

DATA PACKAGE METALS

PROJECT NAME : NWIRP BETHPAGE 112G08005-WE13

TETRA TECH NUS, INC.

661 Andersen Drive

Suite 200

Pittsburgh, PA - 15220-2745

Phone No: 412-921-7090

ORDER ID : Q2937

ATTENTION : Ernie Wu



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) RW8-SP100-20250821	12
9.2) RW8-SP303-20250821	13
10) METALS CALIBRATION DATA	14
10.1) Initial and Continuing Calibration Verification	15
10.2) CRDL Standard For AA & ICP	18
10.3) Initial and Continuing Calibration Blank Summary	19
10.4) Preparation Blank Summary	21
10.5) Interference Check Sample	22
11) METALS QC DATA	23
11.1) Matrix Spike Summary	24
11.2) Post Digest Spike Summary	26
11.3) Duplicate Sample Summary	27
11.4) Laboratory Control Sample Summary	29
11.5) ICP Serial Dilutions	30
12) METALS PREPARATION & INSTRUMENT DATA	31
12.1) ICP Interelement Correction Factors	32
13) PREPARATION & ANALYTICAL SUMMARY	37
13.1) Sample Preparation Summary	38
13.2) Analysis Run Log	39
14) METALS RAW DATA	40
14.1) METALS RAW DATA - ANALYTICAL	41
14.2) LB136973	41
14.3) METALS RAW DATA - PREP	181
14.3.1) PB169379	181
15) Analytical Runlogs	184
16) Standard Prep Logs	187

Table Of Contents for Q2937

17) Shipping Document	342
17.1) Chain Of Custody	343
17.2) Lab Certificate	344

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

Cover Page

Order ID : Q2937

Project ID : NWIRP Bethpage 112G08005-WE13

Client : Tetra Tech NUS, Inc.

Lab Sample Number

Q2937-01
Q2937-02

Client Sample Number

RW8-SP100-20250821
RW8-SP303-20250821

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

Signature : _____

Date: 8/28/2025

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012



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

CASE NARRATIVE

Tetra Tech NUS, Inc.

Project Name: NWIRP Bethpage 112G08005-WE13

Project Manager : Ernie Wu

Order ID # Q2937

Test Name: Metals Group4

A. Number of Samples and Date of Receipt:

2 Water samples were received on 08/22/2025.

B. Parameters:

According to the Chain of Custody document, the following analyses were requested: Metals Group4, SVOC-SIMGroup1, SVOC-TCL BNA -20, TDS and TSS. 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:

The laboratory certifies that the all-electronic diskette deliverable exactly match the data summary forms (i.e. Form Is).

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: Q2937

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:

The laboratory certifies that the all-electronic diskette deliverable exactly match the data summary forms (i.e. Form Is).

QA REVIEW

Date

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: Q2937

Completed

For thorough review, the report must have the following:

GENERAL:

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

✓

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

✓

Is the chain of custody signed and complete

✓

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

✓

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

✓

COVER PAGE:

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

✓

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

✓

CHAIN OF CUSTODY:

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

✓

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

✓

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

✓

Were the samples received within hold time

✓

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

✓

ANALYTICAL:

Was method requirement followed?

✓

Was client requirement followed?

✓

Does the case narrative summarize all QC failure?

✓

All runlogs and manual integration are reviewed for requirements

✓

All manual calculations and /or hand notations verified

✓

QA Review Signature: SOHIL JODHANI

Date: 08/28/2025

LAB CHRONICLE

OrderID:	Q2937	OrderDate:	8/22/2025 9:37:00 AM
Client:	Tetra Tech NUS, Inc.	Project:	NWIRP Bethpage 112G08005-WE13
Contact:	Ernie Wu	Location:	J31

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
Q2937-01	RW8-SP100-2025082 1	Water			08/21/25			08/22/25
			Metals Group4	6010D		08/25/25	08/26/25	
Q2937-02	RW8-SP303-2025082 1	Water			08/21/25			08/22/25
			Metals Group4	6010D		08/25/25	08/26/25	

Hit Summary Sheet
SW-846

SDG No.:	Q2937	Order ID:	Q2937
Client:	Tetra Tech NUS, Inc.	Project ID:	NWIRP Bethpage 112G08005-WE13

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	LOD	RDL	Units
Client ID :	RW8-SP100-20250821								
Q2937-01	RW8-SP100-20250821	Water	Iron	5190		11.7	40.0	50.0	ug/L
Client ID :	RW8-SP303-20250821								
Q2937-02	RW8-SP303-20250821	Water	Iron	1240		11.7	40.0	50.0	ug/L



SAMPLE DATA

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

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/21/25
Project:	NWIRP Bethpage 112G08005-WE13	Date Received:	08/22/25
Client Sample ID:	RW8-SP100-20250821	SDG No.:	Q2937
Lab Sample ID:	Q2937-01	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOD	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7439-89-6	Iron	5190		1	11.7	40.0	50.0	ug/L	08/25/25 10:10	08/26/25 13:51	6010D	SW3010

Color Before:	Colorless	Clarity Before:	Clear	Texture:
Color After:	Colorless	Clarity After:	Clear	Artifacts:
Comments:	Metals Group4			

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:	Tetra Tech NUS, Inc.	Date Collected:	08/21/25
Project:	NWIRP Bethpage 112G08005-WE13	Date Received:	08/22/25
Client Sample ID:	RW8-SP303-20250821	SDG No.:	Q2937
Lab Sample ID:	Q2937-02	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOD	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7439-89-6	Iron	1240		1	11.7	40.0	50.0	ug/L	08/25/25 10:10	08/26/25 13:56	6010D	SW3010

Color Before:	Colorless	Clarity Before:	Clear	Texture:
Color After:	Colorless	Clarity After:	Clear	Artifacts:
Comments:	Metals Group4			

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

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

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.

SDG No.: Q2937

Contract: TETR06

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
ICV01	Iron	3960	4000	99	90 - 110	P	08/26/2025	11:14	LB136973

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.

SDG No.: Q2937

Contract: TETR06

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	Iron	97.1	100	97	80 - 120	P	08/26/2025	11:20	LB136973

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.
Contract: TETR06
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

SDG No.: Q2937
Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Iron	5040	5000	101	90 - 110	P	08/26/2025	11:50	LB136973
CCV02	Iron	5260	5000	105	90 - 110	P	08/26/2025	12:41	LB136973
CCV03	Iron	5080	5000	102	90 - 110	P	08/26/2025	13:30	LB136973
CCV04	Iron	5230	5000	105	90 - 110	P	08/26/2025	14:20	LB136973



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

Metals

- 2b -

CRDL STANDARD FOR AA & ICP

Client: Tetra Tech NUS, Inc.

SDG No.: Q2937

Contract: TETR06

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	Iron	96.8	100	97	65 - 135	P	08/26/2025	11:29	LB136973



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

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q2937

Contract: TETR06

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	LOD	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB01	Iron	23.4	+/-50	U	80.0	100	P	08/26/2025	11:24	LB136973

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc. **SDG No.:** Q2937
Contract: TETR06 **Lab Code:** ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	LOD	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB01	Iron	23.4	+/-50	U	80.0	100	P	08/26/2025	11:54	LB136973
CCB02	Iron	23.4	+/-50	U	80.0	100	P	08/26/2025	12:45	LB136973
CCB03	Iron	23.4	+/-50	U	80.0	100	P	08/26/2025	13:35	LB136973
CCB04	Iron	23.4	+/-50	U	80.0	100	P	08/26/2025	14:24	LB136973

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q2937

Instrument: P4

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	LOD ug/L	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB169379BL		WATER		Batch Number:		PB169379		Prep Date:	08/25/2025	
	Iron	11.7	<25	U	40.0	50.0	P	08/26/2025	12:54	LB136973

Metals
- 4 -
INTERFERENCE CHECK SAMPLE

Client: <u>Tetra Tech NUS, Inc.</u>	SDG No.: <u>Q2937</u>
Contract: <u>TETR06</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	Iron	99200	101000	98	85600	116500	08/26/2025	11:33	LB136973
ICSAB01	Iron	100000	99300	101	84400	114500	08/26/2025	11:37	LB136973



METAL QC DATA

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

metals
- 5a -
MATRIX SPIKE SUMMARY

client: <u>Tetra Tech NUS, Inc.</u>	level: <u>low</u>	sdg no.: <u>Q2937</u>
contract: <u>TETR06</u>		lab code: <u>ACE</u>
matrix: <u>Water</u>	sample id: <u>Q2937-02</u>	client id: <u>RW8-SP303-20250821MS</u>
Percent Solids for Sample: <u>NA</u>	Spiked ID: <u>Q2937-02MS</u>	Percent Solids for Spike Sample: <u>NA</u>

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Iron	ug/L	87 - 115	2620		1240		1500	92		P

metals
- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

client: <u>Tetra Tech NUS, Inc.</u>	level: <u>low</u>	sdg no.: <u>Q2937</u>
contract: <u>TETR06</u>		lab code: <u>ACE</u>
matrix: <u>Water</u>	sample id: <u>Q2937-02</u>	client id: <u>RW8-SP303-20250821MSD</u>
Percent Solids for Sample: <u>NA</u>	Spiked ID: <u>Q2937-02MSD</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
Iron	ug/L	87 - 115	2730		1240		1500	99		P



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

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

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

Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client:	<u>Tetra Tech NUS, Inc.</u>	Level:	<u>LOW</u>	SDG No.:	<u>Q2937</u>
Contract:	<u>TETR06</u>			Lab Code:	<u>ACE</u>
Matrix:	<u>Water</u>	Sample ID:	<u>Q2937-02</u>	Client ID:	<u>RW8-SP303-20250821DUP</u>
Percent Solids for Sample:	NA	Duplicate ID	Q2937-02DUP	Percent Solids for Spike Sample:	NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Iron	ug/L	20	1240		1240		0		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>Tetra Tech NUS, Inc.</u>	Level:	<u>LOW</u>	SDG No.:	<u>Q2937</u>
Contract:	<u>TETR06</u>			Lab Code:	<u>ACE</u>
Matrix:	<u>Water</u>	Sample ID:	<u>Q2937-02MS</u>	Client ID:	<u>RW8-SP303-20250821MSD</u>
Percent Solids for Sample:	NA	Duplicate ID	Q2937-02MSD	Percent Solids for Spike Sample:	NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Iron	ug/L	20	2620		2730		4		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: Tetra Tech NUS, Inc.SDG No.: Q2937Contract: TETR06Lab Code: ACE

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB169379BS Iron	ug/L	1500	1410		94	87 - 115	P

Metals
-9 -
ICP SERIAL DILUTIONS

SAMPLE NO.

RW8-SP303-20250821L

Lab Name: Alliance **Contract:** TETR06
Lab Code: ACE **Lb No.:** lb136973 **Lab Sample ID :** Q2937-02L **SDG No.:** Q2937
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
Iron	1240	1390	12		P



METAL PREPARATION & INSTRUMENT DATA

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

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech NUS, Inc.

SDG No.: Q2937

Contract: TETR06

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
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech NUS, Inc.

SDG No.: Q2937

Contract: TETR06

Lab Code: ACE

Instrument ID:

Date:

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		As	Ba	Be	Cd	Co
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	-0.0039600

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech NUS, Inc.

SDG No.: Q2937

Contract: TETR06

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
Iron	240.488	0.0000000	0.0000000	0.0000730	0.0000000	-0.0015250

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech NUS, Inc.

SDG No.: Q2937

Contract: TETR06

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
Iron	240.488	0.0000000	-0.0017000	0.0000000	0.0000000	0.0000000

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech NUS, Inc.

SDG No.: Q2937

Contract: TETR06

Lab Code: ACE

Instrument ID:

Date:

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Sn	Ti	Tl	V	Zn
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

METAL PREPARATION & ANALYICAL SUMMARY

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

Metals
- 13 -

SAMPLE PREPARATION SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q2937

Contract: TETR06

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: PB169379							
PB169379BL	PB169379BL	MB	WATER	08/25/2025	50.0	25.0	
PB169379BS	PB169379BS	LCS	WATER	08/25/2025	50.0	25.0	
Q2937-01	RW8-SP100-20250821	SAM	WATER	08/25/2025	50.0	25.0	
Q2937-02	RW8-SP303-20250821	SAM	WATER	08/25/2025	50.0	25.0	
Q2937-02DUP	RW8-SP303-20250821DUP	DUP	WATER	08/25/2025	50.0	25.0	
Q2937-02MS	RW8-SP303-20250821MS	MS	WATER	08/25/2025	50.0	25.0	
Q2937-02MSD	RW8-SP303-20250821MSD	MSD	WATER	08/25/2025	50.0	25.0	

metals
- 14 -
ANALYSIS RUN LOG

Client: Tetra Tech NUS, Inc.

Contract: TETR06

Lab code: ACE

Sdg no.: Q2937

Instrument id number: _____

Method: _____

Run number: LB136973

Start date: 08/26/2025

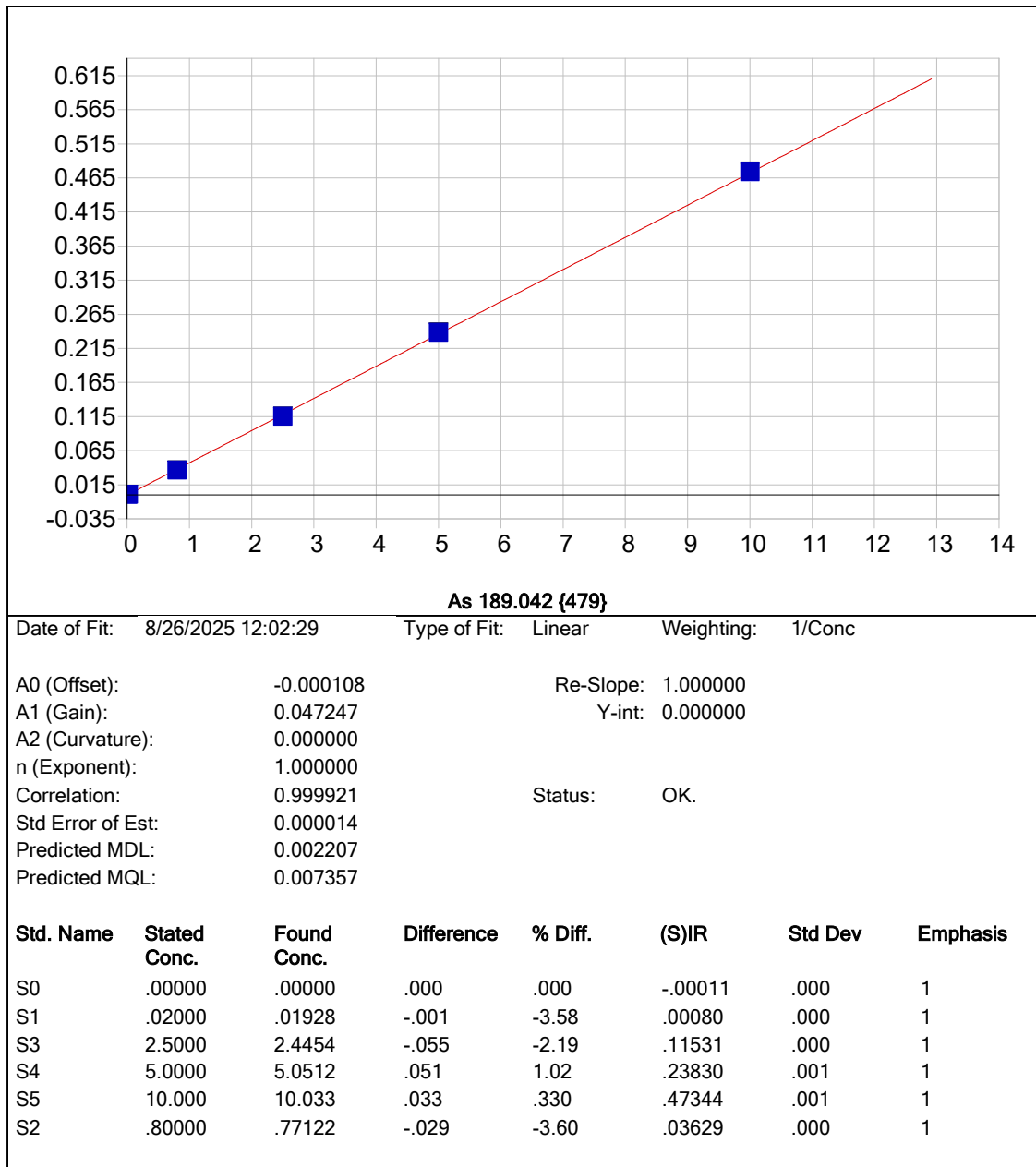
End date: 08/26/2025

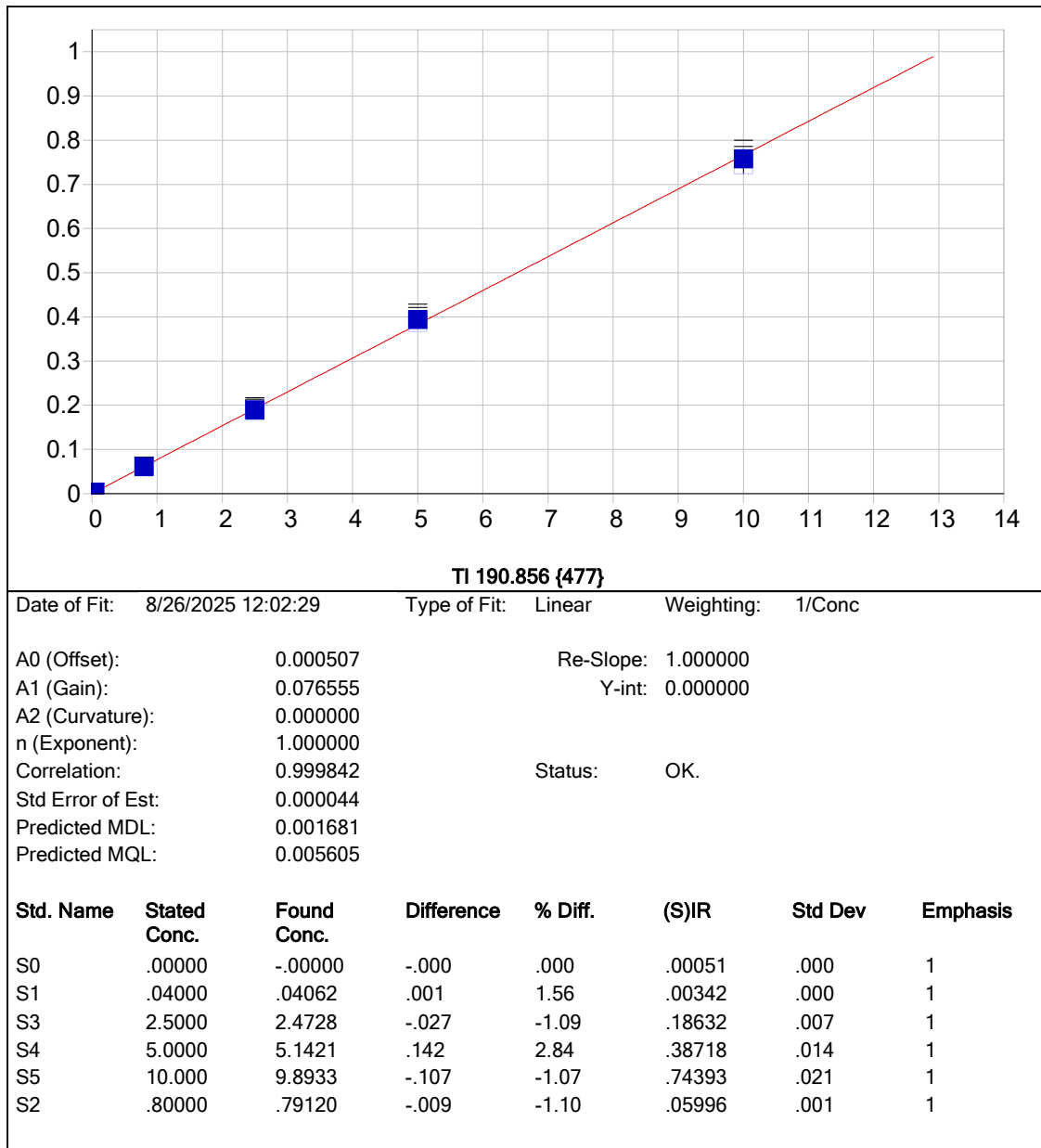
Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1049	Fe
S1	S1	1	1053	Fe
S2	S2	1	1058	Fe
S3	S3	1	1102	Fe
S4	S4	1	1106	Fe
S5	S5	1	1110	Fe
ICV01	ICV01	1	1114	Fe
LLICV01	LLICV01	1	1120	Fe
ICB01	ICB01	1	1124	Fe
CRI01	CRI01	1	1129	Fe
ICSA01	ICSA01	1	1133	Fe
ICSAB01	ICSAB01	1	1137	Fe
CCV01	CCV01	1	1150	Fe
CCB01	CCB01	1	1154	Fe
CCV02	CCV02	1	1241	Fe
CCB02	CCB02	1	1245	Fe
PB169379BL	PB169379BL	1	1254	Fe
PB169379BS	PB169379BS	1	1258	Fe
CCV03	CCV03	1	1330	Fe
CCB03	CCB03	1	1335	Fe
Q2937-01	RW8-SP100-20250821	1	1351	Fe
Q2937-02	RW8-SP303-20250821	1	1356	Fe
Q2937-02DUP	RW8-SP303-20250821DUP	1	1400	Fe
Q2937-02L	RW8-SP303-20250821L	5	1404	Fe
Q2937-02MS	RW8-SP303-20250821MS	1	1408	Fe
Q2937-02MSD	RW8-SP303-20250821MSD	1	1412	Fe
CCV04	CCV04	1	1420	Fe
CCB04	CCB04	1	1424	Fe

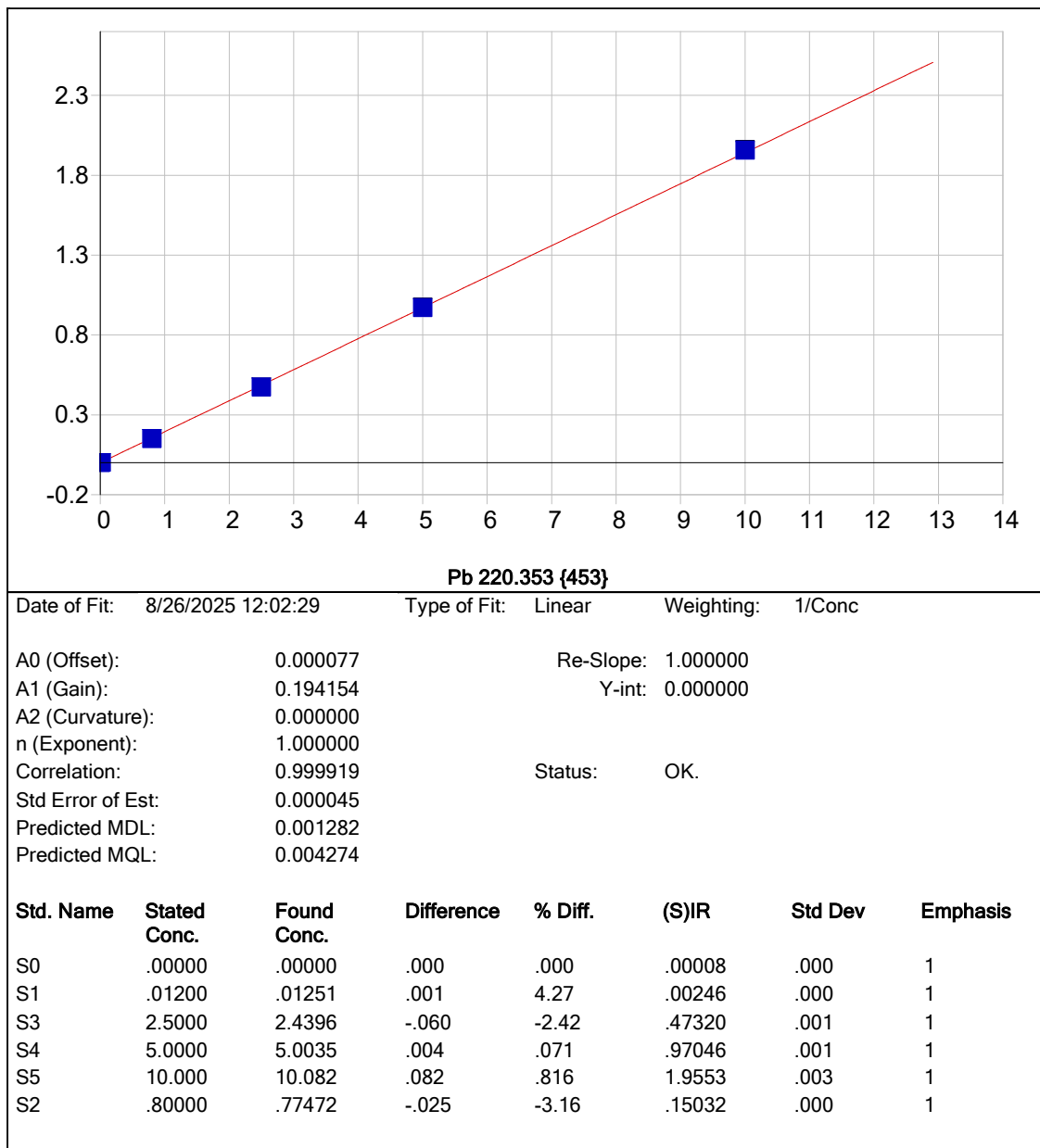


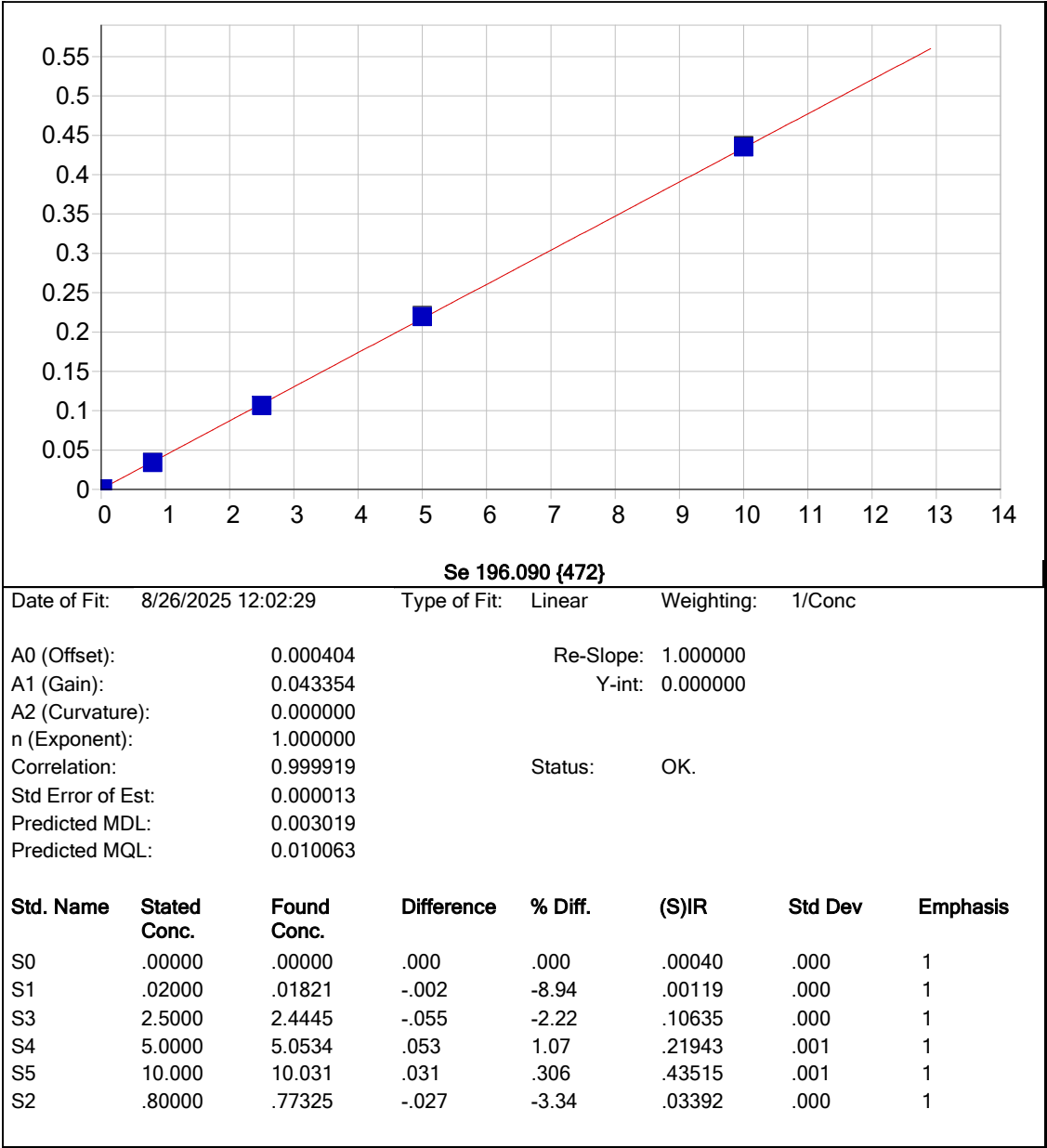
METAL RAW DATA

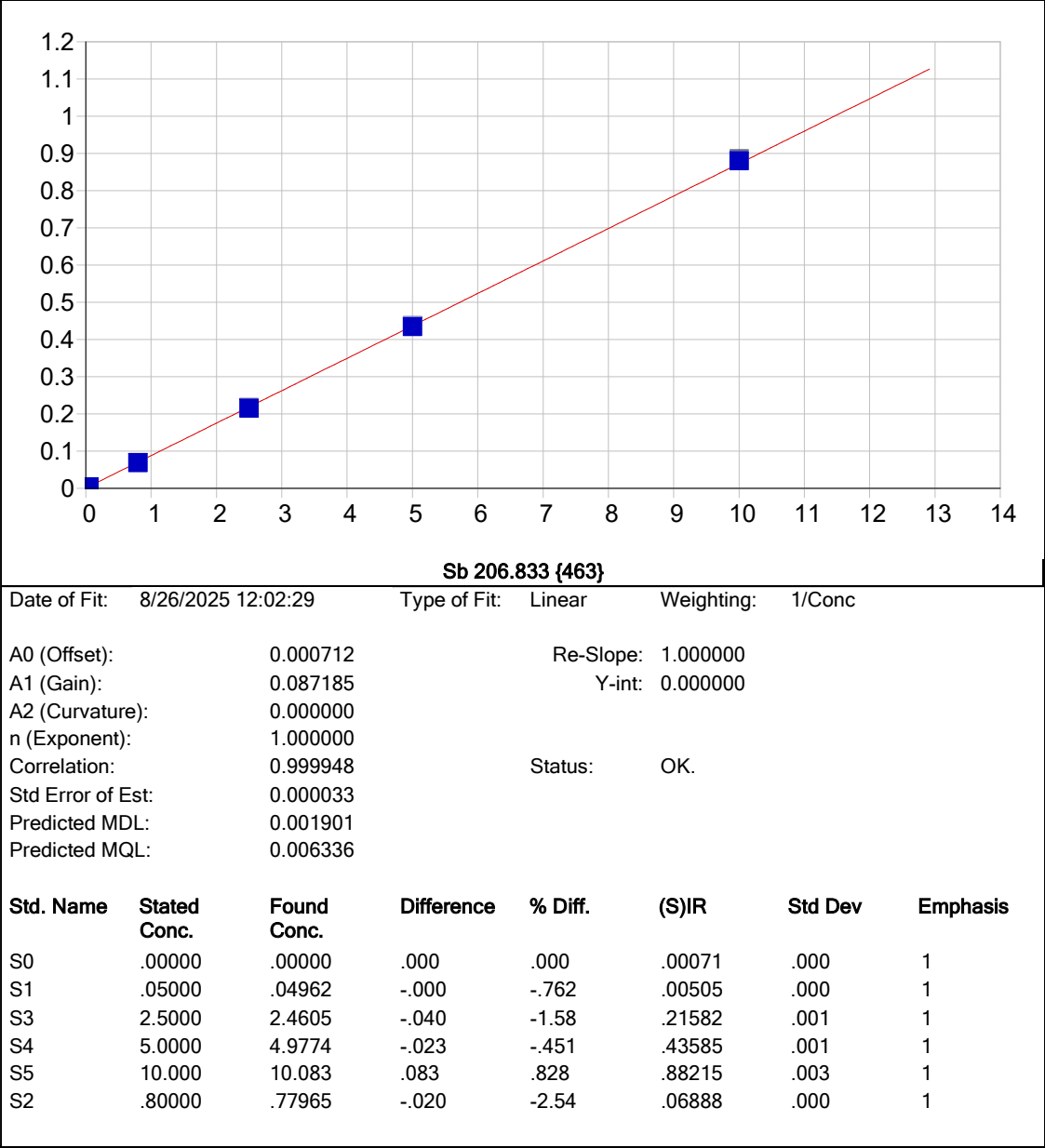
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17

