

DATA PACKAGE METALS

PROJECT NAME : BANKER

G ENVIRONMENTAL

8 Carriage Ln

Succasunna, NJ - 07876

Phone No: 973-294-1771

ORDER ID : Q3444

ATTENTION : Gary Landis



Laboratory Certification ID # 20012



1) METALS DATA	2
2) Signature Page	4
3) Case Narrative	5
4) Qualifier Page	6
5) Conformance/Non Conformance	7
6) QA Checklist	8
7) Chronicle	9
8) Hit Summary	10
9) Sample Data	11
9.1) 16 Banker	12
9.2) 29 Hanover	13
9.3) 29 Post	14
9.4) 683 WARWICK	15
9.5) 735 WARWICK	16
9.6) 739 WARWICK	17
10) METALS CALIBRATION DATA	18
10.1) Initial and Continuing Calibration Verification	19
10.2) CRDL Standard For AA & ICP	22
10.3) Initial and Continuing Calibration Blank Summary	23
10.4) Preparation Blank Summary	25
10.5) Interference Check Sample	26
11) METALS QC DATA	27
11.1) Matrix Spike Summary	28
11.2) Post Digest Spike Summary	30
11.3) Duplicate Sample Summary	31
11.4) Laboratory Control Sample Summary	33
11.5) ICP Serial Dilutions	34
12) METALS PREPARATION & INSTRUMENT DATA	35
12.1) ICP Interelement Correction Factors	36
13) PREPARATION & ANALYTICAL SUMMARY	41
13.1) Sample Preparation Summary	42
13.2) Analysis Run Log	43
14) METALS RAW DATA	44
14.1) METALS RAW DATA - ANALYTICAL	45
14.2) LB137662	45

14.3) METALS RAW DATA - PREP	186
14.3.1) PB170252	186
15) Analytical Runlogs	189
16) Standard Prep Logs	192
17) Shipping Document	347
17.1) Chain Of Custody	348
17.2) Lab Certificate	349

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

Cover Page

Order ID : Q3444

Project ID : Banker

Client : G Environmental

Lab Sample Number

Q3444-01
Q3444-02
Q3444-03
Q3444-04
Q3444-05
Q3444-06

Client Sample Number

16 Banker
29 Hanover
29 Post
683 WARWICK
735 WARWICK
739 WARWICK

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: 11/3/2025

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012



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

CASE NARRATIVE

G Environmental

Project Name: Banker

Project # N/A

Order ID # Q3444

Test Name: Metals Group4

A. Number of Samples and Date of Receipt:

6 Water samples were received on 10/23/2025.

B. Parameters:

According to the Chain of Custody document, the following analyses were requested: Metals Group4. This data package contains results for Metals Group4.

C. Analytical Techniques:

The analysis of Metals Group4 was based on method 6010D and digestion based on method 3010 (waters).

D. QA/ QC Samples:

The Holding Times were met for all analysis.

The Blank Spike met requirements for all compounds.

The Duplicate analysis met criteria for all compounds.

The Matrix Spike analysis met criteria for all compounds.

The Matrix Spike Duplicate analysis met criteria for all compounds.

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

The Calibration met the requirements.

The Serial Dilution met the acceptable requirements.

E. Additional Comments:

In analytical Sequence LB137662, The result was outside acceptance limit for Sodium of CCB05 but, no any samples parameter associated under this CCB.

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: Q3444

MATRIX: Water

METHOD: 6010D

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

ADDITIONAL COMMENTS: In analytical Sequence LB137662, The result was outside acceptance limit for Sodium of CCB05 but, no any samples parameter associated under this CCB.

QA REVIEW

Date

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: Q3444

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: 11/03/2025

LAB CHRONICLE

OrderID:	Q3444	OrderDate:	10/23/2025 12:27:00 PM
Client:	G Environmental	Project:	Banker
Contact:	Gary Landis	Location:	J21

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
Q3444-01	16 Banker	Water	Metals Group4	6010D	10/23/25	10/24/25	10/24/25	10/23/25
Q3444-02	29 Hanover	Water	Metals Group4	6010D	10/23/25	10/24/25	10/24/25	10/23/25
Q3444-03	29 Post	Water	Metals Group4	6010D	10/23/25	10/24/25	10/24/25	10/23/25
Q3444-04	683 WARWICK	Water	Metals Group4	6010D	10/23/25	10/24/25	10/24/25	10/23/25
Q3444-05	735 WARWICK	Water	Metals Group4	6010D	10/23/25	10/24/25	10/24/25	10/23/25
Q3444-06	739 WARWICK	Water	Metals Group4	6010D	10/23/25	10/24/25	10/24/25	10/23/25

Hit Summary Sheet
SW-846

SDG No.: Q3444 **Order ID:** Q3444
Client: G Environmental **Project ID:** Banker

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
Client ID : 16 Banker								
Q3444-01	16 Banker	Water	Sodium	122000		434	1000	ug/L
Client ID : 29 Hanover								
Q3444-02	29 Hanover	Water	Sodium	503000		434	1000	ug/L
Client ID : 29 Post								
Q3444-03	29 Post	Water	Sodium	20100		434	1000	ug/L
Client ID : 683 WARWICK								
Q3444-04	683 WARWICK	Water	Sodium	98600		434	1000	ug/L
Client ID : 735 WARWICK								
Q3444-05	735 WARWICK	Water	Sodium	144000		434	1000	ug/L
Client ID : 739 WARWICK								
Q3444-06	739 WARWICK	Water	Sodium	102000		434	1000	ug/L



SAMPLE DATA

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Report of Analysis

Client: G Environmental
Project: Banker
Client Sample ID: 16 Banker
Lab Sample ID: Q3444-01
Level (low/med): low

Date Collected: 10/23/25
Date Received: 10/23/25
SDG No.: Q3444
Matrix: Water
% Solid: 0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7440-23-5	Sodium	122000	1	434		1000	ug/L	10/24/25 10:45	10/24/25 18:37	6010D	

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

Report of Analysis

Client: G Environmental
Project: Banker
Client Sample ID: 29 Hanover
Lab Sample ID: Q3444-02
Level (low/med): low

Date Collected: 10/23/25
Date Received: 10/23/25
SDG No.: Q3444
Matrix: Water
% Solid: 0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7440-23-5	Sodium	503000	1	434		1000	ug/L	10/24/25 10:45	10/24/25 18:41	6010D	

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

Report of Analysis

Client:	G Environmental	Date Collected:	10/23/25
Project:	Banker	Date Received:	10/23/25
Client Sample ID:	29 Post	SDG No.:	Q3444
Lab Sample ID:	Q3444-03	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.
7440-23-5	Sodium	20100	1	434		1000	ug/L	10/24/25 10:45	10/24/25 18:46	6010D	

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

Report of Analysis

Client: G Environmental
Project: Banker
Client Sample ID: 683 WARWICK
Lab Sample ID: Q3444-04
Level (low/med): low

Date Collected: 10/23/25
Date Received: 10/23/25
SDG No.: Q3444
Matrix: Water
% Solid: 0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7440-23-5	Sodium	98600	1	434		1000	ug/L	10/24/25 10:45	10/24/25 18:50	6010D	

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

Report of Analysis

Client: G Environmental
Project: Banker
Client Sample ID: 735 WARWICK
Lab Sample ID: Q3444-05
Level (low/med): low

Date Collected: 10/23/25
Date Received: 10/23/25
SDG No.: Q3444
Matrix: Water
% Solid: 0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7440-23-5	Sodium	144000	1	434		1000	ug/L	10/24/25 10:45	10/24/25 18:54	6010D	

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

Report of Analysis

Client: G Environmental
Project: Banker
Client Sample ID: 739 WARWICK
Lab Sample ID: Q3444-06
Level (low/med): low

Date Collected: 10/23/25
Date Received: 10/23/25
SDG No.: Q3444
Matrix: Water
% Solid: 0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7440-23-5	Sodium	102000	1	434		1000	ug/L	10/24/25 10:45	10/24/25 18:59	6010D	

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

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



METAL CALIBRATION DATA

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Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: G EnvironmentalSDG No.: Q3444Contract: GENV01Lab Code: ACEInitial Calibration Source: EPAContinuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV01	Sodium	18600	20000	93	90 - 110	P	10/24/2025	14:33	LB137662

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: G Environmental

SDG No.: Q3444

Contract: GENV01

Lab Code: ACE

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV01	Sodium	1900	2000	95	80 - 120	P	10/24/2025	14:38	LB137662

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: G Environmental

Contract: GENV01

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

SDG No.: Q3444

Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Sodium	24300	25000	97	90 - 110	P	10/24/2025	15:12	LB137662
CCV02	Sodium	27200	25000	109	90 - 110	P	10/24/2025	16:32	LB137662
CCV03	Sodium	24500	25000	98	90 - 110	P	10/24/2025	18:29	LB137662
CCV04	Sodium	24500	25000	98	90 - 110	P	10/24/2025	19:19	LB137662
CCV05	Sodium	24900	25000	100	90 - 110	P	10/24/2025	20:06	LB137662



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Fax : 908 789 8922

Metals

- 2b -

CRDL STANDARD FOR AA & ICP

Client: G Environmental

SDG No.: Q3444

Contract: GENV01

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
CRI01	Sodium	1940	2000	97	65 - 135	P	10/24/2025	14:48	LB137662



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Fax : 908 789 8922

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: G Environmental

SDG No.: Q3444

Contract: GENV01

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB01	Sodium	868	+/-1000	U	2000	P	10/24/2025	14:43	LB137662

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: G Environmental

SDG No.: Q3444

Contract: GENV01

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB01	Sodium	868	+/-1000	U	2000	P	10/24/2025	15:16	LB137662
CCB02	Sodium	868	+/-1000	U	2000	P	10/24/2025	16:47	LB137662
CCB03	Sodium	868	+/-1000	U	2000	P	10/24/2025	18:33	LB137662
CCB04	Sodium	999	+/-1000	J	2000	P	10/24/2025	19:23	LB137662
CCB05	Sodium	1260	+/-1000	J*	2000	P	10/24/2025	20:10	LB137662

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: G Environmental

SDG No.: Q3444

Instrument: P4

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB170252BL		WATER		Batch Number:	PB170252		Prep Date:	10/24/2025	
	Sodium	478	<500	J	1000	P	10/24/2025	18:20	LB137662

Metals
- 4 -
INTERFERENCE CHECK SAMPLE

Client: <u>G Environmental</u>	SDG No.: <u>Q3444</u>
Contract: <u>GENV01</u>	Lab Code: <u>ACE</u>
ICS Source: <u>EPA</u>	Instrument ID: <u>P4</u>

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	Sodium	118			0	0	10/24/2025	14:52	LB137662
ICSAB01	Sodium	89.3			0	0	10/24/2025	14:56	LB137662



METAL QC DATA

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metals
- 5a -
MATRIX SPIKE SUMMARY

client: <u>G Environmental</u>	level: <u>low</u>	sdg no.: <u>Q3444</u>
contract: <u>GENV01</u>		lab code: <u>ACE</u>
matrix: <u>Water</u>	sample id: <u>Q3444-06</u>	client id: <u>739 WARWICKMS</u>
Percent Solids for Sample: <u>NA</u>	Spiked ID: <u>Q3444-06MS</u>	Percent Solids for Spike Sample: <u>NA</u>

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Sodium	ug/L	75 - 125	99100		102000		1500	-179		P

metals
- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

client: <u>G Environmental</u>	level: <u>low</u>	sdg no.: <u>Q3444</u>
contract: <u>GENV01</u>		lab code: <u>ACE</u>
matrix: <u>Water</u>	sample id: <u>Q3444-06</u>	client id: <u>739 WARWICKMSD</u>
Percent Solids for Sample: <u>NA</u>	Spiked ID: <u>Q3444-06MSD</u>	Percent Solids for Spike Sample: <u>NA</u>

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Sodium	ug/L	75 - 125	102000		102000		1500	13		P



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Sample ID: _____ **Spiked ID:** _____

Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client:	<u>G Environmental</u>	Level:	<u>LOW</u>	SDG No.:	<u>Q3444</u>
Contract:	<u>GENV01</u>			Lab Code:	<u>ACE</u>
Matrix:	<u>Water</u>	Sample ID:	<u>Q3444-06</u>	Client ID:	<u>739 WARWICKDUP</u>
Percent Solids for Sample:	NA	Duplicate ID	Q3444-06DUP	Percent Solids for Spike Sample:	NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Sodium	ug/L	20	102000		103000		1		P

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

Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client:	<u>G Environmental</u>	Level:	<u>LOW</u>	SDG No.:	<u>Q3444</u>
Contract:	<u>GENV01</u>			Lab Code:	<u>ACE</u>
Matrix:	<u>Water</u>	Sample ID:	<u>Q3444-06MS</u>	Client ID:	<u>739 WARWICKMSD</u>
Percent Solids for Sample:	NA	Duplicate ID	Q3444-06MSD	Percent Solids for Spike Sample:	NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Sodium	ug/L	20	99100		102000		3		P

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

Metals

- 7 -

LABORATORY CONTROL SAMPLE SUMMARY

Client: G Environmental

SDG No.: Q3444

Contract: GENV01

Lab Code: ACE

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB170252BS Sodium	ug/L	1500	1650		110	80 - 120	P

Metals
-9 -
ICP SERIAL DILUTIONS

SAMPLE NO.

739 WARWICKL

Lab Name: Alliance **Contract:** GENV01
Lab Code: ACE **Lb No.:** lb137662 **Lab Sample ID :** Q3444-06L **SDG No.:** Q3444
Matrix (soil/water): Water **Level (low/med):** LOW
Concentration Units: ug/L

Analyte	Initial Sample Result (I) C	Serial Dilution Result (S) C	% Differ- ence	Q	M
Sodium	102000	100000	1		P



METAL PREPARATION & INSTRUMENT DATA

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Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: G Environmental

SDG No.: Q3444

Contract: GENV01

Lab Code: ACE

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Al	Ca	Fe	Mg	Ag
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: G Environmental

SDG No.: Q3444

Contract: GENV01

Lab Code: ACE

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interement Correction Factors For:				
		As	Ba	Be	Cd	Co
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: G Environmental

SDG No.: Q3444

Contract: GENV01

Lab Code: ACE

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Cr	Cu	K	Mn	Mo
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: G Environmental

SDG No.: Q3444

Contract: GENV01

Lab Code: ACE

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interement Correction Factors For:				
		Na	Ni	Pb	Sb	Se
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: G Environmental

SDG No.: Q3444

Contract: GENV01

Lab Code: ACE

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interement Correction Factors For:				
		Sn	Ti	Tl	V	Zn
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000



METAL PREPARATION & ANALYICAL SUMMARY

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Metals
- 13 -

SAMPLE PREPARATION SUMMARY

Client: G Environmental
Contract: GENV01

SDG No.: Q3444
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: PB170252							
PB170252BL	PB170252BL	MB	WATER	10/24/2025	50.0	25.0	
PB170252BS	PB170252BS	LCS	WATER	10/24/2025	50.0	25.0	
Q3444-01	16 Banker	SAM	WATER	10/24/2025	50.0	25.0	
Q3444-02	29 Hanover	SAM	WATER	10/24/2025	50.0	25.0	
Q3444-03	29 Post	SAM	WATER	10/24/2025	50.0	25.0	
Q3444-04	683 WARWICK	SAM	WATER	10/24/2025	50.0	25.0	
Q3444-05	735 WARWICK	SAM	WATER	10/24/2025	50.0	25.0	
Q3444-06	739 WARWICK	SAM	WATER	10/24/2025	50.0	25.0	
Q3444-06DUP	739 WARWICKDUP	DUP	WATER	10/24/2025	50.0	25.0	
Q3444-06MS	739 WARWICKMS	MS	WATER	10/24/2025	50.0	25.0	
Q3444-06MSD	739 WARWICKMSD	MSD	WATER	10/24/2025	50.0	25.0	

metals
- 14 -
ANALYSIS RUN LOG

Client: G Environmental

Contract: GENV01

Lab code: ACE

Sdg no.: Q3444

Instrument id number: _____

Method: _____

Run number: LB137662

Start date: 10/24/2025

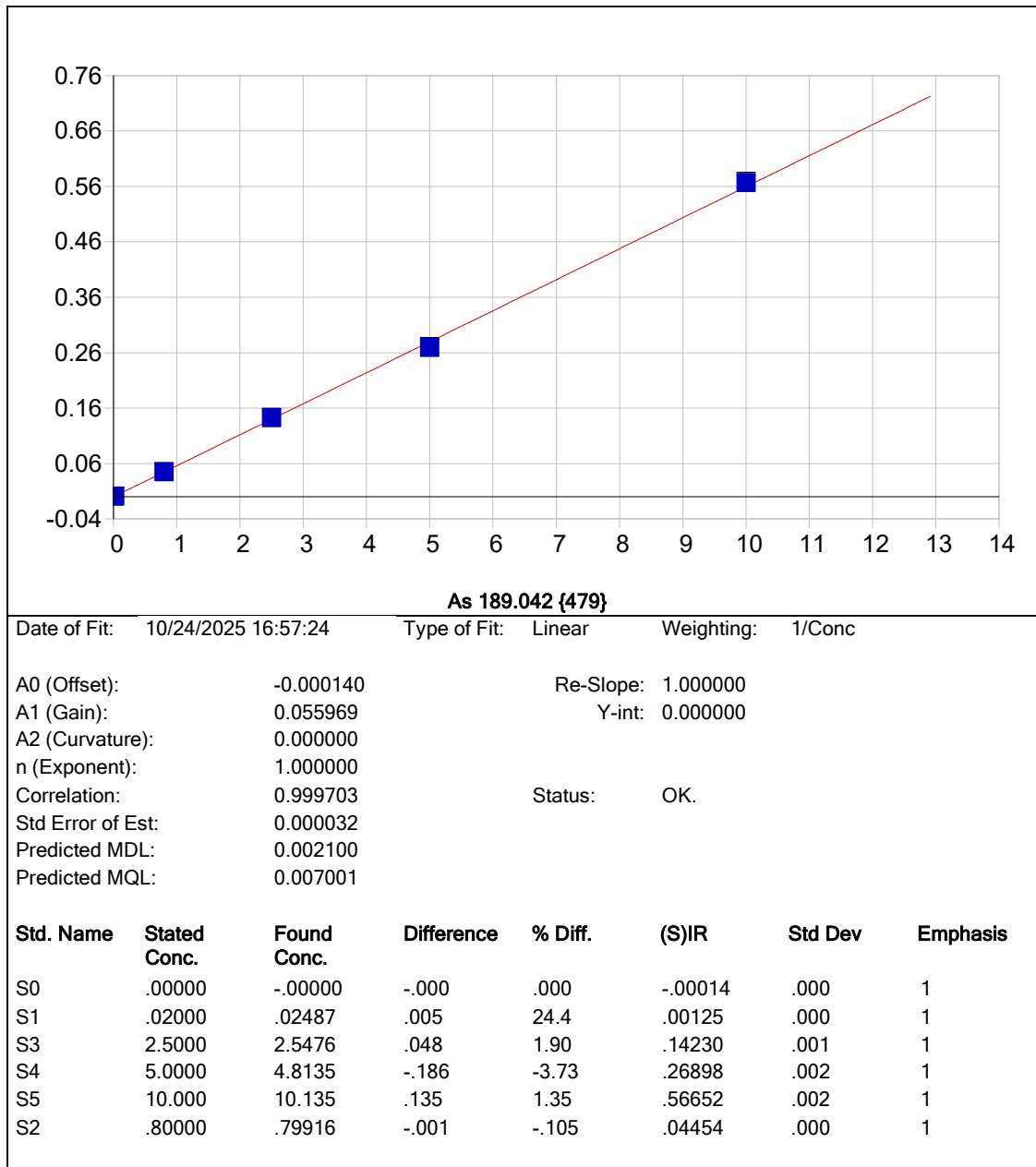
End date: 10/24/2025

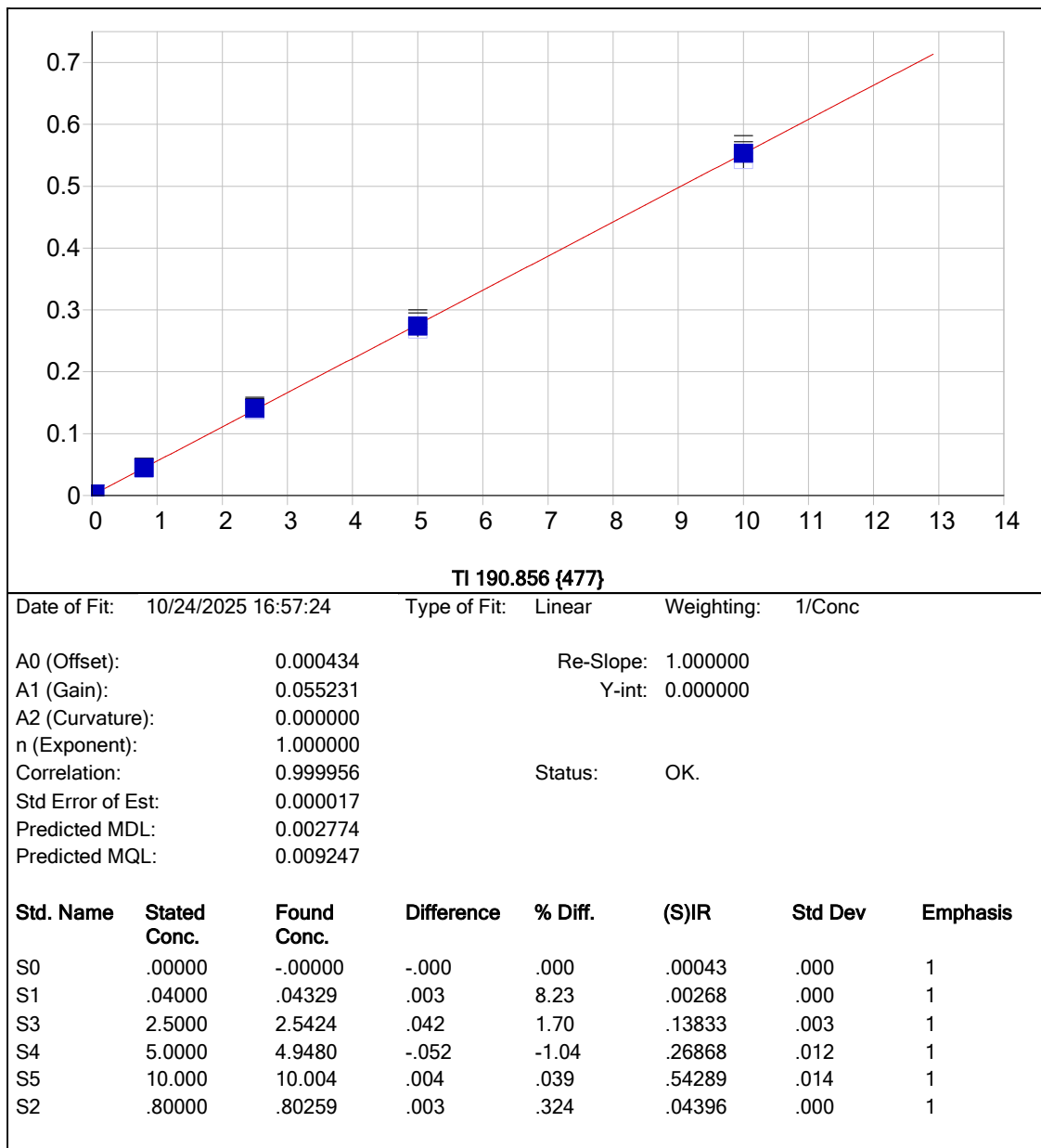
Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1407	Na
S1	S1	1	1412	Na
S2	S2	1	1416	Na
S3	S3	1	1420	Na
S4	S4	1	1424	Na
S5	S5	1	1429	Na
ICV01	ICV01	1	1433	Na
LLICV01	LLICV01	1	1438	Na
ICB01	ICB01	1	1443	Na
CRI01	CRI01	1	1448	Na
ICSA01	ICSA01	1	1452	Na
ICSAB01	ICSAB01	1	1456	Na
CCV01	CCV01	1	1512	Na
CCB01	CCB01	1	1516	Na
CCV02	CCV02	1	1632	Na
CCB02	CCB02	1	1647	Na
PB170252BL	PB170252BL	1	1820	Na
PB170252BS	PB170252BS	1	1825	Na
CCV03	CCV03	1	1829	Na
CCB03	CCB03	1	1833	Na
Q3444-01	16 Banker	1	1837	Na
Q3444-02	29 Hanover	1	1841	Na
Q3444-03	29 Post	1	1846	Na
Q3444-04	683 WARWICK	1	1850	Na
Q3444-05	735 WARWICK	1	1854	Na
Q3444-06	739 WARWICK	1	1859	Na
Q3444-06DUP	739 WARWICKDUP	1	1903	Na
Q3444-06L	739 WARWICKL	5	1907	Na
Q3444-06MS	739 WARWICKMS	1	1911	Na
Q3444-06MSD	739 WARWICKMSD	1	1915	Na
CCV04	CCV04	1	1919	Na
CCB04	CCB04	1	1923	Na
CCV05	CCV05	1	2006	Na
CCB05	CCB05	1	2010	Na

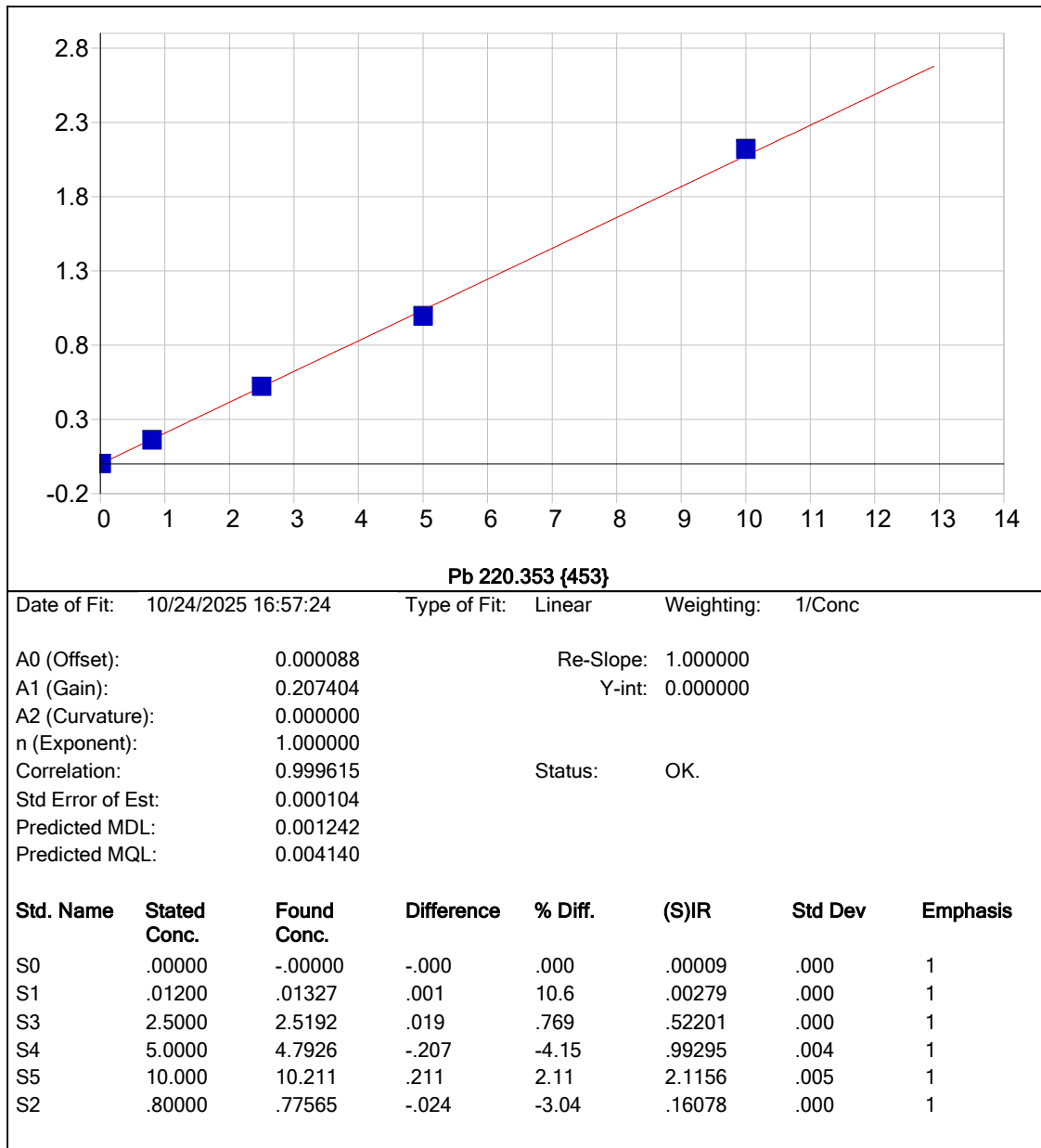


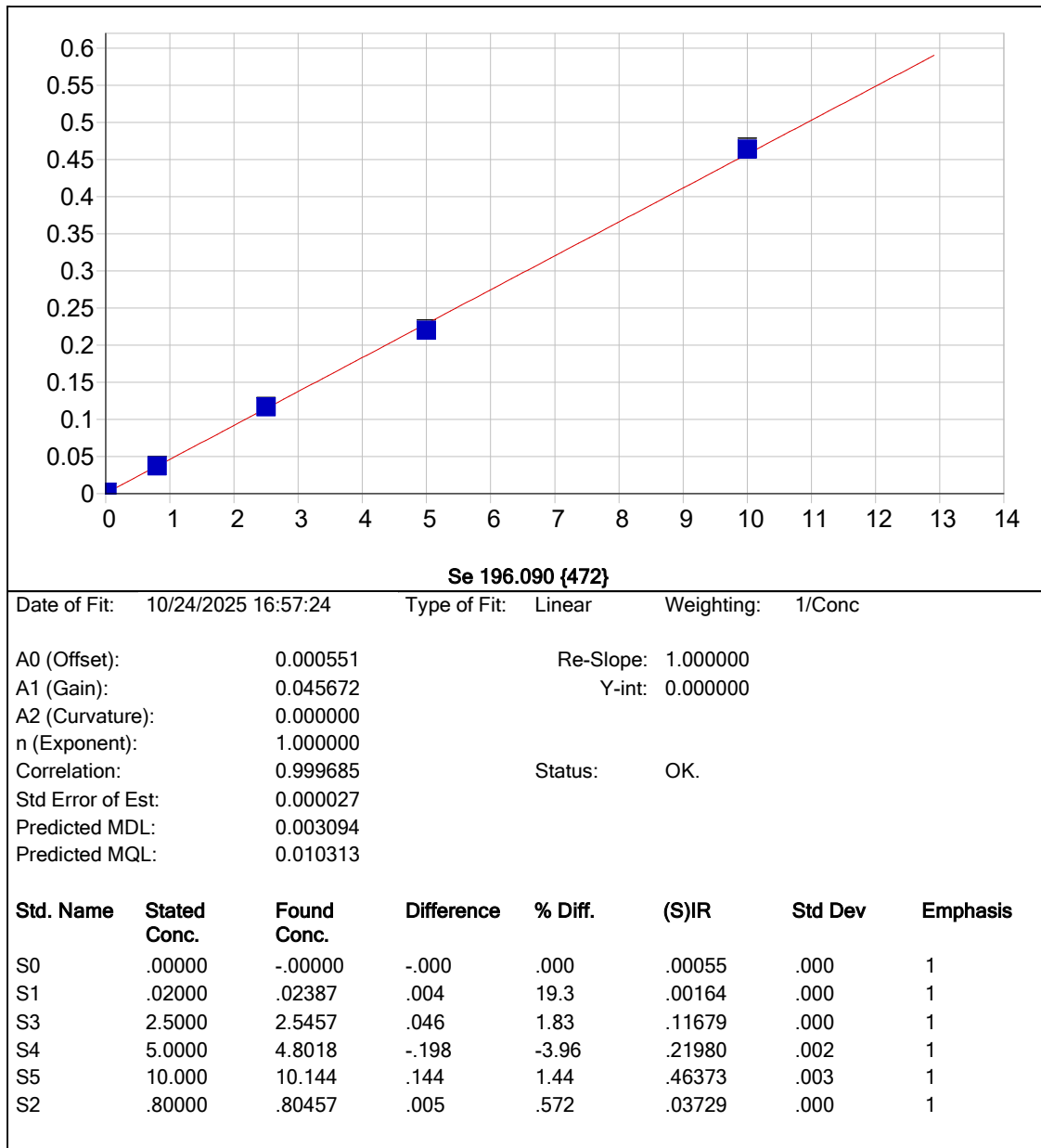
METAL RAW DATA

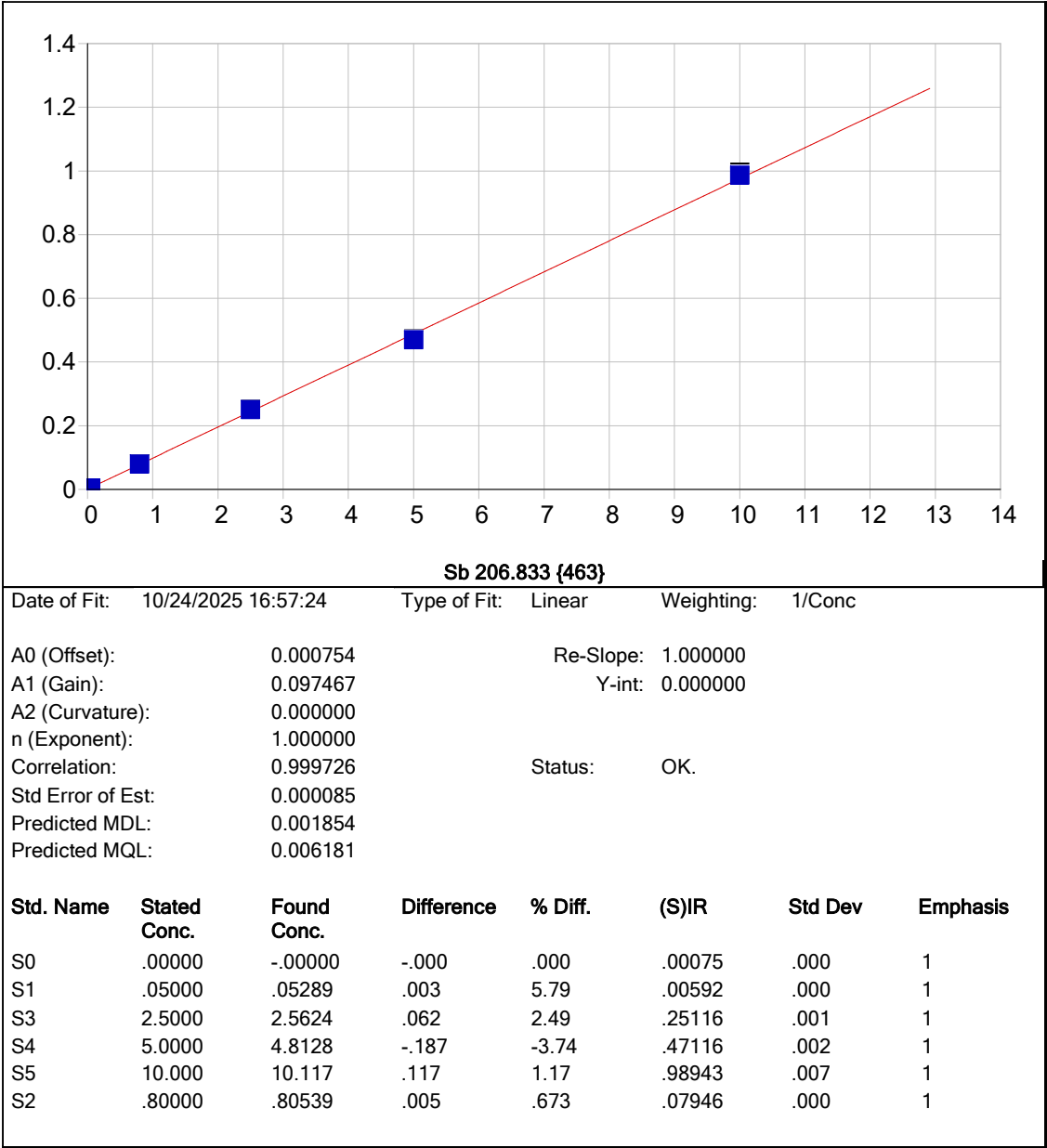
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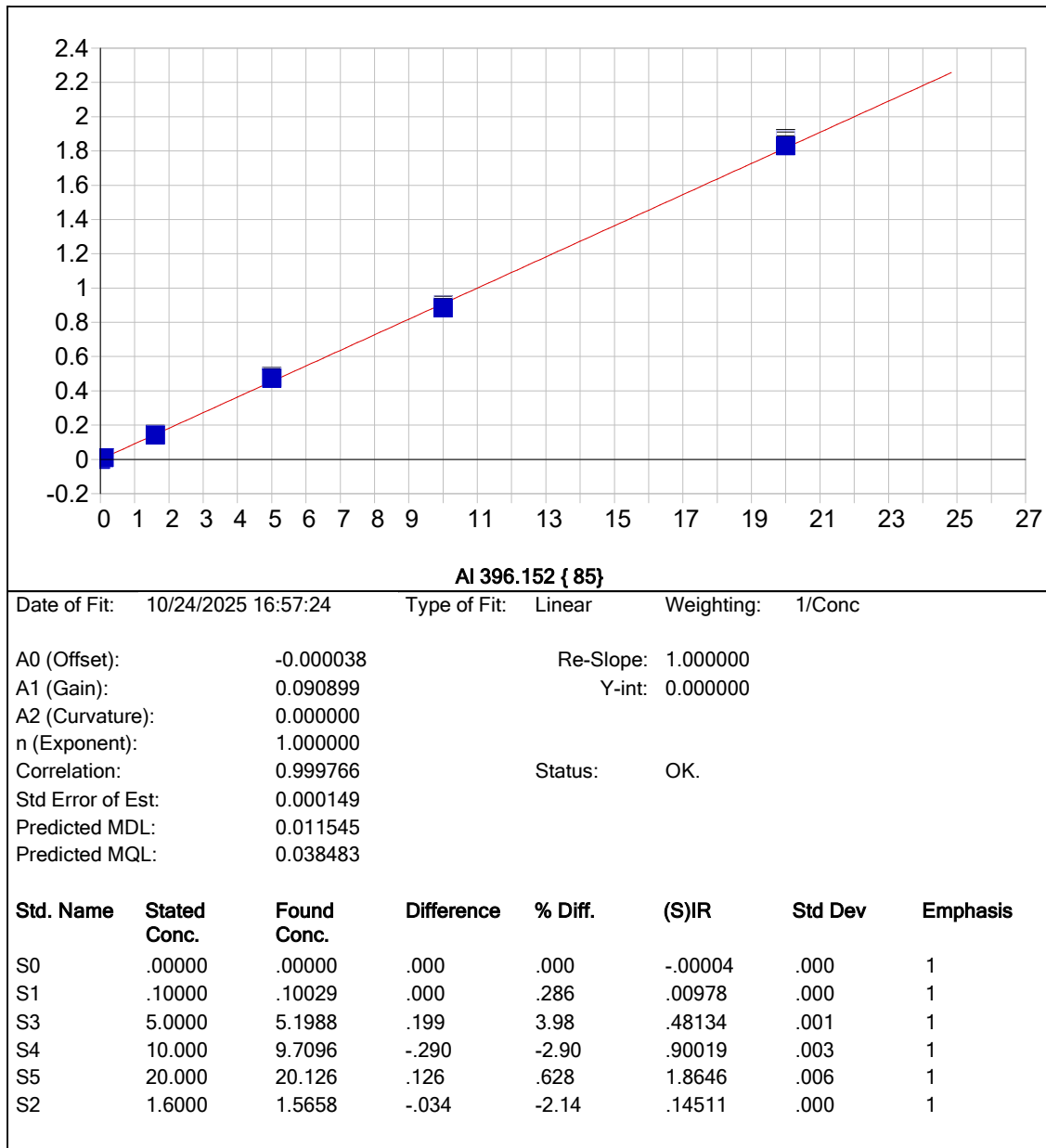


