01 ± 0.04 µg/mL	Beryllium, Be	10.01 ± 0.05 µg/mL
Bismuth, Bi	10.01 ± 0.06 µg/mL	Cerium, Ce	10.01 ± 0.04 µg/mL
Cobalt, Co	10.01 ± 0.05 µg/mL	Indium, In	10.01 ± 0.04 µg/mL
Lead, Pb	10.00 ± 0.04 µg/mL	Lithium, Li	10.01 ± 0.04 µg/mL
Nickel, Ni	10.01 ± 0.04 µg/mL	Uranium, U	10.01 ± 0.05 µg/mL

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

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ba	ICP Assay	3104a	140909
Ba	Calculated		See Sec. 4.2
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Be	Calculated		See Sec. 4.2
Bi	ICP Assay	3106	180815
Ce	ICP Assay	3110	160830
Ce	EDTA	928	928
Ce	Calculated		See Sec. 4.2
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Co	Calculated		See Sec. 4.2
In	ICP Assay	3124a	110516
In	EDTA	928	928
In	Calculated		See Sec. 4.2
Li	ICP Assay	3129a	100714
Li	Calculated		See Sec. 4.2
Li	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Ni	Calculated		See Sec. 4.2
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Pb	Calculated		See Sec. 4.2
U	ICP Assay	traceable to 3164	R2-U689597
U	Calculated		See Sec. 4.2

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

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

Certified Abundance:

IV's Certified Abundance

Isotope	Atom %
Uranium 238U	99.8 ± 0.1
Uranium 235U	0.19 ± 0.05

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

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

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

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

June 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

- June 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

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

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

August 12, 2024

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

11.2 Lot Expiration Date

- **August 12, 2029**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

Part Number: **57040**
Lot Number: **071423**
Description: **Zirconium (Zr)**

Lot # **21110221**
Solvent: **Nitric Acid**

2.0% 40.0 (mL) Nitric Acid

Formulated By: *Benson Chan* Benson Chan 071423

Reviewed By: *Pedro L. Renteria* Pedro L. Renteria 071423

Expiration Date: 071426
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 2000.02
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information		
										(Solvent Safety Info. On Attached pg.)	LDSO	NIST SRM

1. Zirconyl chloride octahydrate (Zr) 58140 070621 0.1000 200.0 0.084 1000 10000.3 1000.0 2.2 13520-82-8 NA NA NA

[1] Spectrum No. 1 [41.163 sec]: 57040.DW [Count] [Linear]

1.OE6	m/z->	10	20	30	40	50	60	70	80	90	100
5.OE6	m/z->	110	120	130	140	150	160	170	180	190	200
1.OE8	m/z->	210	220	230	240	250	260				
5.OE7	m/z->										



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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	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	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02
(T) = Target analyte																			

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

Part Number: **58025**
Lot Number: **101124**
Description: **Manganese (Mn)**

Lot #

Nitric Acid

24002546

58025
101124
Manganese (Mn)

2% Nitric Acid

80.0 (mL)

2%

Expiration Date: **10/11/27**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6UTB**

<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	<i>Pedro L. Renteria</i>
	101124

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
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1. Manganese(II) nitrate hydrate (Mn) IN031 MMN02020A1 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	10	20	30	40	50	60	70	80	90	100
m/z->										
2.5E6										
1.0E6										
5.0E7										
m/z->										
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

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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:

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

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

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 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: 58126
Lot Number: 011025
Description: Iron (Fe)
Lot # R-113125
Solvent: 24012496 Nitric Acid

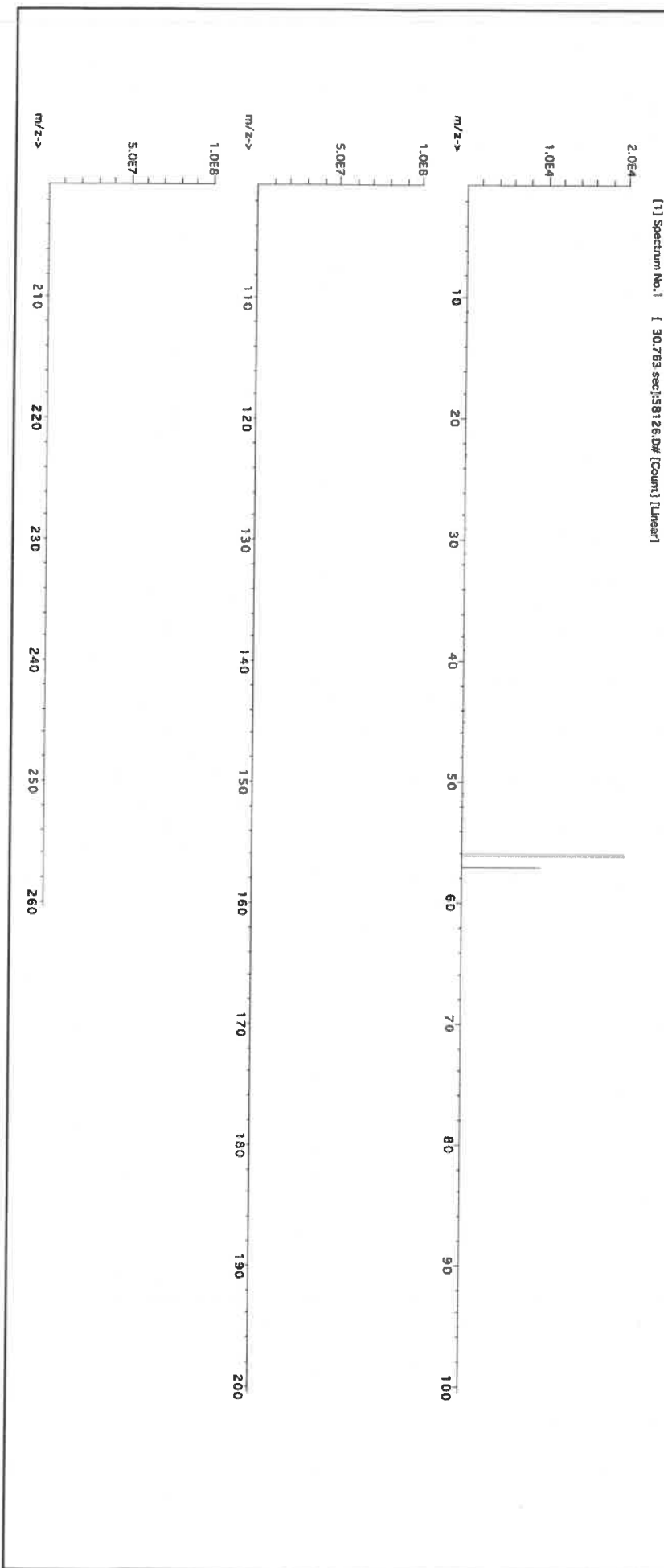
Expiration Date: 011028
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6U7B
Weight shown below was diluted to (mL): 2000.07
5E-05 Balance Uncertainty
0.100 Flask Uncertainty

2%
40.0 (mL)
Nitric Acid

Formulated By:	Benson Chan	011025
Reviewed By:	Pedro L. Renteria	011025

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)	(Solvent Safety Info. On Attached pg.)	SFM

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





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	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		<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

Lot #
Solvent: 24002546
Nitric Acid

<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	Pedro L. Rentes
	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):