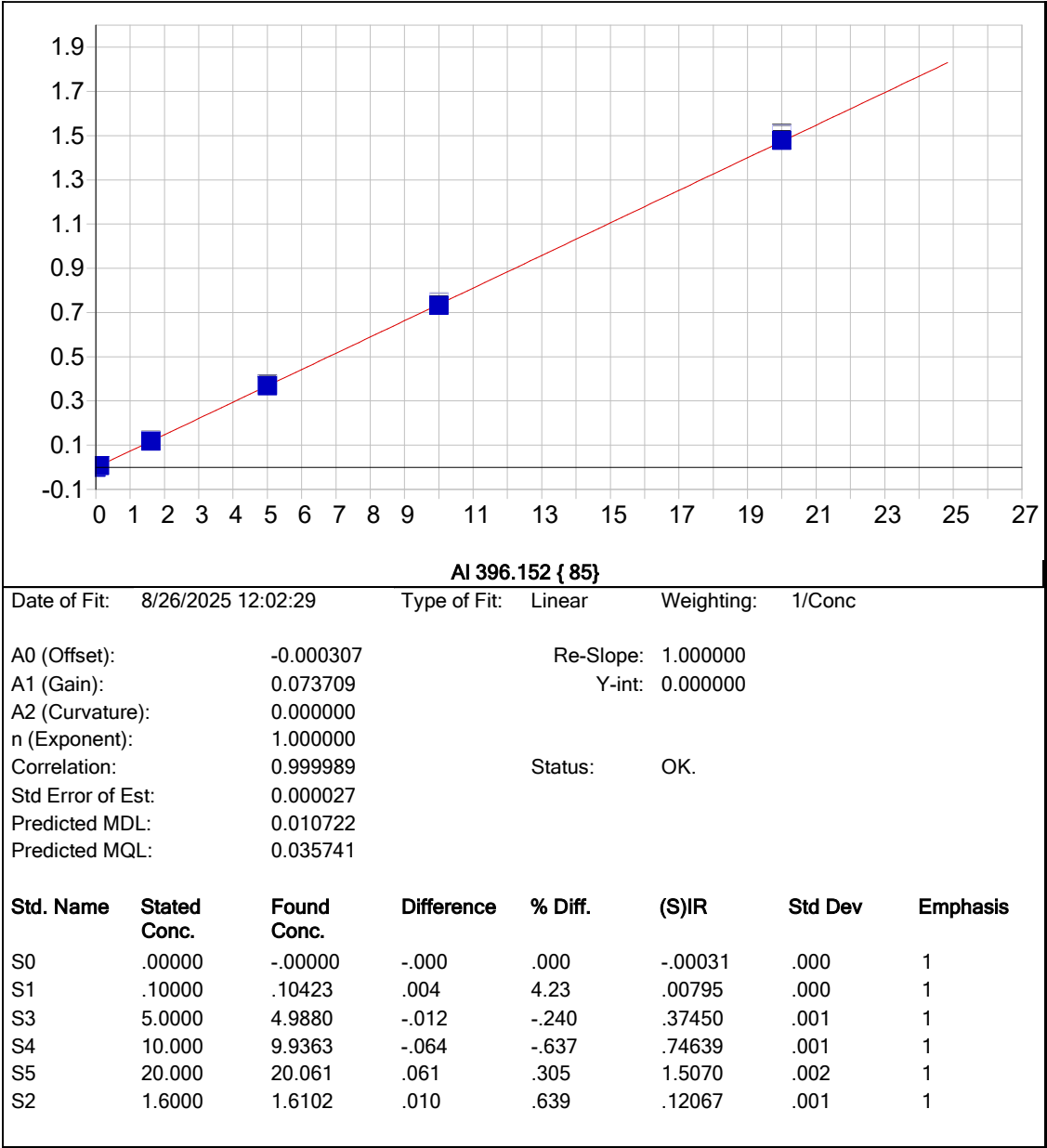


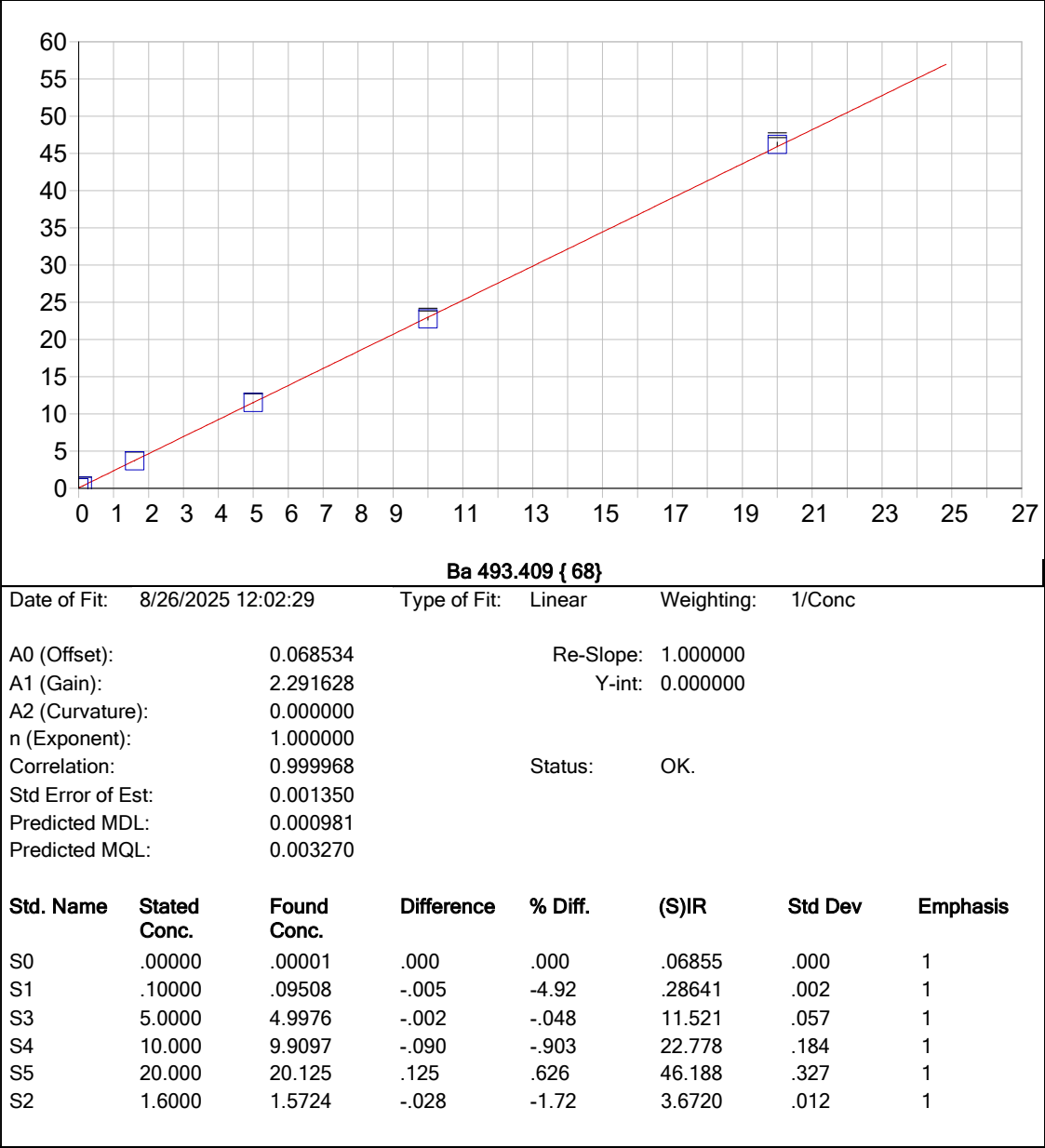


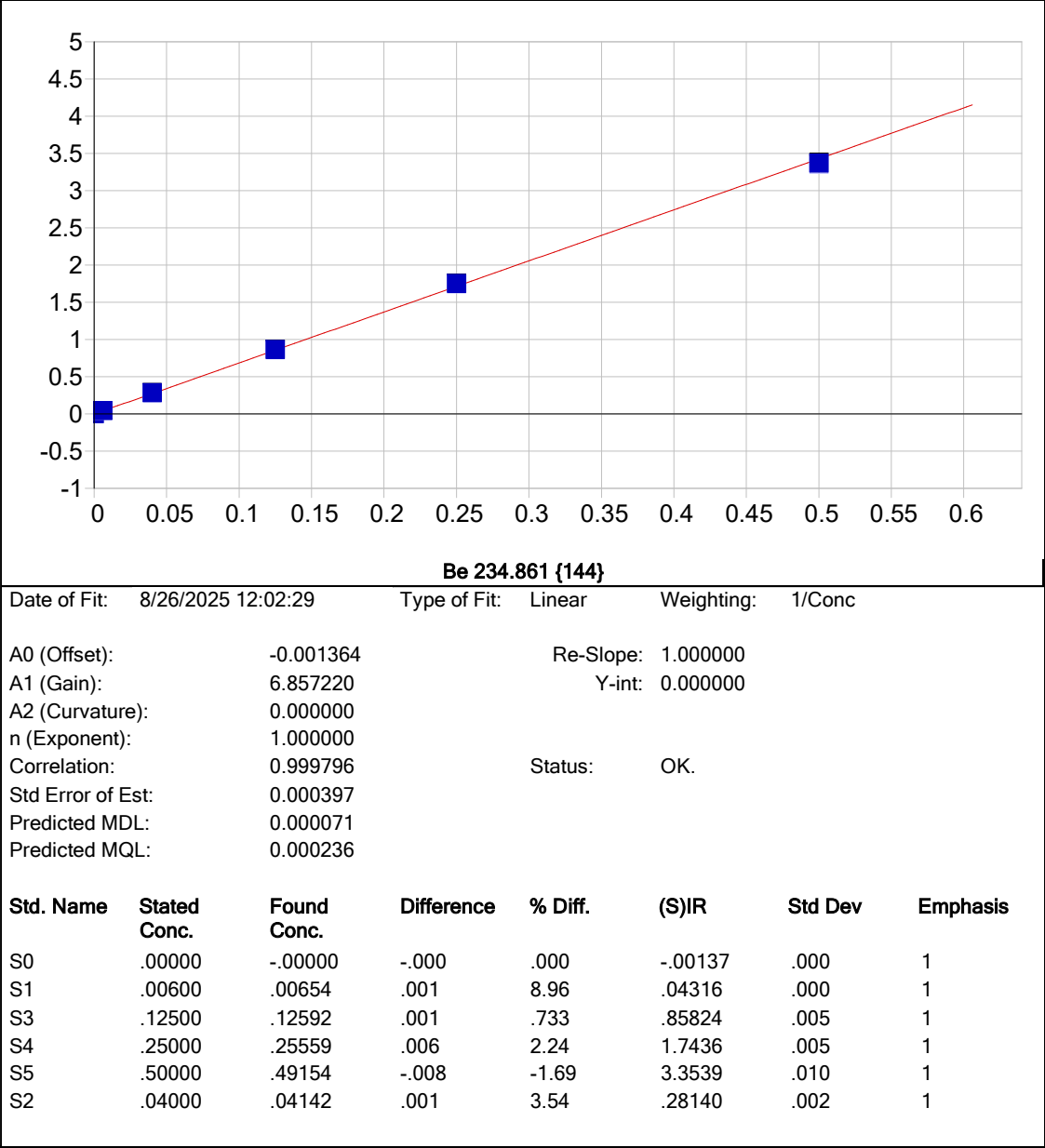


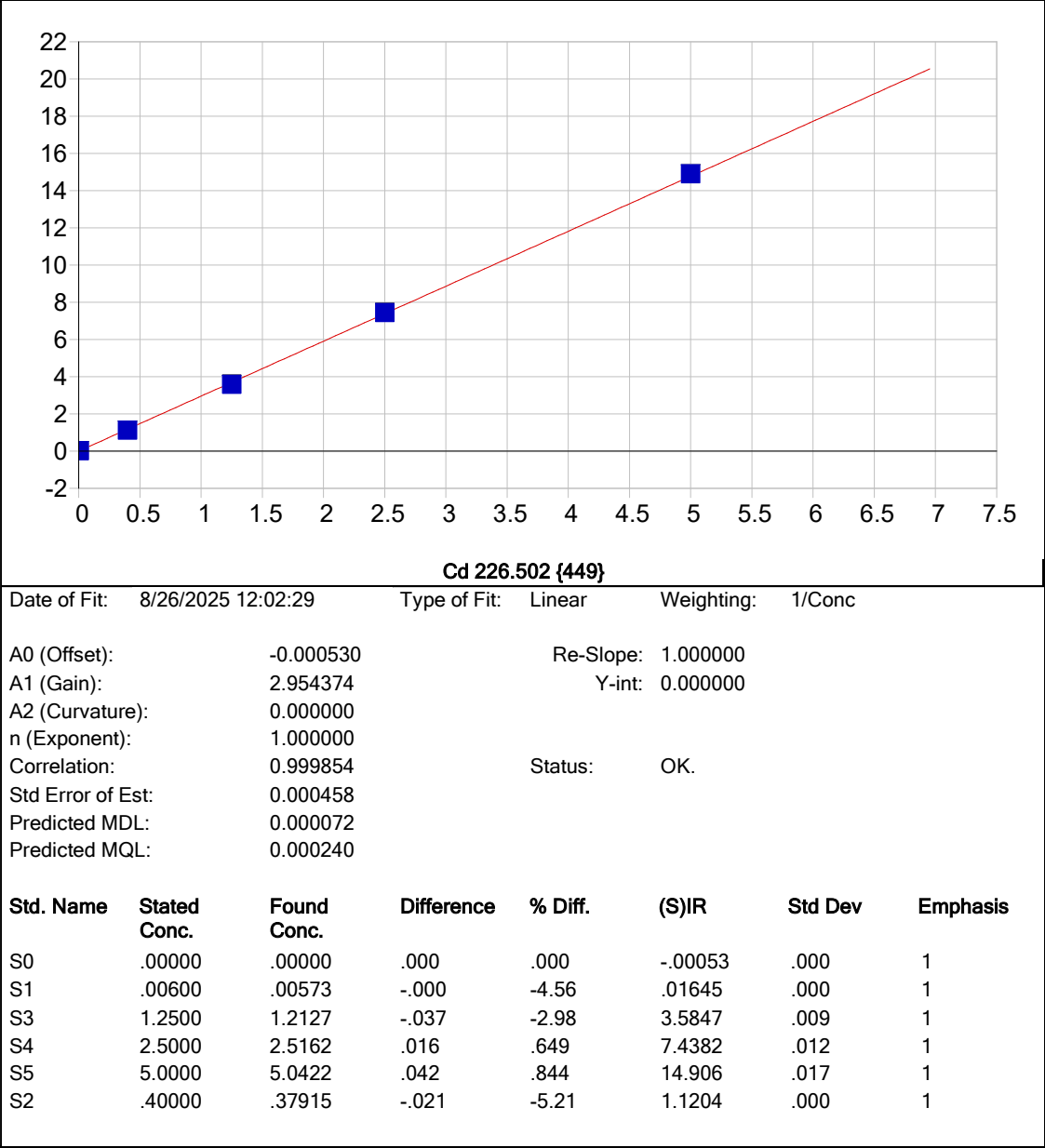


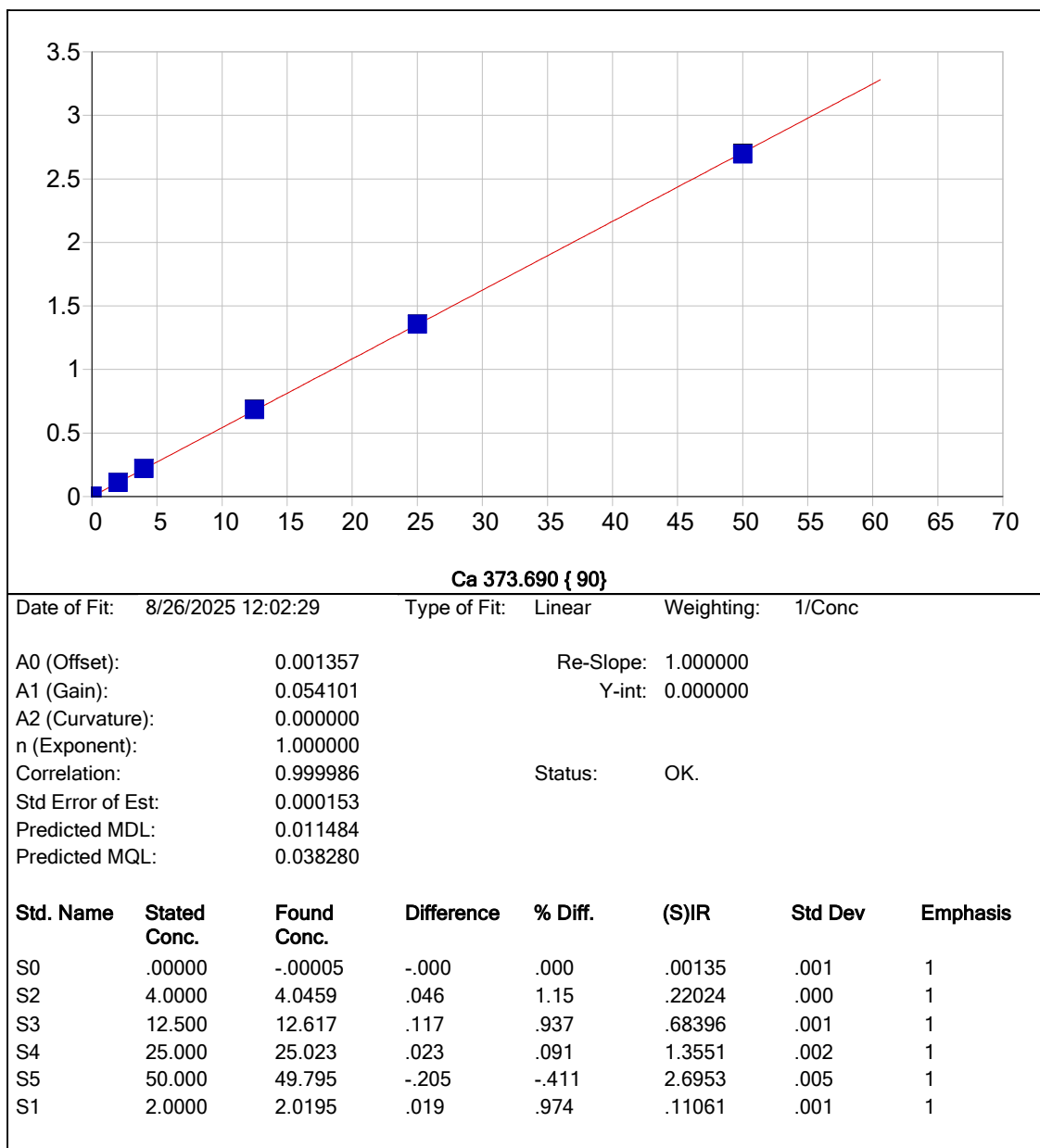


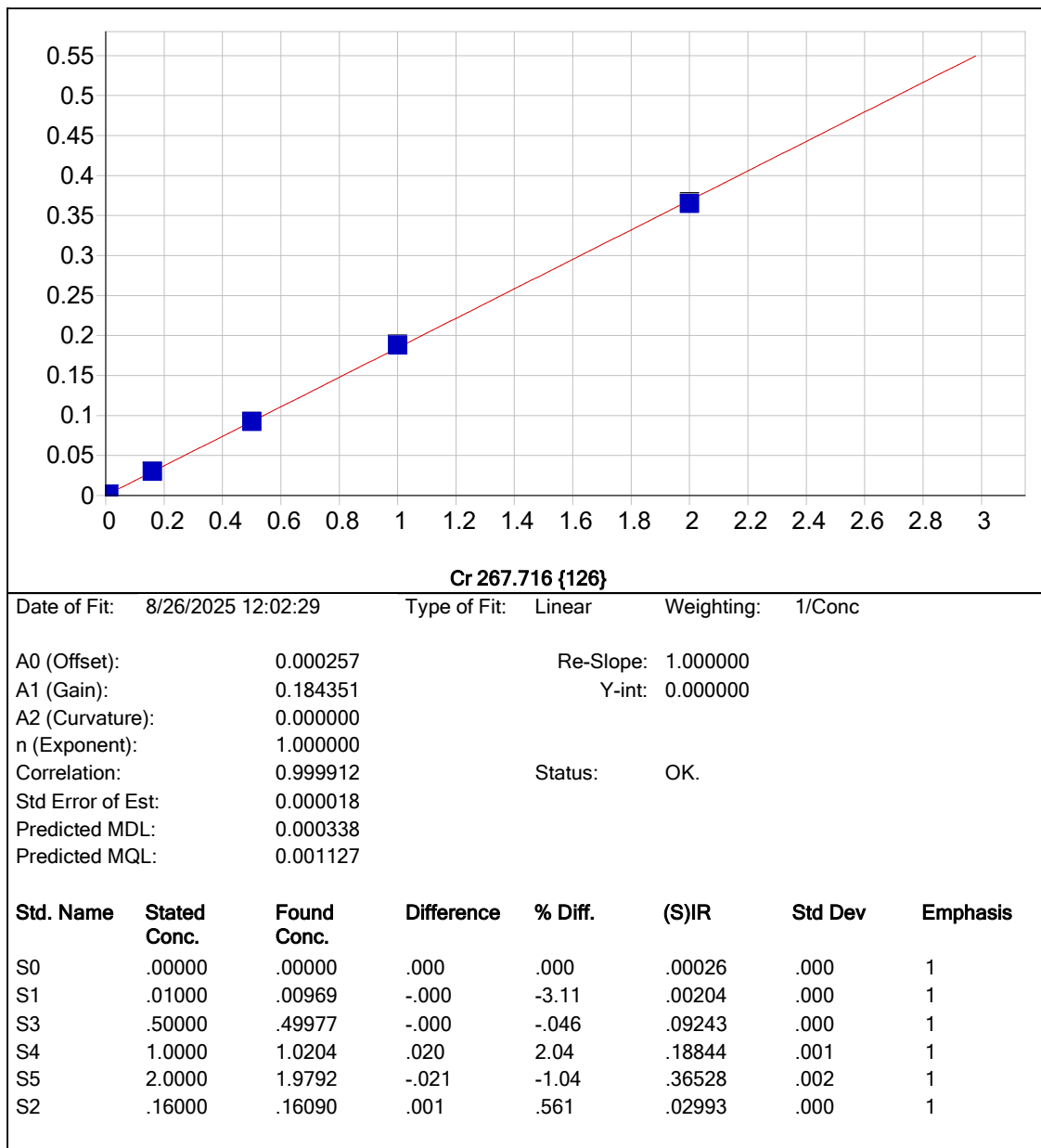


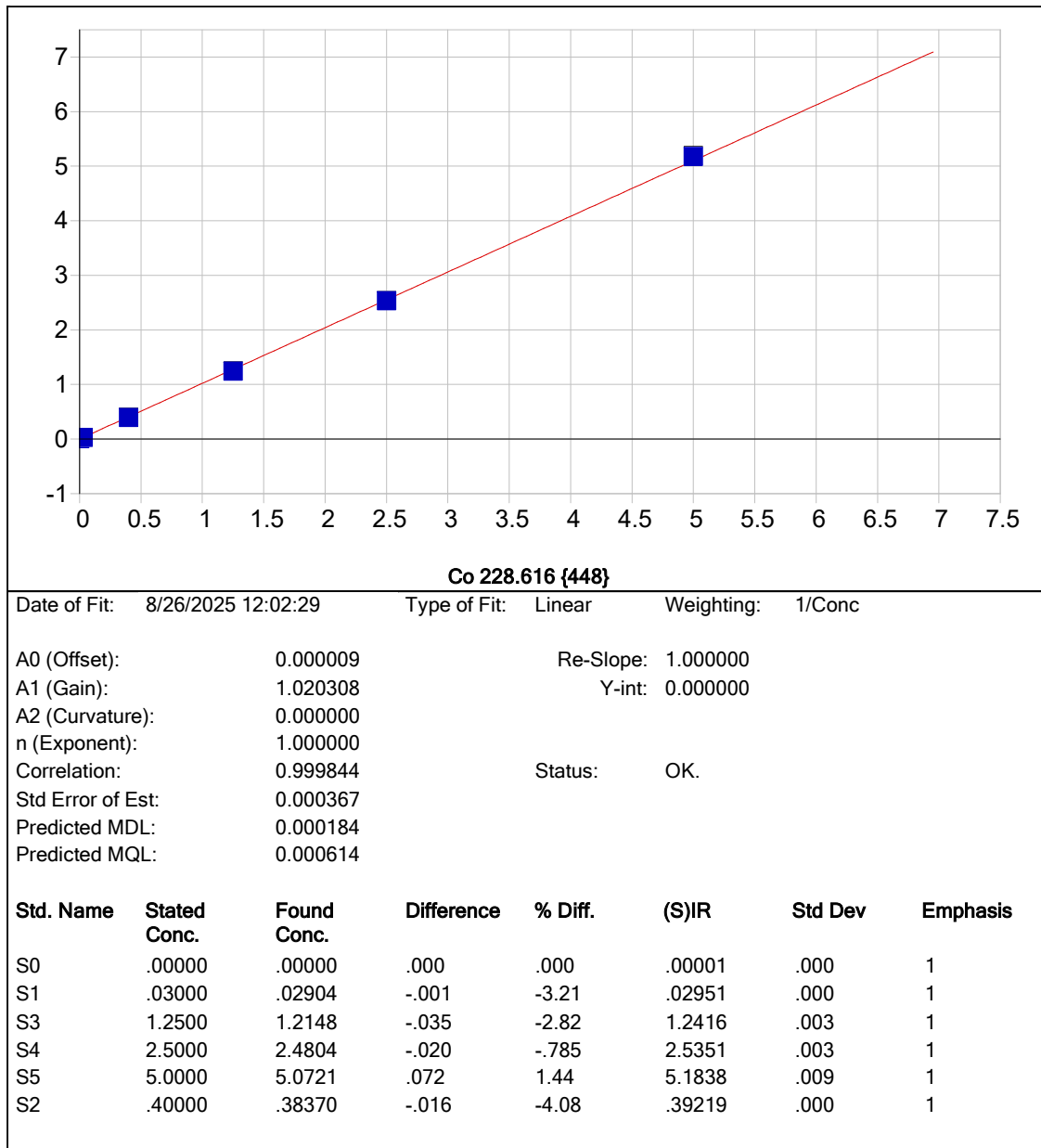


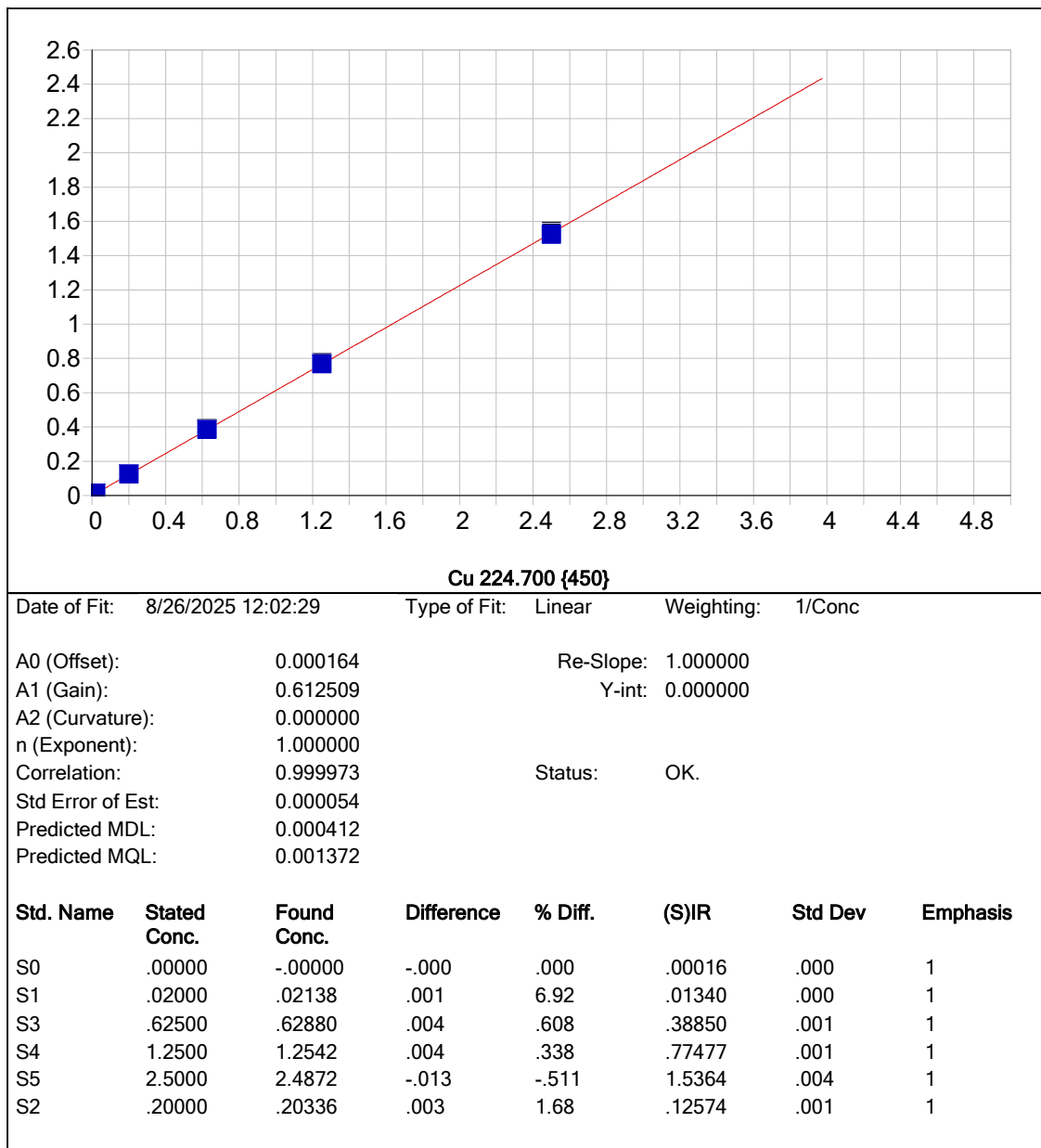


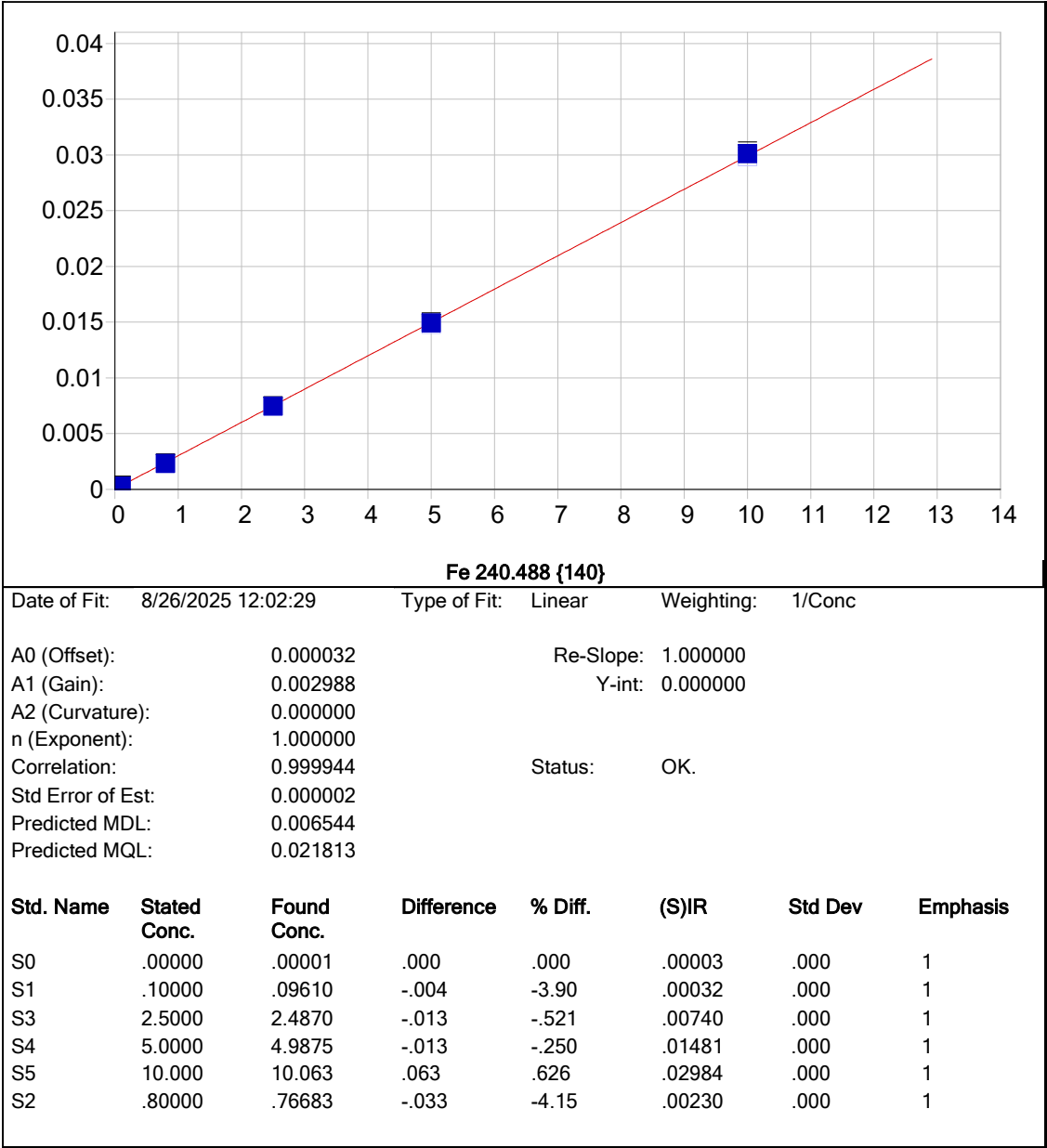


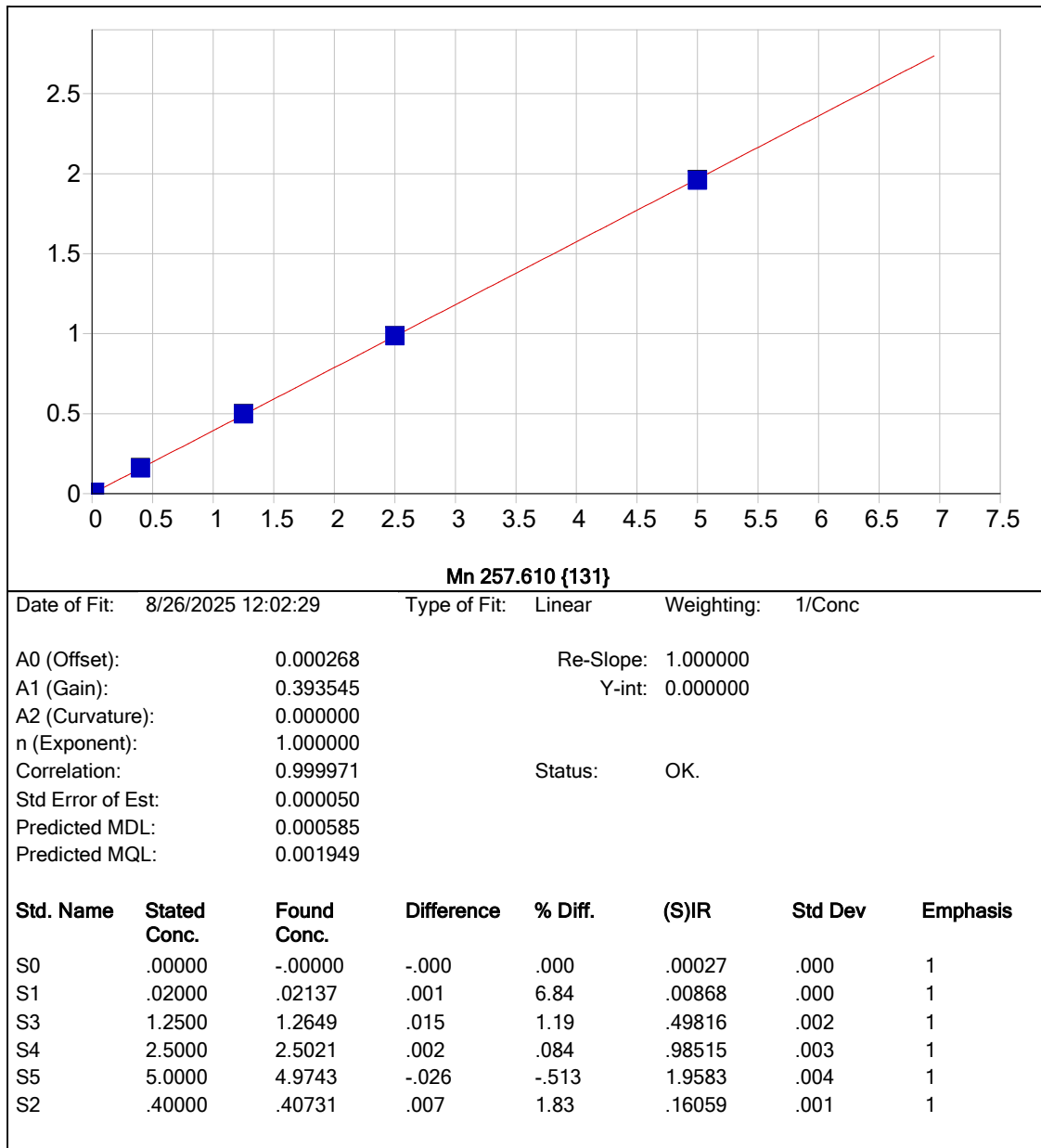


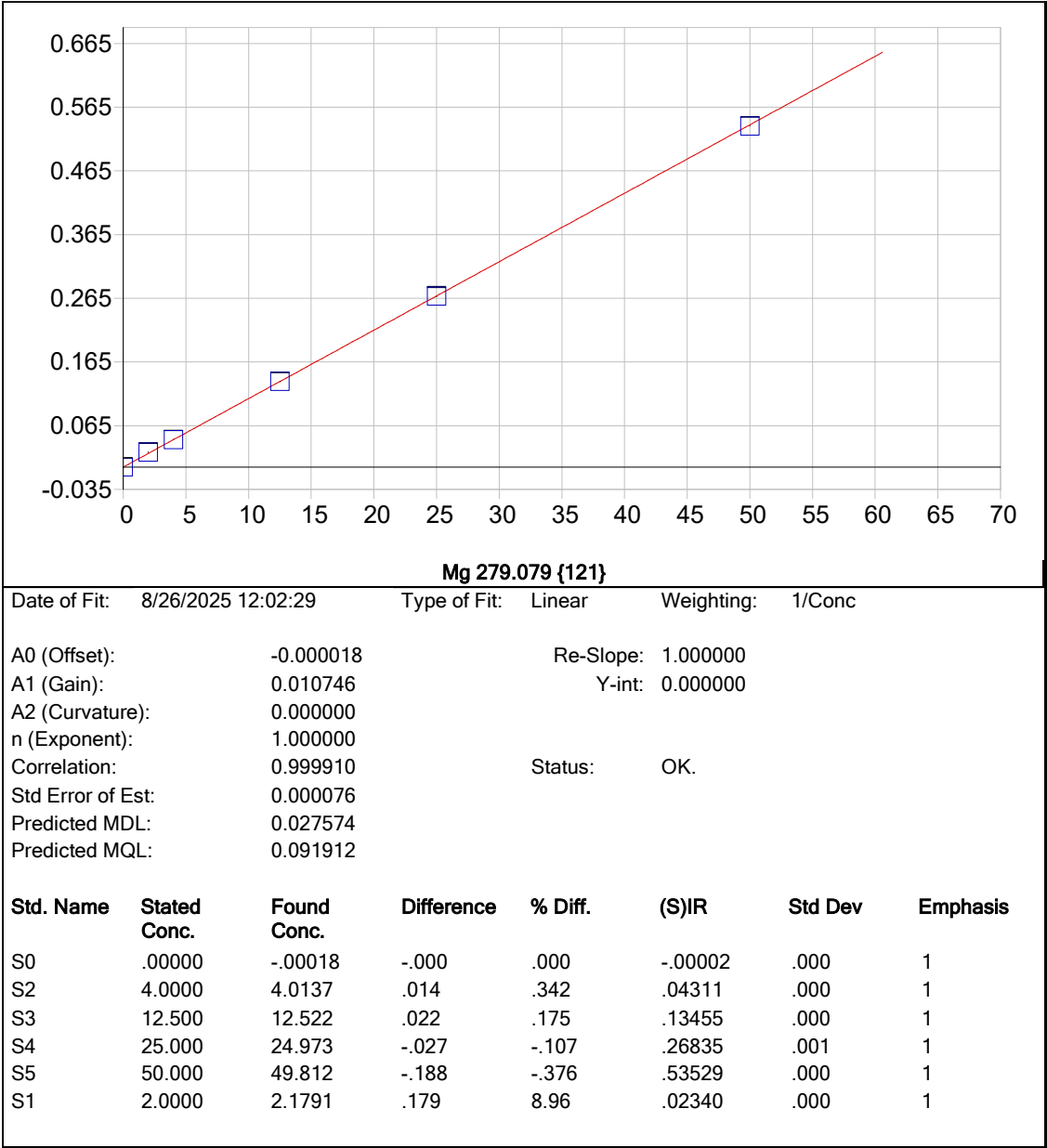


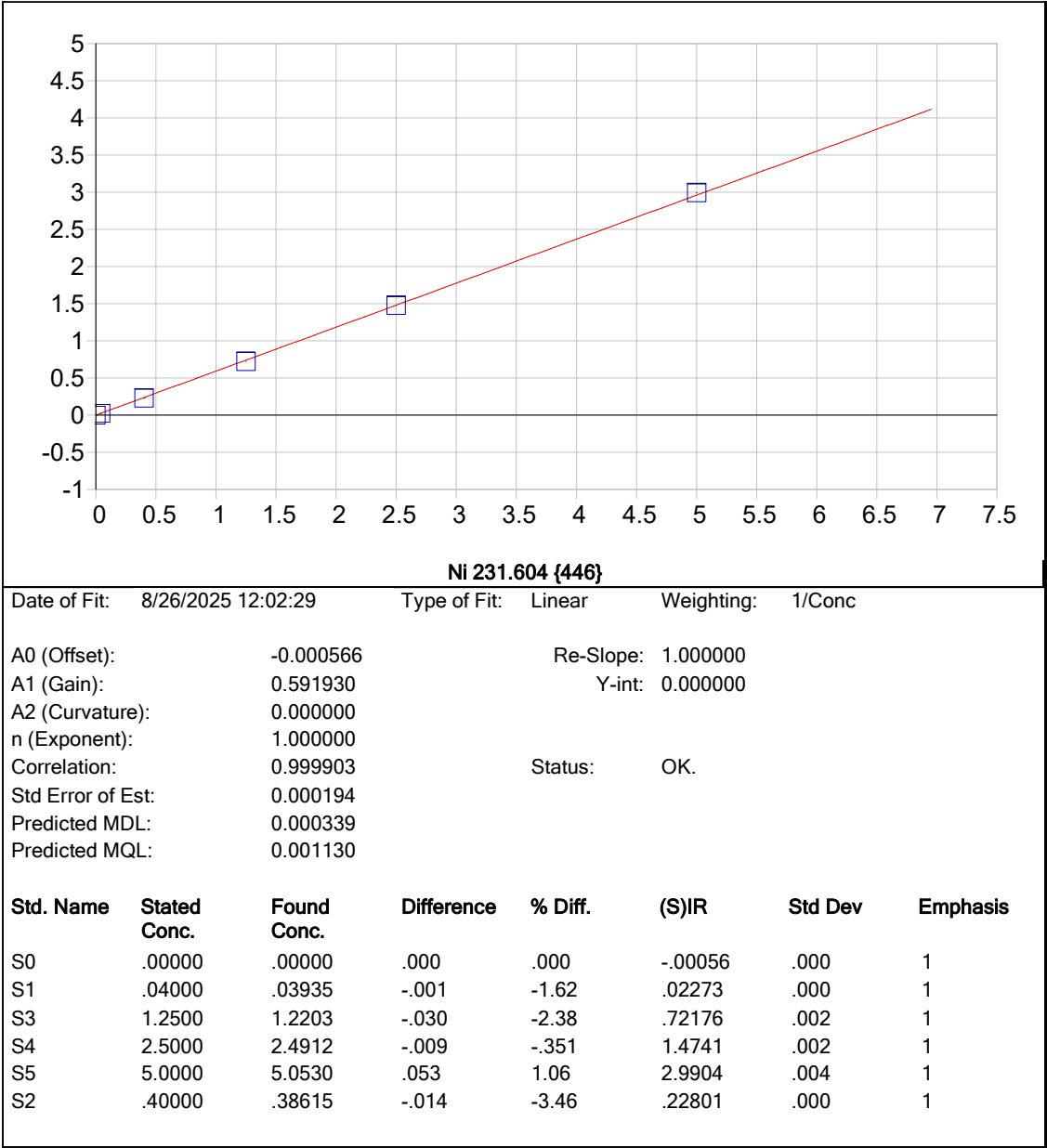


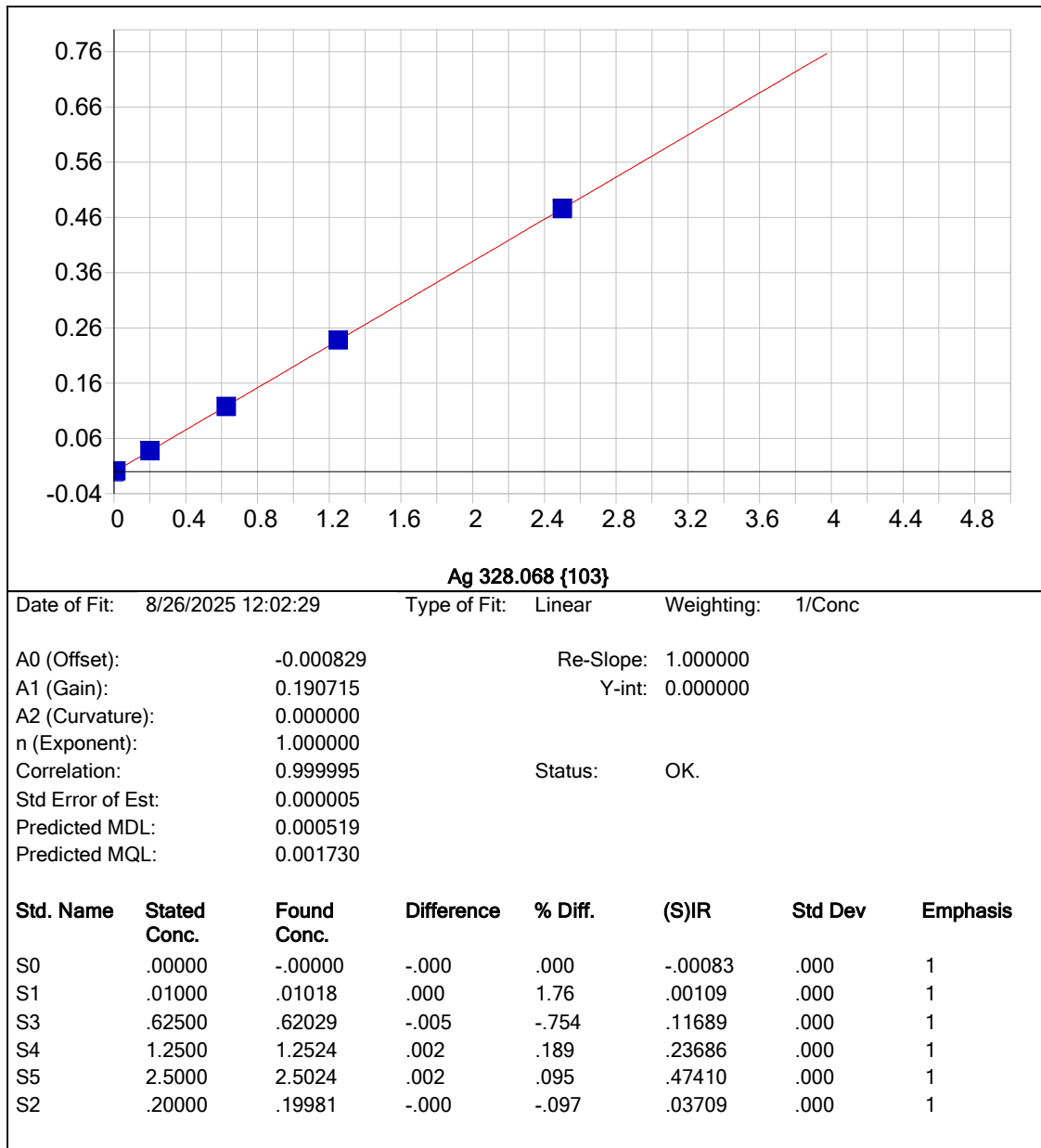


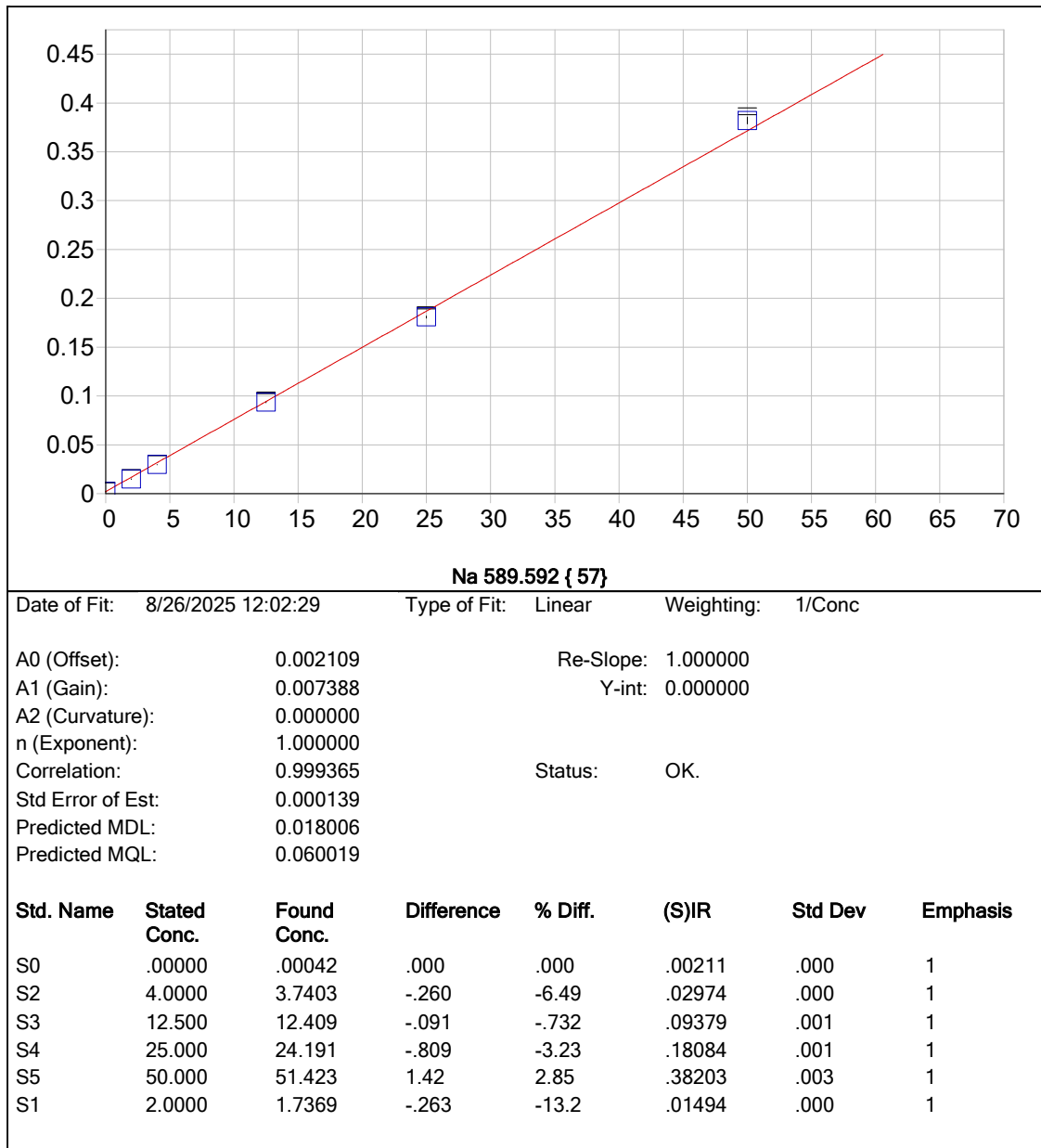


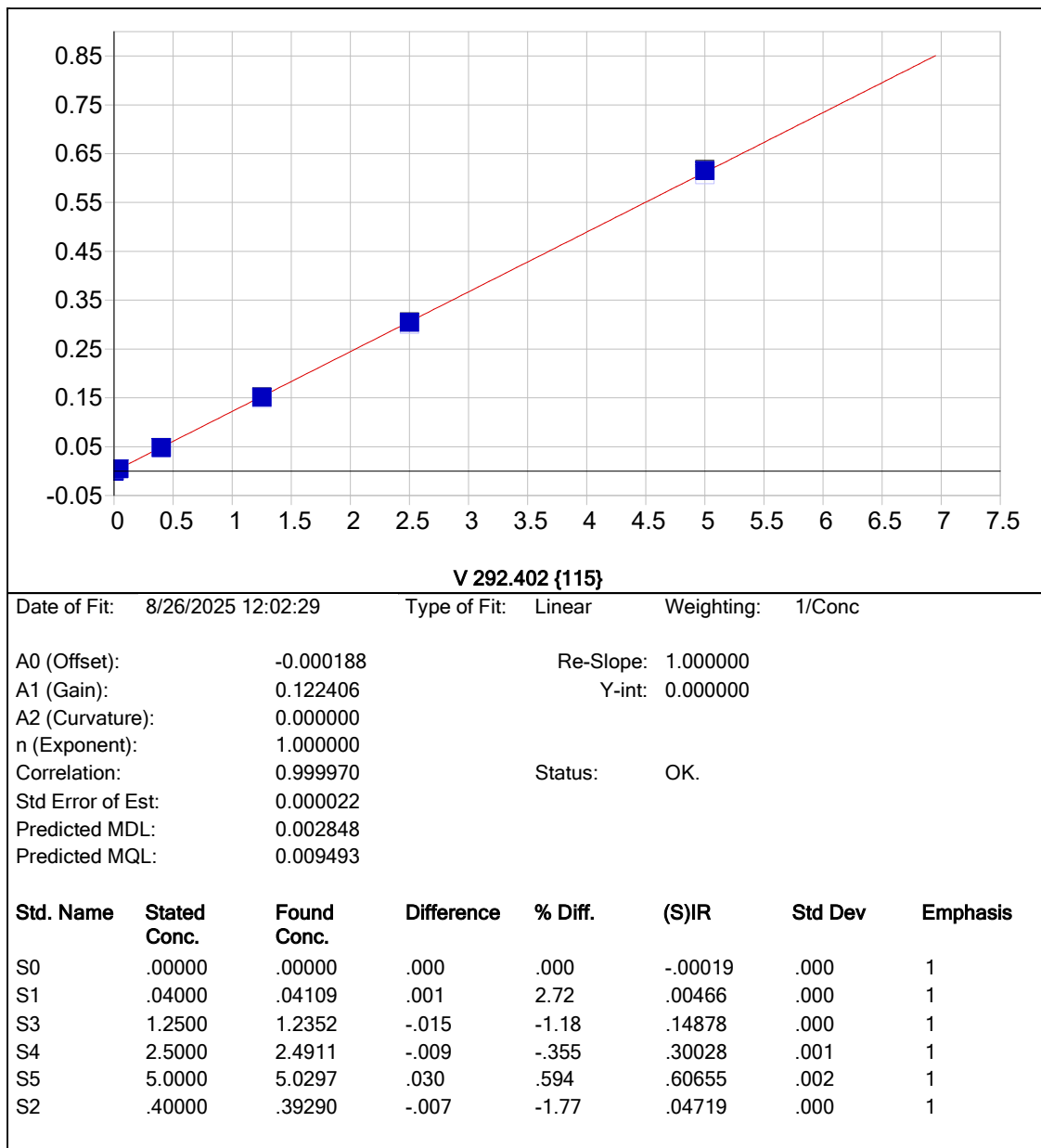


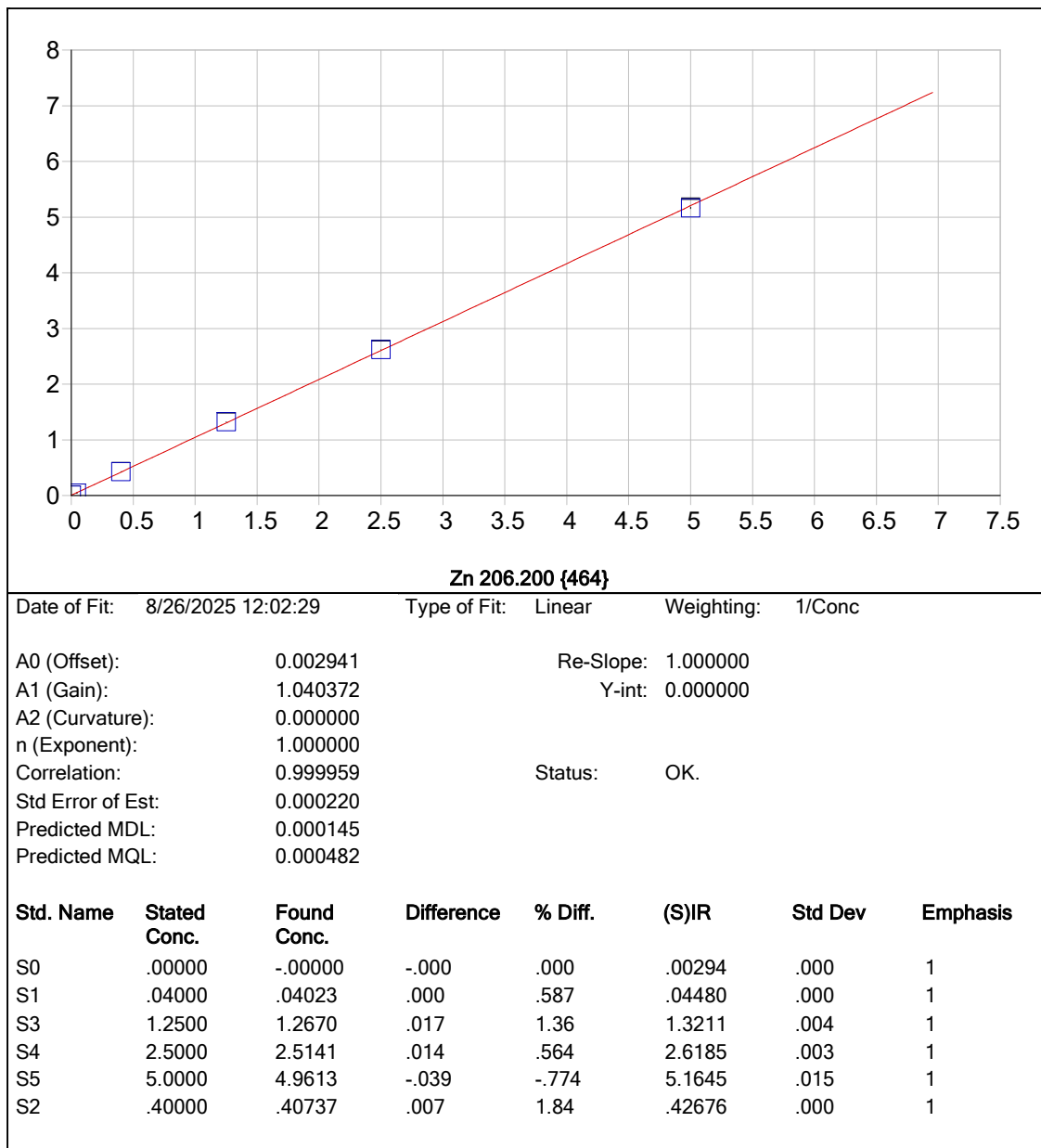


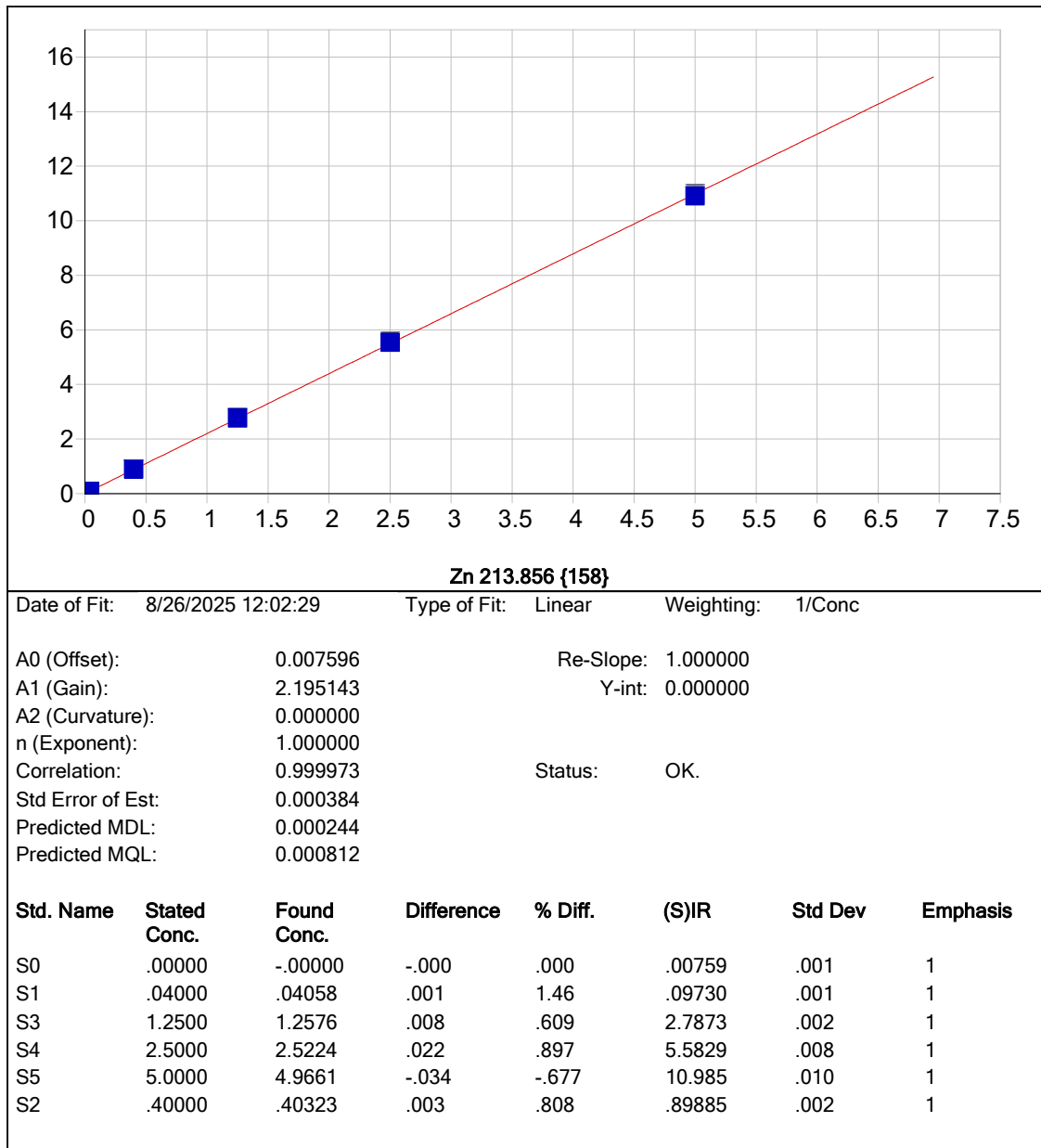


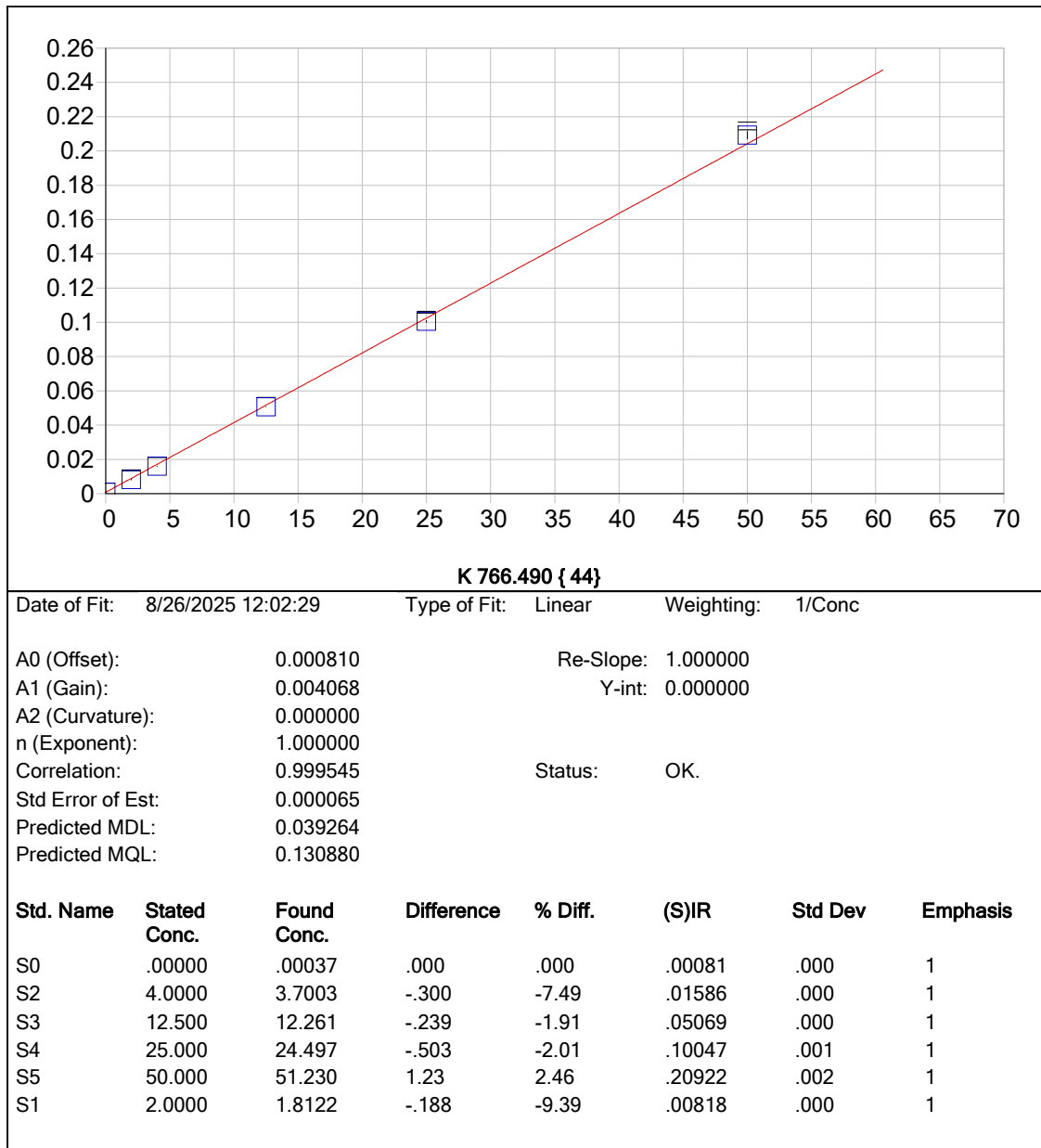


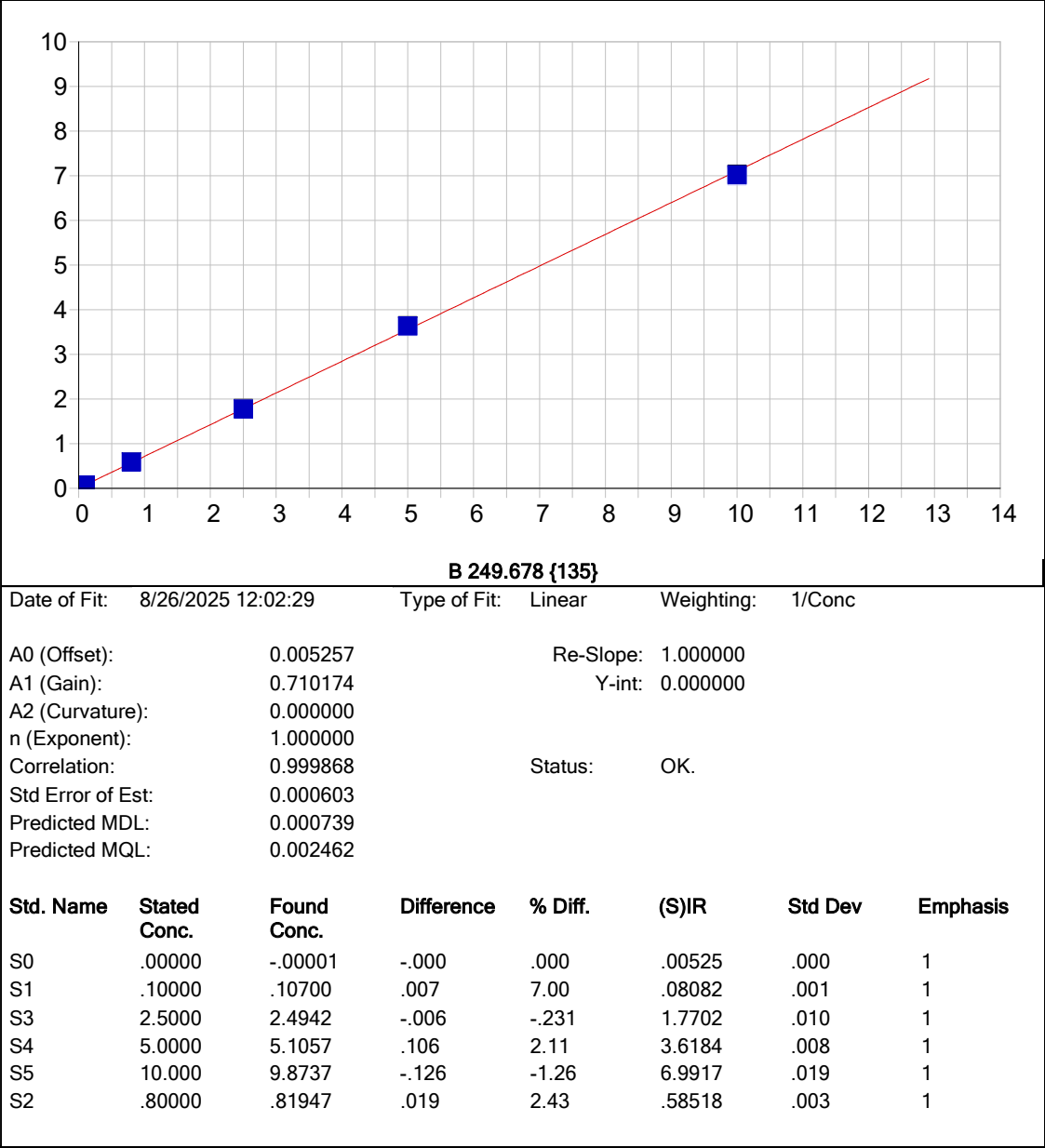


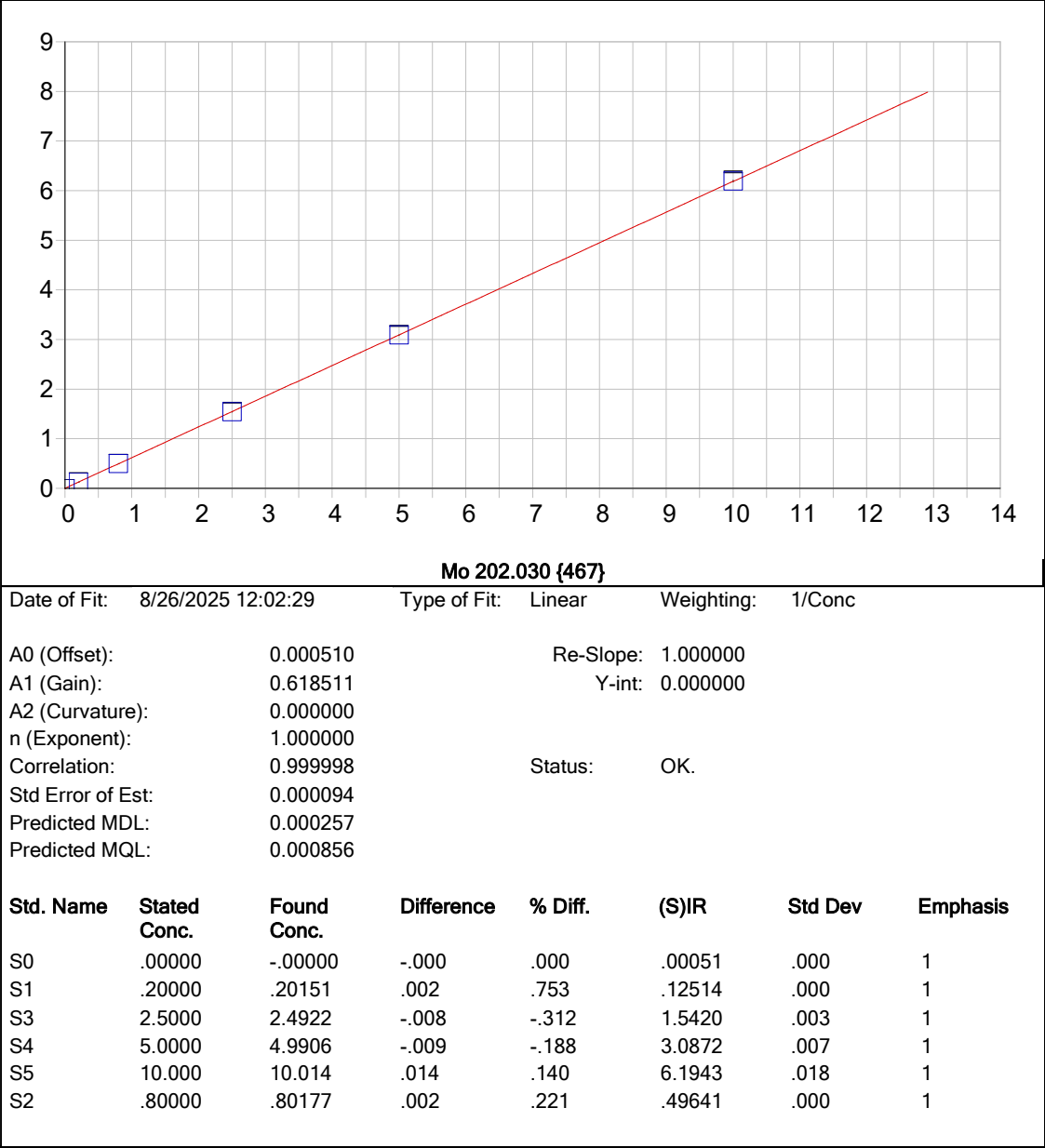


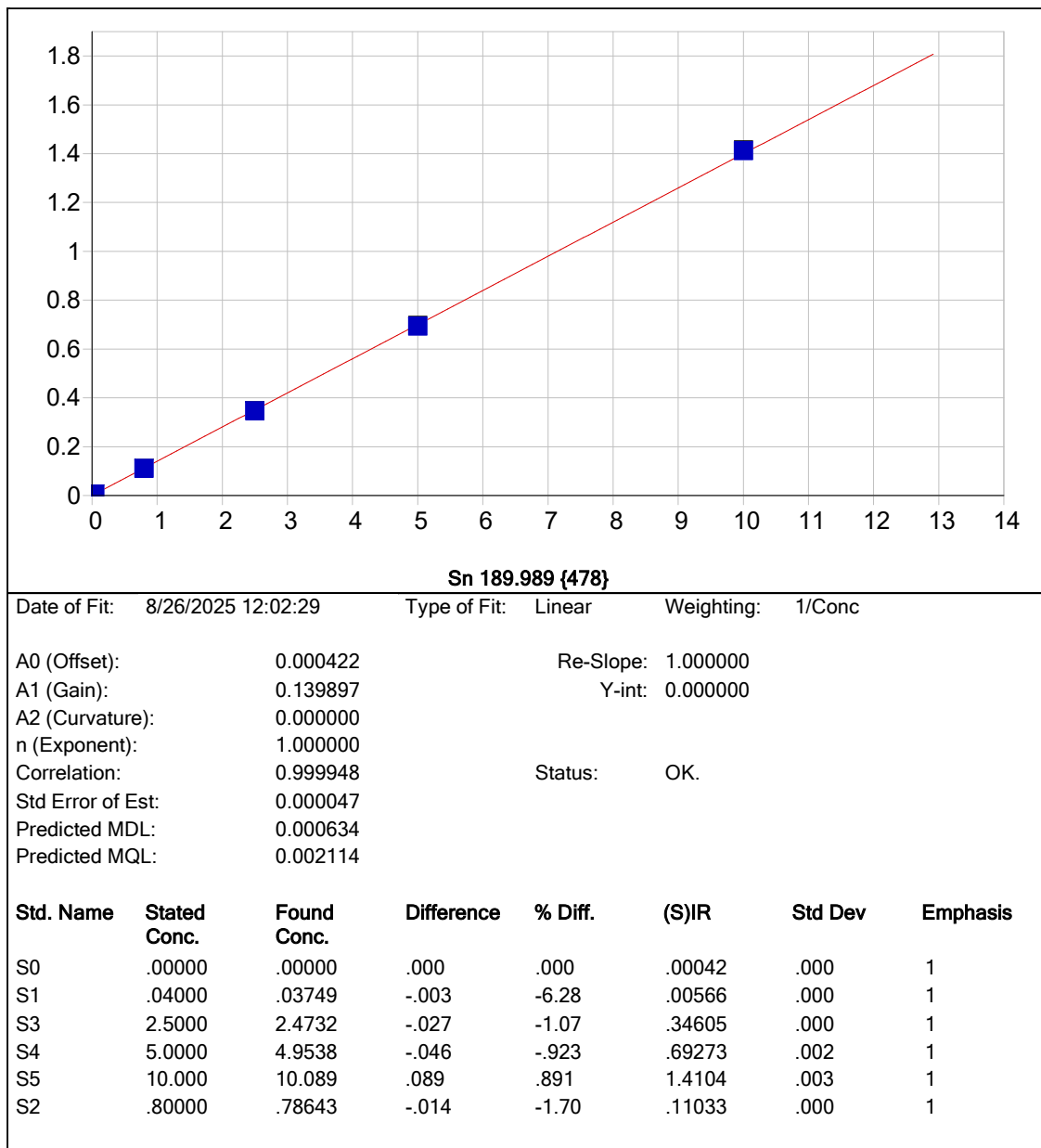


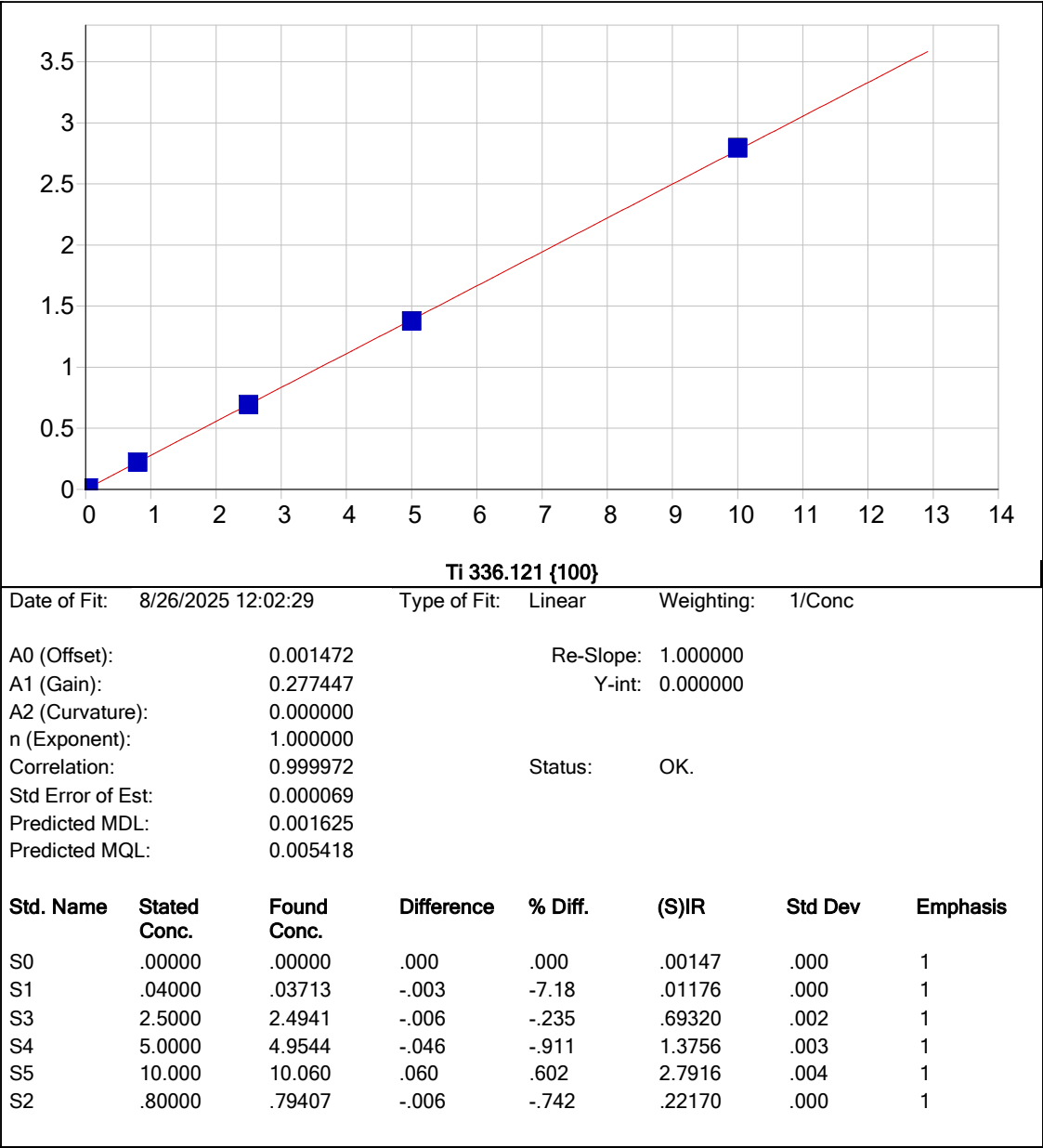


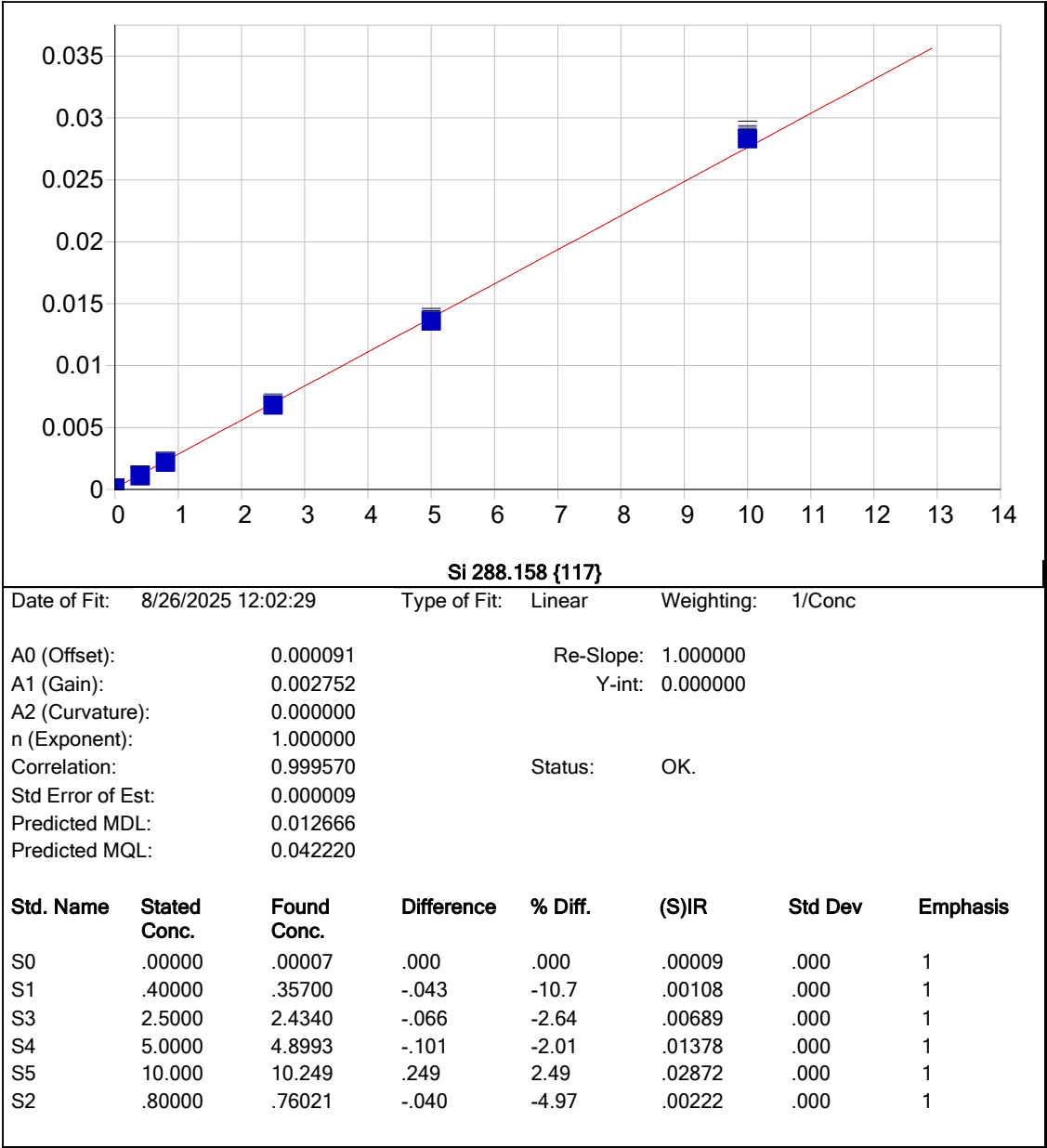


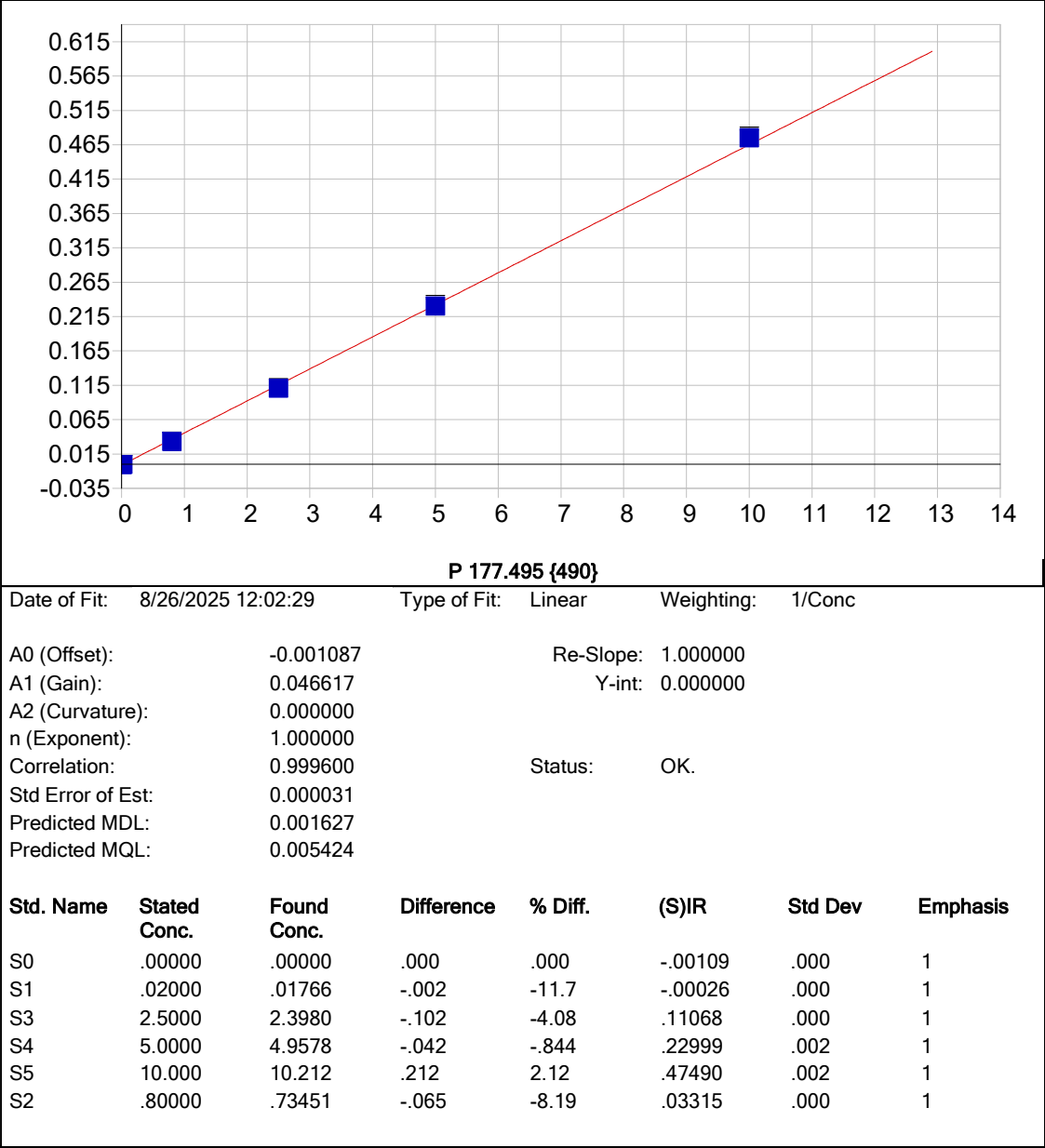


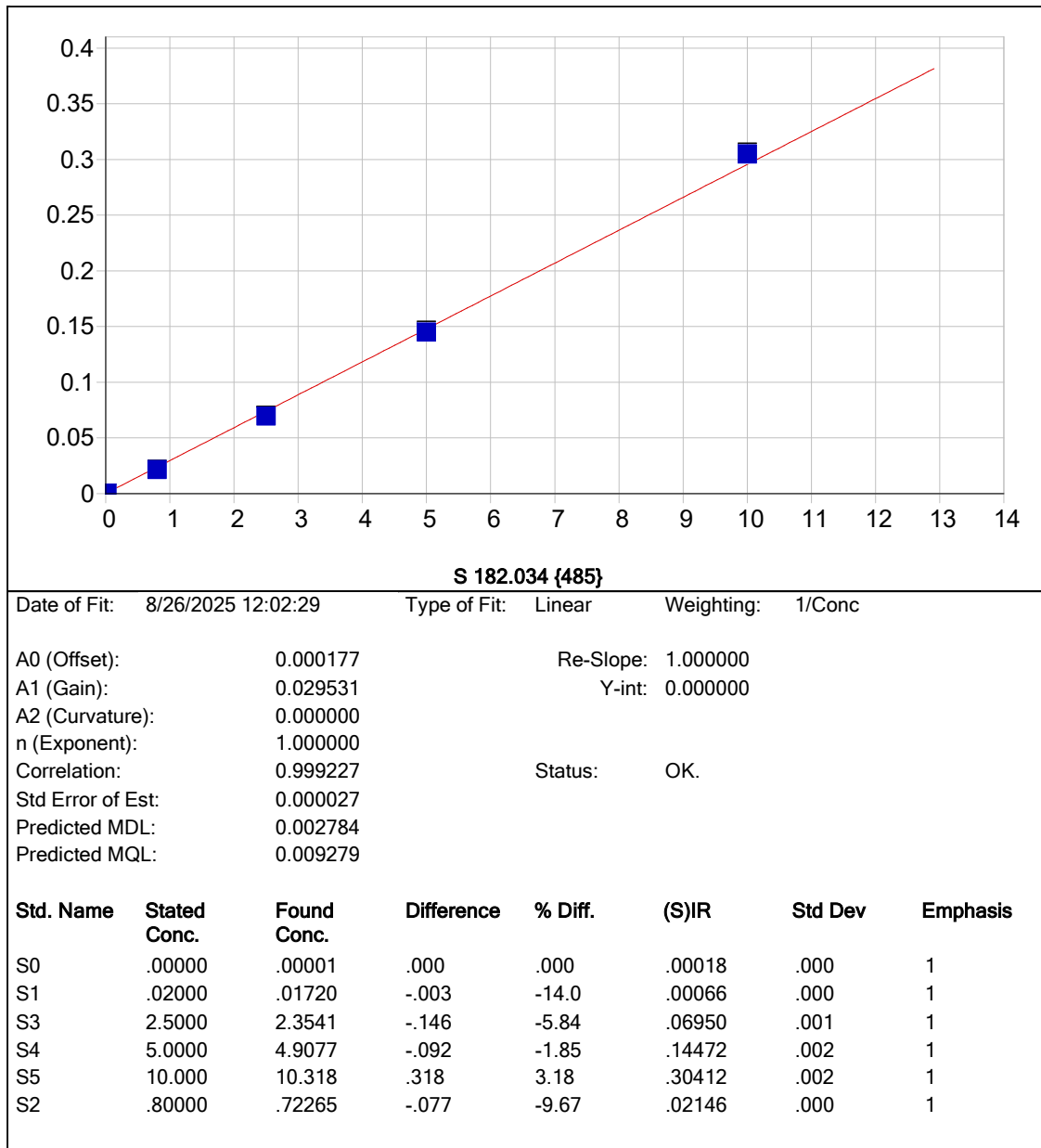


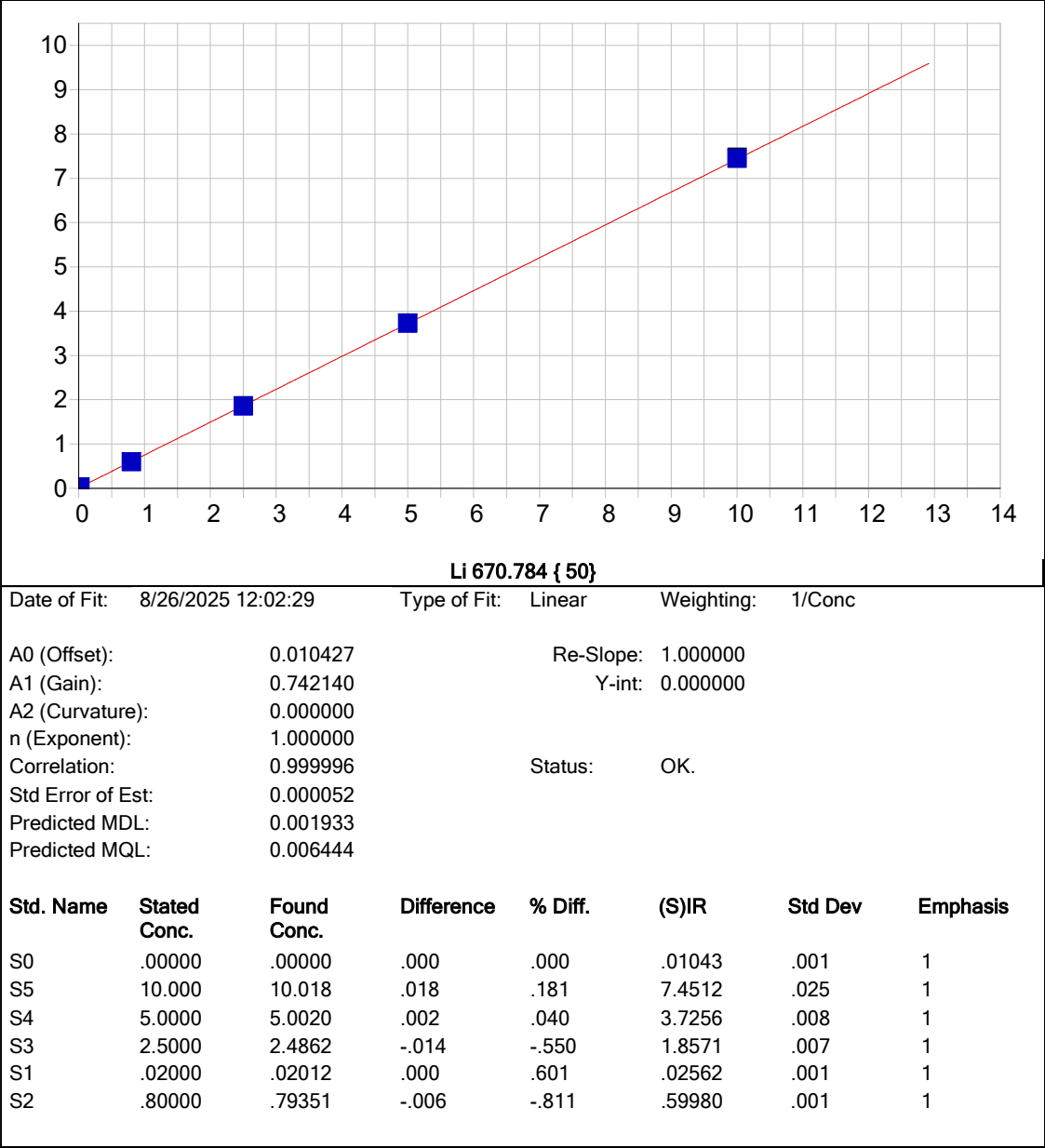


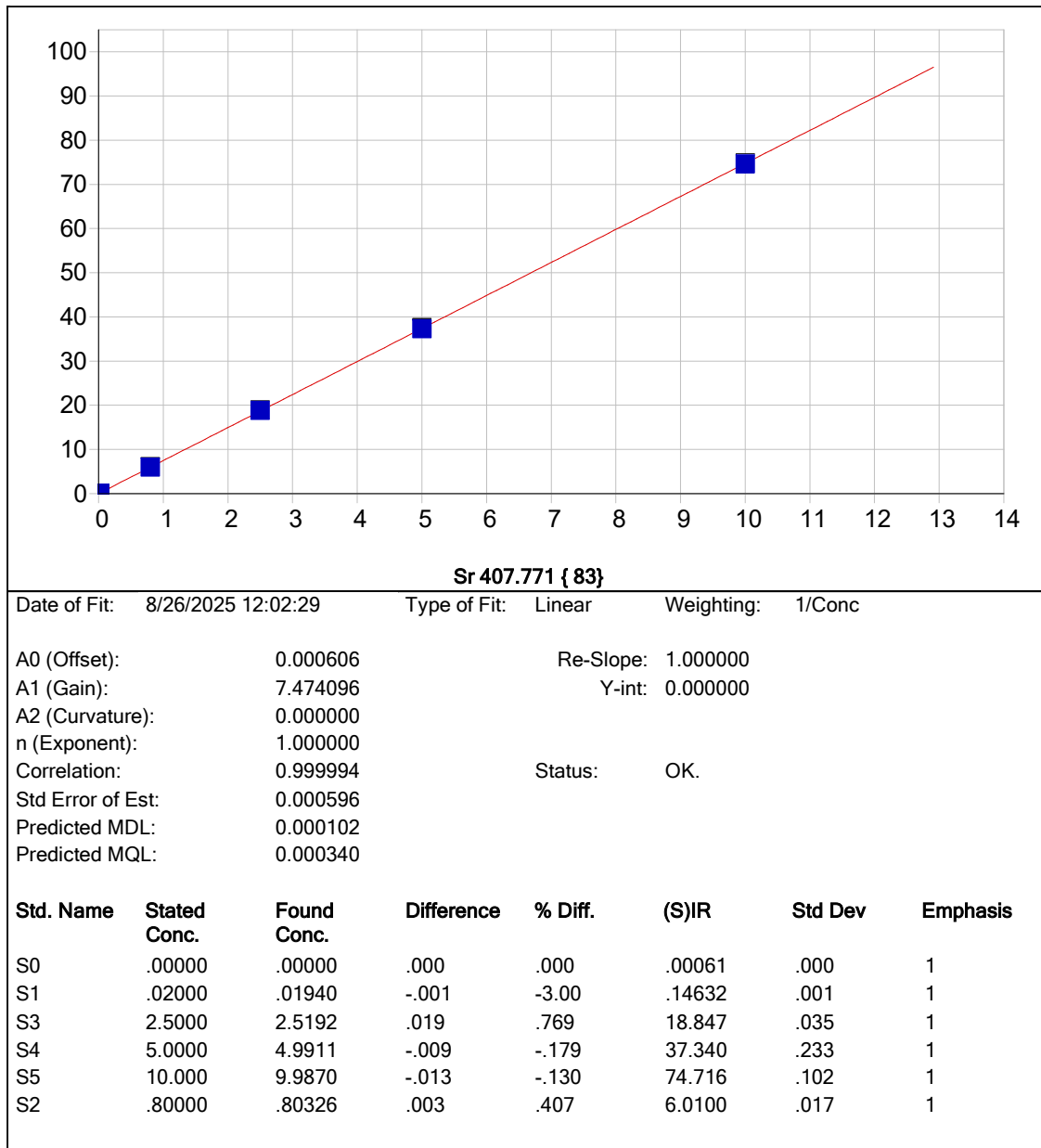






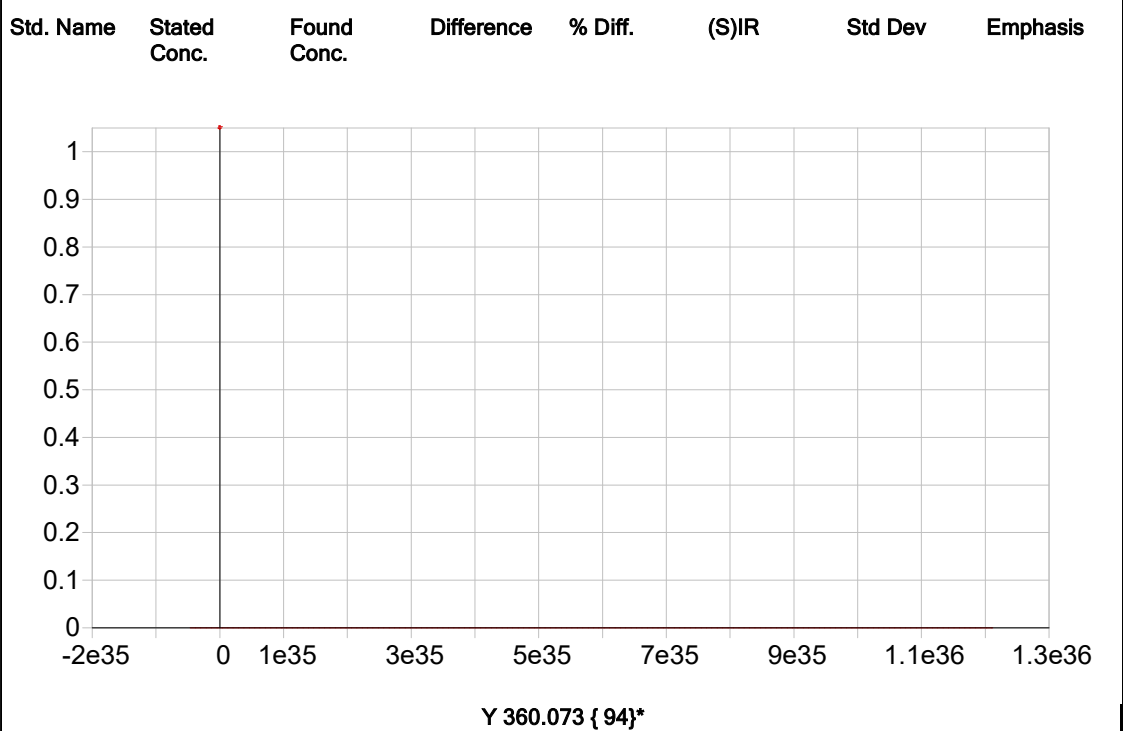




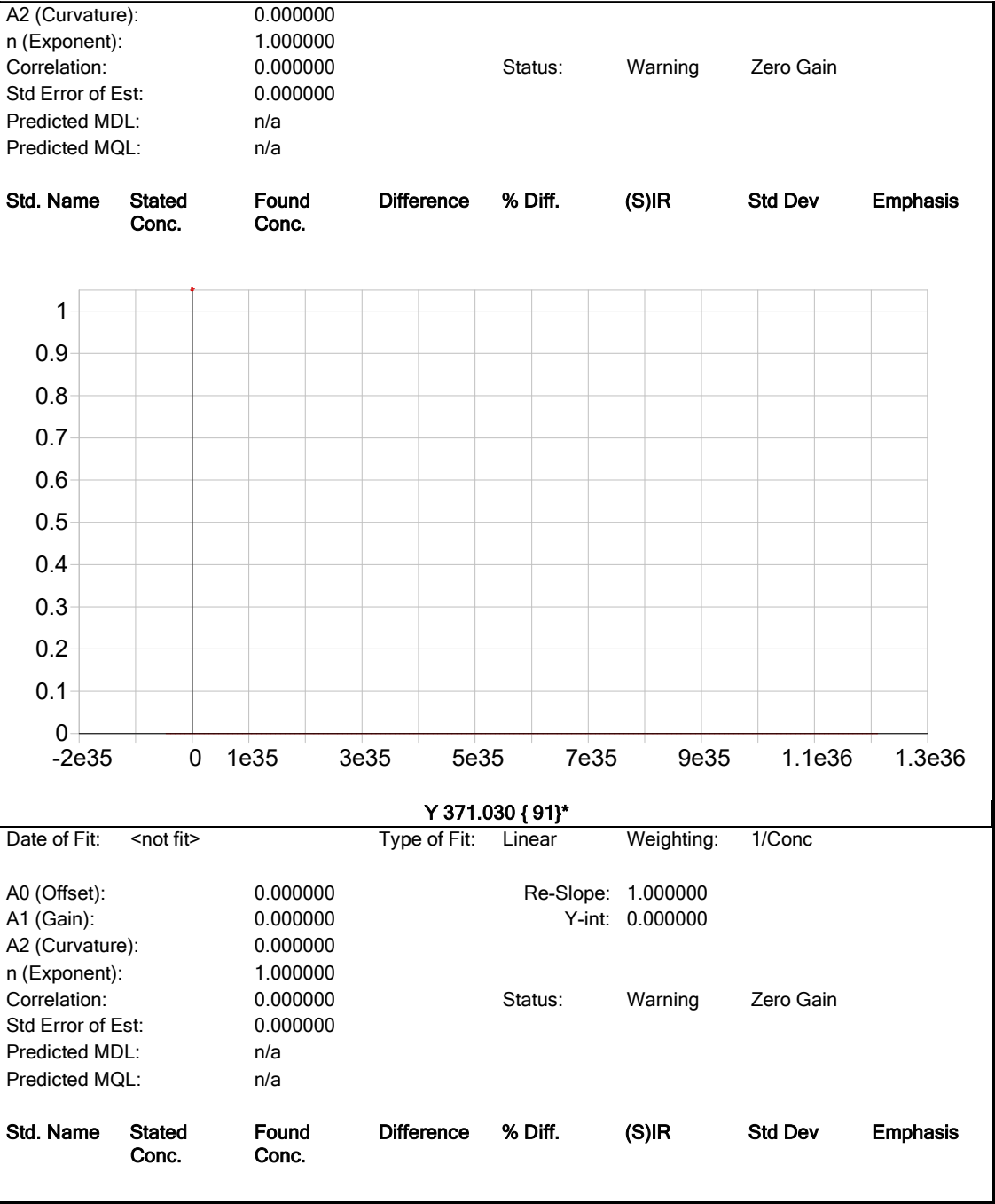


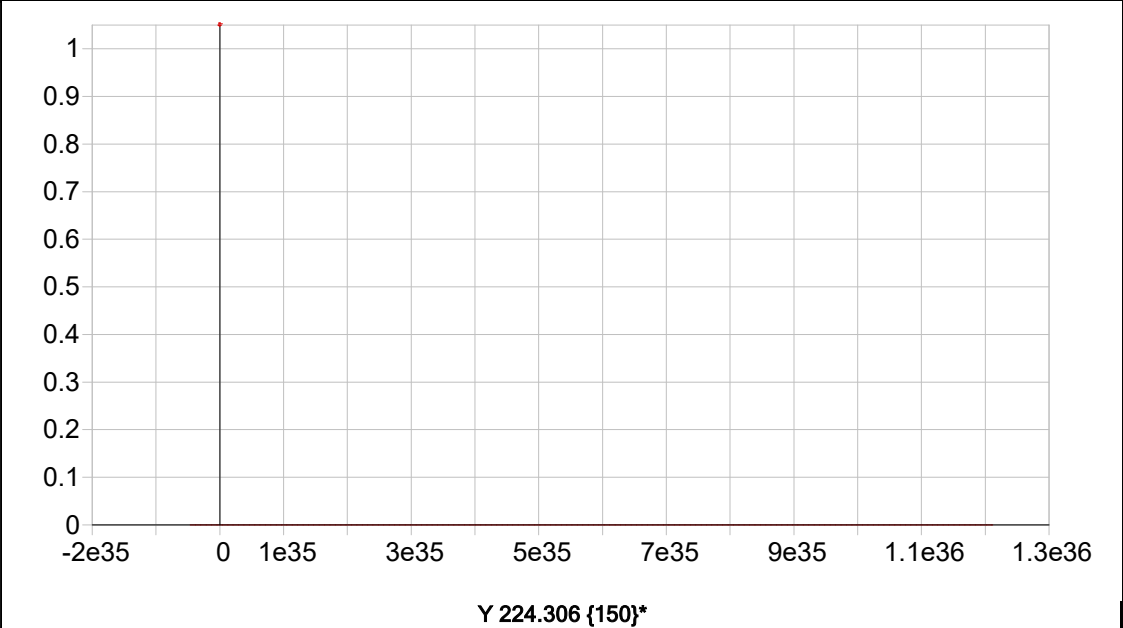


Date of Fit:	8/26/2025 12:02:29	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000	Re-Slope:	1.000000		
A1 (Gain):	0.000000	Y-int:	0.000000		
A2 (Curvature):	0.000000				
n (Exponent):	1.000000				
Correlation:	0.000000	Status:	Warning	Zero Gain	
Std Error of Est:	0.000000				
Predicted MDL:	n/a				
Predicted MQL:	n/a				

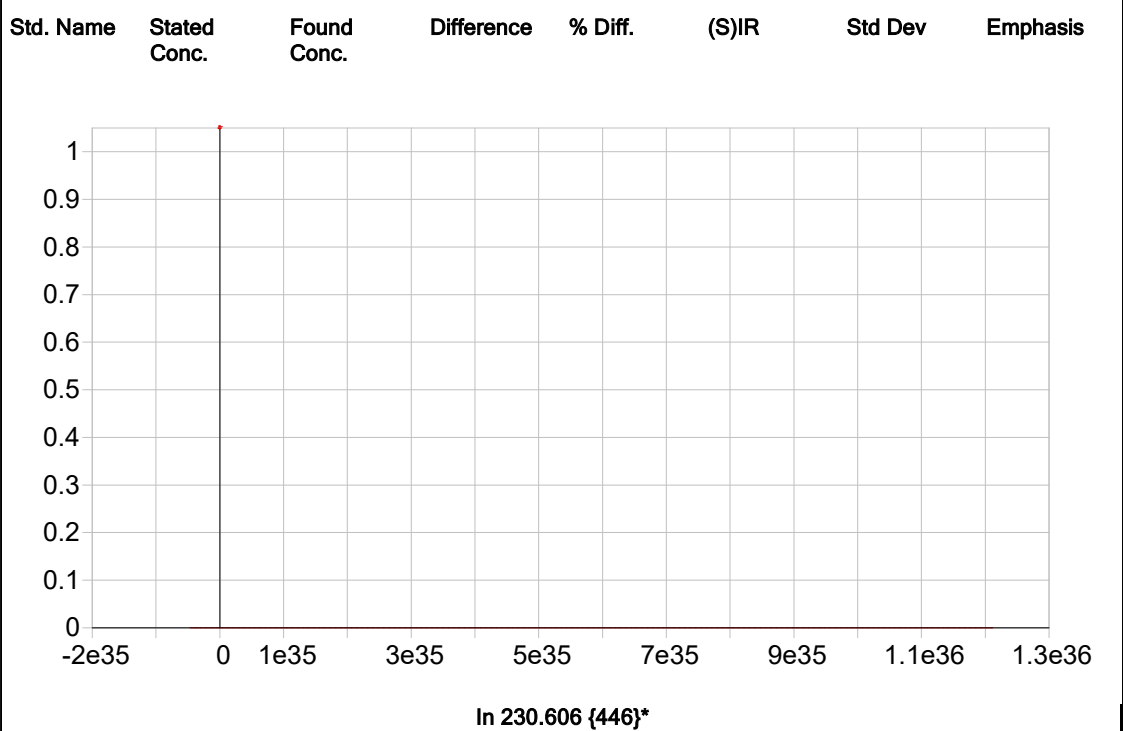


Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000	Re-Slope:	1.000000		
A1 (Gain):	0.000000	Y-int:	0.000000		





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				



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

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

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

Sample Name: S0 Acquired: 8/26/2025 10:49:22 Type: Cal
Method: 6010-200.7 NEW(v130) 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	-.00011	.00051	.00008	.00040	.00071	-.00031	.06855	-.00137
Stddev	.00013	.00002	.00014	.00013	.00010	.00029	.00027	.00038
%RSD	115.64	3.5165	183.76	31.047	13.630	92.789	.39109	27.857

#1	-.00006	.00053	.00020	.00054	.00068	-.00026	.06830	-.00155
#2	-.00025	.00050	-.00008	.00029	.00082	-.00061	.06852	-.00162
#3	-.00002	.00050	.00011	.00038	.00064	-.00005	.06883	-.00093

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	-.00053	.00135	.00026	.00001	.00016	.00003	.00027	-.00002
Stddev	.00009	.00051	.00005	.00012	.00012	.00001	.00019	.00033
%RSD	17.894	37.894	21.156	968.32	75.663	33.413	72.394	1647.4

#1	-.00062	.00077	.00031	.00011	.00026	.00004	.00048	-.00004
#2	-.00054	.00154	.00020	.00005	.00020	.00002	.00009	.00032
#3	-.00043	.00175	.00026	-.00012	.00003	.00004	.00023	-.00034

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	-.00056	-.00083	.00211	-.00019	.00759	.00081	.00525	.00051
Stddev	.00007	.00009	.00015	.00046	.00067	.00016	.00028	.00013
%RSD	12.741	10.357	7.3205	247.15	8.7794	19.962	5.2694	24.690

#1	-.00053	-.00083	.00195	-.00058	.00695	.00071	.00550	.00045
#2	-.00052	-.00074	.00213	.00032	.00828	.00073	.00530	.00042
#3	-.00065	-.00092	.00226	-.00031	.00755	.00100	.00495	.00065

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	.00042	.00147	.00009	-.00109	.00018	.01043	.00061	
Stddev	.00002	.00043	.00003	.00002	.00004	.00081	.00038	
%RSD	4.1960	29.512	28.009	1.5399	21.437	7.7901	61.865	

#1	.00043	.00104	.00006	-.00107	.00013	.01080	.00017	
#2	.00040	.00147	.00010	-.00110	.00021	.01099	.00084	
#3	.00043	.00191	.00011	-.00109	.00019	.00950	.00081	

Sample Name: S0 Acquired: 8/26/2025 10:49:22 Type: Cal
Method: 6010-200.7 NEW(v130) 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	6333.6	108640.	10151.	4941.0	7754.8
Stddev	2.8	190.	20.	8.6	16.3
%RSD	.04388	.17500	.19766	.17385	.21059
#1	6333.4	108640.	10173.	4938.4	7748.2
#2	6331.0	108830.	10134.	4950.6	7742.9
#3	6336.5	108450.	10147.	4934.0	7773.4

Sample Name: S1 Acquired: 8/26/2025 10:53:47 Type: Cal
Method: 6010-200.7 NEW(v130) 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	.00080	.00342	.00246	.00119	.00505	.00795	.28641	.04316
Stddev	.00003	.00014	.00005	.00007	.00013	.00006	.00240	.00035
%RSD	3.9253	4.1358	1.9680	6.1642	2.5275	.80636	.83655	.81860
#1	.00082	.00335	.00241	.00123	.00495	.00796	.28728	.04349
#2	.00082	.00358	.00246	.00124	.00519	.00788	.28825	.04319
#3	.00076	.00333	.00251	.00111	.00500	.00801	.28370	.04279
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	.01645	.11061	.00204	.02951	.01340	.00032	.00868	.02340
Stddev	.00020	.00057	.00004	.00008	.00011	.00002	.00024	.00032
%RSD	1.2291	.51667	1.7674	.27851	.80728	7.1676	2.7082	1.3603
#1	.01626	.11043	.00205	.02959	.01339	.00030	.00891	.02377
#2	.01641	.11015	.00207	.02943	.01351	.00034	.00869	.02320
#3	.01666	.11125	.00200	.02951	.01330	.00031	.00844	.02324
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	.02273	.00109	.01494	.00466	.09730	.00818	.08082	.12514
Stddev	.00019	.00005	.00024	.00010	.00070	.00027	.00061	.00026
%RSD	.84029	4.5018	1.5917	2.1298	.72454	3.3147	.76058	.21159
#1	.02294	.00112	.01484	.00476	.09671	.00787	.08076	.12534
#2	.02257	.00104	.01477	.00456	.09710	.00835	.08147	.12484
#3	.02266	.00113	.01521	.00466	.09808	.00833	.08024	.12525
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	.00566	.01176	.00108	-.00026	.00066	.02562	.14632	
Stddev	.00014	.00007	.00005	.00006	.00005	.00056	.00074	
%RSD	2.4522	.58242	4.4852	23.518	8.1431	2.2044	.50831	
#1	.00557	.01175	.00104	-.00021	.00069	.02595	.14714	
#2	.00559	.01171	.00113	-.00024	.00069	.02593	.14568	
#3	.00582	.01184	.00106	-.00033	.00060	.02497	.14615	

Sample Name: S1 Acquired: 8/26/2025 10:53:47 Type: Cal
Method: 6010-200.7 NEW(v130) 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	6366.6	106470.	9860.7	4843.5	7651.9
Stddev	9.9	500.	40.3	15.9	5.8
%RSD	.15525	.46992	.40845	.32897	.07558
#1	6371.6	106970.	9837.4	4843.0	7658.2
#2	6372.9	106460.	9837.5	4859.6	7650.7
#3	6355.2	105970.	9907.2	4827.8	7646.8

Sample Name: S2 Acquired: 8/26/2025 10:58:08 Type: Cal
Method: 6010-200.7 NEW(v130) 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	.03629	.05996	.15032	.03392	.06888	.12067	3.6720	.28140	1.1204
Stddev	.00011	.00058	.00013	.00013	.00023	.00080	.0121	.00152	.0005
%RSD	.29297	.96252	.08829	.39096	.33028	.66101	.32910	.53945	.04188
#1	.03618	.06027	.15019	.03394	.06866	.12126	3.6811	.28065	1.1206
#2	.03630	.05929	.15032	.03377	.06885	.12099	3.6765	.28315	1.1199
#3	.03639	.06032	.15045	.03404	.06912	.11976	3.6583	.28040	1.1207
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	.22024	.02993	.39219	.12574	.00230	.16059	.04311	.22801	.03709
Stddev	.00012	.00004	.00022	.00057	.00002	.00088	.00030	.00037	.00023
%RSD	.05594	.13301	.05545	.45100	.94793	.55026	.70522	.16198	.62839
#1	.22029	.02990	.39203	.12553	.00230	.16153	.04315	.22795	.03684
#2	.22033	.02997	.39210	.12531	.00233	.16048	.04279	.22767	.03730
#3	.22010	.02992	.39244	.12638	.00229	.15977	.04340	.22840	.03714
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	.02974	.04719	.89885	.01586	.58518	.49641	.11033	.22170	.00222
Stddev	.00013	.00025	.00223	.00006	.00340	.00049	.00033	.00049	.00003
%RSD	.44721	.51984	.24820	.37854	.58096	.09820	.29846	.21932	1.4097
#1	.02981	.04747	.90134	.01593	.58293	.49596	.11024	.22126	.00222
#2	.02983	.04705	.89821	.01583	.58909	.49634	.11005	.22222	.00218
#3	.02959	.04705	.89702	.01583	.58351	.49693	.11069	.22163	.00225
Elem	P_1774	S_1820	Li6707	Sr4077					
Units	Cts/S	Cts/S	Cts/S	Cts/S					
Avg	.03315	.02146	.59980	6.0100					
Stddev	.00010	.00010	.00088	.0167					
%RSD	.29369	.46150	.14594	.27739					