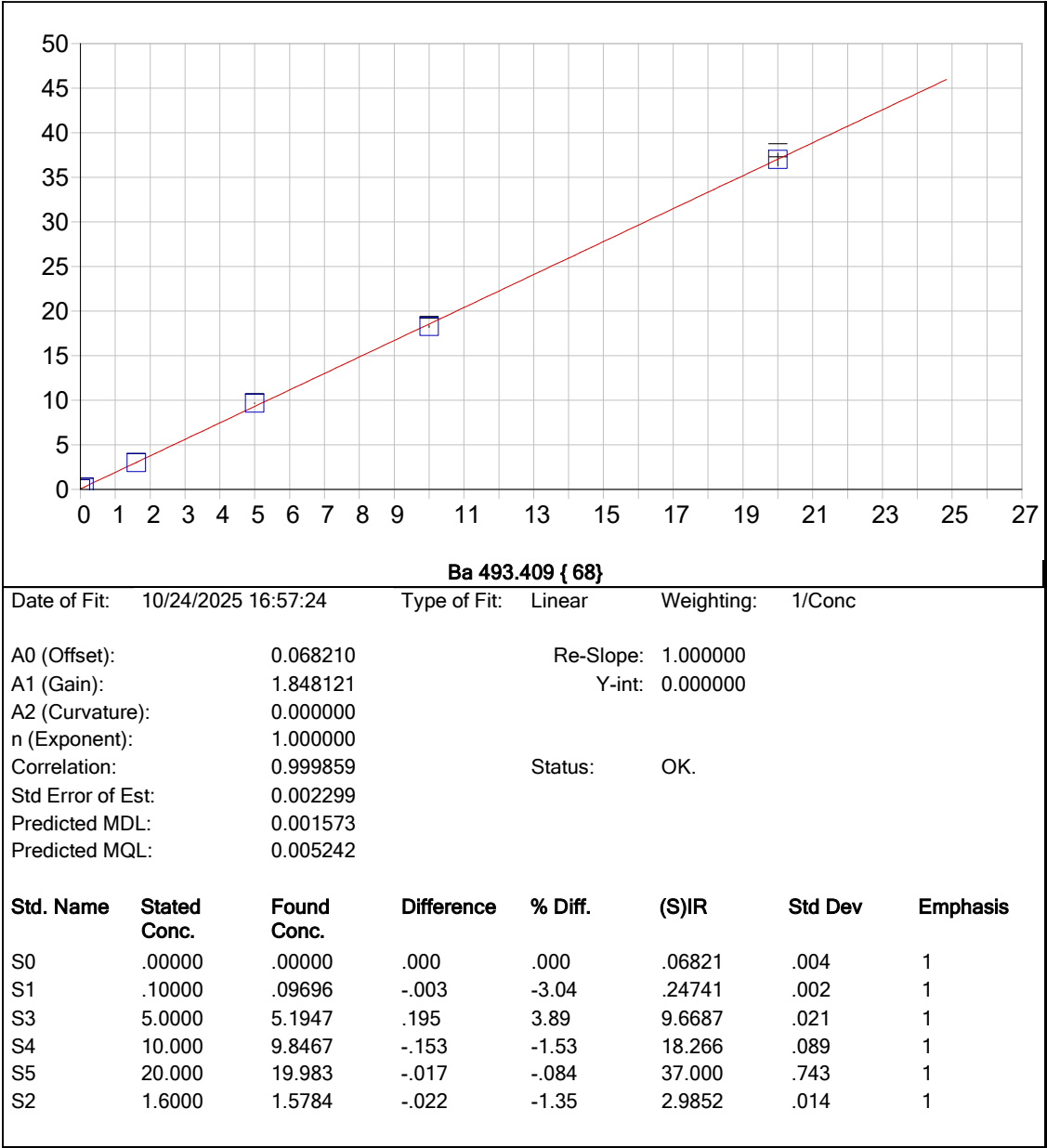


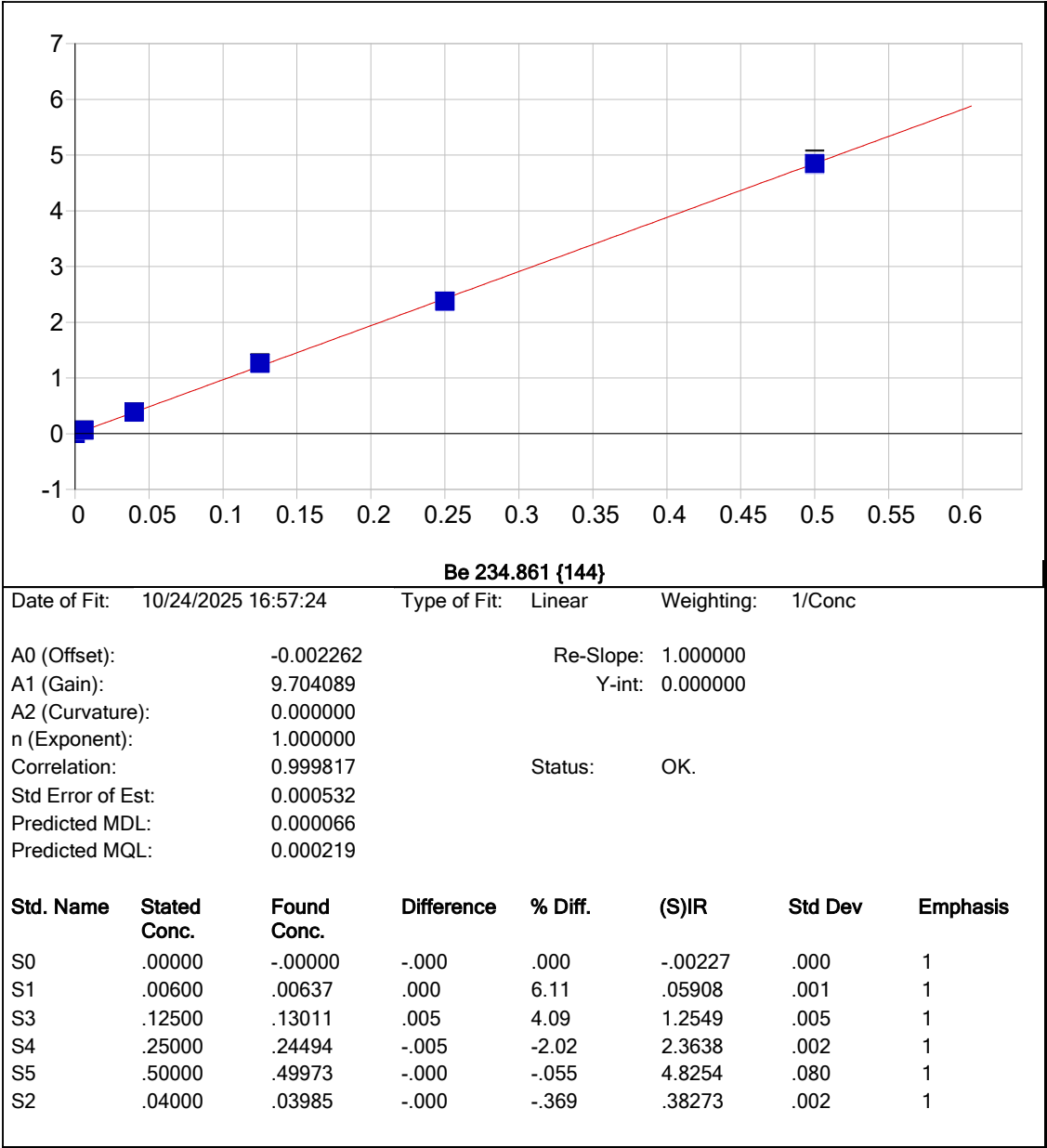


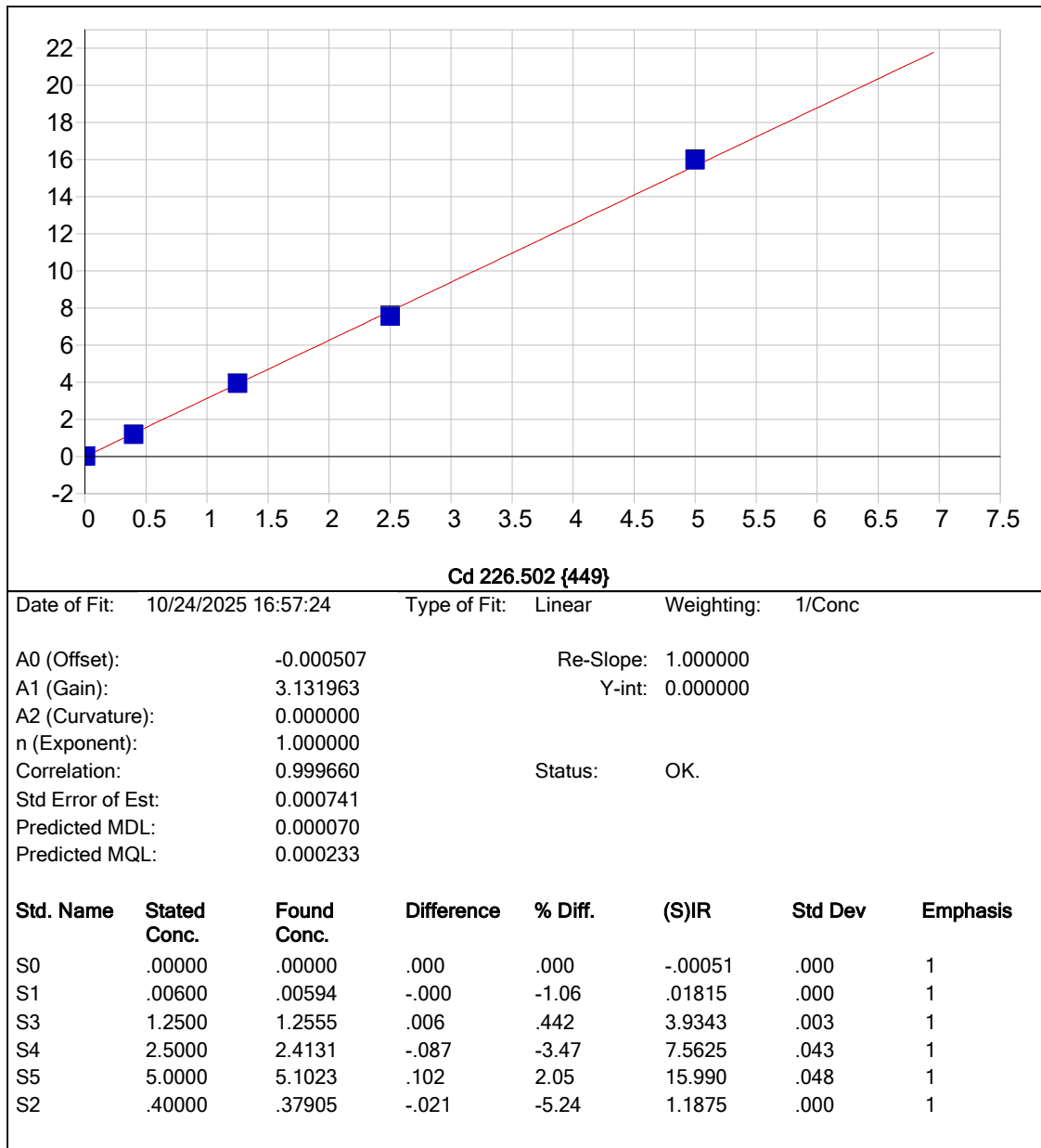


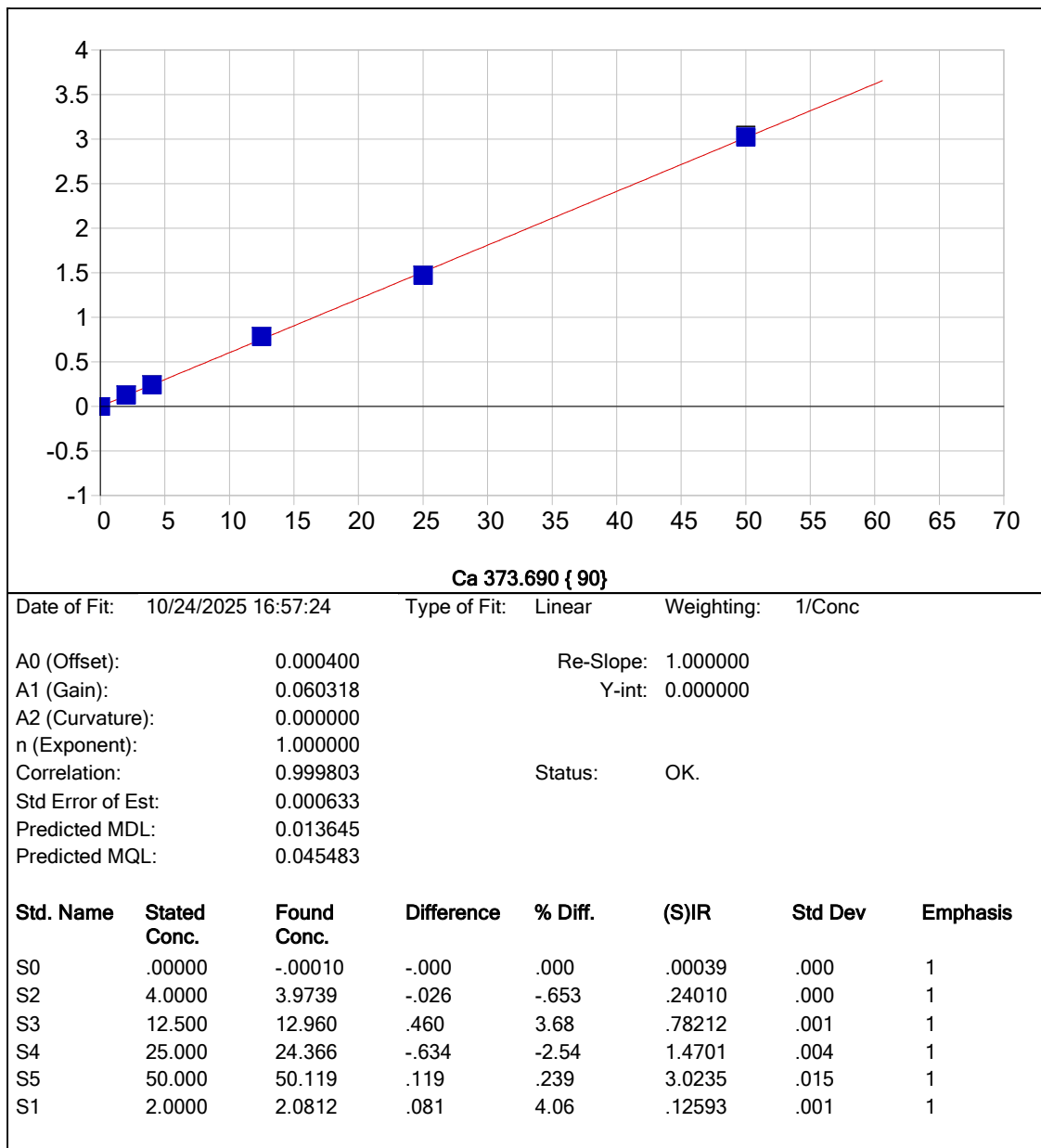


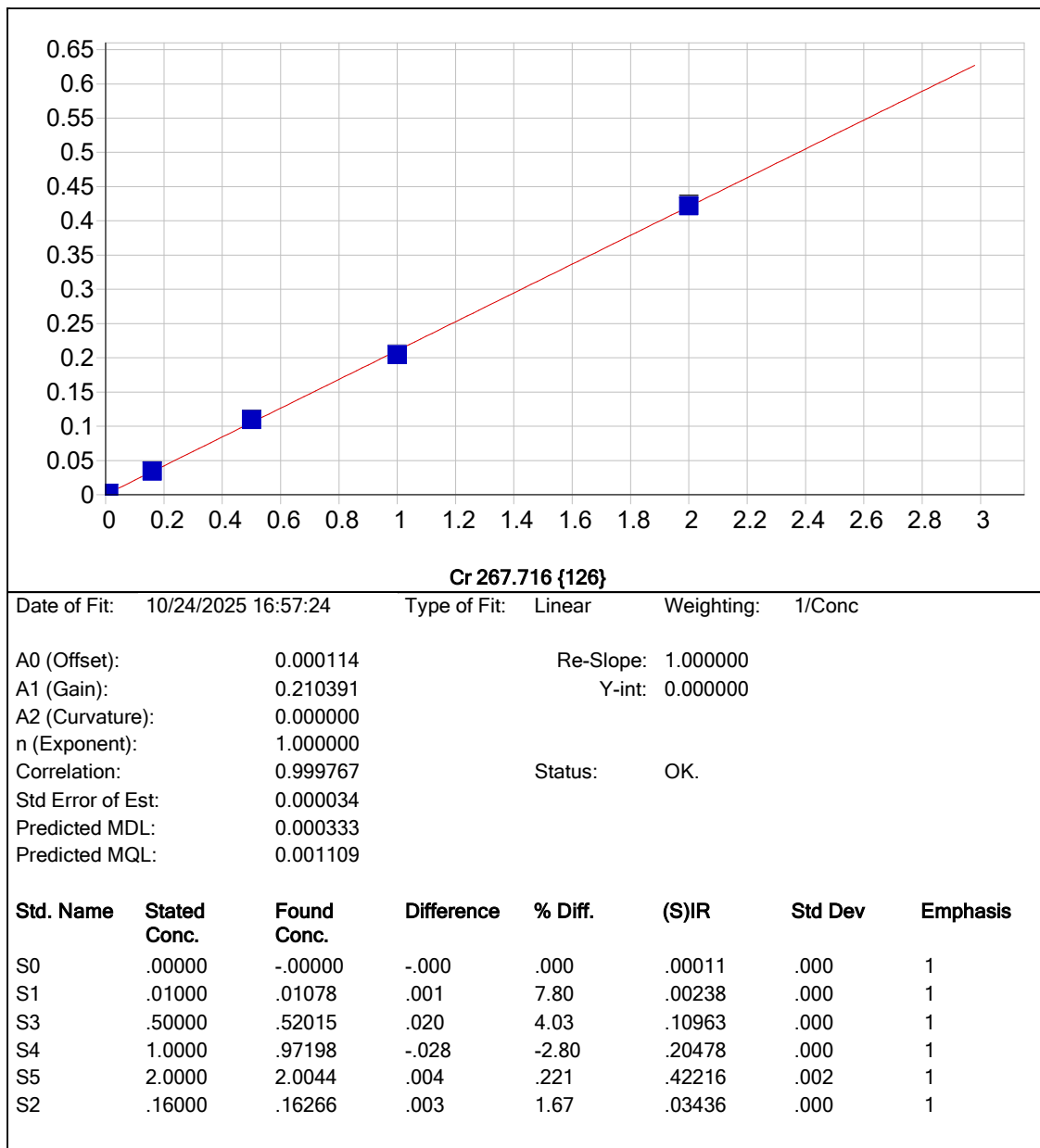


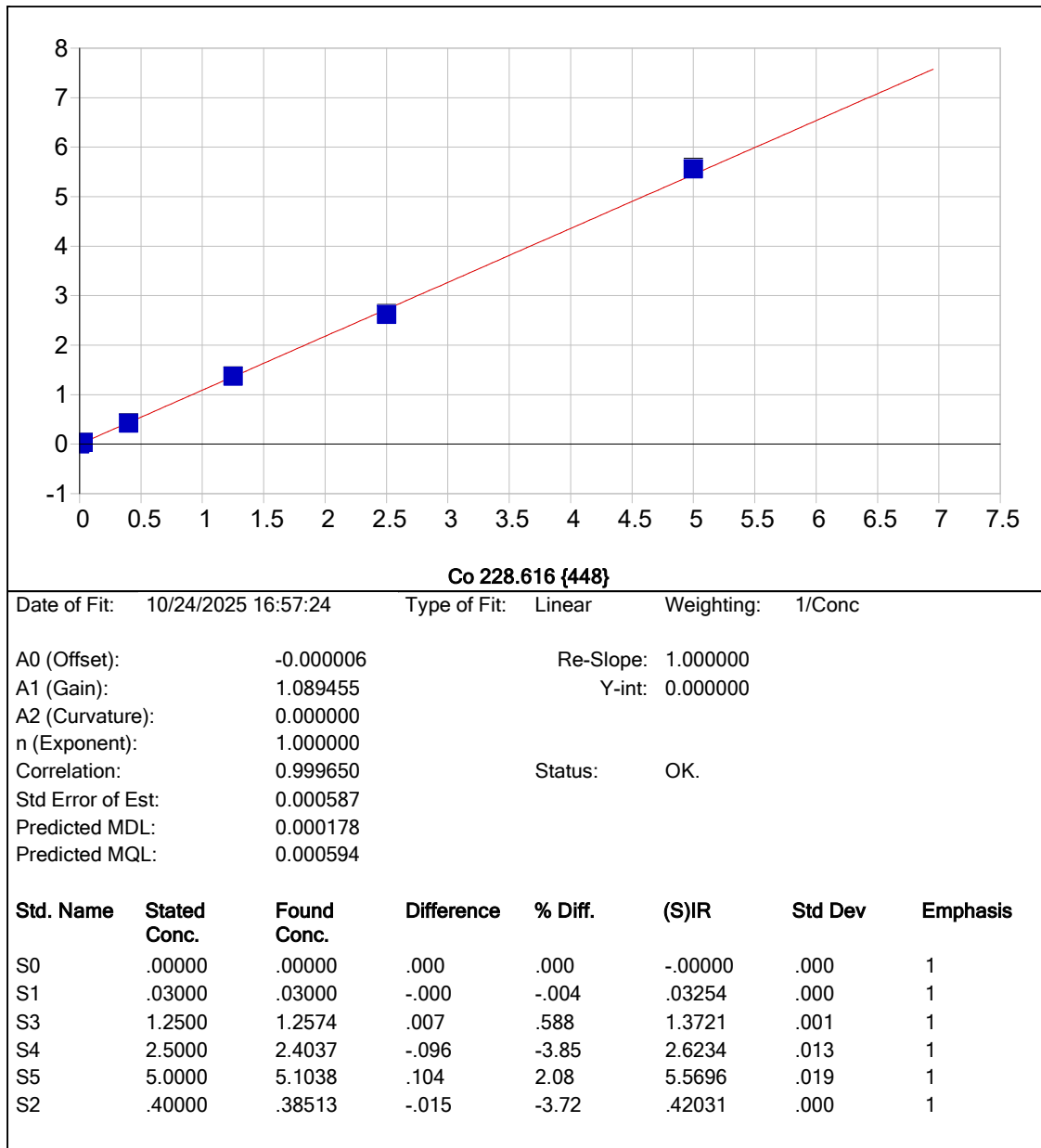


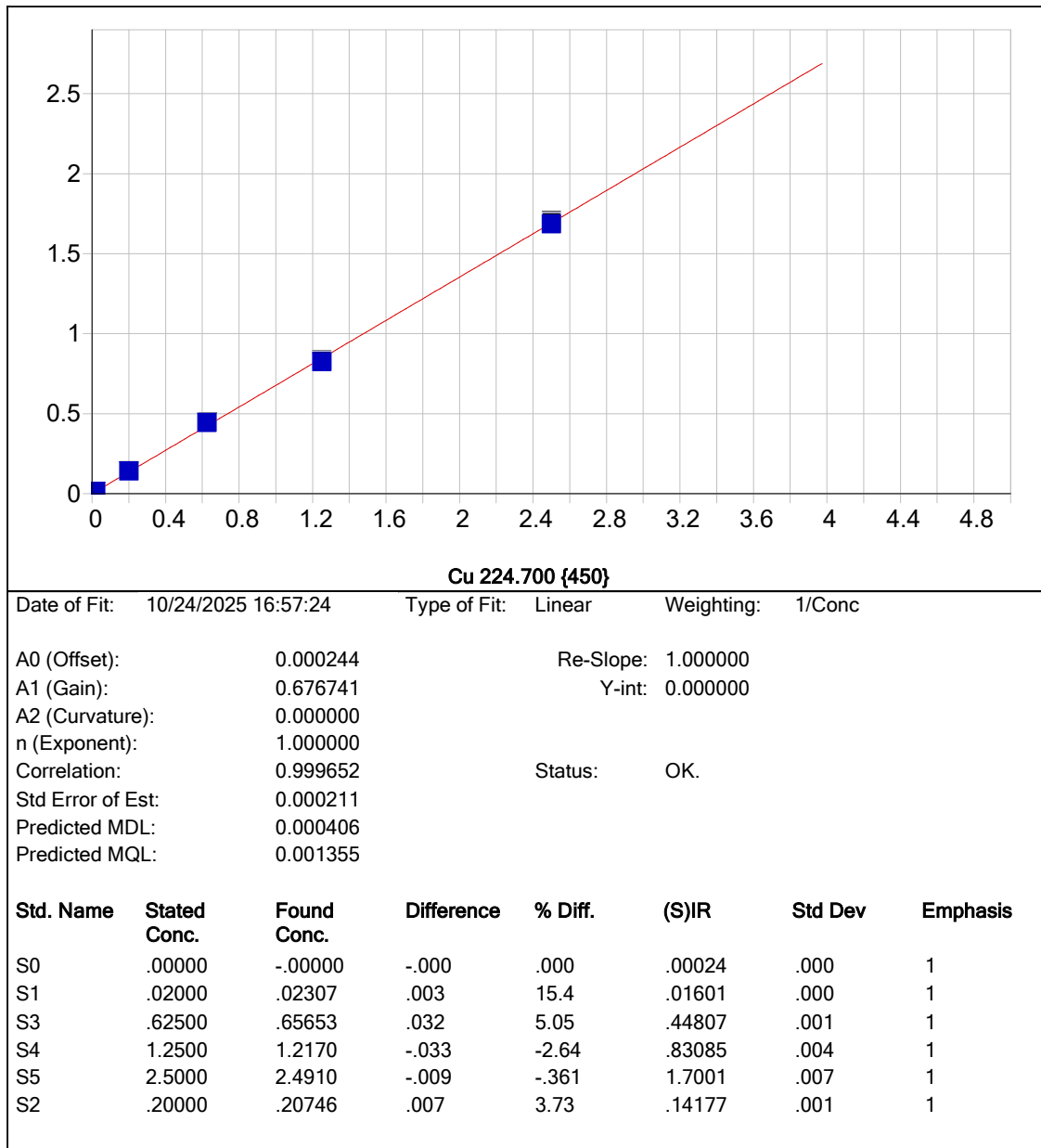


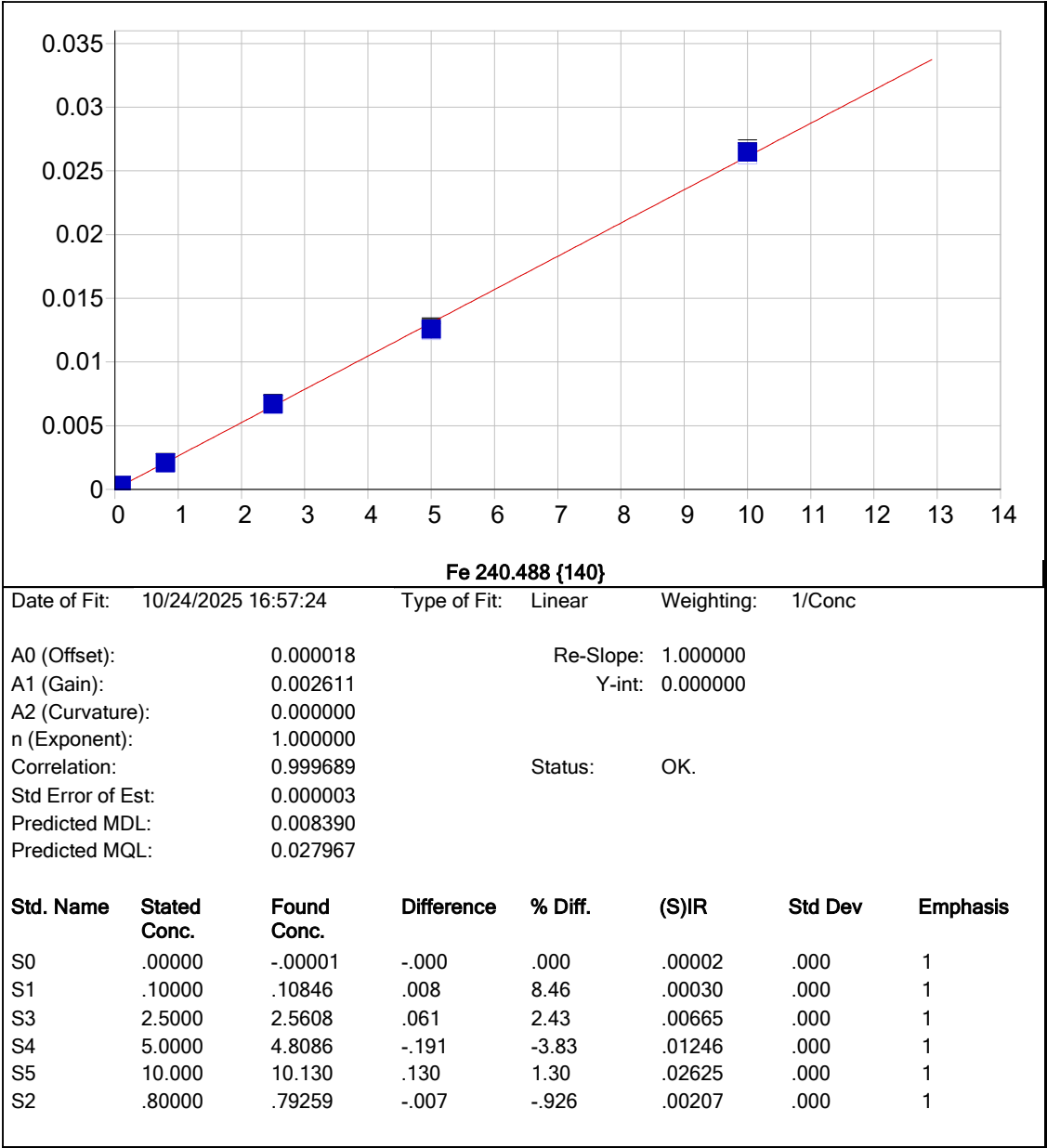


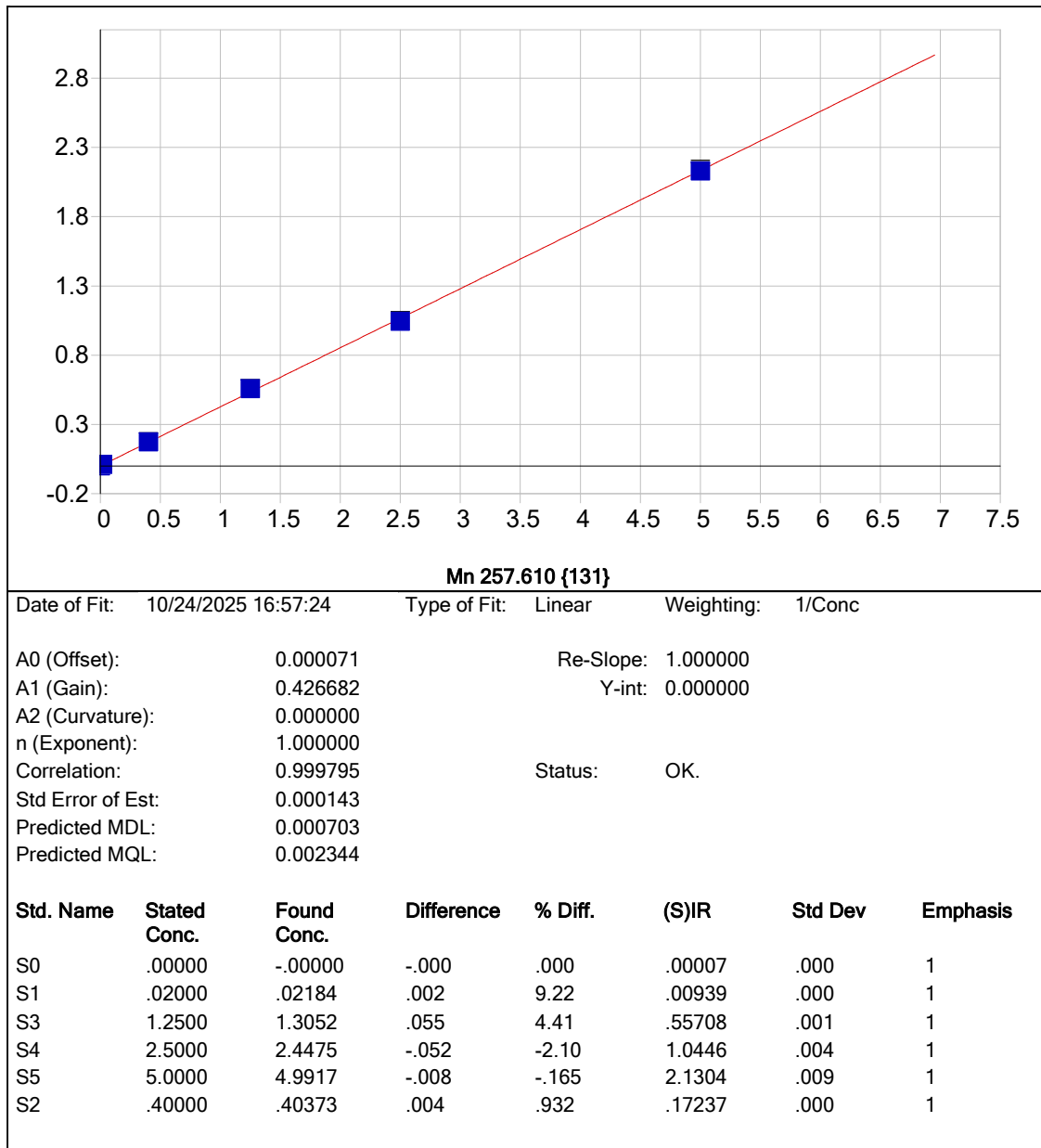


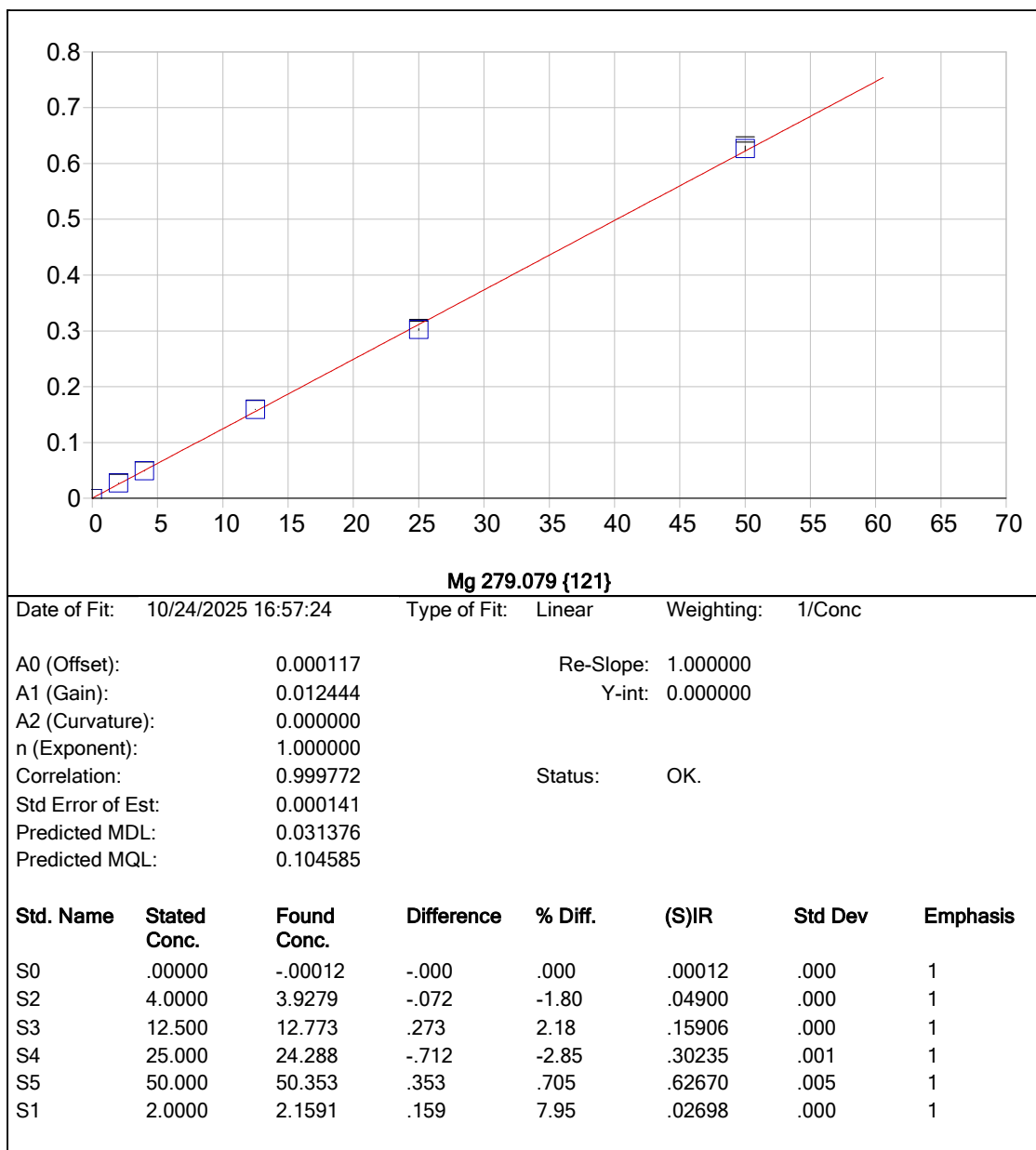


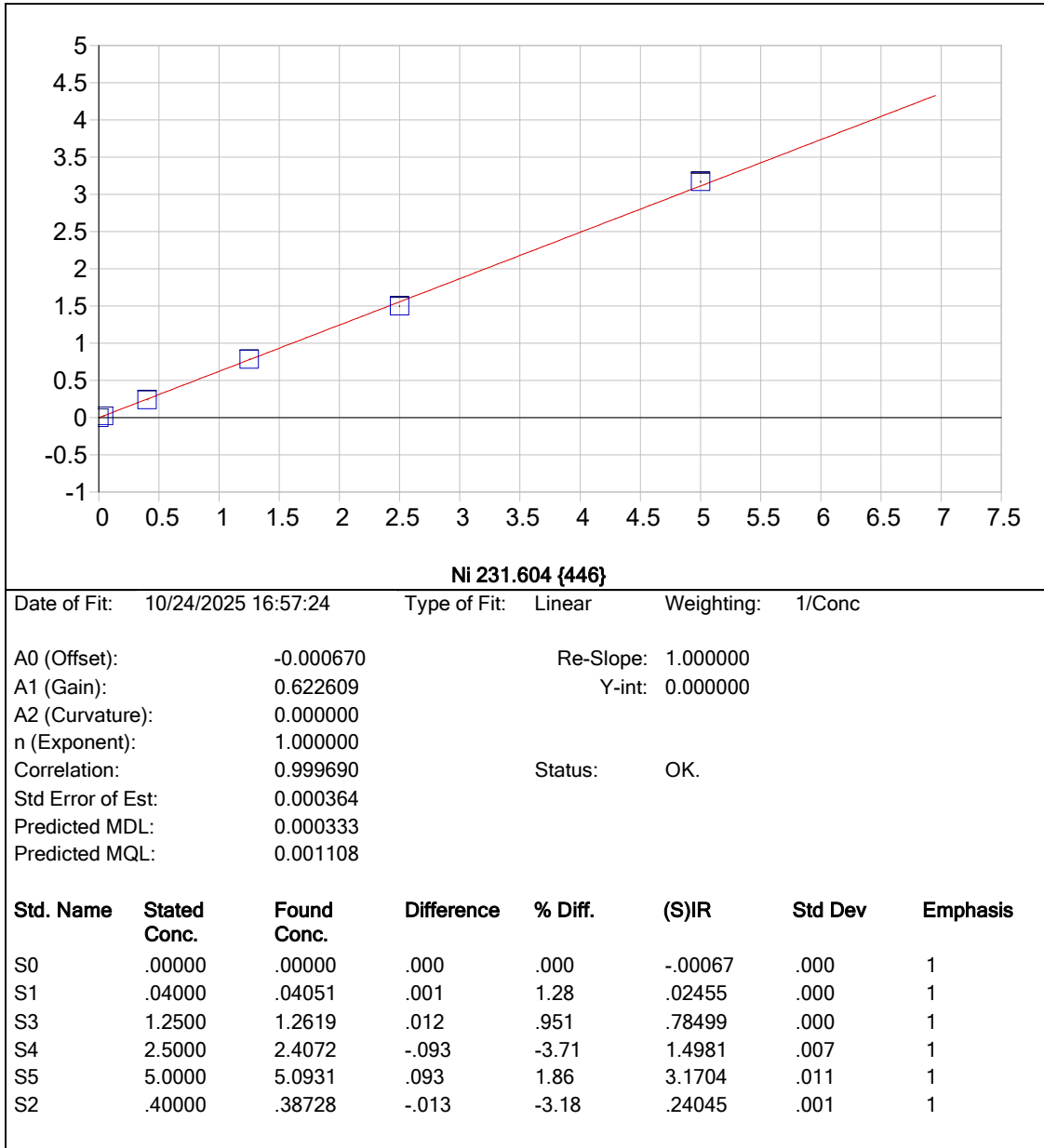


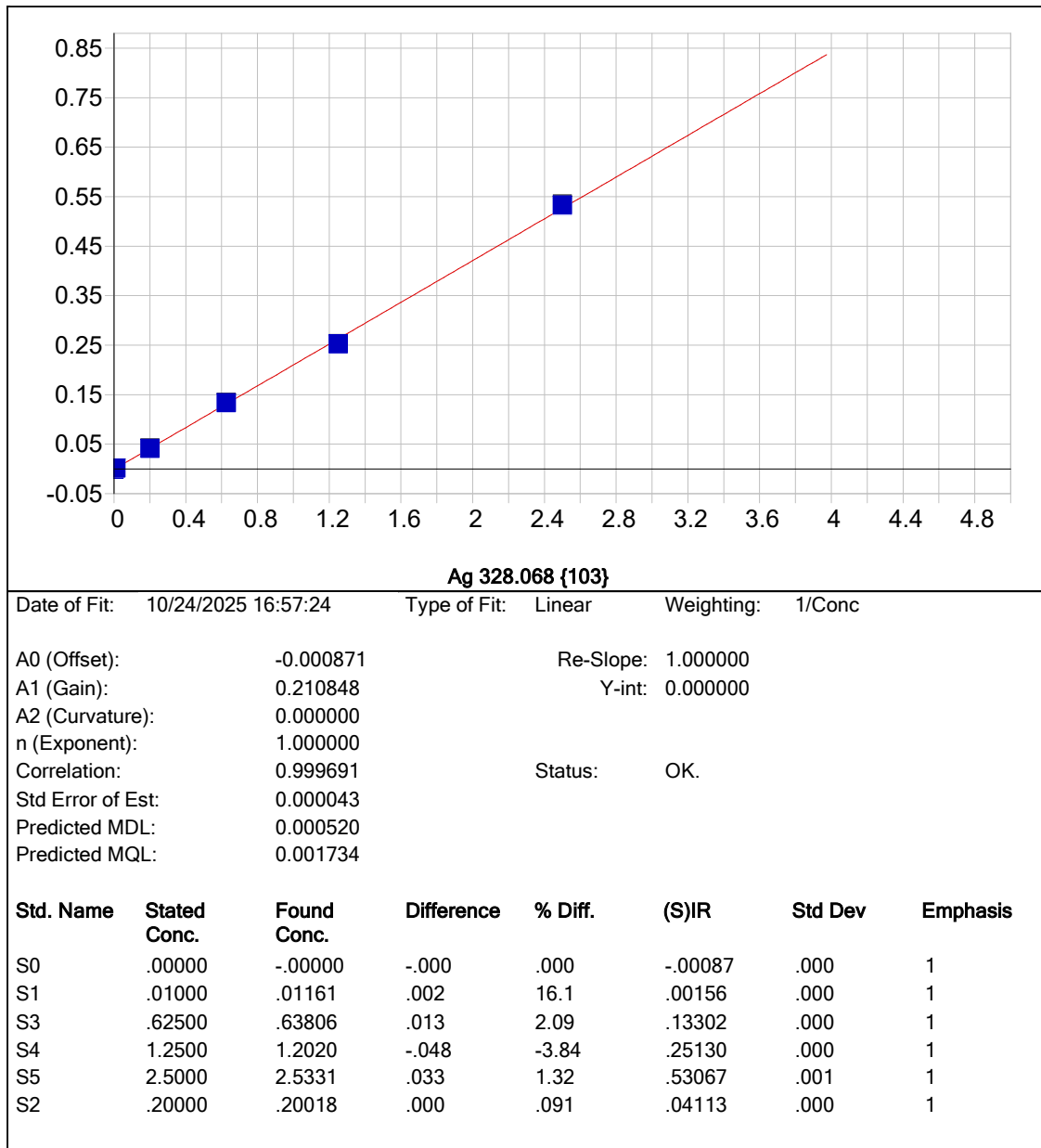


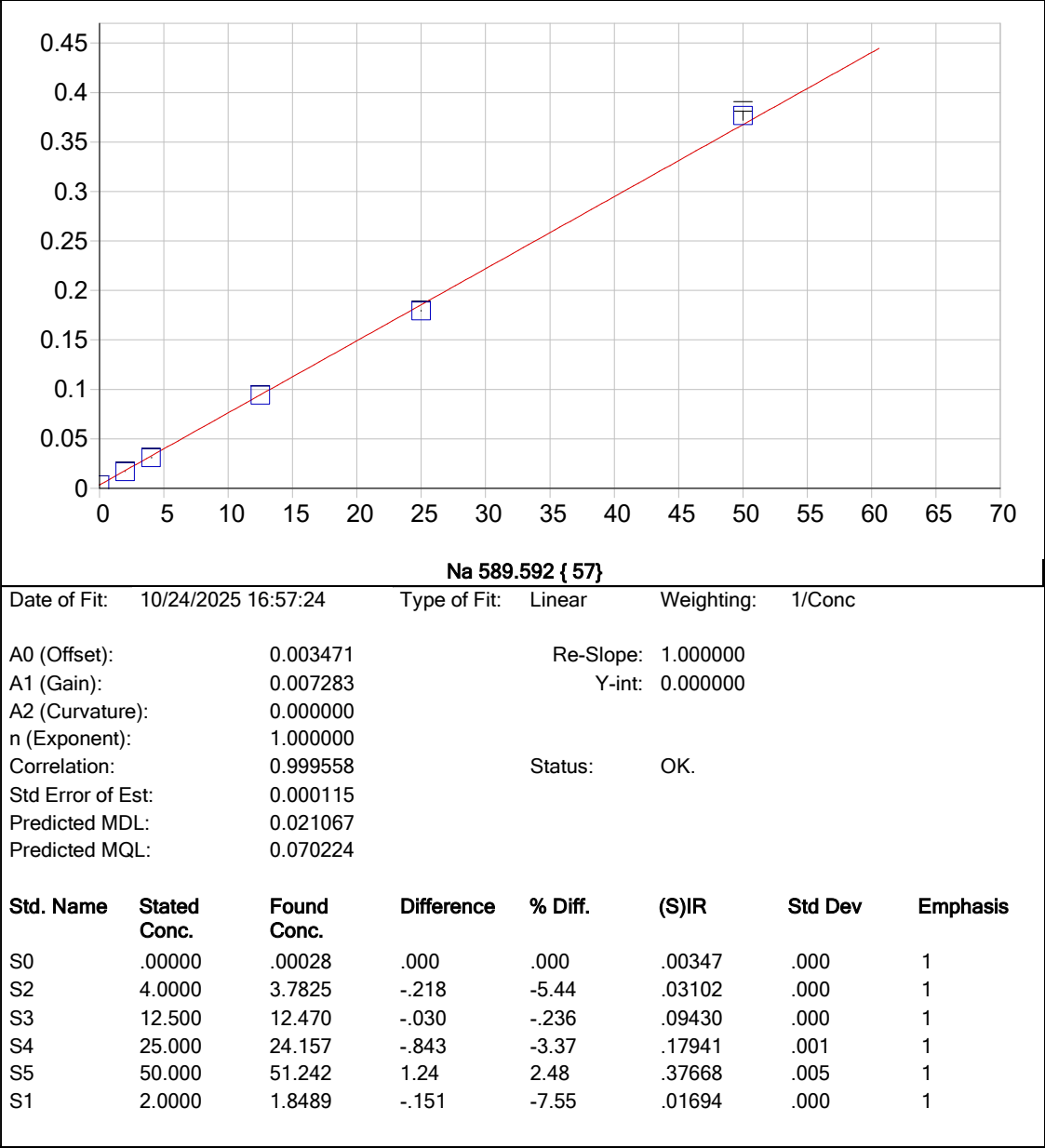


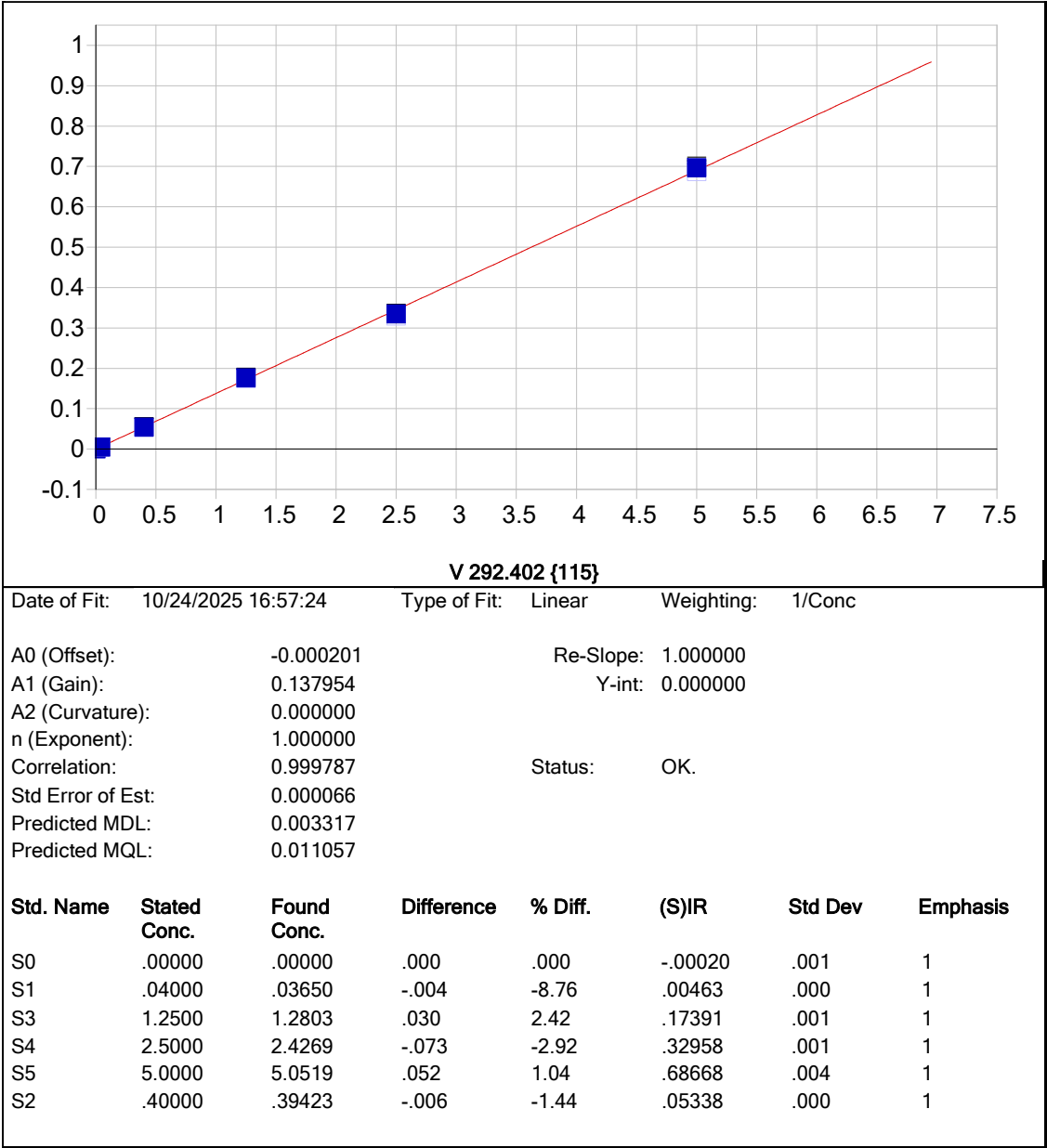


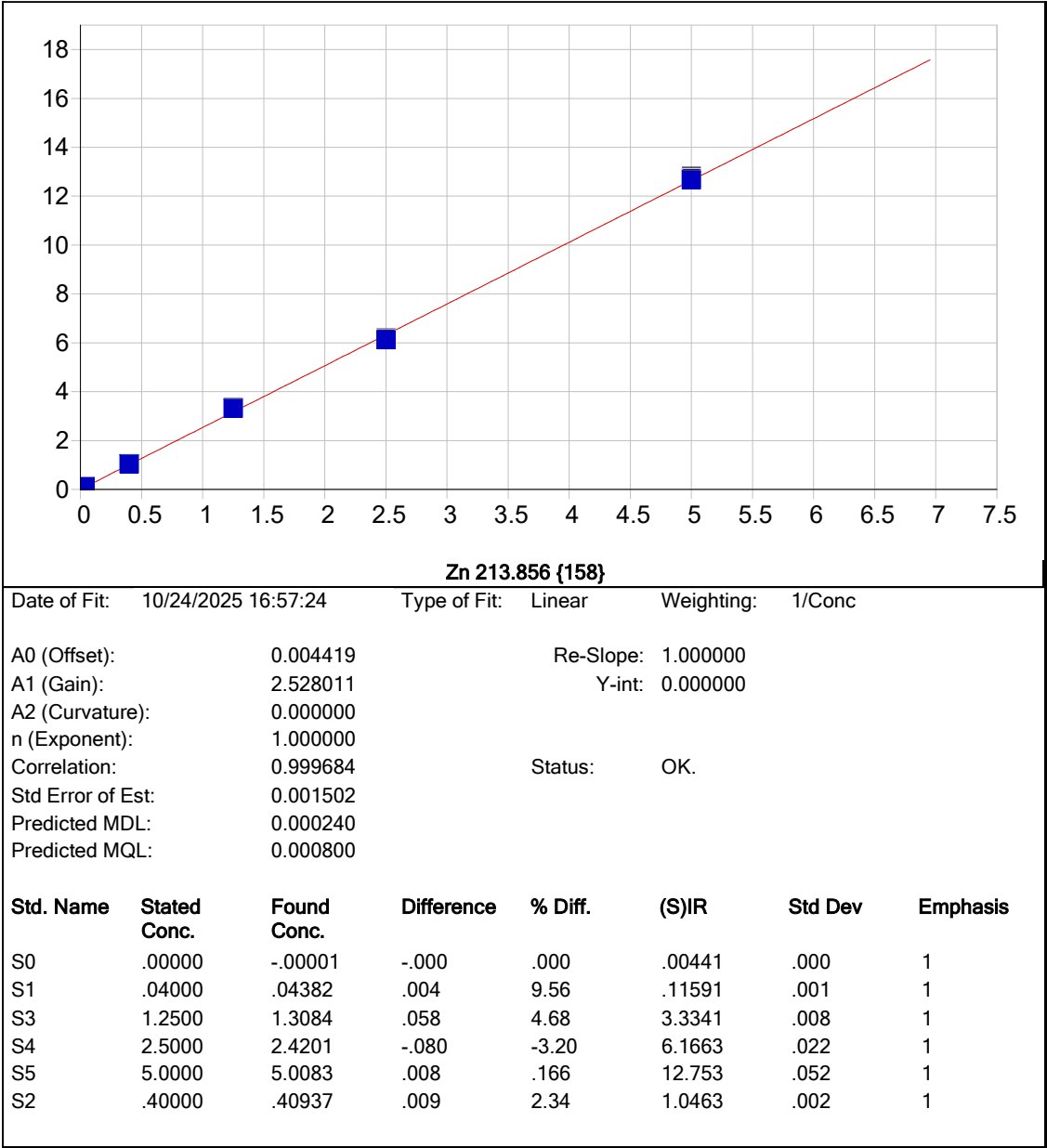


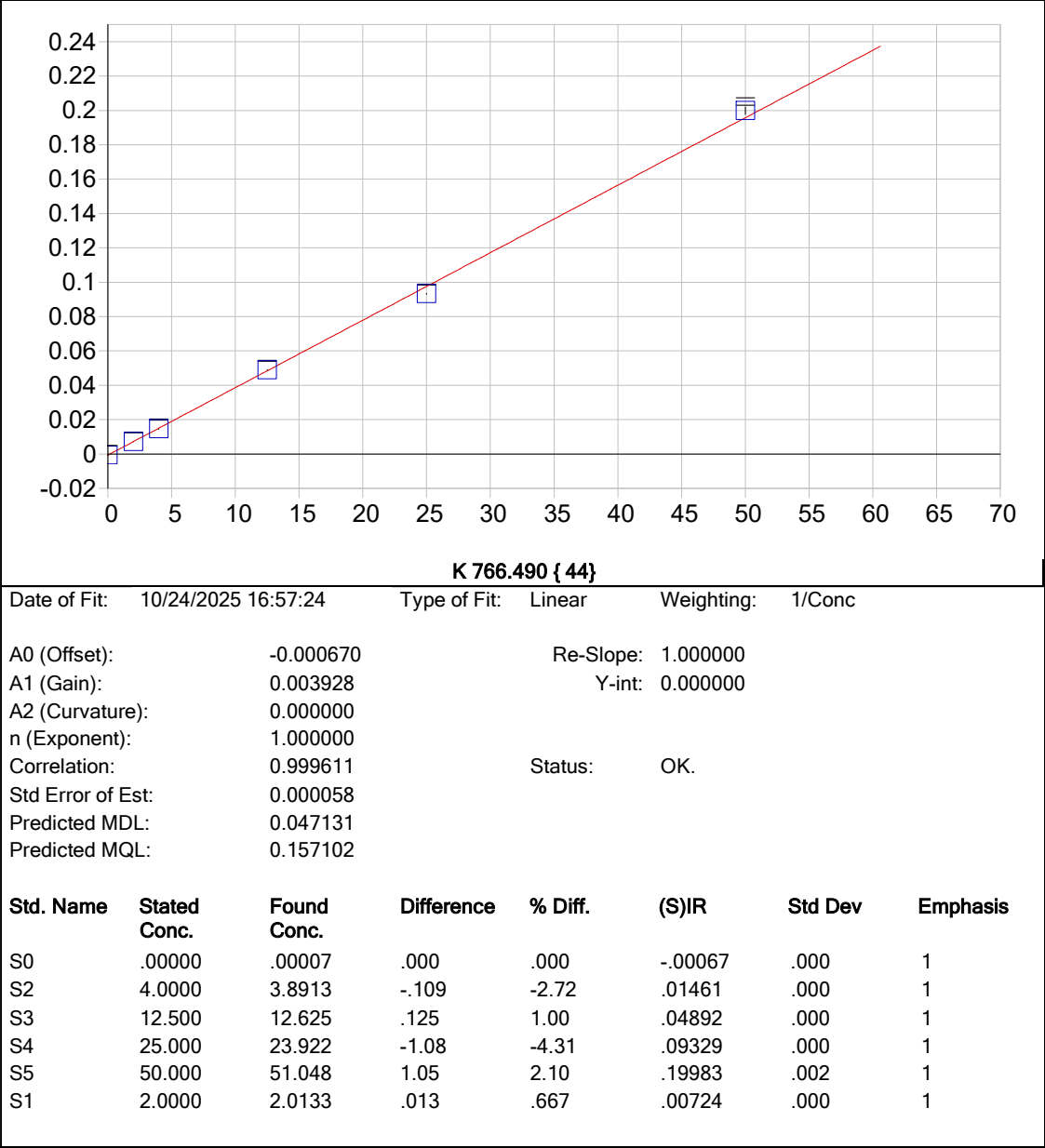


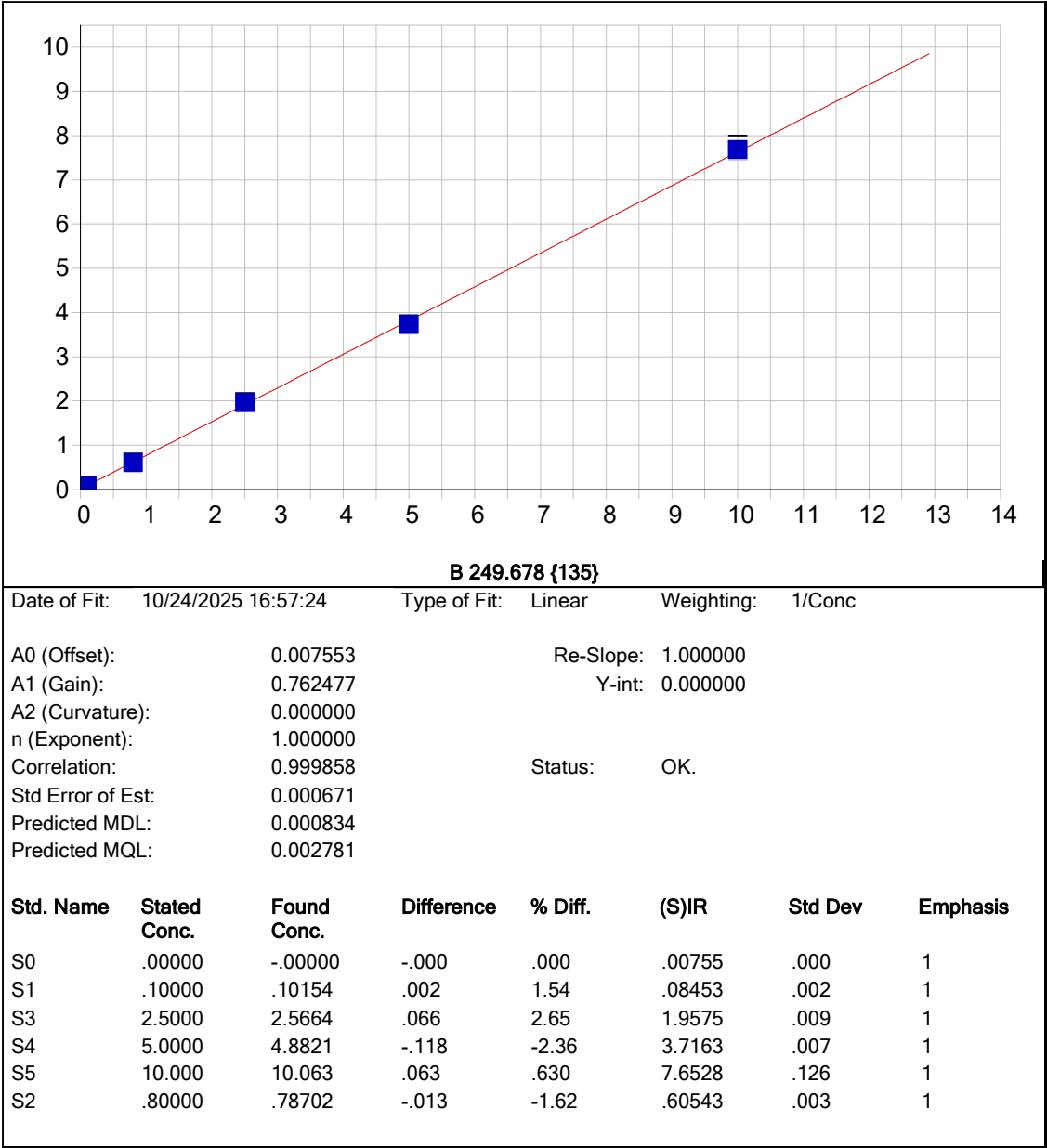


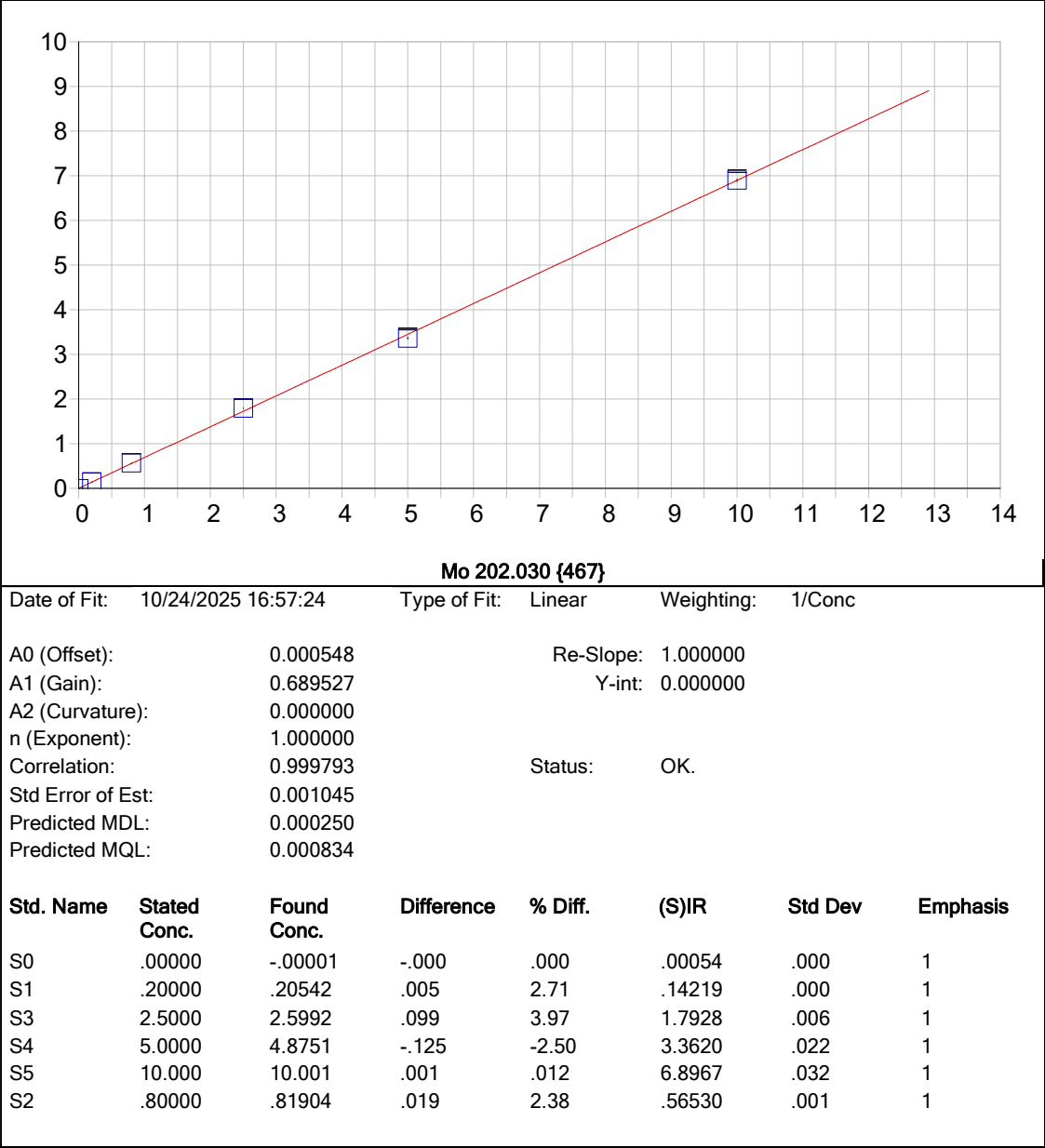


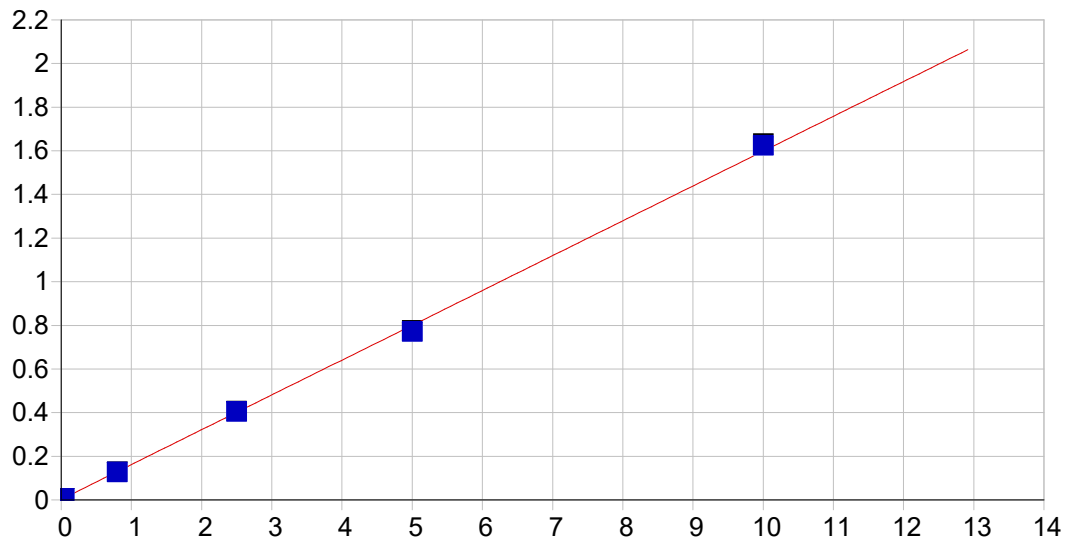










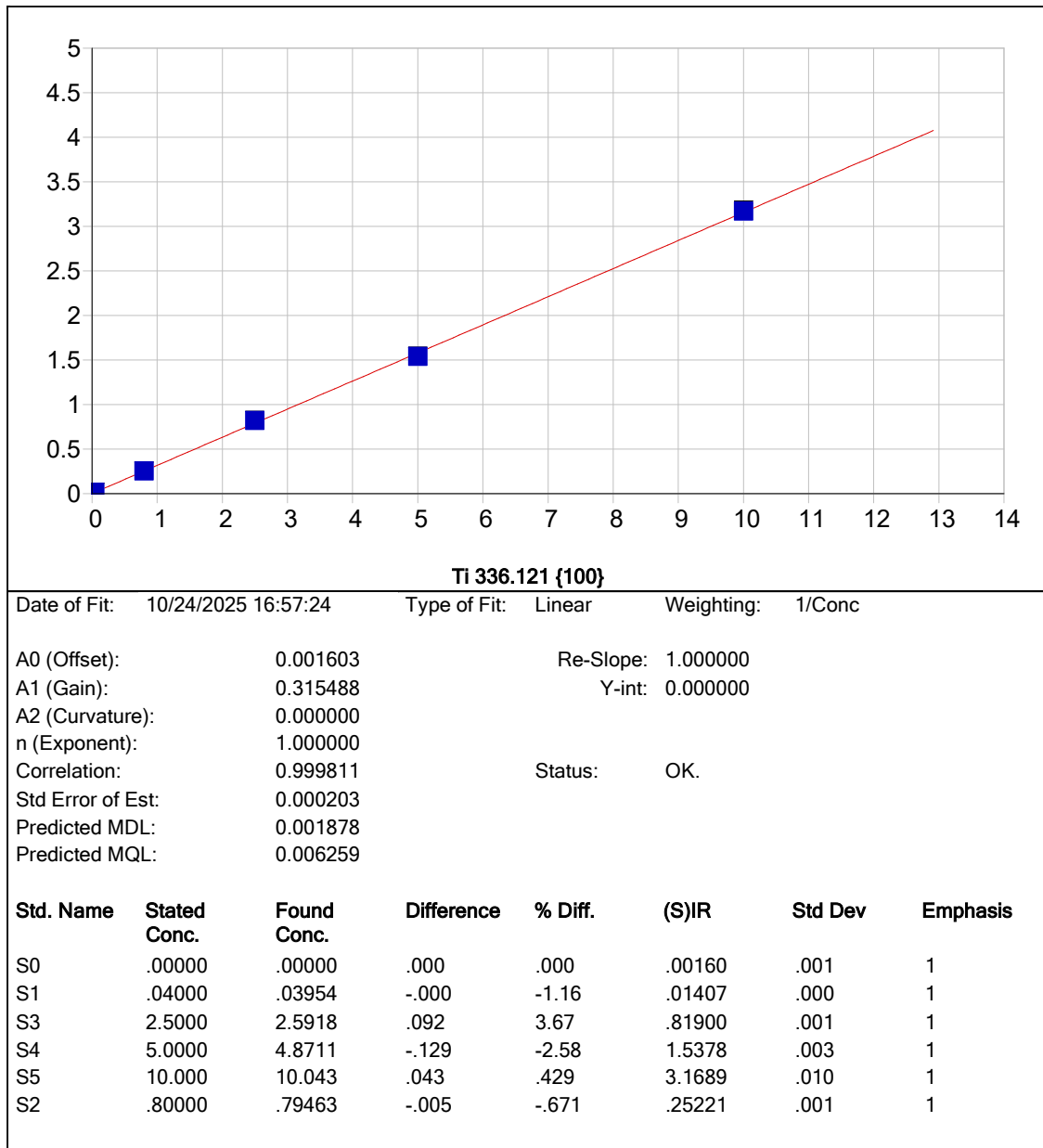


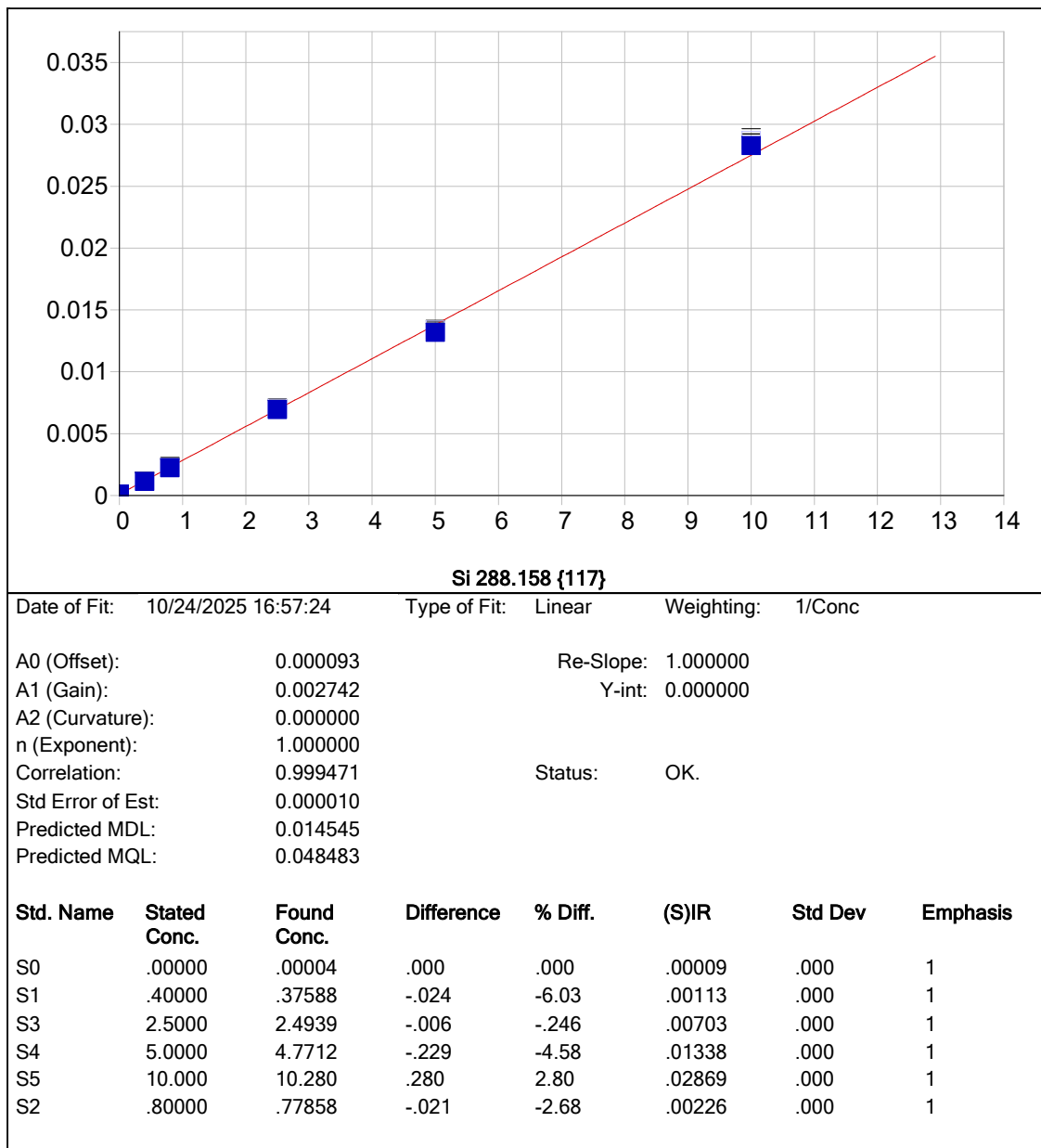
Sn 189.989 {478}

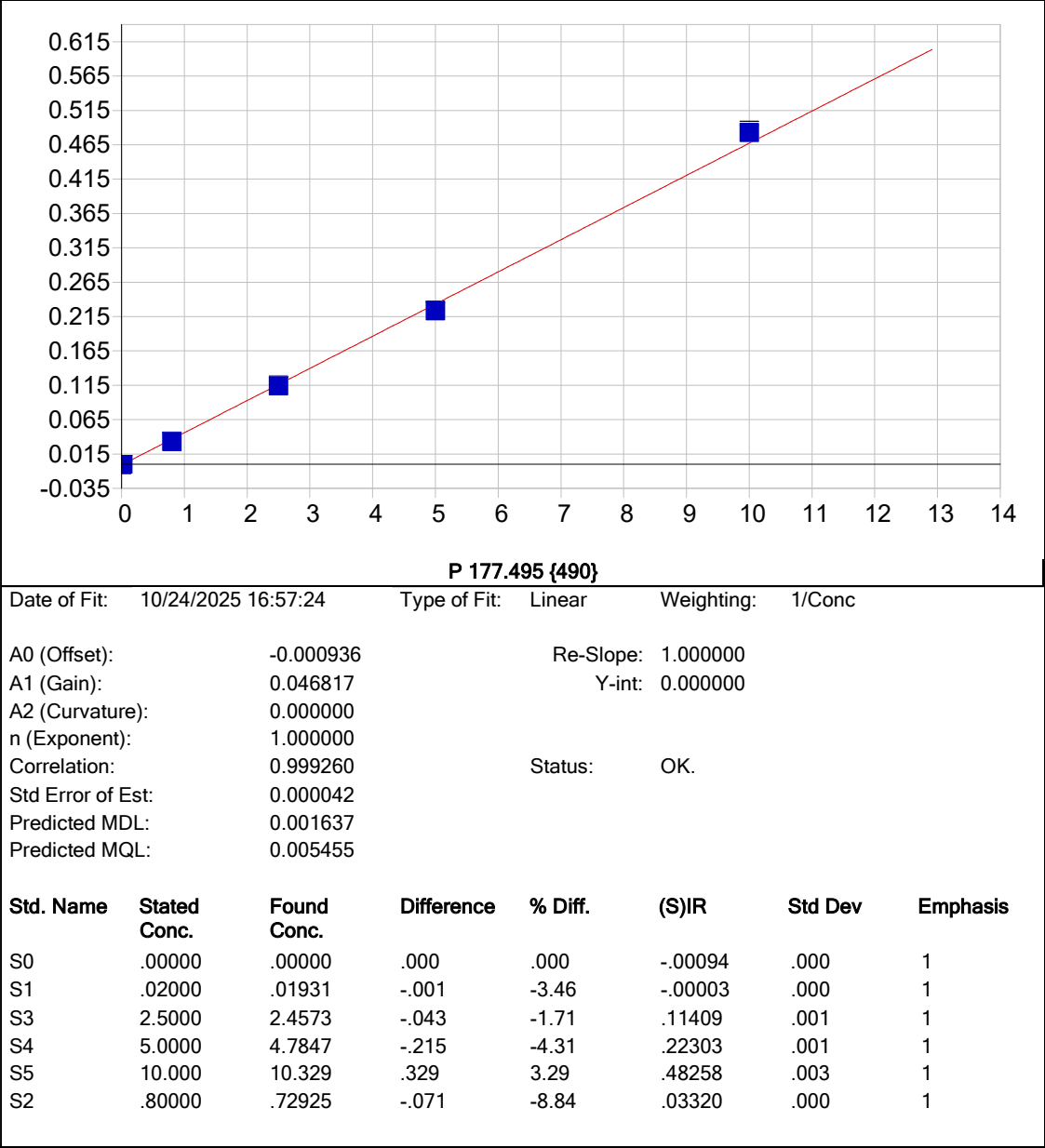
Date of Fit: 10/24/2025 16:57:24 Type of Fit: Linear Weighting: 1/Conc