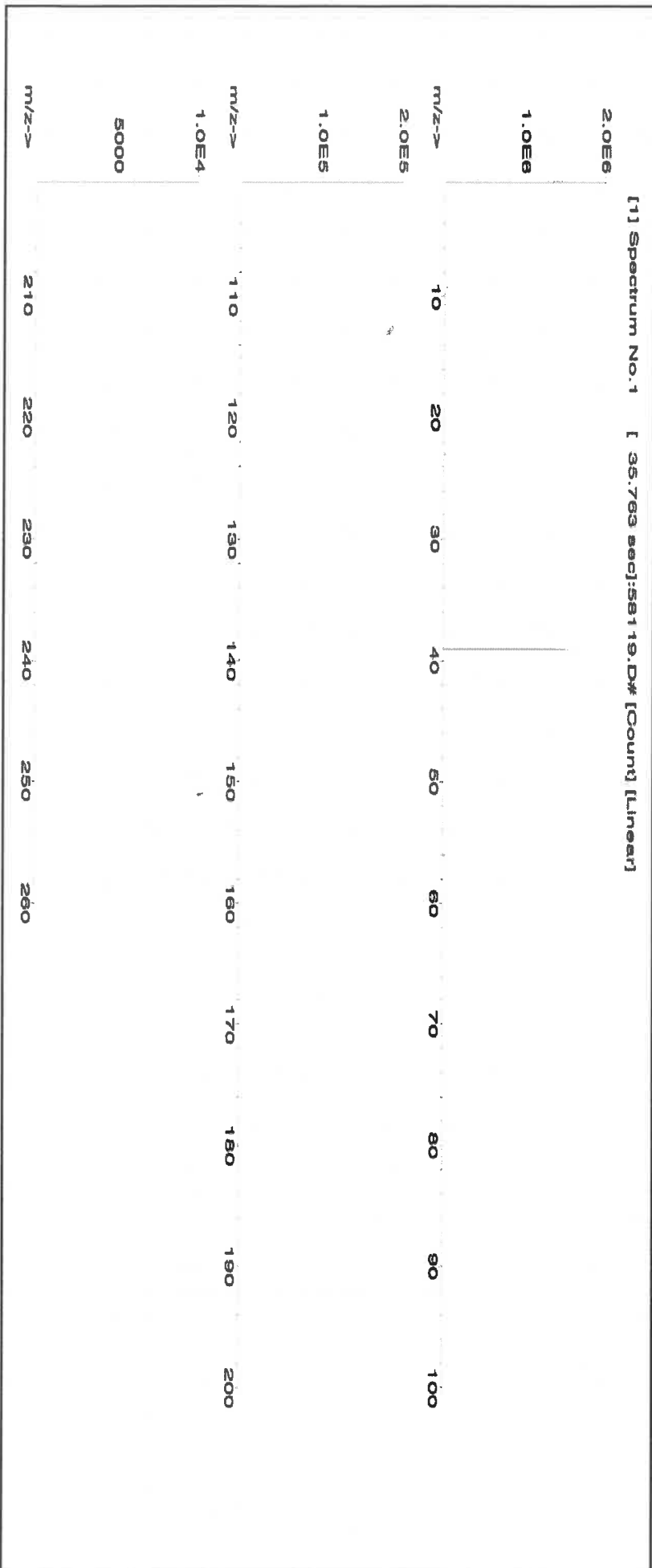
4000.1
0.15
Flask Uncertainty

Compound

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. 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]:S8119.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.
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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).



CERTIFIED WEIGHT REPORT:

Part Number: 58111 **Lot #** R-1113/25
Lot Number: 072424 **Solvent:** Nitric Acid
Description: Sodium (Na)

Expiration Date: 072427 **2%** **80.0** **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): 4000.2 **0.10** **Flask Uncertainty**

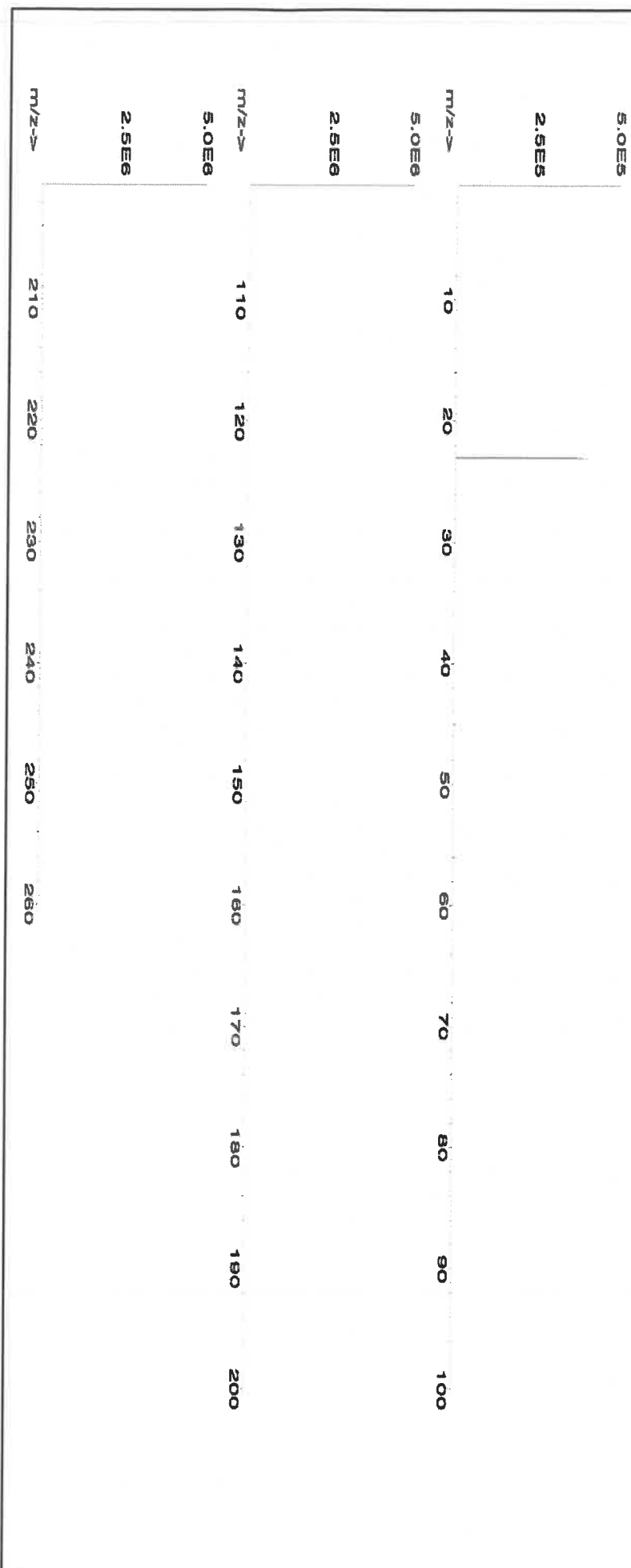
Formulated By:	Benson Chan	072424
Reviewed By:	Pedro L. Renteria	072424

SDS Information

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

1. Sodium nitrate (Na) IN036 NAV01201511 10000 99.999 0.10 26.9 148.7096 ##### 10000.0 20.0 7631-99-4 5 mg/m3 orl-rat 3430 mg/kg 3152a

[1] Spectrum No. 1 [8.935 sec]: 58111.D# [Count] [Linear]





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	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	Rb	<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	<0.02	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	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:

- * 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).



CERTIFIED WEIGHT REPORT:

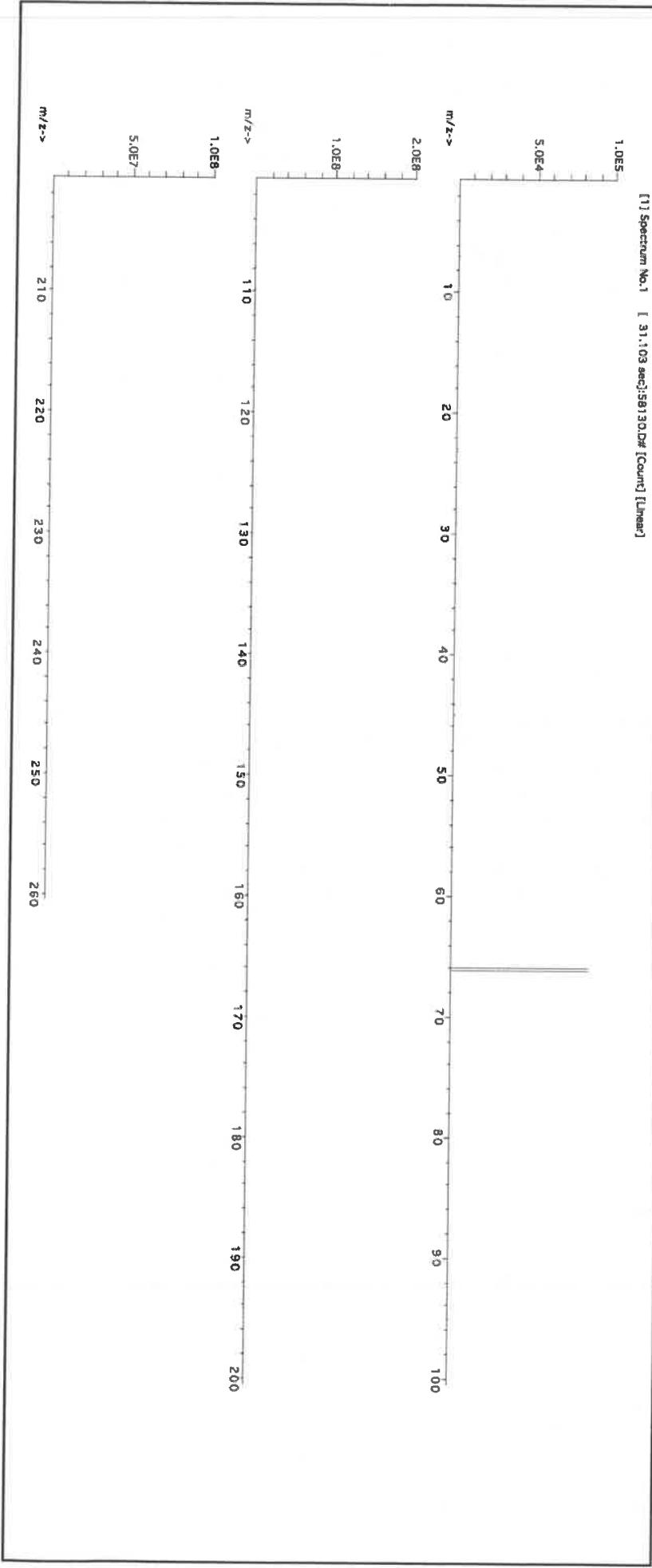
Part Number: 58030
Lot Number: 121724
Description: Zinc (Zn)
Expiration Date: 121727
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 2000.1
Balance Uncertainty: 5E-05
Flask Uncertainty: 0.10