#1	.03306	.02141	.59977	6.0245					
#2	.03312	.02139	.60069	6.0137					
#3	.03325	.02157	.59894	5.9918					

Sample Name: S2 Acquired: 8/26/2025 10:58:08 Type: Cal
Method: 6010-200.7 NEW(v130) 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	6326.2	108020.	10206.	4959.7	7476.4
Stddev	12.4	332.	59.	9.5	12.9
%RSD	.19581	.30764	.57742	.19105	.17221
#1	6333.5	107850.	10212.	4953.1	7479.7
#2	6333.2	107810.	10145.	4955.4	7487.2
#3	6311.9	108400.	10262.	4970.5	7462.1

Sample Name: S3 Acquired: 8/26/2025 11:02:13 Type: Cal
Method: 6010-200.7 NEW(v130) 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	.11531	.18632	.47320	.10635	.21582	.37450	11.521	.85824	3.5847
Stddev	.00018	.00662	.00133	.00027	.00072	.00121	.057	.00452	.0095
%RSD	.15942	3.5510	.28173	.25239	.33420	.32224	.49573	.52631	.26351

#1	.11545	.19146	.47307	.10629	.21563	.37502	11.585	.86022	3.5767
#2	.11510	.18864	.47193	.10612	.21521	.37536	11.502	.85307	3.5823
#3	.11537	.17886	.47459	.10665	.21662	.37312	11.476	.86142	3.5951

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	.68396	.09243	1.2416	.38850	.00740	.49816	.13455	.72176	.11689
Stddev	.00106	.00021	.0033	.00129	.00002	.00154	.00044	.00188	.00034
%RSD	.15533	.22464	.26796	.33141	.23870	.30947	.32410	.25988	.29417

#1	.68288	.09265	1.2391	.38796	.00741	.49967	.13442	.72057	.11719
#2	.68501	.09224	1.2404	.38757	.00741	.49823	.13503	.72078	.11651
#3	.68400	.09239	1.2454	.38997	.00738	.49658	.13419	.72392	.11697

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	.09379	.14878	2.7873	.05069	1.7702	1.5420	.34605	.69320	.00689
Stddev	.00079	.00010	.0019	.00008	.0099	.0032	.00048	.00210	.00006
%RSD	.84230	.06751	.06974	.16410	.56095	.20995	.13813	.30292	.85729

#1	.09459	.14884	2.7857	.05070	1.7711	1.5418	.34660	.69513	.00689
#2	.09375	.14866	2.7868	.05077	1.7598	1.5388	.34574	.69353	.00696
#3	.09301	.14884	2.7895	.05060	1.7796	1.5453	.34581	.69096	.00684

Elem	P_1774	S_1820	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.11068	.06950	1.8571	18.847
Stddev	.00043	.00050	.0070	.035
%RSD	.39209	.72191	.37799	.18332

#1	.11106	.07000	1.8645	18.885
#2	.11077	.06951	1.8561	18.839
#3	.11021	.06900	1.8505	18.818

Sample Name: S3 Acquired: 8/26/2025 11:02:13 Type: Cal
Method: 6010-200.7 NEW(v130) 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	6202.5	105810.	10396.	4859.5	7130.0
Stddev	13.1	181.	36.	13.1	9.4
%RSD	.21195	.17096	.34209	.26854	.13208
#1	6201.8	105680.	10391.	4844.6	7129.9
#2	6216.0	105730.	10434.	4868.9	7139.4
#3	6189.7	106020.	10364.	4864.9	7120.6

Sample Name: S4 Acquired: 8/26/2025 11:06:20 Type: Cal
Method: 6010-200.7 NEW(v130) 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	.23830	.38718	.97046	.21943	.43585	.74639	22.778	1.7436	7.4382
Stddev	.00089	.01360	.00122	.00119	.00061	.00100	.184	.0053	.0121
%RSD	.37526	3.5124	.12599	.54384	.13941	.13428	.80817	.30109	.16200
#1	.23732	.37482	.96921	.21834	.43563	.74633	22.698	1.7441	7.4252
#2	.23851	.38498	.97050	.21924	.43539	.74542	22.989	1.7486	7.4402
#3	.23907	.40175	.97166	.22071	.43654	.74742	22.647	1.7381	7.4491
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	1.3551	.18844	2.5351	.77477	.01481	.98515	.26835	1.4741	.23686
Stddev	.0022	.00068	.0025	.00099	.00007	.00284	.00100	.0021	.00028
%RSD	.16235	.36131	.10037	.12735	.47448	.28790	.37339	.14252	.11725
#1	1.3527	.18815	2.5327	.77413	.01472	.98188	.26722	1.4718	.23683
#2	1.3569	.18922	2.5348	.77427	.01484	.98685	.26911	1.4744	.23715
#3	1.3557	.18796	2.5378	.77590	.01485	.98672	.26873	1.4760	.23660
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	.18084	.30028	5.5829	.10047	3.6184	3.0872	.69273	1.3756	.01378
Stddev	.00112	.00059	.0084	.00052	.0083	.0069	.00215	.0027	.00009
%RSD	.62019	.19788	.15059	.51283	.22813	.22460	.30997	.19281	.65265
#1	.17961	.29962	5.5912	.09988	3.6227	3.0804	.69037	1.3730	.01368
#2	.18180	.30078	5.5831	.10085	3.6235	3.0870	.69328	1.3754	.01381
#3	.18112	.30043	5.5744	.10067	3.6088	3.0943	.69455	1.3783	.01386
Elem	P_1774	S_1820	Li6707	Sr4077					
Units	Cts/S	Cts/S	Cts/S	Cts/S					
Avg	.22999	.14472	3.7256	37.340					
Stddev	.00232	.00159	.0078	.233					
%RSD	1.0074	1.1006	.21067	.62360					
#1	.22765	.14326	3.7167	37.592					
#2	.23005	.14449	3.7316	37.297					
#3	.23228	.14642	3.7284	37.132					

Sample Name: S4 Acquired: 8/26/2025 11:06:20 Type: Cal
Method: 6010-200.7 NEW(v130) 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	6126.4	103930.	10156.	4745.9	6904.1
Stddev	11.1	374.	48.	17.5	9.9
%RSD	.18162	.35980	.47135	.36801	.14341
#1	6118.3	103890.	10125.	4744.9	6895.3
#2	6121.8	103580.	10132.	4729.0	6902.1
#3	6139.1	104320.	10211.	4763.8	6914.8

Sample Name: S5 Acquired: 8/26/2025 11:10:32 Type: Cal
Method: 6010-200.7 NEW(v130) 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	.47344	.74393	1.9553	.43515	.88215	1.5070	46.188	3.3539	14.906
Stddev	.00089	.02123	.0028	.00123	.00256	.0022	.327	.0101	.017
%RSD	.18840	2.8532	.14455	.28298	.28990	.14867	.70880	.30236	.11304
#1	.47406	.73906	1.9578	.43583	.88511	1.5060	46.145	3.3655	14.925
#2	.47384	.76717	1.9522	.43588	.88067	1.5054	45.884	3.3490	14.895
#3	.47241	.72556	1.9559	.43372	.88068	1.5095	46.535	3.3471	14.897
Elem	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.6953	.36528	5.1838	1.5364	.02984	1.9583	.53529	2.9904	.47410
Stddev	.0054	.00159	.0087	.0038	.00023	.0036	.00040	.0040	.00032
%RSD	.20132	.43584	.16838	.24540	.77134	.18435	.07566	.13449	.06832
#1	2.6895	.36398	5.1932	1.5406	.02958	1.9550	.53532	2.9948	.47386
#2	2.6961	.36705	5.1761	1.5351	.03003	1.9622	.53567	2.9868	.47447
#3	2.7003	.36480	5.1819	1.5334	.02991	1.9576	.53486	2.9898	.47397
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	.38203	.60655	10.985	.20922	6.9917	6.1943	1.4104	2.7916	.02872
Stddev	.00348	.00186	.010	.00218	.0193	.0176	.0027	.0044	.00029
%RSD	.91013	.30654	.09018	1.0414	.27612	.28411	.18858	.15826	1.0270
#1	.37829	.60476	10.976	.20690	7.0129	6.2090	1.4128	2.7872	.02838
#2	.38516	.60642	10.984	.21123	6.9751	6.1990	1.4110	2.7960	.02892
#3	.38265	.60847	10.996	.20953	6.9870	6.1748	1.4075	2.7918	.02885
Elem	P_1774	S_1820	Li6707	Sr4077					
Units	Cts/S	Cts/S	Cts/S	Cts/S					
Avg	.47490	.30412	7.4512	74.716					
Stddev	.00228	.00180	.0247	.102					
%RSD	.48090	.59330	.33170	.13657					
#1	.47496	.30365	7.4250	74.599					
#2	.47715	.30611	7.4741	74.781					
#3	.47258	.30259	7.4545	74.770					

Sample Name: S5 Acquired: 8/26/2025 11:10:32 Type: Cal
Method: 6010-200.7 NEW(v130) 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	5985.5	104070.	10464.	4654.6	6563.4
Stddev	14.8	403.	41.	12.7	9.0
%RSD	.24720	.38719	.39477	.27179	.13759
#1	5973.8	104310.	10422.	4660.0	6557.9
#2	5980.5	103600.	10467.	4640.1	6558.4
#3	6002.1	104300.	10504.	4663.6	6573.8

Sample Name: ICV01 Acquired: 8/26/2025 11:14:43 Type: Unk
Method: 6010-200.7 NEW(v130) 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	3.894584	3.774081	3.968343	3.927521	4.053187	7.859028
Stddev	.005916	.027274	.003276	.003711	.004631	.023824
%RSD	.1518956	.7226589	.0825555	.0944987	.1142466	.3031373
#1	3.901250	3.759469	3.972125	3.931581	4.058186	7.832980
#2	3.889957	3.757228	3.966367	3.924303	4.052332	7.879712
#3	3.892546	3.805548	3.966537	3.926680	4.049044	7.864393
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.804942	1.1970261	1.924887	19.65661	1.8003681	1.963537
Stddev	.034654	.0007789	.002319	.01685	.0012083	.001503
%RSD	.4439992	.3953385	.1204854	.0857379	.1509653	.0765323
#1	7.838691	1.1978425	1.927021	19.65802	1.8002157	1.965004
#2	7.769449	1.1962910	1.922419	19.63909	1.7992433	1.962001
#3	7.806685	1.1969448	1.925219	19.67271	1.8016454	1.963606
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.008607	3.957371	1.961886	19.56305	1.962158	1.9722079
Stddev	.001285	.026153	.007300	.06541	.002831	.0031085
%RSD	.1274481	.6608624	.3720972	.3343781	.1442672	.3197406