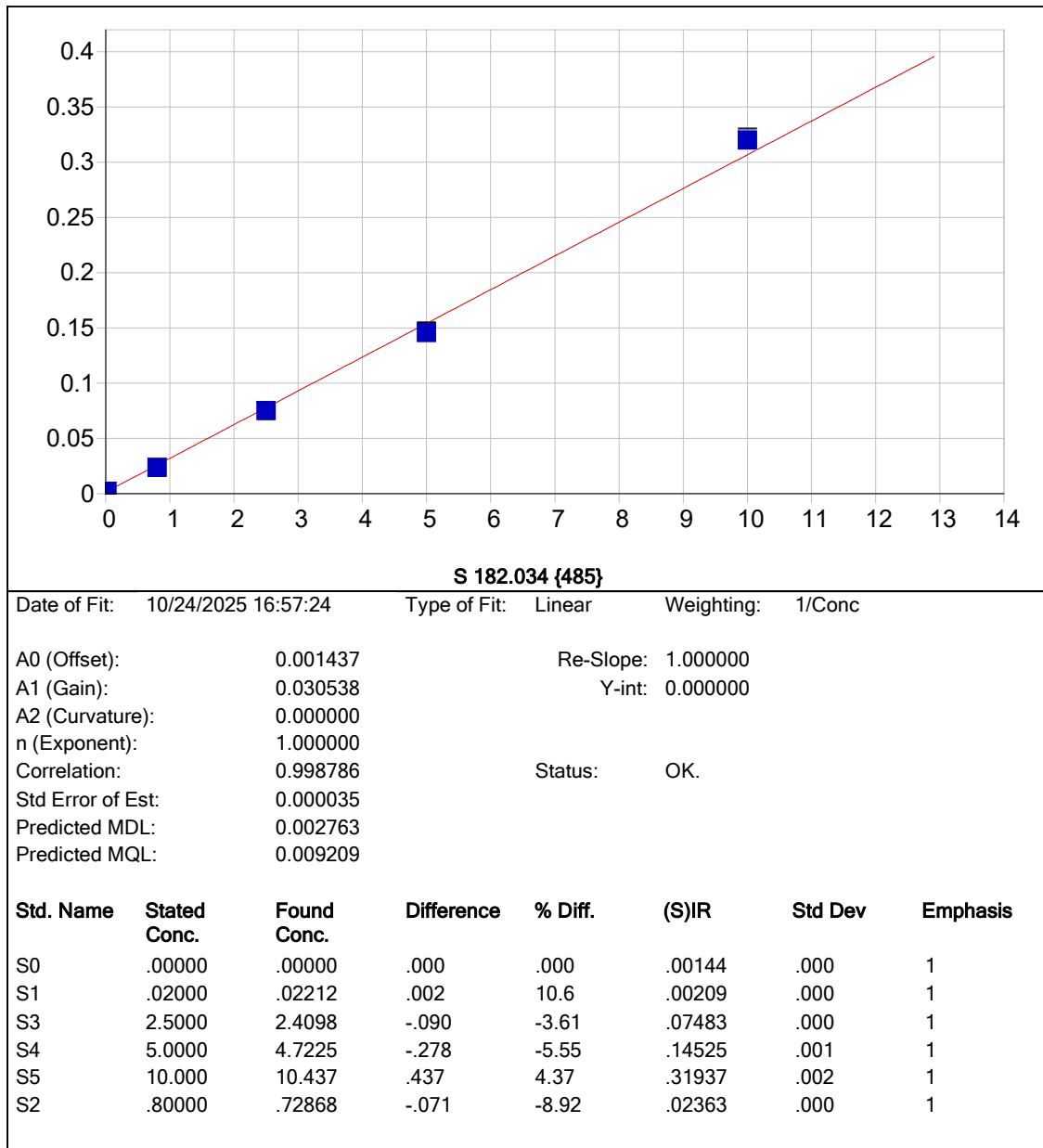
A0 (Offset): 0.002383 Re-Slope: 1.000000
A1 (Gain): 0.159598 Y-int: 0.000000
A2 (Curvature): 0.000000
n (Exponent): 1.000000
Correlation: 0.999734 Status: OK.
Std Error of Est: 0.000122
Predicted MDL: 0.000587
Predicted MQL: 0.001958

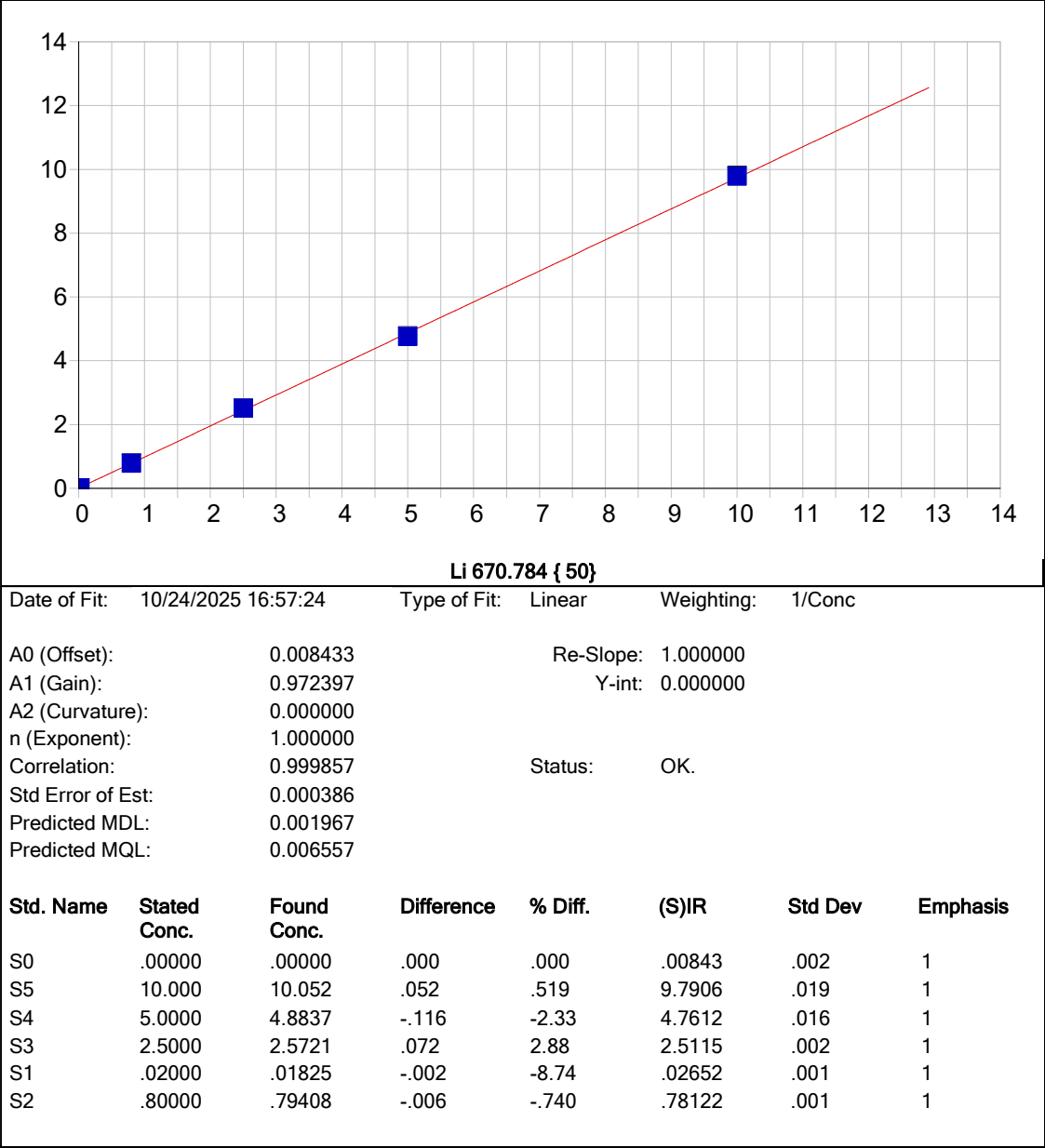
Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00238	.000	1
S1	.04000	.03824	-.002	-4.41	.00848	.000	1
S3	2.5000	2.5224	.022	.896	.40454	.001	1
S4	5.0000	4.8225	-.178	-3.55	.77122	.004	1
S5	10.000	10.171	.171	1.71	1.6240	.006	1
S2	.80000	.78621	-.014	-1.72	.12773	.000	1

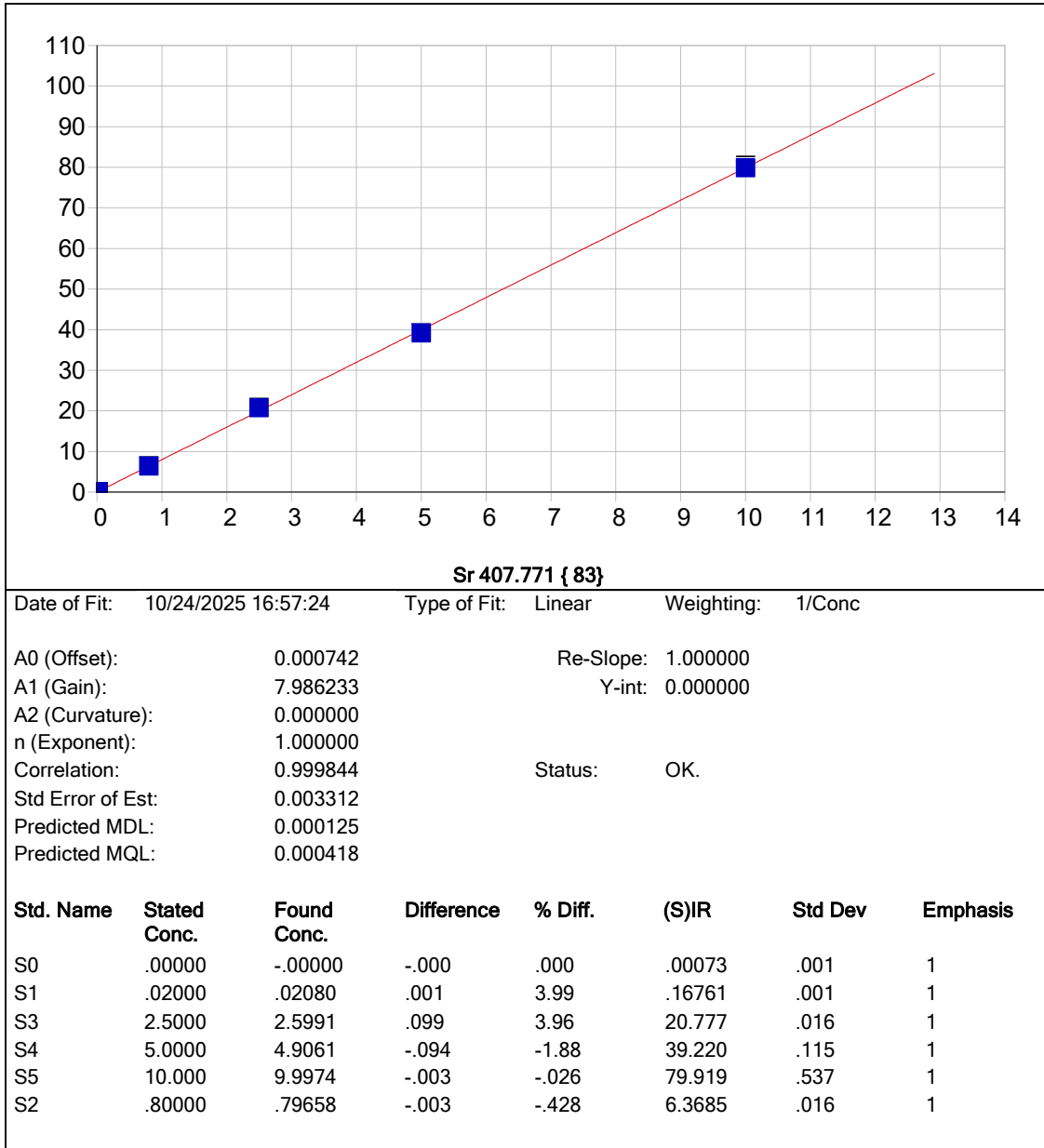


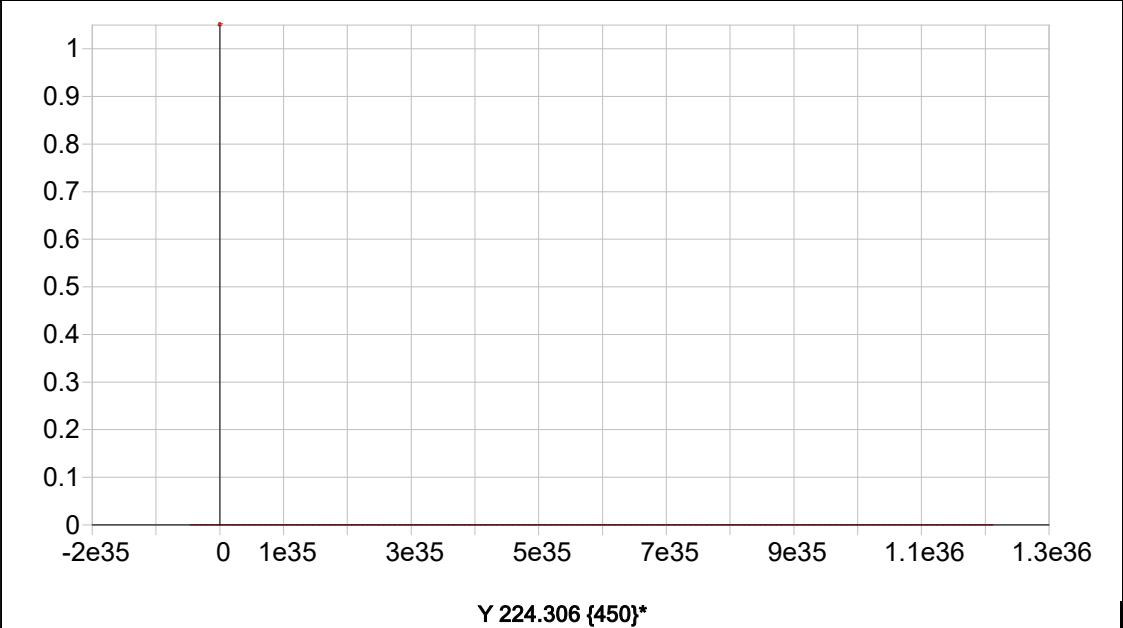




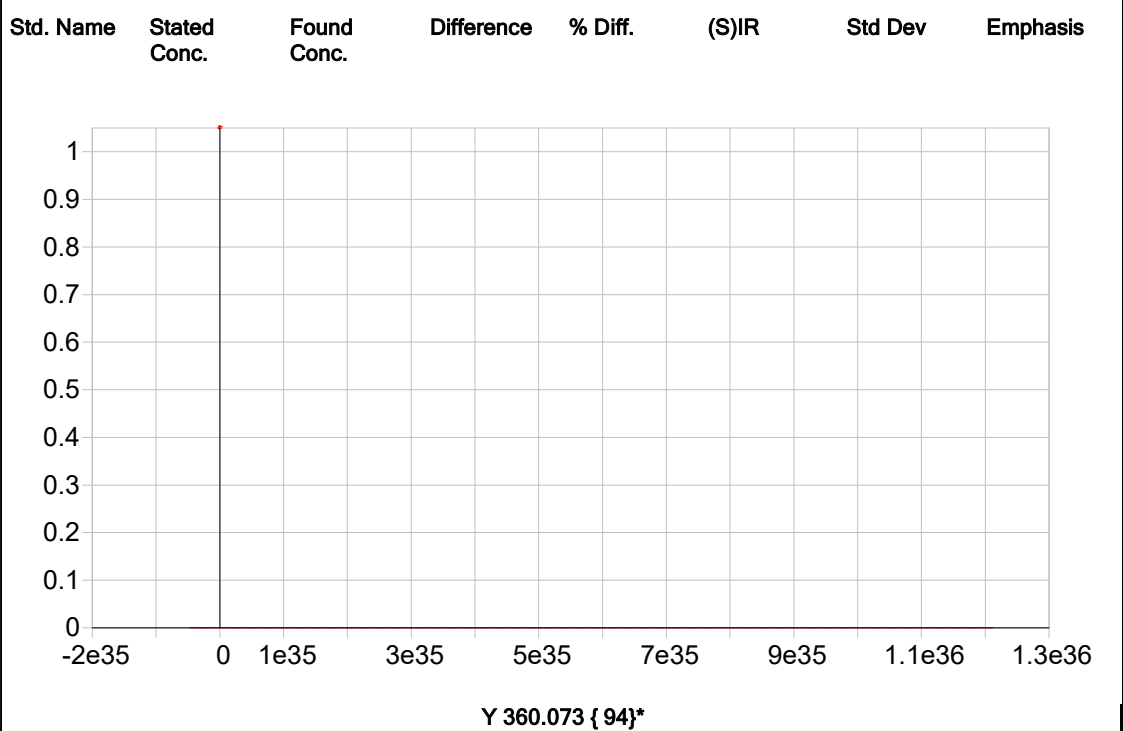




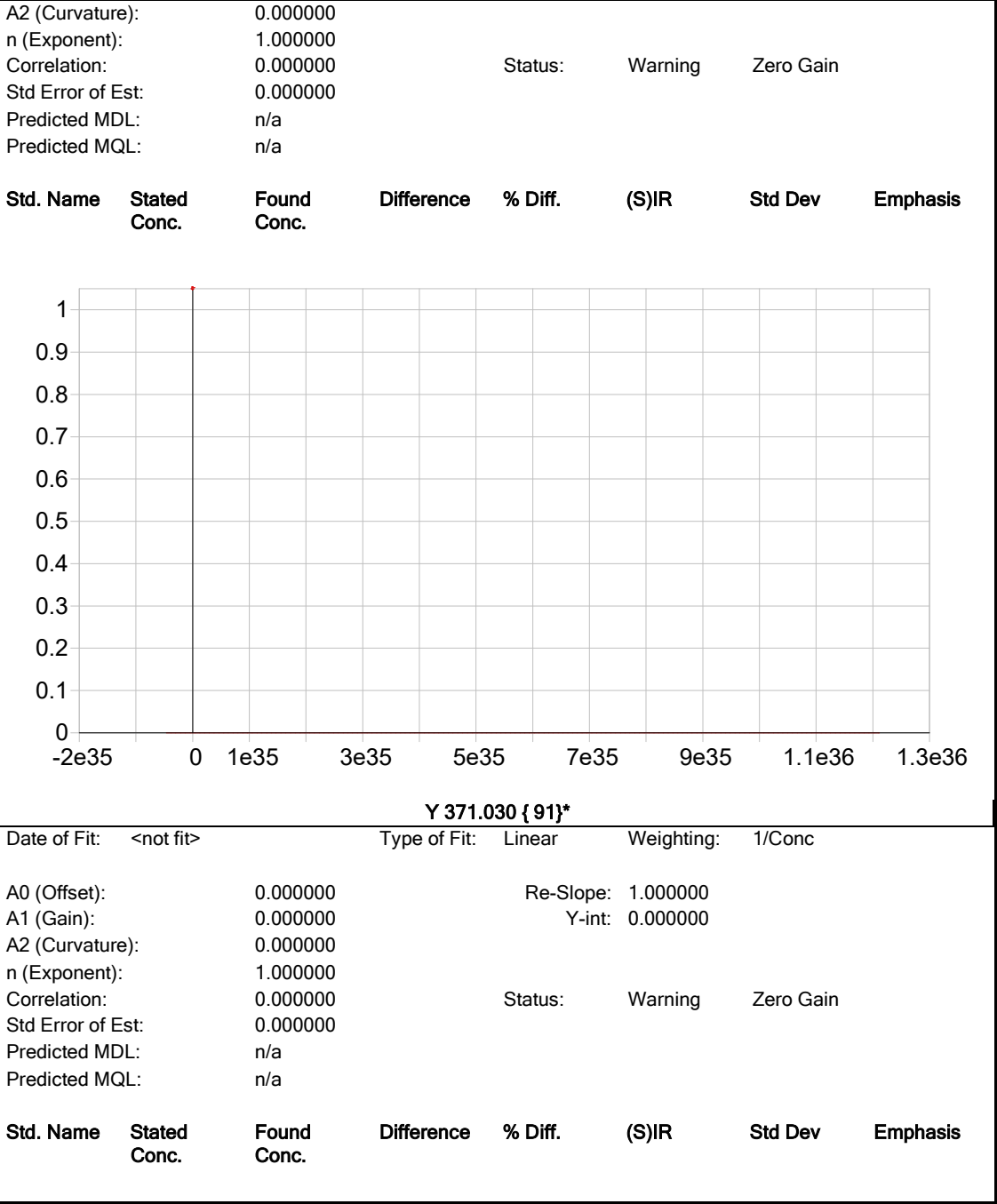


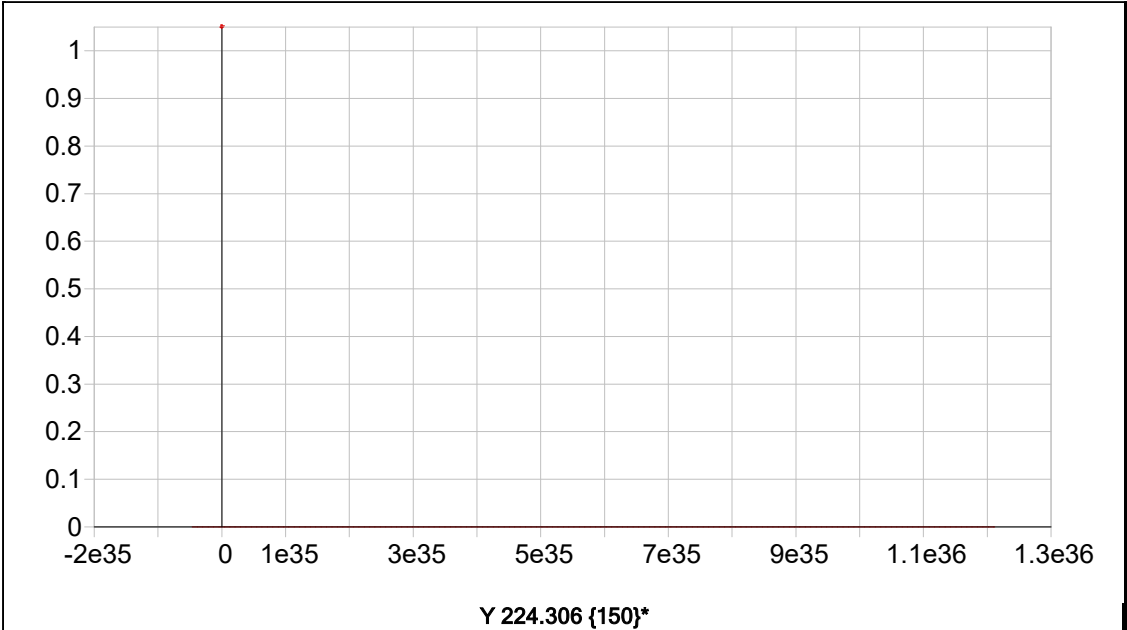


Date of Fit:	10/24/2025 16:57:24	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000	Re-Slope:	1.000000		
A1 (Gain):	0.000000	Y-int:	0.000000		
A2 (Curvature):	0.000000				
n (Exponent):	1.000000				
Correlation:	0.000000	Status:	Warning	Zero Gain	
Std Error of Est:	0.000000				
Predicted MDL:	n/a				
Predicted MQL:	n/a				



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





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

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
A scatter plot with the y-axis ranging from 0 to 1 and the x-axis ranging from -2e35 to 1.3e36. A single data point is plotted at (0, 1), marked with a red dot. The plot is titled "ln 230.606 {446}*".							
ln 230.606 {446}*							

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

A2 (Curvature):		0.000000		Status:	Warning	Zero Gain	
n (Exponent):		1.000000					
Correlation:		0.000000					
Std Error of Est:		0.000000					
Predicted MDL:		n/a					
Predicted MQL:		n/a					
Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis

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Sample Name: S0 Acquired: 10/24/2025 14:07:51 Type: Cal
Method: 6010-200.7 NEW(v308) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00014	.00043	.00009	.00055	.00075	-.00004	.06821	-.00227
Stddev	.00012	.00008	.00018	.00007	.00008	.00024	.00384	.00024
%RSD	84.510	18.862	203.06	13.253	10.280	642.09	5.6231	10.542

#1	-.00000	.00052	-.00011	.00063	.00073	-.00008	.07181	-.00215
#2	-.00022	.00043	.00014	.00052	.00069	-.00026	.06418	-.00211
#3	-.00019	.00035	.00023	.00050	.00084	.00022	.06866	-.00254

Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00051	.00039	.00011	-.00000	.00024	.00002	.00007	.00012
Stddev	.00009	.00047	.00005	.00013	.00018	.00002	.00015	.00005
%RSD	17.368	120.59	44.245	2816.7	73.448	89.457	210.08	43.717

#1	-.00043	.00078	.00006	.00011	.00008	.00004	.00003	.00015
#2	-.00049	.00054	.00012	.00002	.00043	.00001	-.00005	.00006
#3	-.00060	-.00014	.00016	-.00015	.00022	.00001	.00023	.00014

Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00067	-.00087	.00347	-.00020	.00441	-.00067	.00755	.00054
Stddev	.00005	.00016	.00016	.00056	.00012	.00018	.00045	.00012
%RSD	6.8022	18.470	4.5705	277.61	2.7288	26.425	5.9263	21.597

#1	-.00070	-.00069	.00351	.00041	.00432	-.00064	.00704	.00042
#2	-.00062	-.00093	.00330	-.00069	.00454	-.00086	.00788	.00065
#3	-.00070	-.00100	.00361	-.00032	.00435	-.00051	.00774	.00055

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	.00238	.00160	.00009	-.00094	.00144	.00843	.00073	
Stddev	.00004	.00054	.00002	.00003	.00003	.00152	.00054	
%RSD	1.7207	33.543	25.332	3.4427	1.7749	17.997	73.152	

#1	.00234	.00099	.00012	-.00092	.00142	.00987	.00118	
#2	.00242	.00201	.00008	-.00091	.00147	.00858	.00014	
#3	.00239	.00181	.00008	-.00097	.00143	.00685	.00089	

Sample Name: S0 Acquired: 10/24/2025 14:07:51 Type: Cal
Method: 6010-200.7 NEW(v308) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5494.8	91758.	7265.4	4138.4	7152.7
Stddev	10.0	350.	54.5	19.5	14.5
%RSD	.18250	.38196	.74949	.47048	.20243
#1	5484.5	92157.	7207.5	4159.8	7136.6
#2	5495.5	91622.	7315.5	4121.8	7156.6
#3	5504.5	91497.	7273.2	4133.5	7164.7

Sample Name: S1 Acquired: 10/24/2025 14:12:13 Type: Cal
Method: 6010-200.7 NEW(v308) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00125	.00268	.00279	.00164	.00592	.00978	.24741	.05908
Stddev	.00010	.00008	.00005	.00005	.00011	.00049	.00241	.00087
%RSD	7.7162	3.0999	1.8535	3.3229	1.8682	5.0144	.97249	1.4705

#1	.00131	.00262	.00278	.00170	.00605	.00922	.24681	.05935
#2	.00114	.00278	.00275	.00160	.00586	.01011	.25006	.05979
#3	.00129	.00265	.00285	.00163	.00585	.01003	.24536	.05811

Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.01815	.12593	.00238	.03254	.01601	.00030	.00939	.02698
Stddev	.00007	.00113	.00002	.00016	.00017	.00002	.00020	.00030
%RSD	.36663	.89706	.92876	.50453	1.0854	5.9524	2.1565	1.1301

#1	.01822	.12465	.00236	.03235	.01607	.00028	.00919	.02667
#2	.01809	.12679	.00238	.03267	.01582	.00031	.00959	.02728
#3	.01814	.12635	.00241	.03259	.01615	.00031	.00940	.02700

Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02455	.00156	.01694	.00463	.11591	.00724	.08453	.14219
Stddev	.00013	.00005	.00012	.00043	.00068	.00013	.00160	.00042
%RSD	.54614	3.0201	.71729	9.3705	.59020	1.7680	1.8963	.29748

#1	.02462	.00159	.01692	.00419	.11626	.00716	.08394	.14251
#2	.02440	.00150	.01707	.00463	.11512	.00739	.08634	.14235
#3	.02465	.00158	.01683	.00506	.11635	.00717	.08330	.14171

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	.00848	.01407	.00113	-.00003	.00209	.02652	.16761	
Stddev	.00004	.00045	.00003	.00004	.00008	.00065	.00138	
%RSD	.47794	3.1921	2.3432	113.64	3.9547	2.4381	.82417	

#1	.00847	.01356	.00115	-.00007	.00217	.02619	.16835	
#2	.00852	.01441	.00110	-.00001	.00201	.02727	.16847	
#3	.00844	.01423	.00113	-.00001	.00208	.02611	.16602	

Sample Name: S1 Acquired: 10/24/2025 14:12:13 Type: Cal
Method: 6010-200.7 NEW(v308) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5486.8	91337.	7439.4	4179.9	6963.8
Stddev	3.9	352.	62.1	20.1	12.2
%RSD	.07041	.38496	.83532	.48120	.17475
#1	5483.2	91141.	7436.4	4156.7	6973.1
#2	5486.3	91127.	7378.7	4190.8	6968.3
#3	5490.9	91743.	7502.9	4192.1	6950.0

Sample Name: S2 Acquired: 10/24/2025 14:16:36 Type: Cal
Method: 6010-200.7 NEW(v308) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348	Cd2265
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.04454	.04396	.16078	.03729	.07946	.14511	2.9852	.38273	1.1875
Stddev	.00015	.00048	.00030	.00016	.00022	.00044	.0135	.00156	.0001
%RSD	.33648	1.1032	.18548	.44091	.27271	.30337	.45313	.40700	.01272
#1	.04440	.04439	.16043	.03710	.07932	.14480	2.9696	.38448	1.1873
#2	.04470	.04404	.16094	.03739	.07935	.14561	2.9935	.38149	1.1875
#3	.04453	.04343	.16096	.03738	.07971	.14491	2.9926	.38223	1.1876
Elem	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.24010	.03436	.42031	.14177	.00207	.17237	.04900	.24045	.04113
Stddev	.00027	.00012	.00041	.00050	.00001	.00032	.00030	.00056	.00019
%RSD	.11202	.34789	.09701	.35367	.54364	.18375	.60328	.23403	.46947
#1	.23997	.03433	.41989	.14130	.00208	.17245	.04888	.24006	.04100
#2	.24041	.03426	.42070	.14230	.00206	.17202	.04877	.24020	.04104
#3	.23992	.03450	.42034	.14171	.00207	.17264	.04933	.24110	.04135
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.03102	.05338	1.0463	.01461	.60543	.56530	.12773	.25221	.00226
Stddev	.00010	.00030	.0019	.00034	.00258	.00072	.00021	.00085	.00006
%RSD	.31083	.55511	.18442	2.3325	.42595	.12789	.16722	.33717	2.7422
#1	.03091	.05372	1.0445	.01424	.60831	.56452	.12776	.25128	.00221
#2	.03105	.05324	1.0462	.01469	.60468	.56594	.12750	.25239	.00224
#3	.03110	.05318	1.0483	.01491	.60331	.56545	.12792	.25295	.00233
Elem	P_1774	S_1820	Li6707	Sr4077					
Units	Cts/S	Cts/S	Cts/S	Cts/S					
Avg	.03320	.02363	.78122	6.3685					
Stddev	.00007	.00008	.00066	.0160					
%RSD	.21341	.32611	.08509	.25182					
#1	.03324	.02370	.78045	6.3531					
#2	.03325	.02364	.78161	6.3673					
#3	.03312	.02354	.78160	6.3851					

Sample Name: S2 Acquired: 10/24/2025 14:16:36 Type: Cal
Method: 6010-200.7 NEW(v308) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5560.1	92125.	7445.1	4258.9	6871.4
Stddev	15.2	189.	33.2	17.9	13.3
%RSD	.27275	.20568	.44549	.42012	.19318
#1	5576.3	92268.	7406.9	4279.5	6873.8
#2	5557.7	92197.	7461.4	4248.4	6883.4
#3	5546.2	91910.	7466.9	4248.7	6857.2

Sample Name: S3 Acquired: 10/24/2025 14:20:43 Type: Cal
Method: 6010-200.7 NEW(v308) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348	Cd2265
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.14230	.13833	.52201	.11679	.25116	.48134	9.6687	1.2549	3.9343
Stddev	.00052	.00333	.00037	.00032	.00069	.00141	.0208	.0051	.0032
%RSD	.36773	2.4091	.07170	.27727	.27483	.29265	.21488	.40606	.08053
#1	.14242	.14218	.52158	.11692	.25192	.48216	9.6500	1.2491	3.9307
#2	.14276	.13645	.52222	.11702	.25098	.47971	9.6650	1.2582	3.9366
#3	.14173	.13638	.52223	.11642	.25058	.48214	9.6910	1.2576	3.9357
Elem	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.78212	.10963	1.3721	.44807	.00665	.55708	.15906	.78499	.13302
Stddev	.00058	.00031	.0010	.00087	.00001	.00086	.00018	.00007	.00007
%RSD	.07452	.28239	.07467	.19445	.15799	.15377	.11469	.00883	.05074
#1	.78196	.10999	1.3712	.44877	.00664	.55609	.15885	.78491	.13310
#2	.78163	.10948	1.3732	.44835	.00666	.55758	.15913	.78500	.13298
#3	.78276	.10943	1.3719	.44709	.00665	.55756	.15920	.78505	.13298
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.09430	.17391	3.3341	.04892	1.9575	1.7928	.40454	.81900	.00703
Stddev	.00025	.00089	.0083	.00024	.0088	.0055	.00102	.00086	.00002
%RSD	.26157	.51319	.24942	.49908	.44899	.30720	.25232	.10507	.30590
#1	.09425	.17298	3.3381	.04918	1.9474	1.7975	.40367	.81831	.00701
#2	.09408	.17476	3.3246	.04869	1.9615	1.7942	.40566	.81997	.00703
#3	.09457	.17398	3.3397	.04889	1.9635	1.7867	.40430	.81874	.00706
Elem	P_1774	S_1820	Li6707	Sr4077					
Units	Cts/S	Cts/S	Cts/S	Cts/S					
Avg	.11409	.07483	2.5115	20.777					
Stddev	.00071	.00012	.0016	.016					
%RSD	.62370	.16337	.06532	.07921					
#1	.11328	.07473	2.5107	20.759					
#2	.11463	.07479	2.5104	20.781					
#3	.11436	.07497	2.5134	20.791					

Sample Name: S3 Acquired: 10/24/2025 14:20:43 Type: Cal
Method: 6010-200.7 NEW(v308) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5502.9	90119.	7258.0	4222.6	6536.0
Stddev	14.5	295.	16.4	20.7	5.7
%RSD	.26370	.32733	.22635	.48908	.08698
#1	5493.2	89836.	7268.4	4201.2	6538.6
#2	5495.9	90424.	7266.6	4224.0	6529.5
#3	5519.6	90098.	7239.1	4242.4	6539.9

Sample Name: S4 Acquired: 10/24/2025 14:24:54 Type: Cal
Method: 6010-200.7 NEW(v308) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348	Cd2265
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.26898	.26868	.99295	.21980	.47116	.90019	18.266	2.3638	7.5625
Stddev	.00189	.01166	.00427	.00193	.00152	.00275	.089	.0022	.0433
%RSD	.70313	4.3395	.42977	.87680	.32250	.30525	.48847	.09158	.57283
#1	.26695	.25530	.98920	.21780	.46985	.89708	18.312	2.3623	7.5207
#2	.26929	.27410	.99205	.21995	.47081	.90231	18.323	2.3629	7.5596
#3	.27069	.27665	.99760	.22165	.47283	.90118	18.163	2.3663	7.6072
Elem	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.4701	.20478	2.6234	.83085	.01246	1.0446	.30235	1.4981	.25130
Stddev	.0037	.00029	.0126	.00408	.00016	.0045	.00144	.0075	.00017
%RSD	.25009	.14103	.48123	.49083	1.2732	.42573	.47497	.50050	.06902
#1	1.4699	.20454	2.6122	.82754	.01239	1.0439	.30216	1.4917	.25112
#2	1.4739	.20469	2.6209	.82961	.01265	1.0493	.30387	1.4961	.25131
#3	1.4665	.20510	2.6370	.83541	.01235	1.0405	.30102	1.5063	.25147
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.17941	.32958	6.1663	.09329	3.7163	3.3620	.77122	1.5378	.01338
Stddev	.00051	.00146	.0216	.00029	.0071	.0224	.00432	.0027	.00003
%RSD	.28419	.44181	.35093	.31275	.19224	.66524	.56051	.17418	.24695
#1	.17917	.32941	6.1417	.09296	3.7193	3.3396	.76680	1.5367	.01336
#2	.18000	.33111	6.1747	.09350	3.7214	3.3622	.77142	1.5409	.01342
#3	.17907	.32821	6.1825	.09341	3.7081	3.3843	.77544	1.5359	.01337
Elem	P_1774	S_1820	Li6707	Sr4077					
Units	Cts/S	Cts/S	Cts/S	Cts/S					
Avg	.22303	.14525	4.7612	39.220					
Stddev	.00115	.00131	.0161	.115					
%RSD	.51569	.90271	.33798	.29314					
#1	.22208	.14374	4.7518	39.256					
#2	.22431	.14593	4.7798	39.313					
#3	.22271	.14609	4.7521	39.092					

Sample Name: S4 Acquired: 10/24/2025 14:24:54 Type: Cal
Method: 6010-200.7 NEW(v308) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5528.4	90347.	7277.1	4229.5	6388.2
Stddev	23.8	128.	27.5	19.4	25.0
%RSD	.43116	.14155	.37753	.45889	.39063
#1	5543.8	90229.	7252.6	4244.8	6402.5
#2	5540.5	90328.	7271.9	4236.0	6402.7
#3	5501.0	90483.	7306.8	4207.7	6359.4

Sample Name: S5 Acquired: 10/24/2025 14:29:06 Type: Cal
Method: 6010-200.7 NEW(v308) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348	Cd2265
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.56652	.54289	2.1156	.46373	.98943	1.8646	37.000	4.8254	15.990
Stddev	.00219	.01417	.0055	.00273	.00673	.0063	.743	.0796	.048
%RSD	.38609	2.6098	.25759	.58765	.68067	.33900	2.0092	1.6496	.30023
#1	.56812	.54546	2.1184	.46574	.99609	1.8574	36.186	4.7336	15.998
#2	.56403	.52761	2.1094	.46063	.98262	1.8673	37.643	4.8756	15.939
#3	.56742	.55559	2.1191	.46482	.98959	1.8691	37.171	4.8669	16.034
Elem	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.0235	.42216	5.5696	1.7001	.02625	2.1304	.62670	3.1704	.53067
Stddev	.0152	.00172	.0190	.0070	.00023	.0095	.00465	.0106	.00147
%RSD	.50243	.40763	.34055	.40916	.88944	.44553	.74234	.33380	.27760
#1	3.0060	.42059	5.5802	1.7056	.02652	2.1198	.62153	3.1748	.52899
#2	3.0334	.42400	5.5477	1.6922	.02610	2.1382	.63055	3.1583	.53172
#3	3.0311	.42189	5.5809	1.7024	.02612	2.1331	.62802	3.1780	.53132
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.37668	.68668	12.753	.19983	7.6528	6.8967	1.6240	3.1689	.02869
Stddev	.00475	.00357	.052	.00210	.1261	.0317	.0062	.0095	.00020
%RSD	1.2604	.52016	.40596	1.0512	1.6474	.45997	.38240	.30046	.70599
#1	.38216	.68321	12.694	.20226	7.5073	6.9195	1.6227	3.1580	.02892
#2	.37417	.69034	12.783	.19857	7.7246	6.8605	1.6185	3.1754	.02854
#3	.37371	.68648	12.783	.19867	7.7267	6.9101	1.6307	3.1733	.02862
Elem	P_1774	S_1820	Li6707	Sr4077					
Units	Cts/S	Cts/S	Cts/S	Cts/S					
Avg	.48258	.31937	9.7906	79.919					
Stddev	.00301	.00240	.0195	.537					
%RSD	.62468	.75195	.19891	.67150					
#1	.48380	.32014	9.7681	79.332					
#2	.47915	.31667	9.8021	80.384					
#3	.48480	.32129	9.8016	80.042					

Sample Name: S5 Acquired: 10/24/2025 14:29:06 Type: Cal
Method: 6010-200.7 NEW(v308) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5220.4	85882.	7115.7	3925.3	5831.7
Stddev	20.2	250.	106.7	23.1	18.9
%RSD	.38651	.29063	1.4989	.58808	.32427
#1	5206.7	85942.	7236.6	3944.6	5823.9
#2	5243.6	85608.	7035.1	3899.7	5853.2
#3	5211.1	86096.	7075.3	3931.5	5817.9

Sample Name: ICV01 Acquired: 10/24/2025 14:33:21 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.946691	4.010212	3.831660	3.965162	4.014583	7.816199
Stddev	.003566	.081410	.002335	.003670	.008871	.004257
%RSD	.0903617	2.030078	.0609414	.0925503	.2209599	.0544584
#1	3.950626	3.966747	3.830546	3.964406	4.008383	7.820606
#2	3.943672	4.104130	3.834343	3.961929	4.010622	7.815879
#3	3.945775	3.959758	3.830090	3.969150	4.024744	7.812111
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.702571	1.1983100	1.952729	19.42713	.8115328	1.962817
Stddev	.017753	.0003871	.001409	.07504	.0003949	.000917
%RSD	.2304874	.1952037	.0721363	.3862544	.0486594	.0467048
#1	7.722992	.1978869	1.952495	19.48766	.8118204	1.963850
#2	7.690799	.1986464	1.954240	19.34317	.8116953	1.962501
#3	7.693923	.1983969	1.951452	19.45055	.8110825	1.962100
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.012453	3.912338	1.921927	19.46911	1.965889	.9856361
Stddev	.001261	.002069	.006290	.07794	.001104	.0013845
%RSD	.1245402	.0528748	.3272622	.4003079	.0561444	.1404647
#1	1.012859	3.914223	1.927268	19.44407	1.964655	.9849200
#2	1.011039	3.910125	1.914994	19.40678	1.966783	.9847564
#3	1.013461	3.912668	1.923518	19.55649	1.966228	.9872320
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.64352	1.945296	1.979441	19.09814	3.855170	4.013535
Stddev	.09440	.009262	.002814	.05092	.000592	.002614
%RSD	.5063254	.4761228	.1421364	.2665983	.0153513	.0651355
#1	18.75102	1.948206	1.978580	19.14952	3.854640	4.014360
#2	18.57418	1.934928	1.982585	19.09719	3.855060	4.015638
#3	18.60536	1.952753	1.977159	19.04771	3.855809	4.010608

Sample Name: ICV01 Acquired: 10/24/2025 14:33:21 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICV01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.922953	3.857162	3.676229	F .0071298	F .0290161	F -.002264
Stddev	.009169	.011704	.011102	.0001877	.0029254	.001362
%RSD	.2337282	.3034411	.3019838	2.632663	10.08205	60.16693

#1	3.918080	3.867409	3.683940	.0071621	.0261337	-.003290
#2	3.933529	3.844407	3.663505	.0069281	.0319827	-.002783
#3	3.917249	3.859671	3.681242	.0072993	.0289320	-.000719

Elem	Sr4077
Units	ppm
Avg	F -.003075
Stddev	.000054
%RSD	1.759297

#1	-.003013
#2	-.003114
#3	-.003098

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5534.913	89862.66	7393.435	4167.904	6516.334
Stddev	8.972	15.04	7.200	22.623	8.424
%RSD	.1620999	.0167412	.0973813	.5427825	.1292767

#1	5525.335	89874.19	7398.823	4189.377	6506.974
#2	5543.121	89845.64	7396.224	4144.285	6518.724
#3	5536.284	89868.14	7385.258	4170.049	6523.306

Sample Name: LLICV01 Acquired: 10/24/2025 14:38:12 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0230168	.0458710	.0128885	.0208044	.0526278	.1084305	.1002582
Stddev	.0007296	.0047728	.0006909	.0014244	.0005584	.0051273	.0011701
%RSD	3.170052	10.40488	5.360935	6.846369	1.061019	4.728674	1.167045
#1	.0226950	.0419721	.0134452	.0221059	.0531028	.1132212	.0996451
#2	.0225034	.0444473	.0121152	.0192828	.0527678	.1090479	.0995222
#3	.0238521	.0511937	.0131051	.0210244	.0520127	.1030224	.1016075
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0063973	.0060545	2.103756	.0104385	.0304928	.0228792	.1037907
Stddev	.0000734	.0001474	.009377	.0002648	.0000944	.0002551	.0069870
%RSD	1.146939	2.435058	.4457264	2.536753	.3096614	1.115090	6.731806
#1	.0064801	.0060662	2.114080	.0107057	.0305047	.0228149	.0981017
#2	.0063717	.0059015	2.095766	.0104336	.0305807	.0226624	.1115894
#3	.0063402	.0061957	2.101423	.0101761	.0303930	.0231604	.1016809
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0219910	2.174898	.0407468	.0111786	1.897983	.0406001	.0439213
Stddev	.0004552	.043402	.0002080	.0003432	.032906	.0020577	.0000561
%RSD	2.069965	1.995609	.5103670	3.069905	1.733725	5.068243	.1277586
#1	.0221440	2.125044	.0406696	.0109203	1.864870	.0420259	.0438828
#2	.0214790	2.204267	.0405885	.0110474	1.930678	.0415333	.0439857
#3	.0223499	2.195382	.0409823	.0115680	1.898401	.0382412	.0438953
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.012117	.1138557	.2071809	.0397022	.0398994	.3772939	.0192105
Stddev	.033027	.0007200	.0003198	.0003578	.0005414	.0074121	.0005806
%RSD	1.641415	.6323540	.1543563	.9011106	1.356823	1.964545	3.022413
#1	1.975993	.1143741	.2070291	.0393113	.0395026	.3795095	.0194582
#2	2.040766	.1130337	.2075484	.0397819	.0405161	.3833455	.0196262
#3	2.019593	.1141594	.2069654	.0400134	.0396794	.3690266	.0185471

Sample Name: LLICV01 Acquired: 10/24/2025 14:38:12 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0221505	.0203854	.0215004
Stddev	.0022177	.0007304	.0002276
%RSD	10.01178	3.582923	1.058451
#1	.0235722	.0198725	.0215229
#2	.0232841	.0200620	.0212623
#3	.0195952	.0212216	.0217158

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5507.172	90880.30	7265.641	4222.454	6942.727
Stddev	6.517	392.62	22.902	18.538	14.330
%RSD	.1183369	.4320157	.3152030	.4390416	.2063967
#1	5511.907	91053.97	7240.133	4224.498	6952.862
#2	5499.739	90430.79	7284.436	4202.978	6926.332
#3	5509.869	91156.12	7272.353	4239.885	6948.986

Sample Name: ICB01 Acquired: 10/24/2025 14:43:40 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICB01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005225	-.003204	.0002466	-.000715	-.001053	.0101780	-.002863
Stddev	.0011738	.000630	.0006352	.002236	.002184	.0103907	.000780
%RSD	224.6391	19.64643	257.5715	312.6031	207.3710	102.0896	27.24183

#1	.0017616	-.003744	.0002255	.001864	-.003429	.0048647	-.003344
#2	.0003788	-.002513	.0008920	-.002107	.000866	.0035183	-.003281
#3	-.000573	-.003357	-.000378	-.001902	-.000596	.0221509	-.001963

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000163	.0000375	-.003347	.0002131	-.000092	.0003341	.0034940
Stddev	.000046	.0000579	.002865	.0002462	.000157	.0002433	.0040340
%RSD	28.42265	154.2898	85.59781	115.5647	169.8853	72.81843	115.4537

#1	-.000110	.0000476	-.006503	-.000069	.000046	.0002628	-.001153
#2	-.000194	.0000897	-.000910	.000386	-.000061	.0001344	.005546
#3	-.000186	-.000025	-.002628	.000322	-.000263	.0006050	.006090

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002037	.0070993	.0000607	.0006944	-.433441	-.000081	.0003571
Stddev	.0003484	.0229095	.0003001	.0001548	.011972	.003211	.0003106
%RSD	171.0146	322.6994	494.2694	22.29169	2.762123	3948.961	86.96246

#1	.0005123	-.014899	-.000192	.0007334	-.445158	.003118	.0006259
#2	-.000174	.005374	.000392	.0008259	-.421229	-.003304	.0004284
#3	.000273	.030823	-.000019	.0005238	-.433937	-.000058	.0000171

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.120180	.0040337	.0002623	-.013337	-.000677	-.001790	.0004393
Stddev	.038640	.0004331	.0000755	.000206	.000603	.006168	.0005228
%RSD	32.15143	10.73782	28.76233	1.542992	89.09059	344.5625	118.9880

#1	-.107566	.0045191	.0003325	-.013366	-.000652	-.006547	.0000490
#2	-.163550	.0038956	.0002720	-.013527	-.000086	.005178	.0010333
#3	-.089424	.0036865	.0001825	-.013119	-.001292	-.004001	.0002358

Sample Name: ICB01 Acquired: 10/24/2025 14:43:40 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICB01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0074630	-.006422	.0000231
Stddev	.0014755	.000465	.0000954
%RSD	19.77066	7.234619	413.5049

#1	.0091643	-.006538	.0001061
#2	.0065349	-.006818	.0000442
#3	.0066897	-.005911	-.000081

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5757.502	96256.73	7317.398	4489.925	7459.945
Stddev	2.763	282.27	12.723	19.364	2.118
%RSD	.0479918	.2932452	.1738751	.4312858	.0283899

#1	5760.531	96262.05	7325.039	4512.148	7462.125
#2	5756.855	95971.84	7302.710	4480.960	7459.816
#3	5755.120	96536.30	7324.443	4476.668	7457.895

Sample Name: CRI01 Acquired: 10/24/2025 14:48:00 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0227144	.0462293	.0121151	.0213113	.0541965	.0973350	.1014896
Stddev	.0007710	.0010342	.0007200	.0015837	.0007509	.0063655	.0003266
%RSD	3.394487	2.236992	5.943108	7.431169	1.385577	6.539819	.3218075
#1	.0218699	.0463701	.0127939	.0221456	.0546571	.0915435	.1018537
#2	.0228924	.0471858	.0113600	.0194849	.0546024	.0963111	.1012224
#3	.0233809	.0451319	.0121915	.0223035	.0533300	.1041505	.1013928
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0065705	.0059319	2.125558	.0106194	.0305693	.0232312	.1116665
Stddev	.0000671	.0000645	.025863	.0001799	.0000739	.0004913	.0056095
%RSD	1.020544	1.088097	1.216750	1.693579	.2418731	2.115005	5.023468
#1	.0065709	.0059901	2.139922	.0108115	.0305537	.0237276	.1179035
#2	.0066373	.0059431	2.141051	.0104549	.0305044	.0227450	.1070343
#3	.0065032	.0058625	2.095702	.0105918	.0306498	.0232210	.1100617
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0223423	2.131416	.0407587	.0114004	1.937661	.0413538	.0445026
Stddev	.0003001	.027170	.0002675	.0003512	.012250	.0019377	.0003371
%RSD	1.343296	1.274759	.6562893	3.080477	.6322275	4.685604	.7574009
#1	.0223026	2.138654	.0406809	.0115787	1.926409	.0412269	.0447187
#2	.0220639	2.154235	.0405388	.0116267	1.935863	.0433517	.0441142
#3	.0226602	2.101360	.0410565	.0109958	1.950711	.0394826	.0446748
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.024896	.1108460	.2067866	.0392653	.0406808	.3716379	.0194841
Stddev	.025689	.0005107	.0005717	.0003665	.0027079	.0116959	.0010433
%RSD	1.268648	.4607157	.2764643	.9334485	6.656357	3.147118	5.354800
#1	1.995876	.1104136	.2069303	.0393236	.0416305	.3595984	.0206881
#2	2.034085	.1114094	.2061568	.0388732	.0427858	.3723584	.0188449
#3	2.044726	.1107149	.2072728	.0395993	.0376259	.3829569	.0189193

Sample Name: CRI01 Acquired: 10/24/2025 14:48:00 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0247494	.0213720	.0212631
Stddev	.0013213	.0005759	.0001856
%RSD	5.338732	2.694857	.8728541

#1	.0257415	.0207284	.0211904
#2	.0252572	.0215486	.0214740
#3	.0232495	.0218389	.0211248

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5367.911	89942.83	7200.092	4143.453	6823.767
Stddev	5.156	234.36	29.162	14.828	7.498
%RSD	.0960518	.2605673	.4050264	.3578732	.1098805

#1	5363.104	89759.35	7218.889	4130.898	6817.652
#2	5373.357	90206.84	7166.498	4159.813	6821.516
#3	5367.273	89862.29	7214.889	4139.649	6832.132

Sample Name: ICSA01 Acquired: 10/24/2025 14:52:18 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSA01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0084422	.0152877	.0031965	.0072332	-.003328	249.9961	-.000701
Stddev	.0020177	.0041524	.0015847	.0036175	.003617	.3663	.000719
%RSD	23.90038	27.16145	49.57665	50.01172	108.6969	.1465096	102.6740
#1	.0073333	.0152253	.0018419	.0114012	-.001153	250.1627	-.001529
#2	.0072221	.0111670	.0049393	.0049112	-.001327	250.2494	-.000336
#3	.0107711	.0194710	.0028084	.0053872	-.007503	249.5761	-.000236
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0015984	.0022829	237.0336	.0500113	.0020420	.0098105	99.15595
Stddev	.0000427	.0001465	.3023	.0002720	.0003308	.0015423	1.45278
%RSD	2.672720	6.418429	.1275149	.5438831	16.20018	15.72063	1.465145
#1	.0016270	.0023699	237.0346	.0497705	.0022927	.0100430	98.56035
#2	.0016190	.0021138	237.3354	.0503064	.0016670	.0081652	100.8119
#3	.0015493	.0023651	236.7309	.0499572	.0021662	.0112233	98.0956
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0078694	251.2314	.0043536	.0021130	.1178018	.0032856	.0047838
Stddev	.0007552	.3514	.0001711	.0005198	.0092385	.0018261	.0005604
%RSD	9.596383	.1398594	3.930399	24.60172	7.842416	55.57827	11.71488
#1	.0072417	251.6305	.0041591	.0015490	.1071363	.0013861	.0054233
#2	.0087074	251.0949	.0044209	.0025729	.1229441	.0050281	.0043782
#3	.0076590	250.9688	.0044808	.0022172	.1233249	.0034424	.0045500
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1109515	.0152533	.0007827	.0059793	-.004261	.0158876	.0035249
Stddev	.0606753	.0068499	.0004466	.0006195	.001277	.0136744	.0013520
%RSD	54.68636	44.90733	57.05543	10.36137	29.96615	86.06986	38.35463
#1	.0535669	.0123103	.0012971	.0066755	-.003543	.0041793	.0024762
#2	.1744540	.0230829	.0005576	.0054887	-.003505	.0125669	.0050507
#3	.1048337	.0103668	.0004935	.0057735	-.005735	.0309165	.0030478