Lot # 24012496
Nitric Acid
2%
40.0 (mL)
Nitric Acid

Aleah O'Brady
Formulated By: Aleah O'Brady
Reviewed By: Pedro L. Rentias
121724

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)	(Solvent Safety Info. On Attached pg.)	SRM

1. Zinc nitrate hexahydrate (Zn) IN016 ZNE0302021A1 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





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.
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- * Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
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- * All standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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 >>>

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

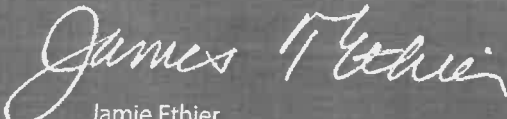


Material No.: 9530-33
Batch No.: 22G2862015

Test	Specification	Result
------	---------------	--------

For Laboratory, Research, or Manufacturing Use
Product Information (not specifications):
Appearance (clear, fuming liquid)
Meets ACS Specifications
Storage Condition: Store below 25 °C.

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC


Jamie Ethier
Vice President Global Quality

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

R → 1/7/23
M6153

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: CGSR10
Lot Number: V2-SR745329
Matrix: 2% (v/v) HNO₃
Value / Analyte(s): 10 000 µg/mL ea:
Strontium
Starting Material: Strontium Carbonate
Starting Material Lot#: 2647
Starting Material Purity: 99.9960%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10081 ± 39 µg/mL
Density: 1.030 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **10059 ± 50 µg/mL**
ICP Assay NIST SRM Traceable to 3153a Lot Number: K2-SR650985

Assay Method #2 **10087 ± 26 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

- 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 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	<	0.000960	M	Eu	<	0.000480	O	Na		0.002964	M	Se	<	0.042000	M	Zn		0.004560
M	Al		0.003420	O	Fe		0.013225	M	Nb	<	0.000480	O	Si		0.012997	M	Zr		0.001847
M	As	<	0.007200	M	Ga	<	0.002900	M	Nd	<	0.000480	M	Sm	<	0.000480				
M	Au	<	0.003900	M	Gd	<	0.000480	O	Ni		0.001482	M	Sn	<	0.000480				
O	B	<	0.003200	M	Ge	<	0.004800	M	Os	<	0.001500	s	Sr	<					
M	Ba		0.638494	M	Hf	<	0.000480	O	P	<	0.017000	M	Ta	<	0.000480				
O	Be	<	0.000450	M	Hg	<	0.000960	M	Pb		0.010717	M	Tb	<	0.000480				
M	Bi	<	0.002000	M	Ho	<	0.000480	M	Pd	<	0.002000	M	Te	<	0.016000				
O	Ca		0.025083	M	In	<	0.008600	M	Pr		0.000547	M	Th	<	0.000480				
M	Cd	<	0.000960	M	Ir	<	0.000480	M	Pt	<	0.000480	M	Ti		0.004560				
M	Ce		0.000661	O	K		0.025083	M	Rb	<	0.003400	M	Tl	<	0.000480				
M	Co		0.001527	M	La	<	0.000480	M	Re	<	0.000480	M	Tm		0.004332				
O	Cr	<	0.004700	O	Li	<	0.005600	O	Rh	<	0.013000	M	U	<	0.000480				
M	Cs	<	0.000480	M	Lu	<	0.000480	M	Ru	<	0.000960	M	V	<	0.000960				
O	Cu	<	0.003800	O	Mg		0.001048	O	S	<	0.045000	M	W	<	0.002400				
M	Dy	<	0.000960	O	Mn		0.000319	M	Sb	<	0.009600	O	Y	<	0.001200				
M	Er	<	0.000480	M	Mo	<	0.002900	M	Sc	<	0.001500	M	Yb	<	0.000480				

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 - 87.62 +2 6 Sr(H₂O)₆+2

Chemical Compatibility - Soluble in HCl, and HNO₃. Avoid H₂SO₄, HF and neutral to basic media. Stable with most metals and inorganic anions forming insoluble silicate, carbonate, hydroxide, oxide, fluoride, sulfate, oxalate, chromate, arsenate and tungstate in neutral aqueous media.

Stability - 2-100 ppb levels stable for months in 1% HNO₃ / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1 - 3.5% HNO₃ / LDPE container.

Sr Containing Samples (Preparation and Solution) -Metal (Best dissolved in diluted HNO₃); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (Dry ash and dissolution in dilute HCl).

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

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 88 amu	1200 ppt	N/A	72Ge16O, 176Yb+2, 176Lu+2 , 176Hf+2
ICP-OES 407.771 nm	0.0004 / 0.00006 µg/mL	1	U, Ce
ICP-OES 421.552 nm	0.0008 / 0.00004 µg/mL	1	Rb
ICP-OES 460.733 nm	0.07 / 0.003 µg/mL	1	Ce

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; Info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

August 26, 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 26, 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





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%
(mL)

Ammonium hydroxide

Expiration Date:

Recommended Storage:

Nominal Concentration (µg/mL):

NIST Test Number:

Volume shown below was diluted to (mL):

Balance Uncertainty

Flask Uncertainty

0.058

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

SDS Information

Formulated By:

Lawrence Barry

Reviewed By:

Pedro L. Rentas

CAS#

OSHA PEL (TWA)

LD50

58142

112322

0.1000

300.0

0.084

1000

10001.4

1000.0

2.1

13106-76-8

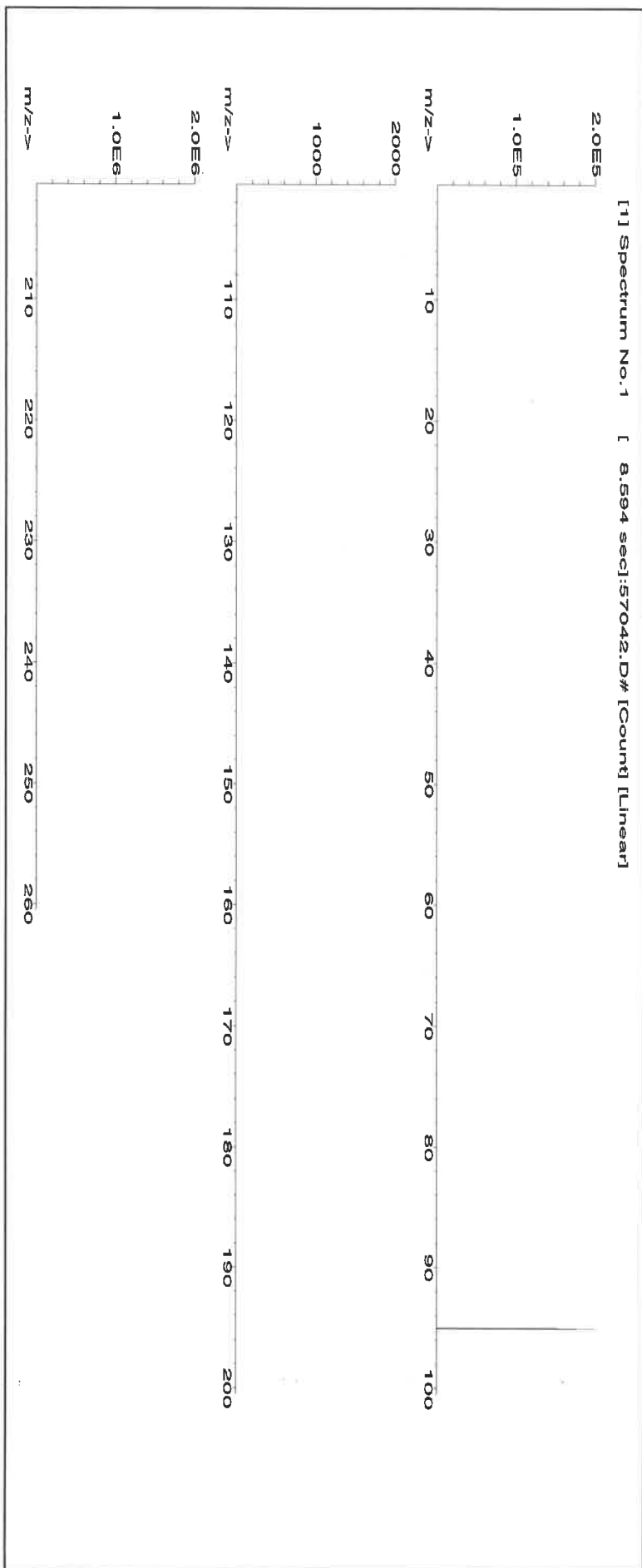
5 mg(Mo)/m3

or-hal 333 mg/kg

3134

1. Ammonium molybdate (Mo)

[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	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	T	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