#1	1.009795	3.931608	1.956353	19.52411	1.965044	1.9743549
#2	1.007242	3.956609	1.959145	19.52647	1.959386	1.9686432
#3	1.008784	3.983897	1.970160	19.63857	1.962043	1.9736256
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	19.59513	1.958050	1.996460	19.69779	3.826285	3.934074
Stddev	.08535	.009983	.006052	.08012	.022522	.005402
%RSD	.4355841	.5098478	.3031434	.4067643	.5886121	.1373168
#1	19.53138	1.949863	1.991425	19.61368	3.850751	3.938865
#2	19.56192	1.955116	1.994780	19.70645	3.806416	3.928219
#3	19.69210	1.969172	2.003175	19.77322	3.821687	3.935138

Sample Name: ICV01 Acquired: 8/26/2025 11:14:43 Type: Unk
Method: 6010-200.7 NEW(v130) 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	3.840507	3.862977	3.664361	F .0051477	F .0236531	F -.006668
Stddev	.005854	.002801	.029076	.0010780	.0017134	.000864
%RSD	.1524369	.0725060	.7934676	20.94165	7.243823	12.95655

#1	3.847076	3.860052	3.635043	.0046162	.0219220	-.006520
#2	3.835843	3.863242	3.664851	.0044387	.0253482	-.007596
#3	3.838600	3.865635	3.693188	.0063883	.0236891	-.005887

Elem	Sr4077
Units	ppm
Avg	F -.003249
Stddev	.000036
%RSD	1.092476

#1	-.003226
#2	-.003232
#3	-.003290

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6248.981	107085.5	10782.03	4833.319	7144.051
Stddev	9.665	259.1	17.09	24.130	10.652
%RSD	.1546690	.2419788	.1585099	.4992384	.1491062
#1	6250.809	107300.8	10765.24	4848.588	7149.890
#2	6257.602	107157.8	10799.41	4845.869	7150.507
#3	6238.532	106797.9	10781.42	4805.501	7131.756

Sample Name: LLICV01 Acquired: 8/26/2025 11:20:39 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0222122	.0398567	.0118934	.0204705	.0502331	.1051967	.0957843
Stddev	.0005670	.0024119	.0002586	.0014563	.0017438	.0120907	.0009888
%RSD	2.552629	6.051415	2.174210	7.114330	3.471391	11.49344	1.032280

#1	.0222317	.0426064	.0116087	.0194479	.0516634	.1027089	.0969160
#2	.0227693	.0380992	.0121138	.0198256	.0507454	.0945435	.0950875
#3	.0216358	.0388644	.0119577	.0221379	.0482905	.1183379	.0953495

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0064943	.0057497	2.058814	.0098785	.0295421	.0217526	.0971202
Stddev	.0000740	.0001264	.025530	.0001014	.0000632	.0001597	.0029684
%RSD	1.139612	2.198697	1.240017	1.026747	.2139015	.7339710	3.056444

#1	.0065163	.0057202	2.070961	.0099571	.0296056	.0217349	.0997956
#2	.0065548	.0056406	2.076002	.0099144	.0294792	.0219203	.0939269
#3	.0064117	.0058883	2.029479	.0097640	.0295414	.0216025	.0976381

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0213685	2.172632	.0396880	.0107575	1.799637	.0407942	.0419514
Stddev	.0007050	.013035	.0001895	.0001751	.026447	.0014491	.0002211
%RSD	3.299345	.5999776	.4774752	1.627915	1.469596	3.552254	.5269976

#1	.0221701	2.165008	.0399015	.0109468	1.783475	.0404296	.0419863
#2	.0210906	2.187683	.0395398	.0107242	1.785278	.0395622	.0417150
#3	.0208447	2.165204	.0396227	.0106013	1.830158	.0423908	.0421530

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.812458	.1110962	.2065451	.0392545	.0383987	.3693868	.0178293
Stddev	.012624	.0002635	.0003656	.0007408	.0016698	.0082413	.0001879
%RSD	.6965027	.2372066	.1770152	1.887220	4.348512	2.231078	1.053746

#1	1.797894	.1113377	.2062757	.0394983	.0396492	.3729799	.0176802
#2	1.819201	.1108151	.2069613	.0384225	.0365025	.3599589	.0180403
#3	1.820278	.1111358	.2063984	.0398427	.0390445	.3752215	.0177674

Sample Name: LLICV01 Acquired: 8/26/2025 11:20:39 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0199467	.0199020	.0198405
Stddev	.0022616	.0018495	.0001732
%RSD	11.33809	9.293227	.8726932

#1	.0208352	.0180314	.0199813
#2	.0216291	.0217297	.0198929
#3	.0173758	.0199451	.0196471

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6376.351	109371.0	10432.90	4892.646	7719.658
Stddev	6.166	183.2	13.57	11.567	15.286
%RSD	.0966972	.1675488	.1300792	.2364069	.1980085

#1	6372.706	109246.0	10444.59	4903.437	7711.557
#2	6383.470	109581.4	10418.02	4880.435	7737.289
#3	6372.877	109285.7	10436.07	4894.067	7710.127

Sample Name: ICB01 Acquired: 8/26/2025 11:24:54 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0023291	.0004050	.0006538	-.001645	-.000838	.0098669	-.001269
Stddev	.0009860	.0006529	.0002411	.002099	.000252	.0084747	.000560
%RSD	42.33337	161.1960	36.88217	127.5721	30.08221	85.89017	44.11264

#1	.0031421	.0010282	.0008353	.000666	-.000978	.0040261	-.001853
#2	.0026127	.0004609	.0007458	-.003433	-.000547	.0195869	-.001217
#3	.0012324	-.000274	.0003802	-.002168	-.000990	.0059877	-.000737

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000032	.0000364	.0006487	-.000167	-.000145	.0001436	.0001811
Stddev	.0000495	.0000391	.0034420	.000188	.000082	.0001066	.0053914
%RSD	1523.145	107.3974	530.5716	112.6972	56.38067	74.22093	2977.851

#1	.0000431	.0000248	.0026038	-.000133	-.000117	.0001474	.0015386
#2	-.000052	.0000044	.0026680	.000002	-.000081	.0000352	.0047639
#3	.000019	.0000799	-.003326	-.000369	-.000237	.0002482	-.005759

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000222	-.003105	-.000244	-.000498	-.054306	-.000857	-.000734
Stddev	.000486	.028816	.000134	.000472	.013177	.003191	.000199
%RSD	218.4037	928.0086	55.11455	94.78074	24.26449	372.4909	27.04564

#1	-.000271	-.036167	-.000140	-.000211	-.040329	.002810	-.000964
#2	-.000682	.010184	-.000395	-.000240	-.066502	-.003004	-.000615
#3	.000286	.016668	-.000195	-.001042	-.056085	-.002376	-.000625

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.075197	.0042250	-.000034	.0083757	-.000622	.0166935	-.000271
Stddev	.010194	.0002901	.000287	.0004323	.000640	.0064255	.000564
%RSD	13.55600	6.867428	844.4457	5.161364	103.0050	38.49095	207.8419

#1	-.074918	.0043468	.000297	.0084510	-.000982	.0191148	-.000767
#2	-.085528	.0044344	-.000214	.0079108	.000118	.0094092	.000342
#3	-.065146	.0038938	-.000185	.0087655	-.001001	.0215566	-.000389

Sample Name: ICB01 Acquired: 8/26/2025 11:24:54 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0009292	-.003549	-.000123
Stddev	.0014027	.001074	.000020
%RSD	150.9458	30.25820	16.57322

#1	.0023839	-.002505	-.000119
#2	-.000415	-.003492	-.000105
#3	.000819	-.004650	-.000145

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6371.352	108540.2	10463.73	4858.148	7820.737
Stddev	8.382	215.2	88.65	25.004	5.874
%RSD	.1315604	.1982379	.8471717	.5146796	.0751054

#1	6374.706	108498.0	10482.51	4843.027	7826.600
#2	6361.812	108349.2	10367.20	4844.407	7814.853
#3	6377.538	108773.3	10541.48	4887.009	7820.758

Sample Name: CRI01 Acquired: 8/26/2025 11:29:12 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0225846	.0419983	.0125047	.0197097	.0508653	.1050243	.0975178
Stddev	.0003952	.0013166	.0005657	.0023705	.0016501	.0036706	.0007030
%RSD	1.749898	3.134881	4.523484	12.02704	3.244065	3.494962	.7208431

#1	.0229177	.0415351	.0121187	.0183490	.0510363	.1044534	.0974472
#2	.0221479	.0409760	.0131540	.0183331	.0524232	.1016727	.0968528
#3	.0226882	.0434840	.0122415	.0224468	.0491363	.1089469	.0982534

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0064045	.0057971	2.064578	.0097813	.0295043	.0217802	.0967880
Stddev	.0000451	.0000351	.010093	.0001066	.0001195	.0006108	.0064560
%RSD	.7037666	.6054228	.4888738	1.089752	.4048522	2.804266	6.670303

#1	.0064373	.0057798	2.071342	.0098981	.0295534	.0217128	.0893557
#2	.0063531	.0058375	2.052977	.0096892	.0293681	.0212060	.1010054
#3	.0064232	.0057740	2.069415	.0097565	.0295914	.0224219	.1000029

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0215073	2.221921	.0397676	.0103118	1.820110	.0380299	.0415651
Stddev	.0003076	.010224	.0003618	.0002536	.023569	.0019230	.0001245
%RSD	1.430214	.4601601	.9098383	2.459051	1.294944	5.056601	.2996600

#1	.0212964	2.226979	.0401449	.0105553	1.802461	.0382698	.0416175
#2	.0218603	2.210154	.0397342	.0100492	1.846876	.0359982	.0416548
#3	.0213653	2.228631	.0394236	.0103310	1.810993	.0398217	.0414229