Sample Name: ICSA01 Acquired: 10/24/2025 14:52:18 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSA01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0072068	F -.027863	.0032117
Stddev	.0043567	.000730	.0011160
%RSD	60.45185	2.619445	34.74852

#1	.0119772	-.028618	.0036761
#2	.0034384	-.027161	.0019384
#3	.0062049	-.027811	.0040205

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5107.228	82024.30	7156.944	3835.885	5578.651
Stddev	7.068	311.48	49.885	8.797	11.972
%RSD	.1383837	.3797402	.6970121	.2293231	.2145968

#1	5105.274	82155.06	7130.688	3844.810	5577.756
#2	5101.343	81668.76	7214.473	3827.223	5567.151
#3	5115.067	82249.09	7125.670	3835.622	5591.044

Sample Name: ICSAB01 Acquired: 10/24/2025 14:56:31 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSAB01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1103160	.1285914	.0516550	.0540033	.6101858	256.9169
Stddev	.0002570	.0054818	.0024701	.0072307	.0027279	1.0381
%RSD	.2330037	4.262980	4.781957	13.38928	.4470549	.4040625
#1	.1105404	.1223212	.0500282	.0616158	.6122301	256.5158
#2	.1103721	.1324773	.0544973	.0472272	.6070883	258.0958
#3	.1100355	.1309758	.0504394	.0531669	.6112389	256.1393
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5064363	.5252553	1.027757	242.8299	.5659798	.5168173
Stddev	.0036285	.0070164	.001559	1.2077	.0020674	.0001302
%RSD	.7164742	1.335816	.1517363	.4973279	.3652831	.0252006
#1	.5040869	.5216053	1.026383	242.3637	.5673940	.5167015
#2	.5106153	.5333444	1.029452	244.2012	.5669384	.5167920
#3	.5046066	.5208162	1.027435	241.9248	.5636071	.5169583
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4987869	100.7446	.5073479	257.6382	1.026031	.2127207
Stddev	.0011692	.5762	.0022013	1.5727	.000552	.0009475
%RSD	.2344130	.5719686	.4338875	.6104120	.0537610	.4454249
#1	.4993634	100.9160	.5056830	256.8948	1.025402	.2116784
#2	.4995559	100.1021	.5098438	259.4447	1.026262	.2135299
#3	.4974413	101.2157	.5065170	256.5750	1.026431	.2129537
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0893248	.4994049	1.054608	.0461103	.9643674	.9951021
Stddev	.0289962	.0050418	.004680	.0127049	.0097697	.0029586
%RSD	32.46153	1.009559	.4437206	27.55320	1.013068	.2973197
#1	.0741623	.4952645	1.059950	.0355416	.9611567	.9920423
#2	.0710535	.5050195	1.052640	.0602060	.9753384	.9979480
#3	.1227586	.4979308	1.051234	.0425833	.9566071	.9953159

Sample Name: ICSAB01 Acquired: 10/24/2025 14:56:31 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSAB01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.014136	.9839186	1.014443	F .0087032	F .0072220	F -.028888
Stddev	.003673	.0057467	.022553	.0006489	.0019394	.001264
%RSD	.3621881	.5840634	2.223170	7.456311	26.85388	4.376907

#1	1.010321	.9832166	1.037805	.0094524	.0093332	-.030295
#2	1.017648	.9899841	.992798	.0083176	.0068134	-.028522
#3	1.014438	.9785552	1.012726	.0083395	.0055195	-.027847

Elem	Sr4077
Units	ppm
Avg	F .0045453
Stddev	.0008502
%RSD	18.70389

#1	.0043529
#2	.0054752
#3	.0038079

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5080.918	81867.33	7069.408	3845.130	5530.127
Stddev	4.000	96.85	82.634	23.434	4.132
%RSD	.0787316	.1183005	1.168899	.6094415	.0747107

#1	5078.128	81756.27	7110.026	3818.085	5534.773
#2	5079.124	81911.49	6974.325	3859.407	5526.864
#3	5085.501	81934.23	7123.872	3857.898	5528.744

Sample Name: ICSA01DLX20 Acquired: 10/24/2025 15:01:33 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSA01DLX20 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0036116	.0005457	.0011018	-.000728	.0013259	12.18624	-.003549
Stddev	.0027236	.0013491	.0003267	.001178	.0002866	.02043	.001234
%RSD	75.41235	247.2432	29.65282	161.7603	21.61332	.1676580	34.76695
#1	.0049985	-.000002	.0009478	.000565	.0014284	12.20502	-.002314
#2	.0004737	-.000444	.0014771	-.001740	.0010022	12.18922	-.004782
#3	.0053625	.002082	.0008806	-.001009	.0015471	12.16448	-.003550
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000681	.0000685	12.17480	.0022942	.0001468	.0007715	4.873201
Stddev	.0000764	.0000280	.06553	.0003031	.0001529	.0001789	.049445
%RSD	112.2341	40.91692	.5382640	13.21001	104.1881	23.18725	1.014637
#1	.0001563	.0000463	12.21870	.0026400	.0002630	.0008539	4.827107
#2	.0000218	.0001000	12.20624	.0021673	.0002038	.0008943	4.925426
#3	.0000261	.0000592	12.09947	.0020752	-.000026	.0005662	4.867069
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007497	12.49671	.0000490	.0007342	-.097477	-.000053	.0003496
Stddev	.0005115	.04241	.0001221	.0002806	.026652	.002819	.0000386
%RSD	68.23697	.3393554	249.4505	38.22112	27.34179	5271.197	11.03566
#1	.0013383	12.52708	.0001335	.0006505	-.114564	-.002972	.0003938
#2	.0004972	12.51480	.0001044	.0005049	-.066767	.002655	.0003324
#3	.0004134	12.44826	-.000091	.0010471	-.111100	.000156	.0003226
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.059978	.0023429	-.000082	.0082491	.0003827	-.013025	-.001439
Stddev	.009316	.0004508	.000081	.0008567	.0011727	.012943	.000474
%RSD	15.53271	19.24335	98.69405	10.38481	306.4663	99.37444	32.90188
#1	-.063922	.0027653	-.000065	.0072974	.0008148	-.000977	-.001015
#2	-.049338	.0023951	-.000169	.0089586	.0012780	-.011389	-.001951
#3	-.066672	.0018682	-.000011	.0084913	-.000945	-.026709	-.001352

Sample Name: ICSA01DLX20 Acquired: 10/24/2025 15:01:33 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSA01DLX20 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0050642	-.002498	.0004494
Stddev	.0009966	.000494	.0000935
%RSD	19.67979	19.78045	20.81591

#1	.0045778	-.002366	.0004203
#2	.0044041	-.002083	.0005540
#3	.0062106	-.003044	.0003738

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5455.096	89536.79	7226.108	4237.384	6677.525
Stddev	12.507	40.61	35.039	13.549	21.453
%RSD	.2292750	.0453565	.4848957	.3197514	.3212708

#1	5469.492	89583.41	7192.211	4248.066	6700.516
#2	5446.896	89517.87	7223.926	4222.144	6658.042
#3	5448.900	89509.10	7262.187	4241.944	6674.015

Sample Name: ICSAB01DLX20 Acquired: 10/24/2025 15:07:53 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSAB01DLX20 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0093749	.0088558	.0028420	.0014569	.0288357	12.50927	.0212085
Stddev	.0014250	.0010327	.0002187	.0022287	.0011029	.02668	.0012994
%RSD	15.20043	11.66117	7.696321	152.9766	3.824864	.2132426	6.126759
#1	.0078891	.0080542	.0027998	.0011945	.0287715	12.48065	.0203725
#2	.0107302	.0100211	.0030787	.0038052	.0299693	12.53344	.0205476
#3	.0095054	.0084920	.0026474	-.000629	.0277663	12.51371	.0227056
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0263637	.0488434	12.45536	.0283595	.0248110	.0271495	4.976195
Stddev	.0003443	.0000151	.03181	.0002521	.0000585	.0002217	.081988
%RSD	1.305858	.0309820	.2554126	.8891304	.2358852	.8165108	1.647598
#1	.0261211	.0488345	12.42088	.0280816	.0248546	.0273559	5.031086
#2	.0262123	.0488608	12.46161	.0285736	.0247445	.0269152	5.015550
#3	.0267578	.0488348	12.48358	.0284234	.0248338	.0271774	4.881950
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0263837	12.86582	.0494602	.0107287	-.112254	.0257116	.0523342
Stddev	.0004834	.09287	.0003569	.0003339	.008986	.0019392	.0003390
%RSD	1.832209	.7218331	.7216100	3.111828	8.005477	7.541955	.6477922
#1	.0260425	12.79108	.0490644	.0106233	-.122262	.0260953	.0521543
#2	.0261718	12.83659	.0497575	.0104603	-.104877	.0236093	.0521232
#3	.0269369	12.96979	.0495588	.0111026	-.109621	.0274302	.0527253
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0109347	.0501676	.0521557	.0568901	.0507771	.0453219	-.000701
Stddev	.0260305	.0007177	.0001432	.0002582	.0010485	.0065968	.001670
%RSD	238.0550	1.430587	.2746287	.4538520	2.064978	14.55548	238.2701
#1	-.018128	.0499800	.0520917	.0568517	.0508528	.0518040	.001223
#2	.018824	.0495624	.0523197	.0566533	.0517857	.0386160	-.001779
#3	.032108	.0509605	.0520556	.0571654	.0496928	.0455458	-.001546

Sample Name: ICSAB01DLX20 Acquired: 10/24/2025 15:07:53 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSAB01DLX20 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0046021	-.004976	.0003131
Stddev	.0021870	.002221	.0000981
%RSD	47.52159	44.62635	31.33917

#1	.0021735	-.006028	.0003442
#2	.0064160	-.002425	.0002032
#3	.0052168	-.006475	.0003920

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5489.305	89887.71	7209.106	4233.766	6727.542
Stddev	3.765	87.97	53.075	16.864	11.860
%RSD	.0685959	.0978720	.7362154	.3983211	.1762957

#1	5485.043	89932.08	7238.459	4244.387	6715.422
#2	5492.180	89786.38	7241.020	4242.591	6728.078
#3	5490.691	89944.66	7147.838	4214.321	6739.125

Sample Name: CCV01 Acquired: 10/24/2025 15:12:04 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.126538	5.219710	5.060322	5.143939	5.105430	10.14501	9.805675
Stddev	.016967	.292566	.009568	.024536	.009364	.01499	.055639
%RSD	.3309600	5.605018	.1890719	.4769882	.1834210	.1477722	.5674186
#1	5.107079	4.894404	5.052951	5.116752	5.105505	10.16129	9.772325
#2	5.138238	5.303453	5.056882	5.150627	5.096029	10.13177	9.869906
#3	5.134297	5.461273	5.071134	5.164437	5.114757	10.14198	9.774794
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.533747	2.545050	25.06948	1.025928	2.532754	1.280827	5.072505
Stddev	.0008594	.006399	.04385	.000463	.004331	.001647	.033594
%RSD	.3391700	.2514180	.1749261	.0451284	.1710134	.1286159	.6622670
#1	.2542274	2.539376	25.08829	1.026451	2.529945	1.280831	5.085662
#2	.2533881	2.543787	25.01936	1.025572	2.530575	1.279177	5.097529
#3	.2525088	2.551985	25.10079	1.025760	2.537742	1.282472	5.034325
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.475556	25.06573	2.536820	1.271186	24.30114	2.497645	2.584606
Stddev	.009890	.06594	.004375	.002684	.06647	.012069	.002137
%RSD	.3995139	.2630593	.1724613	.2111395	.2735226	.4832112	.0826908
#1	2.486356	25.10811	2.533369	1.269302	24.28214	2.510231	2.587054
#2	2.466941	25.09932	2.535349	1.274259	24.24625	2.486169	2.583652
#3	2.473372	24.98976	2.541740	1.269996	24.37505	2.496536	2.583111
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.90974	5.037678	5.119442	5.095399	4.969143	5.040832	5.091665
Stddev	.06171	.015025	.013972	.017711	.012482	.002956	.046981
%RSD	.2477368	.2982468	.2729222	.3475802	.2511997	.0586421	.9226952
#1	24.85404	5.044115	5.104915	5.075041	4.983497	5.038335	5.037543
#2	24.89910	5.048412	5.120627	5.103896	4.960839	5.040067	5.115519
#3	24.97608	5.020507	5.132784	5.107260	4.963092	5.044096	5.121932

Sample Name: CCV01 Acquired: 10/24/2025 15:12:04 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	5.058024	4.829790	4.997226
Stddev	.055776	.003481	.010080
%RSD	1.102717	.0720729	.2017075

#1	4.994416	4.830656	4.999941
#2	5.081088	4.825958	5.005671
#3	5.098569	4.832757	4.986067

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5353.791	87700.59	7298.298	4053.702	6182.728
Stddev	14.526	100.11	32.600	23.009	12.420
%RSD	.2713276	.1141469	.4466831	.5676067	.2008814

#1	5337.780	87664.33	7269.478	4027.529	6168.409
#2	5366.128	87623.66	7291.736	4070.744	6190.583
#3	5357.464	87813.77	7333.681	4062.833	6189.192

Sample Name: CCB01 Acquired: 10/24/2025 15:16:15 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0006303	.0026764	.0013323	-.001569	-.000915	.0162529	-.003382
Stddev	.0010504	.0012776	.0003480	.001376	.000600	.0065148	.001272
%RSD	166.6397	47.73702	26.11827	87.67547	65.53607	40.08385	37.60709
#1	-.000049	.0019905	.0015839	-.000909	-.001555	.0236146	-.002604
#2	.001840	.0041505	.0014778	-.000647	-.000826	.0112317	-.004850
#3	.000100	.0018882	.0009352	-.003150	-.000365	.0139125	-.002693
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000030	.0000425	.0199988	-.000024	.0001544	.0002883	.0033002
Stddev	.000056	.0000129	.0136779	.000045	.0000253	.0001630	.0093913
%RSD	188.3633	30.25515	68.39346	186.3056	16.39736	56.54208	284.5694
#1	-.000070	.0000492	.0099295	-.000002	.0001327	.0003817	-.002001
#2	-.000053	.0000506	.0355710	-.000076	.0001483	.0003831	.014143
#3	.000034	.0000277	.0144958	.000005	.0001822	.0001001	-.002242
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001959	-.013485	-.000202	.0006834	-.146623	.0013919	.0006187
Stddev	.0003203	.018848	.000351	.0003205	.005702	.0005261	.0001196
%RSD	163.5178	139.7669	174.0016	46.89731	3.888859	37.79610	19.33903
#1	.0004656	-.033308	-.000129	.0004899	-.148209	.0007955	.0007383
#2	-.000158	-.011355	-.000583	.0005070	-.140295	.0017901	.0006186
#3	.000280	.004207	.000107	.0010534	-.151363	.0015901	.0004991
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.034013	.0062345	.0004763	.0022827	.0005563	.0061448	.0002546
Stddev	.029278	.0007310	.0002525	.0003719	.0003328	.0095642	.0008411
%RSD	86.07887	11.72430	53.00895	16.29322	59.82424	155.6488	330.3734
#1	-.042294	.0059358	.0005015	.0024086	.0009080	.0114928	-.000081
#2	-.058259	.0070676	.0002122	.0025753	.0002464	.0118388	-.000367
#3	-.001487	.0057003	.0007152	.0018641	.0005145	-.004897	.001212

Sample Name: CCB01 Acquired: 10/24/2025 15:16:15 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.001026	-.002723	.0002509
Stddev	.002333	.001347	.0000431
%RSD	227.3400	49.46889	17.16705

#1	-.003653	-.004129	.0002848
#2	.000805	-.001444	.0002024
#3	-.000230	-.002595	.0002656

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5440.790	90655.60	7234.082	4200.402	7030.418
Stddev	15.073	438.68	26.466	28.045	28.396
%RSD	.2770448	.4838990	.3658449	.6676716	.4039056

#1	5438.066	91110.86	7232.950	4204.653	7022.957
#2	5427.265	90620.31	7261.096	4226.079	7006.498
#3	5457.040	90235.63	7208.201	4170.475	7061.800

Sample Name: PB170225BL Acquired: 10/24/2025 15:20:34 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0008791	.0000467	.0003020	.0006051	-.000033	-.004318	-.000796
Stddev	.0015065	.0019820	.0004373	.0010410	.001252	.006745	.002569
%RSD	171.3553	4241.082	144.7705	172.0292	3785.348	156.2199	322.7385

#1	.0022797	.0012813	.0000366	.0008145	-.000909	-.000437	-.003459
#2	.0010723	-.002239	.0000628	-.000525	.001401	-.000410	-.000597
#3	-.000715	.001098	.0008067	.001526	-.000592	-.012107	.001667

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000050	.0000145	.0063186	-.000182	.0000315	.0002249	-.001120
Stddev	.000038	.0000324	.0050284	.000097	.0000183	.0001263	.004682
%RSD	75.14884	223.6922	79.58114	53.28451	58.25044	56.16340	418.2322

#1	-.000093	.0000286	.0097235	-.000115	.0000475	.0001806	.004076
#2	-.000021	.0000374	.0005431	-.000293	.0000115	.0003675	-.002421
#3	-.000037	-.000023	.0086891	-.000138	.0000355	.0001268	-.005013

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001964	-.027636	-.000058	.0006195	-.145862	-.001755	.0005706
Stddev	.0003351	.017473	.000081	.0005131	.020909	.002254	.0000825
%RSD	170.5959	63.22522	140.0235	82.81983	14.33466	128.4519	14.46605

#1	.0005499	-.008297	-.000129	.0001884	-.122215	-.003344	.0006617
#2	-.000117	-.032327	.000030	.0011871	-.153468	-.002746	.0005009
#3	.000156	-.042286	-.000073	.0004832	-.161904	.000825	.0005491

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.082120	.0019035	.0001913	.0004773	-.000077	-.004521	.0002781
Stddev	.030582	.0007119	.0002546	.0004125	.000569	.012775	.0004332
%RSD	37.24050	37.39974	133.0832	86.42829	734.3390	282.5992	155.7838

#1	-.046813	.0010913	.0004525	.0000021	.000505	-.012421	.0007453
#2	-.100322	.0024194	.0001777	.0007434	-.000105	.010218	-.000110
#3	-.099225	.0021999	-.000056	.0006865	-.000632	-.011359	.000199

Sample Name: PB170225BL Acquired: 10/24/2025 15:20:34 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.002050	-.001813	.0000443
Stddev	.001197	.000506	.0001124
%RSD	58.40951	27.90403	253.6276

#1	-.002822	-.001229	-.000027
#2	-.002656	-.002125	.000174
#3	-.000671	-.002084	-.000014

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5456.027	90681.48	7087.459	4262.913	7012.222
Stddev	2.441	46.11	27.528	13.501	2.236
%RSD	.0447408	.0508433	.3884051	.3167171	.0318923

#1	5458.241	90661.10	7118.249	4250.023	7011.921
#2	5453.409	90734.26	7078.903	4276.952	7010.151
#3	5456.430	90649.07	7065.225	4261.764	7014.593

Sample Name: PB170225BS Acquired: 10/24/2025 15:24:53 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7869132	1.961928	.9620576	1.993697	.8226908	1.999504	.2033171
Stddev	.0035227	.069225	.0047146	.006161	.0037990	.005752	.0015007
%RSD	.4476617	3.528421	.4900520	.3090461	.4617826	.2876530	.7380847
#1	.7835828	1.925940	.9566138	1.986901	.8227451	2.003239	.2021759
#2	.7906010	2.041734	.9648020	1.998919	.8188649	1.992881	.2050170
#3	.7865557	1.918109	.9647571	1.995271	.8264624	2.002393	.2027585
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2057894	.1918200	1.033285	.4033428	.1972125	.3170857	3.037094
Stddev	.0012295	.0003139	.010294	.0016360	.0003888	.0005405	.025505
%RSD	.5974739	.1636481	.9962834	.4056061	.1971377	.1704532	.8397805
#1	.2048877	.1916288	1.024206	.4052210	.1969777	.3165213	3.056984
#2	.2052905	.1921823	1.031181	.4022287	.1976613	.3171372	3.045957
#3	.2071900	.1916489	1.044469	.4025787	.1969985	.3175985	3.008340
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2101410	2.022804	.4955252	.0768999	2.785781	.3035373	.2076388
Stddev	.0005191	.026131	.0007517	.0004124	.032714	.0021144	.0008554
%RSD	.2470152	1.291818	.1516956	.5362272	1.174320	.6965812	.4119544
#1	.2095706	2.029251	.4948332	.0771366	2.774819	.3028940	.2073484
#2	.2102665	2.045107	.4963249	.0771394	2.822568	.3018192	.2069664
#3	.2105858	1.994053	.4954173	.0764238	2.759956	.3058986	.2086015
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.709140	.3049189	.4123853	.6806292	.2017141	.8710858	5.621405
Stddev	.124988	.0015780	.0011243	.0017861	.0010307	.0087055	.020395
%RSD	1.287322	.5175238	.2726405	.2624129	.5109674	.9993813	.3628012
#1	9.837261	.3034270	.4111426	.6787732	.2011422	.8790949	5.627453
#2	9.702618	.3047588	.4133320	.6823359	.2010962	.8723421	5.638091
#3	9.587540	.3065708	.4126814	.6807784	.2029040	.8618204	5.598671

Sample Name: PB170225BS Acquired: 10/24/2025 15:24:53 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	F -.004225	.2033037	.2012867
Stddev	.000476	.0017942	.0002785
%RSD	11.27515	.8825367	.1383364

#1	-.003921	.2029328	.2009830
#2	-.003980	.2017239	.2013473
#3	-.004774	.2052544	.2015300

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5485.230	91121.59	7185.384	4336.675	6773.543
Stddev	6.192	426.99	36.594	13.932	5.928
%RSD	.1128909	.4685892	.5092864	.3212513	.0875108

#1	5480.073	90631.63	7207.804	4322.573	6769.975
#2	5492.098	91318.92	7205.192	4350.430	6770.269
#3	5483.520	91414.22	7143.155	4337.021	6780.386

Sample Name: LR-2 Acquired: 10/24/2025 15:33:22 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1219988	-.067989	.1157756	.0153529	-.136715	1932.128	.0227106
Stddev	.0076860	.004170	.0066818	.0045857	.002787	35.553	.0015712
%RSD	6.300034	6.133351	5.771323	29.86873	2.038851	1.840089	6.918361
#1	.1308204	-.072609	.1089547	.0204867	-.137463	1898.445	.0210849
#2	.1167468	-.064505	.1160633	.0139091	-.139053	1928.644	.0228258
#3	.1184291	-.066853	.1223090	.0116628	-.133630	1969.294	.0242210
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0422068	.0277407	10.93894	-.255040	.0654177	.1756525	2661.815
Stddev	.0005231	.0007932	.21610	.000677	.0000789	.0037947	5.593
%RSD	1.239448	2.859478	1.975502	.2654775	.1205297	2.160363	.2101100
#1	.0418176	.0286411	10.81342	-.254581	.0653869	.1758618	2657.797
#2	.0420013	.0271448	10.81494	-.255817	.0655073	.1717575	2668.203
#3	.0428015	.0274362	11.18847	-.254721	.0653589	.1793383	2659.446
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.202580	1.092358	.0474187	^ *****	3.814174	.0503225	.0722893
Stddev	.000869	.006920	.0014959	-----	.075790	.0017217	.0020450
%RSD	.4291944	.6334508	3.154589	-----	1.987072	3.421360	2.828914
#1	-.202545	1.090572	.0462370	^ -----	3.796910	.0490210	.0738969
#2	-.203467	1.099995	.0469185	^ -----	3.897106	.0522748	.0729834
#3	-.201729	1.086506	.0491006	^ -----	3.748504	.0496718	.0699875
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1902.213	^ *****	-.015275	.0230955	.0044883	.4879168	.0852635
Stddev	4.153	-----	.001127	.0004712	.0009943	.0032797	.0064231
%RSD	.2183004	-----	7.376296	2.040219	22.15222	.6721927	7.533282
#1	1897.511	^ -----	-.014351	.0236228	.0055723	.4849823	.0793274
#2	1903.750	^ -----	-.014945	.0227157	.0042738	.4914573	.0920824
#3	1905.378	^ -----	-.016530	.0229480	.0036188	.4873108	.0843808

Sample Name: LR-2 Acquired: 10/24/2025 15:33:22 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-465130	.2676922	-2.55159
Stddev	.003356	.0024612	.00537
%RSD	.7215499	.9194341	.2105519

#1	-466589	.2662781	-2.54782
#2	-467511	.2705341	-2.55774
#3	-461292	.2662642	-2.54922

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4642.282	71757.38	6777.908	3450.909	4753.675
Stddev	3.565	32.60	56.278	19.073	9.331
%RSD	.0768048	.0454372	.8303220	.5526839	.1962811

#1	4638.657	71781.20	6809.229	3469.757	4755.185
#2	4642.405	71770.72	6811.559	3431.620	4743.681
#3	4645.785	71720.22	6712.938	3451.349	4762.158

Sample Name: LR-3 Acquired: 10/24/2025 15:37:51 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1009421	.0287872	233.0419	.0036065	.1287433	.0836622	.0015717
Stddev	.0002788	.0033135	.6443	.0010547	.0041011	.0019525	.0012732
%RSD	.2761658	11.51022	.2764645	29.24517	3.185453	2.333836	81.00902
#1	.1012027	.0273690	233.7827	.0043649	.1309114	.0842812	.0013585
#2	.1006482	.0325737	232.7310	.0024020	.1240133	.0814752	.0004185
#3	.1009753	.0264189	232.6120	.0040526	.1313053	.0852302	.0029380
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.005489	-.001405	.2474917	24.51025	.0066759	54.51720	.1583551
Stddev	.000120	.000032	.0080765	.08531	.0001010	.20658	.0042646
%RSD	2.186343	2.284209	3.263355	.3480648	1.513223	.3789264	2.693058
#1	-.005397	-.001405	.2407205	24.48481	.0066378	54.71081	.1614373
#2	-.005446	-.001373	.2453236	24.60538	.0067905	54.29972	.1534880
#3	-.005625	-.001437	.2564310	24.44054	.0065995	54.54105	.1601399
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	54.64631	-.049728	23.96344	.0047699	.6733729	-.031196	30.10355
Stddev	1.02971	.018291	.09519	.0004314	.0183232	.003950	.11049
%RSD	1.884323	36.78197	.3972096	9.044751	2.721107	12.66050	.3670228
#1	53.67648	-.061408	24.06683	.0050617	.6807176	-.033731	30.16963
#2	54.53549	-.028648	23.87944	.0042743	.6868842	-.026646	30.16502
#3	55.72695	-.059127	23.94405	.0049737	.6525167	-.033212	29.97600
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5344005	.0011894	-.015023	-.005321	-.044733	-.109551	.1592619
Stddev	.0653540	.0005839	.000170	.000516	.001879	.004448	.0022750
%RSD	12.22941	49.09668	1.129769	9.705043	4.199967	4.060192	1.428461
#1	.5875455	.0010884	-.015022	-.005578	-.045187	-.114525	.1566487
#2	.5542268	.0006625	-.015193	-.005658	-.046343	-.105954	.1603367
#3	.4614292	.0018172	-.014854	-.004726	-.042669	-.108174	.1608004

Sample Name: LR-3 Acquired: 10/24/2025 15:37:51 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0636138	.0030895	.0005751
Stddev	.0069047	.0025832	.0000260
%RSD	10.85409	83.61146	4.524537
#1	.0677410	.0060370	.0005600
#2	.0674577	.0020118	.0005601
#3	.0556426	.0012197	.0006051

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5112.097	89660.09	7151.830	4015.769	6695.378
Stddev	15.466	402.62	93.785	30.551	15.324
%RSD	.3025337	.4490560	1.311343	.7607819	.2288730
#1	5104.033	89478.31	7260.053	3986.666	6683.085
#2	5129.928	89380.41	7101.110	4013.053	6712.546
#3	5102.329	90121.55	7094.327	4047.588	6690.503

Sample Name: LR-1 Acquired: 10/24/2025 15:42:44 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0112401	.0131373	.0256447	-.014824	.0239525	.4707634	.0161795
Stddev	.0041321	.0021770	.0010549	.003309	.0005941	.0088300	.0016157
%RSD	36.76180	16.57144	4.113641	22.32380	2.480483	1.875686	9.985956
#1	.0144733	.0148431	.0265508	-.011384	.0237218	.4692581	.0171347
#2	.0126621	.0106853	.0258967	-.015105	.0235084	.4627827	.0143141
#3	.0065848	.0138835	.0244866	-.017985	.0246274	.4802493	.0170899
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0010281	.0012374	2237.636	.0648217	.0072506	.0121609	.9455519
Stddev	.0000903	.0000345	20.907	.0002947	.0000817	.0006635	.0061645
%RSD	8.781276	2.786825	.9343370	.4545728	1.127287	5.456091	.6519516
#1	.0010626	.0012461	2221.930	.0645349	.0071563	.0128698	.9447804
#2	.0009257	.0012667	2261.367	.0651236	.0072949	.0120580	.9398095
#3	.0010961	.0011994	2229.613	.0648067	.0073007	.0115549	.9520659
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0329476	2174.363	.0489029	.0032955	2527.614	.0119280	.0850173
Stddev	.0005484	7.016	.0002512	.0002134	33.861	.0051501	.0002089
%RSD	1.664557	.3226765	.5135587	6.475283	1.339638	43.17634	.2457266
#1	.0330838	2170.126	.0486840	.0032431	2495.409	.0142305	.0850396
#2	.0334151	2182.462	.0491771	.0031131	2562.918	.0155251	.0852142
#3	.0323439	2170.502	.0488476	.0035302	2524.516	.0060284	.0847982
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.120679	.0097970	.0135198	-.007384	-.100075	-.010519	.0163822
Stddev	.540368	.0011524	.0002602	.000941	.002806	.024298	.0013654
%RSD	13.11357	11.76305	1.924353	12.74350	2.803901	230.9796	8.334590
#1	3.543269	.0089617	.0134602	-.006788	-.100735	.006937	.0179570
#2	4.204576	.0093175	.0138046	-.006894	-.096998	-.038270	.0156607
#3	4.614192	.0111117	.0132946	-.008468	-.102492	-.000225	.0155289

Sample Name: LR-1 Acquired: 10/24/2025 15:42:44 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.2598571	-.345857	.0587404
Stddev	.0118985	.004275	.0002699
%RSD	4.578862	1.235918	.4595178

#1	.2630341	-.344399	.0589191
#2	.2698446	-.350670	.0584299
#3	.2466926	-.342503	.0588723

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3579.338	60454.98	6172.740	2804.747	3780.202
Stddev	19.482	229.38	37.382	10.389	9.427
%RSD	.5442949	.3794309	.6056013	.3704094	.2493881

#1	3600.557	60698.43	6205.373	2815.479	3787.132
#2	3562.258	60242.88	6131.954	2794.739	3769.466
#3	3575.201	60423.62	6180.894	2804.023	3784.007

Sample Name: Q3422-02 Acquired: 10/24/2025 15:51:14 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0011368	-.002619	.0010518	.0240300	.0024111	.0056040	-.001118
Stddev	.0018766	.002195	.0007722	.0034313	.0004408	.0030312	.000337
%RSD	165.0832	83.82730	73.41368	14.27929	18.28362	54.08955	30.14849
#1	.0026045	-.000512	.0014234	.0274848	.0021559	.0063835	-.000965
#2	-.000978	-.002451	.0015679	.0239824	.0029201	.0081694	-.001505
#3	.001783	-.004893	.0001641	.0206227	.0021572	.0022592	-.000885
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000144	-.000018	.0470118	.0053107	-.000139	.0007511	.0275015
Stddev	.000011	.000036	.0062356	.0003318	.000061	.0003354	.0076127
%RSD	7.860993	197.8737	13.26386	6.247722	43.97719	44.65728	27.68113
#1	-.000133	-.000041	.0418568	.0049289	-.000069	.0011108	.0265674
#2	-.000144	-.000036	.0539427	.0055290	-.000162	.0006956	.0203989
#3	-.000155	.000023	.0452359	.0054742	-.000185	.0004468	.0355381
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0023340	.0415975	.0011019	.0004334	.1294906	.0015566	.0021828
Stddev	.0001980	.0194145	.0000918	.0007726	.0217661	.0030799	.0001522
%RSD	8.484142	46.67218	8.330207	178.2709	16.80902	197.8653	6.974388
#1	.0023992	.0559822	.0011615	.0013193	.1446357	.0050848	.0020070
#2	.0021116	.0492960	.0009962	-.000101	.1392886	.0001790	.0022732
#3	.0024912	.0195145	.0011479	.000082	.1045476	-.000594	.0022681
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.055884	-.000481	.0004333	-.010010	.0011339	.0075231	.0067388
Stddev	.027139	.000595	.0002266	.000377	.0006711	.0049083	.0016576
%RSD	48.56376	123.6536	52.28186	3.762250	59.18148	65.24283	24.59807
#1	-.047576	-.000407	.0001742	-.010327	.0014762	.0024196	.0067313
#2	-.086207	-.001111	.0005318	-.009593	.0015649	.0079403	.0084001
#3	-.033870	.000073	.0005940	-.010108	.0003607	.0122096	.0050849

Sample Name: Q3422-02 Acquired: 10/24/2025 15:51:14 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0766234	-.007775	.0002472
Stddev	.0018465	.002037	.0000641
%RSD	2.409846	26.20281	25.94433

#1	.0786380	-.006617	.0002110
#2	.0750114	-.006581	.0002094
#3	.0762207	-.010128	.0003213

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5515.612	92152.39	7017.464	4200.867	7216.186
Stddev	17.674	254.45	18.170	9.732	14.704
%RSD	.3204443	.2761183	.2589187	.2316612	.2037631

#1	5502.378	91891.64	7018.381	4211.114	7199.342
#2	5508.773	92400.03	7035.158	4199.738	7222.756
#3	5535.684	92165.49	6998.854	4191.749	7226.459

Sample Name: Q3434-02 Acquired: 10/24/2025 15:55:50 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0172709	-.005306	.1419183	.0166100	.0094242	8.424387
Stddev	.0007564	.000722	.0014075	.0040153	.0013000	.010770
%RSD	4.379534	13.60038	.9917308	24.17375	13.79455	.1278444

#1	.0169298	-.005474	.1435272	.0131388	.0079266	8.431051
#2	.0181378	-.005930	.1413125	.0156837	.0102616	8.430149
#3	.0167451	-.004516	.1409151	.0210075	.0100845	8.411962

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4651355	.0004151	.0024898	155.7241	.0908376	.0067397
Stddev	.0021946	.0000848	.0000421	.2705	.0005562	.0002081
%RSD	.4718103	20.42403	1.691267	.1736735	.6122708	3.088221

#1	.4631374	.0003621	.0025050	155.8395	.0902278	.0066902
#2	.4674843	.0003704	.0025222	155.9177	.0913170	.0069682
#3	.4647849	.0005129	.0024422	155.4151	.0909678	.0065608

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1019672	22.52155	1.127798	477.7935	.0312257	.0041524
Stddev	.0004439	.26849	.002106	1.9608	.0005881	.0004363
%RSD	.4353891	1.192164	.1867144	.4103780	1.883425	10.50686

#1	.1015362	22.21157	1.125599	479.2127	.0319016	.0036637
#2	.1019423	22.67176	1.129796	478.6117	.0308304	.0042906
#3	.1024230	22.68133	1.128001	475.5562	.0309451	.0045028

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 4042.644	.0274166	.6334742	238.6260	1.495136	.0246476
Stddev	19.918	.0017598	.0008482	3.5143	.013194	.0001390
%RSD	.4927093	6.418619	.1339034	1.472712	.8824731	.5641109

#1	4024.774	.0255776	.6344516	234.8113	1.508898	.0245179
#2	4064.119	.0275877	.6329306	239.3349	1.493914	.0246306
#3	4039.040	.0290846	.6330404	241.7318	1.482595	.0247944

Sample Name: Q3434-02 Acquired: 10/24/2025 15:55:50 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0050028	.2345427	F 23.43294	3.709824	F 395.4251	.0811164
Stddev	.0007119	.0031404	.19416	.024430	2.9936	.0015497
%RSD	14.23085	1.338933	.8285917	.6585117	.7570552	1.910508

#1	.0045211	.2312196	23.24001	3.684245	392.5632	.0799103
#2	.0046668	.2374612	23.43050	3.712313	395.1772	.0805745
#3	.0058206	.2349474	23.62831	3.732914	398.5349	.0828643

Elem	Sr4077
Units	ppm
Avg	2.713181
Stddev	.020071
%RSD	.7397624

#1	2.711234
#2	2.694155
#3	2.734155

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4105.840	67307.69	6927.056	3143.711	4272.563
Stddev	9.276	180.38	82.884	8.592	10.030
%RSD	.2259218	.2679931	1.196528	.2733026	.2347461

#1	4112.281	67110.18	6839.767	3135.122	4283.207
#2	4095.208	67349.19	6936.711	3152.306	4271.194
#3	4110.031	67463.71	7004.689	3143.705	4263.289

Sample Name: Q3417-01 Acquired: 10/24/2025 16:00:15 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5533084	F -1.26531	-.057338	1.328961	.3112514	.6027663	-.011628
Stddev	.0056735	.01680	.001050	.021072	.0046916	.0040210	.000876
%RSD	1.025378	1.327443	1.830955	1.585591	1.507330	.6670938	7.530948
#1	.5473741	-1.25092	-.058422	1.307602	.3119898	.6066760	-.012411
#2	.5586790	-1.26124	-.057265	1.349734	.3155299	.6029803	-.010682
#3	.5538722	-1.28377	-.056327	1.329547	.3062343	.5986426	-.011791
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0018939	-.000087	3.172242	.0012474	.0144253	.0466009	36.75744
Stddev	.0000234	.000138	.040850	.0004346	.0000489	.0012520	.21234
%RSD	1.234907	157.8794	1.287730	34.83979	.3392356	2.686683	.5776847
#1	.0019051	-.000119	3.135627	.0017419	.0144816	.0451621	36.52044
#2	.0019095	-.000206	3.216303	.0009266	.0143934	.0474429	36.93039
#3	.0018670	.000064	3.164797	.0010736	.0144008	.0471976	36.82148
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6882365	.5202777	.0245347	.0033521	17.48902	-.000571	.1905582
Stddev	.0072216	.0257345	.0000977	.0005504	.13391	.000615	.0010192
%RSD	1.049290	4.946295	.3981444	16.41825	.7657023	107.7025	.5348442
#1	.6812027	.5107267	.0244589	.0028589	17.38742	-.000518	.1916708
#2	.6956323	.5494221	.0245003	.0039458	17.64077	.000016	.1903341
#3	.6878743	.5006841	.0246450	.0032516	17.43887	-.001211	.1896697
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.38727	.1600088	.0057043	.4942441	.0041825	.7168486	3.345184
Stddev	.22321	.0023891	.0000913	.0037339	.0004845	.0021571	.031800
%RSD	.4710371	1.493086	1.601067	.7554798	11.58377	.3009179	.9506105
#1	47.15116	.1573593	.0057382	.4899338	.0037787	.7160122	3.312354
#2	47.59483	.1606681	.0057739	.4964888	.0047198	.7152349	3.375842
#3	47.41582	.1619989	.0056009	.4963097	.0040491	.7192986	3.347356

Sample Name: Q3417-01 Acquired: 10/24/2025 16:00:15 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	9.312178	-.001148	-.024197
Stddev	.115514	.000664	.000054
%RSD	1.240457	57.83766	.2211421

#1	9.179067	-.001802	-.024137
#2	9.386114	-.000475	-.024214
#3	9.371353	-.001167	-.024240

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4976.285	79144.95	7436.594	3850.564	6293.803
Stddev	39.229	175.93	75.763	18.078	43.110
%RSD	.7883284	.2222876	1.018788	.4694946	.6849659

#1	5007.399	79058.45	7406.860	3835.278	6327.385
#2	4932.217	79029.01	7380.208	3845.895	6245.189
#3	4989.240	79347.38	7522.714	3870.519	6308.834

Sample Name: CCV02 Acquired: 10/24/2025 16:32:12 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.130229	5.187898	5.113869	5.122566	5.068437	10.33686
Stddev	.004951	.147450	.023383	.002148	.020154	.05968
%RSD	.0964998	2.842189	.4572407	.0419349	.3976281	.5773221
#1	5.135187	5.184692	5.140233	5.125042	5.088838	10.34476
#2	5.125285	5.042077	5.095644	5.121441	5.067932	10.39219
#3	5.130215	5.336925	5.105728	5.121213	5.048540	10.27362
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.14209	.2675559	2.581096	25.66293	1.047568	2.564152
Stddev	.06606	.0005523	.013158	.09172	.000384	.012172
%RSD	.6513117	.2064244	.5097649	.3574215	.0366833	.4746979
#1	10.19627	.2679848	2.595452	25.71684	1.047265	2.577761
#2	10.16149	.2677502	2.569612	25.71493	1.047439	2.554306
#3	10.06850	.2669327	2.578223	25.55702	1.048000	2.560388
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.288183	5.075015	2.555098	25.90813	2.566213	1.302603
Stddev	.005335	.018637	.010254	.07621	.012559	.002352
%RSD	.4141233	.3672207	.4013075	.2941397	.4894039	.1805686
#1	1.294148	5.087538	2.561903	25.94526	2.580324	1.303481
#2	1.286535	5.053598	2.560086	25.95866	2.556261	1.299938
#3	1.283868	5.083909	2.543304	25.82048	2.562052	1.304389
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	27.22903	2.551100	2.606210	25.96189	5.356281	5.152479
Stddev	.23015	.021139	.005488	.08870	.009409	.012627
%RSD	.8452264	.8286298	.2105618	.3416546	.1756584	.2450583
#1	27.41619	2.554983	2.611632	26.05240	5.361437	5.167021
#2	27.29884	2.570029	2.600659	25.87511	5.361985	5.144293
#3	26.97206	2.528289	2.606338	25.95817	5.345421	5.146125

Sample Name: CCV02 Acquired: 10/24/2025 16:32:12 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV02 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.151359	5.084536	F 5.622870	5.138682	5.105444	5.063326
Stddev	.021201	.026402	.029052	.016660	.027045	.030383
%RSD	.4115517	.5192629	.5166829	.3242130	.5297192	.6000536
#1	5.171509	5.107494	5.589746	5.157828	5.120092	5.087286
#2	5.129245	5.090429	5.634833	5.127485	5.074235	5.073540
#3	5.153322	5.055686	5.644031	5.130734	5.122005	5.029152
Elem	Sr4077					
Units	ppm					
Avg	5.019290					
Stddev	.065504					
%RSD	1.305037					
#1	5.015062					
#2	5.086806					
#3	4.956003					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	5283.114	84639.07	6893.647	3917.469	6091.855	
Stddev	14.363	198.82	43.376	5.625	21.478	
%RSD	.2718664	.2349073	.6292147	.1435939	.3525636	
#1	5268.460	84713.61	6888.741	3923.964	6067.172	
#2	5283.714	84413.74	6852.932	3914.312	6106.279	
#3	5297.168	84789.84	6939.267	3914.131	6102.116	

Sample Name: CCB02 Acquired: 10/24/2025 16:47:26 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0014543	-.001522	.0009109	.0021860	.0002958	-.007683
Stddev	.0002898	.000361	.0002925	.0027724	.0006943	.015184
%RSD	19.92714	23.71665	32.11013	126.8258	234.7328	197.6380
#1	.0012782	-.001757	.0007497	.0045469	.0006632	.005132
#2	.0017888	-.001703	.0007345	-.000867	.0007292	-.024454
#3	.0012958	-.001107	.0012485	.002878	-.000505	-.003727
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0010715	-.000084	.0000103	.0122912	-.000051	.0002109
Stddev	.0006243	.000030	.0000398	.0067098	.000244	.0000766
%RSD	58.26674	35.41706	386.3434	54.59060	479.9916	36.31240
#1	.0009513	-.000050	-.000036	.0146095	.000144	.0002051
#2	.0017472	-.000099	.000036	.0175346	-.000325	.0001374
#3	.0005160	-.000104	.000030	.0047297	.000028	.0002903
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005108	-.002626	.0003340	-.018233	-.000107	.0002219
Stddev	.0001885	.001468	.0003106	.043729	.000215	.0003464
%RSD	36.90227	55.89798	93.01568	239.8342	201.4485	156.1438
#1	.0005134	-.001200	.0001209	.029661	-.000171	.0004704
#2	.0006980	-.004132	.0006904	-.028330	.000133	.0003690
#3	.0003210	-.002546	.0001906	-.056030	-.000282	-.000174
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8385219	-.000623	.0003527	.6187587	.0234984	.0001775
Stddev	.0227915	.003825	.0001178	.0095098	.0010046	.0003028
%RSD	2.718060	614.3555	33.38189	1.536919	4.275375	170.6454
#1	.8132755	-.000968	.0004368	.6252270	.0223383	-.000138
#2	.8447093	.003363	.0002182	.6232094	.0240737	.000204
#3	.8575808	-.004263	.0004032	.6078396	.0240831	.000466

Sample Name: CCB02 Acquired: 10/24/2025 16:47:26 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007477	-.000069	.0535595	.0008364	F .0389714	.0026414
Stddev	.0008286	.001556	.0020357	.0006151	.0033590	.0007557
%RSD	110.8171	2243.314	3.800728	73.54855	8.619093	28.60863
#1	.0016843	-.000840	.0520473	.0005615	.0360627	.0031473
#2	.0004487	-.001090	.0558741	.0004066	.0382038	.0030042
#3	.0001101	.001721	.0527572	.0015410	.0426478	.0017728
Elem	Sr4077					
Units	ppm					
Avg	.0000349					
Stddev	.0001334					
%RSD	382.0328					
#1	.0001886					
#2	-.000033					
#3	-.000051					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	5435.430	89387.12	6901.680	4160.103	6978.699	
Stddev	8.584	219.18	20.868	21.140	19.005	
%RSD	.1579283	.2452011	.3023637	.5081701	.2723337	
#1	5427.243	89304.00	6925.011	4155.851	6959.527	
#2	5434.685	89635.70	6895.234	4183.046	6979.037	
#3	5444.362	89221.66	6884.795	4141.411	6997.533	

Sample Name: Q3440-01 Acquired: 10/24/2025 17:55:09 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3540642	-.010606	19.55639	.0056803	.3480377	104.7045
Stddev	.0021118	.003978	.05498	.0052388	.0033632	.7730
%RSD	.5964397	37.50537	.2811111	92.22874	.9663363	.7382803
#1	.3561955	-.014855	19.60242	.0095777	.3509449	103.8126
#2	.3540246	-.009992	19.49552	.0077382	.3488140	105.1816
#3	.3519725	-.006971	19.57124	-.000275	.3443542	105.1193
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.793956	.0196814	.0262636	99.26233	.2859864	.2940172
Stddev	.013571	.0002097	.0004011	.66231	.0012564	.0013309
%RSD	.7564924	1.065333	1.527089	.6672309	.4393087	.4526493
#1	1.778410	.0196030	.0267221	98.50116	.2856042	.2951014
#2	1.803435	.0199190	.0259777	99.70713	.2873894	.2925319
#3	1.800024	.0195222	.0260911	99.57869	.2849655	.2944184
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	21.94842	382.9283	5.371101	53.65942	.6099446	-.051000
Stddev	.06784	2.9147	.029055	.39944	.0027544	.000570
%RSD	.3091097	.7611499	.5409594	.7443967	.4515776	1.117816
#1	21.99314	379.5711	5.338121	53.20176	.6114378	-.051469
#2	21.87035	384.8125	5.392927	53.93787	.6067661	-.051166
#3	21.98175	384.4013	5.382253	53.83864	.6116300	-.050366
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.827763	.4301370	14.13704	16.67508	.1417061	.0130130
Stddev	.035846	.0043114	.06857	.16773	.0185680	.0001518
%RSD	.4579359	1.002326	.4850443	1.005858	13.10317	1.166523
#1	7.795319	.4252069	14.07506	16.48896	.1211216	.0131780
#2	7.866245	.4332010	14.21070	16.72175	.1468044	.0128793
#3	7.821727	.4320031	14.12535	16.81454	.1571924	.0129818

Sample Name: Q3440-01 Acquired: 10/24/2025 17:55:09 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.261367	7.708787	7.765214	F 14.01328	F 12.66069	.1535943
Stddev	.004163	.044934	.108435	.02498	.07565	.0021720
%RSD	.1840958	.5828942	1.396417	.1782238	.5975263	1.414142

#1	2.264791	7.659273	7.875119	13.99060	12.60987	.1513584
#2	2.256733	7.746974	7.762212	14.04005	12.74763	.1537282
#3	2.262576	7.720113	7.658311	14.00919	12.62457	.1556963

Elem	Sr4077
Units	ppm
Avg	.2437034
Stddev	.0010788
%RSD	.4426661

#1	.2424583
#2	.2443580
#3	.2442939

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6372.716	103534.2	8603.654	4910.659	5922.184
Stddev	17.905	310.8	20.912	12.285	15.536
%RSD	.2809705	.3002241	.2430577	.2501761	.2623327

#1	6363.357	103841.1	8606.024	4922.101	5911.721
#2	6393.361	103219.6	8581.658	4897.676	5940.035
#3	6361.429	103541.8	8623.280	4912.202	5914.796

Sample Name: Q3447-01 Acquired: 10/24/2025 17:59:16 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5391144	-.162738	10.93966	-.027503	.2830233	11.39935
Stddev	.0015924	.003401	.02089	.004989	.0011634	.18917
%RSD	.2953668	2.089589	.1909747	18.13868	.4110772	1.659442
#1	.5379379	-.165082	10.95355	-.027111	.2837478	11.61125
#2	.5384788	-.164294	10.91563	-.032677	.2816813	11.24749
#3	.5409264	-.158838	10.94979	-.022722	.2836409	11.33930
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7342871	.0381855	.0502081	53.62915	.0499186	.2631668
Stddev	.0150120	.0006922	.0016933	.96877	.0021105	.0006262
%RSD	2.044429	1.812805	3.372577	1.806421	4.227808	.2379619
#1	.7488169	.0386350	.0482669	54.66961	.0475562	.2626642
#2	.7188354	.0373884	.0509758	52.75311	.0505818	.2638684
#3	.7352091	.0385332	.0513815	53.46474	.0516178	.2629679
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.516851	1979.739	11.44725	9.710947	.4821893	^ *****
Stddev	.033660	18.489	.20315	.178503	.0016534	----
%RSD	.4477998	.9338986	1.774645	1.838163	.3428960	----
#1	7.486341	2000.700	11.64948	9.895936	.4833040	^ ----
#2	7.511252	1972.765	11.24320	9.539727	.4802896	^ ----
#3	7.552960	1965.751	11.44908	9.697180	.4829743	^ ----
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	42.97609	.2291475	6.492662	2.007351	^ *****	.0114548
Stddev	.43017	.0062673	.016823	.056147	----	.0001418
%RSD	1.000945	2.735053	.2591137	2.797047	----	1.237529
#1	43.43663	.2363414	6.508406	1.986344	^ ----	.0112978
#2	42.58466	.2248692	6.474935	1.964738	^ ----	.0115735
#3	42.90698	.2262317	6.494645	2.070972	^ ----	.0114931

Sample Name: Q3447-01 Acquired: 10/24/2025 17:59:16 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4941316	.5224100	5.768023	3.006362	F 78.58411	.2138898
Stddev	.0002707	.0093191	.021804	.011001	.25952	.0039368
%RSD	.0547824	1.783859	.3780186	.3659304	.3302448	1.840585

#1	.4939175	.5303195	5.793194	3.009634	78.42567	.2183728
#2	.4940414	.5121366	5.754972	2.994096	78.44305	.2123006
#3	.4944359	.5247738	5.755902	3.015356	78.88361	.2109960

Elem	Sr4077
Units	ppm
Avg	F -1.39653
Stddev	.01235
%RSD	.8842998

#1	-1.40707
#2	-1.39959
#3	-1.38294

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5154.551	86131.45	7044.114	3980.581	6157.532
Stddev	13.340	51.28	88.998	8.092	4.638
%RSD	.2588067	.0595379	1.263435	.2032763	.0753193

#1	5165.589	86104.89	6963.334	3972.509	6156.307
#2	5158.338	86190.57	7139.518	3988.692	6162.659
#3	5139.727	86098.91	7029.490	3980.541	6153.629

Sample Name: Q3447-03 Acquired: 10/24/2025 18:03:23 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.884126	-.098821	200.1867	.3868004	8.538133	155.9449
Stddev	.005405	.005310	.0841	.0076016	.013720	.2976
%RSD	.1391455	5.373117	.0420331	1.965260	.1606852	.1908246
#1	3.881235	-.092744	200.1767	.3787139	8.537425	155.6210
#2	3.880782	-.102566	200.2755	.3878873	8.552193	156.0075
#3	3.890362	-.101153	200.1081	.3938001	8.524782	156.2062
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.65579	.0389907	.3867653	349.3323	1.297913	.5440942
Stddev	.20055	.0000612	.0011435	.6704	.006127	.0003552
%RSD	1.584632	.1570249	.2956560	.1919180	.4720781	.0652802
#1	12.72199	.0390556	.3880763	348.8471	1.304491	.5441923
#2	12.81486	.0389825	.3862458	349.0525	1.292368	.5443900
#3	12.43051	.0389339	.3859737	350.0973	1.296879	.5437003
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	41.28774	1603.593	10.29017	56.70904	2.780506	^ *****
Stddev	.04329	16.392	.04405	.07834	.001380	----
%RSD	.1048478	1.022214	.4281144	.1381512	.0496342	----
#1	41.30675	1584.915	10.29195	56.63472	2.779479	^ ----
#2	41.31827	1615.589	10.24525	56.70153	2.782075	^ ----
#3	41.23820	1610.275	10.33330	56.79087	2.779964	^ ----
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.726782	.9370325	25.37047	15.83885	^ *****	.0961410
Stddev	.081191	.0031318	.19956	.11448	----	.0004444
%RSD	.9303607	.3342199	.7865930	.7227606	----	.4622104
#1	8.687789	.9353441	25.14702	15.74200	^ ----	.0956376
#2	8.672443	.9351073	25.53094	15.80936	^ ----	.0964787
#3	8.820113	.9406462	25.43346	15.96519	^ ----	.0963066

Sample Name: Q3447-03 Acquired: 10/24/2025 18:03:23 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.303977	5.268423	8.038822	F 30.60947	F 71.00193	.3064063
Stddev	.009690	.013592	.040797	.05654	.39643	.0016474
%RSD	.1166915	.2579854	.5075044	.1847087	.5583366	.5376559

#1	8.298209	5.273327	7.991779	30.66414	70.70042	.3046323
#2	8.315164	5.253060	8.064492	30.61303	71.45097	.3066987
#3	8.298557	5.278883	8.060196	30.55123	70.85439	.3078880

Elem	Sr4077
Units	ppm
Avg	.7169989
Stddev	.0263618
%RSD	3.676680

#1	.7173410
#2	.7431879
#3	.6904678

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5614.231	95568.53	8170.514	4286.134	5510.122
Stddev	8.823	188.85	30.818	11.484	5.724
%RSD	.1571543	.1976118	.3771911	.2679241	.1038793

#1	5608.364	95422.69	8136.034	4274.096	5504.787
#2	5609.951	95781.85	8180.129	4296.968	5509.412
#3	5624.378	95501.04	8195.379	4287.338	5516.168

Sample Name: Q3447-05 Acquired: 10/24/2025 18:08:01 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8305624	.0467462	F 1145.057	.0133128	F 23.18494	26.67059
Stddev	.0543552	.0097421	62.600	.0058698	1.79826	1.04556
%RSD	6.544385	20.84050	5.466990	44.09158	7.756163	3.920267
#1	.7680487	.0542887	1204.189	.0151001	21.12090	27.85184
#2	.8666689	.0502029	1151.495	.0180811	24.41330	26.29602
#3	.8569696	.0357471	1079.487	.0067570	24.02063	25.86391
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.362862	.0096380	.1795062	30.63991	.1822746	.1617317
Stddev	.033492	.0012114	.0081666	1.41307	.0048373	.0071953
%RSD	2.457450	12.56886	4.549469	4.611859	2.653871	4.448938
#1	1.398972	.0110281	.1701225	32.21399	.1830318	.1542612
#2	1.356798	.0090784	.1833896	30.22496	.1771033	.1623179
#3	1.332818	.0088077	.1850064	29.48077	.1866887	.1686160
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 452.7759	587.2732	2.739358	6.466081	1.579138	.1697121
Stddev	20.9679	36.8467	.136433	.376772	.064232	.0055597
%RSD	4.630970	6.274209	4.980482	5.826899	4.067514	3.275945
#1	438.5147	562.1639	2.890075	6.885540	1.520749	.1658643
#2	476.8510	570.0819	2.703717	6.356344	1.568724	.1671857
#3	442.9620	629.5739	2.624283	6.156361	1.647940	.1760864
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.921185	1.738531	16.64226	5.795486	^ *****	.0507592
Stddev	.591525	.062091	.81336	.564899	-----	.0036878
%RSD	9.989976	3.571471	4.887320	9.747230	-----	7.265355
#1	5.348353	1.806375	16.01530	5.247545	^ -----	.0465544
#2	5.885423	1.724689	16.35014	5.762974	^ -----	.0522788
#3	6.529780	1.684530	17.56134	6.375940	^ -----	.0534445

Sample Name: Q3447-05 Acquired: 10/24/2025 18:08:01 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 286.7953	.6637014	2.778532	1.783865	F 93.46327	.0810309
Stddev	20.0965	.0185501	.194641	.117980	3.89671	.0032020
%RSD	7.007276	2.794949	7.005174	6.613755	4.169240	3.951608

#1	294.9557	.6818085	2.592950	1.825000	89.68986	.0798624
#2	263.9022	.6645577	2.761531	1.650824	93.22739	.0785772
#3	301.5281	.6447380	2.981116	1.875770	97.47256	.0846530

Elem	Sr4077
Units	ppm
Avg	-.387240
Stddev	.038264
%RSD	9.881196

#1	-.359163
#2	-.371733
#3	-.430823

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4540.355	109254.3	9028.389	3992.630	6468.588
Stddev	240.136	3542.2	957.574	56.596	218.306
%RSD	5.288923	3.242193	10.60625	1.417500	3.374861