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

Certified by:

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

Nitric Acid 69%
CMOS



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

 **avantor™**



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
------	---------------	--------

For Microelectronic Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC



Jamie Croak
Director Quality Operations, Bioscience Division

Nitric Acid 69%
CMOS

avantor™



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 >>>



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

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 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
 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-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





Certified Reference Material CRM



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

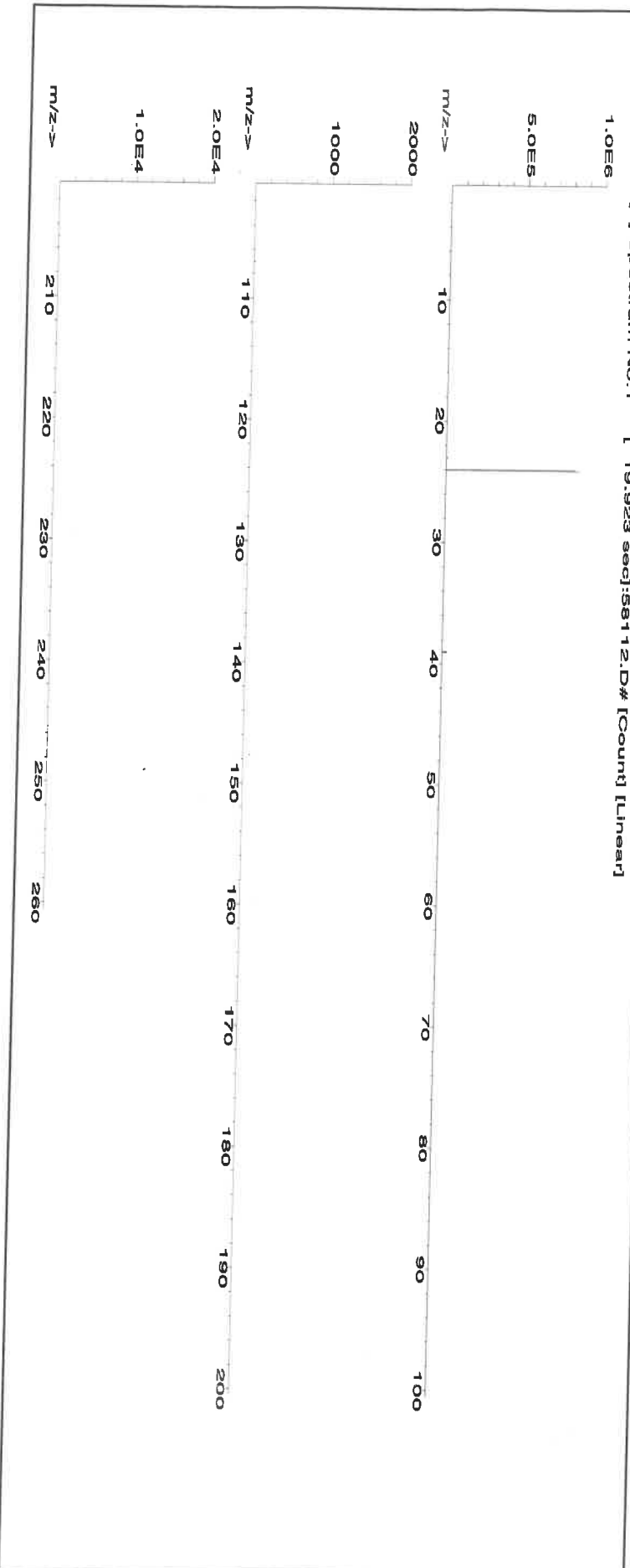
CERTIFIED WEIGHT REPORT:

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)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	T	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ku	<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).

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 < 0.034000	O Se < 0.000387
O Al < 0.003121	O Fe < 0.001622	M Nb < 0.000860	O Si < 0.044943
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>. 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

P: 800-669-6799/540-585-3030

F: 540-585-3012

info@inorganicventures.com

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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: 6020CAL-1
Lot Number: V2-MEB742014
Matrix: 5% (v/v) HNO₃
tr. HF
Value / Analyte(s):
20 µg/mL ea:
Silver, Aluminum,
Arsenic, Barium,
Beryllium, Calcium,
Cadmium, Cobalt,
Chromium, Copper,
Iron, Potassium,
Magnesium, Manganese,
Sodium, Nickel,
Lead, Antimony,
Selenium, Thallium,
Vanadium, Zinc

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	20.02 ± 0.08 µg/mL	Antimony, Sb	20.03 ± 0.11 µg/mL
Arsenic, As	20.03 ± 0.16 µg/mL	Barium, Ba	20.02 ± 0.11 µg/mL
Beryllium, Be	20.02 ± 0.15 µg/mL	Cadmium, Cd	20.02 ± 0.11 µg/mL
Calcium, Ca	20.03 ± 0.09 µg/mL	Chromium, Cr	20.03 ± 0.13 µg/mL
Cobalt, Co	20.03 ± 0.12 µg/mL	Copper, Cu	20.03 ± 0.10 µg/mL
Iron, Fe	20.04 ± 0.09 µg/mL	Lead, Pb	20.03 ± 0.11 µg/mL
Magnesium, Mg	20.03 ± 0.10 µg/mL	Manganese, Mn	20.03 ± 0.11 µg/mL
Nickel, Ni	20.03 ± 0.11 µg/mL	Potassium, K	20.03 ± 0.10 µg/mL
Selenium, Se	20.03 ± 0.13 µg/mL	Silver, Ag	20.03 ± 0.09 µg/mL
Sodium, Na	20.03 ± 0.10 µg/mL	Thallium, Tl	20.03 ± 0.10 µg/mL
Vanadium, V	20.03 ± 0.11 µg/mL	Zinc, Zn	20.03 ± 0.11 µg/mL

Density: 1.027 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
As	ICP Assay	3103a	100818
As	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
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Sb	ICP Assay	3102a	140911
Se	ICP Assay	3149	100901
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:

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

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

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

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

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.

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

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

March 11, 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 11, 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:

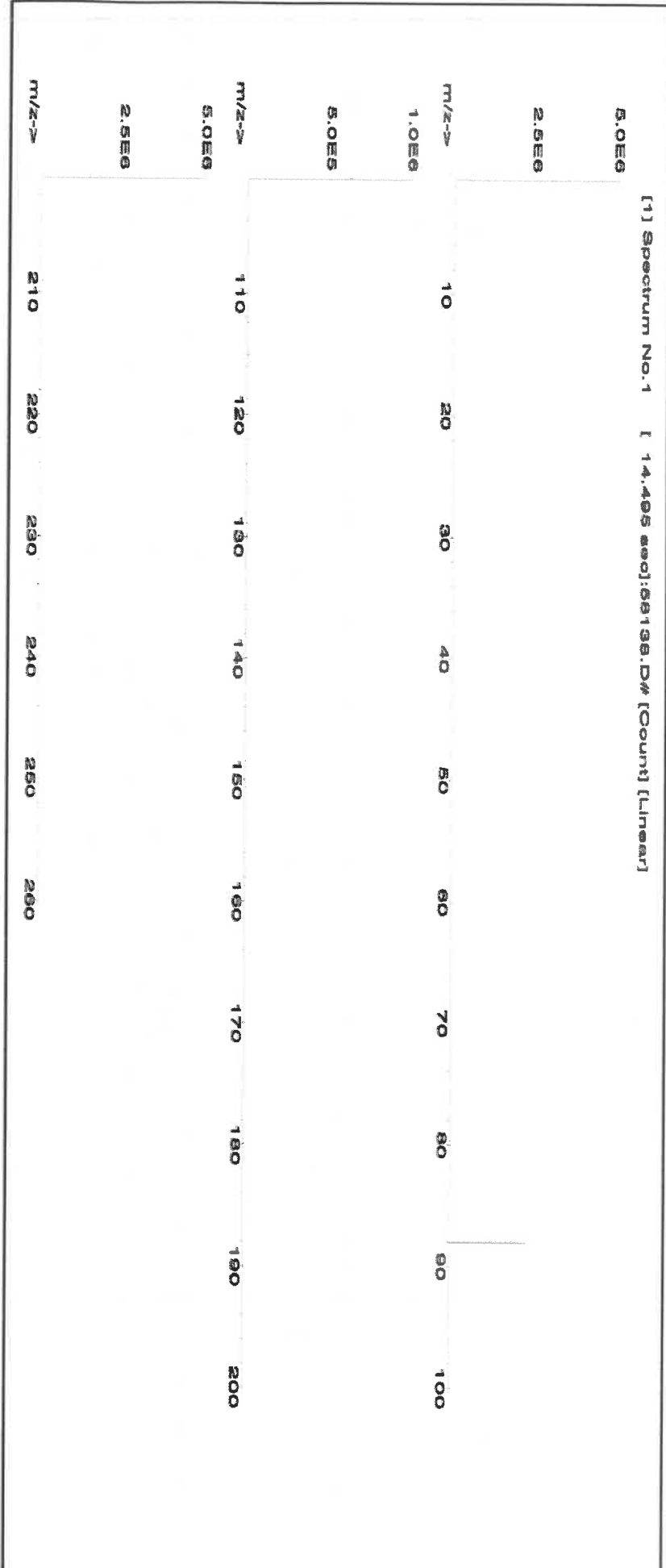
Part Number: 57038 **Lot #** 24002546 **Solvent:** Nitric Acid
Lot Number: 092724
Description: Strontium (Sr)
Expiration Date: 092727 **2%** **40.0** **Nitric Acid**
Recommended Storage: Ambient (20 °C) (mL)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 8UTB **5E-05** **Balance Uncertainty**
Weight shown below was diluted to (mL): 2000.07 **0.100** **Flask Uncertainty**