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.809069	.1072900	.2065888	.0390664	.0396256	.3707451	.0183256
Stddev	.046862	.0006801	.0007864	.0002889	.0011704	.0032230	.0004076
%RSD	2.590392	.6338643	.3806658	.7395109	2.953575	.8693434	2.224024

#1	1.768447	.1080714	.2074551	.0388628	.0400314	.3723199	.0178970
#2	1.860338	.1069665	.2059199	.0393971	.0383063	.3728779	.0183715
#3	1.798423	.1068320	.2063914	.0389393	.0405390	.3670374	.0187083

Sample Name: CRI01 Acquired: 8/26/2025 11:29:12 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0192800	.0169419	.0197806
Stddev	.0023752	.0007505	.0000272
%RSD	12.31961	4.430085	.1375546
#1	.0165459	.0162902	.0197807
#2	.0208347	.0167730	.0198078
#3	.0204595	.0177625	.0197533

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6368.709	109155.5	10500.46	4922.929	7713.939
Stddev	6.230	396.7	67.97	4.180	5.811
%RSD	.0978273	.3633899	.6473420	.0849162	.0753341
#1	6370.134	109528.5	10441.63	4922.581	7720.647
#2	6374.104	108738.8	10574.87	4918.932	7710.744
#3	6361.890	109199.1	10484.89	4927.271	7710.426

Sample Name: ICSA01 Acquired: 8/26/2025 11:33:27 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0064697	-.001441	.0032318	.0019420	-.002270	248.9648	.0013380
Stddev	.0010099	.001751	.0020358	.0012706	.004101	.4406	.0001471
%RSD	15.60961	121.5339	62.99224	65.42920	180.6589	.1769859	10.99098

#1	.0066439	-.002291	.0011795	.0019458	.000575	249.0213	.0011768
#2	.0073813	.000573	.0032654	.0006694	-.006970	249.3744	.0013724
#3	.0053841	-.002603	.0052506	.0032107	-.000414	248.4986	.0014648

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0015442	.0021087	235.5287	.0607078	.0019381	.0076338	99.17567
Stddev	.0000707	.0000180	.1840	.0008243	.0000478	.0009923	.75985
%RSD	4.578226	.8538229	.0781029	1.357738	2.467671	12.99854	.7661667

#1	.0016253	.0021132	235.4049	.0612143	.0019933	.0065777	99.87232
#2	.0015116	.0021239	235.7400	.0611525	.0019095	.0077771	99.28927
#3	.0014957	.0020888	235.4410	.0597567	.0019114	.0085467	98.36541

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0083559	250.2836	.0058631	.0014484	.1096759	.0034571	.0026990
Stddev	.0001073	.4208	.0002598	.0006001	.0193110	.0030900	.0003828
%RSD	1.284385	.1681245	4.430358	41.43037	17.60735	89.38313	14.18451

#1	.0082379	249.9322	.0061630	.0013114	.0905256	.0002399	.0029993
#2	.0083821	250.7499	.0057146	.0021051	.1291438	.0064019	.0028297
#3	.0084476	250.1687	.0057117	.0009286	.1093583	.0037295	.0022679

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1635780	.0495108	.0013896	-.001387	-.003268	.0190345	.0084839
Stddev	.0337631	.0027570	.0002789	.000170	.000691	.0181828	.0022689
%RSD	20.64035	5.568531	20.07213	12.26153	21.15116	95.52565	26.74380

#1	.1246927	.0526793	.0015960	-.001536	-.003622	.0235774	.0097410
#2	.1854486	.0481941	.0015005	-.001422	-.003710	.0345152	.0058647
#3	.1805927	.0476589	.0010723	-.001202	-.002471	-.000989	.0098460

Sample Name: ICSA01 Acquired: 8/26/2025 11:33:27 Type: Unk
Method: 6010-200.7 NEW(v130) 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	-.009639	F -.031216	.0015828
Stddev	.003169	.000520	.0004063
%RSD	32.87336	1.667186	25.66907

#1	-.005993	-.030669	.0011533
#2	-.011193	-.031704	.0016342
#3	-.011730	-.031276	.0019610

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5630.100	95734.17	10238.54	4351.261	6114.422
Stddev	4.082	396.80	39.14	9.710	4.319
%RSD	.0724985	.4144784	.3823038	.2231516	.0706349

#1	5633.571	95402.51	10282.28	4360.413	6117.254
#2	5631.126	95626.24	10226.52	4341.075	6116.560
#3	5625.603	96173.77	10206.82	4352.295	6109.450

Sample Name: ICSAB01 Acquired: 8/26/2025 11:37:38 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.1071488	.1087484	.0505699	.0513156	.5969946	249.8381
Stddev	.0034265	.0003073	.0007304	.0024968	.0022613	.2708
%RSD	3.197908	.2826182	1.444313	4.865557	.3787823	.1083880
#1	.1056540	.1089502	.0498316	.0535374	.5983851	249.6495
#2	.1047237	.1083947	.0512921	.0517958	.5982134	249.7164
#3	.1110688	.1089003	.0505861	.0486136	.5943854	250.1484
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4899446	.4949417	.9797164	236.4588	.5600968	.4946421
Stddev	.0017809	.0031351	.0013093	.3371	.0014879	.0003855
%RSD	.3634825	.6334317	.1336422	.1425574	.2656409	.0779321
#1	.4887733	.4928449	.9794065	236.6003	.5585987	.4942648
#2	.4890665	.4934345	.9785898	236.0741	.5615741	.4946261
#3	.4919940	.4985458	.9811528	236.7021	.5601177	.4950353
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4860813	100.2495	.4903575	250.3288	.9830581	.2170106
Stddev	.0007753	.4251	.0007821	.5484	.0004569	.0008519
%RSD	.1594955	.4240487	.1595019	.2190570	.0464813	.3925730
#1	.4857054	100.3054	.4896098	249.9729	.9828693	.2163434
#2	.4855657	100.6439	.4902928	250.0533	.9827259	.2167182
#3	.4869729	99.7992	.4911700	250.9603	.9835792	.2179703
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0864728	.4820516	1.038652	-.126461	.9629270	.9812571
Stddev	.0188330	.0008931	.001413	.034533	.0024948	.0010093
%RSD	21.77906	.1852764	.1360582	27.30760	.2590801	.1028559
#1	.0788262	.4810450	1.039469	-.166184	.9602071	.9822347
#2	.0726658	.4823606	1.039467	-.109620	.9634652	.9813177
#3	.1079264	.4827492	1.037021	-.103579	.9651087	.9802189

Sample Name: ICSAB01 Acquired: 8/26/2025 11:37:38 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.9680235	.9560483	1.000771	F .0091219	F .0016213	F -.033850
Stddev	.0013551	.0047175	.016606	.0042964	.0009585	.000818
%RSD	.1399864	.4934372	1.659308	47.09935	59.12190	2.416538
#1	.9672218	.9524717	.990536	.0125519	.0026255	-.034790
#2	.9695881	.9542784	1.019931	.0105110	.0015223	-.033457
#3	.9672606	.9613948	.991845	.0043029	.0007161	-.033303
Elem	Sr4077					
Units	ppm					
Avg	F .0015510					
Stddev	.0009030					
%RSD	58.21887					
#1	.0011244					
#2	.0009404					
#3	.0025883					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	5680.441	96694.58	10408.86	4414.042	6178.742	
Stddev	13.004	276.05	37.43	12.861	16.172	
%RSD	.2289210	.2854851	.3595647	.2913664	.2617386	
#1	5675.012	96774.14	10424.37	4417.566	6175.300	
#2	5695.279	96387.48	10436.04	4399.786	6196.358	
#3	5671.031	96922.10	10366.17	4424.773	6164.568	

Sample Name: ICSADLX20 Acquired: 8/26/2025 11:41:39 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0001185	.0002361	.0001413	-.000699	-.000619	12.20673	-.001751
Stddev	.0011132	.0024133	.0005793	.003730	.002511	.01212	.000736
%RSD	939.4032	1022.185	410.0745	533.4295	405.3990	.0992650	42.02418
#1	.0013146	-.001635	.0000812	.002684	-.003515	12.21674	-.002000
#2	-.000887	.002960	-.000406	-.004699	.000966	12.21018	-.000923
#3	-.000072	-.000617	.000748	-.000083	.000691	12.19326	-.002331
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000897	.0001235	12.10111	.0029190	.0000282	.0012425	4.763286
Stddev	.0000563	.0000108	.03139	.0000686	.0000343	.0003536	.005447
%RSD	62.80099	8.748329	.2593904	2.351567	121.4296	28.45748	.1143528
#1	.0001105	.0001354	12.11653	.0028424	.0000168	.0008435	4.766514
#2	.0001326	.0001143	12.12180	.0029749	.0000667	.0013668	4.766347
#3	.0000259	.0001209	12.06499	.0029398	.0000011	.0015171	4.756997
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005563	12.56389	-.000043	.0000693	-.111648	-.000209	-.001190
Stddev	.0003004	.02232	.000008	.0003429	.015234	.001799	.000231
%RSD	53.99680	.1776645	18.83426	494.4790	13.64442	860.6371	19.42824
#1	.0008726	12.58246	-.000040	-.000073	-.128681	-.001153	-.001307
#2	.0005213	12.53912	-.000036	-.000180	-.099327	.001866	-.000923
#3	.0002749	12.57009	-.000052	.000460	-.106935	-.001340	-.001339
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.321335	.0014971	.0001638	-.001068	-.001285	.0090303	-.000053
Stddev	.055758	.0003386	.0001058	.000492	.001064	.0035510	.001330
%RSD	17.35209	22.61630	64.61166	46.03860	82.85762	39.32339	2502.333
#1	-.318804	.0016221	.0000606	-.000968	-.001840	.0060993	.000409
#2	-.378316	.0017554	.0001587	-.001602	-.001956	.0129791	-.001553
#3	-.266885	.0011138	.0002721	-.000634	-.000057	.0080125	.000984

Sample Name: ICSADLX20 Acquired: 8/26/2025 11:41:39 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0018360	-.008240	.0000968
Stddev	.0023937	.001828	.0000856
%RSD	130.3736	22.18930	88.50418

#1	.0033327	-.009531	.0000684
#2	-.000925	-.009041	.0001930
#3	.003100	-.006147	.0000289

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6232.144	105610.4	10393.57	4782.270	7440.230
Stddev	3.829	208.7	40.18	19.676	10.025
%RSD	.0614456	.1975818	.3865533	.4114433	.1347340

#1	6231.283	105576.9	10438.23	4759.744	7440.293
#2	6228.820	105420.5	10360.37	4790.962	7430.174
#3	6236.331	105833.7	10382.11	4796.103	7450.223

Sample Name: ICSABDLX20 Acquired: 8/26/2025 11:45:55 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0053195	.0057690	.0030781	.0029730	.0268374	12.43064	.0240952
Stddev	.0005006	.0006448	.0006871	.0011348	.0005634	.02993	.0001427
%RSD	9.409867	11.17648	22.32346	38.17037	2.099287	.2408059	.5922589
#1	.0053383	.0057845	.0036859	.0020383	.0272572	12.46101	.0242392
#2	.0058105	.0064058	.0023325	.0026449	.0270579	12.42976	.0239538
#3	.0048099	.0051166	.0032160	.0042356	.0261971	12.40116	.0240927
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0258992	.0474067	12.32422	.0283135	.0240120	.0257215	4.824061
Stddev	.0001182	.0001387	.03432	.0001110	.0000913	.0003146	.028189
%RSD	.4561759	.2924886	.2784577	.3920420	.3802443	1.223122	.5843431
#1	.0258916	.0472468	12.34324	.0283549	.0239071	.0259843	4.856610
#2	.0257850	.0474946	12.28460	.0283978	.0240558	.0258072	4.807989
#3	.0260209	.0474786	12.34482	.0281877	.0240732	.0253729	4.807585
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0255591	12.81033	.0482646	.0101548	-.114778	.0230611	.0502622
Stddev	.0001527	.01448	.0002681	.0004834	.008630	.0009049	.0000734
%RSD	.5974747	.1130467	.5555886	4.760208	7.518821	3.923933	.1461401
#1	.0257354	12.82694	.0484535	.0104655	-.116494	.0237391	.0503465
#2	.0254725	12.80371	.0479577	.0104010	-.105419	.0220335	.0502286
#3	.0254693	12.80034	.0483825	.0095978	-.122421	.0234106	.0502116
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.346975	.0489501	.0497580	.0461088	.0452142	.0551672	.0007339
Stddev	.018759	.0003606	.0002550	.0000712	.0008653	.0114003	.0007669
%RSD	5.406475	.7365877	.5125845	.1544474	1.913866	20.66500	104.4878
#1	-.326772	.0490535	.0497825	.0460267	.0461234	.0536615	.0011052
#2	-.350313	.0485491	.0494916	.0461459	.0444007	.0672456	.0012445
#3	-.363842	.0492476	.0499999	.0461538	.0451184	.0445946	-.000148

Sample Name: ICSABDLX20 Acquired: 8/26/2025 11:45:55 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0012198	-.007322	.0001870
Stddev	.0010965	.000897	.0000656
%RSD	89.89425	12.24643	35.05691

#1	.0021757	-.007937	.0001195
#2	.0000228	-.006293	.0001912
#3	.0014608	-.007735	.0002504

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6238.803	106697.4	10472.78	4797.822	7438.389
Stddev	8.310	604.3	44.78	8.794	11.336
%RSD	.1332015	.5663635	.4275958	.1833011	.1523959

#1	6234.998	106239.3	10426.12	4787.715	7436.276
#2	6248.334	106470.6	10515.41	4803.735	7450.632
#3	6233.076	107382.3	10476.83	4802.015	7428.258

Sample Name: CCV01 Acquired: 8/26/2025 11:50:07 Type: Unk
Method: 6010-200.7 NEW(v130) 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	5.038747	5.029405	4.992721	5.073722	4.975816	9.950866	9.610912
Stddev	.016341	.087962	.005997	.009261	.012787	.026170	.073164
%RSD	.3242976	1.748962	.1201052	.1825224	.2569878	.2629952	.7612644
#1	5.025439	5.065313	4.993525	5.065583	4.971290	9.941550	9.677381
#2	5.033819	4.929169	4.986363	5.071786	4.965907	9.930628	9.622839
#3	5.056985	5.093733	4.998275	5.083798	4.990251	9.980420	9.532517
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.548067	2.511350	24.77373	1.038106	2.476666	1.253494	5.035431
Stddev	.0005410	.004843	.05119	.003499	.004056	.002269	.017599
%RSD	.2122999	.1928283	.2066255	.3370583	.1637788	.1810018	.3495104
#1	.2545254	2.513036	24.83106	1.037403	2.477983	1.251812	5.040314
#2	.2544644	2.505890	24.75756	1.035013	2.472115	1.252595	5.050072
#3	.2554304	2.515124	24.73259	1.041904	2.479900	1.256075	5.015905
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.446300	24.81528	2.485940	1.267866	24.17918	2.479577	2.563168
Stddev	.006516	.06239	.003075	.000706	.05109	.003600	.007255
%RSD	.2663625	.2514331	.1237091	.0557204	.2113045	.1451902	.2830318
#1	2.452422	24.88673	2.486743	1.268596	24.23817	2.483089	2.555644
#2	2.447026	24.77161	2.482542	1.267186	24.15043	2.479748	2.563742
#3	2.439451	24.78748	2.488533	1.267816	24.14895	2.475894	2.570119
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.48354	5.039807	5.015666	4.917033	4.876764	5.005014	4.977055
Stddev	.03220	.004380	.007797	.013408	.004946	.013011	.016009
%RSD	.1315230	.0869148	.1554515	.2726857	.1014288	.2599514	.3216626
#1	24.51745	5.038508	5.011072	4.920870	4.882405	4.990171	4.965706
#2	24.47979	5.044690	5.011257	4.902125	4.874720	5.014445	4.970091
#3	24.45337	5.036223	5.024669	4.928104	4.873168	5.010426	4.995366

Sample Name: CCV01 Acquired: 8/26/2025 11:50:07 Type: Unk
Method: 6010-200.7 NEW(v130) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.880136	4.893434	4.869114
Stddev	.022609	.011403	.066643
%RSD	.4632883	.2330245	1.368688

#1	4.869830	4.905847	4.929105
#2	4.864516	4.883425	4.797380
#3	4.906062	4.891030	4.880857

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6078.229	101847.7	10239.25	4581.321	6880.633
Stddev	9.057	57.3	13.51	24.777	16.680
%RSD	.1490116	.0562400	.1319279	.5408214	.2424200

#1	6080.412	101823.5	10246.99	4602.527	6876.136
#2	6085.995	101913.1	10247.11	4587.349	6899.100
#3	6068.279	101806.6	10223.65	4554.086	6866.662

Sample Name: CCB01 Acquired: 8/26/2025 11:54:18 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0006176	-.000316	.0012330	-.002688	-.001407	-.006024	-.001247
Stddev	.0012056	.000646	.0013598	.001618	.001769	.001494	.000650
%RSD	195.1988	204.7138	110.2840	60.21187	125.7176	24.79715	52.10370
#1	-.000627	-.000492	.0019182	-.003852	.000428	-.006137	-.000638
#2	.001780	.000400	.0021140	-.000840	-.001547	-.007458	-.001172
#3	.000700	-.000855	-.000333	-.003372	-.003103	-.004477	-.001931
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000036	.0000054	.0055376	-.000230	-.000028	.0002325	-.003010
Stddev	.000045	.0000405	.0049817	.000291	.000169	.0001626	.005709
%RSD	125.2170	745.3766	89.96175	126.6720	597.7568	69.93893	189.6847
#1	.000016	-.000020	.0008153	-.000009	-.000088	.0002912	.001381
#2	-.000058	.000052	.0107435	-.000121	.000163	.0000487	-.000947
#3	-.000065	-.000016	.0050539	-.000560	-.000159	.0003577	-.009463
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000236	-.001826	-.000046	.0005950	-.123941	-.000022	-.001106
Stddev	.0001830	.0111111	.000184	.0003311	.017251	.000720	.000141
%RSD	777.0131	608.6755	399.3327	55.65093	13.91879	3242.305	12.75970
#1	-.000036	-.011602	-.000186	.0003369	-.141979	-.000825	-.001269
#2	-.000122	.010258	.000162	.0004798	-.122240	.000567	-.001028
#3	.000229	-.004133	-.000114	.0009683	-.107603	.000191	-.001020
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.321034	.0041109	.0002390	.0000062	.0004556	-.001839	-.000313
Stddev	.027096	.0003279	.0002213	.0002292	.0011314	.007108	.001297
%RSD	8.440143	7.976149	92.57317	3681.453	248.3040	386.4546	414.0173
#1	-.330160	.0044706	.0001657	-.000086	.0000315	.004561	-.000898
#2	-.342387	.0040335	.0004877	-.000162	-.000402	-.009490	.001173
#3	-.290553	.0038287	.0000637	.000267	.001738	-.000589	-.001215

Sample Name: CCB01 Acquired: 8/26/2025 11:54:18 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0015867	-.005190	-.000023
Stddev	.0031995	.001337	.000137
%RSD	201.6404	25.75878	605.7610

#1	.0042825	-.004061	-.000087
#2	-.001949	-.006667	.000135
#3	.002427	-.004843	-.000116

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6298.890	105925.8	10327.91	4728.146	7782.296
Stddev	11.833	447.2	34.06	12.273	10.993
%RSD	.1878559	.4222196	.3298124	.2595829	.1412574

#1	6307.807	105999.9	10320.83	4714.915	7786.528
#2	6303.397	105446.1	10297.95	4739.159	7790.544
#3	6285.466	106331.3	10364.96	4730.365	7769.816

Sample Name: LR-1 Acquired: 8/26/2025 11:58:36 Type: Unk
Method: 6010-200.7 NEW(v130) 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	-.001368	.0115265	.0162547	-.019656	.0180270	.0553082	-.011258
Stddev	.002369	.0048783	.0018134	.000628	.0008793	.0091397	.000521
%RSD	173.1770	42.32230	11.15615	3.192484	4.877635	16.52504	4.625222
#1	.001084	.0102139	.0176669	-.019913	.0173533	.0522130	-.010855
#2	-.001543	.0074388	.0168874	-.020114	.0190217	.0481180	-.011074
#3	-.003644	.0169267	.0142097	-.018941	.0177061	.0655936	-.011846
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001699	.0004733	2433.866	.0154361	-.000256	.0028594	.4403304
Stddev	.0000324	.0000029	37.055	.0005855	.000346	.0004391	.0028997
%RSD	19.08992	.6108984	1.522460	3.793112	135.3350	15.35732	.6585362
#1	.0001860	.0004731	2452.143	.0152709	-.000140	.0023705	.4434947
#2	.0001911	.0004705	2458.230	.0149510	.000018	.0029872	.4378001
#3	.0001325	.0004763	2391.223	.0160865	-.000645	.0032204	.4396964
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0146244	2226.632	.0113796	-.001710	2461.046	.0075075	.0510873
Stddev	.0001673	9.002	.0004009	.000435	20.513	.0007927	.0001894
%RSD	1.144124	.4043034	3.522805	25.46347	.8334894	10.55847	.3708179
#1	.0148104	2216.515	.0110830	-.001921	2453.238	.0076568	.0511260
#2	.0144863	2233.757	.0118357	-.001999	2484.316	.0082150	.0508815
#3	.0145764	2229.626	.0112202	-.001209	2445.584	.0066508	.0512544
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.799882	.0095920	.0030581	-.005542	-.115064	-.029845	.0105824
Stddev	.909419	.0005507	.0004172	.001419	.001431	.023899	.0044874
%RSD	9.279894	5.741677	13.64203	25.61067	1.243681	80.07651	42.40460
#1	8.845260	.0098020	.0035156	-.004543	-.114958	-.057424	.0102043
#2	9.898295	.0089671	.0029600	-.007167	-.116545	-.015207	.0062959
#3	10.65609	.0100068	.0026987	-.004916	-.113689	-.016904	.0152469

Sample Name: LR-1 Acquired: 8/26/2025 11:58:36 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.2194363	-.376783	.0612813
Stddev	.0033417	.007008	.0000980
%RSD	1.522875	1.859979	.1598454

#1	.2232078	-.379065	.0611734
#2	.2182570	-.382365	.0613059
#3	.2168441	-.368918	.0613646

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3982.085	70923.42	9025.904	3085.825	4093.430
Stddev	5.923	207.68	27.359	21.848	8.855
%RSD	.1487516	.2928171	.3031162	.7080209	.2163161

#1	3988.489	71034.38	9048.581	3110.146	4103.543
#2	3980.965	70683.84	8995.517	3067.858	4089.681
#3	3976.802	71052.05	9033.614	3079.471	4087.067

Sample Name: LR-2 Acquired: 8/26/2025 12:03:15 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.1092092	-.332027	.1015375	.0121388	-.159663	1945.588	.0219708
Stddev	.0060098	.009069	.0098723	.0032177	.006660	30.287	.0001893
%RSD	5.503047	2.731494	9.722772	26.50757	4.171180	1.556676	.8618074

#1	.1097626	-.340421	.1087218	.0118775	-.164294	1962.665	.0217525
#2	.1029419	-.333252	.0902804	.0090598	-.152031	1910.620	.0220697
#3	.1149233	-.322407	.1056103	.0154792	-.162665	1963.480	.0220902

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0463009	.1199418	13.65306	-.042602	.0872013	.2910311	2677.860
Stddev	.0006260	.0010629	.02130	.000228	.0002441	.0039471	5.158
%RSD	1.352077	.8861493	.1559789	.5344154	.2799132	1.356248	.1926152

#1	.0464407	.1200459	13.66137	-.042840	.0869494	.2889083	2679.809
#2	.0456168	.1209488	13.66894	-.042580	.0872178	.2885996	2681.759
#3	.0468452	.1188308	13.62886	-.042386	.0874367	.2955853	2672.011

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.186870	1.027932	.0607358	^ *****	2.753588	.0471577	.1052004
Stddev	.002344	.006020	.0026423	-----	.028067	.0017080	.0020276
%RSD	1.254562	.5856241	4.350418	-----	1.019291	3.621960	1.927368

#1	-.188540	1.020982	.0579310	^ -----	2.723624	.0467419	.1068602
#2	-.184190	1.031351	.0631781	^ -----	2.779265	.0456959	.1058004
#3	-.187880	1.031464	.0610983	^ -----	2.757874	.0490352	.1029405

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1805.060	^ *****	-.016240	.0350511	.0038250	.5041804	.1134616
Stddev	19.347	-----	.000718	.0024772	.0004196	.0135359	.0048997
%RSD	1.071803	-----	4.422716	7.067534	10.96968	2.684725	4.318337

#1	1826.004	^ -----	-.015895	.0336772	.0033416	.5068752	.1105748
#2	1787.858	^ -----	-.015759	.0335652	.0040380	.5161661	.1191188
#3	1801.317	^ -----	-.017065	.0379108	.0040954	.4894998	.1106912

Sample Name: LR-2 Acquired: 8/26/2025 12:03:15 Type: Unk
Method: 6010-200.7 NEW(v130) 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	-0.369958	.2658079	-2.56687
Stddev	.012090	.0009131	.00496
%RSD	3.268030	.3435334	.1931278

#1	-.356027	.2647966	-2.56868
#2	-.377710	.2665720	-2.57067
#3	-.376138	.2660551	-2.56126

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5005.325	83275.62	9643.397	3837.245	4173.849
Stddev	13.589	247.02	56.643	27.505	8.070
%RSD	.2714993	.2966265	.5873716	.7167943	.1933527

#1	4993.097	82999.88	9620.076	3808.660	4172.360
#2	5002.924	83476.69	9707.977	3839.552	4166.628
#3	5019.955	83350.28	9602.139	3863.525	4182.561

Sample Name: LR-3 Acquired: 8/26/2025 12:07:43 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0989965	.0163850	227.8308	.0042162	.1240869	.0887592	-.001853
Stddev	.0013200	.0014220	1.1166	.0039747	.0024317	.0057021	.000342
%RSD	1.333352	8.678885	.4900788	94.27307	1.959697	6.424178	18.46401

#1	.1002594	.0148645	228.9218	.0067222	.1240992	.0869212	-.001677
#2	.0991041	.0176822	226.6903	-.000367	.1216491	.0842029	-.001635
#3	.0976260	.0166084	227.8802	.006293	.1265125	.0951536	-.002248

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.004914	-.001641	.2310593	24.34153	.0060246	53.15555	.0614782
Stddev	.000069	.000080	.0113610	.06744	.0000806	.01899	.0041665
%RSD	1.397728	4.847806	4.916939	.2770554	1.338114	.0357184	6.777233

#1	-.004994	-.001718	.2425676	24.28341	.0060024	53.15101	.0613858
#2	-.004874	-.001646	.2307588	24.32572	.0059573	53.13924	.0573587
#3	-.004875	-.001559	.2198514	24.41548	.0061139	53.17639	.0656902

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.26658	-.191912	23.81698	.0047206	.1653596	-.038913	30.32700
Stddev	.37653	.035724	.00811	.0005314	.0231797	.002150	.13324
%RSD	.7642762	18.61491	.0340445	11.25763	14.01778	5.525792	.4393493

#1	49.69473	-.170316	23.82558	.0043279	.1386619	-.038414	30.17412
#2	48.98701	-.233147	23.80947	.0045086	.1770583	-.041269	30.41840
#3	49.11800	-.172272	23.81591	.0053254	.1803587	-.037056	30.38848

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3375625	.0009308	-.014961	.0024782	-.045019	-.110460	.1485144
Stddev	.0392656	.0005100	.000191	.0001208	.000672	.014627	.0005987
%RSD	11.63211	54.79351	1.274592	4.874353	1.493380	13.24227	.4031482

#1	.2972054	.0015084	-.015156	.0025055	-.045355	-.126519	.1478907
#2	.3756371	.0007418	-.014775	.0023461	-.044245	-.106963	.1490845
#3	.3398448	.0005423	-.014950	.0025830	-.045456	-.097898	.1485682

Sample Name: LR-3 Acquired: 8/26/2025 12:07:43 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0671256	-.003530	.0003850
Stddev	.0036813	.001181	.0000712
%RSD	5.484252	33.45919	18.49021

#1	.0628851	-.004338	.0003355
#2	.0689901	-.002175	.0003529
#3	.0695017	-.004079	.0004666

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5914.833	106934.0	10598.57	4585.900	7415.757
Stddev	27.286	325.3	57.47	21.254	36.968
%RSD	.4613075	.3041898	.5422517	.4634653	.4985080

#1	5883.775	107272.1	10533.30	4608.588	7373.124
#2	5934.950	106906.7	10620.83	4566.452	7438.938
#3	5925.774	106623.2	10641.58	4582.662	7435.209

Sample Name: Q2832-09DLX10 Acquired: 8/26/2025 12:12:37 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0612712	-.010306	1.022550	.0070367	.0144197	8.098681	.5228869
Stddev	.0024085	.001412	.005365	.0006244	.0005339	.003286	.0005351
%RSD	3.930936	13.69722	.5246490	8.873185	3.702801	.0405703	.1023305

#1	.0609025	-.008719	1.028503	.0071781	.0144398	8.102444	.5234977
#2	.0638429	-.011421	1.021058	.0063538	.0138760	8.097218	.5226616
#3	.0590684	-.010778	1.018090	.0075784	.0149433	8.096381	.5225013

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0025535	.0011574	10.09886	.0787054	.0147163	.5902098	92.11320
Stddev	.0000483	.0000350	.01496	.0004562	.0001062	.0019679	.44722
%RSD	1.892188	3.026250	.1481632	.5796389	.7220119	.3334214	.4855111

#1	.0025287	.0011979	10.10802	.0791049	.0148302	.5916535	92.47388
#2	.0026092	.0011370	10.08159	.0788031	.0146989	.5910076	92.25293
#3	.0025226	.0011373	10.10696	.0782083	.0146198	.5879683	91.61280

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3902514	2.247641	.0544981	.0030884	.6601427	.0632563	.2395813
Stddev	.0021063	.032742	.0002222	.0006655	.0299888	.0028097	.0003469
%RSD	.5397330	1.456738	.4076469	21.54692	4.542782	4.441819	.1447951

#1	.3916995	2.211108	.0544398	.0025139	.6409492	.0652357	.2394200
#2	.3878351	2.257476	.0547436	.0038175	.6447788	.0644927	.2399795
#3	.3912196	2.274338	.0543109	.0029338	.6947002	.0600403	.2393444

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.542829	.0543610	.0049539	.0820179	.5086230	2.652838	.7560534
Stddev	.048439	.0021159	.0002066	.0011970	.0004842	.012674	.0037984
%RSD	3.139593	3.892259	4.170268	1.459469	.0951992	.4777481	.5023959

#1	1.490394	.0566906	.0048971	.0830833	.5084739	2.640076	.7603161
#2	1.552188	.0538340	.0051830	.0822479	.5091642	2.653017	.7548163
#3	1.585905	.0525585	.0047817	.0807226	.5082308	2.665422	.7530277

Sample Name: Q2832-09DLX10 Acquired: 8/26/2025 12:12:37 Type: Unk
Method: 6010-200.7 NEW(v130) 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	2.155474	.0113388	.0123316
Stddev	.005889	.0006336	.0004217
%RSD	.2732210	5.587755	3.419332

#1	2.156438	.0106240	.0124630
#2	2.149162	.0118311	.0118598
#3	2.160822	.0115614	.0126718

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6323.928	107227.0	10851.08	4799.509	7421.461
Stddev	8.765	325.1	47.67	28.547	4.700
%RSD	.1386001	.3031543	.4392973	.5947894	.0633285

#1	6321.775	106857.4	10832.87	4768.429	7418.786
#2	6333.569	107355.0	10905.17	4805.536	7426.887
#3	6316.440	107468.6	10815.21	4824.561	7418.708

Sample Name: Q2832-09DUPDLX10 Acquired: 8/26/2025 12:16:43 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0641962	-.011684	1.063500	.0063952	.0134792	8.755853	.5654492
Stddev	.0030138	.001269	.019133	.0010685	.0026480	.019604	.0019167
%RSD	4.694625	10.86009	1.799081	16.70774	19.64531	.2238924	.3389738
#1	.0675699	-.012633	1.082631	.0068459	.0159085	8.760464	.5653435
#2	.0632486	-.010243	1.063504	.0051752	.0106564	8.772740	.5674167
#3	.0617702	-.012176	1.044365	.0071645	.0138728	8.734354	.5635876
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0027569	.0011419	10.89307	.0837960	.0154283	.6148271	98.08410
Stddev	.0000841	.0002727	.01091	.0005869	.0002832	.0114932	.84850
%RSD	3.051398	23.88012	.1001152	.7004305	1.835687	1.869343	.8650770
#1	.0027743	.0013322	10.88697	.0843273	.0155442	.6258234	98.93814
#2	.0028309	.0012641	10.90566	.0838947	.0156352	.6157635	97.24124
#3	.0026654	.0008295	10.88657	.0831660	.0151055	.6028943	98.07291
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4203685	2.445102	.0566257	.0030375	.6175479	.0685609	.2585054
Stddev	.0011232	.014000	.0008522	.0001443	.0089567	.0026573	.0015383
%RSD	.2671875	.5725906	1.505037	4.751961	1.450368	3.875875	.5950779
#1	.4191316	2.437084	.0575512	.0028802	.6151932	.0678183	.2596112
#2	.4213246	2.461268	.0564525	.0031639	.6100038	.0663538	.2591563
#3	.4206495	2.436954	.0558734	.0030685	.6274468	.0715105	.2567486
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.533590	.0563992	.0048061	.0856904	.5488217	2.825675	.7934562
Stddev	.020310	.0046064	.0003314	.0019482	.0011416	.020308	.0208838
%RSD	1.324325	8.167418	6.896189	2.273575	.2080153	.7187106	2.632007
#1	1.520545	.0600399	.0051242	.0879005	.5476430	2.847662	.8146027
#2	1.523235	.0512206	.0048313	.0849488	.5499222	2.807621	.7929205
#3	1.556990	.0579370	.0044628	.0842219	.5488999	2.821743	.7728454

Sample Name: Q2832-09DUPDLX10 Acquired: 8/26/2025 12:16:43 Type: Unk
Method: 6010-200.7 NEW(v130) 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	2.260712	.0131799	.0143085
Stddev	.053262	.0006420	.0008972
%RSD	2.355997	4.870709	6.270630
#1	2.309445	.0137862	.0135338
#2	2.268837	.0125075	.0152916
#3	2.203854	.0132462	.0141000

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6264.614	107559.1	10757.77	4811.184	7352.193
Stddev	8.799	392.9	72.87	20.052	1.181
%RSD	.1404521	.3653067	.6773944	.4167866	.0160627
#1	6266.978	107106.6	10802.75	4788.036	7351.003
#2	6271.989	107813.8	10673.69	4823.215	7353.364
#3	6254.874	107757.0	10796.87	4822.302	7352.212

Sample Name: Q2832-09LDLX50 Acquired: 8/26/2025 12:20:49 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0095409	-.002354	.1617386	.0002835	.0011263	1.279728	.0805323
Stddev	.0006885	.000449	.0008102	.0003794	.0005014	.006318	.0010233
%RSD	7.216405	19.07250	.5009608	133.8302	44.52380	.4937212	1.270703
#1	.0088748	-.001866	.1625796	.0001352	.0005515	1.272447	.0809731
#2	.0094981	-.002750	.1609631	.0000007	.0014746	1.283779	.0812613
#3	.0102498	-.002446	.1616731	.0007147	.0013526	1.282957	.0793624
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0004066	.0002522	1.642637	.0121159	.0023787	.0964381	13.96310
Stddev	.0000828	.0000384	.015066	.0001926	.0000449	.0003506	.05566
%RSD	20.35839	15.23888	.9171665	1.589909	1.887287	.3635199	.3986079
#1	.0004229	.0002590	1.626835	.0122150	.0024299	.0963375	13.89925
#2	.0004801	.0002108	1.656839	.0122387	.0023602	.0968280	13.98867
#3	.0003169	.0002867	1.644236	.0118939	.0023461	.0961488	14.00137
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0612017	.3484577	.0082987	.0004330	.1348622	.0122854	.0372471
Stddev	.0004827	.0148995	.0002076	.0005495	.0185850	.0006194	.0001209
%RSD	.7886723	4.275827	2.501859	126.9019	13.78070	5.041674	.3244585
#1	.0608360	.3504621	.0081305	-.000145	.1146100	.0123628	.0373513
#2	.0617488	.3622535	.0082349	.000949	.1388414	.0128624	.0371146
#3	.0610204	.3326576	.0085308	.000495	.1511353	.0116309	.0372755
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2562672	.0023691	.0005833	.0131212	.0789958	.3963671	.1172115
Stddev	.0452357	.0009358	.0001699	.0007029	.0015470	.0051757	.0001146
%RSD	17.65179	39.50005	29.11684	5.356749	1.958274	1.305777	.0978027
#1	.2063965	.0020541	.0005890	.0139245	.0774941	.4012480	.1172787
#2	.2677504	.0016314	.0007503	.0126191	.0789090	.3969132	.1170792
#3	.2946547	.0034217	.0004107	.0128201	.0805844	.3909400	.1172767

Sample Name: Q2832-09LDLX50 Acquired: 8/26/2025 12:20:49 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.3313397	-.002111	.0023011
Stddev	.0009287	.001356	.0000317
%RSD	.2802893	64.23087	1.375763

#1	.3308484	-.003676	.0023151
#2	.3324108	-.001330	.0023234
#3	.3307598	-.001326	.0022649

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6334.411	109254.2	10469.51	4854.908	7698.394
Stddev	8.409	419.8	15.01	21.244	13.988
%RSD	.1327481	.3842783	.1433299	.4375687	.1816983

#1	6333.002	109014.3	10456.57	4850.527	7688.706
#2	6343.435	109739.0	10466.01	4878.000	7714.431
#3	6326.795	109009.4	10485.96	4836.196	7692.047

Sample Name: Q2832-09MSDLX10 Acquired: 8/26/2025 12:25:04 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.1334128	.1915165	1.023775	.2022706	.0917516	7.494568	.4858686
Stddev	.0021542	.0048070	.001824	.0027554	.0016814	.008671	.0012739
%RSD	1.614699	2.509965	.1781866	1.362234	1.832532	.1156926	.2621920
#1	.1310292	.1961168	1.025051	.2023198	.0916496	7.504318	.4871059
#2	.1339886	.1865265	1.024588	.2050011	.0901235	7.487723	.4859387
#3	.1352206	.1919061	1.021685	.1994910	.0934816	7.491663	.4845610
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0227749	.0207336	9.184896	.1121430	.0331189	.5694290	80.33907
Stddev	.0000914	.0000479	.037626	.0006841	.0001044	.0004514	.08808
%RSD	.4012801	.2312344	.4096524	.6100323	.3151852	.0792740	.1096320
#1	.0228472	.0207521	9.227966	.1127633	.0332116	.5698559	80.44031
#2	.0226722	.0207695	9.168311	.1114093	.0331392	.5694748	80.28004
#3	.0228054	.0206792	9.158413	.1122565	.0330058	.5689565	80.29687
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3699012	2.223516	.0984884	.0092029	.7228026	.0879817	.2398249
Stddev	.0001512	.028209	.0002995	.0004527	.0298269	.0040059	.0009224
%RSD	.0408698	1.268653	.3041261	4.918954	4.126556	4.553126	.3845955
#1	.3698359	2.194344	.0988079	.0090592	.6884878	.0900881	.2406267
#2	.3697936	2.250652	.0984433	.0097100	.7425111	.0904949	.2400311
#3	.3700740	2.225552	.0982139	.0088396	.7374091	.0833620	.2388169
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.090368	.0658695	.0455597	.1417958	.4751012	2.406240	1.259991
Stddev	.047674	.0001239	.0002442	.0014505	.0024196	.002263	.009291
%RSD	2.280674	.1880860	.5359257	1.022914	.5092901	.0940370	.7373597
#1	2.035464	.0658334	.0457695	.1426354	.4778382	2.407124	1.268741
#2	2.121285	.0660075	.0452917	.1401210	.4742186	2.407928	1.250241
#3	2.114356	.0657677	.0456178	.1426311	.4732467	2.403669	1.260991

Sample Name: Q2832-09MSDLX10 Acquired: 8/26/2025 12:25:04 Type: Unk
Method: 6010-200.7 NEW(v130) 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	1.969355	.0297175	.0327032
Stddev	.016373	.0005515	.0001408
%RSD	.8313959	1.855765	.4304247

#1	1.980602	.0298955	.0325988
#2	1.950571	.0301580	.0328633
#3	1.976893	.0290990	.0326475

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6319.827	109036.0	10672.48	4853.299	7423.971
Stddev	2.177	122.6	14.38	16.951	.733
%RSD	.0344539	.1124672	.1347571	.3492771	.0098752

#1	6321.899	109097.2	10658.38	4833.750	7424.412
#2	6317.558	109115.9	10671.95	4863.930	7423.125
#3	6320.024	108894.8	10687.13	4862.217	7424.377

Sample Name: Q2832-09MSDDLX10 Acquired: 8/26/2025 12:29:07 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.1335950	.1903441	1.018110	.2012190	.0915372	7.489093	.4866824
Stddev	.0014086	.0066327	.002095	.0019252	.0010462	.010741	.0000854
%RSD	1.054353	3.484613	.2057590	.9567830	1.142883	.1434152	.0175458

#1	.1336558	.1948412	1.020382	.2004881	.0907387	7.486852	.4867745
#2	.1321570	.1934644	1.016255	.2034026	.0927214	7.500777	.4866059
#3	.1349722	.1827266	1.017694	.1997663	.0911514	7.479650	.4866667

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0227184	.0205651	9.198323	.1117690	.0332015	.5663089	80.97301
Stddev	.0002978	.0001793	.012763	.0001692	.0000630	.0009505	.62106
%RSD	1.310794	.8719927	.1387549	.1513568	.1897267	.1678376	.7669969

#1	.0229384	.0207474	9.185503	.1118981	.0332714	.5673807	80.33406
#2	.0223796	.0205590	9.211028	.1115775	.0331837	.5655686	81.57448
#3	.0228373	.0203889	9.198437	.1118314	.0331492	.5659774	81.01048

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3697738	2.236910	.0982672	.0092480	.7067543	.0886091	.2408556
Stddev	.0004174	.005698	.0004601	.0001706	.0264531	.0042204	.0006359
%RSD	.1128695	.2547215	.4681858	1.844742	3.742895	4.762964	.2640322

#1	.3701153	2.241543	.0987970	.0090814	.6763339	.0928211	.2401220
#2	.3693085	2.238639	.0979680	.0094224	.7243549	.0843803	.2412502
#3	.3698974	2.230548	.0980367	.0092403	.7195740	.0886261	.2411946

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.078379	.0673889	.0448044	.1408110	.4765654	2.423936	1.248806
Stddev	.037934	.0016774	.0002587	.0010183	.0028475	.030073	.012256
%RSD	1.825155	2.489124	.5774254	.7231631	.5974986	1.240685	.9814364

#1	2.035997	.0664670	.0448788	.1413127	.4737920	2.397276	1.258715
#2	2.089991	.0693250	.0450177	.1414812	.4794815	2.456536	1.252603
#3	2.109149	.0663746	.0445166	.1396392	.4764227	2.417996	1.235101

Sample Name: Q2832-09MSDDLX10 Acquired: 8/26/2025 12:29:07 Type: Unk
Method: 6010-200.7 NEW(v130) 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	1.950350	.0308175	.0320205
Stddev	.021756	.0011391	.0004116
%RSD	1.115516	3.696276	1.285406