#1	4816.195	109955.3	7954.337	4043.773	6720.253
#2	4377.951	112393.5	9337.915	4002.293	6355.237
#3	4426.918	105413.9	9792.915	3931.826	6330.273

Sample Name: Q3447-07 Acquired: 10/24/2025 18:12:40 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0263881	-.001336	6.814924	.0023726	-.234015	3.153905
Stddev	.0013635	.001232	.016866	.0035820	.000941	.006314
%RSD	5.166925	92.21972	.2474913	150.9725	.4019540	.2001945
#1	.0248151	-.000770	6.831955	.0052098	-.234443	3.151234
#2	.0271165	-.002749	6.814591	.0035605	-.234667	3.161116
#3	.0272326	-.000488	6.798227	-.001652	-.232937	3.149365
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0605689	.0016907	.0323098	4.409227	.0566872	.0305202
Stddev	.0002821	.0001146	.0001098	.002946	.0005300	.0002112
%RSD	.4656838	6.778716	.3399526	.0668171	.9348814	.6918781
#1	.0604489	.0016930	.0323795	4.412607	.0564086	.0307634
#2	.0608911	.0018041	.0323667	4.407868	.0572983	.0303837
#3	.0603667	.0015749	.0321832	4.407205	.0563546	.0304134
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	27.43708	86.54650	1.230397	2.930437	.7418209	-.013676
Stddev	.06497	.66604	.003812	.009416	.0022319	.000742
%RSD	.2368040	.7695749	.3098151	.3213176	.3008687	5.422299
#1	27.50309	86.43976	1.233122	2.921328	.7442673	-.013459
#2	27.43494	85.94028	1.226041	2.940133	.7412996	-.014502
#3	27.37320	87.25947	1.232027	2.929849	.7398958	-.013068
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.388373	.8984121	13.44776	1.341262	.0056286	.0040996
Stddev	.052536	.0030158	.02382	.042550	.0029274	.0005664
%RSD	1.550479	.3356798	.1771548	3.172362	52.00855	13.81554
#1	3.351008	.9018923	13.43575	1.366364	.0043467	.0047368
#2	3.365668	.8965662	13.47520	1.292134	.0035609	.0039084
#3	3.448443	.8967777	13.43233	1.365288	.0089783	.0036535

Sample Name: Q3447-07 Acquired: 10/24/2025 18:12:40 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 23.97596	.0426568	.3498037	.1793629	F 24.82000	.0188310
Stddev	.02304	.0005295	.0043735	.0011640	.16298	.0022129
%RSD	.0961122	1.241242	1.250275	.6489452	.6566358	11.75152

#1	23.97319	.0422162	.3538612	.1801066	24.63188	.0182604
#2	24.00026	.0425099	.3451711	.1780215	24.90974	.0212734
#3	23.95443	.0432442	.3503790	.1799606	24.91839	.0169593

Elem	Sr4077
Units	ppm
Avg	-.071640
Stddev	.000584
%RSD	.8154266

#1	-.071509
#2	-.071132
#3	-.072278

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5381.785	89738.30	6755.363	4179.118	6826.396
Stddev	11.630	224.49	31.606	12.284	15.852
%RSD	.2160982	.2501616	.4678721	.2939268	.2322099

#1	5374.091	89980.01	6760.625	4191.472	6814.404
#2	5376.100	89698.54	6721.456	4166.906	6820.417
#3	5395.164	89536.34	6784.008	4178.977	6844.368

Sample Name: Q3449-01 Acquired: 10/24/2025 18:16:44 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0600190	-.000304	1.329723	.0031593	-.007018	114.9983	.5994365
Stddev	.0008987	.000712	.001567	.0017590	.000362	.8201	.0051450
%RSD	1.497382	234.0865	.1178492	55.67586	5.156031	.7131478	.8583005
#1	.0606246	-.001089	1.329578	.0016517	-.007056	115.7928	.6015624
#2	.0604459	-.000122	1.328233	.0027344	-.007359	115.0473	.6031778
#3	.0589864	.000299	1.331357	.0050918	-.006638	114.1548	.5935693
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0085273	.0067803	32.93807	.2099912	.0755879	.2587193	187.5907
Stddev	.0000446	.0002242	.19671	.0007671	.0001244	.0007876	1.4018
%RSD	.5226483	3.307139	.5972025	.3653230	.1645203	.3044103	.7472537
#1	.0084976	.0069341	33.08258	.2092620	.0755211	.2594581	186.4883
#2	.0085058	.0068839	33.01758	.2107914	.0757314	.2588092	187.1155
#3	.0085786	.0065230	32.71405	.2099202	.0755112	.2578907	189.1683
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.345484	24.73872	.1675755	-.033238	3.522160	.3227923	.7892310
Stddev	.020537	.16983	.0005548	.000780	.026907	.0053553	.0023151
%RSD	.6138637	.6865001	.3310948	2.345277	.7639459	1.659067	.2933356
#1	3.357929	24.87730	.1681441	-.033964	3.496609	.3261666	.7917789
#2	3.356743	24.78960	.1670355	-.033336	3.519627	.3255930	.7872565
#3	3.321780	24.54927	.1675468	-.032414	3.550245	.3166174	.7886575
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.071498	.0091974	.0063208	.0298386	2.834194	7.107347	9.696399
Stddev	.062451	.0081664	.0002090	.0005187	.020060	.171115	.042895
%RSD	.8831383	88.79114	3.306679	1.738451	.7077811	2.407576	.4423758
#1	7.050180	.0091473	.0061333	.0298166	2.853163	7.304509	9.735188
#2	7.022498	.0010561	.0062829	.0293312	2.836222	6.997562	9.703678
#3	7.141817	.0173887	.0065462	.0303679	2.813197	7.019969	9.650330

Sample Name: Q3449-01 Acquired: 10/24/2025 18:16:44 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.529482	.1045228	-.038757
Stddev	.034184	.0015672	.002200
%RSD	.7547109	1.499365	5.677602

#1	4.555298	.1029074	-.037006
#2	4.542433	.1046239	-.038038
#3	4.490714	.1060369	-.041227

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6323.046	101598.0	7862.235	4971.829	6332.733
Stddev	10.922	248.3	85.598	12.811	12.084
%RSD	.1727336	.2444145	1.088719	.2576813	.1908104

#1	6315.879	101784.0	7804.346	4986.216	6322.663
#2	6335.616	101693.9	7821.801	4961.653	6346.132
#3	6317.642	101316.0	7960.560	4967.619	6329.406

Sample Name: PB170252BL Acquired: 10/24/2025 18:20:46 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0021974	.0000511	.0023015	.0012672	.0010243	.0031655
Stddev	.0013676	.0019399	.0003061	.0026165	.0011772	.0071195
%RSD	62.23884	3797.475	13.29981	206.4804	114.9289	224.9058
#1	.0006267	.0022616	.0025835	.0036417	.0010038	.0075338
#2	.0028412	-.000741	.0019759	-.001538	-.000143	-.005050
#3	.0031243	-.001368	.0023452	.001698	.002212	.007013
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000240	-.000033	.0000064	.0027153	.0000533	.0000533
Stddev	.000918	.000012	.0000015	.0064456	.0001288	.0001895
%RSD	383.0298	35.70467	23.20759	237.3771	241.4315	355.7056
#1	.000627	-.000020	.0000050	-.004670	.0001764	.0002361
#2	-.000144	-.000043	.0000064	.005611	-.000081	-.000142
#3	-.001202	-.000035	.0000079	.007205	.000064	.000066
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0009658	.0217966	.0005595	.0137784	.0000105	.0003970
Stddev	.0001755	.0071791	.0004362	.0125314	.0001323	.0003092
%RSD	18.16924	32.93667	77.96291	90.94924	1255.404	77.86183
#1	.0011649	.0135134	.0002688	.0102758	-.000047	.0004197
#2	.0008991	.0256549	.0003486	.0276885	.000162	.0006942
#3	.0008335	.0262214	.0010611	.0033710	-.000083	.0000772
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9559862	-.002391	.0002526	.5735233	.0201819	.0000899
Stddev	.0455009	.004174	.0004066	.0628118	.0012322	.0000388
%RSD	4.759577	174.5728	161.0006	10.95192	6.105335	43.10153
#1	.9046112	.001668	.0002058	.5165082	.0207918	.0000711
#2	.9721454	-.002170	.0006805	.5632071	.0209901	.0001345
#3	.9912020	-.006672	-.000129	.6408546	.0187637	.0000641

Sample Name: PB170252BL Acquired: 10/24/2025 18:20:46 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0138319	.0015832	.0054363	-.001206	F .0308096	.0014295
Stddev	.0006875	.0021943	.0098371	.001702	.0028996	.0037361
%RSD	4.970285	138.6057	180.9512	141.1884	9.411357	261.3510

#1	.0143151	.0033599	.0086405	-.002919	.0335792	.0057171
#2	.0141357	.0022593	-.005603	.000485	.0310541	-.001128
#3	.0130448	-.000870	.013272	-.001183	.0277955	-.000300

Elem	Sr4077
Units	ppm
Avg	.0000650
Stddev	.0001454
%RSD	223.7390

#1	-.000101
#2	.000124
#3	.000172

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5700.322	92924.96	6810.857	4421.081	7250.213
Stddev	13.355	187.34	198.191	34.677	9.127
%RSD	.2342904	.2016014	2.909927	.7843537	.1258808

#1	5702.575	93079.17	6703.480	4446.935	7245.462
#2	5685.984	92979.24	6689.525	4434.633	7244.442
#3	5712.408	92716.48	7039.567	4381.674	7260.735

Sample Name: PB170252BS Acquired: 10/24/2025 18:25:04 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7606418	1.942612	.9360105	1.893714	.7701252	1.938582
Stddev	.0021793	.052558	.0014964	.006594	.0013245	.047601
%RSD	.2865097	2.705520	.1598721	.3482159	.1719810	2.455457
#1	.7607221	1.931060	.9345586	1.886130	.7700826	1.907321
#2	.7627798	1.999985	.9359251	1.896922	.7688225	1.915061
#3	.7584234	1.896791	.9375478	1.898090	.7714705	1.993365
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1925651	.2152081	.1879286	1.014787	.4067695	.1906910
Stddev	.0039279	.0010926	.0000997	.021321	.0008556	.0004112
%RSD	2.039777	.5076936	.0530412	2.101081	.2103352	.2156575
#1	.1912748	.2147759	.1879017	.998890	.4062811	.1907065
#2	.1894448	.2143978	.1878452	1.006455	.4077575	.1902722
#3	.1969759	.2164507	.1880390	1.039017	.4062700	.1910943
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3042366	2.759997	.2002846	2.009629	.4805457	.0735012
Stddev	.0002071	.028736	.0040457	.047000	.0002487	.0005992
%RSD	.0680669	1.041174	2.019959	2.338738	.0517593	.8152825
#1	.3040436	2.743964	.1982774	1.970443	.4802948	.0738639
#2	.3044554	2.742855	.1976351	1.996706	.4807922	.0728095
#3	.3042108	2.793173	.2049414	2.061739	.4805502	.0738302
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.309370	.2904358	.1954928	9.243754	.3319467	.3986244
Stddev	.044026	.0084172	.0007305	.136241	.0011710	.0007167
%RSD	1.330339	2.898111	.3736441	1.473866	.3527795	.1797974
#1	3.283175	.2876093	.1949866	9.131547	.3332375	.3981413
#2	3.284736	.2837958	.1963302	9.204365	.3309524	.3994479
#3	3.360198	.2999025	.1951616	9.395349	.3316503	.3982841

Sample Name: PB170252BS Acquired: 10/24/2025 18:25:04 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6776417	.1920291	.8132965	5.503556	F .0269768	.1912701
Stddev	.0008551	.0045564	.0294878	.012345	.0014094	.0028529
%RSD	.1261819	2.372769	3.625707	.2243105	5.224487	1.491581

#1	.6774453	.1879342	.8221662	5.515856	.0266627	.1902657
#2	.6785779	.1912157	.7803919	5.503644	.0285167	.1890552
#3	.6769020	.1969374	.8373313	5.491166	.0257509	.1944894

Elem	Sr4077
Units	ppm
Avg	.1880738
Stddev	.0041425
%RSD	2.202602

#1	.1861058
#2	.1852821
#3	.1928334

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5544.147	89517.95	6680.190	4222.777	6828.251
Stddev	4.877	83.77	46.802	26.181	4.535
%RSD	.0879614	.0935774	.7006055	.6199969	.0664081

#1	5545.333	89608.15	6711.870	4240.909	6833.072
#2	5548.322	89442.60	6702.265	4192.761	6827.611
#3	5538.787	89503.10	6626.433	4234.659	6824.070

Sample Name: CCV03 Acquired: 10/24/2025 18:29:06 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.977248	5.064179	5.010155	4.936229	4.884780	10.31114	10.11292
Stddev	.044979	.093889	.034984	.036176	.042468	.06473	.08592
%RSD	.9036913	1.853981	.6982548	.7328648	.8693942	.6277486	.8496029
#1	4.934065	5.148284	4.975153	4.906355	4.845401	10.30372	10.06991
#2	5.023831	5.081373	5.045120	4.976451	4.929778	10.37926	10.21185
#3	4.973849	4.962882	5.010193	4.925879	4.879163	10.25044	10.05700
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2736783	2.531328	25.79513	1.040236	2.498219	1.249537	5.167231
Stddev	.0024692	.018482	.18001	.004768	.018542	.009860	.040701
%RSD	.9022400	.7301499	.6978341	.4583798	.7422147	.7891075	.7876709
#1	.2731445	2.514140	25.77705	1.034874	2.480287	1.239946	5.120556
#2	.2763708	2.550878	25.98350	1.043999	2.517316	1.259646	5.185813
#3	.2715196	2.528966	25.62485	1.041836	2.497055	1.249019	5.195325
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.562361	26.06534	2.505207	1.272909	24.45580	2.545960	2.494776
Stddev	.022530	.21441	.019247	.003074	.12217	.017417	.012005
%RSD	.8792692	.8225934	.7682642	.2415231	.4995576	.6841145	.4812197
#1	2.547539	26.11113	2.486860	1.269639	24.32002	2.547702	2.482664
#2	2.588288	26.25316	2.525242	1.273345	24.55684	2.562441	2.494993
#3	2.551257	25.83174	2.503519	1.275742	24.49055	2.527738	2.506672
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.50398	5.422170	5.009423	5.062916	5.077379	5.046399	5.080480
Stddev	.08423	.045685	.038805	.037659	.040215	.049651	.020906
%RSD	.3437263	.8425540	.7746352	.7438150	.7920348	.9838854	.4115059
#1	24.40762	5.408567	4.973885	5.025749	5.068917	4.990328	5.071049
#2	24.56356	5.473111	5.050826	5.101048	5.121151	5.084788	5.104441
#3	24.54077	5.384832	5.003557	5.061950	5.042069	5.064082	5.065951

Sample Name: CCV03 Acquired: 10/24/2025 18:29:06 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV04 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.902153	4.997382	5.015117
Stddev	.029390	.038284	.024040
%RSD	.5995244	.7660795	.4793441

#1	4.889270	4.984652	5.002204
#2	4.935784	5.040410	5.042854
#3	4.881406	4.967085	5.000294

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5444.314	85378.72	6679.845	4021.354	6248.227
Stddev	29.433	187.02	67.858	13.683	30.679
%RSD	.5406121	.2190476	1.015864	.3402611	.4910103

#1	5472.120	85435.69	6674.174	4036.884	6275.482
#2	5413.488	85169.84	6615.000	4011.070	6215.001
#3	5447.333	85530.62	6750.361	4016.109	6254.197

Sample Name: CCB03 Acquired: 10/24/2025 18:33:09 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0021085	.0034151	.0013671	.0005722	.0011862	-.003295
Stddev	.0011217	.0011684	.0006112	.0016544	.0022952	.008718
%RSD	53.19676	34.21331	44.70871	289.1295	193.4847	264.5753
#1	.0009729	.0031584	.0010899	.0005971	-.000813	-.013240
#2	.0021370	.0023964	.0020679	-.001095	.003693	.003027
#3	.0032157	.0046905	.0009437	.002214	.000679	.000328
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0015285	-.000009	.0000196	.0128991	-.000042	.0001797
Stddev	.0012123	.000053	.0000174	.0144367	.000250	.0001386
%RSD	79.31549	591.2791	88.51075	111.9201	595.8182	77.10473
#1	.0006149	.000043	.0000001	.0278831	-.000002	.0003354
#2	.0029038	-.000063	.0000333	.0117337	-.000309	.0001338
#3	.0010667	-.000007	.0000255	-.000920	.000186	.0000699
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0004190	.0011000	.0003378	-.012861	.0001036	.0005337
Stddev	.0002171	.0059669	.0002325	.028054	.0001071	.0000962
%RSD	51.82176	542.4267	68.83014	218.1316	103.3673	18.02587
#1	.0005219	.0070668	.0003786	-.012344	.0000081	.0004408
#2	.0005654	-.004867	.0005472	-.041170	.0000833	.0005274
#3	.0001695	.001100	.0000876	.014931	.0002193	.0006328
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7451984	-.002015	.0001982	.5047702	.0287533	.0003774
Stddev	.0623228	.003206	.0002018	.0315247	.0011550	.0000228
%RSD	8.363245	159.0829	101.7852	6.245364	4.016937	6.047436
#1	.6803067	.000687	-.000031	.4685407	.0300829	.0003810
#2	.7507014	-.005557	.000350	.5198225	.0281779	.0003982
#3	.8045872	-.001175	.000276	.5259474	.0279989	.0003530

Sample Name: CCB03 Acquired: 10/24/2025 18:33:09 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0067509	.0016597	.0136451	-.001683	F .0229733	.0014360
Stddev	.0002737	.0011123	.0148617	.001453	.0004203	.0017760
%RSD	4.054715	67.01570	108.9167	86.37088	1.829659	123.6791
#1	.0064369	.0015873	.0267071	-.003129	.0225273	-.000334
#2	.0068772	.0028065	-.002525	-.000223	.0233621	.001424
#3	.0069387	.0005855	.016753	-.001696	.0230305	.003218
Elem	Sr4077					
Units	ppm					
Avg	.0000290					
Stddev	.0000149					
%RSD	51.40815					
#1	.0000436					
#2	.0000138					
#3	.0000297					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	5518.858	87605.53	6878.600	4147.454	6999.342	
Stddev	5.912	207.68	24.982	15.569	3.519	
%RSD	.1071204	.2370612	.3631879	.3753949	.0502713	
#1	5514.012	87837.62	6855.635	4129.521	7001.159	
#2	5517.116	87541.77	6874.965	4157.521	6995.286	
#3	5525.445	87437.21	6905.201	4155.321	7001.581	

Sample Name: Q3444-01 Acquired: 10/24/2025 18:37:28 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003117	-.000588	.0058180	-.002551	.0020746	.0321887
Stddev	.002129	.002284	.0012244	.001269	.0016021	.0123566
%RSD	68.29552	388.1776	21.04517	49.74009	77.22575	38.38795
#1	-.001895	.000489	.0071958	-.001207	.0015469	.0209481
#2	-.001881	.000958	.0048544	-.002718	.0008029	.0454197
#3	-.005575	-.003212	.0054038	-.003729	.0038740	.0301983
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0869594	-.000172	.0000214	152.9359	.0009769	.0002976
Stddev	.0000873	.000048	.0000979	.9149	.0003893	.0000395
%RSD	.1003883	27.82322	456.9536	.5982045	39.85405	13.26420
#1	.0869162	-.000143	.0000947	151.8959	.0013728	.0002525
#2	.0869022	-.000145	-.000090	153.2954	.0009634	.0003261
#3	.0870599	-.000227	.000059	153.6163	.0005945	.0003141
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0197135	.0401324	.0797162	56.19623	.0019160	.0002380
Stddev	.0001597	.0120308	.0003906	.40589	.0000752	.0001681
%RSD	.8100557	29.97785	.4899985	.7222677	3.923744	70.63533
#1	.0198063	.0465266	.0798247	55.72923	.0018316	.0001678
#2	.0198050	.0476161	.0792828	56.39545	.0019758	.0004299
#3	.0195291	.0262547	.0800411	56.46402	.0019407	.0001164
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	243.5460	.0000439	.0856481	5.527222	.0758238	.0048440
Stddev	2.7842	.0037709	.0006702	.024498	.0007413	.0001666
%RSD	1.143207	8581.203	.7825241	.4432262	.9776413	3.438854
#1	243.9381	-.003552	.0850193	5.505533	.0753049	.0046807
#2	246.1134	.003968	.0855720	5.553794	.0766728	.0048376
#3	240.5866	-.000284	.0863532	5.522339	.0754937	.0050137

Sample Name: Q3444-01 Acquired: 10/24/2025 18:37:28 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.012032	-.005238	F 12.74862	.0090415	F 13.68232	-.021832
Stddev	.000451	.002783	.08197	.0002335	.02933	.002240
%RSD	3.745424	53.13966	.6429607	2.582781	.2143628	10.25921

#1	-.012397	-.003249	12.65513	.0092995	13.65980	-.020290
#2	-.011528	-.008419	12.78259	.0088445	13.67167	-.020805
#3	-.012172	-.004046	12.80814	.0089806	13.71548	-.024401

Elem	Sr4077
Units	ppm
Avg	.2907519
Stddev	.0005953
%RSD	.2047331

#1	.2900665
#2	.2911391
#3	.2910502

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5079.235	81779.08	6599.184	3952.202	5831.707
Stddev	3.690	138.78	17.361	16.977	10.505
%RSD	.0726509	.1696985	.2630845	.4295645	.1801358

#1	5077.420	81939.30	6619.108	3955.595	5821.168
#2	5083.481	81701.20	6591.148	3933.785	5842.178
#3	5076.804	81696.73	6587.297	3967.227	5831.776

Sample Name: Q3444-02 Acquired: 10/24/2025 18:41:49 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0010562	-.002055	.0139417	-.004066	.0044209	.0615986
Stddev	.0006168	.004567	.0017362	.002488	.0010325	.0082275
%RSD	58.40089	222.2180	12.45300	61.18851	23.35553	13.35664
#1	.0016925	-.003227	.0159360	-.006812	.0044772	.0691654
#2	.0010151	.002983	.0127670	-.003423	.0033614	.0528403
#3	.0004610	-.005921	.0131222	-.001963	.0054241	.0627899
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2527473	-.000288	.0001970	468.6895	.0065422	.0023729
Stddev	.0024454	.000041	.0001185	.8080	.0010404	.0000158
%RSD	.9675345	14.16739	60.15129	.1723969	15.90265	.6649574
#1	.2526581	-.000331	.0001766	467.9082	.0077370	.0023888
#2	.2552361	-.000250	.0000901	468.6384	.0060529	.0023727
#3	.2503477	-.000282	.0003245	469.5218	.0058367	.0023572
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0365028	.1033822	1.265488	140.4246	.0148292	-.000490
Stddev	.0002986	.0064990	.005762	.0551	.0002097	.000302
%RSD	.8181173	6.286371	.4553508	.0392383	1.413999	61.58432
#1	.0362557	.1104365	1.261443	140.3632	.0148176	-.000584
#2	.0368347	.0976383	1.272086	140.4410	.0150444	-.000152
#3	.0364180	.1020718	1.262935	140.4697	.0146255	-.000734
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1006.183	.0008222	.0938580	15.52974	.1060978	.0022264
Stddev	8.019	.0015945	.0001196	.11190	.0009337	.0000544
%RSD	.7969535	193.9237	.1274830	.7205326	.8800546	2.442462
#1	1011.261	-.000188	.0939726	15.50593	.1053283	.0021669
#2	1010.349	-.000006	.0938675	15.65163	.1071366	.0022734
#3	996.938	.002660	.0937338	15.43167	.1058286	.0022390

Sample Name: Q3444-02 Acquired: 10/24/2025 18:41:49 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.010944	-.017115	F 23.24867	.0083739	F 18.42607	-.049787
Stddev	.001078	.001498	.07788	.0000694	.06644	.000348
%RSD	9.853066	8.755206	.3350003	.8283219	.3605858	.6988542

#1	-.010219	-.015948	23.19400	.0083015	18.42691	-.050167
#2	-.010429	-.018804	23.33785	.0084397	18.49208	-.049484
#3	-.012183	-.016592	23.21417	.0083806	18.35920	-.049710

Elem	Sr4077
Units	ppm
Avg	1.266642
Stddev	.003619
%RSD	.2857286

#1	1.264257
#2	1.270807
#3	1.264863

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4636.689	74326.68	6431.415	3568.571	5104.803
Stddev	6.450	198.04	18.955	17.027	2.535
%RSD	.1390979	.2664399	.2947324	.4771290	.0496631

#1	4642.909	74469.20	6426.123	3563.033	5106.187
#2	4630.032	74100.55	6452.454	3587.678	5101.877
#3	4637.125	74410.29	6415.668	3555.003	5106.344

Sample Name: Q3444-03 Acquired: 10/24/2025 18:46:09 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001613	-.000565	.0050740	.0049734	.0024062	.0493062	.0019525
Stddev	.001154	.000905	.0009196	.0013673	.0023890	.0030350	.0018099
%RSD	71.54235	160.2381	18.12362	27.49324	99.28385	6.155421	92.69461

#1	-.000345	-.000931	.0057386	.0065519	.0028078	.0527842	.0002984
#2	-.002603	-.001228	.0040245	.0042121	.0045690	.0471946	.0016735
#3	-.001892	.000466	.0054591	.0041562	-.000158	.0479397	.0038857

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000258	-.000039	.0399289	.0033537	-.000112	.0335704	.0404214
Stddev	.000019	.000066	.0148573	.0001229	.000165	.0003365	.0101299
%RSD	7.374363	169.1708	37.20931	3.662976	147.8492	1.002477	25.06069

#1	-.000272	.000025	.0530053	.0032386	-.000027	.0335623	.0298483
#2	-.000236	-.000036	.0237733	.0034831	-.000007	.0332379	.0413755
#3	-.000266	-.000107	.0430083	.0033395	-.000302	.0339109	.0500405

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0011952	-.025808	.0013957	.0002425	40.14529	.0016836	.0260214
Stddev	.0009291	.005348	.0002394	.0008094	.11596	.0033303	.0002853
%RSD	77.73955	20.72160	17.15025	333.7678	.2888542	197.8120	1.096412

#1	.0021896	-.026558	.0015273	.0007309	40.17142	-.001539	.0257226
#2	.0010468	-.030742	.0015403	-.000692	40.24596	.001479	.0260507
#3	.0003492	-.020125	.0011194	.000688	40.01849	.005112	.0262909

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.077224	.0945626	.0007220	-.007875	.0009295	.6526481	.0049766
Stddev	.014304	.0011031	.0002345	.000386	.0008714	.0134281	.0017901
%RSD	18.52248	1.166527	32.48139	4.905167	93.75136	2.057486	35.97044

#1	-.084996	.0933010	.0005587	-.008305	.0017759	.6448371	.0031173
#2	-.085959	.0950420	.0006166	-.007762	.0009776	.6681534	.0051242
#3	-.060717	.0953449	.0009907	-.007557	.0000350	.6449537	.0066884

Sample Name: Q3444-03 Acquired: 10/24/2025 18:46:09 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0358113	-.004562	.0000691
Stddev	.0016157	.001177	.0000506
%RSD	4.511816	25.80081	73.20262

#1	.0353255	-.003607	.0001272
#2	.0376141	-.004202	.0000346
#3	.0344941	-.005877	.0000456

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5290.167	86134.09	6772.640	4028.768	6542.792
Stddev	5.675	117.14	16.231	10.669	9.179
%RSD	.1072709	.1359928	.2396619	.2648309	.1402856

#1	5285.764	86253.13	6782.409	4017.077	6534.911
#2	5296.571	86018.95	6781.607	4031.246	6552.870
#3	5288.166	86130.20	6753.903	4037.980	6540.594

Sample Name: Q3444-04 Acquired: 10/24/2025 18:50:28 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0003789	-.001561	.0065273	-.002783	.0040762	.0427558
Stddev	.0006650	.001446	.0013253	.001250	.0026558	.0164296
%RSD	175.5173	92.68089	20.30326	44.90946	65.15505	38.42668
#1	-.000352	-.002603	.0074724	-.002606	.0038599	.0410467
#2	.000540	.000091	.0050124	-.001631	.0015351	.0599732
#3	.000949	-.002169	.0070970	-.004111	.0068335	.0272475
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2266143	.0003628	-.000006	250.0858	.0022778	-.000157
Stddev	.0014411	.0000283	.000071	1.1138	.0002798	.000175
%RSD	.6359338	7.804114	1150.179	.4453547	12.28160	111.7145
#1	.2256159	.0003949	.000072	249.2769	.0019624	-.000323
#2	.2282665	.0003521	-.000024	251.3562	.0023750	.000026
#3	.2259606	.0003413	-.000067	249.6245	.0024960	-.000173
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0065361	.3304824	.8654379	52.14242	.0007793	.0002258
Stddev	.0004494	.0033507	.0090358	.30016	.0001879	.0005002
%RSD	6.875477	1.013869	1.044075	.5756500	24.11186	221.5556
#1	.0065779	.3327952	.8553757	51.85631	.0006750	-.000336
#2	.0060672	.3320122	.8728587	52.45488	.0006667	.000390
#3	.0069631	.3266399	.8680793	52.11606	.0009963	.000623
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	197.2479	.0013267	.0256284	4.480134	.0795847	.0088689
Stddev	1.0448	.0013427	.0003097	.077932	.0005445	.0002671
%RSD	.5296818	101.2038	1.208541	1.739497	.6842237	3.012081
#1	197.0910	.0000885	.0252712	4.564662	.0798715	.0091709
#2	196.2905	.0027539	.0258221	4.411138	.0799258	.0087728
#3	198.3623	.0011377	.0257920	4.464601	.0789567	.0086632

Sample Name: Q3444-04 Acquired: 10/24/2025 18:50:28 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.011107	-.007896	F 18.04154	.0058710	F 14.59026	-.030236
Stddev	.001085	.001179	.10948	.0020757	.16687	.000999
%RSD	9.770013	14.92768	.6068102	35.35576	1.143699	3.303300

#1	-.010552	-.007989	18.16782	.0071228	14.40362	-.029502
#2	-.010412	-.009026	17.97334	.0034750	14.64215	-.031374
#3	-.012358	-.006674	17.98346	.0070153	14.72503	-.029833

Elem	Sr4077
Units	ppm
Avg	.4961093
Stddev	.0021942
%RSD	.4422734

#1	.4935785
#2	.4974781
#3	.4972712

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5077.409	82640.92	6858.529	3861.964	5847.844
Stddev	7.805	219.70	46.275	5.544	8.884
%RSD	.1537297	.2658451	.6747044	.1435588	.1519125

#1	5071.474	82387.72	6876.952	3862.157	5857.957
#2	5086.251	82753.86	6805.880	3867.408	5841.297
#3	5074.501	82781.17	6892.754	3856.325	5844.279

Sample Name: Q3444-05 Acquired: 10/24/2025 18:54:42 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001797	.0004199	.0022847	-.000124	.0041921	.0477031
Stddev	.001972	.0009687	.0013472	.003243	.0005558	.0119928
%RSD	109.7632	230.7108	58.96476	2614.999	13.25713	25.14055
#1	-.002475	-.000600	.0007454	.000397	.0035559	.0606999
#2	.000425	.000533	.0032485	.002827	.0044370	.0370646
#3	-.003340	.001327	.0028602	-.003597	.0045833	.0453448
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0718297	-.000171	-.000023	193.4748	.0023080	.0003238
Stddev	.0019376	.000071	.000080	.2353	.0003596	.0000963
%RSD	2.697481	41.47819	343.0403	.1215960	15.58163	29.74804
#1	.0740482	-.000093	-.000092	193.2298	.0019673	.0002868
#2	.0704692	-.000232	-.000042	193.4956	.0022727	.0002515
#3	.0709719	-.000189	.000064	193.6989	.0026839	.0004331
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0356660	.0208319	.0010183	78.17697	.0017617	.0001463
Stddev	.0005127	.0014449	.0006133	.16236	.0004433	.0002719
%RSD	1.437473	6.935917	60.22583	.2076869	25.16126	185.7865
#1	.0358528	.0223361	.0010450	78.18802	.0014154	-.000110
#2	.0360591	.0194547	.0003921	78.00937	.0022613	.000118
#3	.0350861	.0207049	.0016178	78.33353	.0016085	.000431
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	288.1139	.0017775	.0494025	6.458928	.0809357	.0049802
Stddev	2.4373	.0017300	.0001253	.034287	.0008787	.0000912
%RSD	.8459476	97.32509	.2536290	.5308494	1.085627	1.831170
#1	285.9810	.0035496	.0494712	6.472620	.0800318	.0049151
#2	287.5903	.0000930	.0492579	6.419911	.0817867	.0050844
#3	290.7705	.0016898	.0494785	6.484254	.0809886	.0049411

Sample Name: Q3444-05 Acquired: 10/24/2025 18:54:42 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.014310	-.005433	F 15.78098	.0105427	F 16.10525	-.027840
Stddev	.000766	.001357	.03008	.0004016	.09075	.000784
%RSD	5.351748	24.98312	.1905968	3.809112	.5634661	2.814880

#1	-.013469	-.006819	15.81474	.0103932	16.15678	-.028724
#2	-.014967	-.005373	15.77117	.0102374	16.00047	-.027564
#3	-.014494	-.004106	15.75703	.0109976	16.15850	-.027231

Elem	Sr4077
Units	ppm
Avg	.3170361
Stddev	.0009252
%RSD	.2918180

#1	.3161770
#2	.3180156
#3	.3169158

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4910.724	79120.72	6461.511	3781.025	5627.120
Stddev	6.307	162.92	23.776	11.132	2.670
%RSD	.1284361	.2059148	.3679604	.2944084	.0474401

#1	4907.109	78943.37	6488.661	3784.331	5624.701
#2	4918.007	79263.75	6444.410	3790.129	5629.984
#3	4907.056	79155.03	6451.461	3768.615	5626.675

Sample Name: Q3444-06 Acquired: 10/24/2025 18:59:05 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001233	-.004718	.0051168	.0014693	.0047147	.0332250
Stddev	.001604	.002932	.0008019	.0008674	.0011187	.0021876
%RSD	130.0868	62.14002	15.67244	59.03871	23.72854	6.584105
#1	-.003075	-.001333	.0042854	.0017832	.0051508	.0310014
#2	-.000146	-.006465	.0058856	.0021360	.0055496	.0332989
#3	-.000478	-.006357	.0051794	.0004886	.0034436	.0353746
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0559987	-.000212	.0000475	204.5107	.0046387	.0001383
Stddev	.0009287	.000010	.0001051	1.5808	.0001620	.0001600
%RSD	1.658426	4.515000	221.4212	.7729458	3.491964	115.6591
#1	.0559792	-.000223	-.000070	206.3292	.0047715	.0000249
#2	.0550799	-.000205	.000132	203.4649	.0046865	.0003212
#3	.0569370	-.000207	.000081	203.7380	.0044582	.0000688
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0245288	.2847855	.0030524	91.59095	.0035431	-.000386
Stddev	.0004437	.0042951	.0004705	.83200	.0004336	.000081
%RSD	1.809013	1.508200	15.41311	.9083813	12.23904	20.85019
#1	.0250238	.2838749	.0034316	92.54164	.0033137	-.000479
#2	.0243958	.2894630	.0031996	90.99575	.0032723	-.000347
#3	.0241668	.2810188	.0025259	91.23547	.0040433	-.000332
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	203.5053	.0024812	.1147621	4.515785	.0589241	.0080433
Stddev	1.2913	.0046840	.0003987	.035803	.0003264	.0001149
%RSD	.6345303	188.7764	.3473791	.7928498	.5539717	1.428236
#1	203.3211	.0074066	.1152164	4.533432	.0591056	.0080986
#2	204.8788	.0019538	.1144709	4.539339	.0585472	.0081200
#3	202.3159	-.001917	.1145989	4.474584	.0591193	.0079112

Sample Name: Q3444-06 Acquired: 10/24/2025 18:59:05 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.013676	-.007797	F 15.56957	.0186599	F 15.72164	-.031291
Stddev	.000315	.001397	.04798	.0003705	.16402	.000461
%RSD	2.299635	17.92045	.3081430	1.985588	1.043244	1.471899
#1	-.013538	-.006270	15.61394	.0190698	15.79052	-.030838
#2	-.013454	-.009011	15.57611	.0183488	15.83999	-.031758
#3	-.014036	-.008110	15.51866	.0185610	15.53442	-.031276
Elem	Sr4077					
Units	ppm					
Avg	.3114643					
Stddev	.0021165					
%RSD	.6795220					
#1	.3138378					
#2	.3107818					
#3	.3097733					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	5025.958	81285.62	6581.851	3903.419	5793.236	
Stddev	43.373	219.97	69.305	33.346	47.441	
%RSD	.8629755	.2706141	1.052968	.8542801	.8189028	
#1	4988.265	81055.61	6508.098	3864.960	5754.286	
#2	5016.247	81493.94	6645.627	3921.018	5779.351	
#3	5073.364	81307.30	6591.827	3924.279	5846.070	

Sample Name: Q3444-06DUP Acquired: 10/24/2025 19:03:17 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000351	.0005742	.0044446	.0007572	.0035191	.0402438
Stddev	.002961	.0016448	.0009913	.0020296	.0015551	.0132062
%RSD	842.5969	286.4430	22.30396	268.0420	44.19119	32.81538
#1	-.003710	.0003015	.0033853	-.001174	.0030753	.0514963
#2	.000775	-.000917	.0045987	.000573	.0022341	.0257047
#3	.001881	.002338	.0053499	.002873	.0052479	.0435305
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0601293	-.000167	.0000620	209.0772	.0046760	.0002765
Stddev	.0003826	.000024	.0000251	.2707	.0001470	.0000623
%RSD	.6363510	14.55967	40.44272	.1294527	3.143692	22.51854
#1	.0605661	-.000195	.0000895	208.8243	.0045144	.0002236
#2	.0598536	-.000154	.0000404	209.0446	.0048019	.0003451
#3	.0599681	-.000152	.0000560	209.3626	.0047117	.0002608
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0255573	.2841186	.0028913	94.44897	.0035426	.0005516
Stddev	.0002802	.0092657	.0006010	.42816	.0003939	.0003188
%RSD	1.096493	3.261222	20.78469	.4533233	11.11875	57.79264
#1	.0253017	.2738746	.0035622	94.14006	.0039938	.0004197
#2	.0255133	.2865666	.0027094	94.93772	.0033665	.0009151
#3	.0258570	.2919144	.0024024	94.26914	.0032675	.0003200
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	205.9360	.0011497	.1172150	4.505817	.0590321	.0085717
Stddev	.8613	.0026583	.0004284	.014024	.0008184	.0003438
%RSD	.4182307	231.2232	.3655001	.3112477	1.386379	4.010508
#1	205.5091	.0027368	.1167281	4.502392	.0584457	.0089663
#2	205.3715	-.001919	.1173828	4.521237	.0599671	.0083372
#3	206.9274	.002632	.1175341	4.493823	.0586834	.0084115

Sample Name: Q3444-06DUP Acquired: 10/24/2025 19:03:17 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.012964	-.007669	F 15.95011	.0206350	F 16.08827	-.033601
Stddev	.000573	.000253	.15250	.0025291	.07272	.001580
%RSD	4.422624	3.302348	.9561156	12.25629	.4520153	4.703287
#1	-.012305	-.007936	15.77804	.0177493	16.13846	-.032179
#2	-.013346	-.007432	16.00371	.0224659	16.00487	-.035303
#3	-.013241	-.007639	16.06857	.0216899	16.12147	-.033320
Elem	Sr4077					
Units	ppm					
Avg	.3140380					
Stddev	.0009352					
%RSD	.2978023					
#1	.3147732					
#2	.3129854					
#3	.3143555					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	4902.609	79437.52	6430.186	3773.048	5673.239	
Stddev	13.914	490.56	25.277	16.452	17.393	
%RSD	.2838022	.6175412	.3931020	.4360531	.3065742	
#1	4897.759	80001.85	6436.745	3786.031	5659.450	
#2	4891.769	79112.95	6402.276	3754.546	5667.489	
#3	4918.299	79197.77	6451.537	3778.567	5692.779	

Sample Name: Q3444-06LX5 Acquired: 10/24/2025 19:07:30 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0006009	.0015063	.0021898	.0030279	.0007028	.0000974	.0186004
Stddev	.0013555	.0026463	.0011087	.0013588	.0007893	.0035785	.0019719
%RSD	225.5995	175.6793	50.63135	44.87558	112.3036	3673.890	10.60143

#1	.0017619	.0005971	.0034091	.0036868	.0005313	.0008719	.0165135
#2	-.000889	.0044873	.0012422	.0014653	.0000134	.0032253	.0188551
#3	.000929	-.000565	.0019180	.0039315	.0015638	-.003805	.0204326

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000080	.0000386	42.81041	.0008060	.0002487	.0071584	.0561413
Stddev	.000045	.0000540	.18264	.0000651	.0002433	.0002044	.0087131
%RSD	56.20844	139.9933	.4266249	8.071893	97.82619	2.855712	15.51994

#1	-.000065	.0000034	42.60284	.0007310	.0001180	.0069233	.0466969
#2	-.000044	.0001008	42.94649	.0008399	.0000987	.0072943	.0638670
#3	-.000130	.0000115	42.88191	.0008471	.0005294	.0072576	.0578601

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0006439	19.34747	.0013229	.0005615	40.09644	-.002156	.0249387
Stddev	.0003949	.07374	.0007830	.0004310	.23631	.002089	.0002374
%RSD	61.33150	.3811511	59.19152	76.75314	.5893430	96.88876	.9517518

#1	.0002358	19.26332	.0005354	.0004954	40.35724	-.004135	.0248367
#2	.0006716	19.37826	.0013319	.0010217	39.89655	.000028	.0247694
#3	.0010242	19.40082	.0021013	.0001674	40.03553	-.002362	.0252100

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.438353	.0182198	.0020168	-.000933	-.001020	3.112780	.0015319
Stddev	.057095	.0004531	.0002538	.000684	.001075	.028342	.0009574
%RSD	3.969499	2.487048	12.58283	73.38749	105.4420	.9104965	62.49973

#1	1.372641	.0179430	.0019938	-.000152	-.002202	3.139762	.0005286
#2	1.475825	.0179735	.0022813	-.001217	-.000758	3.083251	.0024356
#3	1.466594	.0187427	.0017754	-.001429	-.000100	3.115328	.0016315

Sample Name: Q3444-06LX5 Acquired: 10/24/2025 19:07:30 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	3.208370	.0031200	.0637821
Stddev	.021691	.0033843	.0004876
%RSD	.6760635	108.4720	.7644622
#1	3.233350	-.000624	.0633379
#2	3.194311	.004023	.0637047
#3	3.197448	.005961	.0643038

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5220.688	83699.63	6564.719	3947.476	6262.842
Stddev	46.725	440.22	62.300	29.135	59.014
%RSD	.8949979	.5259487	.9490175	.7380577	.9422913
#1	5167.150	83770.04	6635.503	3948.783	6195.206
#2	5241.667	84100.39	6540.442	3975.935	6289.471
#3	5253.246	83228.44	6518.212	3917.710	6303.849

Sample Name: Q3444-06MS Acquired: 10/24/2025 19:11:46 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8073792	1.804923	.9318763	1.960095	.8033421	2.012663
Stddev	.0033273	.009177	.0012150	.006622	.0025084	.012606
%RSD	.4121141	.5084305	.1303853	.3378584	.3122480	.6263389
#1	.8086192	1.794973	.9317113	1.964246	.8020149	1.998465
#2	.8099085	1.813054	.9331654	1.963581	.8017762	2.016983
#3	.8036099	1.806742	.9307522	1.952458	.8062354	2.022541
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2481488	.2069834	.1945851	204.6301	.4202618	.1954002
Stddev	.0026370	.0009053	.0001755	.5475	.0021817	.0003417
%RSD	1.062656	.4373596	.0901884	.2675790	.5191295	.1748683
#1	.2452149	.2065691	.1946045	204.1052	.4178648	.1952674
#2	.2503213	.2080217	.1947502	205.1978	.4207892	.1957884
#3	.2489102	.2063594	.1944008	204.5874	.4221315	.1951449
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3164557	3.214832	.1997746	94.01019	.4899315	.0752873
Stddev	.0070565	.025266	.0014029	.26283	.0013901	.0005042
%RSD	2.229850	.7859320	.7022477	.2795729	.2837389	.6697324
#1	.3246036	3.186100	.1982913	93.71013	.4912714	.0758191
#2	.3123221	3.224811	.2010803	94.19960	.4884960	.0748161
#3	.3124416	3.233586	.1999520	94.12085	.4900270	.0752267
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	198.1261	.2975924	.3223885	14.51426	.3284044	.4309781
Stddev	1.4180	.0009050	.0012668	.10106	.0019241	.0009641
%RSD	.7157304	.3041220	.3929562	.6962761	.5858961	.2237068
#1	196.4894	.2965483	.3233409	14.41211	.3284036	.4320617
#2	198.9878	.2981541	.3209508	14.51648	.3303289	.4306573
#3	198.9010	.2980747	.3228739	14.61419	.3264807	.4302152

Sample Name: Q3444-06MS Acquired: 10/24/2025 19:11:46 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6940536	.1834096	F 16.63322	6.108118	F 16.02518	.1633693
Stddev	.0016345	.0013618	.05572	.018518	.03095	.0008359
%RSD	.2354944	.7425068	.3350022	.3031773	.1931604	.5116728

#1	.6947202	.1818620	16.57241	6.099268	16.03108	.1627245
#2	.6952495	.1839423	16.64544	6.129401	16.05276	.1643138
#3	.6921913	.1844246	16.68182	6.095686	15.99170	.1630697

Elem	Sr4077
Units	ppm
Avg	.4902689
Stddev	.0021590
%RSD	.4403625

#1	.4880335
#2	.4923422
#3	.4904311

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4960.153	79897.29	6548.467	3754.519	5676.972
Stddev	13.960	484.44	35.844	22.053	7.446
%RSD	.2814472	.6063283	.5473574	.5873764	.1311608

#1	4945.790	80454.68	6582.367	3774.741	5670.341
#2	4960.994	79659.44	6510.954	3757.812	5675.548
#3	4973.673	79577.75	6552.080	3731.005	5685.027

Sample Name: Q3444-06MSD Acquired: 10/24/2025 19:15:44 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7936357	1.765966	.9235916	1.935744	.8300407	1.987215
Stddev	.0038852	.020285	.0002112	.006112	.0007689	.016861
%RSD	.4895456	1.148653	.0228682	.3157412	.0926298	.8484739
#1	.7980618	1.766673	.9238349	1.942245	.8299774	2.005788
#2	.7907883	1.785888	.9234845	1.934871	.8293055	1.972872
#3	.7920571	1.745337	.9234553	1.930115	.8308393	1.982986
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2497157	.2054946	.1921882	211.1591	.4062251	.1932867
Stddev	.0005300	.0008442	.0001756	.7065	.0007928	.0003535
%RSD	.2122530	.4108253	.0913717	.3345908	.1951583	.1828939
#1	.2500809	.2059873	.1920732	211.9180	.4064120	.1931230
#2	.2491078	.2045198	.1923903	211.0390	.4053555	.1936924
#3	.2499584	.2059768	.1921011	210.5203	.4069077	.1930448
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3107683	3.193687	.2003720	96.09102	.4844558	.0736750
Stddev	.0001216	.006632	.0011851	.34041	.0006691	.0003584
%RSD	.0391155	.2076466	.5914496	.3542535	.1381056	.4864026
#1	.3108760	3.201253	.2001165	96.47260	.4850675	.0735874
#2	.3107924	3.190927	.2016641	95.98195	.4845586	.0740690
#3	.3106365	3.188881	.1993356	95.81852	.4837413	.0733685
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	203.8846	.2936485	.3195849	14.43039	.3303761	.4437102
Stddev	.5920	.0036520	.0003342	.04596	.0024007	.0004198
%RSD	.2903456	1.243660	.1045813	.3184801	.7266639	.0946089
#1	203.8741	.2941460	.3193433	14.43958	.3325130	.4439457
#2	204.4817	.2897733	.3194450	14.47106	.3277784	.4432255
#3	203.2979	.2970262	.3199663	14.38053	.3308368	.4439593

Sample Name: Q3444-06MSD Acquired: 10/24/2025 19:15:44 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7158923	.1939549	F 16.67158	6.143677	F 16.49152	.1637503
Stddev	.0004712	.0009378	.03938	.008413	.02642	.0003302
%RSD	.0658215	.4835139	.2362056	.1369444	.1601932	.2016737

#1	.7164257	.1934040	16.66866	6.136364	16.47222	.1637875
#2	.7155326	.1950377	16.71234	6.141796	16.48072	.1640604
#3	.7157186	.1934230	16.63375	6.152872	16.52163	.1634031

Elem	Sr4077
Units	ppm
Avg	.5079320
Stddev	.0015103
%RSD	.2973475

#1	.5095377
#2	.5077185
#3	.5065397

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4959.496	81474.91	6522.079	3902.141	5652.789
Stddev	4.747	218.65	44.164	8.921	5.727
%RSD	.0957150	.2683684	.6771395	.2286053	.1013087

#1	4955.547	81401.93	6501.298	3892.598	5655.639
#2	4958.177	81720.71	6572.799	3910.269	5646.196
#3	4964.763	81302.07	6492.138	3903.557	5656.532

Sample Name: CCV04 Acquired: 10/24/2025 19:19:43 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV05 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.828514	4.750388	4.938443	4.766302	4.814072	9.946799	10.20860
Stddev	.007232	.158339	.006070	.016422	.005602	.042115	.05430
%RSD	.1497857	3.333178	.1229049	.3445445	.1163618	.4233982	.5318605

#1	4.835995	4.924646	4.936762	4.778369	4.807718	9.898410	10.18485
#2	4.827988	4.615333	4.945176	4.747600	4.816201	9.966803	10.17023
#3	4.821559	4.711186	4.933391	4.772936	4.818298	9.975183	10.27073

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2651833	2.490958	25.17372	1.008111	2.468042	1.239960	4.844027
Stddev	.0019538	.002092	.06135	.001422	.003491	.000277	.050183
%RSD	.7367855	.0839648	.2437201	.1410488	.1414563	.0223721	1.035970

#1	.2629550	2.492146	25.18418	1.007401	2.465972	1.239707	4.896636
#2	.2659915	2.492186	25.22916	1.007183	2.472073	1.239917	4.838757
#3	.2666034	2.488543	25.10780	1.009748	2.466081	1.240256	4.796687

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.557878	25.23483	2.478975	1.229997	24.53539	2.482911	2.430686
Stddev	.018738	.04782	.002998	.002937	.38163	.003878	.000998
%RSD	.7325673	.1895126	.1209564	.2388173	1.555438	.1562010	.0410772

#1	2.557263	25.24874	2.477880	1.227317	24.92441	2.478564	2.431463
#2	2.576915	25.18160	2.482367	1.229535	24.52017	2.484149	2.431034
#3	2.539454	25.27416	2.476678	1.233138	24.16160	2.486018	2.429560

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	23.83875	5.235551	4.953983	4.966324	4.997779	4.723850	5.044567
Stddev	.21448	.044666	.007865	.011780	.022795	.012907	.027583
%RSD	.8997131	.8531342	.1587657	.2371893	.4560967	.2732291	.5467908

#1	24.06249	5.184281	4.960078	4.979855	5.009548	4.714931	5.076313
#2	23.81883	5.256322	4.945104	4.958363	5.012285	4.717968	5.030927
#3	23.63492	5.266049	4.956766	4.960752	4.971506	4.738650	5.026462

Sample Name: CCV04 Acquired: 10/24/2025 19:19:43 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV05 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.753641	4.836717	4.990343
Stddev	.031675	.024774	.056495
%RSD	.6663411	.5122135	1.132093
#1	4.789952	4.851510	5.032005
#2	4.731681	4.850526	5.012984
#3	4.739291	4.808116	4.926039

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5435.166	86990.19	6671.045	4244.243	6231.846
Stddev	2.899	144.04	34.636	11.146	9.216
%RSD	.0533446	.1655768	.5191935	.2626159	.1478898
#1	5438.465	86848.86	6710.264	4234.895	6233.452
#2	5434.009	86984.92	6644.651	4241.256	6221.932
#3	5433.024	87136.78	6658.220	4256.578	6240.154

Sample Name: CCB04 Acquired: 10/24/2025 19:23:48 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB05 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001199	.0017453	.0009205	.0031934	-.000882	-.001590
Stddev	.0017243	.0018086	.0008891	.0018849	.001013	.004552
%RSD	1437.865	103.6233	96.59241	59.02279	114.7930	286.3411
#1	-.001722	.0030059	-.000103	.0039067	-.001836	-.006843
#2	.001696	.0025570	.001498	.0010561	.000181	.000871
#3	.000386	-.000327	.001367	.0046176	-.000991	.001202
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000092	-.000044	.0000469	.0104980	-.000024	.0000198
Stddev	.002384	.000029	.0000210	.0170868	.000265	.0001482
%RSD	2598.758	65.09510	44.77807	162.7621	1094.407	749.8539
#1	.002085	-.000012	.0000231	-.005135	.000116	.0001697
#2	-.002641	-.000052	.0000548	.028739	.000141	-.000127
#3	.000281	-.000068	.0000629	.007890	-.000330	.000016
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005588	.0077050	.0006101	-.017484	.0000640	.0007768
Stddev	.0001966	.0018398	.0004898	.026395	.0000660	.0004799
%RSD	35.17529	23.87795	80.28308	150.9686	103.0431	61.78083
#1	.0007067	.0060322	.0004301	-.031603	.0000649	.0010057
#2	.0003358	.0074072	.0002357	.012968	.0001296	.0002253
#3	.0006338	.0096755	.0011644	-.033816	-.000002	.0010996
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9990747	-.001305	.0007525	.5228735	.0114579	.0005188
Stddev	.0386958	.002279	.0000456	.0479356	.0005658	.0001186
%RSD	3.873169	174.5898	6.059519	9.167722	4.938271	22.86032
#1	.9551381	.000470	.0007128	.4831682	.0114712	.0006508
#2	1.014004	-.000511	.0008023	.5093280	.0120170	.0004847
#3	1.028082	-.003875	.0007424	.5761243	.0108856	.0004210

Sample Name: CCB04 Acquired: 10/24/2025 19:23:48 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB05 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0016598	-.000621	.0009437	-.000856	F .0220219	.0023389
Stddev	.0006057	.002320	.0046995	.000271	.0018657	.0020499
%RSD	36.49105	373.8206	497.9875	31.60823	8.472180	87.64124

#1	.0010128	.000858	.0036307	-.001051	.0220798	.0040226
#2	.0017535	.000575	-.004483	-.000547	.0201279	.0029378
#3	.0022132	-.003295	.003683	-.000971	.0238580	.0000563

Elem	Sr4077
Units	ppm
Avg	.0001554
Stddev	.0001530
%RSD	98.46254

#1	.0002444
#2	-.000021
#3	.000243

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5622.608	90702.10	6965.928	4294.594	7213.211
Stddev	58.404	201.63	15.927	28.282	64.913
%RSD	1.038735	.2222983	.2286400	.6585572	.8999205

#1	5689.761	90919.66	6947.573	4302.555	7288.103
#2	5583.656	90665.11	6974.106	4263.185	7178.421
#3	5594.408	90521.53	6976.104	4318.043	7173.109

Sample Name: Q3444-06A Acquired: 10/24/2025 19:28:06 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7961882	1.772508	.9233347	1.928586	.7881599	2.005789
Stddev	.0007070	.016170	.0034737	.003797	.0027650	.026418
%RSD	.0888049	.9122467	.3762070	.1968924	.3508207	1.317102

#1	.7962523	1.790336	.9262796	1.925934	.7913490	1.997434
#2	.7968611	1.758790	.9195039	1.932936	.7864315	2.035375
#3	.7954513	1.768397	.9242207	1.926889	.7866993	1.984558

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2411675	.2047490	.1923100	198.5694	.4101553	.1929716
Stddev	.0015192	.0005965	.0003420	.4354	.0027200	.0004707
%RSD	.6299183	.2913340	.1778158	.2192932	.6631588	.2439061

#1	.2425537	.2044352	.1926376	198.3034	.4122843	.1934284
#2	.2395434	.2054369	.1919553	198.3330	.4110906	.1929984
#3	.2414055	.2043749	.1923371	199.0719	.4070911	.1924882

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3087915	3.170998	.1948583	91.61139	.4841452	.0720075
Stddev	.0004713	.026794	.0011152	.29652	.0016791	.0002097
%RSD	.1526352	.8449813	.5723183	.3236768	.3468069	.2911683

#1	.3089582	3.180889	.1942776	91.26900	.4839306	.0718203
#2	.3082594	3.140664	.1941532	91.78094	.4825838	.0722340
#3	.3091568	3.191440	.1961440	91.78424	.4859212	.0719681

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	191.1895	.2962079	.3149041	14.15638	.3292968	.4250507
Stddev	1.7005	.0007691	.0018456	.12121	.0024693	.0004101
%RSD	.8894296	.2596446	.5860919	.8562262	.7498783	.0964914

#1	192.2311	.2961608	.3168075	14.29515	.3266294	.4249585
#2	189.2271	.2969994	.3147825	14.07123	.3315030	.4246945
#3	192.1101	.2954634	.3131222	14.10275	.3297578	.4254991

Sample Name: Q3444-06A Acquired: 10/24/2025 19:28:06 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6791029	.1825981	F 16.16690	6.005328	F 15.44684	.1632982
Stddev	.0013929	.0011454	.07434	.006867	.02129	.0016478
%RSD	.2051115	.6272632	.4598253	.1143477	.1378323	1.009084

#1	.6774952	.1827053	16.25239	6.012477	15.42720	.1638628
#2	.6798658	.1814029	16.13079	5.998783	15.46946	.1614423
#3	.6799477	.1836861	16.11751	6.004724	15.44384	.1645895

Elem	Sr4077
Units	ppm
Avg	.4779312
Stddev	.0034058
%RSD	.7126067

#1	.4770962
#2	.4750205
#3	.4816768

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5069.402	81881.71	6692.406	3833.273	5827.608
Stddev	9.670	299.70	21.913	16.890	13.160
%RSD	.1907476	.3660121	.3274355	.4406082	.2258200

#1	5061.312	81672.33	6714.720	3817.288	5814.596
#2	5080.112	81747.79	6670.917	3831.588	5840.911
#3	5066.782	82225.02	6691.580	3850.941	5827.316