Formulated By: Benson Chan 092724
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
	Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Weight (g)	Conc. (µg/mL)	+/- (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**





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	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:

- * 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
AFR-1539 Certificate Number
https://AbsoluteStandards.com

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57082
031525
Lead (Pb)

Lot #

Nitric Acid

Expiration Date:

031528

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6LJB

Weight shown below was diluted to (mL):

2000.07

5E-05 Balance Uncertainty
0.10 Flask Uncertainty

2% 40.0 (mL)

Nitric Acid

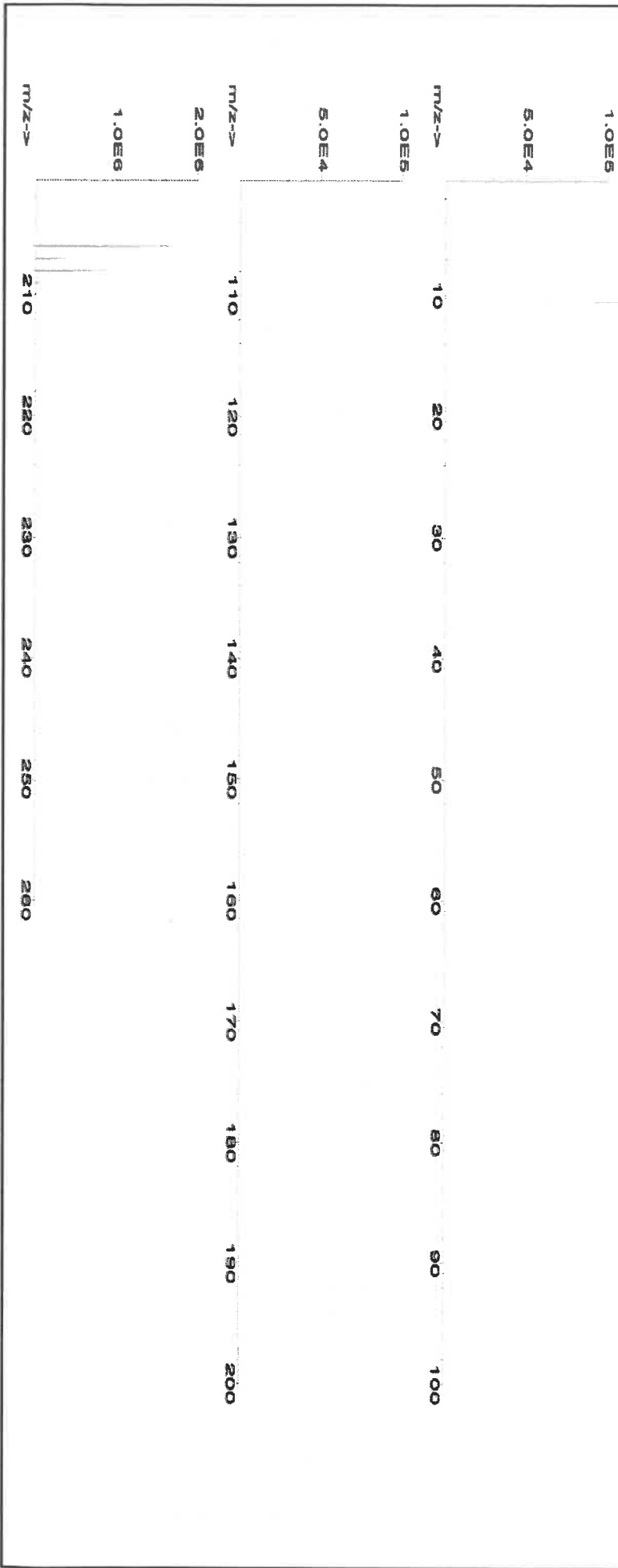
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
	031525
Reviewed By:	<i>Pedro L. Renteria</i>
	Pedro L. Renteria
	031525

Compound

Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Uncertainty	(Solvent Safety Info. On Attached pg.)			NIST
PM#	Number	Conc. (µg/mL)	(%)	Purity (%)	Weight (g)	Weight (g)	Conc. (µg/mL)	+/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	SRM

1. Lead(II) nitrate (Pb) IN029 PBD122016A1 1000 99.999 0.10 62.5 3.20015 3.20067 1000.2 2.0 10089-74-8 0.05 mg/m3 Intra-rat 93 mg/kg 3128

[1] Spectrum No. 1 [14.144 sec]:58082.D# [Count] [Linear]





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	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	Tc	<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	Se	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
"An ISO 9001:2015 Certified Program"

Instructions for QATS Reference Material: *ICP-MS ICS*

**QATS LABORATORY INORGANIC REFERENCE MATERIAL
INTERFERENCE CHECK SAMPLE SET FOR ICP-MS (ICSA WITH ICSB)**

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.

Contains Heavy Metals
HAZARDOUS MATERIAL

Safety Data Sheets
Available Upon Request

(A) SAMPLE DESCRIPTION

Enclosed is a set of one (1) or more bottles of an 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-0803" and for the ICSAB mixture use "ICSA-0803+ICSB-0803".**

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 the Contracting Officer, Ross Miller at miller.ross@epa.gov. If directed by Ross Miller, 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

This interference check sample set is to be used to verify elemental isobaric correction factors of inductively coupled plasma-mass spectrometers (ICP-MS). This reference material set consists of two (2) concentrated solutions. The ICSA solution contains several interferent elements and species; for a complete listing refer to the CLP SOW. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for the ICP-MS ICS 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-0803, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 1% v/v HNO₃. Analyze this solution by ICP-MS.

ICSB-0803, Analytes, mixed with ICSA-0803, 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 1% v/v HNO₃. Analyze this ICSAB solution by ICP-MS.

(D) "CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-MS 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-MS
ICSA-0803, AND ICSA-0803 MIXED WITH ICSB-0803

Element	CRQL	Part A (µg/L)	Lower Limit (µg/L)	Upper Limit (µg/L)	Part A +Part B (µg/L)	Lower Limit (µg/L)	Upper Limit (µg/L)
Al	20.0	[100000]			[100000]		
Sb	2.0	(1.5)	-2.5	5.5	(22.0)	18.0	26.0
As	1.0	(0.1)	-1.9	2.1	19.0	16.2	21.9
Ba	10.0	(1.2)	-18.8	21.2	(22.0)	2.0	42.0
Be	1.0	(0)	-2.0	2.0	19.0	16.2	21.9
Cd	1.0	(0.7)	-1.3	2.7	20.0	17.0	23.0
Ca	500	[100000]			[100000]		
C		[200000]			[200000]		
Cl		[1000000]			[1000000]		
Cr	2.0	(21.0)	17.0	25.0	40.0	34.0	46.0
Co	1.0	(1.0)	-1.0	3.0	20.0	17.0	23.0
Cu	2.0	(8.0)	4.0	12.0	(25.0)	21.0	29.0
Fe	200	[100000]			[100000]		
Pb	1.0	(4.0)	2.0	6.0	25.0	21.3	28.8
Mg	500	[100000]			[100000]		
Mn	1.0	(7.0)	5.0	9.0	27.0	23.0	31.1
Mo		[2000]			[2000]		
Ni	1.0	(6.0)	4.0	8.0	24.0	20.4	27.6
P		[100000]			[100000]		
K	500	[100000]			[100000]		
Se	5.0	(0.3)	-9.7	10.3	(19.0)	9.0	29.0
Ag	1.0	(0)	-2.0	2.0	18.0	15.3	20.7
Na	500	[100000]			[100000]		
S		[100000]			[100000]		
Tl	1.0	(0)	-2.0	2.0	21.0	17.9	24.2
Ti		[2000]			[2000]		
V	5.0	(0.5)	-9.5	10.5	(19.0)	9.0	29.0
Zn	5.0	(11.0)	1.0	21.0	(29.0)	19.0	39.0

[] Indicates analytes that do not require ICP-MS determination in the ICS.