#1	1.969469	.0299427	.0324939
#2	1.954905	.0321055	.0318200
#3	1.926677	.0304043	.0317475

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6317.164	108606.3	10732.81	4820.177	7429.099
Stddev	2.328	209.5	70.76	12.837	3.705
%RSD	.0368554	.1929427	.6593219	.2663077	.0498693

#1	6319.781	108528.8	10655.62	4834.741	7425.181
#2	6316.388	108446.5	10794.62	4810.511	7429.569
#3	6315.323	108843.5	10748.19	4815.278	7432.546

Sample Name: Q2832-09ADLX10 Acquired: 8/26/2025 12:33:11 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.1346015	.1907544	1.016447	.2013567	.0916561	7.440452	.4768012
Stddev	.0009735	.0067767	.002296	.0007969	.0013449	.008950	.0023632
%RSD	.7232548	3.552568	.2258621	.3957499	1.467387	.1202887	.4956279
#1	.1349311	.1970448	1.018752	.2018784	.0924957	7.450473	.4740731
#2	.1353675	.1916400	1.016427	.2017524	.0923678	7.437628	.4781118
#3	.1335060	.1835785	1.014161	.2004395	.0901048	7.433254	.4782186
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0230488	.0207214	9.106024	.1111328	.0329763	.5668980	78.79903
Stddev	.0001117	.0000339	.036752	.0002584	.0002172	.0005408	.30640
%RSD	.4847649	.1633626	.4036036	.2325253	.6586297	.0953889	.3888432
#1	.0229197	.0207061	9.080498	.1113034	.0330775	.5665515	78.89587
#2	.0231131	.0206980	9.089427	.1112594	.0331244	.5675211	78.45590
#3	.0231135	.0207602	9.148148	.1108355	.0327269	.5666214	79.04531
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3646428	2.199589	.0984108	.0084195	.6318956	.0875098	.2403117
Stddev	.0031598	.023311	.0001080	.0003277	.0162541	.0016676	.0003172
%RSD	.8665510	1.059792	.1097780	3.892526	2.572277	1.905574	.1319976
#1	.3610090	2.173016	.0983408	.0081955	.6132270	.0859067	.2403467
#2	.3661753	2.209160	.0983563	.0082673	.6395537	.0892351	.2406100
#3	.3667442	2.216592	.0985352	.0087956	.6429061	.0873875	.2399785
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.010223	.0595445	.0449997	.1407410	.4683566	2.361827	1.250063
Stddev	.038181	.0007042	.0001069	.0011376	.0003738	.020616	.005763
%RSD	1.899347	1.182708	.2375477	.8082559	.0798175	.8728927	.4610396
#1	1.966376	.0593731	.0450962	.1417085	.4679701	2.374308	1.255627
#2	2.036132	.0589418	.0448848	.1394879	.4687164	2.338031	1.250442
#3	2.028160	.0603186	.0450180	.1410266	.4683832	2.373143	1.244119

Sample Name: Q2832-09ADLX10 Acquired: 8/26/2025 12:33:11 Type: Unk
Method: 6010-200.7 NEW(v130) 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	1.949947	.0303998	.0322599
Stddev	.019161	.0018410	.0004110
%RSD	.9826250	6.056072	1.274156

#1	1.968178	.0285559	.0317854
#2	1.951689	.0304055	.0325072
#3	1.929975	.0322380	.0324871

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6327.124	108689.6	10557.81	4820.411	7447.358
Stddev	10.891	296.0	28.79	16.474	9.903
%RSD	.1721255	.2723096	.2727254	.3417539	.1329773

#1	6337.000	108347.9	10586.64	4820.923	7445.338
#2	6328.929	108856.5	10529.05	4803.687	7458.116
#3	6315.444	108864.5	10557.75	4836.623	7438.621

Sample Name: PB169380BL Acquired: 8/26/2025 12:37:15 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0016322	.0001019	-.000733	-.000076	-.001710	.0008117	-.000871
Stddev	.0021582	.0001486	.000575	.002169	.000264	.0073392	.000297
%RSD	132.2221	145.8671	78.35730	2858.370	15.45816	904.1573	34.09767
#1	.0001591	.0002624	-.000305	-.002532	-.001489	-.006317	-.001122
#2	.0041095	.0000743	-.001386	.000726	-.002003	.000407	-.000543
#3	.0006281	-.000031	-.000508	.001578	-.001638	.008345	-.000947
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000034	.0000302	.0173652	-.000291	-.000062	.0004754	-.003350
Stddev	.000025	.0000516	.0051028	.000055	.000150	.0002492	.004986
%RSD	74.08553	170.8138	29.38539	18.82187	239.7584	52.41217	148.8163
#1	-.000028	.0000585	.0228560	-.000355	-.000235	.0006863	-.005252
#2	-.000013	-.000029	.0127685	-.000255	.000011	.0005396	.002306
#3	-.000062	.000062	.0164712	-.000265	.000036	.0002004	-.007105
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000070	-.003703	-.000041	.0005400	-.027845	.0011111	-.001489
Stddev	.000686	.023615	.000165	.0001125	.011790	.0017830	.000354
%RSD	975.7061	637.6604	406.4023	20.82399	42.34171	160.4690	23.76302
#1	-.000278	-.022500	-.000002	.0006307	-.041042	.0030699	-.001886
#2	.000695	-.011413	.000102	.0004142	-.024142	-.000417	-.001376
#3	-.000628	.022803	-.000222	.0005751	-.018351	.000681	-.001206
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.108532	-.003365	-.000131	-.000339	.0005093	-.000780	.0005626
Stddev	.008403	.000458	.000202	.000365	.0008064	.008333	.0002564
%RSD	7.742272	13.62444	154.0832	107.6509	158.3442	1068.789	45.58295
#1	-.116592	-.003894	-.000194	.000061	.0011320	.008738	.0007566
#2	-.109179	-.003108	-.000294	-.000654	-.000402	-.004312	.0006593
#3	-.099824	-.003092	.000095	-.000425	.000798	-.006764	.0002719

Sample Name: PB169380BL Acquired: 8/26/2025 12:37:15 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0011958	-.004907	-.000105
Stddev	.0015031	.000404	.000068
%RSD	125.7064	8.231560	64.42565

#1	.0013619	-.004458	-.000087
#2	-.000384	-.005024	-.000048
#3	.002609	-.005240	-.000180

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6235.576	107769.5	10598.03	4775.914	7715.625
Stddev	4.000	157.9	57.07	13.910	4.729
%RSD	.0641415	.1465421	.5385125	.2912439	.0612893

#1	6231.101	107820.1	10648.86	4789.002	7715.321
#2	6238.803	107895.9	10608.93	4777.431	7711.055
#3	6236.825	107592.4	10536.29	4761.308	7720.498

Sample Name: CCV02 Acquired: 8/26/2025 12:41:34 Type: Unk
Method: 6010-200.7 NEW(v130) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.092658	5.153713	5.011788	5.132128	5.017742	10.16461	10.08943
Stddev	.017534	.057594	.002352	.023211	.013125	.04308	.17977
%RSD	.3443088	1.117519	.0469273	.4522663	.2615712	.4238036	1.781762

#1	5.093019	5.137813	5.011880	5.128512	5.027998	10.11503	9.88185
#2	5.074946	5.105739	5.009391	5.110938	5.002951	10.19291	10.19396
#3	5.110009	5.217586	5.014092	5.156935	5.022277	10.18588	10.19247

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.2456886	2.525705	25.37225	1.032073	2.487626	1.260362	5.256663
Stddev	.0011195	.002004	.03403	.001546	.000761	.001264	.017198
%RSD	.4556670	.0793527	.1341349	.1497779	.0305824	.1003074	.3271732

#1	.2444344	2.523548	25.33296	1.032009	2.487755	1.260765	5.273130
#2	.2460446	2.526056	25.39175	1.030560	2.486809	1.258945	5.258045
#3	.2465869	2.527510	25.39205	1.033650	2.488314	1.261375	5.238816

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.517898	25.22337	2.498847	1.257676	26.94354	2.537092	2.532036
Stddev	.005062	.05108	.000733	.002301	.10104	.006757	.004891
%RSD	.2010326	.2025266	.0293423	.1829390	.3749965	.2663292	.1931784

#1	2.512746	25.16987	2.499622	1.258061	27.05132	2.529762	2.527899
#2	2.522865	25.22860	2.498164	1.255207	26.92832	2.538441	2.530774
#3	2.518084	25.27164	2.498756	1.259760	26.85097	2.543073	2.537434

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.98650	4.861814	5.062253	4.958744	5.038166	5.226402	5.039524
Stddev	.05461	.013912	.015506	.005617	.002276	.030036	.021717
%RSD	.2101384	.2861408	.3063116	.1132821	.0451808	.5747030	.4309244

#1	26.04381	4.846840	5.054443	4.963000	5.035551	5.231132	5.038565
#2	25.98062	4.864267	5.052205	4.952377	5.039241	5.194281	5.018303
#3	25.93507	4.874337	5.080112	4.960856	5.039705	5.253793	5.061704

Sample Name: CCV02 Acquired: 8/26/2025 12:41:34 Type: Unk
Method: 6010-200.7 NEW(v130) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV02 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.940466	5.163127	5.055040
Stddev	.021267	.005932	.020943
%RSD	.4304570	.1148942	.4143078

#1	4.937956	5.162512	5.060310
#2	4.920565	5.169342	5.072845
#3	4.962876	5.157526	5.031965

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6081.585	104124.6	10689.16	4658.783	6879.222
Stddev	1.965	283.8	52.08	30.284	9.674
%RSD	.0323166	.2725886	.4871879	.6500308	.1406230

#1	6083.817	104174.9	10738.30	4679.985	6875.596
#2	6080.115	104380.0	10694.62	4672.265	6871.885
#3	6080.822	103819.0	10634.57	4624.100	6890.185

Sample Name: CCB02 Acquired: 8/26/2025 12:45:45 Type: Unk
Method: 6010-200.7 NEW(v130) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000062	-.000824	-.000332	.0007804	-.002940	.0239641	-.001136
Stddev	.001461	.000924	.000480	.0013467	.003046	.0098336	.001372
%RSD	2359.446	112.0764	144.2403	172.5668	103.6082	41.03455	120.6984
#1	.000907	-.001849	-.000788	.0017700	.000574	.0339303	-.000067
#2	.000649	-.000055	.000168	.0013243	-.004833	.0236933	-.000659
#3	-.001742	-.000569	-.000378	-.000753	-.004562	.0142688	-.002683
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000154	.0000184	.0057764	-.000414	-.000034	.0003356	.0041823
Stddev	.0000581	.0000546	.0042661	.000100	.000121	.0002463	.0028763
%RSD	375.9713	296.5663	73.85374	24.01896	351.9508	73.38054	68.77277
#1	.0000153	.0000634	.0065134	-.000526	.000064	.0000540	.0022820
#2	.0000735	-.000042	.0096260	-.000384	-.000169	.0004421	.0027735
#3	-.000043	.000034	.0011898	-.000333	.000002	.0005108	.0074914
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000027	-.004690	.0000223	.0002245	-.063062	.0000068	-.000099
Stddev	.000295	.021939	.0000771	.0002002	.013145	.0019102	.000149
%RSD	1107.846	467.8098	345.8554	89.19070	20.84447	28265.46	150.4115
#1	-.000010	-.029737	.0000230	.0001015	-.060963	.0015255	.000044
#2	.000259	.004547	-.000055	.0004554	-.077130	-.002138	-.000253
#3	-.000329	.011121	.000099	.0001164	-.051093	.000633	-.000088
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.147793	.0007301	.0004195	.0004071	-.001195	.0026304	.0010088
Stddev	.041274	.0008001	.0002387	.0005934	.001436	.0091562	.0013432
%RSD	27.92673	109.5879	56.89393	145.7773	120.1905	348.0861	133.1422
#1	-.195361	-.000172	.0006875	-.000267	-.000409	-.007655	.0023062
#2	-.126555	.001008	.0003417	.000850	-.000323	.009893	.0010962
#3	-.121463	.001354	.0002295	.000639	-.002852	.005654	-.000376

Sample Name: CCB02 Acquired: 8/26/2025 12:45:45 Type: Unk
Method: 6010-200.7 NEW(v130) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0028602	-.004742	-.000022
Stddev	.0003770	.000343	.000118
%RSD	13.17943	7.223676	534.6878

#1	.0032069	-.004775	.000105
#2	.0029149	-.004384	-.000042
#3	.0024589	-.005067	-.000129

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6346.587	110207.6	10571.67	4901.287	7807.240
Stddev	9.282	147.0	21.46	27.068	13.075
%RSD	.1462529	.1334107	.2029943	.5522621	.1674707

#1	6339.871	110234.7	10580.64	4884.266	7802.243
#2	6342.710	110339.1	10547.19	4932.500	7797.402
#3	6357.179	110048.9	10587.20	4887.095	7822.077

Sample Name: PB169380BS Acquired: 8/26/2025 12:50:06 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.7726398	1.976237	.9438955	1.963387	.7871989	1.986955
Stddev	.0040972	.025777	.0027170	.009551	.0026774	.005103
%RSD	.5302877	1.304327	.2878467	.4864642	.3401153	.2568416
#1	.7732965	2.001426	.9438378	1.959941	.7847325	1.986107
#2	.7682539	1.949910	.9412079	1.956037	.7868177	1.992429
#3	.7763690	1.977375	.9466409	1.974183	.7900464	1.982328
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1847673	.2119990	.1887362	1.017458	.4071023	.1935941
Stddev	.0002862	.0014604	.0002108	.007017	.0004336	.0004250
%RSD	.1548781	.6888662	.1116902	.6896565	.1065083	.2195174
#1	.1844368	.2105480	.1885002	1.009560	.4066055	.1934871
#2	.1849336	.2134686	.1888026	1.019840	.4074045	.1932328
#3	.1849314	.2119806	.1889058	1.022974	.4072969	.1940623
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3088525	2.814520	.1965976	1.979500	.4859208	.0751842
Stddev	.0005276	.015521	.0012750	.017048	.0007810	.0005948
%RSD	.1708111	.5514710	.6485148	.8612079	.1607295	.7910949
#1	.3083821	2.821935	.1951287	1.964544	.4854388	.0746922
#2	.3087526	2.796682	.1974179	1.975895	.4855017	.0750152
#3	.3094229	2.824944	.1972462	1.998062	.4868219	.0758452
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.548742	.2939507	.2083801	9.017841	.3065805	.4008029
Stddev	.019993	.0020296	.0009847	.050611	.0032687	.0011556
%RSD	.7844316	.6904710	.4725670	.5612336	1.066194	.2883233
#1	2.535622	.2916397	.2074533	8.981459	.3028586	.4007362
#2	2.538851	.2947686	.2094140	8.996425	.3089848	.3996821
#3	2.571753	.2954438	.2082731	9.075639	.3078981	.4019904

Sample Name: PB169380BS Acquired: 8/26/2025 12:50:06 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.6564671	.1864396	.8491429	5.530900	F .0009931	.1959286
Stddev	.0029470	.0008157	.0046142	.036160	.0010979	.0022291
%RSD	.4489163	.4374972	.5433946	.6537752	110.5429	1.137703

#1	.6569262	.1855119	.8445246	5.540839	.0018135	.1937976
#2	.6533176	.1870443	.8537530	5.490810	-.000254	.1957439
#3	.6591577	.1867625	.8491511	5.561050	.001420	.1982442

Elem	Sr4077
Units	ppm
Avg	.1873843
Stddev	.0010447
%RSD	.5575350

#1	.1864255
#2	.1872297
#3	.1884977

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6299.922	107460.2	10232.74	4763.279	7554.005
Stddev	.774	255.0	68.91	14.150	3.555
%RSD	.0122821	.2373073	.6734192	.2970641	.0470616

#1	6299.099	107587.9	10311.84	4779.514	7549.940
#2	6300.032	107626.2	10185.73	4756.758	7555.543
#3	6300.635	107166.6	10200.64	4753.566	7556.532

Sample Name: PB169379BL Acquired: 8/26/2025 12:54:06 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0008019	-.000042	.0000769	.0010752	-.003295	.0039226	-.001135
Stddev	.0012251	.000789	.0004045	.0019804	.001249	.0065374	.001117
%RSD	152.7833	1892.494	526.1957	184.1927	37.89935	166.6622	98.44485

#1	.0021831	-.000828	.0001232	-.000641	-.001995	.0079125	-.002425
#2	-.000153	-.000046	.0004563	.000624	-.004485	.0074772	-.000477
#3	.000376	.000749	-.000349	.003242	-.003404	-.003622	-.000503

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000028	-.000007	.0538111	-.000303	.0000035	.0000336	-.004572
Stddev	.000064	.000047	.0116823	.000224	.0000119	.0001987	.003906
%RSD	230.6177	662.6828	21.70976	73.82845	338.0192	591.9553	85.42399

#1	.000044	.000042	.0672120	-.000129	.0000033	.0002438	-.009043
#2	-.000081	-.000010	.0484475	-.000555	-.000008	-.000151	-.001823
#3	-.000046	-.000053	.0457738	-.000224	.000015	.000008	-.002851

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000040	.0198690	-.000128	.0000459	-.089465	.0004776	-.001346
Stddev	.000226	.0126848	.000197	.0002460	.019987	.0015679	.000168
%RSD	566.2794	63.84205	153.7271	536.4735	22.34102	328.2729	12.51043

#1	.000145	.0091015	-.000326	.0002898	-.112161	-.001230	-.001530
#2	-.000291	.0338521	.000069	-.000202	-.074487	.000812	-.001199
#3	.000027	.0166533	-.000128	.000050	-.081748	.001852	-.001310

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.166647	-.001921	-.000227	.0003770	-.001233	.0008839	-.000093
Stddev	.039224	.000513	.000144	.0004192	.000707	.0120916	.001247
%RSD	23.53695	26.68904	63.61217	111.1817	57.32743	1367.936	1341.141

#1	-.122013	-.002323	-.000148	.0004740	-.000564	-.009282	.001328
#2	-.182306	-.002098	-.000140	.0007393	-.001164	-.002321	-.000604
#3	-.195622	-.001344	-.000394	-.000082	-.001973	.014255	-.001003

Sample Name: PB169379BL Acquired: 8/26/2025 12:54:06 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0007753	-.005232	-.000042
Stddev	.0009955	.000589	.000014
%RSD	128.4131	11.26699	34.43548

#1	.0015358	-.005817	-.000030
#2	-.000352	-.005241	-.000058
#3	.001141	-.004638	-.000037

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6350.579	109152.9	10572.89	4821.790	7797.830
Stddev	12.018	216.9	67.25	13.456	12.496
%RSD	.1892364	.1986769	.6360598	.2790661	.1602495

#1	6364.059	109304.7	10648.18	4836.057	7810.816
#2	6340.987	109249.5	10518.78	4819.984	7796.782
#3	6346.690	108904.6	10551.71	4809.328	7785.890

Sample Name: PB169379BS Acquired: 8/26/2025 12:58:24 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.7553036	1.910178	.9241075	1.916471	.7888550	1.955618
Stddev	.0037034	.024094	.0012289	.000558	.0016105	.014882
%RSD	.4903229	1.261346	.1329854	.0291369	.2041607	.7610009
#1	.7524225	1.895892	.9231702	1.917045	.7870294	1.966503
#2	.7594809	1.937996	.9254988	1.916437	.7894608	1.961691
#3	.7540073	1.896646	.9236534	1.915930	.7900747	1.938659
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1857503	.2006286	.1846319	1.063155	.3990438	.1891341
Stddev	.0014780	.0009647	.0003533	.004341	.0013484	.0002275
%RSD	.7956954	.4808559	.1913626	.4083021	.3379084	.1202699
#1	.1873239	.2008904	.1846351	1.064285	.4001348	.1889477
#2	.1843914	.1995600	.1849836	1.058361	.3994602	.1890671
#3	.1855354	.2014354	.1842770	1.066819	.3975363	.1893876
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3011982	2.827612	.1945271	1.955898	.4751213	.0732735
Stddev	.0000889	.025039	.0012256	.028269	.0007810	.0003254
%RSD	.0295183	.8855263	.6300579	1.445323	.1643764	.4440579
#1	.3012880	2.850521	.1946672	1.940732	.4756391	.0736429
#2	.3011102	2.831434	.1932374	1.938449	.4755019	.0731485
#3	.3011965	2.800882	.1956767	1.988514	.4742230	.0730293
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.650614	.2916802	.2033413	9.146020	.2894521	.4025476
Stddev	.007512	.0019851	.0011422	.047077	.0020853	.0004398
%RSD	.2834094	.6805863	.5617331	.5147234	.7204276	.1092467
#1	2.643860	.2925864	.2046270	9.169971	.2896267	.4026593
#2	2.658704	.2894037	.2029535	9.176305	.2872849	.4020628
#3	2.649277	.2930506	.2024435	9.091783	.2914445	.4029208

Sample Name: PB169379BS Acquired: 8/26/2025 12:58:24 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.6584640	.1882133	.8898250	5.397527	F .0027923	.1916489
Stddev	.0020992	.0013050	.0127907	.030155	.0013185	.0004560
%RSD	.3188013	.6933346	1.437438	.5586824	47.21829	.2379332

#1	.6573406	.1896918	.8814752	5.412491	.0043133	.1918046
#2	.6608859	.1877260	.9045504	5.417273	.0020897	.1911354
#3	.6571656	.1872222	.8834495	5.362817	.0019740	.1920066

Elem	Sr4077
Units	ppm
Avg	.1860182
Stddev	.0009008
%RSD	.4842390

#1	.1870443
#2	.1856523
#3	.1853579

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6305.691	108118.0	10538.12	4807.112	7567.582
Stddev	2.621	360.3	20.48	30.611	5.936
%RSD	.0415642	.3332240	.1943545	.6367795	.0784361

#1	6303.989	107850.3	10518.06	4772.228	7561.357
#2	6308.710	107976.1	10558.99	4819.615	7568.212
#3	6304.376	108527.6	10537.30	4829.491	7573.179

Sample Name: Q2941-01 Acquired: 8/26/2025 13:02:25 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0424263	-.022229	.2660582	.0014950	-.012429	104.0658	.4160364
Stddev	.0015743	.001327	.0014195	.0014399	.000923	.0996	.0011181
%RSD	3.710602	5.971766	.5335336	96.31719	7.425232	.0956700	.2687534
#1	.0442441	-.021727	.2667861	-.000023	-.011652	103.9858	.4172184
#2	.0415300	-.021225	.2669662	.001665	-.013449	104.0343	.4158952
#3	.0415049	-.023734	.2644224	.002842	-.012185	104.1773	.4149955
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0077971	.0090434	55.23238	.2419337	.1025341	.3128604	238.7035
Stddev	.0001247	.0002697	.11481	.0009806	.0000886	.0009432	2.3302
%RSD	1.599580	2.982292	.2078691	.4053212	.0864394	.3014624	.9761883
#1	.0077549	.0088755	55.18865	.2429614	.1024391	.3121966	240.6788
#2	.0076990	.0089001	55.14587	.2418314	.1025485	.3124446	239.2980
#3	.0079375	.0093545	55.36263	.2410082	.1026146	.3139400	236.1336
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.460028	42.97527	.1784299	.0040417	7.249352	.4034289	1.003132
Stddev	.003071	.13344	.0003504	.0008868	.097582	.0007193	.002774
%RSD	.1248366	.3104967	.1963971	21.94151	1.346073	.1783051	.2765146
#1	2.459929	42.88552	.1786664	.0047096	7.322501	.4035379	1.004089
#2	2.457008	42.91168	.1780273	.0043799	7.287001	.4040875	1.000007
#3	2.463147	43.12861	.1785959	.0030355	7.138555	.4026613	1.005301
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.10657	.1460872	.0150623	.0244586	4.643025	2.623924	9.544387
Stddev	.17211	.0118635	.0001430	.0004802	.006049	.012783	.043074
%RSD	1.313166	8.120822	.9491081	1.963318	.1302902	.4871648	.4513008
#1	13.26595	.1545497	.0150679	.0239916	4.649967	2.623159	9.562748
#2	13.12968	.1511850	.0149166	.0244333	4.638884	2.637072	9.495176
#3	12.92407	.1325269	.0152023	.0249510	4.640223	2.611540	9.575239

Sample Name: Q2941-01 Acquired: 8/26/2025 13:02:25 Type: Unk
Method: 6010-200.7 NEW(v130) 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	2.782683	.1531178	.1365634
Stddev	.020774	.0003758	.0011636
%RSD	.7465391	.2454183	.8520536

#1	2.800262	.1530485	.1358455
#2	2.759759	.1527814	.1359388
#3	2.788027	.1535233	.1379059

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7294.385	126439.9	13331.72	5624.858	6643.106
Stddev	10.267	483.6	93.37	19.783	8.847
%RSD	.1407521	.3824470	.7003339	.3517039	.1331701

#1	7294.515	125935.2	13385.86	5625.127	6645.938
#2	7284.054	126485.5	13385.38	5644.506	6633.190
#3	7304.586	126899.1	13223.91	5604.943	6650.190

Sample Name: Q2947-01 Acquired: 8/26/2025 13:06:28 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.2055666	-.037089	2.238149	.0240847	.0181807	143.4216
Stddev	.0031623	.001591	.004753	.0025050	.0030767	.1585
%RSD	1.538326	4.290669	.2123588	10.40067	16.92293	.1105044

#1	.2036485	-.038254	2.233443	.0223303	.0152735	143.5828
#2	.2092165	-.037737	2.238059	.0269535	.0178657	143.2659
#3	.2038349	-.035276	2.242947	.0229704	.0214027	143.4159

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.419068	.0165306	.0206753	142.1906	1.507854	.2200004
Stddev	.009145	.0001381	.0001627	.0814	.003129	.0000611
%RSD	.3780508	.8356828	.7868453	.0572303	.2075328	.0277861

#1	2.427675	.0166554	.0204881	142.2582	1.511431	.2199753
#2	2.409466	.0163822	.0207557	142.1003	1.505621	.2199558
#3	2.420064	.0165541	.0207822	142.2134	1.506510	.2200701

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.263393	352.6083	4.478921	29.24440	2.247830	.0136777
Stddev	.006506	.4157	.009929	.05403	.003950	.0006863
%RSD	.1526092	.1178789	.2216771	.1847489	.1757351	5.017717

#1	4.255880	352.4124	4.488527	29.18371	2.243378	.0129831
#2	4.267209	352.3267	4.468699	29.26222	2.249193	.0136947
#3	4.267088	353.0856	4.479538	29.28727	2.250918	.0143554

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.350101	.4231722	3.634081	13.67921	.2368234	.1280400
Stddev	.013939	.0038564	.003181	.03724	.0015414	.0001358
%RSD	.4160637	.9113125	.0875451	.2722623	.6508715	.1060592

#1	3.335710	.4257771	3.637276	13.67658	.2355422	.1280230
#2	3.363538	.4249974	3.634054	13.64335	.2385339	.1281834
#3	3.351056	.4187420	3.630913	13.71770	.2363940	.1279134

Sample Name: Q2947-01 Acquired: 8/26/2025 13:06:28 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.2103827	3.806408	5.376234	F 13.03354	F 11.49808	.1383702
Stddev	.0011525	.011954	.003186	.04828	.06993	.0017206
%RSD	.5478033	.3140486	.0592673	.3704188	.6081667	1.243500

#1	.2100661	3.819220	5.379482	12.98881	11.41834	.1377851
#2	.2116604	3.795555	5.376107	13.08472	11.54895	.1370184
#3	.2094216	3.804448	5.373113	13.02708	11.52694	.1403071

Elem	Sr4077
Units	ppm
Avg	.5475977
Stddev	.0041746
%RSD	.7623493

#1	.5506467
#2	.5428398
#3	.5493067

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6832.896	118164.9	12789.32	5219.892	6427.807
Stddev	12.016	409.3	31.60	12.134	10.947
%RSD	.1758564	.3463389	.2470516	.2324529	.1703044

#1	6846.768	118471.1	12803.41	5229.320	6440.352
#2	6826.204	118323.6	12811.42	5224.154	6422.878
#3	6825.716	117700.1	12753.13	5206.202	6420.192

Sample Name: Q2947-03 Acquired: 8/26/2025 13:10:28 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.1275089	-.033877	1.289526	.0036097	.0039293	248.7254
Stddev	.0008638	.002231	.002802	.0032109	.0006139	1.2240
%RSD	.6774522	6.586627	.2172635	88.95220	15.62281	.4921202

#1	.1265402	-.034160	1.289107	.0071246	.0040562	248.8851
#2	.1277873	-.031518	1.286958	.0008306	.0044698	247.4293
#3	.1281992	-.035954	1.292514	.0028738	.0032619	249.8617

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.980328	.0211563	.0259245	76.22744	.9833508	.1833397
Stddev	.056731	.0004290	.0003099	2.06679	.0021302	.0004101
%RSD	2.864713	2.027945	1.195519	2.711343	.2166244	.2236562

#1	2.044941	.0216298	.0257993	78.61349	.9833656	.1835078
#2	1.957364	.0207933	.0256968	75.07580	.9812132	.1828723
#3	1.938680	.0210458	.0262775	74.99305	.9854735	.1836390

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9084591	390.9125	4.106071	31.28519	1.033078	.0062726
Stddev	.0022753	3.4334	.105178	.80164	.001610	.0016963
%RSD	.2504547	.8783129	2.561513	2.562376	.1558275	27.04343

#1	.9082068	392.9305	4.226059	32.20945	1.032053	.0065220
#2	.9063205	392.8590	4.062337	30.86709	1.032246	.0078304
#3	.9108500	386.9482	4.029817	30.77903	1.034933	.0044654

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.471644	.5033125	3.258474	7.759395	.2232814	.0639829
Stddev	.028618	.0135113	.004304	.090119	.0179052	.0003165
%RSD	1.157860	2.684465	.1320721	1.161413	8.019106	.4947100

#1	2.485617	.5189126	3.262939	7.816027	.2048579	.0643387
#2	2.490592	.4953389	3.258132	7.806684	.2406187	.0638775
#3	2.438724	.4956858	3.254352	7.655475	.2243676	.0637325

Sample Name: Q2947-03 Acquired: 8/26/2025 13:10:28 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.2011667	7.003729	4.312873	F 20.05426	4.668262	.1051399
Stddev	.0001317	.189376	.065455	.05475	.011047	.0028765
%RSD	.0654470	2.703936	1.517676	.2730021	.2366451	2.735870

#1	.2013115	7.222329	4.380500	20.09296	4.680870	.1078105
#2	.2010542	6.899294	4.308289	19.99162	4.660277	.1055150
#3	.2011345	6.889563	4.249830	20.07820	4.663640	.1020943

Elem	Sr4077
Units	ppm
Avg	.0333060
Stddev	.0098389
%RSD	29.54083

#1	.0445382
#2	.0262126
#3	.0291673

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7170.337	122955.9	12802.00	5473.267	6452.874
Stddev	8.481	374.4	216.22	11.612	8.537
%RSD	.1182800	.3044592	1.688940	.2121532	.1322948

#1	7161.275	123380.7	12560.56	5483.939	6447.771
#2	7178.084	122674.5	12977.77	5460.902	6462.730
#3	7171.651	122812.3	12867.66	5474.960	6448.122

Sample Name: Q2947-03DUP Acquired: 8/26/2025 13:14:35 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.1191905	-.033825	1.478568	.0100426	.0214930	235.8803
Stddev	.0007949	.002959	.000281	.0022460	.0017752	2.5768
%RSD	.6668907	8.748631	.0190058	22.36537	8.259227	1.092436
#1	.1195555	-.036665	1.478888	.0078174	.0208919	233.3103
#2	.1197373	-.030759	1.478451	.0100013	.0234907	238.4639
#3	.1182787	-.034051	1.478364	.0123090	.0200965	235.8667
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.944371	.0207291	.0233100	77.26457	1.734536	.2107402
Stddev	.004307	.0001521	.0000856	.04133	.005826	.0004395
%RSD	.2214855	.7337246	.3674571	.0534963	.3358665	.2085650
#1	1.946215	.0207349	.0234023	77.29091	1.728316	.2106438
#2	1.939449	.0205741	.0232331	77.28586	1.735425	.2103569
#3	1.947448	.0208781	.0232947	77.21693	1.739865	.2112200
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.743008	397.7859	5.116056	29.98127	1.724660	.0148275
Stddev	.003833	1.0451	.005119	.10149	.000700	.0004779
%RSD	.2198941	.2627209	.1000553	.3385202	.0405730	3.222907
#1	1.739743	396.6245	5.110693	29.89631	1.724051	.0146922
#2	1.742054	398.0828	5.116586	30.09366	1.724506	.0153584
#3	1.747228	398.6504	5.120889	29.95385	1.725424	.0144318
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.753098	.4913207	3.438908	7.742598	.3314747	.1150419
Stddev	.020207	.0021334	.014624	.032342	.0068930	.0003628
%RSD	.7339863	.4342194	.4252372	.4177161	2.079479	.3153965
#1	2.744262	.4937196	3.436981	7.758406	.3260057	.1149251
#2	2.738814	.4906064	3.425344	7.705392	.3292012	.1147518
#3	2.776219	.4896361	3.454400	7.763995	.3392172	.1154487

Sample Name: Q2947-03DUP Acquired: 8/26/2025 13:14:35 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.3123207	6.963046	4.786819	F 18.94265	4.863261	.1173400
Stddev	.0013430	.001590	.010030	.15773	.041999	.0013353
%RSD	.4299908	.0228299	.2095428	.8326737	.8636006	1.138022

#1	.3136367	6.964182	4.792756	19.10858	4.906042	.1174593
#2	.3123732	6.961229	4.775238	18.92473	4.861651	.1159490
#3	.3109523	6.963726	4.792462	18.79465	4.822090	.1186117

Elem	Sr4077
Units	ppm
Avg	.0050658
Stddev	.0016136
%RSD	31.85174

#1	.0068823
#2	.0037985
#3	.0045167

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6943.798	119023.1	12889.55	5336.012	6358.350
Stddev	11.880	262.0	24.79	35.095	5.387
%RSD	.1710950	.2200996	.1922951	.6577039	.0847277

#1	6955.729	119319.1	12910.61	5366.211	6363.313
#2	6943.696	118929.0	12862.23	5344.314	6359.117
#3	6931.968	118821.2	12895.81	5297.510	6352.620

Sample Name: Q2947-03LX5 Acquired: 8/26/2025 13:18:42 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0305625	-.007562	.2850222	-.000231	-.000453	64.35027	.5026010
Stddev	.0005569	.001601	.0033647	.002350	.001095	.23721	.0014817
%RSD	1.822167	21.17397	1.180510	1016.506	241.8842	.3686253	.2948112
#1	.0300859	-.008379	.2888137	-.002895	.000761	64.07984	.5015801
#2	.0311746	-.005717	.2838612	.000655	-.001366	64.44775	.5043005
#3	.0304269	-.008589	.2823917	.001547	-.000754	64.52320	.5019224
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0055161	.0036263	20.12340	.2583747	.0383701	.2419292	100.8709
Stddev	.0001152	.0000958	.08296	.0014736	.0006308	.0041343	.1272
%RSD	2.088730	2.640713	.4122524	.5703365	1.643885	1.708884	.1260690
#1	.0055398	.0037331	20.03260	.2594077	.0389835	.2458740	101.0099
#2	.0056176	.0035480	20.19525	.2566872	.0384036	.2422851	100.7605
#3	.0053909	.0035979	20.14234	.2590292	.0377233	.2376284	100.8422
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.092352	8.287617	.2226536	.0019053	.5278939	.1325956	.8510411
Stddev	.005083	.010829	.0027382	.0002371	.0081691	.0030092	.0036042
%RSD	.4652826	.1306704	1.229798	12.44651	1.547489	2.269450	.4235078
#1	1.088550	8.275625	.2254918	.0016567	.5198081	.1307848	.8551782
#2	1.098125	8.296682	.2224412	.0021291	.5361438	.1360693	.8485807
#3	1.090382	8.290545	.2200278	.0019303	.5277299	.1309328	.8493643
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.714809	.0512504	.0161410	.0421746	1.830510	1.163195	4.308620
Stddev	.028619	.0016390	.0003455	.0008818	.003364	.007181	.060448
%RSD	1.668920	3.197965	2.140275	2.090813	.1838001	.6173111	1.402960
#1	1.743629	.0526985	.0164480	.0427114	1.826939	1.171486	4.378419
#2	1.686396	.0494711	.0162081	.0426554	1.833620	1.159003	4.273906
#3	1.714402	.0515815	.0157669	.0411569	1.830970	1.159096	4.273535

Sample Name: Q2947-03LX5 Acquired: 8/26/2025 13:18:42 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.9509768	.0217419	.0086197
Stddev	.0113583	.0010959	.0003713
%RSD	1.194385	5.040347	4.307752

#1	.9621301	.0207798	.0081915
#2	.9394240	.0229348	.0088526
#3	.9513762	.0215112	.0088150

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6544.878	112491.0	11283.07	5026.377	7252.531
Stddev	16.231	164.8	46.92	24.130	21.253
%RSD	.2479964	.1465268	.4158757	.4800738	.2930471

#1	6527.503	112380.9	11335.36	5012.704	7228.311
#2	6547.480	112680.5	11244.63	5054.239	7261.216
#3	6559.650	112411.5	11269.21	5012.189	7268.067

Sample Name: Q2947-03MS Acquired: 8/26/2025 13:22:47 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.7646316	1.786047	3.095649	1.523182	.3140639	273.7819
Stddev	.0015586	.009679	.004650	.006258	.0024241	.3985
%RSD	.2038417	.5419429	.1502140	.4108470	.7718509	.1455477

#1	.7644621	1.775359	3.091405	1.523428	.3147876	273.3340
#2	.7631646	1.794222	3.094924	1.529313	.3113604	273.9147
#3	.7662680	1.788561	3.100620	1.516804	.3160438	274.0970

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.900236	.1762842	.2234219	107.9996	1.963456	.4236491
Stddev	.004930	.0009816	.0001558	.1555	.003129	.0004457
%RSD	.1700020	.5568546	.0697375	.1440047	.1593546	.1051985

#1	2.900524	.1769754	.2233353	107.9963	1.963172	.4235131
#2	2.895168	.1751605	.2233286	107.8457	1.960479	.4232873
#3	2.905016	.1767165	.2236018	108.1567	1.966717	.4241470

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.820170	414.7897	5.118498	39.94516	2.081041	.0803272
Stddev	.001482	1.2723	.011861	.12120	.002055	.0006245
%RSD	.0814145	.3067288	.2317221	.3034260	.0987342	.7773959

#1	1.821750	413.3399	5.116857	39.86250	2.079823	.0796098
#2	1.818810	415.7201	5.107544	39.88869	2.079886	.0807487
#3	1.819951	415.3093	5.131094	40.08430	2.083413	.0806231

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.688303	.7552411	4.633689	19.15015	.5986639	.4446433
Stddev	.020895	.0045162	.008016	.02633	.0065578	.0006504
%RSD	.3673328	.5979754	.1729922	.1375171	1.095403	.1462773

#1	5.665675	.7508726	4.632813	19.13713	.5911076	.4453827
#2	5.692367	.7598917	4.642106	19.18046	.6020161	.4441595
#3	5.706868	.7549590	4.626146	19.13287	.6028680	.4443877

Sample Name: Q2947-03MS Acquired: 8/26/2025 13:22:47 Type: Unk
Method: 6010-200.7 NEW(v130) 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	1.139137	7.356092	7.723124	F 27.50236	6.257913	.3025107
Stddev	.001374	.013341	.010553	.05445	.001004	.0008976
%RSD	.1206533	.1813656	.1366430	.1979856	.0160488	.2967291
#1	1.138295	7.356546	7.729425	27.45800	6.258340	.3029843
#2	1.140723	7.342530	7.729007	27.48595	6.256766	.3014754
#3	1.138393	7.369202	7.710941	27.56313	6.258633	.3030723
Elem	Sr4077					
Units	ppm					
Avg	.2755048					
Stddev	.0020219					
%RSD	.7338890					
#1	.2771328					
#2	.2732416					
#3	.2761401					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	7145.858	121703.6	13330.24	5442.774	6246.891	
Stddev	6.969	231.2	49.46	12.983	.981	
%RSD	.0975202	.1899913	.3710065	.2385274	.0157031	
#1	7138.026	121963.5	13321.40	5455.479	6247.912	
#2	7148.175	121626.8	13383.53	5443.312	6245.956	
#3	7151.373	121520.6	13285.81	5429.530	6246.805	

Sample Name: Q2947-03MSD Acquired: 8/26/2025 13:26:50 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.7519962	1.815586	2.464576	1.551182	.3209983	274.5876
Stddev	.0015034	.030644	.007377	.015684	.0002872	1.0670
%RSD	.1999285	1.687845	.2993406	1.011131	.0894593	.3885830
#1	.7531444	1.843929	2.473021	1.568120	.3212020	273.9513
#2	.7525497	1.819760	2.459388	1.537160	.3206698	275.8194
#3	.7502944	1.783069	2.461318	1.548267	.3211231	273.9919
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.517627	.1780825	.2237906	87.90761	1.209791	.4209261
Stddev	.011333	.0006494	.0004548	.19214	.007042	.0005729
%RSD	.4501479	.3646494	.2032375	.2185700	.5820868	.1361030
#1	2.514146	.1785932	.2242871	87.94416	1.213116	.4215750
#2	2.530292	.1783027	.2236906	88.07885	1.214554	.4204902
#3	2.508442	.1773517	.2233940	87.69982	1.201702	.4207131
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.223822	417.7606	5.008854	35.21812	1.473069	.0779378
Stddev	.002435	2.5702	.023859	.03442	.000762	.0012766
%RSD	.1989705	.6152429	.4763438	.0977221	.0517073	1.637990
#1	1.226517	417.6307	5.012973	35.25591	1.473295	.0783860
#2	1.221779	420.3933	5.030386	35.20989	1.473691	.0789298
#3	1.223172	415.2577	4.983204	35.18857	1.472219	.0764975
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.750075	.7553214	3.393620	17.90393	.5317687	.3826648
Stddev	.049298	.0013617	.006955	.10685	.0048663	.0011314
%RSD	.8573520	.1802744	.2049570	.5967918	.9151131	.2956732
#1	5.728490	.7566372	3.385935	17.86449	.5265061	.3839090
#2	5.806484	.7554089	3.399483	18.02489	.5361057	.3823879
#3	5.715250	.7539181	3.395442	17.82240	.5326943	.3816976

Sample Name: Q2947-03MSD Acquired: 8/26/2025 13:26:50 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.9086954	7.714925	8.214331	F 27.28646	4.955391	.3003511
Stddev	.0007587	.035490	.037973	.10387	.030893	.0015342
%RSD	.0834975	.4600129	.4622760	.3806709	.6234232	.5108105
#1	.9091829	7.708112	8.218994	27.36632	4.965418	.2986421
#2	.9090821	7.753327	8.249756	27.32402	4.980024	.3016097
#3	.9078212	7.683336	8.174241	27.16903	4.920729	.3008016
Elem	Sr4077					
Units	ppm					
Avg	.2257354					
Stddev	.0009582					
%RSD	.4244713					
#1	.2246605					
#2	.2264999					
#3	.2260458					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	7138.107	121045.9	13250.78	5421.248	6264.518	
Stddev	8.052	573.2	57.24	18.461	5.748	
%RSD	.1128097	.4735462	.4319505	.3405363	.0917520	
#1	7128.824	120835.3	13206.38	5435.892	6259.303	
#2	7143.206	120607.8	13230.58	5400.510	6263.570	
#3	7142.292	121694.6	13315.38	5427.342	6270.681	