Sample Name: Q3434-02DLX5 Acquired: 10/24/2025 19:32:05 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0053039	.0016235	.0320040	-.001297	.0027075	2.001209
Stddev	.0036102	.0020231	.0006685	.000994	.0016634	.086007
%RSD	68.06690	124.6190	2.088829	76.62729	61.43531	4.297731
#1	.0076276	.0039246	.0318233	-.000489	.0010461	2.082439
#2	.0011447	.0001243	.0314444	-.002407	.0027037	1.911113
#3	.0071394	.0008214	.0327443	-.000995	.0043728	2.010074
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1023888	.0001021	.0004167	34.86450	.0212751	.0013710
Stddev	.0029980	.0000766	.0000887	.97977	.0001661	.0000949
%RSD	2.928055	75.04320	21.28977	2.810231	.7808689	6.920769
#1	.1056949	.0000155	.0003569	35.80892	.0213128	.0014223
#2	.0998467	.0001299	.0005186	33.85284	.0210934	.0014292
#3	.1016247	.0001610	.0003745	34.93175	.0214192	.0012615
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0227059	4.463706	.2499274	105.7928	.0061203	-.000334
Stddev	.0008767	.038084	.0080010	3.1097	.0001383	.000558
%RSD	3.860963	.8531871	3.201316	2.939431	2.259726	167.2677
#1	.0235814	4.477030	.2581471	108.6887	.0061005	.000208
#2	.0227081	4.420751	.2421647	102.5062	.0059930	-.000303
#3	.0218281	4.493338	.2494704	106.1836	.0062674	-.000906
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	994.7661	.0094019	.1231646	41.31491	.3858058	.0051552
Stddev	18.5897	.0001068	.0008329	.36639	.0061334	.0000899
%RSD	1.868750	1.136102	.6762357	.8868144	1.589766	1.743491
#1	1015.636	.0092790	.1222325	41.33048	.3912349	.0052334
#2	979.983	.0094541	.1234254	40.94099	.3791527	.0050570
#3	988.679	.0094726	.1238359	41.67327	.3870300	.0051753

Sample Name: Q3434-02DLX5 Acquired: 10/24/2025 19:32:05 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0018964	.0643248	5.293469	.7076888	F 78.59658	.0249903
Stddev	.0002927	.0030399	.098908	.0028064	.69632	.0020907
%RSD	15.43232	4.725822	1.868485	.3965527	.8859413	8.366012

#1	.0018097	.0653198	5.345039	.7108397	79.39718	.0258268
#2	.0016569	.0609121	5.179434	.7067686	78.13193	.0226109
#3	.0022227	.0667425	5.355935	.7054580	78.26064	.0265332

Elem	Sr4077
Units	ppm
Avg	.5693889
Stddev	.0166767
%RSD	2.928879

#1	.5861510
#2	.5527989
#3	.5692168

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4979.513	73976.15	6721.366	3546.414	5471.357
Stddev	35.009	560.94	174.345	24.635	41.453
%RSD	.7030619	.7582718	2.593885	.6946519	.7576325

#1	4940.937	74040.98	6557.402	3552.733	5426.957
#2	5009.268	74501.87	6904.506	3567.273	5509.043
#3	4988.334	73385.62	6702.191	3519.234	5478.071

Sample Name: Q3417-01DLX5 Acquired: 10/24/2025 19:36:26 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1368794	-.178682	-.003867	.5636205	.1235169	.1296048	-.014735
Stddev	.0002259	.003055	.000897	.0137253	.0015878	.0090992	.002028
%RSD	.1650742	1.709491	23.20204	2.435199	1.285526	7.020686	13.76379
#1	.1370613	-.176877	-.003751	.5778394	.1238622	.1399403	-.012666
#2	.1369503	-.182209	-.004817	.5625732	.1217848	.1228006	-.014819
#3	.1366265	-.176961	-.003033	.5504488	.1249037	.1260736	-.016719
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0003466	-.000177	.7509003	.0009020	.0025336	.0088821	8.300406
Stddev	.0000550	.000048	.0104825	.0001803	.0000373	.0002463	.047496
%RSD	15.86819	27.05767	1.395987	19.98566	1.471200	2.772741	.5722075
#1	.0002835	-.000187	.7600575	.0009170	.0025090	.0087869	8.299589
#2	.0003843	-.000219	.7531768	.0007147	.0025765	.0086976	8.348305
#3	.0003719	-.000125	.7394667	.0010743	.0025154	.0091618	8.253324
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1605433	.1466273	.0072898	.0000990	4.858064	-.001437	.0390894
Stddev	.0006416	.0283169	.0001023	.0002776	.022622	.000486	.0003790
%RSD	.3996399	19.31213	1.403781	280.5325	.4656652	33.80653	.9695393
#1	.1609184	.1155230	.0071832	.0003854	4.833655	-.001915	.0394321
#2	.1598025	.1709107	.0073872	-.000169	4.878326	-.001451	.0386824
#3	.1609090	.1534482	.0072991	.000080	4.862209	-.000944	.0391537
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.61658	.0331383	.0017325	.0773008	-.000377	.1733349	.5601521
Stddev	.01722	.0012226	.0003680	.0007059	.000588	.0107928	.0058752
%RSD	.1622420	3.689264	21.23954	.9132296	156.0915	6.226546	1.048864
#1	10.63332	.0325956	.0018929	.0777900	.000007	.1845111	.5587227
#2	10.61750	.0345383	.0019931	.0764916	-.000084	.1725223	.5551235
#3	10.59891	.0322811	.0013116	.0776209	-.001054	.1629714	.5666102

Sample Name: Q3417-01DLX5 Acquired: 10/24/2025 19:36:26 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	1.535133	.0030446	-.005449
Stddev	.008293	.0012643	.000121
%RSD	.5402310	41.52572	2.214066

#1	1.526183	.0038638	-.005318
#2	1.536658	.0015885	-.005474
#3	1.542558	.0036814	-.005555

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4966.096	82296.50	7359.528	3883.076	7047.890
Stddev	8.240	314.96	13.264	17.439	8.695
%RSD	.1659193	.3827097	.1802288	.4491109	.1233644

#1	4971.649	82184.29	7366.778	3865.070	7052.113
#2	4970.010	82053.01	7367.587	3884.271	7053.667
#3	4956.628	82652.19	7344.219	3899.887	7037.891

Sample Name: CCV05 Acquired: 10/24/2025 20:06:47 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV06 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.800875	4.906092	4.892214	4.725940	4.737067	9.875027	9.904050
Stddev	.015103	.033061	.002802	.010145	.004933	.021093	.020131
%RSD	.3145823	.6738682	.0572817	.2146753	.1041446	.2136043	.2032642
#1	4.810987	4.892767	4.895013	4.729345	4.739836	9.885089	9.926953
#2	4.783514	4.881774	4.892220	4.714530	4.731371	9.889207	9.896043
#3	4.808123	4.943736	4.889408	4.733944	4.739994	9.850787	9.889154
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2649608	2.478119	24.94405	1.008985	2.446994	1.230494	4.679831
Stddev	.0007756	.001694	.06493	.001497	.001676	.002598	.018484
%RSD	.2927062	.0683466	.2602924	.1483770	.0685110	.2110941	.3949696
#1	.2656655	2.479258	25.01498	1.009200	2.447660	1.228475	4.700856
#2	.2650870	2.478927	24.92961	1.010363	2.448236	1.229583	4.672502
#3	.2641298	2.476173	24.88756	1.007392	2.445087	1.233424	4.666136
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.512790	25.20127	2.459421	1.213132	24.88221	2.450834	2.420643
Stddev	.007741	.08821	.001952	.000341	.17804	.005484	.003180
%RSD	.3080712	.3500209	.0793856	.0280968	.7155508	.2237551	.1313710
#1	2.521617	25.23822	2.460247	1.213005	25.08760	2.447420	2.424031
#2	2.509594	25.26501	2.460825	1.213519	24.77153	2.457160	2.420175
#3	2.507158	25.10060	2.457192	1.212874	24.78752	2.447923	2.417723
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	23.90181	5.198637	4.913067	4.952394	4.936694	5.219615	5.053957
Stddev	.12455	.007592	.007895	.005272	.017711	.028351	.010909
%RSD	.5210895	.1460304	.1606906	.1064521	.3587671	.5431563	.2158564
#1	24.02183	5.205984	4.918723	4.949705	4.955066	5.212672	5.057561
#2	23.91044	5.190822	4.904048	4.949009	4.935291	5.250792	5.062607
#3	23.77318	5.199106	4.916431	4.958468	4.919727	5.195380	5.041701

Sample Name: CCV05 Acquired: 10/24/2025 20:06:47 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV06 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.748359	4.851021	4.914556
Stddev	.014554	.016845	.033429
%RSD	.3064955	.3472540	.6801945

#1	4.762935	4.870433	4.952802
#2	4.733828	4.842391	4.899947
#3	4.748313	4.840239	4.890919

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5337.535	84828.57	6453.770	4103.958	6117.794
Stddev	9.450	309.75	28.741	21.435	7.269
%RSD	.1770551	.3651450	.4453331	.5223114	.1188208

#1	5328.049	84848.34	6435.919	4097.668	6109.801
#2	5346.949	84509.41	6438.466	4086.370	6119.572
#3	5337.608	85127.96	6486.924	4127.834	6124.009

Sample Name: CCB05 Acquired: 10/24/2025 20:10:50 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB06 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0017168	.0005289	.0014671	.0011169	.0004427	-.008326
Stddev	.0003539	.0006921	.0002708	.0013347	.0021480	.004370
%RSD	20.61393	130.8510	18.46065	119.5009	485.1742	52.48264
#1	.0020719	.0013208	.0013143	.0013380	.0016390	-.003714
#2	.0017144	.0000400	.0013071	-.000315	-.002037	-.012405
#3	.0013641	.0002259	.0017798	.002327	.001726	-.008860
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0011458	-.000032	.0000110	.0068094	.0000167	.0001121
Stddev	.0014516	.000056	.0000496	.0050521	.0001129	.0000313
%RSD	126.6956	177.4032	452.1980	74.19255	675.5180	27.96151
#1	.0001190	-.000019	-.000039	.0072238	.0000434	.0001168
#2	.0005117	-.000093	.000012	.0116414	-.000107	.0001408
#3	.0028065	.000017	.000060	.0015629	.000114	.0000787
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0048181	.0029978	.0006277	-.022368	-.000137	.0005301
Stddev	.0002366	.0113401	.0009238	.034256	.000297	.0004185
%RSD	4.911043	378.2788	147.1790	153.1508	217.3311	78.95207
#1	.0045830	-.009130	-.000398	-.009425	.000134	.0003189
#2	.0050562	.004786	.001393	-.061210	-.000090	.0010121
#3	.0048152	.013338	.000888	.003532	-.000454	.0002592
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1.263720	-.000945	.0002712	.6051534	.0215364	.0006406
Stddev	.041464	.002613	.0003116	.0240948	.0011177	.0001606
%RSD	3.281087	276.4822	114.8821	3.981600	5.189971	25.06450
#1	1.218376	-.001602	.0003163	.5773365	.0225449	.0007917
#2	1.273082	.001934	-.000060	.6185870	.0203346	.0006580
#3	1.299702	-.003167	.000558	.6195366	.0217296	.0004720

Sample Name: CCB05 Acquired: 10/24/2025 20:10:50 Type: Unk
Method: 6010-200.7 NEW(v308) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB06 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001630	.0018790	.0956398	-.001818	F .0322131	.0044047
Stddev	.0007929	.0016160	.0077018	.000576	.0014983	.0020896
%RSD	486.3576	86.00657	8.052960	31.70465	4.651133	47.44065

#1	-.000614	.0001604	.0896194	-.001404	.0339385	.0027401
#2	.000971	.0033679	.1043187	-.002476	.0314599	.0037242
#3	.000133	.0021087	.0929813	-.001575	.0312409	.0067497

Elem	Sr4077
Units	ppm
Avg	.0001213
Stddev	.0001119
%RSD	92.22468

#1	.0002486
#2	.0000384
#3	.0000770

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5582.750	90854.45	6842.333	4282.939	7122.873
Stddev	10.664	541.35	43.960	17.340	20.976
%RSD	.1910159	.5958450	.6424764	.4048570	.2944854

#1	5589.204	91317.04	6832.054	4297.824	7141.362
#2	5570.441	90987.25	6890.523	4287.093	7100.079
#3	5588.605	90259.06	6804.424	4263.899	7127.179

SOP ID : M3010A-Digestion-17

SDG No : N/A

Matrix : WATER

Pipette ID: ICP A

Balance ID : N/A

Filter paper ID : N/A

pH Strip ID : M6069

Hood ID : #3

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

Start Digest Date: 10/24/2025 Time : 10:45 Temp : 96 °C

End Digest Date: 10/24/2025 Time : 13:50 Temp : 96 °C

Digestion tube ID: M5595

Block thermometer ID: MET-DIG. #1

Dig Technician Signature: *SKS*

Supervisor Signature: *SKS*

Temp : 1. 96°C 2. N/A

Standard Name	MLS USED	STD REF. # FROM LOG
LFS-1	0.25	M6209
LFS-2	0.25	M6201
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Chemical Used	ML/SAMPLE USED	Lot Number
Conc. HNO3	3.00	M6158
1:1 HCL	5.00	MP87148
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 96C

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
10/24/25 14:50	<i>SKS met dig</i>	<i>SKS (met dig)</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
PB170252BL	PBW252	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	1
PB170252BS	LCS252	<2	50	25	Colorless	Colorless	Clear	Clear	M6209,M6201	2
Q3444-01	16 BANKER	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	3
Q3444-02	29 HANOVER	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	4
Q3444-03	29 POST	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	5
Q3444-04	683 WARWICK	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	6
Q3444-05	735 WARWICK	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	7
Q3444-06	739 WARWICK	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	8
Q3444-06MS	739 WARWICKMS	<2	50	25	Colorless	Colorless	Clear	Clear	M6209,M6201	10
Q3444-06MSD	739 WARWICKMSD	<2	50	25	Colorless	Colorless	Clear	Clear	M6209,M6201	11
Q3444-06DUP	739 WARWICKDUP	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	9

WORKLIST(Hardcopy Internal Chain)

Worklist Name : PB170252

Worklist ID : 192665

Department : Digestion

Date : 10-24-2025 09:55:48

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q3444-01	16 Banker	Water	Metals Group4	1:1 HNO3 to pH < 2	GENV01	J21	10/23/2025	6010D
Q3444-02	29 Hanover	Water	Metals Group4	1:1 HNO3 to pH < 2	GENV01	J21	10/23/2025	6010D
Q3444-03	29 Post	Water	Metals Group4	1:1 HNO3 to pH < 2	GENV01	J21	10/23/2025	6010D
Q3444-04	683 WARWICK	Water	Metals Group4	1:1 HNO3 to pH < 2	GENV01	J21	10/23/2025	6010D
Q3444-05	735 WARWICK	Water	Metals Group4	1:1 HNO3 to pH < 2	GENV01	J21	10/23/2025	6010D
Q3444-06	739 WARWICK	Water	Metals Group4	1:1 HNO3 to pH < 2	GENV01	J21	10/23/2025	6010D

Date/Time 10/24/2025 10:15
 Raw Sample Received by: SLY nact d12
 Raw Sample Relinquished by: CP (sm)

Date/Time 10/24/25 11:15
 Raw Sample Received by: CP (sm)
 Raw Sample Relinquished by: SLY metals

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB137662

Review By	Janvi	Review On	10/28/2025 11:25:13 AM
Supervise By	jaswal	Supervise On	10/28/2025 3:16:27 PM
STD. NAME	STD REF.#		
ICAL Standard	MP87637,MP87643,MP87641,MP87640,MP87639,MP87638		
ICV Standard	MP87644,MP87643		
CCV Standard	MP87647		
ICSA Standard	MP87645,MP87646		
CRI Standard	MP87643		
LCS Standard			
Chk Standard	MP87668,MP87648,MP87651,MP87649,MP87650		

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	10/24/25 14:07		Jaswal	OK
2	S1	S1	CAL2	10/24/25 14:12		Jaswal	OK
3	S2	S2	CAL3	10/24/25 14:16		Jaswal	OK
4	S3	S3	CAL4	10/24/25 14:20		Jaswal	OK
5	S4	S4	CAL5	10/24/25 14:24		Jaswal	OK
6	S5	S5	CAL6	10/24/25 14:29		Jaswal	OK
7	ICV01	ICV01	ICV	10/24/25 14:33		Jaswal	OK
8	LLICV01	LLICV01	LLICV	10/24/25 14:38		Jaswal	OK
9	ICB01	ICB01	ICB	10/24/25 14:43		Jaswal	OK
10	CRI01	CRI01	CRDL	10/24/25 14:48		Jaswal	OK
11	ICSA01	ICSA01	ICSA	10/24/25 14:52		Jaswal	OK
12	ICSAB01	ICSAB01	ICSAB	10/24/25 14:56		Jaswal	OK
13	ICSA01DL	ICSA01DL	ICSA	10/24/25 15:01		Jaswal	OK
14	ICSAB01DL	ICSAB01DL	ICSAB	10/24/25 15:07		Jaswal	OK
15	CCV01	CCV01	CCV	10/24/25 15:12		Jaswal	OK
16	CCB01	CCB01	CCB	10/24/25 15:16		Jaswal	OK
17	PB170225BL	PB170225BL	MB	10/24/25 15:20		Jaswal	OK
18	PB170225BS	PB170225BS	LCS	10/24/25 15:24		Jaswal	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB137662

Review By	Janvi	Review On	10/28/2025 11:25:13 AM
Supervise By	jaswal	Supervise On	10/28/2025 3:16:27 PM
STD. NAME	STD REF.#		
ICAL Standard	MP87637,MP87643,MP87641,MP87640,MP87639,MP87638		
ICV Standard	MP87644,MP87643		
CCV Standard	MP87647		
ICSA Standard	MP87645,MP87646		
CRI Standard	MP87643		
LCS Standard			
Chk Standard	MP87668,MP87648,MP87651,MP87649,MP87650		

19	LR-2	LR-2	HIGH STD	10/24/25 15:33		Jaswal	OK
20	LR-3	LR-3	HIGH STD	10/24/25 15:37		Jaswal	OK
21	LR-1	LR-1	HIGH STD	10/24/25 15:42		Jaswal	OK
22	Q3422-02	PR132-FB2-2025102	SAM	10/24/25 15:51		Jaswal	OK
23	Q3434-02	PR132-WC2-2025102	SAM	10/24/25 15:55	Na is high , Need dilution	Jaswal	Dilution
24	Q3417-01	101425	SAM	10/24/25 16:00	WRONG METHOD	Jaswal	Not Ok
25	CCV02	CCV02	CCV	10/24/25 16:32		Jaswal	OK
26	CCB02	CCB02	CCB	10/24/25 16:47		Jaswal	OK
27	Q3440-01	JB-2	SAM	10/24/25 17:55		Jaswal	OK
28	Q3447-01	P001-TW1-251023-01	SAM	10/24/25 17:59	Fe high, need dilution, Ag oversaturated.	Jaswal	Dilution
29	Q3447-03	P001-TW2-251023-01	SAM	10/24/25 18:03	Ag oversaturated.	Jaswal	Dilution
30	Q3447-05	P001-TW3-251023-01	SAM	10/24/25 18:08	Cu,Pb is high need dilution	Jaswal	Dilution
31	Q3447-07	P001-TW4-251023-01	SAM	10/24/25 18:12		Jaswal	OK
32	Q3449-01	CF-620-COMP-41	SAM	10/24/25 18:16		Jaswal	OK
33	PB170252BL	PB170252BL	MB	10/24/25 18:20		Jaswal	OK
34	PB170252BS	PB170252BS	LCS	10/24/25 18:25		Jaswal	OK
35	CCV03	CCV03	CCV	10/24/25 18:29		Jaswal	OK
36	CCB03	CCB03	CCB	10/24/25 18:33		Jaswal	OK
37	Q3444-01	16 Banker	SAM	10/24/25 18:37		Jaswal	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB137662

Review By	Janvi	Review On	10/28/2025 11:25:13 AM
Supervise By	jaswal	Supervise On	10/28/2025 3:16:27 PM
STD. NAME	STD REF.#		
ICAL Standard	MP87637,MP87643,MP87641,MP87640,MP87639,MP87638		
ICV Standard	MP87644,MP87643		
CCV Standard	MP87647		
ICSA Standard	MP87645,MP87646		
CRI Standard	MP87643		
LCS Standard			
Chk Standard	MP87668,MP87648,MP87651,MP87649,MP87650		

38	Q3444-02	29 Hanover	SAM	10/24/25 18:41		Jaswal	OK
39	Q3444-03	29 Post	SAM	10/24/25 18:46		Jaswal	OK
40	Q3444-04	683 WARWICK	SAM	10/24/25 18:50		Jaswal	OK
41	Q3444-05	735 WARWICK	SAM	10/24/25 18:54		Jaswal	OK
42	Q3444-06	739 WARWICK	SAM	10/24/25 18:59		Jaswal	OK
43	Q3444-06DUP	739 WARWICKDUP	DUP	10/24/25 19:03		Jaswal	OK
44	Q3444-06L	739 WARWICKL	SD	10/24/25 19:07		Jaswal	OK
45	Q3444-06MS	739 WARWICKMS	MS	10/24/25 19:11		Jaswal	OK
46	Q3444-06MSD	739 WARWICKMSD	MSD	10/24/25 19:15		Jaswal	OK
47	CCV04	CCV04	CCV	10/24/25 19:19		Jaswal	OK
48	CCB04	CCB04	CCB	10/24/25 19:23		Jaswal	OK
49	Q3444-06A	739 WARWICKA	PS	10/24/25 19:28	0.1 ML OF M6008 AND M6017 IN 10ML SAMPLE.	Jaswal	OK
50	Q3434-02DL	PR132-WC2-2025102	SAM	10/24/25 19:32	Not use	Jaswal	Not Ok
51	Q3417-01DL	101425DL	SAM	10/24/25 19:36	Not use	Jaswal	Not Ok
52	CCV05	CCV05	CCV	10/24/25 20:06		Jaswal	OK
53	CCB05	CCB05	CCB	10/24/25 20:10		Jaswal	OK

Prep Standard - Chemical Standard Summary

Order ID : Q3444
Test : Metals Group4

Prepbatch ID : PB170252,
Sequence ID/Qc Batch ID: LB137662,

Standard ID :
MP87148,MP87637,MP87638,MP87639,MP87640,MP87641,MP87642,MP87643,MP87644,MP87645,MP87646,MP87647,MP87648,MP87649,MP87650,MP87651,MP87668,

Chemical ID :
M5467,M5658,M5697,M5748,M5798,M5799,M5800,M5801,M5814,M5820,M5962,M5969,M5971,M5979,M5985,M5998,M6021,M6023,M6026,M6027,M6028,M6030,M6032,M6058,M6077,M6086,M6128,M6137,M6140,M6142,M6144,M6145,M6151,M6158,M6159,M6160,M6163,M6164,M6165,M6171,M6174,M6176,M6177,M6178,M6179,M6182,M6184,M6187,M6200,M6201,M6209,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	MP87148	09/09/2025	02/17/2026	Sagar Kanani	None	None	Sarabjit Jaswal
								09/10/2025

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>
902	ICP AES CAL BLK (SO/ICB/CCB)	MP87637	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal
								10/28/2025

FROM 125.00000ml of M6200 + 2350.00000ml of W3112 + 25.00000ml of M6187 = Final Quantity: 2500.000 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>
907	ICP AES STD S (S5)	MP87638	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 10/28/2025
FROM 5.00000ml of M5467 + 5.00000ml of M5820 + 5.00000ml of M5969 + 5.00000ml of M5971 + 5.00000ml of M5998 + 5.00000ml of M6077 + 5.00000ml of M6160 + 5.00000ml of M6174 + 5.00000ml of M6176 + 455.00000ml of MP87637 = Final Quantity: 500.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
910	ICP AES STD S4	MP87639	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 10/28/2025
FROM 50.00000ml of MP87637 + 50.00000ml of MP87638 = 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>
909	ICP AES STD S3	MP87640	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 10/28/2025

FROM 25.00000ml of MP87638 + 75.00000ml of MP87637 = Final Quantity: 100.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3913	ICP AES STD S2	MP87641	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 10/28/2025

FROM 16.00000ml of MP87638 + 184.00000ml of MP87637 = Final Quantity: 200.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
2950	ICP AES S1/CRI STOCK STD	MP87642	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 10/28/2025

FROM 0.03000ml of M5798 + 0.03000ml of M6028 + 0.05000ml of M5658 + 0.05000ml of M6030 + 0.05000ml of M6140 + 0.05000ml of M6159 + 0.06000ml of M6177 + 0.10000ml of M5697 + 0.10000ml of M5801 + 0.10000ml of M5820 + 0.10000ml of M5962 + 0.10000ml of M5969 + 0.10000ml of M5971 + 0.10000ml of M6128 + 0.10000ml of M6176 + 0.15000ml of M5800 + 0.20000ml of M5799 + 0.20000ml of M5979 + 0.20000ml of M6021 + 0.20000ml of M6023 + 0.20000ml of M6027 + 0.20000ml of M6145 + 0.25000ml of M5467 + 0.25000ml of M6160 + 0.50000ml of M5814 + 0.50000ml of M6032 + 1.00000ml of M6086 + 1.00000ml of M6142 + 1.00000ml of M6144 + 1.00000ml of M6171 + 1.00000ml of M6178 + 2.00000ml of M6137 + 89.03000ml of MP87637 = Final Quantity: 100.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
2951	ICP AES S1/CRI WORK STD	MP87643	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 10/28/2025

FROM 2.00000ml of MP87642 + 98.00000ml of MP87637 = 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>
4163	NEW ICV-060925	MP87644	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 10/28/2025
FROM 0.20000ml of M6058 + 0.40000ml of M6163 + 0.40000ml of M6164 + 0.40000ml of M6165 + 48.60000ml of MP87637 = Final Quantity: 50.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
904	ICP AES ICSA SOLN	MP87645	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 10/28/2025
FROM 25.00000ml of M6182 + 225.00000ml of MP87637 = Final Quantity: 250.000 ml								

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3494	ICP AES ICSAB SOLN-1	MP87646	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 10/28/2025
FROM 0.10000ml of M6077 + 10.00000ml of M6182 + 10.00000ml of M6184 + 79.90000ml of MP87637 = 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>
911	ICP AES CCV SOLN	MP87647	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 10/28/2025
FROM 50.00000ml of MP87637 + 50.00000ml of MP87638 = 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>
903	ICP AES RINSE SOLN	MP87648	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 10/28/2025

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

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
4226	LR-2	MP87649	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 10/28/2025

FROM 13.50000ml of M6140 + 9.00000ml of M6142 + 9.50000ml of M6159 + 18.00000ml of MP87637 = 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>
4227	LR-3	MP87650	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal
FROM 1.15000ml of M6026 + 1.25000ml of M5658 + 1.25000ml of M5748 + 1.50000ml of M6145 + 2.50000ml of M5697 + 2.50000ml of M6128 + 39.85000ml of MP87637 = Final Quantity: 50.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
4225	LR-1	MP87651	10/17/2025	11/17/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal
FROM 11.50000ml of M6086 + 11.50000ml of M6144 + 11.50000ml of M6171 + 15.50000ml of MP87637 = 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>
919	ICP AES INTERNAL STD	MP87668	10/17/2025	11/11/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal
FROM 1.00000ml of M6179 + 10.00000ml of M5985 + 1969.00000ml of W3112 + 20.00000ml of M6187 = Final Quantity: 2000.000 ml								

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57058 / Cerium, 1000PPM, 100ML	020623	02/06/2026	03/06/2023 / bin	03/01/2023 / bin	M5467

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	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.	57005 / B, 1000 PPM, 125 ml	071123	07/11/2026	03/26/2024 / Sohil	01/03/2024 / jaswal	M5814

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57015 / P, 1000 PPM, 125 ml	091123	09/11/2026	05/01/2024 / jaswal	02/09/2024 / jaswal	M5820

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57016 / S, 1000 PPM, 125 ml	122923	03/31/2026	03/31/2025 / kareem	06/11/2024 / Jaswal	M5969

CHEMICAL RECEIPT LOG BOOK

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGT11-1 / TITANIUM 125mL 1000ug/mL	T2-TI719972	08/05/2026	08/06/2025 / Janvi	02/22/2024 / Jaswal	M5979

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CLPP-CAL-3 / CLP CAL SOLUTION #3, 125mL	T2-MEB727800	07/30/2026	07/30/2025 / Janvi	02/22/2024 / kareem	M5998

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

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

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57182 / Pb, 10000 PPM, 125 ml	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

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57056 / Ba, 1000 PPM, 125 ml	010924	01/09/2027	01/14/2025 / Jaswal	08/05/2024 / Jaswal	M6032

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CHEM-QC-4 / CHEM-QC-4, Second Source, 1000 ug/ml, B, Mo, Si, Sn, Ti	V2-MEB746173	01/29/2026	01/29/2025 / JANVI	08/22/2024 / Jaswal	M6058

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	Z9651Q / CHEM-CLP-4/.25L	V2-MEB746762	09/06/2029	01/23/2025 / kareem	09/19/2024 / kareem	M6077

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

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58111 / Na, 10000 PPM, 500 ml	072424	07/24/2027	01/23/2025 / kareem	01/13/2025 / Jaswal	M6144

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
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 #
Seidler Chemical	BA-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24D1062002	10/30/2025	03/10/2025 / Eman	02/02/2025 / Sagar	M6158

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58113 / Al, 10000 PPM, 500 ml	011325	03/18/2026	03/18/2025 / kareem	02/09/2025 / kareem	M6159

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57051 / Sb, 1000 PPM, 125 ml	071724	07/17/2027	03/24/2025 / kareem	10/18/2024 / kareem	M6160

CHEMICAL RECEIPT LOG BOOK

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

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
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	CLPP-CAL-1 / CLP CAL SOLUTION #1, 125mL	V2-MEB742428	07/31/2026	07/31/2025 / Janvi	05/05/2025 / Janvi	M6174

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57038 / Sr, 1000 PPM, 125 ml	092724	09/27/2027	08/06/2025 / Janvi	08/06/2025 / Janvi	M6176

CHEMICAL RECEIPT LOG BOOK

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
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 #
Inorganic Ventures	CGY10-1 / YTTRIUM 125mL 10,000ug/mL	V2-Y740548	08/05/2026	08/06/2025 / Janvi	06/02/2024 / Janvi	M6179

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	PART B / ICSAB (ICP) STOCK SOLN	ICSB-0710	02/05/2026	08/06/2025 / Janvi	03/06/2024 / Janvi	M6184

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

CHEMICAL RECEIPT LOG BOOK

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	WW-LFS-2 / Laboratory Fortified Stock Solution 2, 125 ml	V2-MEB743480	10/15/2026	10/15/2025 / janvi	07/20/2025 / janvi	M6201

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	WW-LFS-1 / Laboratory Fortified Stock Solution 1, 125 ml	V2-MEB752149	10/15/2026	10/15/2025 / Janvi	07/20/2025 / Janvi	M6209

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



M6032

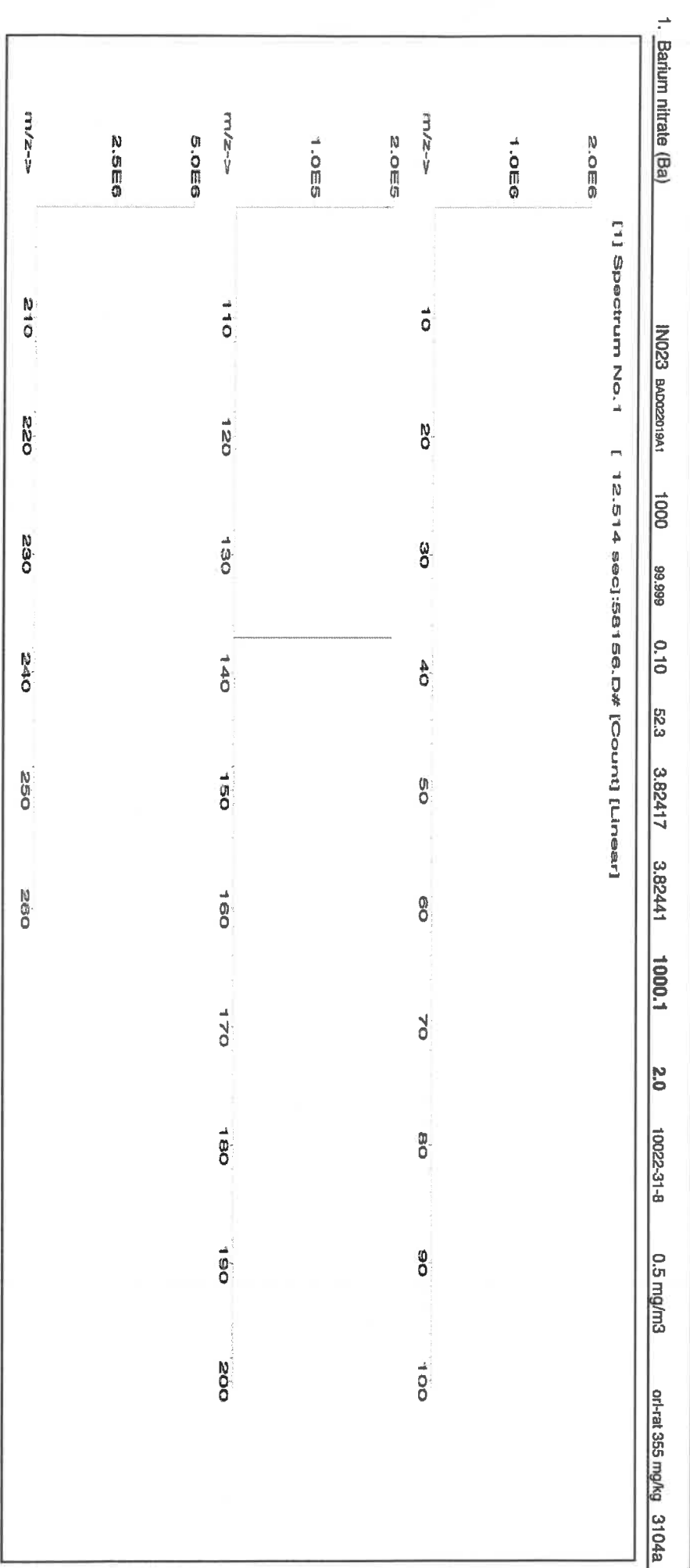


CERTIFIED WEIGHT REPORT:

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

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



Rev'd 20/11/2021 M6085 / M6086 / M6087

CERTIFIED WEIGHT REPORT:

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

Solvent: 24002546 Nitric Acid

Lot #

Giovanni Esposito
Formulated By: Giovanni Esposito 082324

Expiration Date: 082327

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 10000

NIST Test Number: 6UTB

5E-05 Balance Uncertainty

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

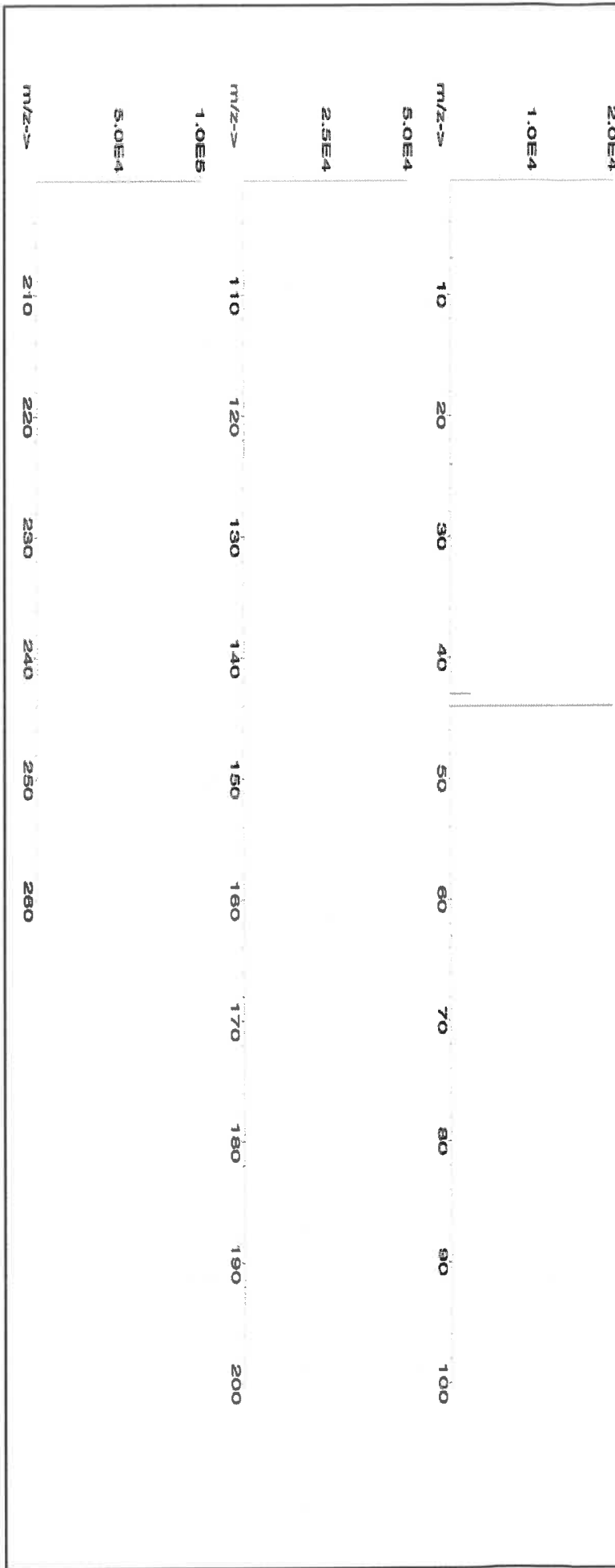
Pedro L. Rentas
Reviewed By: Pedro L. Rentas 082324

SDS Information

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Calcium carbonate (Ca) IN014 CAD03202383 10000 99.999 0.10 39.9 100.2537 100.2656 10001.2 20.0 471-34-1 5 mg/m3 or-rat >2000mg/kg 3109a

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





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	T	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	30	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Su	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
- * 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: 57048
Lot Number: 070124
Description: Cadmium (Cd)

Solvent: 24002546 Nitric Acid
Lot #

Expiration Date:

070127

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL):

2000.07

SE-05 Balance Uncertainty
0.100 Flask Uncertainty

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

Compound

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

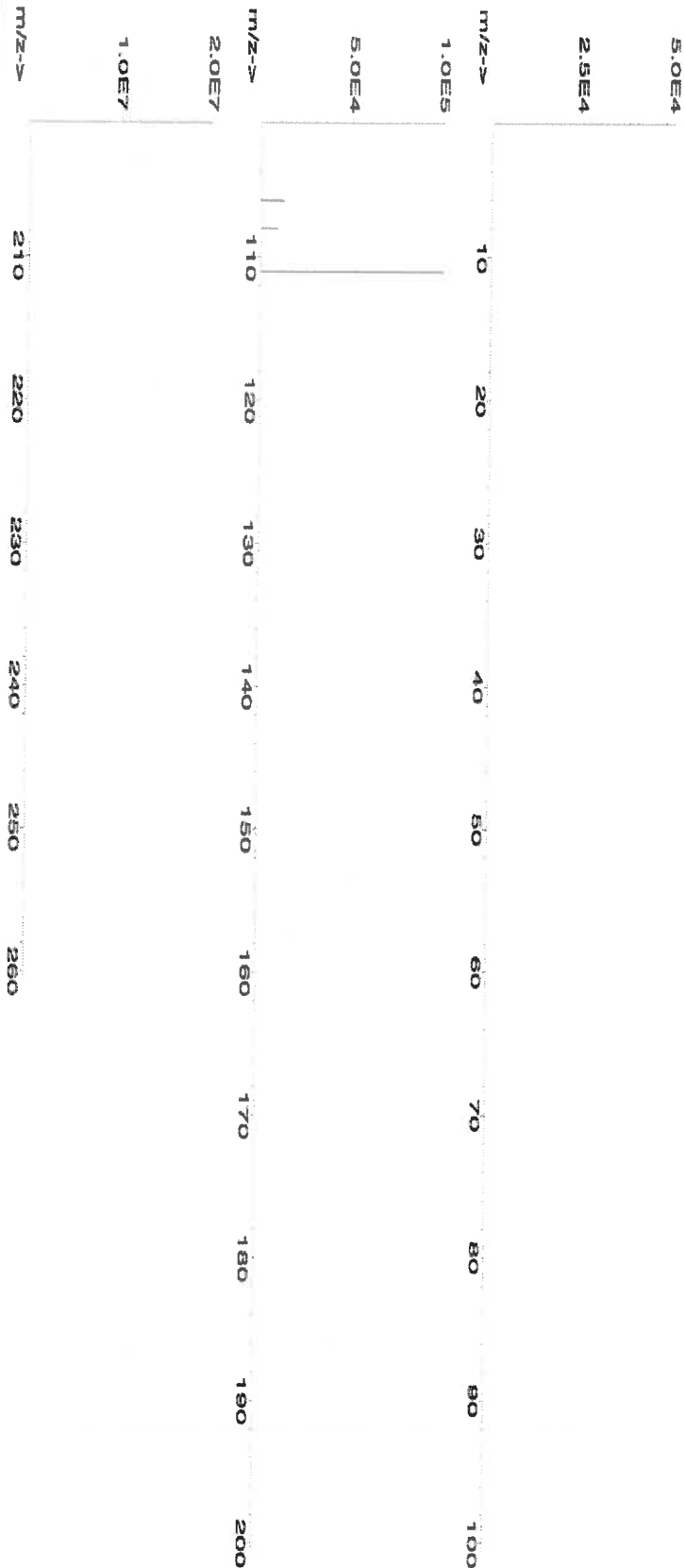
0.01 mg/m3

ref rat 60.2mg/kg

3108

Expanded		SDS Information	
Uncertainty	(µg/mL)	CAS#	OSHA PEL (TWA)
			LD50
			NIST SRM

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



MC026



CERTIFIED WEIGHT REPORT:

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

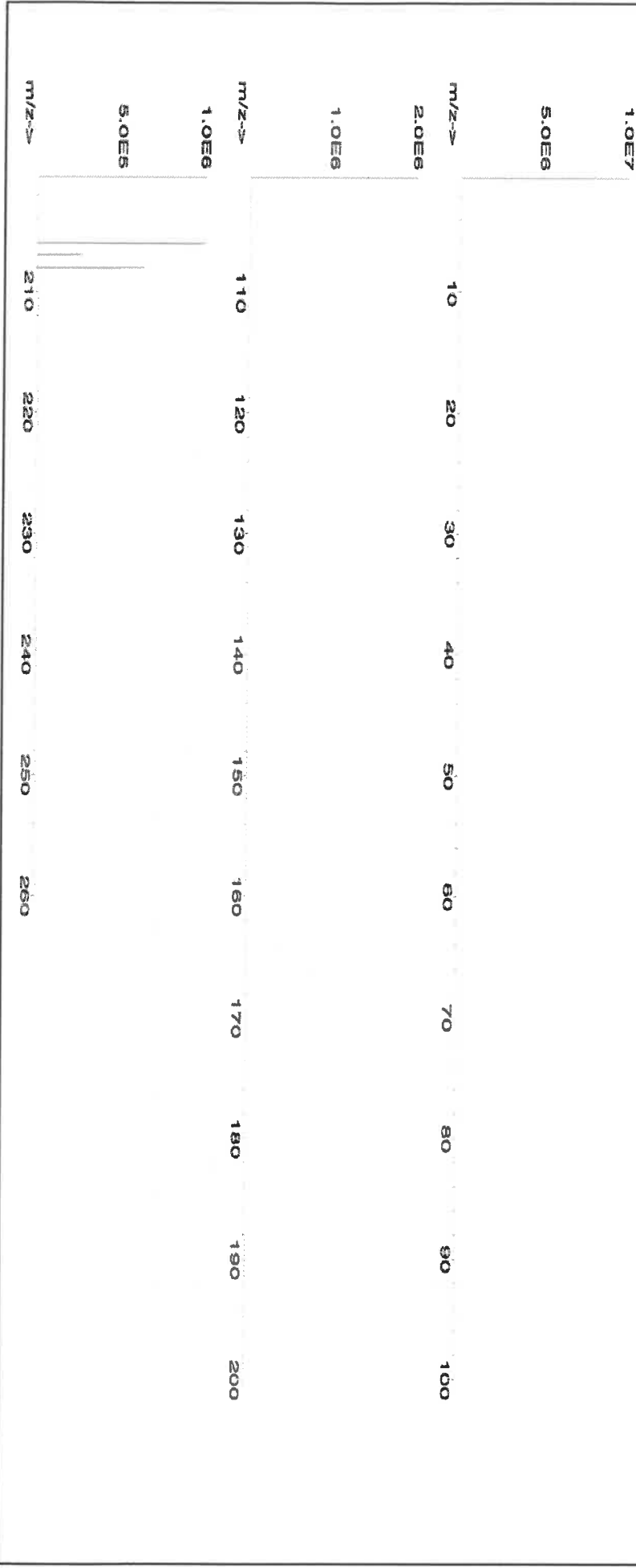
Solvent: 24002546 Nitric Acid
Lot #

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)	+/- (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	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).



Certified Reference Material CRM



MS467 R: 03/01/23 (14)

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57058
020623
Cerium (Ce)

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

020626
Ambient (20 °C)
1000
6UTB

Weight shown below was diluted to (mL):

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

Lot #

Solvent: 21110221 Nitric Acid

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

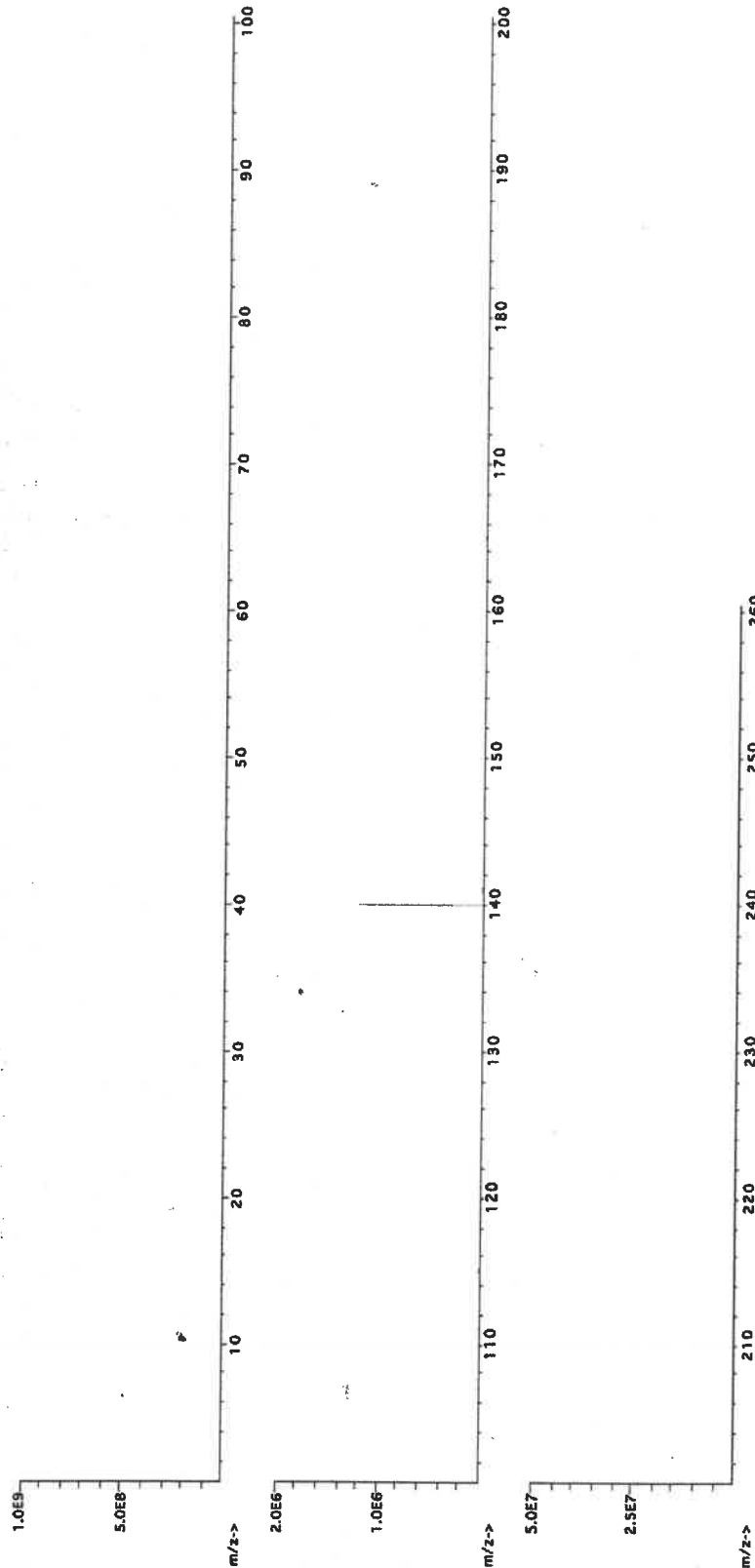
Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas

SDS Information

Expanded Uncertainty
Actual Weight (g)
Actual Conc. (µg/mL)
CAS#
OSHA PEL (TWA)
LD50
SRM

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	SRM
1. Cerium nitrate hexahydrate (Ce)	IN146	Z512CEB1	1000	99.999	0.10	32.8	3.04919	3.04921	1000.0	2.0	10294-41-4	NA	NA

[1] Spectrum No.1 [43.472 sec]58158.D# [Count] [Linear]





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

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

(T)= Target analyte

Physical Characterization:

Certified by:

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

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



CERTIFIED WEIGHT REPORT:

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

Lot # 21110221
Solvent: Nitric Acid

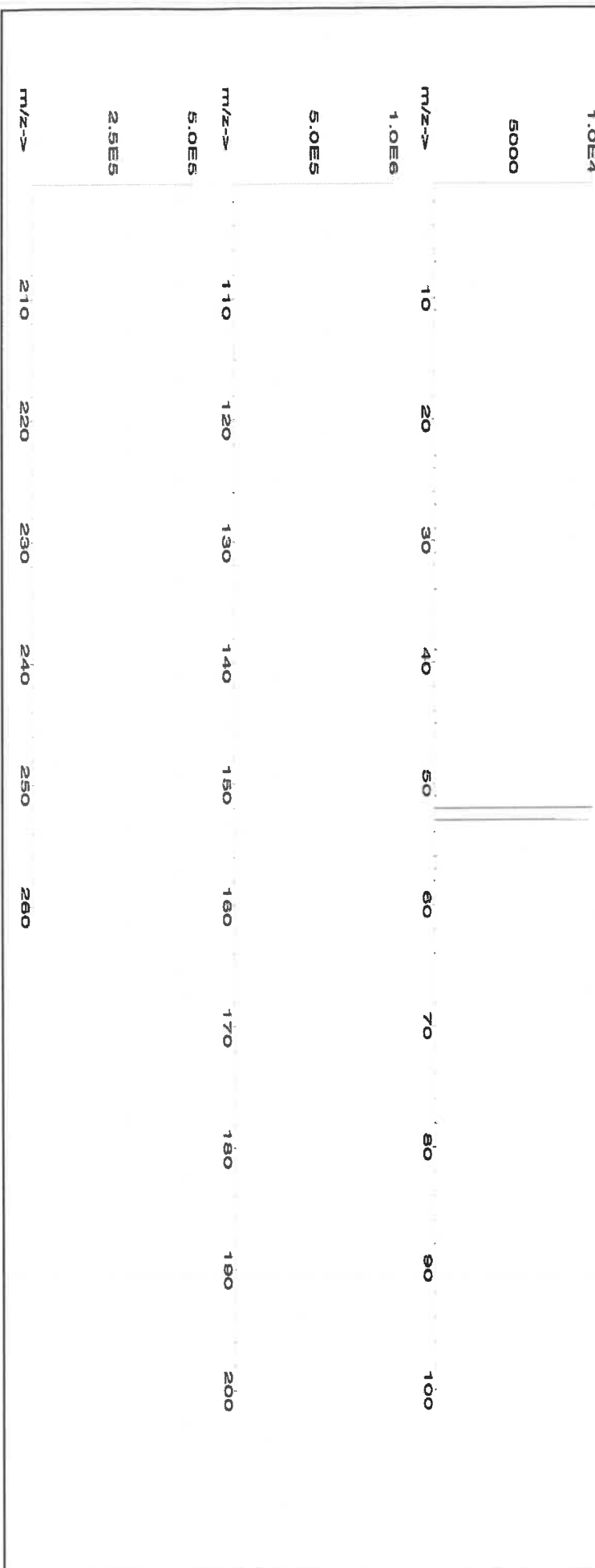
Formulated By:	Lawrence Barry
	060523
Reviewed By:	Pedro L. Ruelas
	060523

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

[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).