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value $\pm$ 2 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value $\pm$ 15 percent of the listed certified value.

M6185
ICSA



Certified Reference Material CRM

M6027



CERTIFIED WEIGHT REPORT:

Part Number: **57028**
Lot Number: **062024**
Description: **Nickel (NI)**

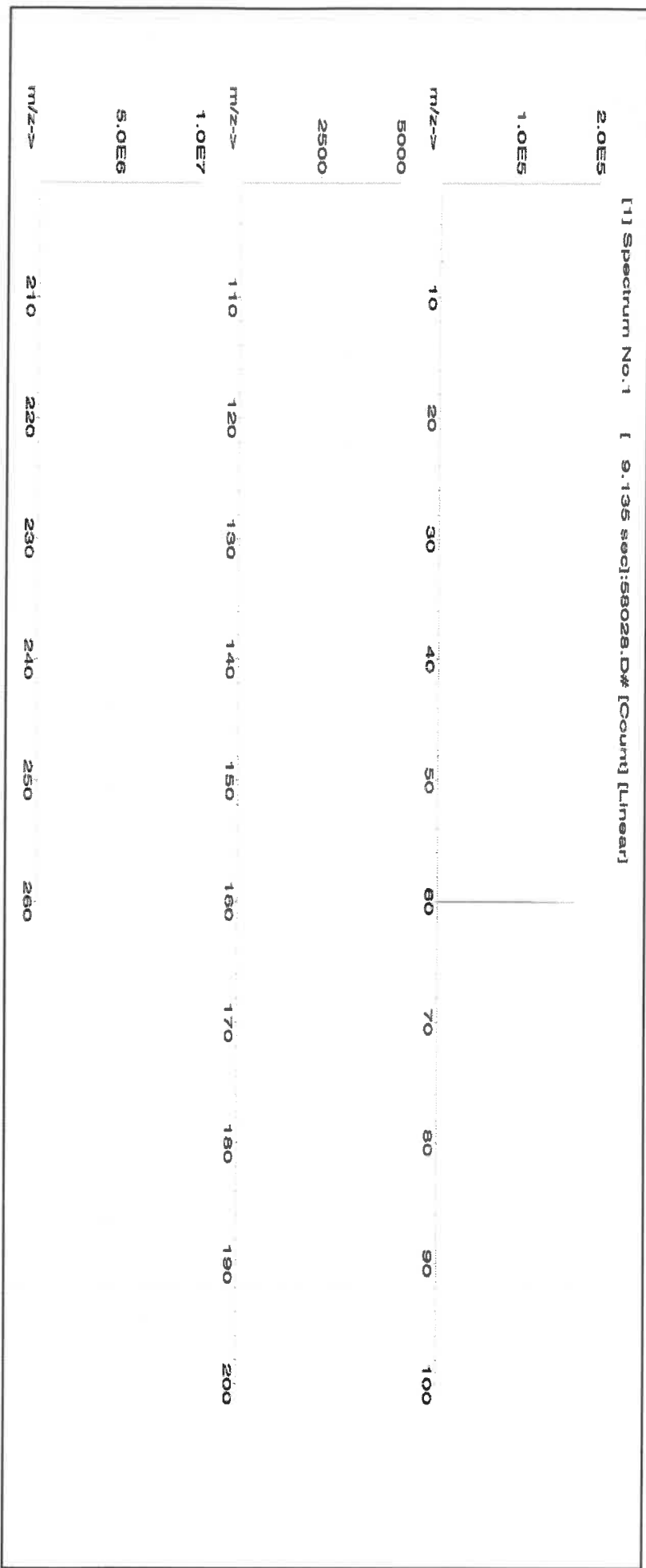
Lot # **24002546**
Solvent: **Nitric Acid**

Formulated By:	Benson Chan
062024	
Reviewed By:	Pedro L. Rentes
062024	

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**
5E-05 Balance Uncertainty
0.100 Flask Uncertainty

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





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



CERTIFIED WEIGHT REPORT:

Part Number: **57047**
Lot Number: **122823**
Description: **Silver (Ag)**

Solvent: 24002546 Nitric Acid
Lot #

Expiration Date: 122826
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

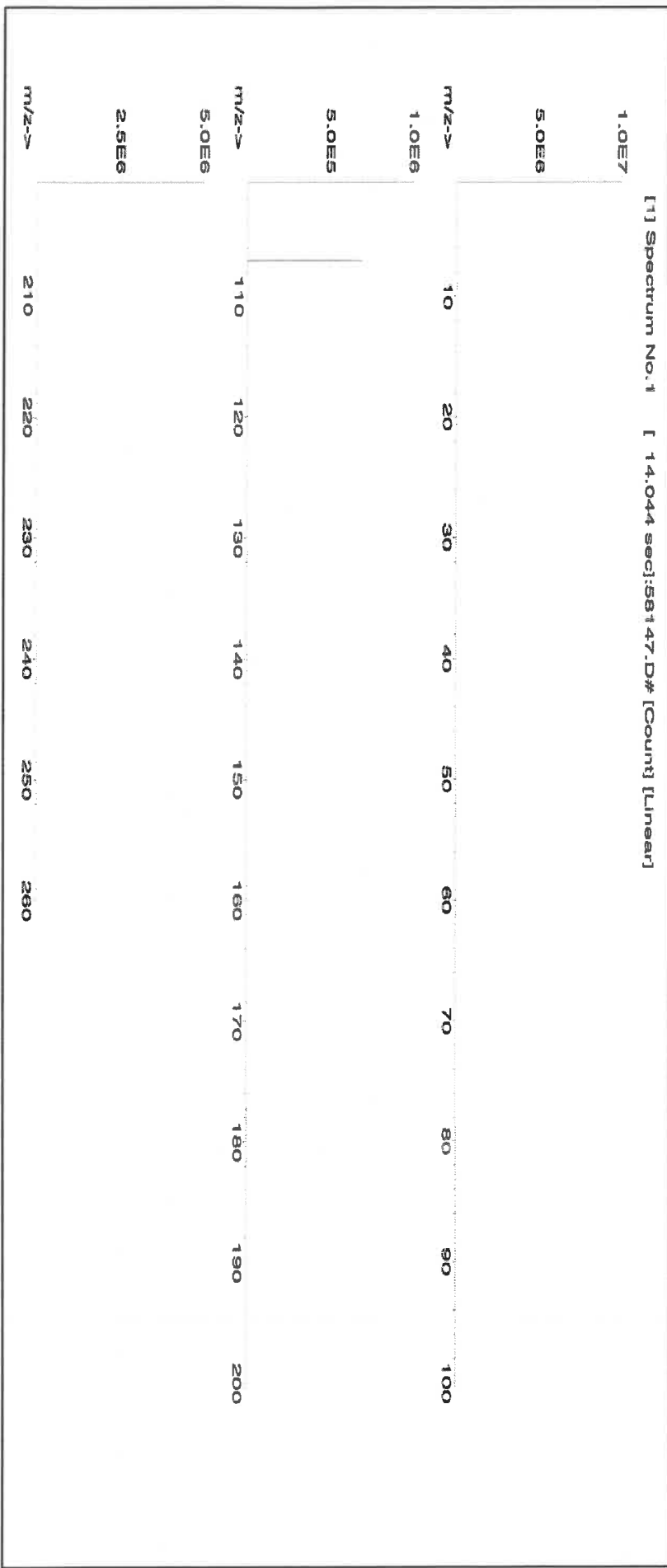
2% 80.0 (mL) Nitric Acid

Weight shown below was diluted to (mL): 4000.30 0.058 Balance Uncertainty
Flask Uncertainty

Formulated By:	Benson Chan
Reviewed By:	Pedro L. Rentas
	122823

SDS Information									
Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)
1. Silver nitrate (Ag)	IN035	J0612AGA1	1000.0	99.999	0.10	63.7	6.27992	6.27998	1000.0

Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
2.0	7761-88-8	10 µg/m ³	NA	3151





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

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 meghom 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: 10/18/24
Certified Reference Material CRM



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:

6UJB

Volume shown below was diluted to (mL):