Sample Name: CCV03 Acquired: 8/26/2025 13:30:55 Type: Unk
Method: 6010-200.7 NEW(v130) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.131213	5.217672	5.055123	5.182727	5.058389	10.16836	10.00084
Stddev	.025187	.060381	.018454	.027355	.021451	.04908	.13315
%RSD	.4908549	1.157243	.3650479	.5278175	.4240687	.4826433	1.331414

#1	5.102157	5.197009	5.034645	5.156572	5.033668	10.21283	10.12047
#2	5.144657	5.285673	5.070462	5.211142	5.069406	10.17655	10.02468
#3	5.146826	5.170336	5.060263	5.180467	5.072092	10.11571	9.85738

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.548506	2.548480	25.25415	1.041179	2.510144	1.271485	5.082583
Stddev	.0018049	.009125	.11227	.003183	.008794	.006279	.029937
%RSD	.7082193	.3580749	.4445684	.3057524	.3503309	.4938672	.5890024

#1	.2567162	2.538012	25.36069	1.041326	2.500197	1.264254	5.049230
#2	.2547222	2.554759	25.26484	1.044287	2.516884	1.274634	5.107128
#3	.2531132	2.552669	25.13691	1.037925	2.513352	1.275567	5.091390

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.489331	25.18477	2.521775	1.264303	24.63962	2.525608	2.525506
Stddev	.011251	.20314	.009487	.003177	.10459	.014940	.009138
%RSD	.4519851	.8065820	.3762168	.2512690	.4244955	.5915256	.3618090

#1	2.502262	25.28544	2.510824	1.267018	24.52305	2.542042	2.527035
#2	2.483957	25.31791	2.527498	1.265082	24.67051	2.521935	2.533782
#3	2.481775	24.95096	2.527004	1.260809	24.72528	2.512848	2.515700

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.74972	5.034533	5.116992	5.003092	4.999734	5.092652	5.077512
Stddev	.06266	.033548	.021272	.029180	.021949	.022348	.030756
%RSD	.2531589	.6663578	.4157053	.5832308	.4389961	.4388360	.6057287

#1	24.69004	5.070419	5.095237	4.970644	5.021986	5.087955	5.056478
#2	24.81498	5.029225	5.137744	5.027179	4.999116	5.116975	5.112810
#3	24.74416	5.003956	5.117995	5.011451	4.978102	5.073025	5.063247

Sample Name: CCV03 Acquired: 8/26/2025 13:30:55 Type: Unk
Method: 6010-200.7 NEW(v130) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV03 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.987379	5.002821	4.994234
Stddev	.030048	.019015	.042908
%RSD	.6024875	.3800776	.8591545

#1	4.960060	5.022428	5.009945
#2	5.019563	5.001575	4.945685
#3	4.982515	4.984460	5.027072

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6059.168	104572.2	10379.83	4702.694	6860.099
Stddev	17.233	216.2	62.69	25.367	16.968
%RSD	.2844056	.2067022	.6039610	.5394242	.2473438

#1	6079.028	104573.6	10309.84	4699.227	6879.662
#2	6048.164	104355.3	10398.82	4679.239	6851.270
#3	6050.313	104787.6	10430.83	4729.617	6849.367

Sample Name: CCB03 Acquired: 8/26/2025 13:35:07 Type: Unk
Method: 6010-200.7 NEW(v130) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0012895	-.000063	.0003247	-.001424	-.001140	.0054012	-.002776
Stddev	.0011480	.001998	.0011542	.001971	.001089	.0086932	.000724
%RSD	89.02689	3178.407	355.4394	138.4493	95.48229	160.9501	26.08475

#1	.0000020	-.000582	-.000561	-.003344	-.000170	.0008500	-.003407
#2	.0022063	.002143	-.000094	.000595	-.000933	-.000072	-.002936
#3	.0016601	-.001750	.001630	-.001522	-.002317	.015425	-.001985

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000678	-.000017	.0000846	-.000359	-.000052	.0001582	-.003035
Stddev	.0000749	.000035	.0058087	.000180	.000158	.0003323	.001928
%RSD	110.3819	200.1830	6867.854	50.13504	305.9853	209.9957	63.51691

#1	-.000015	-.000051	-.000678	-.000563	.000130	-.000225	-.001978
#2	.000087	.000018	.006237	-.000223	-.000132	.000345	-.005260
#3	.000131	-.000019	-.005305	-.000291	-.000153	.000355	-.001867

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000734	-.015306	-.000056	.0003147	-.113055	.0005576	-.001460
Stddev	.0007062	.009776	.000212	.0003391	.021343	.0014959	.000231
%RSD	961.9250	63.86719	375.8540	107.7512	18.87852	268.2787	15.81805

#1	.0006156	-.004469	-.000300	.0000459	-.137694	.0020907	-.001394
#2	.0003298	-.023460	.000085	.0006956	-.101195	-.000898	-.001716
#3	-.000725	-.017990	.000046	.0002025	-.100275	.000480	-.001269

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.257523	.0019236	.0003858	-.000050	-.000981	.0011282	.0002295
Stddev	.042189	.0007413	.0000340	.000154	.001304	.0066454	.0017443
%RSD	16.38272	38.53718	8.823165	307.1850	132.9351	589.0022	760.1501

#1	-.305141	.0025000	.0004064	-.000208	-.001705	-.006535	.0004243
#2	-.242625	.0010874	.0004046	.000100	-.001763	.004624	.0018682
#3	-.224804	.0021833	.0003466	-.000043	.000525	.005296	-.001604

Sample Name: CCB03 Acquired: 8/26/2025 13:35:07 Type: Unk
Method: 6010-200.7 NEW(v130) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB03 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0000461	-.002578	-.000054
Stddev	.0008968	.001197	.000077
%RSD	1947.278	46.40671	143.1437

#1	.0003160	-.003890	-.000003
#2	.0007768	-.001546	-.000143
#3	-.000955	-.002299	-.000016

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6462.364	112138.3	10477.32	4946.096	7951.601
Stddev	12.436	226.0	106.59	8.217	8.783
%RSD	.1924314	.2015112	1.017302	.1661395	.1104531

#1	6460.885	112242.1	10569.30	4955.092	7943.809
#2	6475.473	111879.1	10502.16	4938.985	7961.118
#3	6450.734	112293.8	10360.51	4944.210	7949.873

Sample Name: Q2947-03A Acquired: 8/26/2025 13:39:26 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.7685968	1.850529	2.208018	1.606134	.6537588	247.1725
Stddev	.0039585	.046226	.004294	.008371	.0032593	3.1258
%RSD	.5150292	2.498006	.1944748	.5211654	.4985485	1.264621

#1	.7659329	1.870188	2.211130	1.610489	.6560583	243.9476
#2	.7731455	1.883677	2.203119	1.611429	.6551892	247.3810
#3	.7667119	1.797723	2.209803	1.596483	.6500288	250.1888

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.093368	.1743694	.2190629	74.98845	1.303787	.3823204
Stddev	.033925	.0019345	.0002054	1.29234	.003502	.0004021
%RSD	1.620616	1.109432	.0937667	1.723381	.2686005	.1051786

#1	2.056489	.1723159	.2190749	73.54459	1.307474	.3827167
#2	2.100368	.1746349	.2188517	75.38390	1.303384	.3823318
#3	2.123248	.1761575	.2192620	76.03685	1.300505	.3819127

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.131896	405.9326	4.151550	32.00642	1.517364	.0757193
Stddev	.002307	2.5616	.072082	.61266	.000497	.0010670
%RSD	.2038099	.6310294	1.736260	1.914165	.0327715	1.409095

#1	1.134528	403.2829	4.072397	31.31030	1.517815	.0746108
#2	1.130226	408.3959	4.168837	32.24536	1.516831	.0758080
#3	1.130934	406.1189	4.213417	32.46360	1.517445	.0767391

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.183610	.7274054	3.436047	16.89900	.5318277	.3926000
Stddev	.027644	.0124430	.014060	.11123	.0040298	.0004278
%RSD	.5332932	1.710603	.4091857	.6582015	.7577248	.1089540

#1	5.153490	.7131399	3.444820	16.81836	.5307099	.3930937
#2	5.207822	.7360215	3.443490	17.02589	.5362984	.3923397
#3	5.189519	.7330547	3.419830	16.85276	.5284748	.3923668

Sample Name: Q2947-03A Acquired: 8/26/2025 13:39:26 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.8707039	6.998775	5.617552	F 25.57281	4.665341	.2690750
Stddev	.0039113	.115965	.080089	.11963	.020283	.0028817
%RSD	.4492093	1.656933	1.425685	.4677914	.4347648	1.070972

#1	.8707659	6.871960	5.533705	25.65432	4.680213	.2657711
#2	.8745838	7.024952	5.693261	25.62863	4.673574	.2703839
#3	.8667620	7.099415	5.625690	25.43547	4.642235	.2710699

Elem	Sr4077
Units	ppm
Avg	.1672069
Stddev	.0080165
%RSD	4.794346

#1	.1591016
#2	.1673876
#3	.1751315

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7050.487	119872.7	13231.94	5314.398	6322.323
Stddev	11.382	388.1	145.54	10.381	8.897
%RSD	.1614299	.3237986	1.099891	.1953386	.1407220

#1	7038.889	119562.9	13377.95	5317.897	6312.331
#2	7050.931	119747.0	13230.98	5322.577	6325.250
#3	7061.639	120308.1	13086.88	5302.719	6329.387

Sample Name: Q2949-01 Acquired: 8/26/2025 13:43:31 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0095326	-.003509	.0308737	.0007926	-.001597	40.69523	.1203366
Stddev	.0027769	.000892	.0004740	.0029719	.001750	.05372	.0003953
%RSD	29.13054	25.42005	1.535173	374.9375	109.5981	.1320117	.3285352
#1	.0078178	-.004174	.0304978	.0006130	-.001739	40.69017	.1207785
#2	.0080436	-.003858	.0307171	.0038502	-.003272	40.64422	.1200164
#3	.0127365	-.002496	.0314061	-.002085	.000220	40.75130	.1202149
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0016529	.0009096	39.98383	.1129686	.0216112	.2029984	55.15035
Stddev	.0000190	.0000347	.14563	.0002627	.0001914	.0005928	.13705
%RSD	1.146644	3.815941	.3642173	.2325005	.8856876	.2920429	.2485041
#1	.0016718	.0008720	40.13992	.1132719	.0216045	.2035683	55.30664
#2	.0016339	.0009163	39.85162	.1128139	.0218059	.2023850	55.05067
#3	.0016529	.0009405	39.95994	.1128200	.0214232	.2030418	55.09375
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4870371	15.29210	.0483527	.0026291	4.120888	.0938293	.1379819
Stddev	.0038370	.04936	.0001339	.0001761	.021357	.0010887	.0004209
%RSD	.7878323	.3227725	.2770140	6.698168	.5182533	1.160296	.3050443
#1	.4907788	15.34860	.0484929	.0027796	4.145199	.0927224	.1383883
#2	.4831113	15.25732	.0482260	.0026722	4.105148	.0938667	.1380095
#3	.4872212	15.27040	.0483393	.0024354	4.112318	.0948989	.1375478
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.364825	.0470143	.0046105	.0090443	1.714907	3.022015	1.249778
Stddev	.006316	.0011592	.0000556	.0003546	.006282	.014313	.002793
%RSD	.2671016	2.465627	1.206064	3.921008	.3662902	.4736316	.2234753
#1	2.367997	.0483495	.0045816	.0087210	1.722111	3.020130	1.249660
#2	2.368927	.0464282	.0046746	.0089884	1.710574	3.008738	1.252628
#3	2.357551	.0462651	.0045753	.0094236	1.712037	3.037178	1.247046

Sample Name: Q2949-01 Acquired: 8/26/2025 13:43:31 Type: Unk
Method: 6010-200.7 NEW(v130) 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	3.158720	.0147803	.0919943
Stddev	.005420	.0012414	.0006650
%RSD	.1715992	8.398763	.7229070

#1	3.161434	.0161849	.0926187
#2	3.162247	.0138303	.0912950
#3	3.152479	.0143258	.0920690

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6242.699	107582.6	10999.90	4769.577	7201.277
Stddev	3.280	85.6	25.71	7.632	3.415
%RSD	.0525397	.0795317	.2337268	.1600087	.0474262

#1	6243.510	107656.5	10980.33	4762.300	7204.906
#2	6245.497	107488.8	11029.02	4768.912	7198.126
#3	6239.090	107602.4	10990.36	4777.520	7200.800

Sample Name: Q2940-01 Acquired: 8/26/2025 13:47:37 Type: Unk
Method: 6010-200.7 NEW(v130) 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	-.001385	-.001973	.0209749	.0027847	-.000516	.0963317	.0030679
Stddev	.001191	.000975	.0003599	.0005001	.001657	.0077849	.0005298
%RSD	86.01376	49.44494	1.715979	17.95913	321.3402	8.081305	17.26918
#1	-.002316	-.002887	.0211854	.0022281	-.002231	.1020531	.0030509
#2	-.001797	-.000946	.0211800	.0029299	.001076	.0874665	.0025468
#3	-.000043	-.002085	.0205593	.0031962	-.000392	.0994753	.0036060
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000203	-.000007	5.183958	.0006184	.0077896	.1793693	2.608124
Stddev	.000021	.000043	.004947	.0003058	.0000814	.0003339	.008472
%RSD	10.43436	616.3112	.0954354	49.45142	1.044907	.1861314	.3248406
#1	-.000210	-.000026	5.178399	.0006609	.0077839	.1796369	2.605122
#2	-.000180	-.000038	5.187878	.0009007	.0078737	.1794760	2.601561
#3	-.000220	.000042	5.185596	.0002935	.0077112	.1789952	2.617688
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0237525	2.019017	.0121898	.0001910	17.09727	.0001556	.0802379
Stddev	.0002683	.012295	.0002021	.0003851	.06063	.0006443	.0002446
%RSD	1.129735	.6089632	1.658084	201.6232	.3546219	414.1773	.3048667
#1	.0235708	2.026629	.0122523	.0006226	17.12794	-.000025	.0805194
#2	.0236259	2.004833	.0123533	.0000679	17.02743	.000871	.0801180
#3	.0240607	2.025591	.0119638	-.000118	17.13644	-.000379	.0800764
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7441315	.0066321	.0003891	-.000786	-.000135	6.719789	.0096037
Stddev	.0038863	.0002520	.0000878	.000168	.001183	.030956	.0015234
%RSD	.5222646	3.799587	22.56239	21.42732	877.2994	.4606630	15.86269
#1	.7404763	.0067663	.0004826	-.000653	-.001379	6.755113	.0088619
#2	.7437045	.0063415	.0003083	-.000975	-.000000	6.697394	.0113560
#3	.7482137	.0067887	.0003765	-.000729	.000975	6.706861	.0085934

Sample Name: Q2940-01 Acquired: 8/26/2025 13:47:37 Type: Unk
Method: 6010-200.7 NEW(v130) 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	6.363131	-.009592	.0252916
Stddev	.011405	.000591	.0001019
%RSD	.1792332	6.161026	.4030591

#1	6.356068	-.010078	.0251740
#2	6.376288	-.008934	.0253475
#3	6.357035	-.009765	.0253534

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6242.851	107138.8	10749.10	4691.008	7573.839
Stddev	1.867	238.9	37.31	25.458	7.239
%RSD	.0298988	.2229416	.3470973	.5426994	.0955769

#1	6241.753	106876.9	10780.50	4667.036	7581.151
#2	6241.795	107194.7	10707.86	4717.729	7573.690
#3	6245.007	107344.7	10758.95	4688.258	7566.675

Sample Name: Q2937-01 Acquired: 8/26/2025 13:51:50 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0038544	.0001994	.0133034	.0035205	.0000236	3.355455
Stddev	.0023344	.0006257	.0010844	.0027932	.0016034	.034443
%RSD	60.56565	313.7531	8.151364	79.34297	6804.334	1.026487
#1	.0015980	.0003083	.0120679	.0055477	-.000860	3.332412
#2	.0037055	-.000474	.0137443	.0003343	-.000944	3.395049
#3	.0062597	.000763	.0140978	.0046794	.001874	3.338902
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3784552	.0001247	.0003253	115.5536	.0045190	.0103504
Stddev	.0041289	.0000139	.0000160	1.3361	.0000883	.0001623
%RSD	1.090977	11.15093	4.916202	1.156269	1.954464	1.568203
#1	.3771904	.0001232	.0003276	115.0176	.0046205	.0103286
#2	.3830685	.0001117	.0003400	117.0744	.0044595	.0102001
#3	.3751067	.0001394	.0003082	114.5687	.0044770	.0105225
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0183002	10.37044	.3355254	44.85592	.0124472	.0007027
Stddev	.0003987	.01086	.0027763	.54212	.0001986	.0002898
%RSD	2.178823	.1047045	.8274362	1.208576	1.595487	41.24409
#1	.0182309	10.36009	.3344253	44.54045	.0126765	.0005790
#2	.0179407	10.36948	.3386832	45.48190	.0123279	.0004953
#3	.0187291	10.38174	.3334678	44.54542	.0123374	.0010339
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	859.7894	.0156666	.1052062	17.89980	.1489861	.0075971
Stddev	14.4298	.0018298	.0009874	.04431	.0020348	.0000959
%RSD	1.678291	11.67948	.9384977	.2475495	1.365741	1.262386
#1	876.4498	.0159268	.1043480	17.88063	.1478352	.0077077
#2	851.6585	.0173523	.1062853	17.95047	.1513355	.0075370
#3	851.2597	.0137206	.1049851	17.86831	.1477877	.0075466

Sample Name: Q2937-01 Acquired: 8/26/2025 13:51:50 Type: Unk
Method: 6010-200.7 NEW(v130) 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	-.003368	.1146633	F 13.31791	F 11.52546	F 27.27796	-.018998
Stddev	.000425	.0025414	.01102	.00896	.07825	.001088
%RSD	12.63107	2.216444	.0827272	.0777479	.2868572	5.725098

#1	-.003036	.1123458	13.31304	11.52276	27.30227	-.019412
#2	-.003220	.1173812	13.33052	11.51816	27.19045	-.019818
#3	-.003847	.1142630	13.31016	11.53546	27.34117	-.017764

Elem	Sr4077
Units	ppm
Avg	.4473321
Stddev	.0044314
%RSD	.9906266

#1	.4455852
#2	.4523707
#3	.4440404

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5617.717	95419.08	10783.34	4259.903	6073.227
Stddev	8.243	31.22	102.39	12.834	2.425
%RSD	.1467405	.0327230	.9495072	.3012663	.0399279

#1	5626.952	95395.58	10798.35	4274.526	6075.940
#2	5611.104	95407.15	10674.28	4254.672	6072.471
#3	5615.094	95454.51	10877.40	4250.511	6071.270

Sample Name: Q2937-02 Acquired: 8/26/2025 13:56:07 Type: Unk
Method: 6010-200.7 NEW(v130) 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	-.001502	-.001601	.0054779	.0019182	-.000327	.0835361	.0032070
Stddev	.001575	.000882	.0008868	.0024628	.001978	.0029906	.0006381
%RSD	104.8308	55.07648	16.18918	128.3883	605.0479	3.580044	19.89579

#1	.000269	-.001058	.0065011	.0005042	.001826	.0804742	.0038249
#2	-.002031	-.001126	.0050006	.0004885	-.002065	.0836842	.0032456
#3	-.002745	-.002618	.0049319	.0047620	-.000743	.0864499	.0025505

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000155	.0000413	5.038296	.0001486	.0083835	.0152729	2.480684
Stddev	.000006	.0000357	.013298	.0003117	.0001174	.0000559	.013303
%RSD	3.826300	86.33464	.2639413	209.6759	1.400817	.3657581	.5362654

#1	-.000149	.0000058	5.038085	-.000146	.0083631	.0152192	2.468209
#2	-.000161	.0000771	5.025104	.000475	.0085098	.0153307	2.494683
#3	-.000154	.0000410	5.051698	.000117	.0082776	.0152687	2.479161

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5317183	1.907311	.0101399	-.000200	14.59767	-.002736	.0987019
Stddev	.0014842	.020107	.0001239	.000274	.06183	.002261	.0000381
%RSD	.2791373	1.054182	1.222166	136.9054	.4235788	82.64412	.0386198

#1	.5334303	1.927950	.0102084	.000058	14.53604	-.005327	.0987340
#2	.5307945	1.887783	.0099969	-.000488	14.65970	-.001723	.0986598
#3	.5309300	1.906199	.0102145	-.000170	14.59726	-.001158	.0987119

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.260000	.0082989	.0001626	-.001240	-.000674	6.324025	.0182495
Stddev	.044064	.0003224	.0001557	.000368	.001305	.018168	.0008731
%RSD	3.497111	3.884802	95.79098	29.68675	193.5895	.2872788	4.784171

#1	1.310640	.0079292	.0000892	-.000878	-.001451	6.310461	.0192523
#2	1.230406	.0084458	.0003415	-.001614	.000832	6.316947	.0178378
#3	1.238953	.0085215	.0000571	-.001227	-.001403	6.344666	.0176584

Sample Name: Q2937-02 Acquired: 8/26/2025 13:56:07 Type: Unk
Method: 6010-200.7 NEW(v130) 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	6.233865	-.007350	.0261358
Stddev	.018037	.001846	.0001088
%RSD	.2893438	25.12062	.4160869
#1	6.229729	-.007961	.0260997
#2	6.253611	-.005275	.0262580
#3	6.218255	-.008812	.0260496

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6279.609	109495.2	10563.20	4793.939	7631.983
Stddev	6.600	83.6	27.45	16.108	2.272
%RSD	.1051093	.0763112	.2598336	.3360152	.0297652
#1	6276.128	109538.4	10534.23	4777.028	7631.811
#2	6287.222	109398.9	10566.57	4809.102	7634.335
#3	6275.479	109548.3	10588.81	4795.688	7629.802

Sample Name: Q2937-02DUP Acquired: 8/26/2025 14:00:19 Type: Unk
Method: 6010-200.7 NEW(v130) 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	-.000596	-.002214	.0049360	.0020785	-.001762	.0781920	.0034385
Stddev	.001032	.000849	.0003808	.0024685	.000670	.0071503	.0010338
%RSD	173.0723	38.35452	7.714733	118.7630	38.03905	9.144492	30.06634
#1	.000501	-.001505	.0052642	.0009214	-.002106	.0711790	.0023760
#2	-.000741	-.001981	.0050252	.0049129	-.000989	.0854720	.0034985
#3	-.001548	-.003155	.0045185	.0004011	-.002190	.0779251	.0044411
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000078	.0000267	4.857713	.0000741	.0078464	.0146240	2.478676
Stddev	.000034	.0000308	.023152	.0001874	.0001462	.0002563	.009032
%RSD	43.08358	115.4163	.4766050	252.7399	1.863300	1.752486	.3644004
#1	-.000117	.0000055	4.838193	.0002485	.0076790	.0145025	2.484747
#2	-.000058	.0000126	4.851654	-.000124	.0079112	.0149184	2.482985
#3	-.000060	.0000620	4.883292	.000098	.0079491	.0144510	2.468296
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0607430	1.855025	.0092709	.0000800	15.00823	.0007140	.0935749
Stddev	.0002362	.017220	.0002628	.0001008	.09450	.0016345	.0004951
%RSD	.3888469	.9282684	2.834671	126.0232	.6296702	228.9266	.5291331
#1	.0604912	1.835344	.0092885	.0001171	14.97931	.0024942	.0930370
#2	.0609596	1.862408	.0089998	-.000034	15.11381	.0003668	.0936759
#3	.0607782	1.867321	.0095245	.000157	14.93157	-.000719	.0940117
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7903331	.0068000	.0001088	-.001172	.0004642	6.249253	.0179201
Stddev	.0459867	.0001775	.0001904	.000485	.0010856	.011753	.0013048
%RSD	5.818647	2.610862	175.0350	41.36916	233.8748	.1880727	7.281203
#1	.7975598	.0065963	-.000015	-.000681	-.000763	6.260672	.0169976
#2	.8322785	.0069222	.000013	-.001651	.000857	6.249894	.0173498
#3	.7411609	.0068814	.000328	-.001185	.001299	6.237192	.0194130

Sample Name: Q2937-02DUP Acquired: 8/26/2025 14:00:19 Type: Unk
Method: 6010-200.7 NEW(v130) 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	5.702188	-.008668	.0252538
Stddev	.009665	.002512	.0001201
%RSD	.1694962	28.97866	.4755178
#1	5.691162	-.005773	.0251267
#2	5.706210	-.009960	.0253654
#3	5.709193	-.010271	.0252692

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6423.166	112394.1	11161.86	4908.062	7804.507
Stddev	6.625	266.2	7.06	16.998	7.222
%RSD	.1031467	.2368548	.0632317	.3463315	.0925389
#1	6416.528	112168.5	11158.79	4903.263	7798.126
#2	6429.778	112326.2	11169.94	4893.979	7803.048
#3	6423.191	112687.8	11156.86	4926.943	7812.348

Sample Name: Q2937-02LX5 Acquired: 8/26/2025 14:04:34 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.0007292	-.000893	.0020178	-.001217	-.001705	.0172173	-.001684
Stddev	.0012387	.000317	.0006366	.002552	.001451	.0036898	.000690
%RSD	169.8814	35.45488	31.54867	209.6266	85.10043	21.43104	40.94436
#1	.0008874	-.001257	.0018081	-.002001	-.002175	.0194799	-.001425
#2	.0018811	-.000736	.0027328	.001634	-.000077	.0129594	-.002466
#3	-.000581	-.000685	.0015125	-.003285	-.002863	.0192124	-.001162
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000003	-.000008	1.170618	-.000342	.0018068	.0034959	.5562005
Stddev	.0000124	.000031	.013334	.000102	.0001339	.0001421	.0077620
%RSD	4430.183	368.7887	1.139032	29.87341	7.412413	4.064235	1.395534
#1	-.000012	-.000029	1.183658	-.000245	.0018784	.0035957	.5498808
#2	.000001	-.000023	1.157009	-.000448	.0018897	.0035587	.5648644
#3	.000013	.000027	1.171187	-.000332	.0016523	.0033332	.5538564
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1221812	.4261452	.0021284	.0004684	3.316560	-.001027	.0210016
Stddev	.0006306	.0211801	.0002260	.0002357	.043318	.001657	.0003064
%RSD	.5161441	4.970157	10.61891	50.30425	1.306099	161.3686	1.459083
#1	.1226478	.4020790	.0023860	.0007397	3.315128	-.001964	.0206515
#2	.1224321	.4344084	.0020361	.0003145	3.360576	.000886	.0212213
#3	.1214638	.4419481	.0019632	.0003512	3.273976	-.002002	.0211319
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1600623	-.000825	-.000158	.0000038	.0003269	1.415999	.0031138
Stddev	.0344243	.000326	.000104	.0002733	.0011683	.023377	.0003874
%RSD	21.50682	39.52196	65.87876	7240.404	357.4030	1.650943	12.44193
#1	.1237383	-.000666	-.000264	-.000207	.0003157	1.433759	.0034280
#2	.1922050	-.001199	-.000155	-.000094	-.000836	1.424724	.0026809
#3	.1642436	-.000608	-.000056	.000312	.001501	1.389514	.0032324

Sample Name: Q2937-02LX5 Acquired: 8/26/2025 14:04:34 Type: Unk
Method: 6010-200.7 NEW(v130) 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	1.406671	-.002815	.0058039
Stddev	.017623	.001309	.0000316
%RSD	1.252802	46.51677	.5450946

#1	1.425299	-.004285	.0058046
#2	1.404450	-.002389	.0058351
#3	1.390264	-.001772	.0057719

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6374.771	111443.2	10802.55	4901.372	7787.689
Stddev	7.315	379.4	37.09	32.342	5.423
%RSD	.1147478	.3404735	.3433488	.6598533	.0696331

#1	6382.130	111343.9	10788.45	4911.151	7782.193
#2	6367.501	111123.3	10844.62	4865.269	7787.839
#3	6374.681	111862.5	10774.57	4927.696	7793.035

Sample Name: Q2937-02MS Acquired: 8/26/2025 14:08:51 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.7884252	1.904372	.9298804	1.951801	.7980505	2.090875	.1919853
Stddev	.0032828	.042806	.0007640	.008888	.0007251	.004908	.0004463
%RSD	.4163724	2.247786	.0821583	.4553870	.0908627	.2347267	.2324586
#1	.7867042	1.881622	.9290034	1.941781	.7979740	2.087828	.1922407
#2	.7863607	1.877744	.9302362	1.954885	.7988108	2.096537	.1914699
#3	.7922106	1.953749	.9304015	1.958736	.7973666	2.088261	.1922451
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2040330	.1877842	5.979608	.4189600	.2038979	.3212342	5.248330
Stddev	.0004252	.0002923	.024801	.0019722	.0001400	.0002012	.032253
%RSD	.2083866	.1556740	.4147534	.4707246	.0686647	.0626228	.6145335
#1	.2044955	.1877925	5.959269	.4166829	.2037467	.3211805	5.213960
#2	.2039443	.1874878	6.007237	.4201232	.2039238	.3210653	5.277935
#3	.2036592	.1880723	5.972318	.4200739	.2040231	.3214567	5.253097
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2627534	3.874880	.4947271	.0721428	16.29092	.3027012	.3041804
Stddev	.0013131	.007935	.0003991	.0002433	.03238	.0022052	.0008560
%RSD	.4997391	.2047882	.0806769	.3372794	.1987780	.7285196	.2814144
#1	.2620495	3.867699	.4951064	.0718907	16.25637	.3002203	.3051687
#2	.2619422	3.873541	.4947642	.0721615	16.29581	.3034448	.3036742
#3	.2642683	3.883399	.4943108	.0723762	16.32058	.3044386	.3036982
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.968497	.2858793	.4362292	.6708479	.1949910	6.923383	5.398275
Stddev	.058881	.0003342	.0006903	.0007679	.0008704	.026744	.029998
%RSD	.5906708	.1168964	.1582529	.1144596	.4463981	.3862829	.5556895
#1	9.915251	.2859454	.4354361	.6707273	.1939870	6.900887	5.376749
#2	10.03173	.2861755	.4365565	.6716690	.1954522	6.952953	5.385537
#3	9.95851	.2855170	.4366951	.6701476	.1955338	6.916310	5.432540

Sample Name: Q2937-02MS Acquired: 8/26/2025 14:08:51 Type: Unk
Method: 6010-200.7 NEW(v130) 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	6.053367	.1889530	.2149189
Stddev	.024459	.0012244	.0008437
%RSD	.4040494	.6480130	.3925659
#1	6.029506	.1894471	.2149117
#2	6.052213	.1898532	.2157662
#3	6.078383	.1875587	.2140788

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6220.053	108585.1	10233.62	4777.944	7461.630
Stddev	7.159	313.0	43.83	19.423	5.627
%RSD	.1151019	.2882545	.4283198	.4065105	.0754166
#1	6219.269	108769.9	10218.00	4759.139	7457.118
#2	6213.318	108223.7	10199.73	4776.764	7459.836
#3	6227.572	108761.8	10283.12	4797.930	7467.935

Sample Name: Q2937-02MSD Acquired: 8/26/2025 14:12:49 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.7674565	1.799443	.9024690	1.896332	.7823184	2.063145	.1936740
Stddev	.0018324	.012181	.0013666	.003793	.0030762	.003838	.0006569
%RSD	.2387659	.6769127	.1514306	.2000282	.3932097	.1860467	.3391932
#1	.7673007	1.801032	.9033470	1.891958	.7850465	2.059255	.1943991
#2	.7657069	1.786546	.9008944	1.898708	.7789844	2.063250	.1931186
#3	.7693618	1.810752	.9031655	1.898331	.7829244	2.066929	.1935042
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1894229	.1824670	5.990213	.4059931	.1985423	.3129151	5.457507
Stddev	.0005469	.0001788	.025013	.0009280	.0001692	.0005291	.005865
%RSD	.2887335	.0979724	.4175698	.2285672	.0852171	.1690833	.1074670
#1	.1900464	.1825499	6.011253	.4050654	.1985529	.3132931	5.452325
#2	.1890243	.1822618	5.962556	.4059924	.1983680	.3123104	5.463874
#3	.1891981	.1825892	5.996830	.4069214	.1987059	.3131417	5.456321
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2580143	3.833503	.4816097	.0706351	17.89512	.2972997	.2989562
Stddev	.0011600	.024940	.0006179	.0004531	.04483	.0012228	.0017762
%RSD	.4495735	.6505806	.1282915	.6414176	.2505063	.4113087	.5941369
#1	.2588668	3.852002	.4820989	.0706607	17.84466	.2969083	.2974532
#2	.2566934	3.805140	.4809154	.0701698	17.91034	.2963204	.3009163
#3	.2584828	3.843367	.4818149	.0710749	17.93035	.2986702	.2984993
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.35805	.2674840	.4263543	.6556990	.1922554	7.328459	5.242374
Stddev	.02994	.0003940	.0008440	.0026589	.0004029	.004327	.008508
%RSD	.2890061	.1472805	.1979496	.4055082	.2095563	.0590461	.1622922
#1	10.32367	.2672044	.4273172	.6526300	.1918638	7.326980	5.232569
#2	10.37836	.2679346	.4257429	.6571547	.1922339	7.325066	5.247813
#3	10.37210	.2673131	.4260028	.6573121	.1926687	7.333332	5.246739

Sample Name: Q2937-02MSD Acquired: 8/26/2025 14:12:49 Type: Unk
Method: 6010-200.7 NEW(v130) 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	5.999047	.1840704	.2138573
Stddev	.024148	.0021072	.0003760
%RSD	.4025323	1.144761	.1758084

#1	5.971283	.1843594	.2141384
#2	6.010689	.1818337	.2134302
#3	6.015168	.1860181	.2140033

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6233.432	108288.5	10724.10	4752.044	7483.587
Stddev	9.423	327.2	22.39	26.678	9.766
%RSD	.1511705	.3021819	.2088022	.5614075	.1305013

#1	6223.252	108662.1	10709.57	4779.516	7472.896
#2	6235.196	108052.9	10749.88	4726.237	7485.824
#3	6241.849	108150.5	10712.84	4750.379	7492.040

Sample Name: Q2937-02A Acquired: 8/26/2025 14:16:47 Type: Unk
Method: 6010-200.7 NEW(v130) 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	.7792972	1.885151	.9193083	1.938632	.7940629	2.106745	.2047715
Stddev	.0035194	.038638	.0006036	.004493	.0031140	.012306	.0010604
%RSD	.4516123	2.049614	.0656569	.2317717	.3921605	.5841201	.5178452
#1	.7808977	1.929766	.9188174	1.934618	.7948828	2.111717	.2044436
#2	.7752620	1.862979	.9191251	1.937791	.7966850	2.092731	.2039138
#3	.7817319	1.862707	.9199822	1.943486	.7906210	2.115787	.2059571
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1882241	.1850815	6.018239	.4107932	.2006124	.3172318	5.688486
Stddev	.0011057	.0001052	.021491	.0003939	.0002258	.0006624	.060581
%RSD	.5874567	.0568339	.3570941	.0958877	.1125344	.2088104	1.064971
#1	.1889760	.1851458	6.042726	.4104311	.2006225	.3169181	5.693639
#2	.1887418	.1851386	6.002513	.4107359	.2008329	.3167846	5.625494
#3	.1869545	.1849601	6.009477	.4112126	.2003817	.3179928	5.746326
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5099395	3.887288	.4901588	.0696736	19.18033	.3108215	.3028944
Stddev	.0013627	.030088	.0001361	.0004057	.10150	.0032205	.0007485
%RSD	.2672205	.7739992	.0277714	.5822615	.5291999	1.036133	.2471192
#1	.5105292	3.913183	.4902938	.0698006	19.15517	.3144881	.3030789
#2	.5083813	3.894398	.4901612	.0700006	19.09377	.3084508	.3035334
#3	.5109079	3.854282	.4900216	.0692196	19.29204	.3095257	.3020709
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.19036	.2674131	.4279025	.6614455	.1983795	7.496269	5.381291
Stddev	.10419	.0017419	.0004033	.0019562	.0009475	.068497	.015797
%RSD	.9310281	.6513773	.0942578	.2957529	.4776249	.9137501	.2935536
#1	11.23380	.2688134	.4274524	.6622779	.1994703	7.488598	5.392731
#2	11.07148	.2679634	.4282311	.6592108	.1979069	7.431930	5.363267
#3	11.26579	.2654626	.4280239	.6628480	.1977612	7.568279	5.387876

Sample Name: Q2937-02A Acquired: 8/26/2025 14:16:47 Type: Unk
Method: 6010-200.7 NEW(v130) 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	6.056837	.1991208	.2216070
Stddev	.016756	.0019252	.0004760
%RSD	.2766379	.9668301	.2148141

#1	6.073625	.2001035	.2221236
#2	6.040114	.1969026	.2211860
#3	6.056772	.2003563	.2215116

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6172.610	108269.8	10961.54	4749.329	7418.037
Stddev	12.710	261.5	34.79	1.511	6.766
%RSD	.2059089	.2415251	.3173745	.0318059	.0912152

#1	6186.347	108252.1	10933.56	4749.300	7423.095
#2	6170.214	108539.8	10950.56	4747.833	7420.665
#3	6161.269	108017.7	11000.49	4750.854	7410.350

Sample Name: CCV04 Acquired: 8/26/2025 14:20:44 Type: Unk
Method: 6010-200.7 NEW(v130) 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	5.103610	5.073365	4.997521	5.158756	5.049329	10.11860	10.04551
Stddev	.006613	.104250	.002651	.011618	.008643	.00683	.04936
%RSD	.1295804	2.054849	.0530549	.2252056	.1711624	.0675021	.4913580
#1	5.109849	4.985360	4.994890	5.147611	5.059293	10.11078	10.04206
#2	5.104304	5.188497	4.997481	5.170795	5.043877	10.12338	9.99797
#3	5.096677	5.046238	5.000192	5.157861	5.044815	10.12163	10.09651
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2462281	2.518342	25.08160	1.036604	2.484044	1.262454	5.234644
Stddev	.0009166	.002738	.05539	.001792	.001825	.001180	.033493
%RSD	.3722626	.1087226	.2208230	.1728906	.0734581	.0934376	.6398375
#1	.2470521	2.515184	25.04905	1.038037	2.482405	1.263140	5.209753
#2	.2452408	2.519800	25.14555	1.034594	2.483716	1.261092	5.272724
#3	.2463914	2.520044	25.05019	1.037179	2.486010	1.263131	5.221455
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.489923	24.85122	2.494785	1.266855	26.08243	2.527856	2.542302
Stddev	.008610	.09393	.002434	.001368	.14116	.002717	.003136
%RSD	.3457926	.3779861	.0975614	.1079598	.5412058	.1074872	.1233482
#1	2.487222	24.76466	2.492699	1.265428	25.99350	2.524951	2.545827
#2	2.499559	24.95110	2.494196	1.266983	26.24519	2.530336	2.541256
#3	2.482987	24.83790	2.497459	1.268155	26.00859	2.528280	2.539823
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.80210	4.872695	5.103493	4.940598	4.996005	5.234014	5.005258
Stddev	.13871	.015414	.005211	.006422	.019813	.025962	.021223
%RSD	.5375864	.3163326	.1021109	.1299882	.3965791	.4960250	.4240190
#1	25.67759	4.888155	5.102120	4.937366	4.986661	5.204082	4.998133
#2	25.95161	4.857327	5.109253	4.947995	5.018762	5.247540	5.029126
#3	25.77709	4.872604	5.099105	4.936434	4.982592	5.250420	4.988513

Sample Name: CCV04 Acquired: 8/26/2025 14:20:44 Type: Unk
Method: 6010-200.7 NEW(v130) 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	4.915495	5.047142	5.023871
Stddev	.032360	.013788	.008519
%RSD	.6583203	.2731904	.1695693

#1	4.903301	5.040970	5.019825
#2	4.952180	5.062939	5.033659
#3	4.891004	5.037519	5.018128

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6114.675	104932.9	10823.11	4674.163	6948.322
Stddev	6.801	132.3	19.91	19.140	1.880
%RSD	.1112286	.1261201	.1839963	.4094835	.0270627

#1	6108.056	104973.1	10800.54	4692.076	6947.341
#2	6121.645	104785.1	10838.22	4653.996	6950.490
#3	6114.324	105040.5	10830.56	4676.416	6947.134

Sample Name: CCB04 Acquired: 8/26/2025 14:24:56 Type: Unk
Method: 6010-200.7 NEW(v130) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0014848	-.000202	.0005327	-.002142	-.001477	-.005007	-.002387
Stddev	.0007286	.001777	.0008779	.003741	.000264	.008165	.000908
%RSD	49.07176	877.3627	164.8101	174.6865	17.86270	163.0500	38.05111

#1	.0018297	.001342	.0003790	-.002334	-.001770	-.007143	-.001915
#2	.0006478	.000194	.0014772	.001692	-.001258	-.011892	-.001813
#3	.0019768	-.002144	-.000258	-.005783	-.001403	.004013	-.003435

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000152	.0000388	-.000988	-.000509	-.000014	-.000057	.0032434
Stddev	.0000204	.0000302	.000939	.000031	.000124	.000405	.0006927
%RSD	134.1016	77.87557	95.03572	6.043658	855.0599	704.2224	21.35623

#1	.0000086	.0000045	-.002040	-.000497	-.000041	-.000320	.0027103
#2	-.000001	.0000614	-.000691	-.000485	-.000123	.000409	.0040263
#3	.000038	.0000504	-.000234	-.000543	.000121	-.000261	.0029936

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000639	.0200344	.0000338	.0005075	-.041121	.0010945	-.000797
Stddev	.0004166	.0041592	.0001122	.0002748	.027017	.0009175	.000145
%RSD	651.9660	20.76012	331.8744	54.15828	65.69993	83.82936	18.18900

#1	.0001198	.0161592	-.000038	.0006027	-.061652	.0000387	-.000632
#2	-.000378	.0244288	-.000023	.0001977	-.051197	.0016989	-.000902
#3	.000450	.0195152	.000163	.0007221	-.010515	.0015460	-.000857

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.122182	.0014863	.0003147	.0002028	-.000569	-.004744	-.001041
Stddev	.049368	.0005867	.0000512	.0007478	.000715	.007097	.001392
%RSD	40.40536	39.47356	16.26343	368.7789	125.4688	149.6060	133.7207

#1	-.178393	.0020951	.0002572	-.000304	-.001394	-.011203	-.002439
#2	-.102286	.0014393	.0003315	.001062	-.000176	.002854	.000345
#3	-.085866	.0009245	.0003553	-.000149	-.000138	-.005883	-.001029

Sample Name: CCB04 Acquired: 8/26/2025 14:24:56 Type: Unk
Method: 6010-200.7 NEW(v130) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0070765	-.003189	-.000007
Stddev	.0031055	.001968	.000075
%RSD	43.88388	61.72213	1104.505
#1	.0043942	-.004823	.000044
#2	.0104787	-.003739	-.000093
#3	.0063567	-.001004	.000029

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6378.262	111528.7	10786.87	4926.168	7863.257
Stddev	8.925	96.0	34.60	18.198	19.696
%RSD	.1399346	.0860596	.3207408	.3694164	.2504801
#1	6385.717	111444.2	10747.29	4920.744	7882.817
#2	6368.371	111509.0	10801.95	4911.298	7843.428
#3	6380.697	111633.1	10811.37	4946.461	7863.527

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: 08/25/2025 Time : 10:10 Temp : 97 °C