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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

Part Number: **57028**
Lot Number: **091223**
Description: **Nickel (NI)**

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

Expiration Date: **091226**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6U7B**

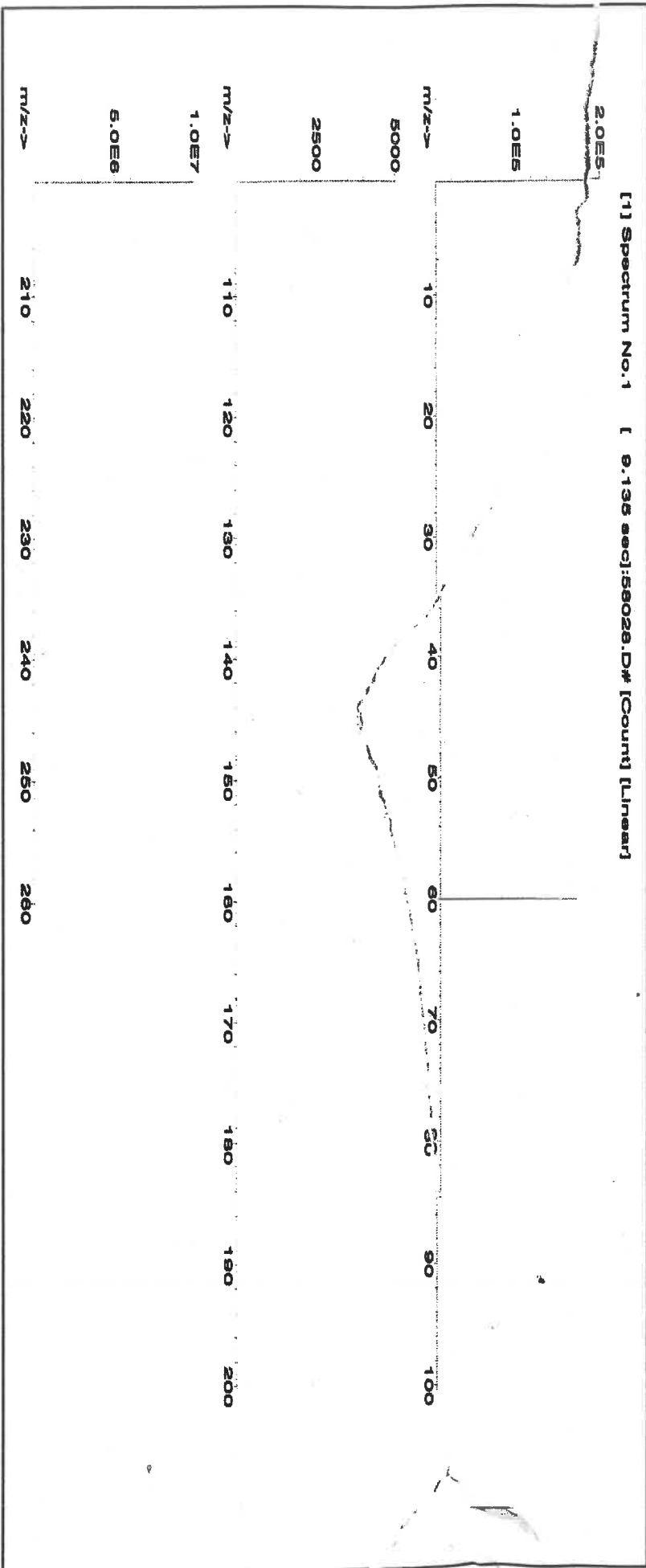
2.0% 40.0 (mL) Nitric Acid

Volume shown below was diluted to (mL): **2000.02** 5E-05 Balance Uncertainty
0.056 Flask Uncertainty

Formulated By:	<i>Lawrence Barry</i>	091223
Reviewed By:	<i>Pedro L. Renteria</i>	091223

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty 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. Nickel(II) nitrate hexahydrate (NI)	58128	062023	0.1000	200.0	0.084	1000	10000.4	1000.0	2.2	13478-00-7	1 mg/m3	or-rel 1620 mg/kg	3136
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Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

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

Lot # 24002546
Solvent: Nitric Acid

Expiration Date:

102526

2.0%

40.0 (mL)

Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL): 2000.02

5E-05 Balance Uncertainty

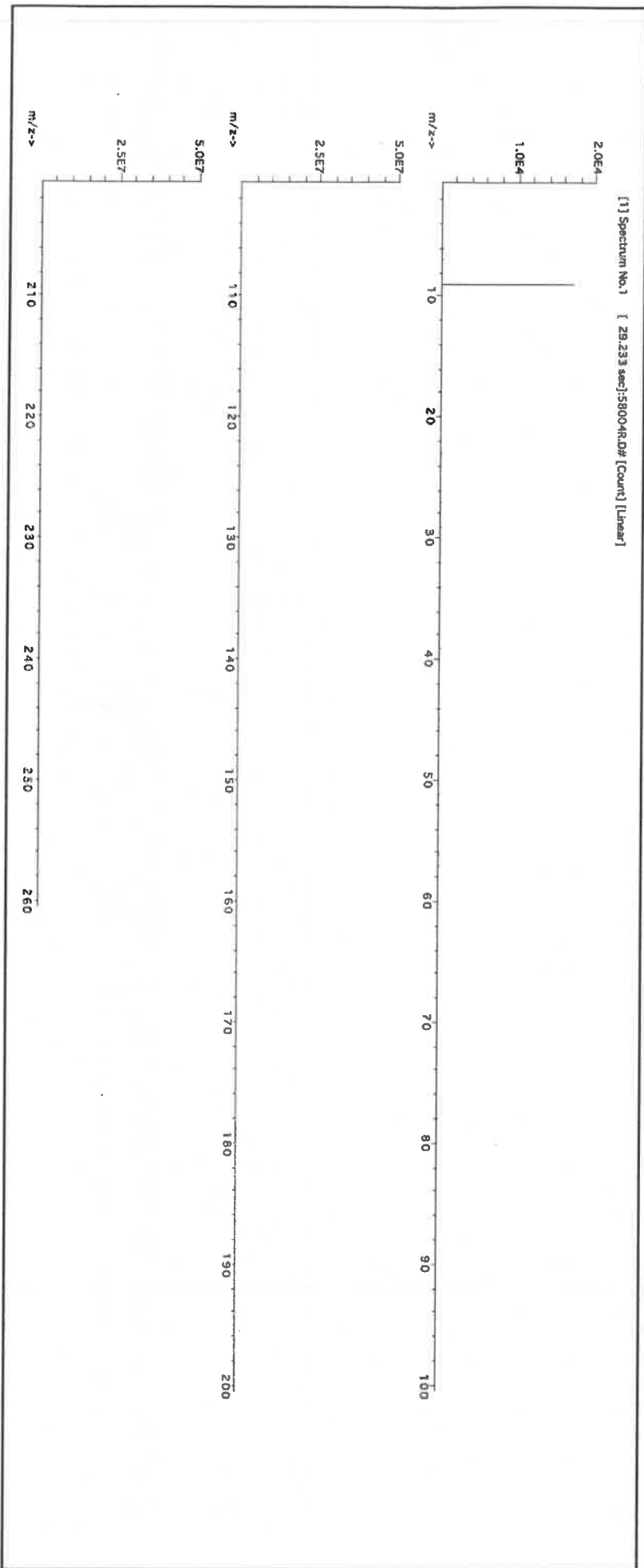
0.058 Flask Uncertainty

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

SDS Information

Compound	Part Number	Lot	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Beryllium nitrate (Be)	58104	091423	0.1000	200.0	0.084	1000	10001.5	1000.0	2.2	13597-99-4	0.2µg/m3	intrinsc-rat 3.16mg/kg	NA
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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

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



Certified Reference Material CRM

CERTIFIED WEIGHT REPORT:

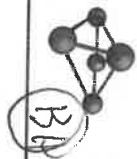
Part Number: 57050
Lot Number: 071123
Description: Tin (Sn)

Solvents: 21110221 Nitric Acid
22D0562008 Hydrochloric acid

Lot #

R. 02509124

M599



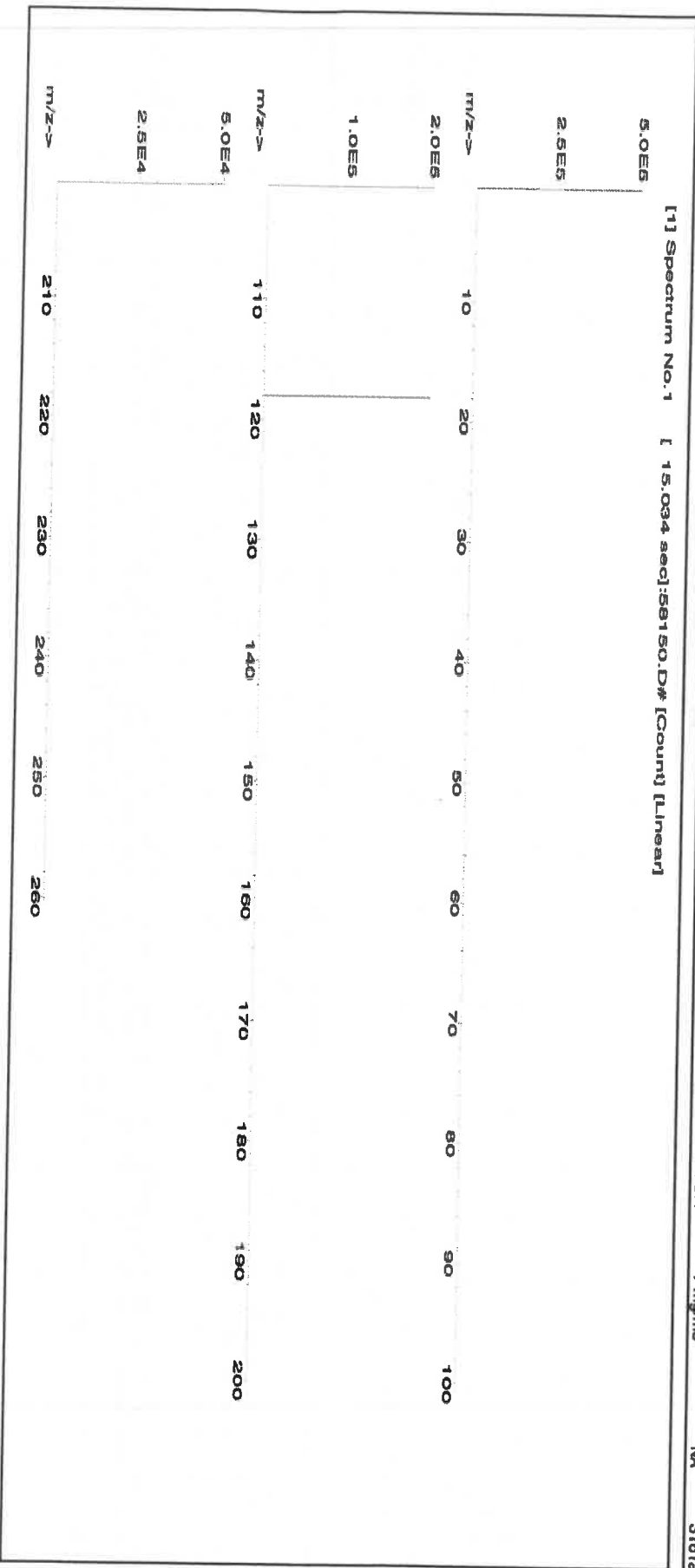
Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 499.93
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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

Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Ammonium hexafluoroantimonate(V) (Sn) INO10 SMD042023A1 1000 99.99 0.10 44.2 1.13107 1.13286 1001.6 2.0 16919-24-7 7 mg/m3 NA 3161a

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





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<500	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Ta	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



R: 02/09/24 115800 (54)

CERTIFIED WEIGHT REPORT:

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

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

Volume shown below was diluted to (mL): 2000.02

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Lot # 24002546
Solvent: Nitric Acid

2.0% Nitric Acid
40.0 (mL)

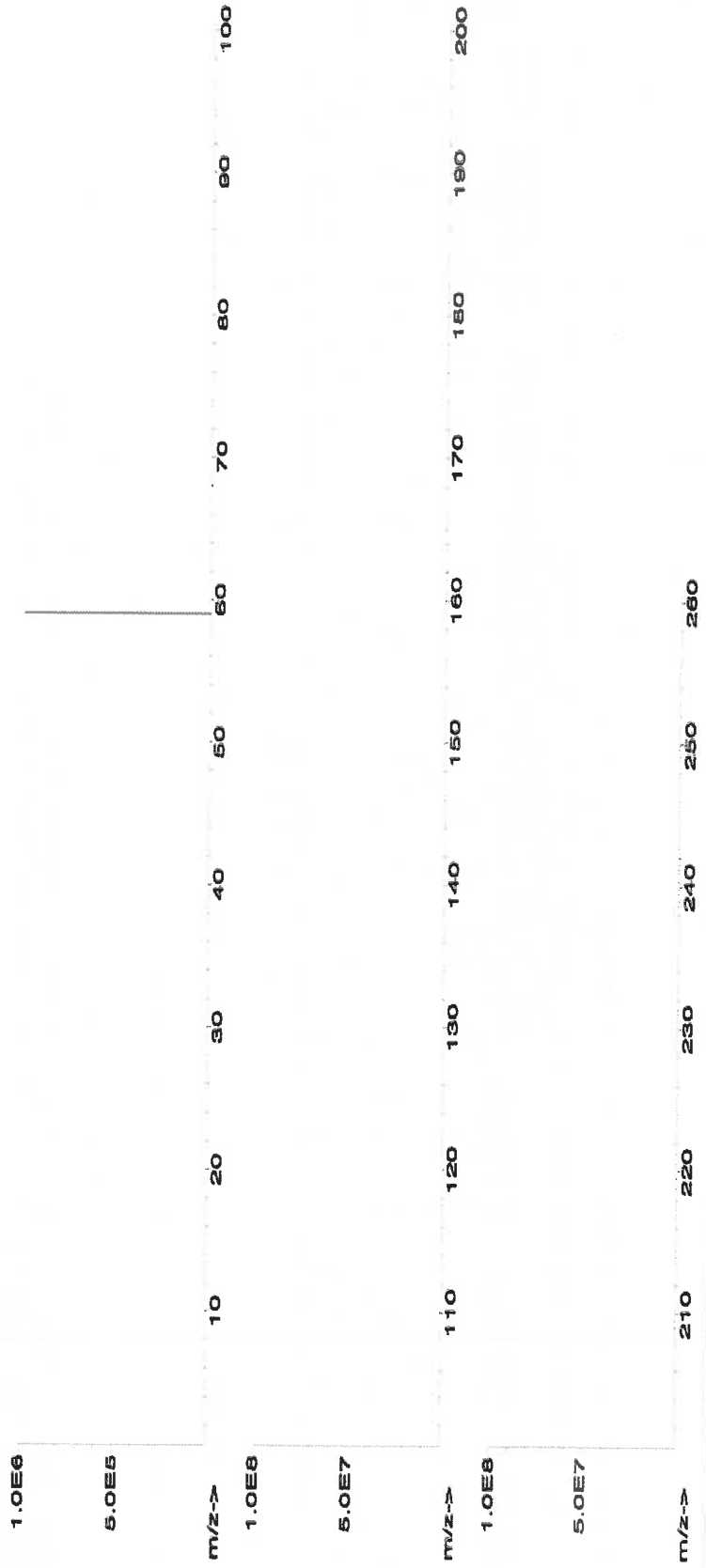
Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas

SDS Information

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

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

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





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

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

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

(T)= Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM

CERTIFIED WEIGHT REPORT:

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

Lot # 24002546
Solvent: Nitric Acid

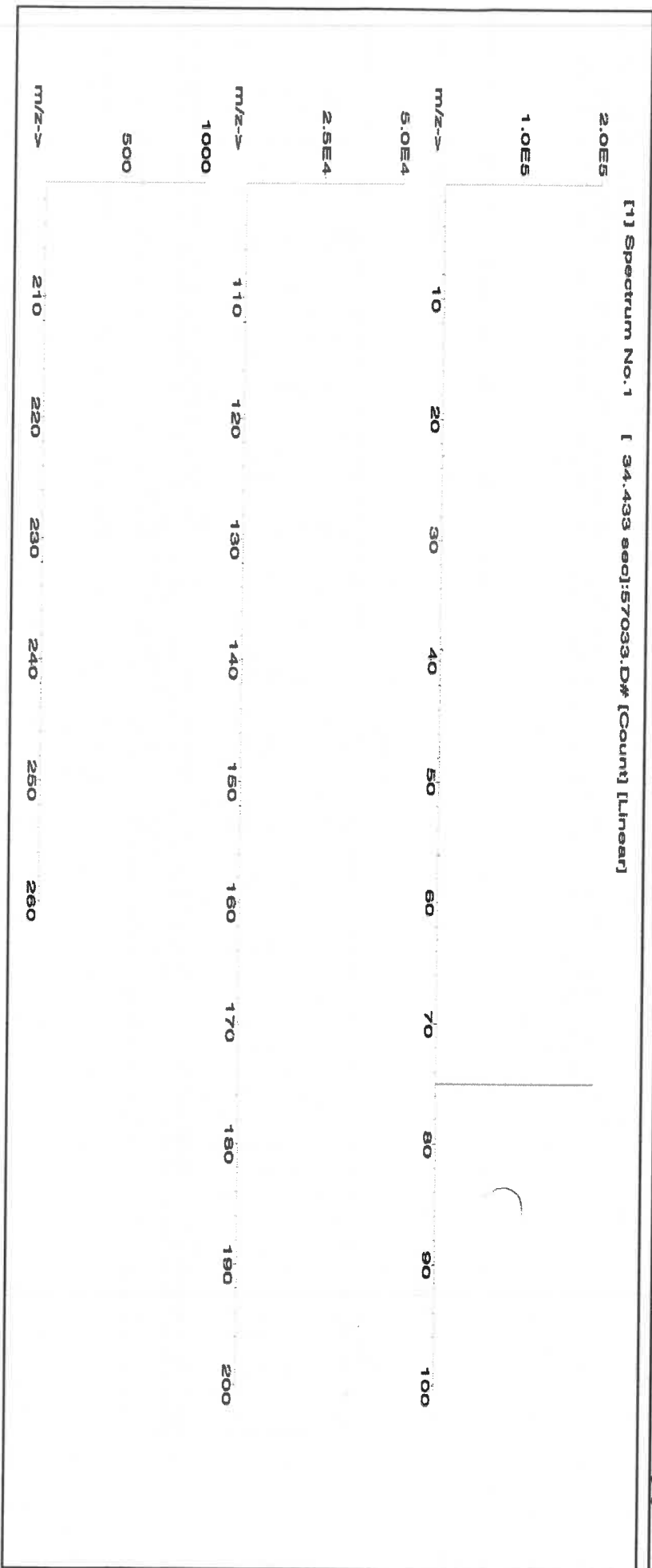
Expiration Date: 111326
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6LUTB
Volume shown below was diluted to (mL): 4000.0

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

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

Solvent: MKB0857V Ammonium hydroxide

Lot #

AI: 021009124 M5814

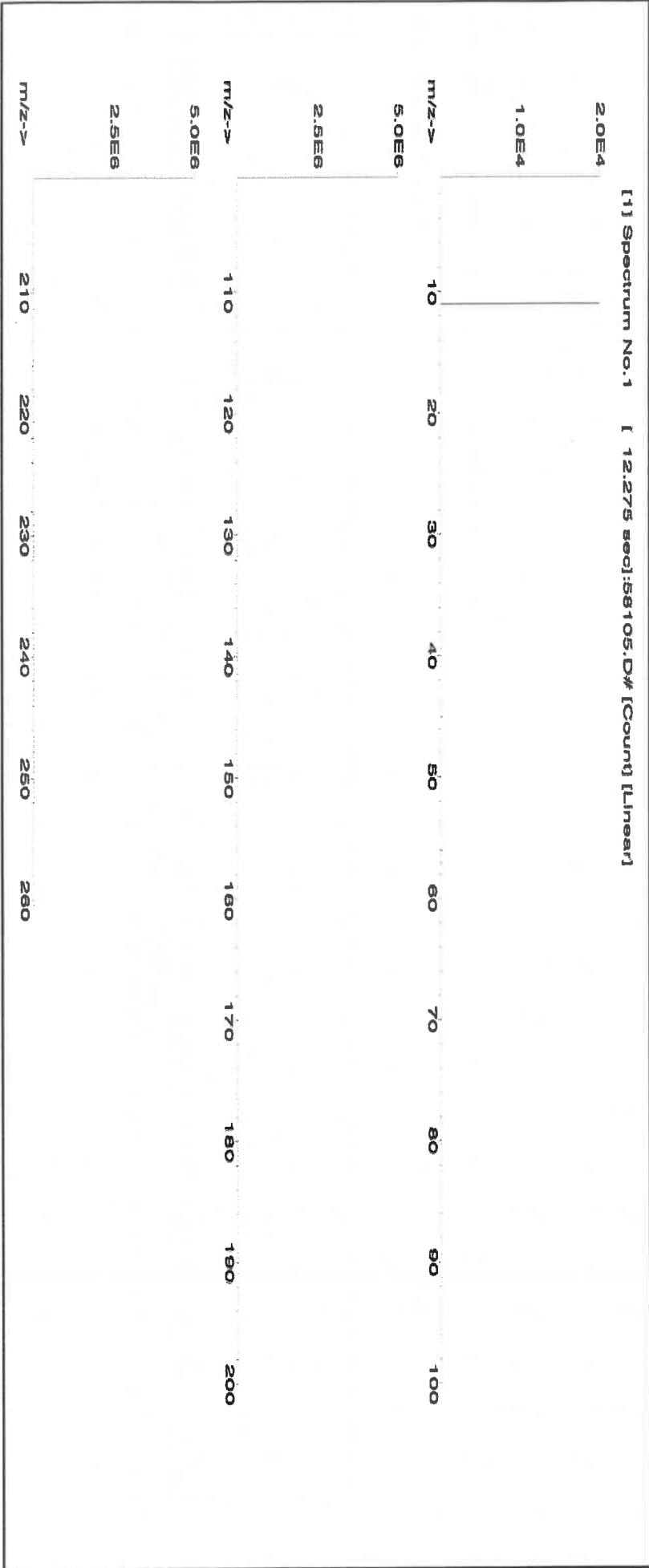
Formulated By:	Benson Chan
	071123
Reviewed By:	Pedro L. Rientas
	071123

Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 1999.48
5E-05 Balance Uncertainty
0.058 Flask Uncertainty
2.0% 40.0 Ammonium hydroxide (mL)

SDS Information

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

1. Boric acid (B) IN018 BV082018A1 1000 99.999 0.10 17.3 11.55772 11.56201 1000.4 2.0 10043-35-3 2 mg/m3 or-nat 2660 mg/kg 3107





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

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

Solvent: 24002546 Nitric Acid

Lot #

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

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

2% 40.0 (mL) Nitric Acid

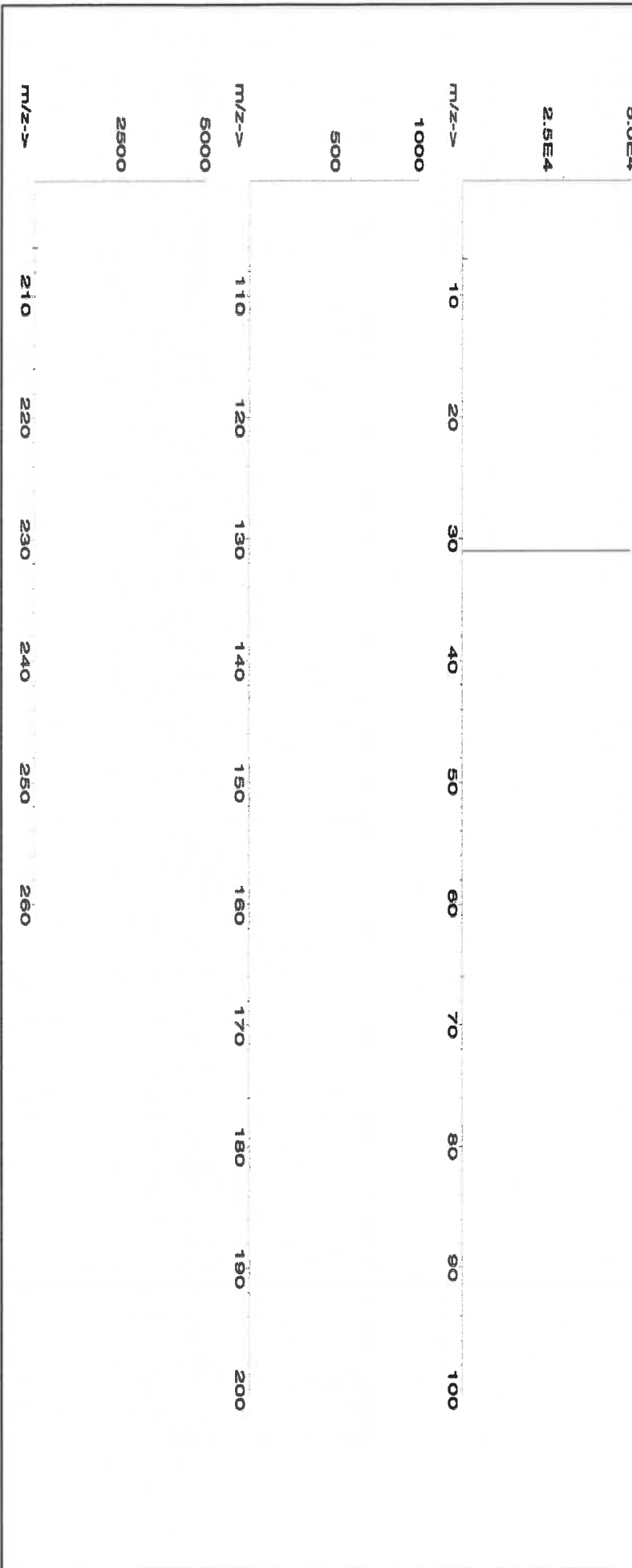
Weight shown below was diluted to (mL): 2000.02
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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 PVO62019A1 1000 99.999 0.10 27.5 7.2729 7.2730 1000.0 2.0 7722-76-1 5 mg/m3 xH-rat >2000mg/kg 3186

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

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Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

Part Number:

57034

Lot Number:

060624

Description:

Selenium (Se)

Lot #

24002546

Solvent:

Nitric Acid

2.0%

40.0 (mL)

Nitric Acid

Formulated By:

Benson Chan

060624

Expiration Date:

060627

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

2000.07

SE-05

Balance Uncertainty

0.100

Flask Uncertainty

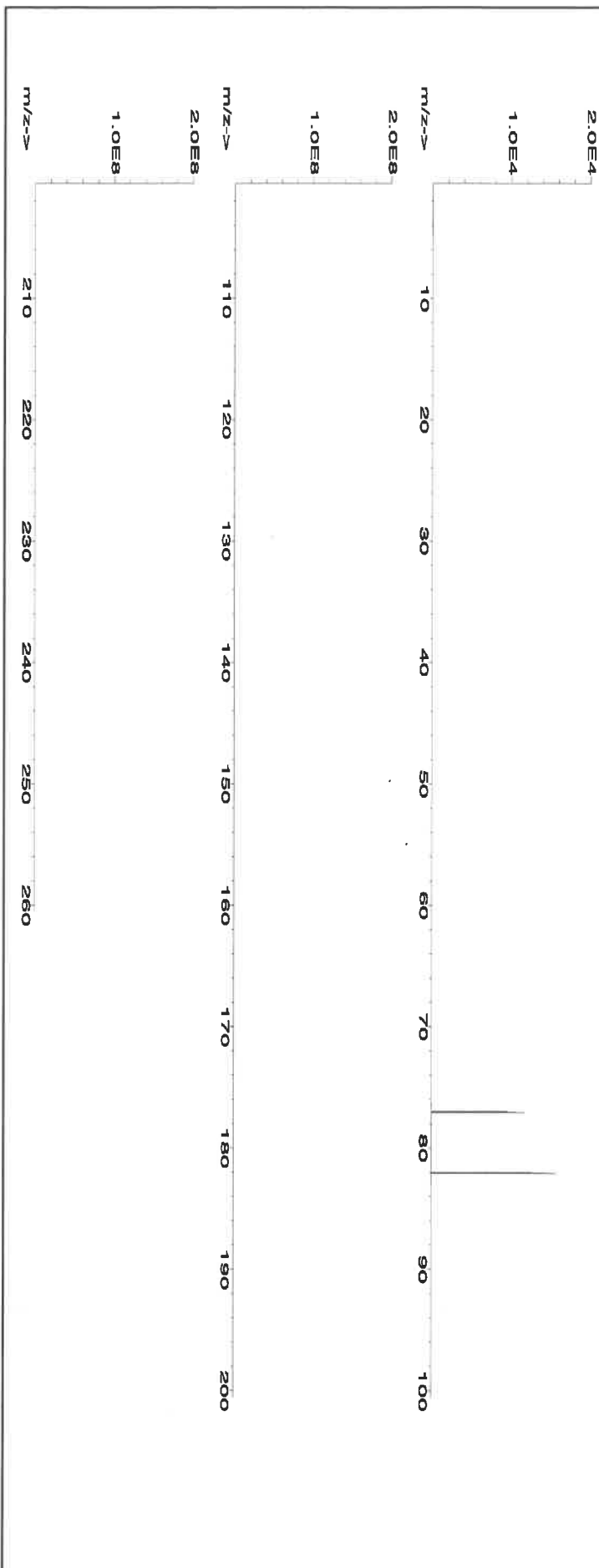
SDS Information

Compound

Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	(Solvent Safety Info. On Attached pg.)	CAS#	OSHA PEL (TWA)	LDSO	NIST SRM
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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
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[1] Spectrum No.1 [33.702 sec]:58034.D# [Count] [Linear]



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Certified Reference Material CRM



ANAB ISO 17034 Accredited
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Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

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

Lot #
Solvent: 122923 ASTM Type 1 Water

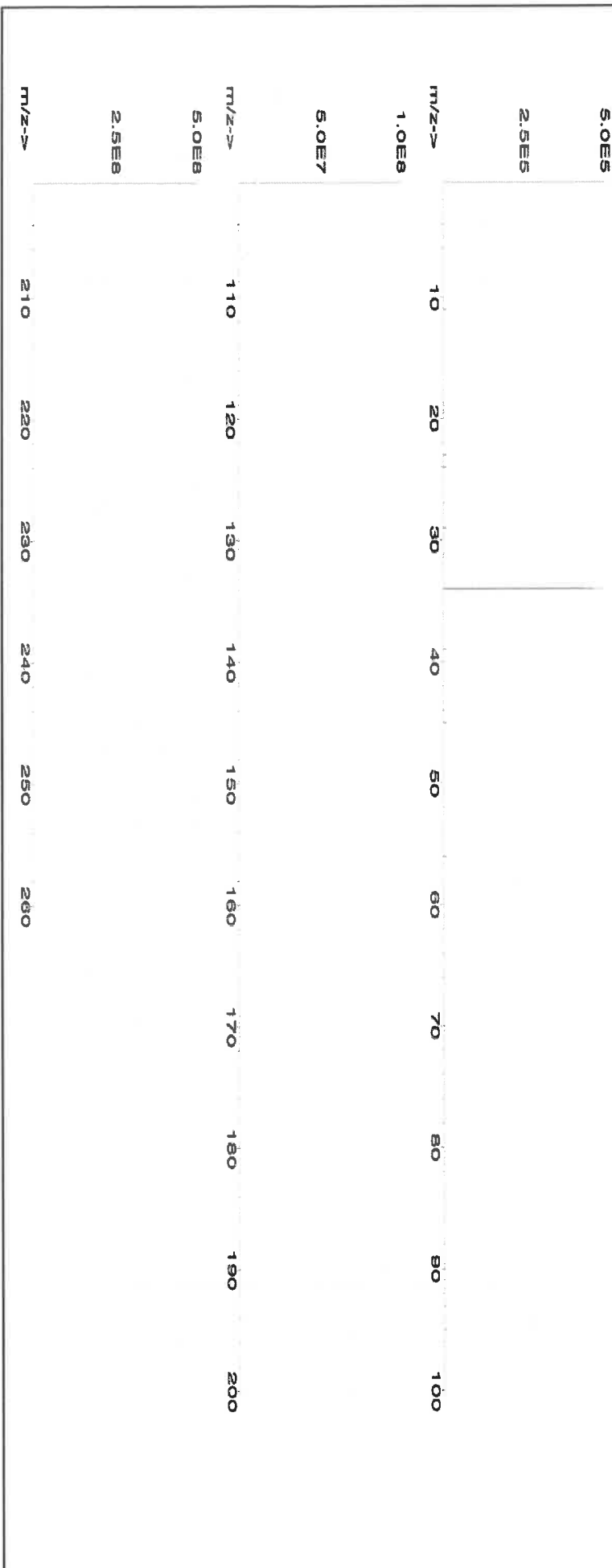
Formulated By:	Benson Chan
122923	
Reviewed By:	Pedro L. Rentas
122923	

Expiration Date: 122926
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 4000.0
5E-05 Balance Uncertainty
0.06 Flask Uncertainty

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

[1] Spectrum No. 1 [33.603 sec]:57016.D# [Count] [Linear]



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Certified Reference Material CRM
M5970 M5971 R1 710124



ANAB ISO 17034 Accredited
AR-1539 Certificate Number
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CERTIFIED WEIGHT REPORT:

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

SE-05 Balance Uncertainty
0.016 Flask Uncertainty

Lot # 24002546
Solvent: Nitric Acid

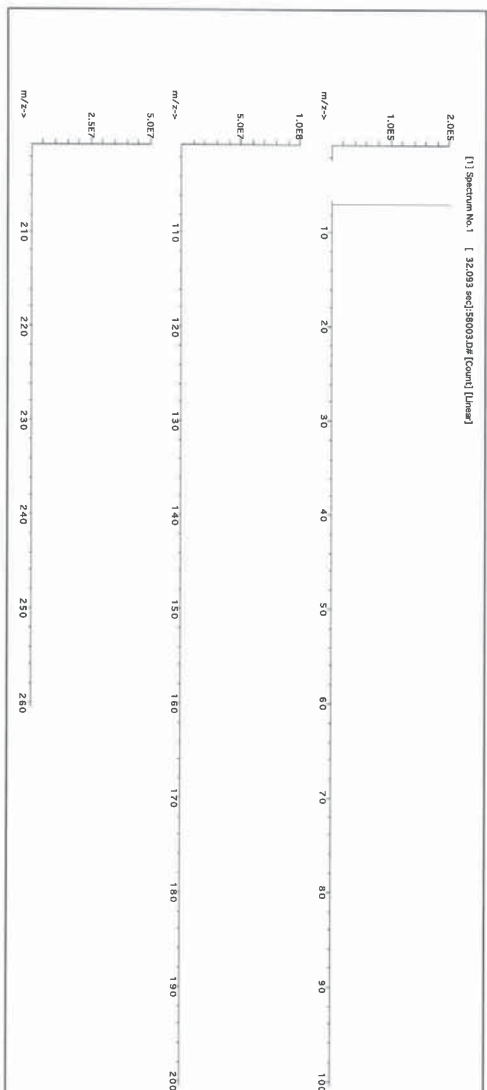
Conc. (µg/mL) 2.0%
Initial (mL) 5.0
Nitric Acid

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

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

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

[1] Spectrum No. 1 [32.093 sec; 15000.0Hz Count [Lines]



Part # 57003 Lot # 062124

1 of 2

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Certificate of Analysis



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inorganicventures.com

R: 2/22/24

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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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 5 µg/mL

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

Assay Method #1: 1002 ± 4 µg/mL

ICP Assay NIST SRM 3162a Lot Number: 130925

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

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

Characterization of CRM/RM by Two or More Methods

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

$X_{CRM/RM} = (k_p / v_{char,p})$

k_p = mean of Assay Method A with

$v_{char,p}$ = the standard uncertainty of characterization Method A

k = coverage factor = 2

$v_{char,p} = [(2/(n-1)) \sum (v_{char,i})^2]^{1/2}$ where $v_{char,i}$ are the errors from each characterization method

$v_{char,p}$ = long term stability standard uncertainty (storage)

$v_{char,p}$ = bottle to bottle homogeneity standard uncertainty

$v_{char,p}$ = transport stability standard uncertainty

Page 1 of 4

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

5.0

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

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

M Ag	<	0.000536	M Eu	<	0.000268	O Na	<	0.032670	M Se	<	0.001204	O Zn	<	0.003267
M Al	<	0.000872	O Fe	<	0.000268	Nb	<	0.043560	O Si	<	0.004735	O Zr	<	0.043560
M As	<	0.008586	M Ga	<	0.000268	M Nd	<	0.000268	M Sm	<	0.000268			
M Au	<	0.004577	M Gd	<	0.000268	O Ni	<	0.010890	M Sn	<	0.000986			
O B	<	0.008929	M Ge	<	0.002146	M Os	<	0.000269	O Sr	<	0.000986			
M Ba	<	0.002683	M Hf	<	0.002161	O P	<	0.054450	M Ta	<	0.010560			
M Be	<	0.005366	M Hg	<	0.003231	M Pb	<	0.001073	M Tb	<	0.000268			
M Bi	<	0.001609	M Ho	<	0.000268	M Pd	<	0.000268	M Th	<	0.001341			
O Ca	<	0.000676	M In	<	0.002683	M Pr	<	0.000268	M Tl	<	0.053663			
M Cd	<	0.000268	M Ir	<	0.000269	M Pt	<	0.000536	S Ti	<				
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 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 1% HNO3 / 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); K2S2O7 - no KF if silica not present); Organic Matrices (Dry ash at 450EC 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,
ICP-OES 323.452 nm	0.0054 / 0.00092 µg/mL	1	14N16O18O,
ICP-OES 334.941 nm	0.0038 / 0.00028 µg/mL	1	14N17N2, 36Ar12C,
ICP-OES 336.121 nm	0.0053 / 0.00034 µg/mL	1	48Ca, 196X=2
HF Note: This standard should not be prepared or stored in glass.			(where X = Zr, Mo, W, Mo, Co Nb, Ta, Cr, U Ce, Ar, Ni Ru))

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"

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 Kozlowski
Manager, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul Gaines

80978

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

M5985
R: 6/14/24

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution
Catalog Number: CGIN10
Lot Number: U2-IN729349
Matrix: 5% (v/v) HNO₃
Value / Analyte(s): 10 000 µg/mL ea:
Indium
Starting Material: Indium Metal
Starting Material Lot#: 2511
Starting Material Purity: 99.9995%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10022 ± 30 µg/mL
Density: 1.044 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	10021 ± 56 µg/mL ICP Assay NIST SRM 3124a Lot Number: 110516
Assay Method #2	10035 ± 25 µg/mL EDTA NIST SRM 928 Lot Number: 928
Assay Method #3	10001 ± 33 µg/mL Calculated NIST SRM Lot Number: See Sec. 4.2

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

M	Ag	<	0.000760	M	Eu	<	0.000760	O	Na	0.012771	M	Se	<	0.023000	M	Zn	<	0.006100
M	Al	0.003385	O	Fe	0.004462	M	Nb	<	0.000760	O	Si	0.024619	M	Zr	<	0.000760		
M	As	<	0.004600	M	Ga	<	0.000760	M	Nd	<	0.000760	M	Sm	<	0.000760			
M	Au	<	0.002300	M	Gd	<	0.000760	O	Ni	<	0.005100	M	Sn	<	0.000760			
O	B	0.003692	M	Ge	<	0.001600	M	Os	<	0.000760	O	Sr	<	0.000610				
M	Ba	<	0.001600	M	Hf	<	0.000760	n	P	<		M	Ta	<	0.000760			
O	Be	<	0.000130	M	Hg	<	0.003100	M	Pb	0.001400	M	Tb	<	0.000760				
M	Bi	<	0.000760	M	Ho	<	0.000760	M	Pd	<	0.001600	M	Te	<	0.000760			
O	Ca	0.004616	s	In	<			M	Pr	<	0.000760	M	Th	<	0.000760			
M	Cd	<	0.000760	M	Ir	<	0.000760	M	Pt	<	0.000760	O	Ti	<	0.001100			
M	Ce	<	0.000760	O	K	0.007078	M	Rb	<	0.000760	M	Tl	<	0.000760				
M	Co	<	0.000760	M	La	<	0.000760	M	Re	<	0.000760	M	Tm	<	0.000760			
O	Cr	<	0.001300	O	Li	<	0.000130	M	Rh	<	0.000760	M	U	<	0.000760			
M	Cs	<	0.000760	M	Lu	<	0.000760	M	Ru	<	0.000760	M	V	<	0.001600			
M	Cu	<	0.003800	O	Mg	0.000707	n	S	<		M	W	<	0.001600				
M	Dy	<	0.000760	O	Mn	0.000149	M	Sb	<	0.000760	M	Y	<	0.000760				
M	Er	<	0.000760	M	Mo	<	0.002300	M	Sc	<	0.000760	M	Yb	<	0.000760			

M - Checked by ICP-MS

O - Checked by ICP-OES

i - Spectral Interference

n - Not Checked For

s - Solution Standard Element

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale. <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.
- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.
- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

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

Atomic Weight; Valence; Coordination Number; Chemical Form In Solution - 114.82 +3 6 In(H₂O)₆+3

Chemical Compatibility -Soluble in HCl, HNO₃, and H₂SO₄. Avoid neutral and basic media. Stable with most metals and inorganic anions. The oxalate, sulfide, carbonate, hydroxide and phosphate are insoluble in water.

Stability - 2-100 ppb levels stable for months in 1% HNO₃ / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO₃ / LDPE container.

In Containing Samples (Preparation and Solution) -Metal (Best dissolved in HCl / HNO₃); Oxide (Soluble in mineral acids); Ores (Carbonate fusion in PtO followed by HCl dissolution); Organic Matrices (Sulfuric/peroxide digestion or dry ash and dissolution in dilute HCl).

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

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 115 amu	1 ppt	n/a	115Sn, 99Ru16O
ICP-OES 158.583 nm	0.05 / 0.002 µg/mL	1	
ICP-OES 230.606 nm	0.1 / 0.03 µg/mL	1	Ni, Os
ICP-OES 325.609 nm	0.2 / 0.05 µg/mL	1	Mn, Mo, Th

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 21, 2023

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

11.2 Lot Expiration Date

- February 21, 2028

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

R: 2/22/24
MS997

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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: CLPP-CAL-3
Lot Number: T2-MEB727800
Matrix: 7% (v/v) HNO₃
Value / Analyte(s):
1 000 µg/mL ea:
Arsenic, Lead,
Selenium, Thallium,
500 µg/mL ea:
Cadmium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Arsenic, As	1 000 ± 7 µg/mL	Cadmium, Cd	500.0 ± 2.2 µg/mL
Lead, Pb	1 000 ± 4 µg/mL	Selenium, Se	1 000 ± 6 µg/mL
Thallium, Tl	1 000 ± 7 µg/mL		

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

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale. <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

December 21, 2022

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

11.2 Lot Expiration Date

- **December 21, 2027**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



Certificate of Analysis

R: 08/22/24 M6058, M6059

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: CHEM-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



300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

Certificate of Analysis

M6074
M6075
M6076
M6077

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

F: 540-585-3012

info@inorganicventures.com

EXP: 9/6/2029

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: CHEM-CLP-4
Lot Number: V2-MEB746762
Matrix: 3% (v/v) HNO₃
3% (v/v) HF
Value / Analyte(s): 1 000 µg/mL ea:
Boron, Molybdenum,
Silicon, Tin,
Titanium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Boron, B	1 000 ± 5 µg/mL	Molybdenum, Mo	1 000 ± 5 µg/mL
Silicon, Si	1 000 ± 7 µg/mL	Tin, Sn	1 000 ± 5 µg/mL
Titanium, Ti	1 000 ± 6 µg/mL		

Density: 1.033 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
B	ICP Assay	3107	190605
B	Calculated		See Sec. 4.2
Mo	ICP Assay	traceable to 3134	U2-MO739068
Si	ICP Assay	Traceable to 3150	S2-SI702546
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	traceable to 3162a	T2-TI725816

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale. <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 06, 2024

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

11.2 Lot Expiration Date

- September 06, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58025
101124
Manganese (Mn)

Lot #
Solvent: Nitric Acid

24002546
2%
80.0 (mL)
Nitric Acid

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

101127
Ambient (20 °C)
1000
6UTB

Weight shown below was diluted to (mL): 4000.2 0.10 Flask Uncertainty

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

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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SDS Information

(Solvent Safety Info. On Attached pg.)
NIST

1. Manganese(II) nitrate hydrate (Mn) IN031 MNM02020A1 1000 99.999 0.10 20.8 19.2322 19.2344 1000.1 2.0 15710-66-4 5 mg/m3 or-rel >300mg/kg 3132

[1] Spectrum No.1 [34.243 sec]:57025.D# [Count] [Linear]

5.0E6													
2.5E6													
m/z->	10	20	30	40	50	60	70	80	90	100			
1.0E6													
5.0E7													
m/z->	110	120	130	140	150	160	170	180	190	200			
1.0E6													
5.0E7													
m/z->	210	220	230	240	250	260							



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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

Certificate of Analysis

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Christiansburg, VA 24073 USA
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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:

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

M	Ag	<	0.000310	M	Eu	<	0.000310	O	Na	0.001656	M	Se	<	0.022000	M	Zn	<	0.002500	
M	Al		0.010787	M	Fe	<	0.027000	M	Nb	<	0.001300	s	Si	<		O	Zr	<	0.001900
M	As	<	0.001900	M	Ga	<	0.001300	M	Nd	<	0.000310	M	Sm	<	0.000310				
M	Au	<	0.000910	M	Gd	<	0.000310	M	Ni	<	0.005500	M	Sn		0.000096				
M	B		0.016180	M	Ge	<	0.001900	M	Os	<	0.000610	O	Sr		0.000092				
M	Ba		0.000096	M	Hf		0.000423	i	P	<		M	Ta		0.002542				
O	Be	<	0.000570	M	Hg	<	0.000610	M	Pb	<	0.000310	M	Tb	<	0.000310				
M	Bi	<	0.000310	M	Ho	<	0.000610	M	Pd	<	0.000610	M	Te	<	0.000910				
O	Ca		0.011557	M	In	<	0.000310	M	Pr	<	0.000310	M	Th	<	0.001900				
M	Cd	<	0.000310	M	Ir	<	0.000310	M	Pt	<	0.000310	M	Ti		0.001078				
M	Ce	<	0.000610	O	K		0.000577	M	Rb	<	0.009100	M	Tl	<	0.000310				
M	Co	<	0.001600	M	La	<	0.000310	M	Re	<	0.000310	M	Tm	<	0.000310				
M	Cr	<	0.010000	O	Li	<	0.000460	M	Rh	<	0.000310	M	U	<	0.000310				
M	Cs	<	0.000310	M	Lu	<	0.000310	M	Ru	<	0.000310	O	V	<	0.001300				
M	Cu	<	0.002500	O	Mg		0.001348	O	S	<	0.570000	M	W	<	0.001900				
M	Dy	<	0.000310	M	Mn	<	0.002500	M	Sb	<	0.000310	M	Y	<	0.000310				
M	Er	<	0.000310	M	Mo	<	0.000310	O	Sc	<	0.000590	M	Yb	<	0.000310				

M - Checked by ICP-MS

O - Checked by ICP-OES

i - Spectral Interference

n - Not Checked For

s - Solution Standard Element

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.
- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.
- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

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

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 28.09 +4 6 Si(OH)x(F)y2-

Chemical Compatibility -Soluble in HCl, HF, H3PO4 H2SO4 and HNO3 as the Si(OH)x(F)y2-. Avoid neutral to basic media. Unstable at ppm levels with metals that would pull F- away (i.e. Do not mix with Alkaline or Rare Earths, or high levels of transition elements unless they are fluorinated. Stable with most inorganic anions with a tendency to hydrolyze forming silicic acid (silicic acid is soluble up to ∼100 ppm in water) in all dilute acids except HF.

Stability - 2-100 ppb levels - stability unknown - (alone or mixed with all other metals) as the Si(OH)x(F)y2-. 1-10,000 ppm single element solutions as the Si(OH)x(F)y2- chemically stable for years in 2-5 % HNO3 / trace HF in a LDPE container.

Si Containing Samples (Preparation and Solution) -Metal (Soluble in 1:1:1 H2O / HF / HNO3); Oxide - SiO2, amorphous (dissolve by heating in 1:1:1 H2O / HF / HNO3); Oxide - quartz (fuse in Pt0 with Na2CO3); Geological Samples(fuse in Pt0with Na2CO3 followed by HCl solution of the fuseate); Organic Matrices containing silicates and non volatile silicon compounds (dry ash at 4500C in Pt0 and dissolve by gently warming with 1:1:1 H2O / HF / H2SO4 or fuse / ash with Na2CO3 and dissolve fuseate with HCl / H2O); Silicone Oils - dimethyl silicones depolymerize to form volatile monomer units when heated (Measure directly in alcoholic KOH / xylene mixture where sample is treated first with the KOH at 60-1000C to "unzip" the Si- O-Si polymeric structure or digest with conc. H2SO4 / H2O2 followed by cooling and dissolution of the dehydrated silica with HF.) Note that the direct analysis of silicone oils in an organic solvent will result in false high results due to high vapor pressure of volatile monomer units like hexamethylcyclotrisiloxane. The KOH forms the K2+Si(CH3)2O= salt which is not volatile at room temperature.

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

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 28 amu	4000 - 8000 ppt	N/A	N2, 12C16O
ICP-OES 212.412 nm	0.02/0.01 µg/mL	1	Hf, Os, Mo, Ta
ICP-OES 251.611 nm	0.012/0.003 µg/mL	1	Ta, U, Zn, Th
ICP-OES 288.158 nm	0.03/0.004 µg/mL	1	Ta, Ce, Cr, Cd, Th

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 10, 2024

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

11.2 Lot Expiration Date

- July 10, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Muzzammil Khan
Stock Laboratory Supervisor



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58126
011025
Iron (Fe)
M6140

Lot #
Solvent: 24012496 Nitric Acid

Expiration Date:

011028

2%

40.0 (mL)
Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

10000

NIST Test Number:

6U7B

5E-05 Balance Uncertainty

Weight shown below was diluted to (mL):

2000.07

0.100 Flask Uncertainty

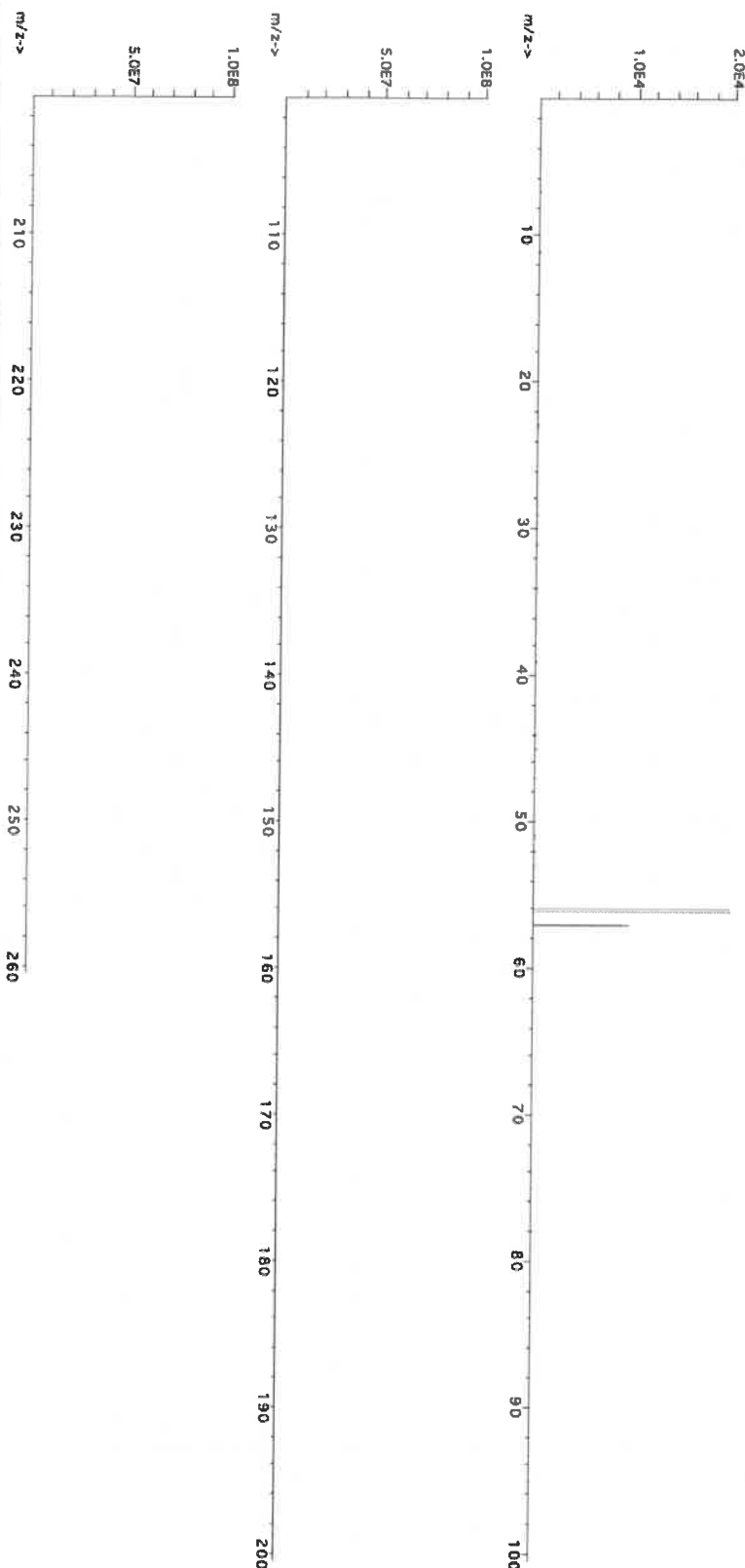
Formulated By:	Benson Chan	011025
Reviewed By:	Pedro L. Renteria	011025

Compound

Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Expanded	SDS Information	NIST
Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Weight (g)	Conc. (µg/mL)	± (µg/mL)	(Solvent Safety Info. On Attached pg.)	SFM

1. Iron(III) nitrate nonahydrate (Fe) IN028 FED082023A1 10000 99.999 0.10 13.0 153.8534 ##### 10000.2 20.0 7782-61-8 1 mg/m³ or-rel 3250mg/kg 3126A

[1] Spectrum No.1 [30.763 sec]58126.D# [Count] [Linear]





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<0.02	Sc	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	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	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:

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 #
24002546
Nitric Acid

<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	Pedro L. Renteria
	103024

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

103027
Ambient (20 °C)
10000

M6141
M6142
M6143

2%
80.0 (mL)
Nitric Acid

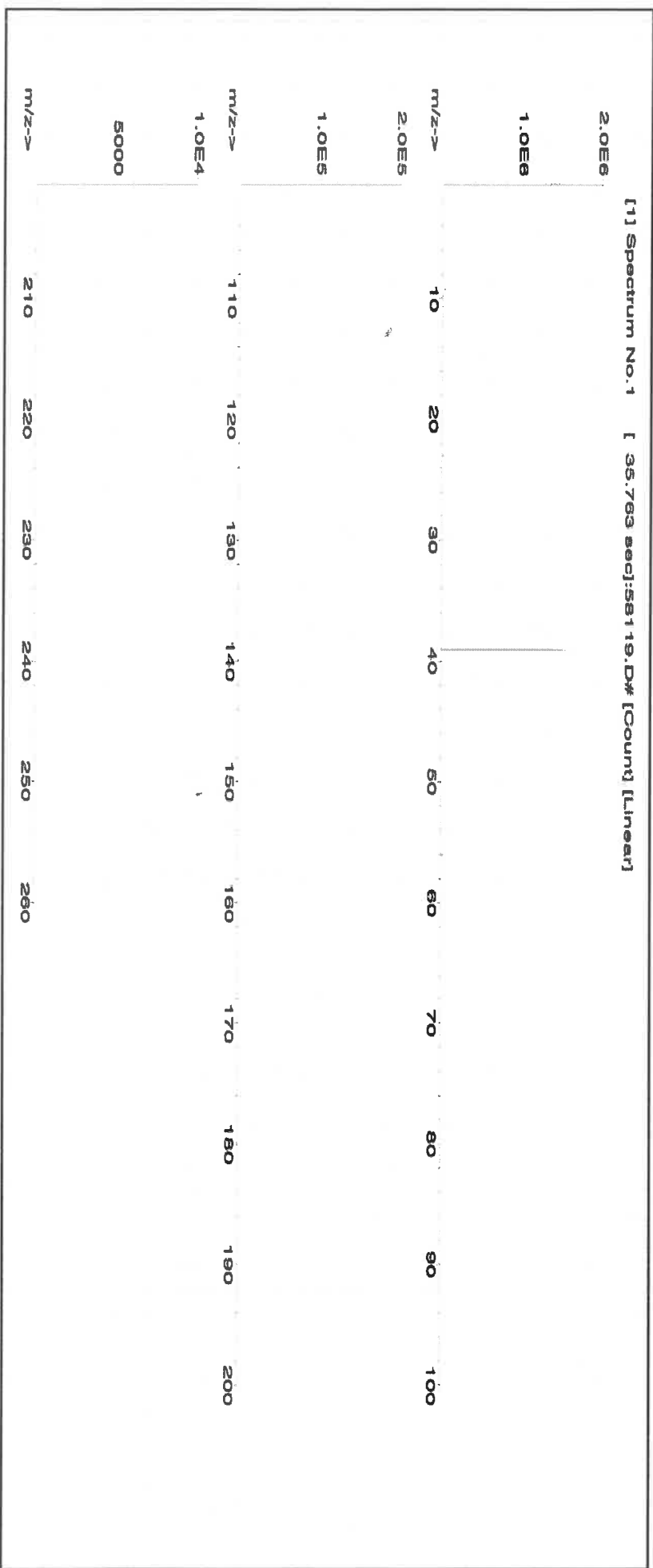
Weight shown below was diluted to (mL):

4000.1
0.15
Flask Uncertainty

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

1. Potassium nitrate (K) IN034 KD062022A1 10000 99.999 0.10 37.7 106.1040 ##### 10001.1 20.0 7757-79-1 5 mg/m3 orl-rat 3750 mg/kg 3141a

[1] Spectrum No. 1 [35.763 sec]:58119.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

Part Number: **58111** Lot # **R-1113125**
Lot Number: **072424** Solvent: **24002546 Nitric Acid**
Description: **Sodium (Na)**

Expiration Date: **072427** 2% 80.0 Nitric Acid (mL)

Recommended Storage: **Ambient (20 °C)**

Nominal Concentration (µg/mL): **10000**

NIST Test Number: **6UTB**

Weight shown below was diluted to (mL): **4000.2** 5E-05 Balance Uncertainty
0.10 Flask Uncertainty

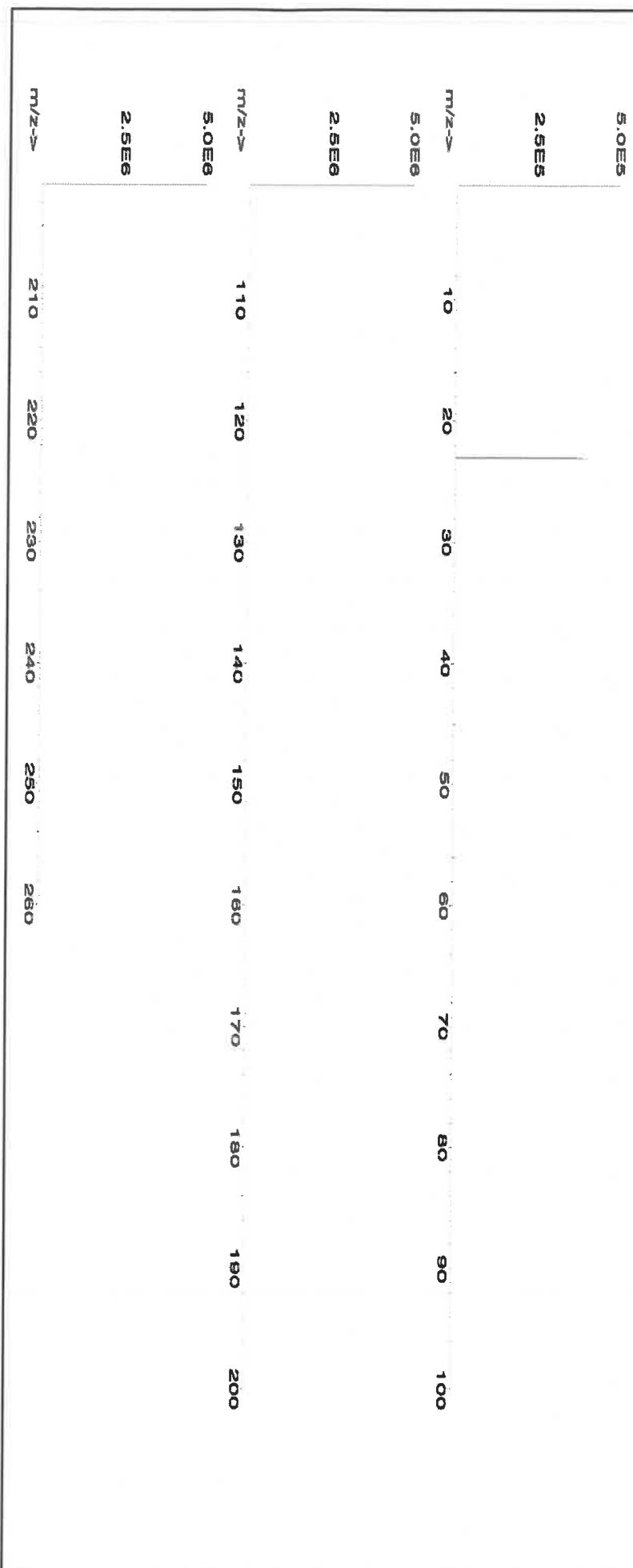
Formulated By:	Benson Chan	072424
Reviewed By:	Pedro L. Renteria	072424

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

Part Number: **58030** Lot # **24012496**
Lot Number: **121724** Nitric Acid
Description: **Zinc (Zn)**

Expiration Date: **121727** 2% 40.0 (mL) Nitric Acid

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

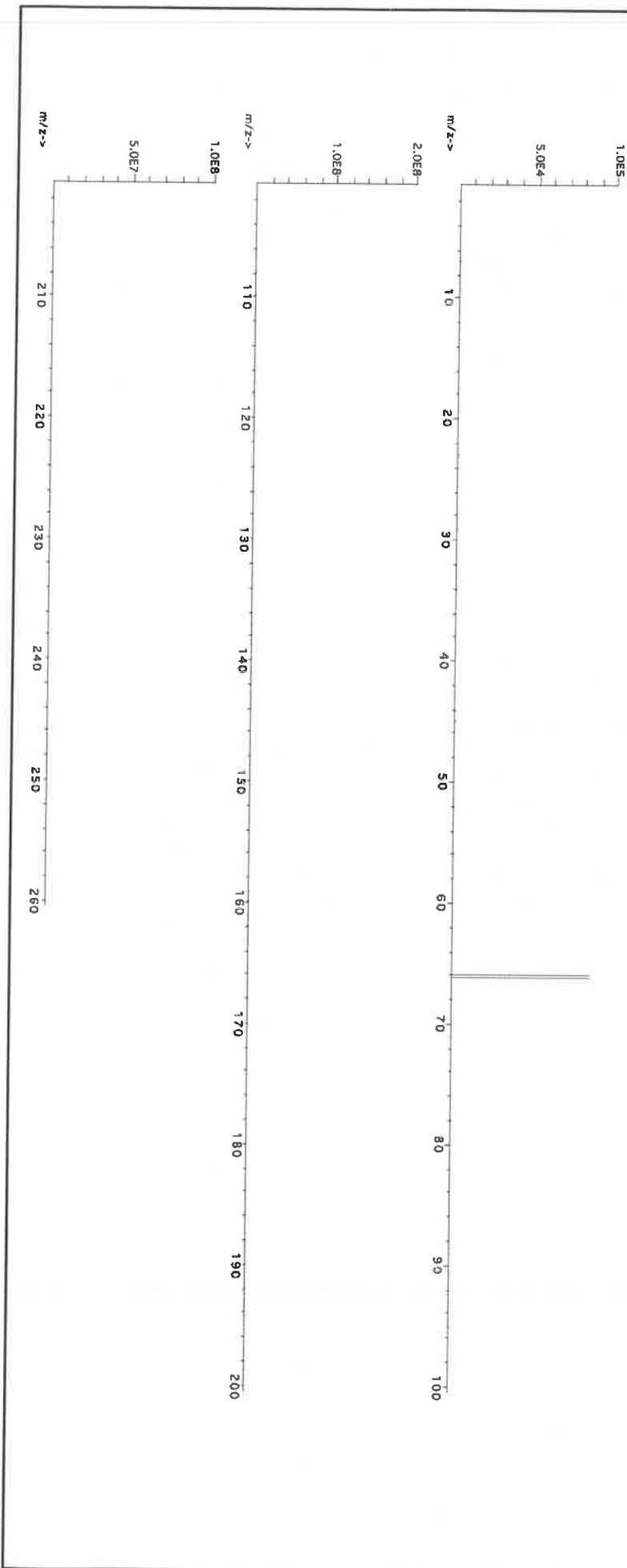
<i>Aleah O'Brady</i>	
Formulated By:	Aleah O'Brady
Reviewed By:	<i>Pedro L. Rentias</i>
	Pedro L. Rentias
	121724

Compound

RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Zinc nitrate hexahydrate (Zn) IN016 ZNE032021A1 1000 99.999 0.10 24.3 8.2308 8.2311 1000.0 2.0 10196-18-6 1 mg/m3 or-rat 1190mg/kg 3168

[1] Spectrum No.1 [31.103 sec; 58130.D# [Count] [Lines]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

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 >>>

Test	Specification	Result
Trace Impurities – Lead (Pb)	≤ 1.0 ppb	< 0.5 ppb
Trace Impurities – Lithium (Li)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Magnesium (Mg)	≤ 10.0 ppb	2.9 ppb
Trace Impurities – Manganese (Mn)	≤ 1.0 ppb	< 0.4 ppb
Trace Impurities – Mercury (Hg)	≤ 0.5 ppb	0.1 ppb
Trace Impurities – Molybdenum (Mo)	≤ 10.0 ppb	< 3.0 ppb
Trace Impurities – Nickel (Ni)	≤ 4.0 ppb	< 0.3 ppb
Trace Impurities – Niobium (Nb)	≤ 1.0 ppb	0.8 ppb
Trace Impurities – Potassium (K)	≤ 9.0 ppb	< 2.0 ppb
Trace Impurities – Selenium (Se), For Information Only		< 1.0 ppb
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	< 10.0 ppb
Trace Impurities – Silver (Ag)	≤ 1.0 ppb	0.5 ppb
Trace Impurities – Sodium (Na)	≤ 100.0 ppb	2.3 ppb
Trace Impurities – Strontium (Sr)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Tantalum (Ta)	≤ 1.0 ppb	1.6 ppb
Trace Impurities – Thallium (Tl)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Tin (Sn)	≤ 5.0 ppb	4.0 ppb
Trace Impurities – Titanium (Ti)	≤ 1.0 ppb	1.5 ppb
Trace Impurities – Vanadium (V)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Zinc (Zn)	≤ 5.0 ppb	0.8 ppb
Trace Impurities – Zirconium (Zr)	≤ 1.0 ppb	0.3 ppb

>>> Continued on page 3 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA–ANALYZED® Reagent
For Trace Metal Analysis

 **avantor**™

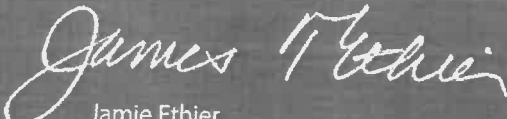


Material No.: 9530-33
Batch No.: 22G2862015

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

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


Jamie Ethier
Vice President Global Quality

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

avantorsTM



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

Test	Specification	Result
Trace Impurities - Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities - Potassium (K)	≤ 50 ppb	16 ppb
Trace Impurities - Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities - Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities - Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities - Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities - Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities - Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count - 0.5 µm and greater	≤ 60 par/ml	10 par/ml
Particle Count - 1.0 µm and greater	≤ 10 par/ml	3 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

 **avantor™**



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

Test	Specification	Result
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For Microelectronic Use

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



Jamie Croak
Director Quality Operations, Bioscience Division

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. 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

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 F: 540-585-3012
 info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
 Catalog Number: 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>

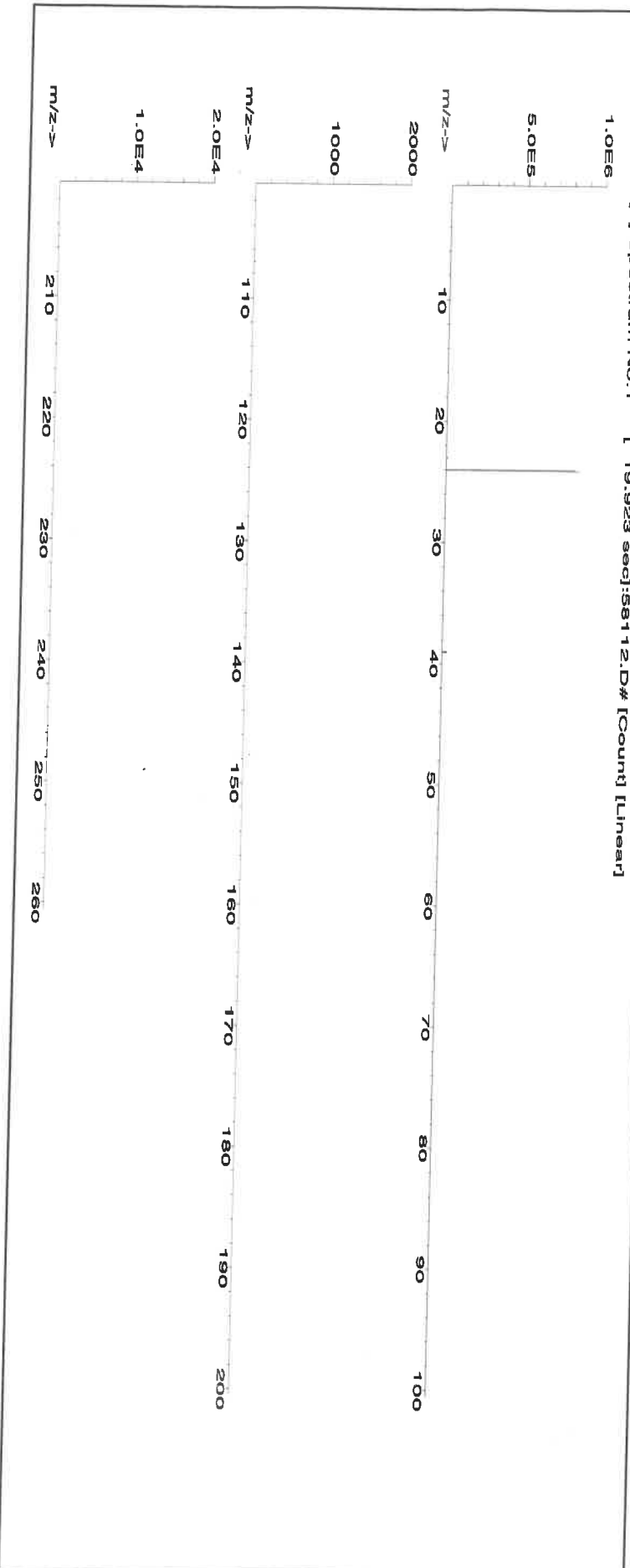
CERTIFIED WEIGHT REPORT:

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 ($\mu\text{g/mL}$)

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

Physical Characterization:

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

Certified by:

John P. ...