2000.26

Balance Uncertainty

0.058

F flask Uncertainty

Formulated By:

Giovanni Esposito

071724

Reviewed By:

Pedro L. Rentas

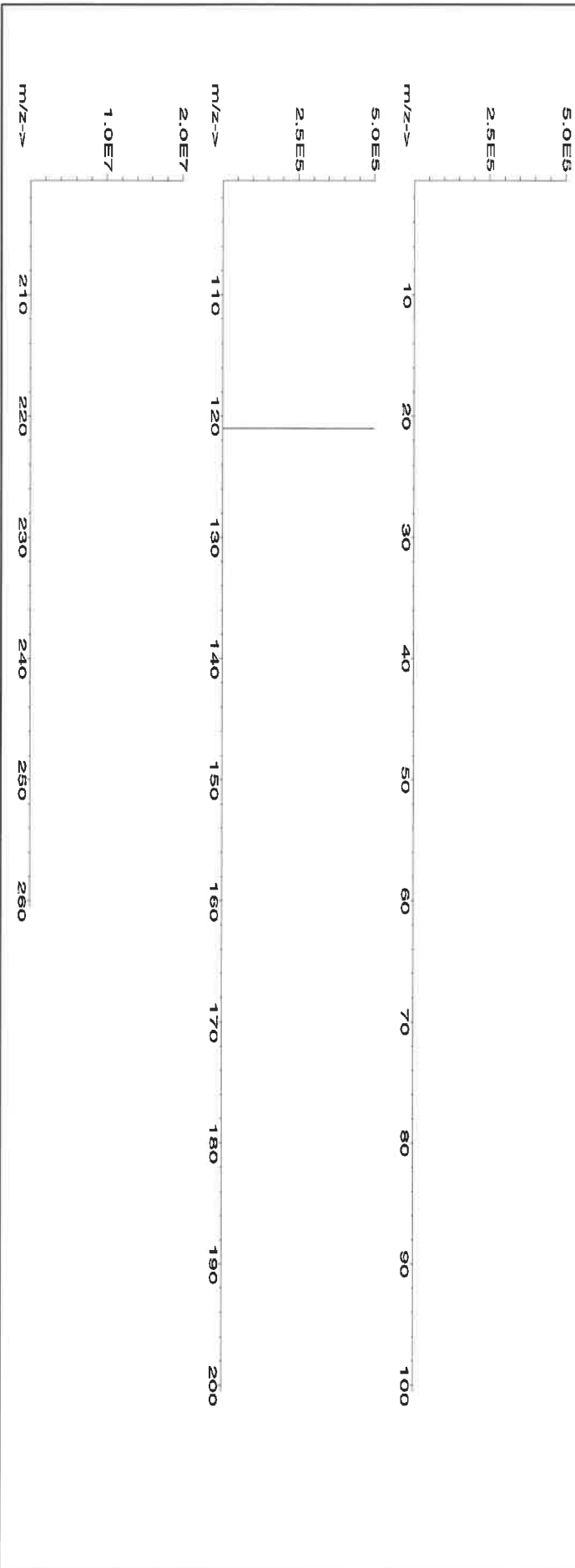
071724

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	or-rat 7000 mg/kg	3102a
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[1] Spectrum No.1 [17.964 sec]:58051.D# [Count] [Linear]



- 1
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- 16
- 17



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

Part Number: 57051
Lot Number: 071724
Description: Antimony (Sb)

NG160

Lot # 24002546
Solvent: Nitric Acid

Expiration Date: 071727

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test Number: 6UTB

Volume shown below was diluted to (mL): 2000.26

5E-05 Balance Uncertainty

0.058 Flask Uncertainty

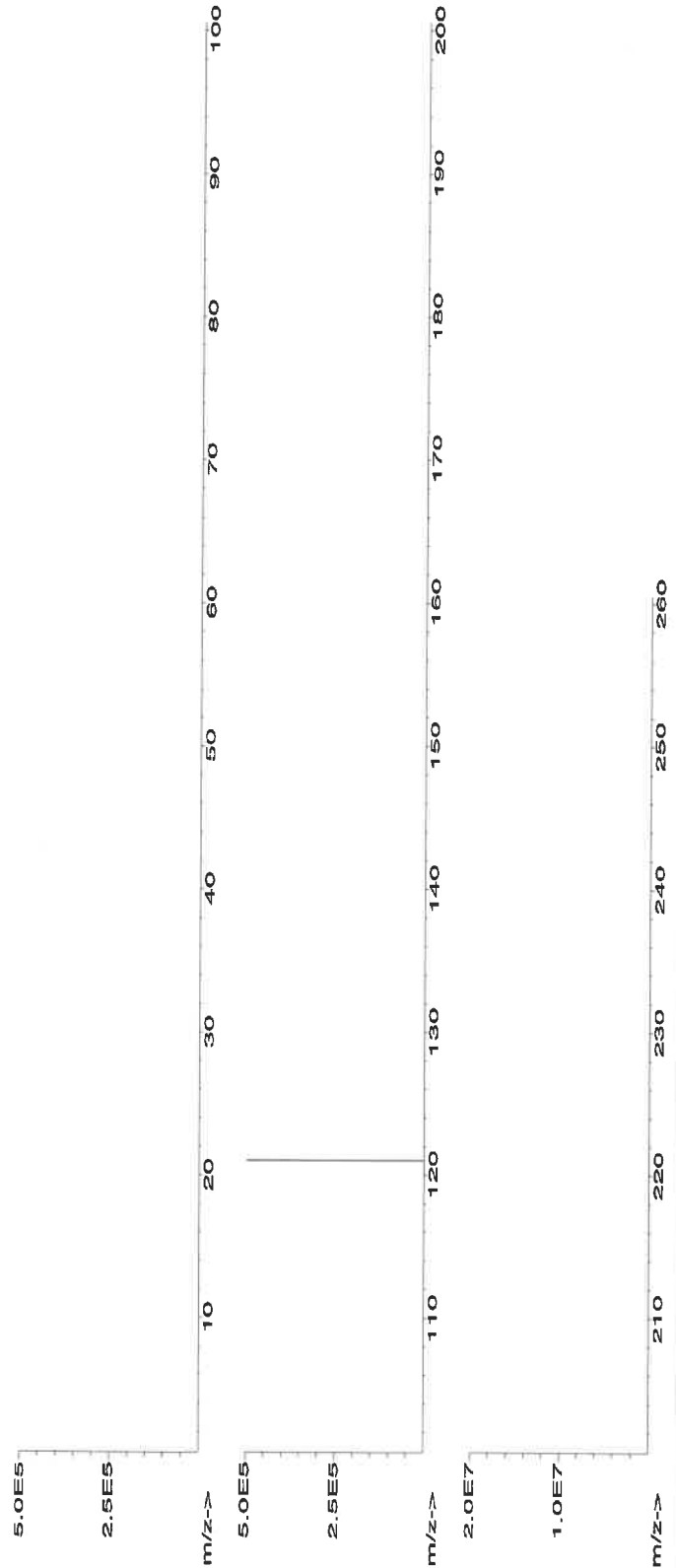
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
<i>Pedro L. Rentas</i>	
Reviewed By:	Pedro L. Rentas
071724	

SDS Information

Expanded	Uncertainty	(Solvent Safety Info, On Attached pg.)	NIST
Conc. (µg/mL)	+/- (µg/mL)	CAS#	OSHA PEL (TWA)
Final	Initial	Nominal	Uncertainty
Conc. (µg/mL)	Conc. (µg/mL)	Conc. (µg/mL)	Conc. (µg/mL)
1000.0	10001.4	1000	0.084
2.2	7440-36-0	0.5 mg/m3	or-rat 7000 mg/kg
3102a			

1. Antimony (Sb) 58151 060324 0.1000 200.0 200.0 0.084 1000 10001.4 1000.0 2.2 7440-36-0 0.5 mg/m3 or-rat 7000 mg/kg 3102a

[1] Spectrum No.1 [17.964 sec]:58051.D# [Count] [Linear]



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

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02
Sb	T	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	U
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
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.02	Th	Yb
Be	<0.01	Cr	<0.02	Ga	<0.2	Fe	<0.02	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	Y
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
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

(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: 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: 6UTB