- * 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).

M6174
R → S1/S124

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution	
Catalog Number:	CLPP-CAL-1	
Lot Number:	V2-MEB742428	
Matrix:	5% (v/v) HNO ₃	
Value / Analyte(s):	5 000 µg/mL ea:	
	Calcium,	Potassium,
	Magnesium,	Sodium,
	2 000 µg/mL ea:	
	Aluminum,	Barium,
	1 000 µg/mL ea:	
	Iron,	
	500 µg/mL ea:	
	Nickel,	Vanadium,
	Zinc,	Cobalt,
	Manganese,	
	250 µg/mL ea:	
	Silver,	Copper,
	200 µg/mL ea:	
	Chromium,	
	50 µg/mL ea:	
	Beryllium	

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	2 000 ± 7 µg/mL	Barium, Ba	2 000 ± 9 µg/mL
Beryllium, Be	50.03 ± 0.30 µg/mL	Calcium, Ca	5 000 ± 16 µg/mL
Chromium, Cr	200.0 ± 1.1 µg/mL	Cobalt, Co	500.0 ± 2.3 µg/mL
Copper, Cu	250.0 ± 1.1 µg/mL	Iron, Fe	1 000 ± 4 µg/mL
Magnesium, Mg	5 000 ± 22 µg/mL	Manganese, Mn	499.9 ± 2.2 µg/mL
Nickel, Ni	500.1 ± 2.3 µg/mL	Potassium, K	5 000 ± 22 µg/mL
Silver, Ag	250.0 ± 1.1 µg/mL	Sodium, Na	5 000 ± 22 µg/mL
Vanadium, V	500.0 ± 2.2 µg/mL	Zinc, Zn	500.0 ± 2.2 µg/mL

Density: 1.117 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	120618
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	200413
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
V	ICP Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures [Terms and Conditions of Sale](https://www.inorganicventures.com/terms-and-conditions-sale). <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Note: This solution contains Silver (Ag), please refer to our Sample Preparation Guide for more information (<https://www.inorganicventures.com/sample-preparation-guide/samples-containing-silver>)

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 22, 2024

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

11.2 Lot Expiration Date

- **March 22, 2029**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





CERTIFIED WEIGHT REPORT:

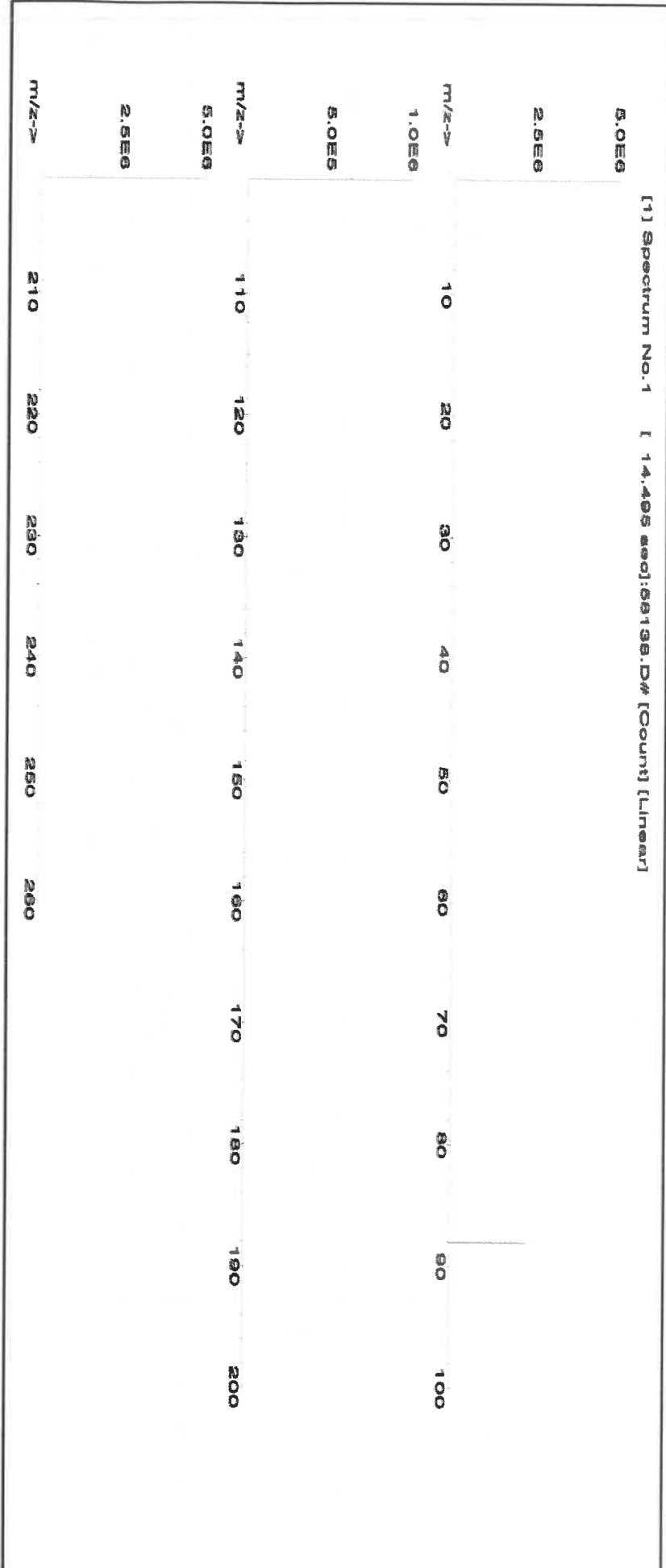
Part Number: 57038 **Lot #** 24002546 **Solvent:** Nitric Acid
Lot Number: 092724
Description: Strontium (Sr)
Expiration Date: 092727
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 8UTB
Weight shown below was diluted to (mL): 2000.07
5E-05 Balance Uncertainty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

R-5816125
M 6/76

Formulated By:	Benson Chan	092724
Reviewed By:	Pedro L. Rentas	092724

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

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	Tim	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57042
080525
Molybdenum (Mo)

Solvent

Ammonium hydroxide
ASTM Type 1 Water

Expiration Date:

080528

Recommended Storage:

Ambient (15 - 30 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

1999.41

5E-05

Balance Uncertainty

0.058

Fork Uncertainty

R → 8/6/25
M6177

0.5%

10.0

Ammonium hydroxide

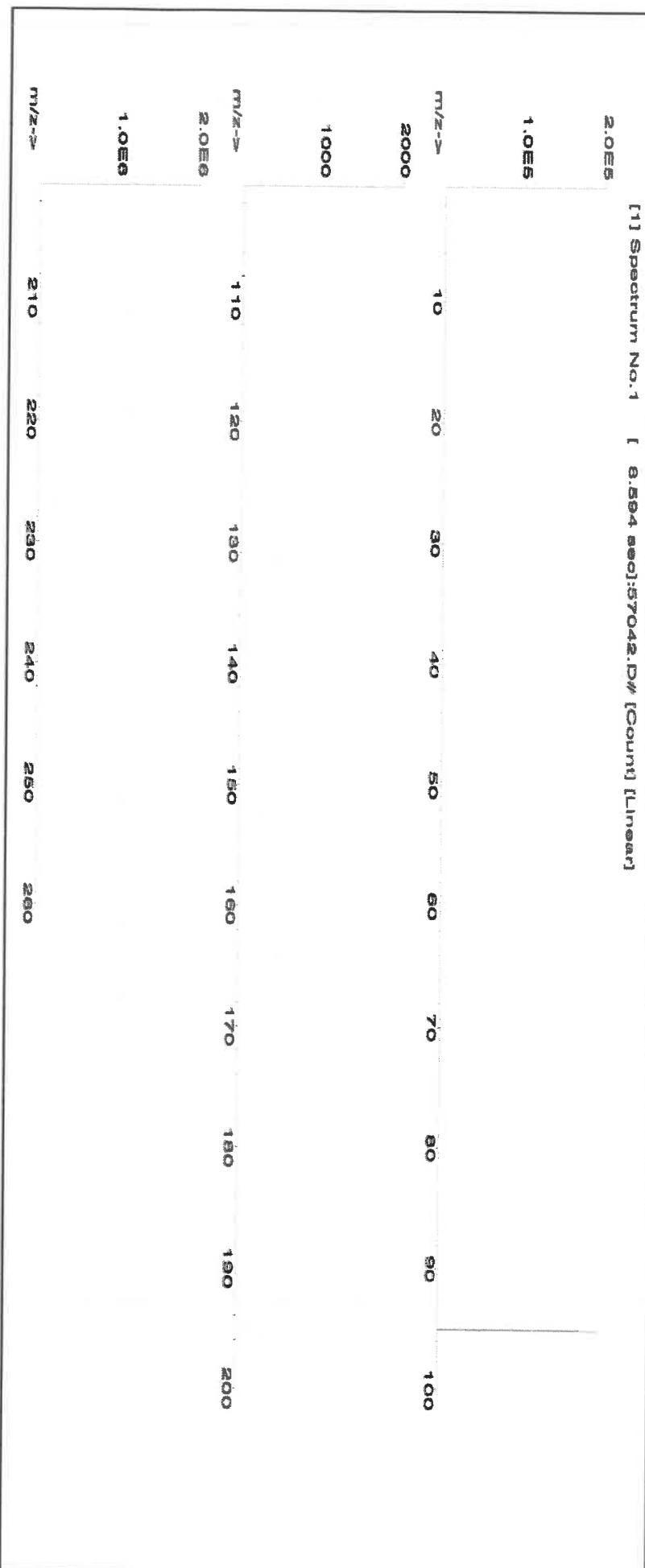
Formulated By:	Benson Chan	080525
Reviewed By:	Pedro L. Rentes	080525

Compound

Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Ammonium molybdate (Mo) 58142 112322 0.1000 200.0 0.084 1000 10001.4 1000.5 2.2 13106-76-8 5 mg(Mo)/mL 0.1-0.3 333 mg/kg 3134

[1] Spectrum No. 1 [8.594 sec]:57042.D# [Count] [Linear]





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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware, and the highest purity raw materials are used in the preparation of all standards.
- * All standard containers are meticulously cleaned prior to use.
- * Standards are prepared gravimetrically using balances that are calibrated by an ISO17025 certified organization with weights traceable through NIST to the SI kilogram (see above).
- * Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- * All standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).
- Rev 1.0, 2/25/2025



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:

6UTB

Weight shown below was diluted to (mL):

2000.07

5E-05 Balance Uncertainty
0.10 Flask Uncertainty

Solvent: 24014457 Nitric Acid
2% 40.0 (mL)

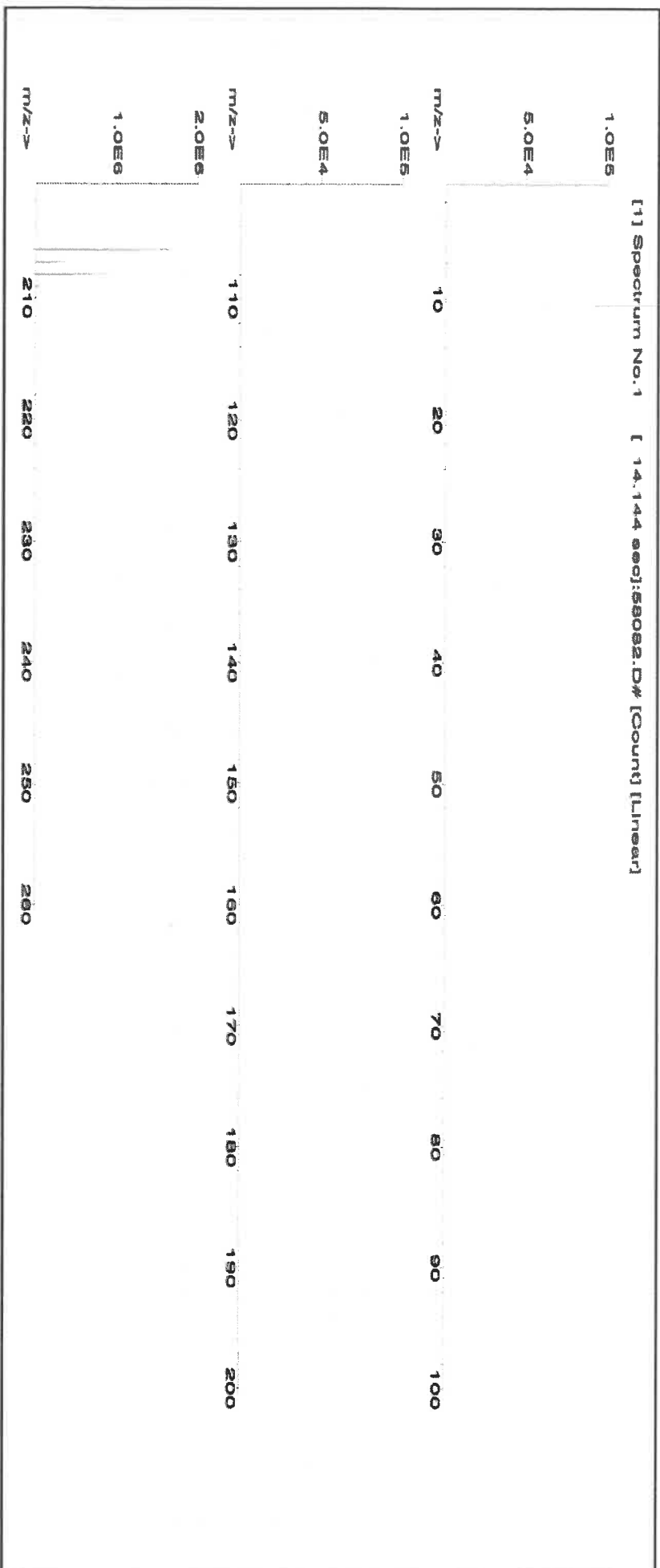
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	<i>Pedro L. Renteria</i>
	Pedro L. Renteria
	031525

SDS Information

Compound	Lot	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. Lead(II) nitrate (Pb) IN029 PBD122016A1 1000 99.999 0.10 62.5 3.20015 3.20067 1000.2 2.0 10099-74-8 0.05 mg/m3 Intrins-ral 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	T	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).

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

M6179
R → 612/24

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution
Catalog Number: CGY10
Lot Number: V2-Y740548
Matrix: 2% (v/v) HNO₃
Value / Analyte(s): 10 000 µg/mL ea:
Yttrium
Starting Material: Yttrium Oxide
Starting Material Lot#: 2661 and 06230520YL
Starting Material Purity: 99.9984%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10000 ± 30 µg/mL
Density: 1.032 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	10011 ± 25 µg/mL EDTA NIST SRM 928 Lot Number: 928
Assay Method #2	9997 ± 50 µg/mL ICP Assay NIST SRM 3167a Lot Number: 190730
Assay Method #3	9984 ± 31 µg/mL Calculated NIST SRM Lot Number: See Sec. 4.2

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

M	Ag	<	0.004600	M	Eu	0.009037	M	Na	0.086360	M	Se	<	0.005200	M	Zn	0.030125	
M	Al		0.014862	O	Fe	0.002410	M	Nb	<	0.000570	O	Si	0.024100	O	Zr	<	0.002600
M	As	<	0.003500	M	Ga	<	0.000570	M	Nd	0.000923	M	Sm	0.000461				
M	Au	<	0.001700	M	Gd	<	0.003500	M	Ni	<	0.005700	M	Sn	<	0.002300		
O	B		0.002209	M	Ge	<	0.005200	M	Os	<	0.001200	M	Sr	<	0.004600		
O	Ba	<	0.002500	M	Hf	<	0.000570	n	P	<		M	Ta	<	0.000570		
O	Be	<	0.001400	M	Hg	<	0.000570	M	Pb	0.005020	M	Tb	0.001044				
M	Bi	<	0.003500	M	Ho	0.009037	M	Pd	<	0.005100	M	Te	<	0.002300			
O	Ca		0.009841	M	In	<	0.002300	M	Pr	<	0.002300	M	Th	<	0.000570		
M	Cd	<	0.000570	M	Ir	<	0.000570	M	Pt	<	0.000570	M	Ti	<	0.003500		
M	Ce	<	0.002300	O	K	0.018677	M	Rb	<	0.000570	M	Tl	<	0.000570			
M	Co	<	0.000570	M	La	0.000461	M	Re	<	0.000570	M	Tm	<	0.003500			
M	Cr	<	0.004000	O	Li	<	0.009300	M	Rh	<	0.008000	M	U	<	0.000570		
M	Cs	<	0.000570	M	Lu	0.000582	M	Ru	<	0.000570	M	V	0.001265				
M	Cu		0.002610	O	Mg	0.001486	n	S	<		M	W	<	0.002300			
M	Dy		0.003815	M	Mn	0.000582	M	Sb	0.005422	s	Y	<					
M	Er		0.003615	M	Mo	<	0.005700	M	Sc	<	0.001200	M	Yb	0.001827			

M - Checked by ICP-MS

O - Checked by ICP-OES

i - Spectral Interference

n - Not Checked For

s - Solution Standard Element

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures [Terms and Conditions of Sale](https://www.inorganicventures.com/terms-and-conditions-sale). <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.
- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.
- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

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

Atomic Weight; Valence; Coordination Number; Chemical Form In Solution - 88.91 +3 6 Y(OH)(H₂O)_{x+2}

Chemical Compatibility -Soluble in HCl, H₂SO₄ and HNO₃. Avoid HF, H₃PO₄ and neutral to basic media. Stable with most metals and inorganic anions forming an insoluble carbonate, oxide, oxalate, and fluoride. Avoid mixing with elements / solutions containing moderate amounts of fluoride.

Stability - 2-100 ppb levels stable for months in 1% HNO₃ / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO₃ / LDPE container.

Y Containing Samples (Preparation and Solution) - Metal (Soluble in acids); Oxide (Dissolve by heating in H₂O / HNO₃); Ores (Carbonate fusion in PtO followed by HCl dissolution); Organic Matrices (Dry ash and dissolve in 1:1 H₂O / HCl or HNO₃).

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

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 89 amu	0.8 ppt	N/A	<u>73Ge16O</u> , <u>178Hf+2</u>
ICP-OES 360.073 nm	0.005 / 0.000036 µg/mL	1	Ce, Th
ICP-OES 371.030 nm	0.004 / 0.00007 µg/mL	1	Ce
ICP-OES 377.433 nm	0.005 / 0.0009 µg/mL	1	Ta, Th

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 20, 2024

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

11.2 Lot Expiration Date

- February 20, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Muzzammil Khan
Stock Laboratory Supervisor



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





Instructions for QATS Reference Material: ICP-AES ICS

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

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

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

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



M6182

(A) **SAMPLE DESCRIPTION**

Enclosed is a set of one (1) or more bottles of Aqueous Reference Material, each composed of metals at various concentrations and prepared with nitrate salts and oxy-acids of the respective elements in a 5% nitric acid matrix. **For the reference material source in reporting ICSA and ICSAB mixture use "USEPA". For the reference material lot number for the ICSA use "ICSA-1211" and for the ICSAB mixture use "ICSA-1211+ICSB-0710".**

CAUTION: The bottle(s) should be protected from light during storage to ensure the stability of silver which is contained in the ICSB solution. The bottle(s) should be stored at room temperature. **Do not allow the solution(s) to freeze.**

(B) **BREAKAGE OR MISSING ITEMS**

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) **ANALYSIS OF SAMPLES**

The interference check sample set is to be used to verify inter-element and background correction factors of inductively-coupled plasma (ICP) spectrometers. This reference material set consists of two (2) concentrated solutions. The ICSA solution contains the four (4) interferent elements: Al, Ca, Fe, and Mg. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be,





Instructions for QATS Reference Material: ICP-AES ICS

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSAB solution by ICP-AES.

(D) "CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.



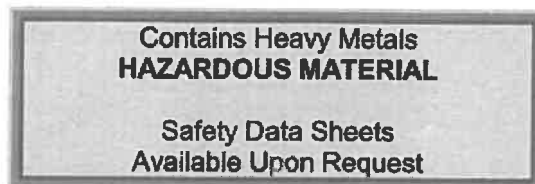
Instructions for QATS Reference Material: ICP-AES ICS

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

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

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

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



M6184

(A) **SAMPLE DESCRIPTION**

Enclosed is a set of one (1) or more bottles of Aqueous Reference Material, each composed of metals at various concentrations and prepared with nitrate salts and oxy-acids of the respective elements in a 5% nitric acid matrix. **For the reference material source in reporting ICSA and ICSAB mixture use "USEPA". For the reference material lot number for the ICSA use "ICSA-1211" and for the ICSAB mixture use "ICSA-1211+ICSB-0710".**

CAUTION: The bottle(s) should be protected from light during storage to ensure the stability of silver which is contained in the ICSB solution. The bottle(s) should be stored at room temperature. **Do not allow the solution(s) to freeze.**

(B) **BREAKAGE OR MISSING ITEMS**

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) **ANALYSIS OF SAMPLES**

The interference check sample set is to be used to verify inter-element and background correction factors of inductively-coupled plasma (ICP) spectrometers. This reference material set consists of two (2) concentrated solutions. The ICSA solution contains the four (4) interferent elements: Al, Ca, Fe, and Mg. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be,





Instructions for QATS Reference Material: ICP-AES ICS

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSAB solution by ICP-AES.

(D) "CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.

Nitric Acid 69%
CMOS

avantor™



M6187

R.D :- 08/08/25

Material No.: 9606-03
Batch No.: 24H0162012
Manufactured Date: 2024-06-28
Retest Date: 2029-06-27
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO ₃)	69.0 – 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	< 1 ppm
Chloride (Cl)	≤ 0.08 ppm	0.03 ppm
Phosphate (PO ₄)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO ₄)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities – Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Bismuth (Bi)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	0.1 ppb
Trace Impurities – Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	0.3 ppb
Trace Impurities – Chromium (Cr)	≤ 30.0 ppb	0.1 ppb
Trace Impurities – Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Germanium (Ge)	≤ 20 ppb	< 1 ppb
Trace Impurities – Gold (Au)	≤ 20 ppb	< 1 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities – Lead (Pb)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities – Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Nickel (Ni)	≤ 20.0 ppb	< 1.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS



Material No.: 9606-03
Batch No.: 24H0162012

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	< 1 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	1 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 1.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	13 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	5 par/ml

>>> Continued on page 3 >>>



Test	Specification	Result

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

cloak

Jamie Croak
Director Quality Operations, Bioscience Production

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis



M6200
R.O → 08/25/25

Material No.: 9530-33
Batch No.: 24D1562005
Manufactured Date: 2024-03-18
Retest Date: 2029-03-17
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
ACS – Assay (as HCl) (by acid-base titrn)	36.5 – 38.0 %	37.6 %
ACS – Color (APHA)	≤ 10	5
ACS – Residue after Ignition	≤ 3 ppm	< 1 ppm
ACS – Specific Gravity at 60°/60°F	1.185 – 1.192	1.192
ACS – Bromide (Br)	≤ 0.005 %	< 0.005 %
ACS – Extractable Organic Substances	≤ 5 ppm	< 1 ppm
ACS – Free Chlorine (as Cl ₂)	≤ 0.5 ppm	< 0.5 ppm
Phosphate (PO ₄)	≤ 0.05 ppm	0.03 ppm
Sulfate (SO ₄)	≤ 0.5 ppm	< 0.3 ppm
Sulfite (SO ₃)	≤ 0.8 ppm	0.3 ppm
Ammonium (NH ₄)	≤ 3 ppm	< 1 ppm
Trace Impurities – Arsenic (As)	≤ 0.010 ppm	< 0.003 ppm
Trace Impurities – Aluminum (Al)	≤ 10.0 ppb	< 5.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 3.0 ppb
Trace Impurities – Barium (Ba)	≤ 1.0 ppb	< 1.0 ppb
Trace Impurities – Beryllium (Be)	≤ 1.0 ppb	< 1.0 ppb
Trace Impurities – Bismuth (Bi)	≤ 10.0 ppb	< 10.0 ppb
Trace Impurities – Boron (B)	≤ 20.0 ppb	2.2 ppb
Trace Impurities – Cadmium (Cd)	≤ 1.0 ppb	< 1.0 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	31.0 ppb
Trace Impurities – Chromium (Cr)	≤ 1.0 ppb	0.5 ppb
Trace Impurities – Cobalt (Co)	≤ 1.0 ppb	0.2 ppb
Trace Impurities – Copper (Cu)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Gallium (Ga)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Germanium (Ge)	≤ 3.0 ppb	< 2.0 ppb
Trace Impurities – Gold (Au)	≤ 4.0 ppb	< 0.2 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 15 ppb	3 ppb

>>> Continued on page 2 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis



Material No.: 9530-33
Batch No.: 24D1562005

Test	Specification	Result
Trace Impurities – Lead (Pb)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Lithium (Li)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Magnesium (Mg)	≤ 10.0 ppb	2.2 ppb
Trace Impurities – Manganese (Mn)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Mercury (Hg)	≤ 0.5 ppb	< 0.1 ppb
Trace Impurities – Molybdenum (Mo)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Nickel (Ni)	≤ 4.0 ppb	0.2 ppb
Trace Impurities – Niobium (Nb)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Potassium (K)	≤ 9.0 ppb	< 1.0 ppb
Trace Impurities – Selenium (Se), For Information Only		< 1.0 ppb
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	< 10.0 ppb
Trace Impurities – Silver (Ag)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Sodium (Na)	≤ 100.0 ppb	2.0 ppb
Trace Impurities – Strontium (Sr)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Tantalum (Ta)	≤ 1.0 ppb	< 0.9 ppb
Trace Impurities – Thallium (Tl)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Tin (Sn)	≤ 5.0 ppb	< 0.4 ppb
Trace Impurities – Titanium (Ti)	≤ 1.0 ppb	0.2 ppb
Trace Impurities – Vanadium (V)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Zinc (Zn)	≤ 5.0 ppb	< 0.2 ppb
Trace Impurities – Zirconium (Zr)	≤ 1.0 ppb	< 0.1 ppb

>>> Continued on page 3 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA–ANALYZED® Reagent
For Trace Metal Analysis

 **avantorsm**



Material No.: 9530–33
Batch No.: 24D1562005

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

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



Jamie Croak
Director Quality Operations, Bioscience Production

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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F: 540-585-3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution

Catalog Number: WW-LFS-2

Lot Number: V2-MEB743480

Matrix: 5% (v/v) HNO₃
tr. HF

Value / Analyte(s):
200 µg/mL ea:
Silica,
80 µg/mL ea:
Antimony,
70 µg/mL ea:
Tin,
40 µg/mL ea:
Molybdenum,
20 µg/mL ea:
Titanium

R-7/20/28
M6201
M6202
M6203
M6204

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	80.1 ± 0.5 µg/mL	Molybdenum, Mo	40.05 ± 0.22 µg/mL
Silica, SiO ₂	200.3 ± 1.4 µg/mL	Tin, Sn	70.1 ± 0.4 µg/mL
Titanium, Ti	20.03 ± 0.12 µg/mL		

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

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Sb	ICP Assay	3102a	140911
SiO ₂	Calculated		See Sec. 4.2
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	traceable to 3162a	T2-TI725816

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

May 07, 2024

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

11.2 Lot Expiration Date

- May 07, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Thomas Kozikowski
Stock VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: WW-LFS-1
Lot Number: W2-MEB752149
Matrix: 5% (v/v) HNO₃

R → 7/20/28

M6209
M6210
M6211
M6212

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	200.2 ± 0.7 µg/mL	Arsenic, As	80.1 ± 0.5 µg/mL
Barium, Ba	20.02 ± 0.12 µg/mL	Beryllium, Be	20.02 ± 0.11 µg/mL
Boron, B	30.02 ± 0.15 µg/mL	Cadmium, Cd	20.04 ± 0.09 µg/mL
Calcium, Ca	100.1 ± 0.3 µg/mL	Cerium, Ce	200.2 ± 1.0 µg/mL
Chromium, Cr	40.02 ± 0.26 µg/mL	Cobalt, Co	20.03 ± 0.09 µg/mL
Copper, Cu	30.03 ± 0.13 µg/mL	Iron, Fe	300.3 ± 1.3 µg/mL
Lead, Pb	100.1 ± 0.5 µg/mL	Lithium, Li	20.03 ± 0.09 µg/mL
Magnesium, Mg	200.2 ± 0.9 µg/mL	Manganese, Mn	19.99 ± 0.09 µg/mL
Mercury, Hg	70.0 ± 0.3 µg/mL	Nickel, Ni	50.05 ± 0.22 µg/mL
Phosphorus, P	600.5 ± 2.9 µg/mL	Potassium, K	1 001 ± 4 µg/mL
Selenium, Se	200.2 ± 1.1 µg/mL	Silver, Ag	7.52 ± 0.03 µg/mL
Sodium, Na	300.3 ± 1.3 µg/mL	Strontium, Sr	20.02 ± 0.10 µg/mL
Thallium, Tl	200.2 ± 1.0 µg/mL	Vanadium, V	30.02 ± 0.13 µg/mL
Zinc, Zn	20.05 ± 0.09 µg/mL		

Density: 1.037 g/mL (measured at 20 ± 5 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
As	ICP Assay	3103a	100818
B	ICP Assay	3107	190605
B	Calculated		See Sec. 4.2
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Ce	ICP Assay	3110	160830
Ce	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	120618
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
Hg	ICP Assay	3133	160921
Hg	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Li	ICP Assay	3129a	100714
Li	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	14Q110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	200413
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Sr	EDTA	928	928
Sr	ICP Assay	Traceable to 3153a	K2-SR650985
Tl	ICP Assay	3158	151215
V	ICP Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

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_{ls} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

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_{ls} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures [Terms and Conditions of Sale](https://www.inorganicventures.com/terms-and-conditions-sale). <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.
- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.
- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 25° C to minimize the effects of transpiration. Use at 20° ± 5° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

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

Note: This solution contains Silver (Ag), please refer to our Sample Preparation Guide for more information (<https://www.inorganicventures.com/sample-preparation-guide/samples-containing-silver>)

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

April 08, 2025

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

11.2 Lot Expiration Date

- April 08, 2029

- The date after which this CRM/RM should not be used.
- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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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

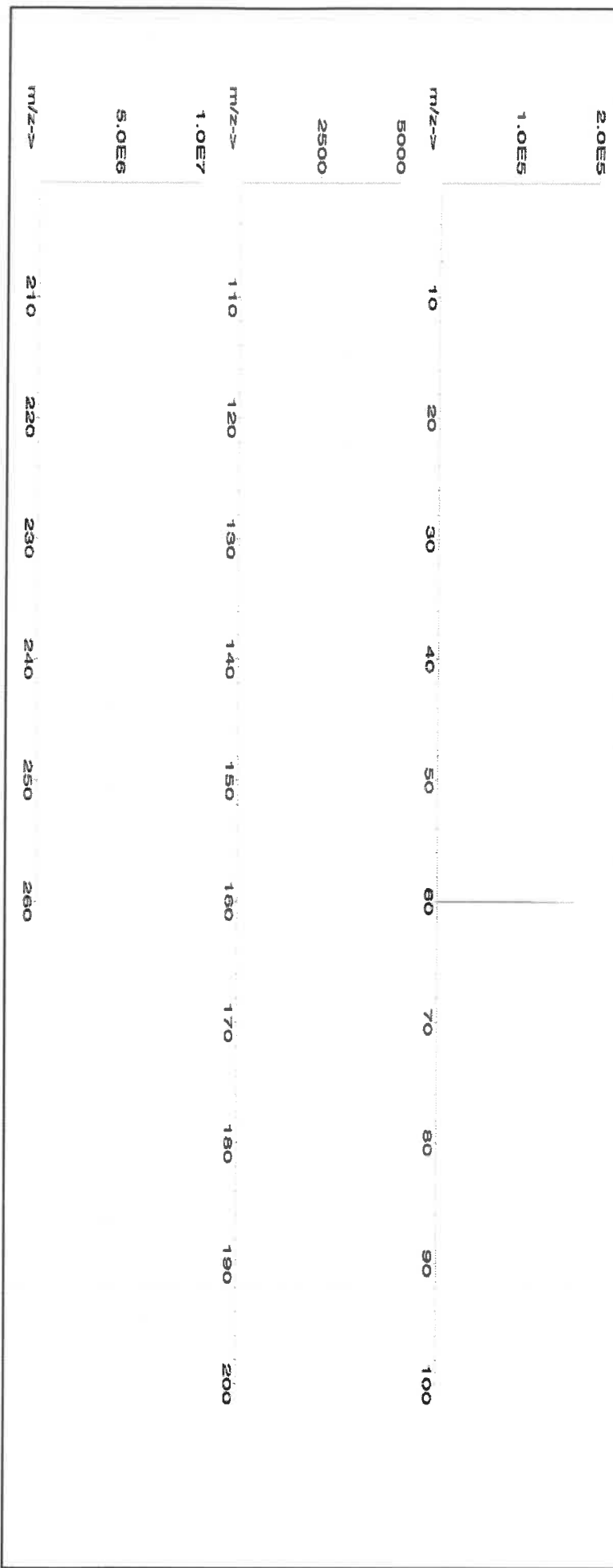
Expiration Date: **062027**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6UTB**
Volume shown below was diluted to (mL): **2000.07**
5E-05 Balance Uncertainty
0.100 Flask Uncertainty

SDS Information

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty (mL)	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. **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

[1] Spectrum No.1 [9.136 sec]:58028.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM

M6030



CERTIFIED WEIGHT REPORT:

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

Lot #
Solvent: 24002546 Nitric Acid

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

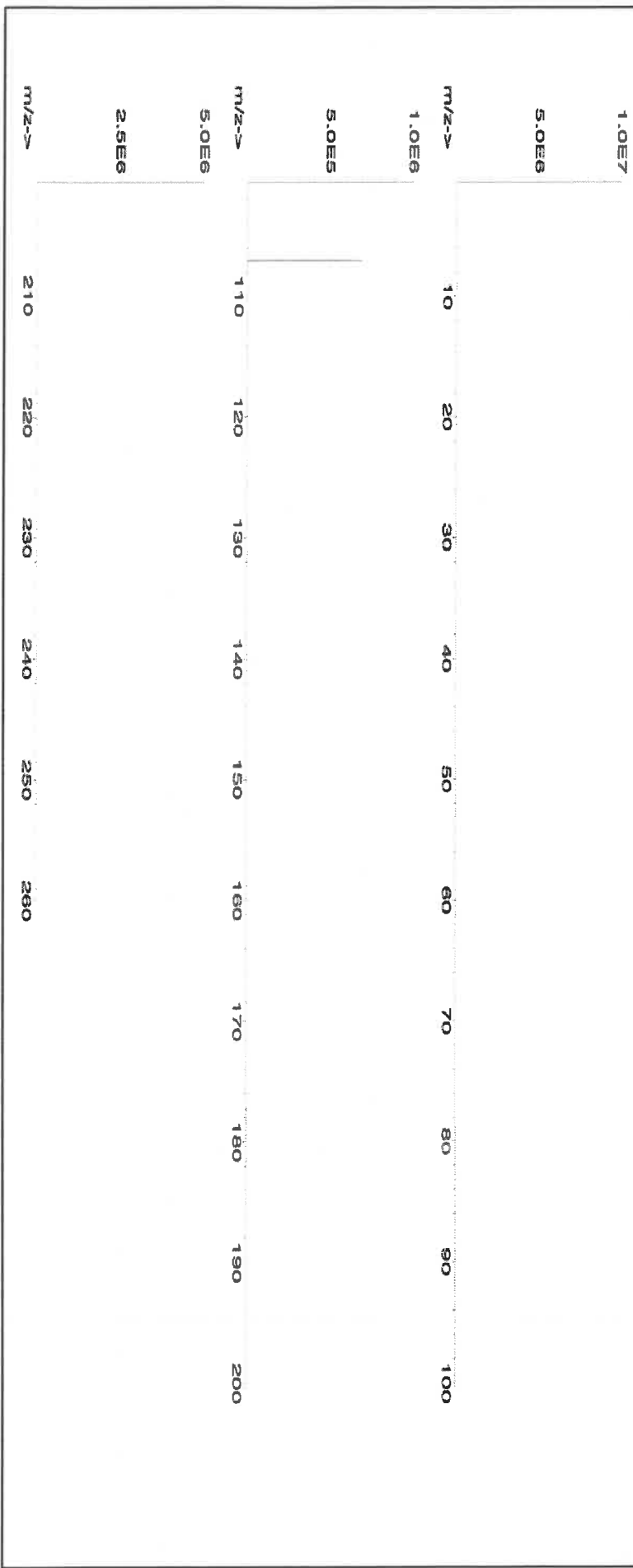
2% 80.0 (mL) Nitric Acid

Weight shown below was diluted to (mL): 4000.30
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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

SDS Information									
Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)
1. Silver nitrate (Ag)	IN035	J0612AGAI	1000.0	99.9996	0.10	63.7	6.27992	6.27998	1000.0
							2.0	7761-88-8	10 µg/mL
									NA
									3151

[1] Spectrum No. 1 [14.044 sec]:58147.D# [Count] [Linear]





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

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

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

(T)= Target analyte

Physical Characterization:

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

Certified by:

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

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Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

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

126160

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

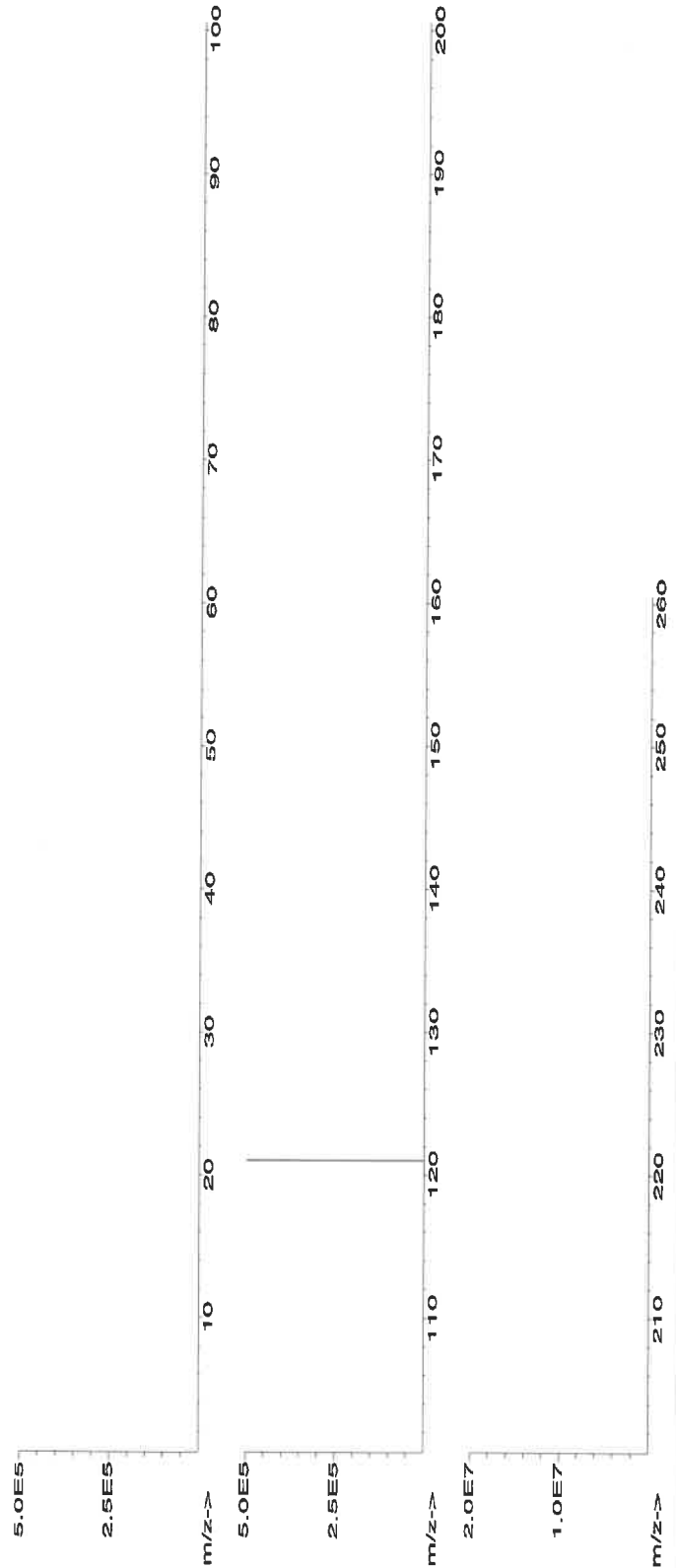
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
<i>Pedro L. Rentas</i>	
Reviewed By:	Pedro L. Rentas
071724	

SDS Information

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

1. Antimony (Sb)

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





CERTIFIED WEIGHT REPORT:

Part Number: 57081
Lot Number: 062724
Description: Thallium (TI)

Lot #

Solvent: 24002546 Nitric Acid

2% 40.0 Nitric Acid (mL)

Expiration Date:

062727

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL): 2000.1

5E-05 Balance Uncertainty
0.10 Flask Uncertainty

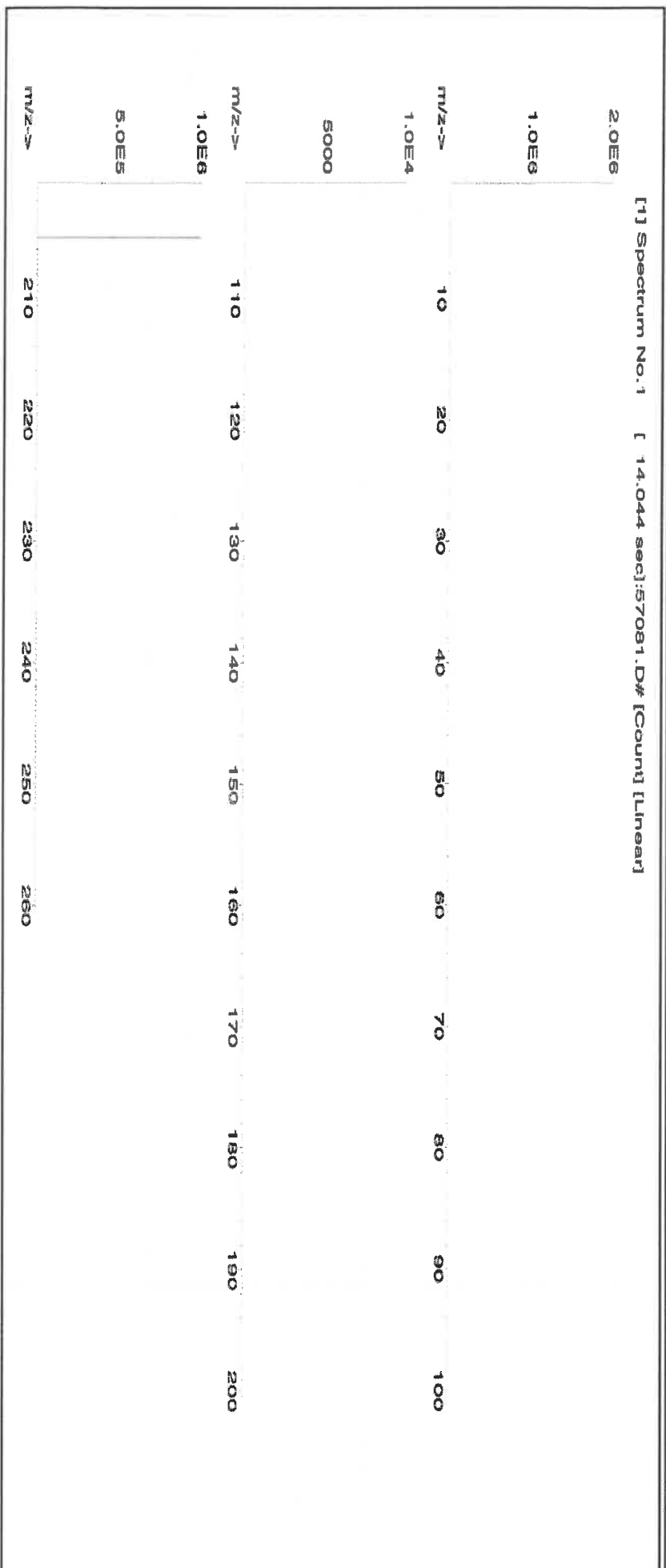
<i>Aleah O'Brady</i>	
Formulated By:	Aleah O'Brady
	062724
Reviewed By:	<i>Pedro L. Renteria</i>
	Pedro L. Renteria
	062724

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 or-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:

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



Certified Reference Material CRM

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

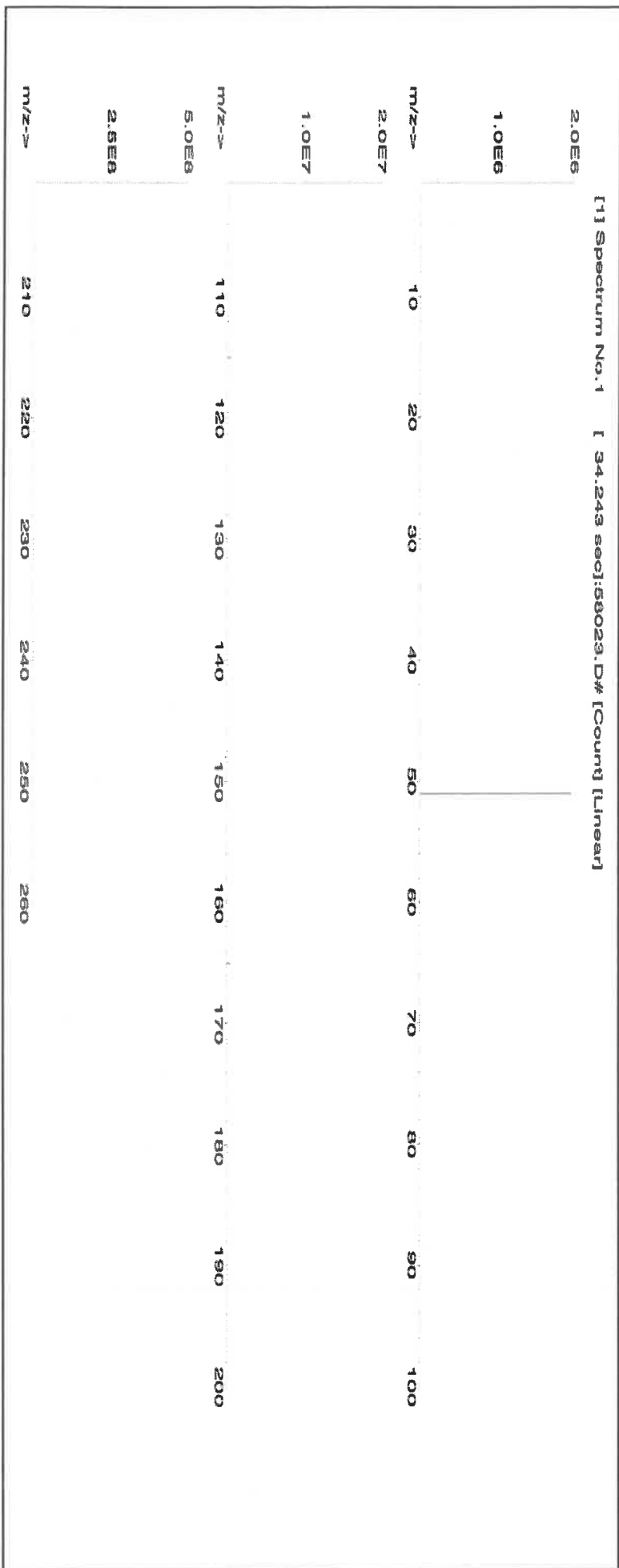
Expiration Date: **062427**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6UTB**

Volume shown below was diluted to (mL): **2000.3**

5E-05 Balance Uncertainty
0.06 Flask Uncertainty

SDS Information									
(Solvent Safety Info. On Attached pg.)									
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. Ammonium metavanadate (V)	58123	021224	0.1000	200.0	0.084	1000	10000.3	1000.0	2.2
						7803-55-6		0.05 mg/m3	or -rat 58.1mg/kg
									3165

[1] Spectrum No.1 [34.243 sec]:58023.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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SHIPPING DOCUMENTS

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CLIENT INFORMATION

COMPANY: G Environmental
ADDRESS: 8 Carriage
CITY: Summerville STATE: NJ ZIP:
ATTENTION:
PHONE: FAX:

CLIENT PROJECT INFORMATION

PROJECT NAME: Banker
PROJECT NO.: LOCATION: NJ
PROJECT MANAGER: GL
e-mail:
PHONE: FAX:

CLIENT BILLING INFORMATION

BILL TO: G Environmental PO#:
ADDRESS: 8 Carriage
CITY: Summerville STATE: NJ ZIP:
ATTENTION: PHONE:

ANALYSIS

DATA TURNAROUND INFORMATION

FAX (RUSH) 5 day DAYS*
HARDCOPY (DATA PACKAGE): DAYS*
EDD: DAYS*
*TO BE APPROVED BY CHEMTECH
STANDARD HARDCOPY TURNAROUND TIME IS 10 BUSINESS

DATA DELIVERABLE INFORMATION

☐ Level 1 (Results Only) ☒ Level 4 (QC + Full Raw Data)
☐ Level 2 (Results + QC) ☐ NJ Reduced ☐ US EPA CLP
☐ Level 3 (Results + QC) ☐ NYS ASP A ☐ NYS ASP B
+ Raw Data ☐ Other
☒ EDD FORMAT excel, pdf, hard

PRESERVATIVES

COMMENTS

ALLIANCE SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE		SAMPLE COLLECTION		# OF BOTTLES										COMMENTS ← Specify Preservatives A-HCl D-NaOH B-HNO3 E-ICE C-H2SO4 F-OTHER
			COMP	GRAB	DATE	TIME		1	2	3	4	5	6	7	8	9	
1.	16 Banker	DW		X	10/23	25/10/1	2			X		X					
2.	29 Hanover	DW		X	↑	1036	2			X		X					
3.	29 Post	DW		X	↑	1039	2			X		X					
4.	683 WARWICK	DW		X	↓	1019	2			X		X					
5.	735 WARWICK	DW		X	↓	0943	2			X		X					
6.	739 WARWICK	DW		X	10/23	0927	2			X		X					
7.																	
8.																	
9.																	
10.																	

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE/TIME:	RECEIVED BY:	Conditions of bottles or coolers at receipt: ☐ COMPLIANT ☐ NON COMPLIANT ☐ COOLER TEMP <u>1.9°C</u>
1. <u>[Signature]</u>		1. <u>[Signature]</u> 10/23/25	Comments: <u>onice Banker</u>
RELINQUISHED BY SAMPLER:	DATE/TIME:	RECEIVED BY:	
2.		2.	
RELINQUISHED BY SAMPLER:	DATE/TIME:	RECEIVED BY:	
3.		3.	

Page ____ of ____

CLIENT: ☐ Hand Delivered ☐ Other

Shipment Complete
☐ YES ☐ NO

Laboratory Certification

Certified By	License No.
Connecticut	PH-0830
DOD ELAP (ANAB)	L2219
Maine	2024021
Maryland	296
New Hampshire	255425
New Jersey	20012
New York	11376
Pennsylvania	68-00548
Soil Permit	525-24-234-08441
Texas	TX-C25-00189
Virginia	460312