5E-05 Balance Uncertainty

Weight shown below was diluted to (mL): 2000.1 0.10 Flask Uncertainty

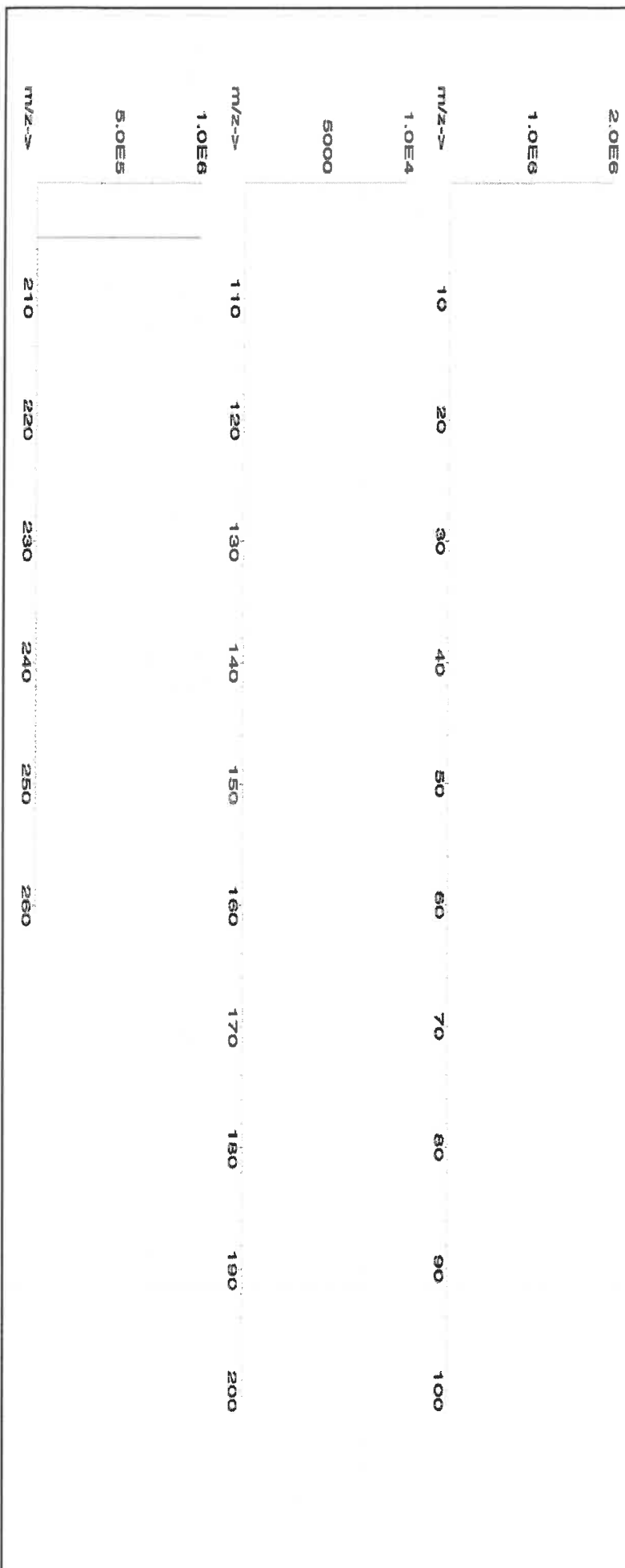
Pedro L. Renias
Reviewed By: Pedro L. Renias 062724

SDS Information

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



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

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:	Pedro L. Rantas
	062424

Expiration Date: **062427**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6UTB**

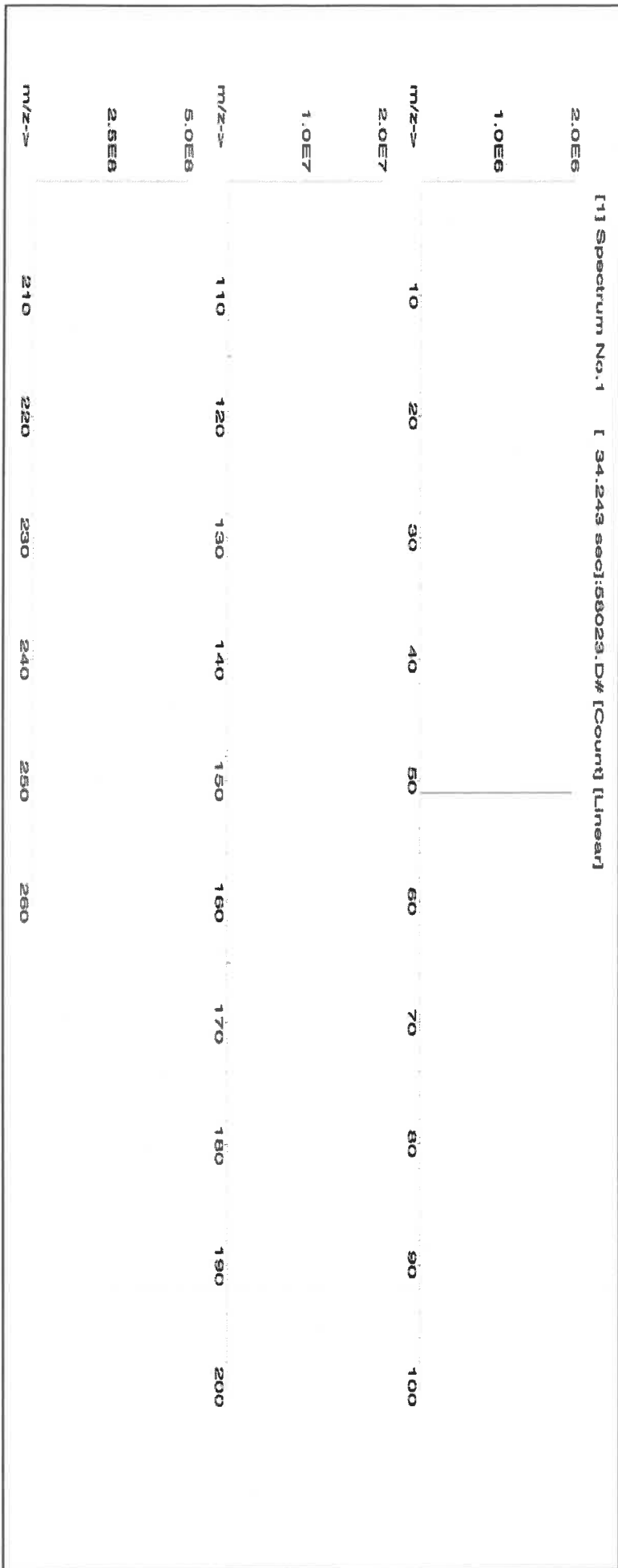
2.0%
40.0 (mL)
Nitric Acid

Volume shown below was diluted to (mL): **2000.3**
5E-05 Balance Uncertainty
0.06 Flask Uncertainty

SDS Information									
Formulated By: Aleah O'Brady									
Reviewed By: Pedro L. Rantas									
Expanded Uncertainty +/- (µg/mL)									
(Solvent Safety Info. On Attached pg.)									
CAS# OSHA PEL (TWA) LD50									
NIST SRM									

1. Ammonium metavanadate (V) 58123 021224 0.1000 200.0 0.084 1000 10000.3 1000.0 2.2 7803-55-6 0.05 mg/m3 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	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



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phenova®
Certified Reference Materials

A Phenomenex®
Company

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



Date	Order #
07/07/2025	333292

Ship To

Alliance Tech Group - Newark
ATTN: Sohil Jodhani
284 Sheffield St., #1
Mountainside, NJ 07092
USA

7/9/25 10:00

For terms and conditions of your order, please visit:
www.phenova.com/home/termsandsale

Customer PO #	Terms	PT Acct #	Customer #	Ship Via	F.O.B.
PO2-2553	Net 30	ZCM-100	1500470	FedEx Collect 2nd Day	Golden, CO

Qty Ordered	Qty Shipped	Qty Backorder	Part Number	Part Description	Study Number	Lot Number
1	1	0	PT-TM-WS	WS Trace Metals 1	WS0725	9101-04
1	1	0	PT-HG-WS	WS Trace Metals Mercury	WS0725	9101-05
1	1	0	PT-MIN-WS	WS Minerals Only	WS0725	9101-51
1	1	0	PT-TURB-WS	WS Turbidity	WS0725	9101-13
1	1	0	PT-SIO2-WS	WS Silica	WS0725	9101-17
1	1	0	PT-RVOA-WS	WS Regulated Volatiles	WS0725	9101-21
1	1	0	PT-UNRVOA-WS	WS Unregulated Volatiles	WS0725	9101-22
1	1	0	PT-THM-WS	WS Trihalomethanes	WS0725	9101-23
1	1	0	PT-EDBCP-WS	WS EDB/DBCP/TCP	WS0725	9101-27
1	1	0	PT-ADD-WS	WS Gasoline Additives	WS0725	9101-36

Laboratory Certification

Certified By	License No.
CAS EPA CLP Contract	68HERH20D0011
Connecticut	PH-0830
DOD ELAP (ANAB)	L2219
Maine	2024021
Maryland	296
New Hampshire	255424 Rev 1
New Jersey	20012
New York	11376
Pennsylvania	68-00548
Soil Permit	525-24-234-08441
Texas	TX-C25-00189
Virginia	460312