End Digest Date: 08/25/2025 Time : 13:15 Temp : 98 °C

Digestion tube ID: M5595

Block thermometer ID: MET-DIG. #1

Dig Technician Signature: *SKS*

Supervisor Signature: *SO*

Temp : 1. 96°C 2. N/A

Standard Name	MLS USED	STD REF. # FROM LOG
LFS-1	0.25	M6180
LFS-2	0.25	M6181
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

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

Extraction Conformance/Non-Conformance Comments:

HOT BLOCK#1 CELL#50 97C

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
08/25/25 14:15	<i>SKS met dig</i>	<i>SO met lab</i>
	Preparation Group	Analysis Group

Lab Sample ID	Client Sample ID	pH	Initial Vol (ml)	Final Vol (ml)	Color Before	Color After	Clarity Before	Clarity After	Comment	Prep Pos
PB169379BL	PBW379	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	1
PB169379BS	LCS379	<2	50	25	Colorless	Colorless	Clear	Clear	M6180,M6181	2
Q2937-01	RW8-SP100-20250821	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	3
Q2937-02	RW8-SP303-20250821	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	4
Q2937-02MS	RW8-SP303-20250821MS	<2	50	25	Colorless	Colorless	Clear	Clear	M6180,M6181	6
Q2937-02MSD	RW8-SP303-20250821MSD	<2	50	25	Colorless	Colorless	Clear	Clear	M6180,M6181	7
Q2937-02DUP	RW8-SP303-20250821DUP	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	5
Q2940-01	COMP(1-6)	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	8

WORKLIST(Hardcopy Internal Chain)

WorkList Name : PB169379 WorkList ID : 191453 Department : Digestion Date : 08-25-2025 09:33:01

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q2937-01	RW8-SP100-20250821	Water	Metals Group4	1:1 HNO3 to pH < 2	TETTR06	J31	08/21/2025	6010D
Q2937-02	RW8-SP303-20250821	Water	Metals Group4	1:1 HNO3 to pH < 2	TETTR06	J31	08/21/2025	6010D
Q2940-01	COMP(1-6)	Water	Metals PSEG Group2	1:1 HNO3 to pH < 2	PSEG03	D21	08/22/2025	6010D

Date/Time 08/25/25 09:55
Raw Sample Received by: SLS met dls
Raw Sample Relinquished by: CJP cen

Date/Time 08/25/25 10:55
Raw Sample Received by: CJP cen
Raw Sample Relinquished by: SLS met dls

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB136973

Review By	Janvi	Review On	8/27/2025 1:04:18 PM
Supervise By	jaswal	Supervise On	8/28/2025 12:35:24 AM
STD. NAME	STD REF.#		
ICAL Standard	MP86640,MP86656,MP86653,MP86643,MP86642,MP86641		
ICV Standard	MP86752,MP86656		
CCV Standard	MP86646		
ICSA Standard	MP86651,MP86753		
CRI Standard	MP86656		
LCS Standard			
Chk Standard	MP86647,MP86648		

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	08/26/25 10:49		Jaswal	OK
2	S1	S1	CAL2	08/26/25 10:53		Jaswal	OK
3	S2	S2	CAL3	08/26/25 10:58		Jaswal	OK
4	S3	S3	CAL4	08/26/25 11:02		Jaswal	OK
5	S4	S4	CAL5	08/26/25 11:06		Jaswal	OK
6	S5	S5	CAL6	08/26/25 11:10		Jaswal	OK
7	ICV01	ICV01	ICV	08/26/25 11:14		Jaswal	OK
8	LLICV01	LLICV01	LLICV	08/26/25 11:20		Jaswal	OK
9	ICB01	ICB01	ICB	08/26/25 11:24		Jaswal	OK
10	CRI01	CRI01	CRDL	08/26/25 11:29		Jaswal	OK
11	ICSA01	ICSA01	ICSA	08/26/25 11:33		Jaswal	OK
12	ICSAB01	ICSAB01	ICSAB	08/26/25 11:37		Jaswal	OK
13	ICSADL	ICSADL	ICSA	08/26/25 11:41		Jaswal	OK
14	ICSABDL	ICSABDL	ICSAB	08/26/25 11:45		Jaswal	OK
15	CCV01	CCV01	CCV	08/26/25 11:50		Jaswal	OK
16	CCB01	CCB01	CCB	08/26/25 11:54		Jaswal	OK
17	LR-1	LR-1	HIGH STD	08/26/25 11:58		Jaswal	OK
18	LR-2	LR-2	HIGH STD	08/26/25 12:03		Jaswal	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB136973

Review By	Janvi	Review On	8/27/2025 1:04:18 PM
Supervise By	jaswal	Supervise On	8/28/2025 12:35:24 AM

STD. NAME	STD REF.#
ICAL Standard	MP86640,MP86656,MP86653,MP86643,MP86642,MP86641
ICV Standard	MP86752,MP86656
CCV Standard	MP86646
ICSA Standard	MP86651,MP86753
CRI Standard	MP86656
LCS Standard	
Chk Standard	MP86647,MP86648

19	LR-3	LR-3	HIGH STD	08/26/25 12:07		Jaswal	OK
20	Q2832-09DL	TG-S05DL	SAM	08/26/25 12:12	10x for Si	Jaswal	Confirms
21	Q2832-09DUPDL	TG-S05DUPDL	DUP	08/26/25 12:16	10x for Si	Jaswal	Confirms
22	Q2832-09LDL	TG-S05LDL	SD	08/26/25 12:20	10x for Si	Jaswal	Confirms
23	Q2832-09MSDL	TG-S05MSDL	MS	08/26/25 12:25	10x for Si	Jaswal	Confirms
24	Q2832-09MSDDL	TG-S05MSDDL	MSD	08/26/25 12:29	10x for Si	Jaswal	Confirms
25	Q2832-09ADL	TG-S05ADL	PS	08/26/25 12:33	10x for Si	Jaswal	Confirms
26	PB169380BL	PB169380BL	MB	08/26/25 12:37		Jaswal	OK
27	CCV02	CCV02	CCV	08/26/25 12:41		Jaswal	OK
28	CCB02	CCB02	CCB	08/26/25 12:45		Jaswal	OK
29	PB169380BS	PB169380BS	LCS	08/26/25 12:50		Jaswal	OK
30	PB169379BL	PB169379BL	MB	08/26/25 12:54		Jaswal	OK
31	PB169379BS	PB169379BS	LCS	08/26/25 12:58		Jaswal	OK
32	Q2941-01	SOIL-COMP(1-2)	SAM	08/26/25 13:02		Jaswal	OK
33	Q2947-01	291	SAM	08/26/25 13:06		Jaswal	OK
34	Q2947-03	235	SAM	08/26/25 13:10		Jaswal	OK
35	Q2947-03DUP	235DUP	DUP	08/26/25 13:14		Jaswal	OK
36	Q2947-03L	235L	SD	08/26/25 13:18		Jaswal	OK
37	Q2947-03MS	235MS	MS	08/26/25 13:22		Jaswal	OK
38	Q2947-03MSD	235MSD	MSD	08/26/25 13:26		Jaswal	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB136973

Review By	Janvi	Review On	8/27/2025 1:04:18 PM
Supervise By	jaswal	Supervise On	8/28/2025 12:35:24 AM

STD. NAME	STD REF.#
ICAL Standard	MP86640,MP86656,MP86653,MP86643,MP86642,MP86641
ICV Standard	MP86752,MP86656
CCV Standard	MP86646
ICSA Standard	MP86651,MP86753
CRI Standard	MP86656
LCS Standard	
Chk Standard	MP86647,MP86648

39	CCV03	CCV03	CCV	08/26/25 13:30		Jaswal	OK
40	CCB03	CCB03	CCB	08/26/25 13:35		Jaswal	OK
41	Q2947-03A	235A	PS	08/26/25 13:39	0.1 ml of each M6004 and M6017 in 10ml sample.	Jaswal	OK
42	Q2949-01	367	SAM	08/26/25 13:43		Jaswal	OK
43	Q2940-01	COMP(1-6)	SAM	08/26/25 13:47		Jaswal	OK
44	Q2937-01	RW8-SP100-2025082	SAM	08/26/25 13:51		Jaswal	OK
45	Q2937-02	RW8-SP303-2025082	SAM	08/26/25 13:56		Jaswal	OK
46	Q2937-02DUP	RW8-SP303-2025082	DUP	08/26/25 14:00		Jaswal	OK
47	Q2937-02L	RW8-SP303-2025082	SD	08/26/25 14:04		Jaswal	OK
48	Q2937-02MS	RW8-SP303-2025082	MS	08/26/25 14:08		Jaswal	OK
49	Q2937-02MSD	RW8-SP303-2025082	MSD	08/26/25 14:12		Jaswal	OK
50	Q2937-02A	RW8-SP303-2025082	PS	08/26/25 14:16	0.1 ml of each M6004 and M6017 in 10ml sample.	Jaswal	OK
51	CCV04	CCV04	CCV	08/26/25 14:20		Jaswal	OK
52	CCB04	CCB04	CCB	08/26/25 14:24		Jaswal	OK

Prep Standard - Chemical Standard Summary

Order ID : Q2937
Test : Metals Group4
Prepbatch ID : PB169379,
Sequence ID/Qc Batch ID: LB136973, LB136973,

Standard ID :
MP85156, MP86640, MP86641, MP86642, MP86643, MP86646, MP86647, MP86648, MP86651, MP86653, MP86655, MP86656, MP86752, MP86753,

Chemical ID :
M5467, M5658, M5697, M5748, M5798, M5799, M5800, M5801, M5805, M5814, M5816, M5820, M5962, M5969, M5970, M5979, M5985, M5998, M6021, M6023, M6027, M6028, M6030, M6032, M6058, M6076, M6077, M6086, M6128, M6137, M6140, M6142, M6144, M6145, M6146, M6151, M6158, M6159, M6162, M6163, M6164, M6165, M6171, M6174, M6176, M6177, M6178, M6179, M6180, M6181, M6182, M6184, W3112,

Metals STANDARD PREPARATION LOG

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

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

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
902	ICP AES CAL BLK (SO/ICB/CCB)	MP86640	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal
								08/07/2025

FROM 125.00000ml of M6151 + 2350.00000ml of W3112 + 25.00000ml of M6162 = Final Quantity: 500.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
907	ICP AES STD S (S5)	MP86641	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/07/2025
FROM 5.00000ml of M5467 + 5.00000ml of M5820 + 5.00000ml of M5969 + 5.00000ml of M5970 + 5.00000ml of M5998 + 5.00000ml of M6077 + 5.00000ml of M6146 + 5.00000ml of M6174 + 5.00000ml of M6176 + 455.00000ml of MP86640 = 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	MP86642	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/07/2025
FROM 50.00000ml of MP86640 + 50.00000ml of MP86641 = 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	MP86643	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/07/2025

FROM 25.00000ml of MP86641 + 75.00000ml of MP86640 = 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	MP86646	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/07/2025

FROM 50.00000ml of MP86640 + 50.00000ml of MP86641 = Final Quantity: 100.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
919	ICP AES INTERNAL STD	MP86647	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP	Sarabjit Jaswal

FROM 1.00000ml of M6179 + 10.00000ml of M5985 + 1969.00000ml of W3112 + 20.00000ml of M6162 = Final Quantity: 2000.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
903	ICP AES RINSE SOLN	MP86648	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP	Sarabjit Jaswal

FROM 200.00000ml of M6162 + 9800.00000ml of W3112 = Final Quantity: 10000.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
904	ICP AES ICSA SOLN	MP86651	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP	Sarabjit Jaswal

A)

FROM 5.00000ml of M6182 + 45.00000ml of MP86640 = 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>
3913	ICP AES STD S2	MP86653	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP	Sarabjit Jaswal

A)

FROM 4.00000ml of MP86641 + 46.00000ml of MP86640 = 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>
2950	ICP AES S1/CRI STOCK STD	MP86655	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/07/2025
FROM 0.00000ml of M5748 + 0.00000ml of M5805 + 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 M5816 + 0.10000ml of M5820 + 0.10000ml of M5962 + 0.10000ml of M5970 + 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 M6146 + 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 MP86640 = 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	MP86656	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/07/2025
FROM 1.00000ml of MP86655 + 49.00000ml of MP86640 = 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>
4163	NEW ICV-060925	MP86752	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/14/2025
FROM 0.20000ml of M6058 + 0.40000ml of M6163 + 0.40000ml of M6164 + 0.40000ml of M6165 + 48.60000ml of MP86640 = 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>
3494	ICP AES ICSAB SOLN-1	MP86753	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/14/2025
FROM 0.05000ml of M6076 + 5.00000ml of M6182 + 5.00000ml of M6184 + 39.95000ml of MP86640 = Final Quantity: 100.000 ml								

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
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.	58120 / Ca, 10000 PPM, 500 ml	122223	12/22/2026	04/17/2025 / Janvi	01/03/2024 / jaswal	M5805

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57016 / S, 1000 PPM, 125 ml	122923	12/29/2026	05/20/2024 / Jaswal	02/09/2024 / jaswal	M5816

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

CHEMICAL RECEIPT LOG BOOK

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGTI1-1 / TITANIUM 125mL 1000ug/mL	T2-TI719972	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

CHEMICAL RECEIPT LOG BOOK

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

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

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

CHEMICAL RECEIPT LOG BOOK

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

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

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

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58126 / Fe, 10000 PPM, 500 ml	011025	01/10/2028	06/25/2025 / Janvi	01/13/2025 / Jaswal	M6140

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58119 / K, 10000 PPM, 500 ml	103024	10/30/2027	05/06/2025 / JANVI	01/13/2025 / Jaswal	M6142

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

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9530-33 / Hydrochloric Acid, Instra-Analyzed (cs/6x2.5L)	22G2862015	02/17/2026	02/18/2025 / Sagar	01/15/2025 / Sagar	M6151

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24D1062002	09/09/2025	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 #
Seidler Chemical	BA-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24H0162012	11/27/2025	05/27/2025 / Sagar	04/27/2025 / Sagar	M6162

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

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

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

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58112 / Mg, 10000 PPM, 500 ml	011525	01/15/2028	07/15/2025 / Janvi	02/13/2025 / Janvi	M6171

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

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

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

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

CHEMICAL RECEIPT LOG BOOK

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	W2-MEB752149	02/05/2026	08/06/2025 / Janvi	07/22/2025 / Janvi	M6180

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-MEB7433480	02/05/2026	08/06/2025 / Janvi	07/22/2025 / Janvi	M6181

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	DIW / DI Water	Daily Lab-Certified	07/03/2029	07/03/2024 / Iwona	07/03/2024 / Iwona	W3112



M6032

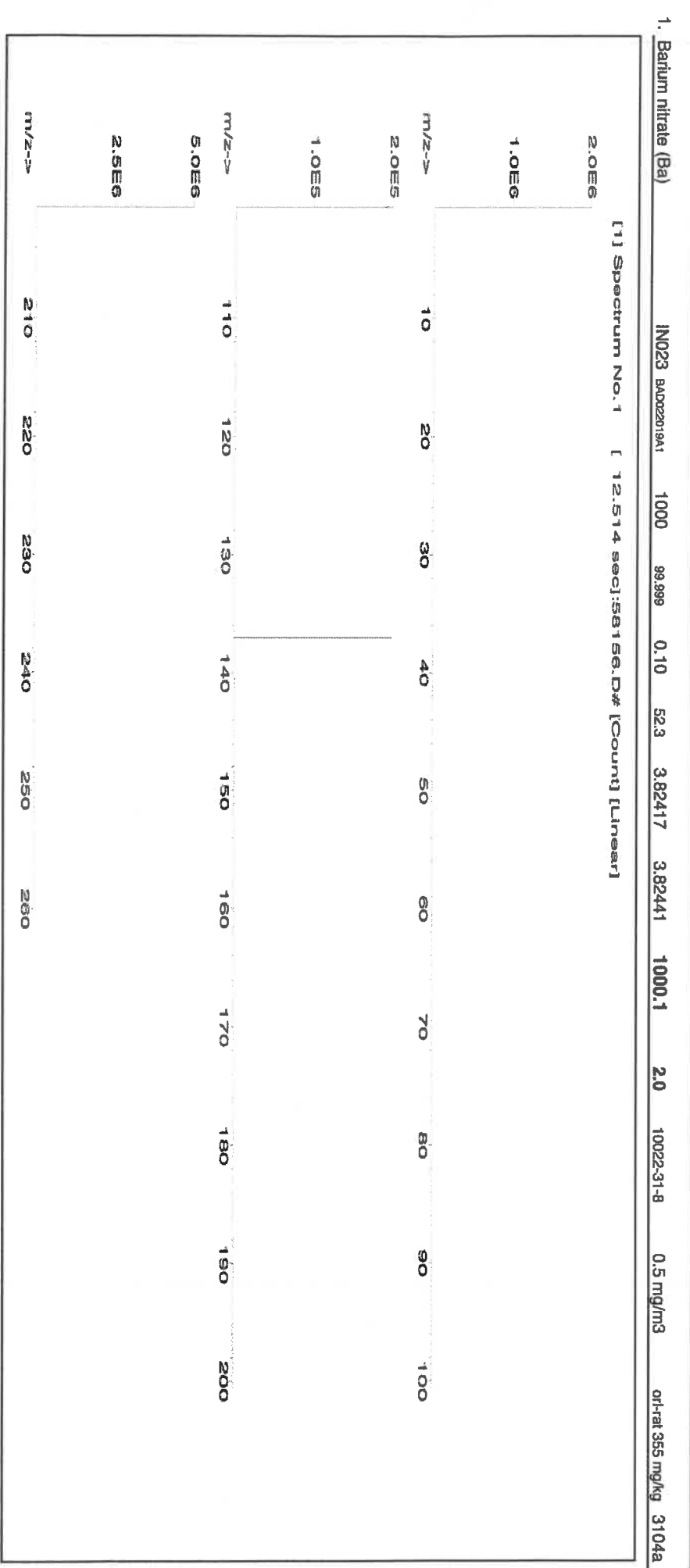


CERTIFIED WEIGHT REPORT:

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



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

CERTIFIED WEIGHT REPORT:

Part Number: 58120
Lot Number: 122223
Description: Calcium (Ca)

Solvent: 24002546 Nitric Acid

Lot #

Expiration Date: 122226

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 10000

NIST Test Number: 6UTB

Weight shown below was diluted to (mL): 4000.0

5E-05 Balance Uncertainty
0.06 Flask Uncertainty

2% 80.0 Nitric Acid
(mL)

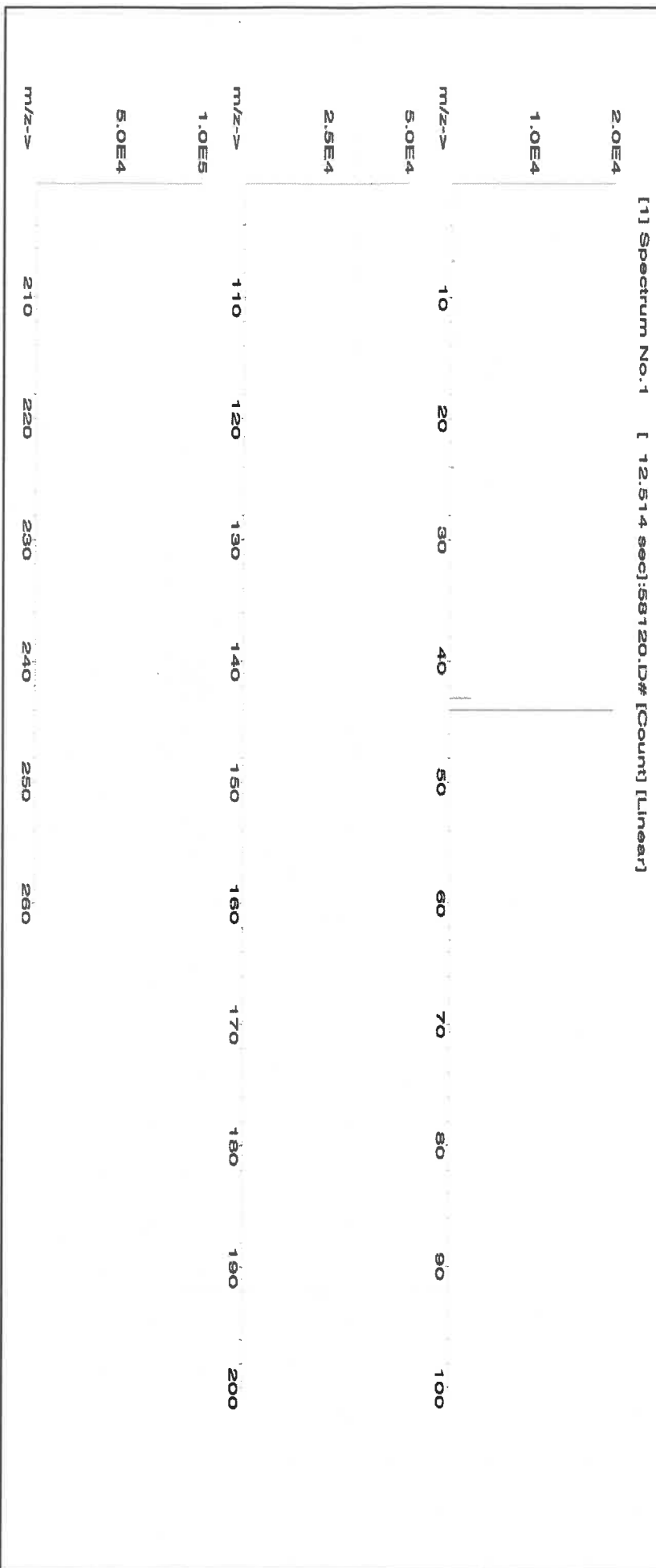
<i>Giovanni Caporaso</i>	
Formulated By:	Giovanni Esposito 122223
Reviewed By:	<i>Pedro L. Renteria</i> 122223

SDS Information

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

1. Calcium carbonate (Ca) IN014 CAD0302383 10000 99.999 0.10 39.9 100.2525 100.2670 10001.4 20.0 471.34-1 5 mg/m3 off-ral >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	Bu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Ti	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	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	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	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



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

CERTIFIED WEIGHT REPORT:

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

Solvent: 24002546 Nitric Acid

Lot #

2% 80.0 Nitric Acid (mL)

Expiration Date: 082327

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 10000

NIST Test Number: 6UTB

5E-05 Balance Uncertainty

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

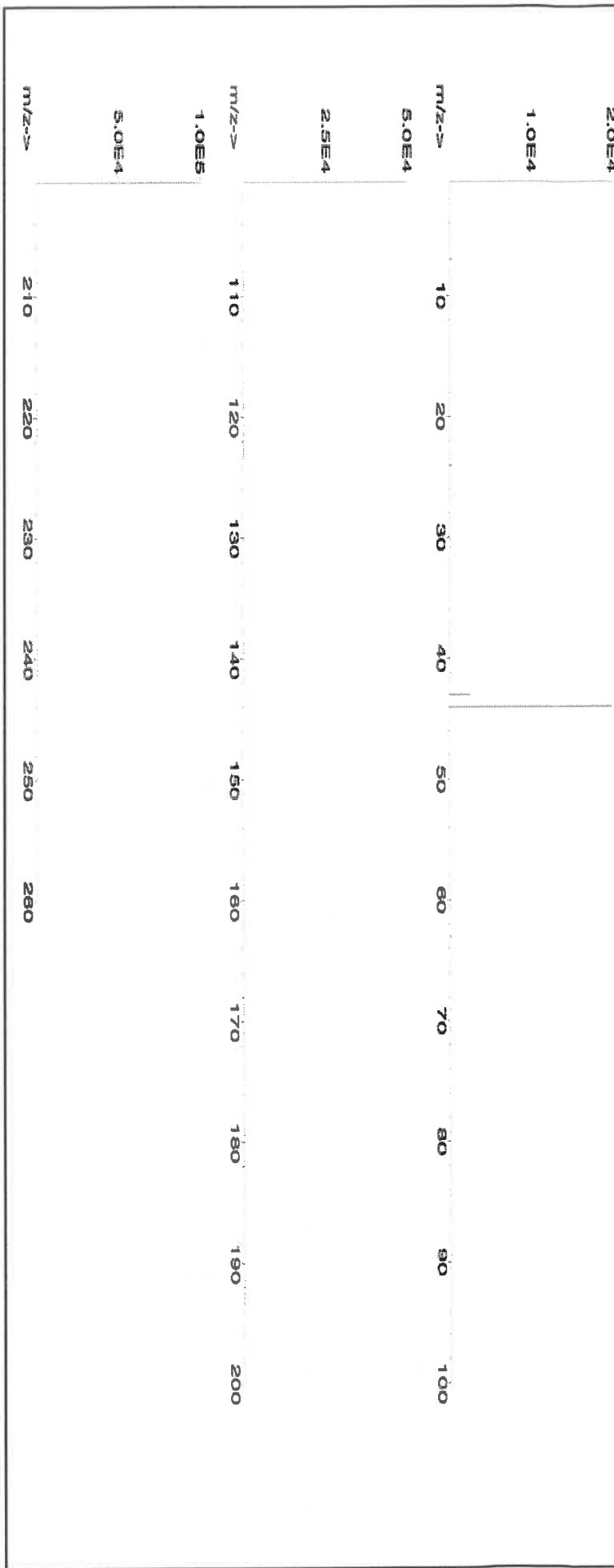
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
082324	
<i>Pedro L. Rentas</i>	
Reviewed By:	Pedro L. Rentas
082324	

SDS Information

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

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



M6028



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57048
070124
Cadmium (Cd)

Lot #
Solvent: 24002546 Nitric Acid

Expiration Date:

070127

2% 40.0 (mL) Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL):

2000.07

SE-05 Balance Uncertainty
0.100 Flask Uncertainty

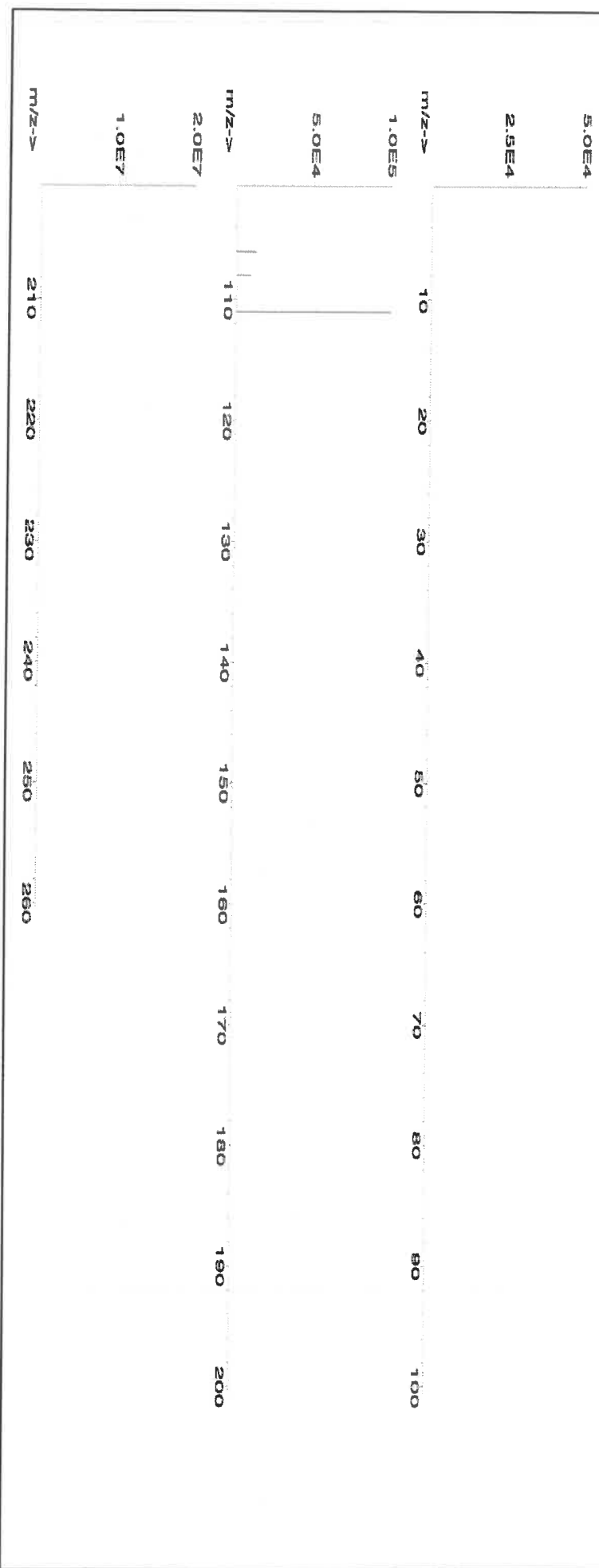
<i>Aleah O'Brady</i>	
Formulated By:	Aleah O'Brady
	070124
<i>Pedro L. Rentas</i>	
Reviewed By:	Pedro L. Rentas
	070124

Compound

Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Expanded	SDS Information	NIST
Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Weight (g)	Conc. (µg/mL)	+/- (µg/mL)	(Solvent Safety Info. On Attached pg.)	SRM

1. Cadmium nitrate tetrahydrate (Cd) IN024 CDM09221A1 1000 99.999 0.10 36.5 5.4797 5.4804 1000.1 2.0 10022-68-1 0.01 mg/m3 ref rat 60.2mg/kg 3108

[T1 Spectrum No.1 [12.514 sec]:\$8148.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



M5467 R: 03/01/23 (14)

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57058
020623
Cerium (Ce)

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

020626
Ambient (20 °C)
1000
6UTB

Weight shown below was diluted to (mL):

1000.12

Solvent: Nitric Acid

2% Nitric Acid
20.0 (mL)

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Lot #

21110221

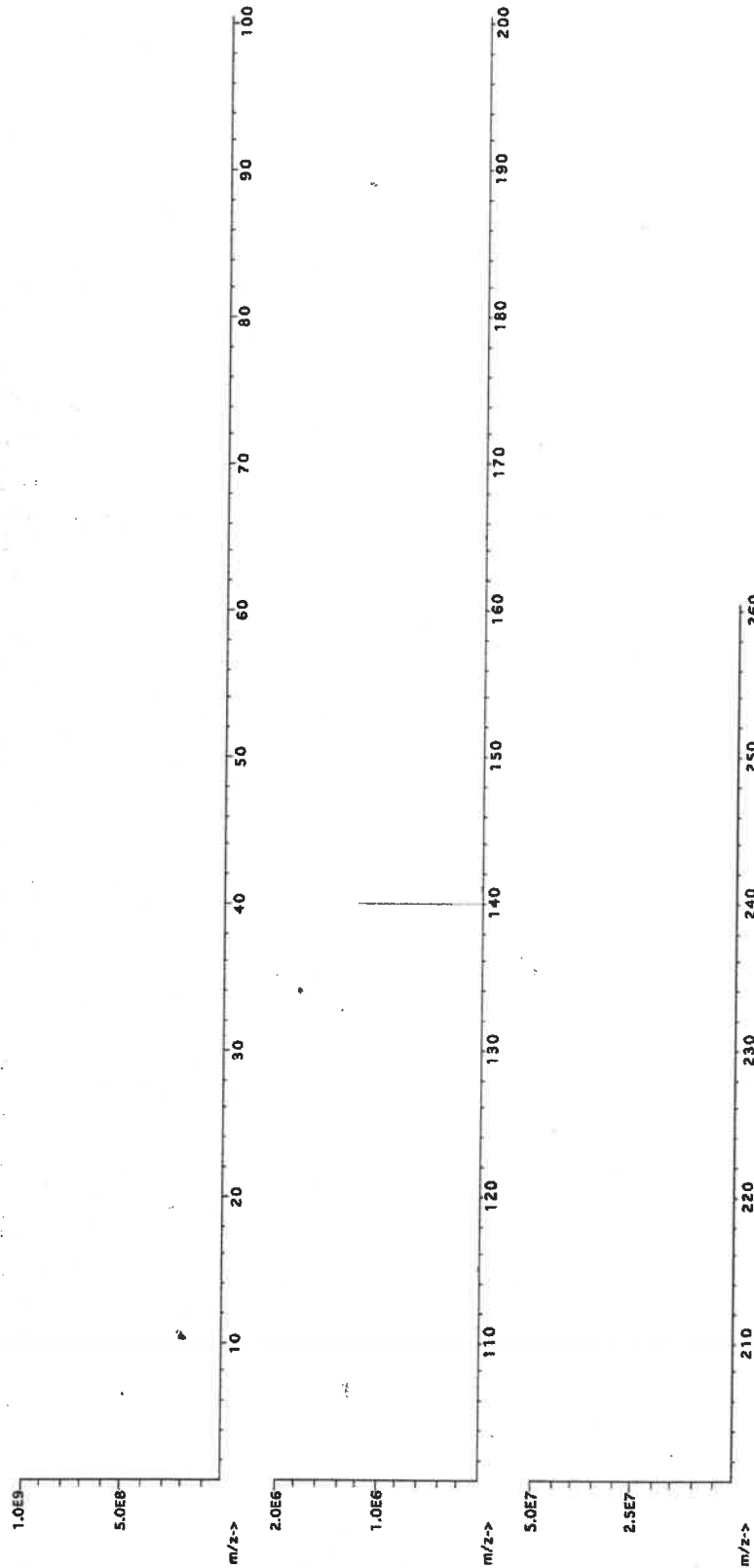
Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas

SDS Information

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

(T)= Target analyte

Physical Characterization:

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

2.0% 40.0 (mL)

Nitric Acid

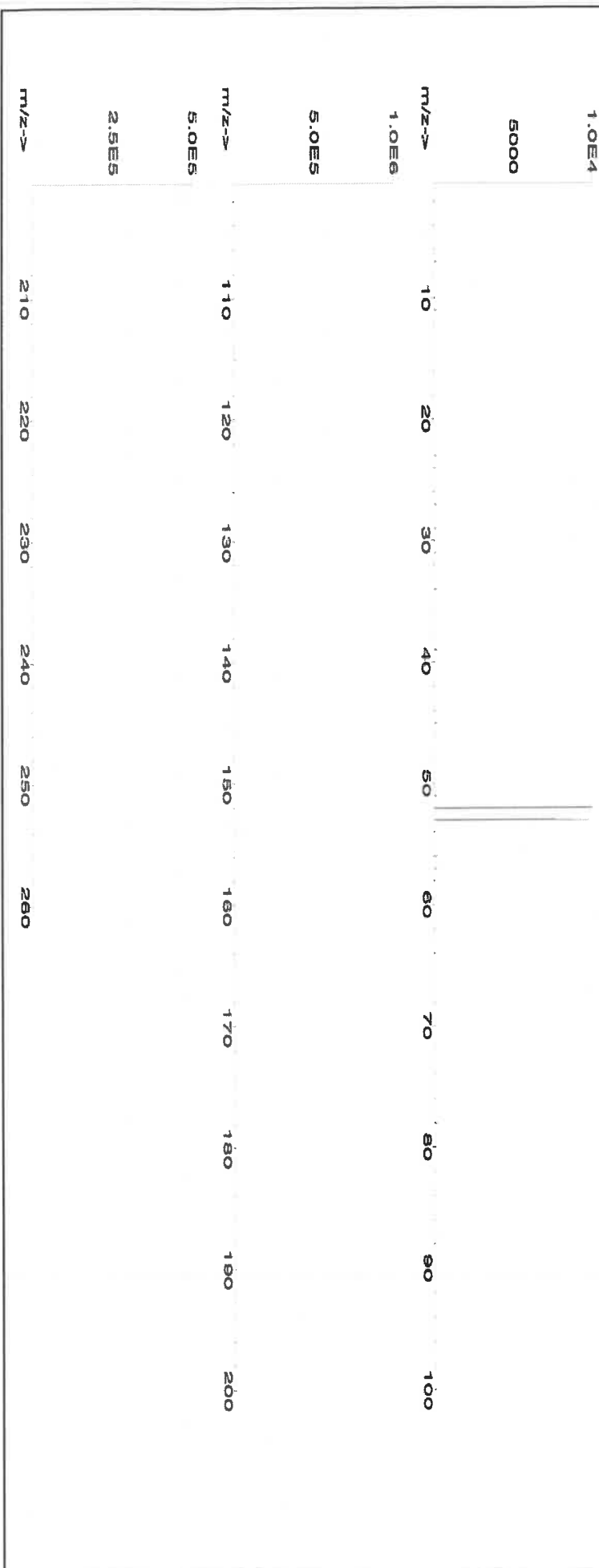
Volume shown below was diluted to (mL): 2000.02 0.058 Balance Uncertainty Flask Uncertainty

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

SDS Information

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

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





Certified Reference Material CRM



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

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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

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

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

Expiration Date: **102526**

2.0%

40.0 (mL)

Nitric Acid

Recommended Storage: **Ambient (20 °C)**

Nominal Concentration (µg/mL): **1000**

NIST Test Number: **6UTB**

5E-05 Balance Uncertainty

Volume shown below was diluted to (mL): **2000.02**

0.058 Flask Uncertainty

Formulated By: *[Signature]* Benson Chan 102523

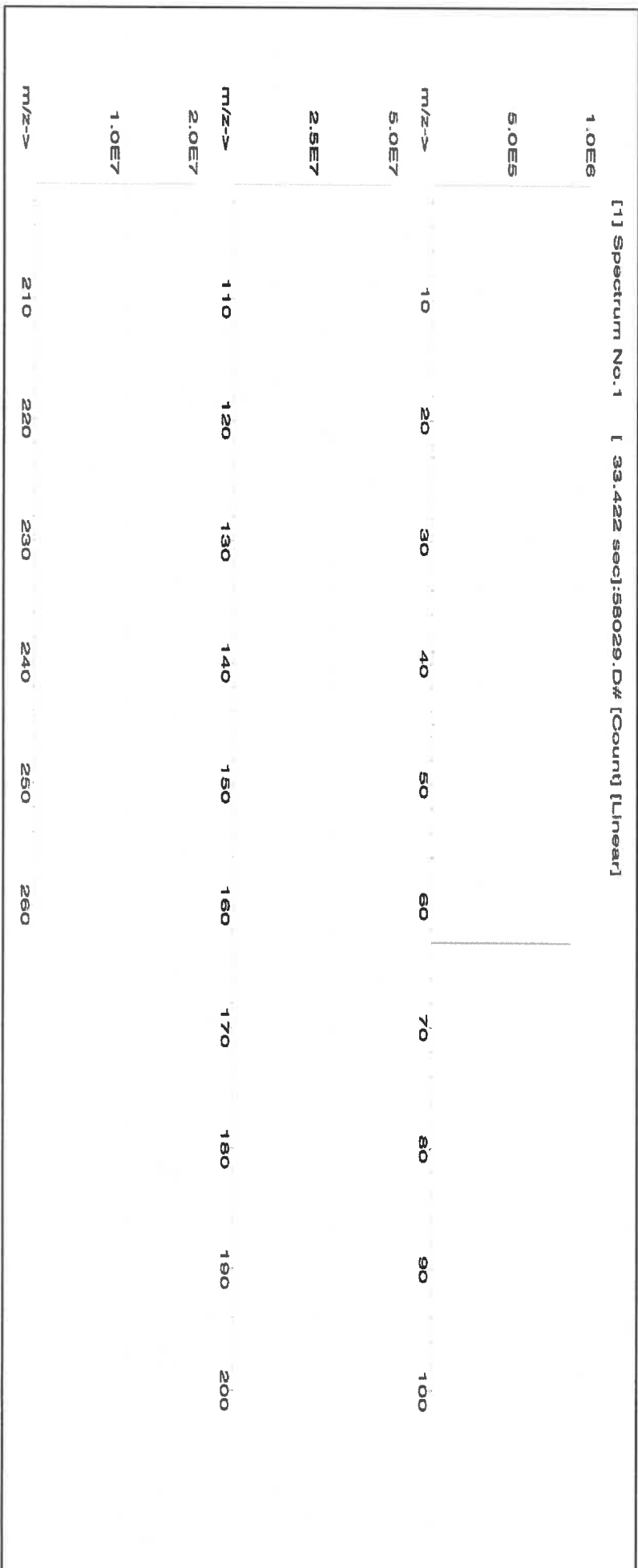
Reviewed By: *[Signature]* Pedro L. Rentas 102523

SDS Information

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

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

John J. [Signature]

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



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**

2.0% 40.0 (mL)

Nitric Acid

NIST Test Number: **6U7B**

Volume shown below was diluted to (mL): **2000.02**

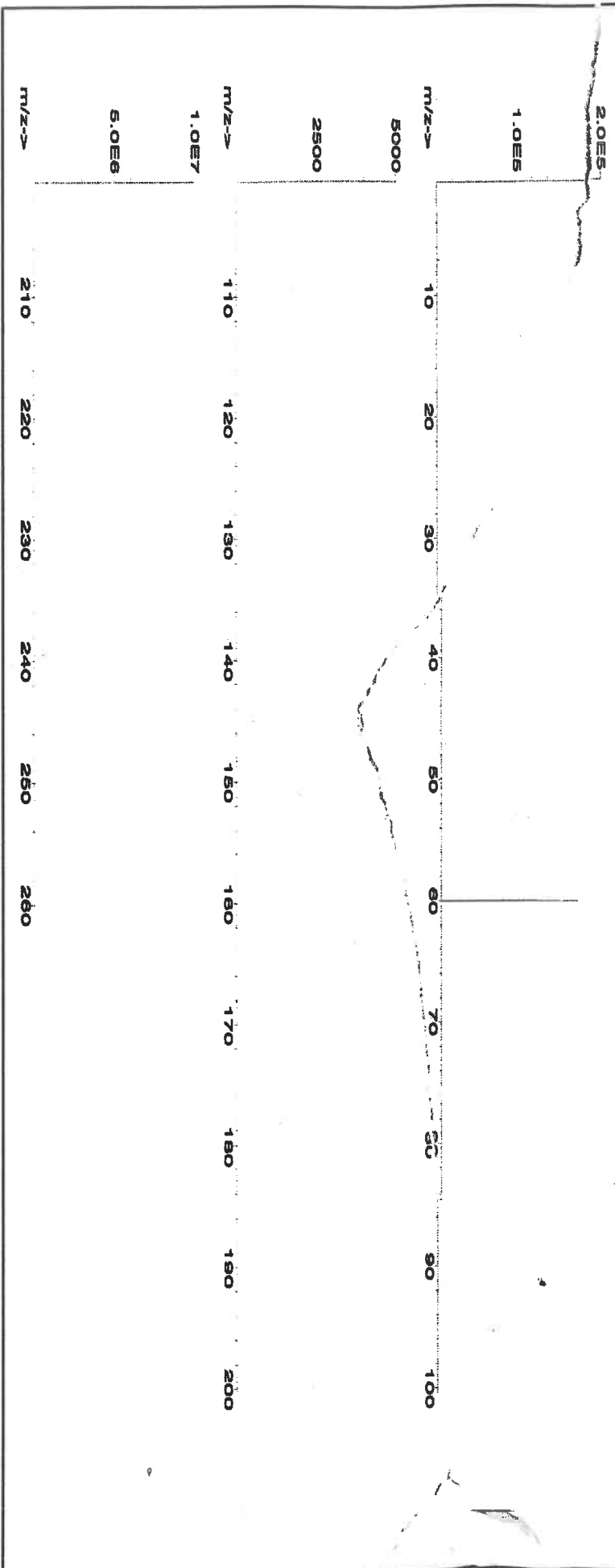
5E-05 Balance Uncertainty
0.056 Flask Uncertainty

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
----------	-------------	------------	-----------------	-------------------	--------------------------	-----------------------	-----------------------	---------------------	----------------------------------	------	----------------	------	----------

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
--	-------	--------	--------	-------	-------	------	---------	--------	-----	------------	---------	-------------------	------

[1] Spectrum No.1 [9.135 sec]:58028.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	T	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	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	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).



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

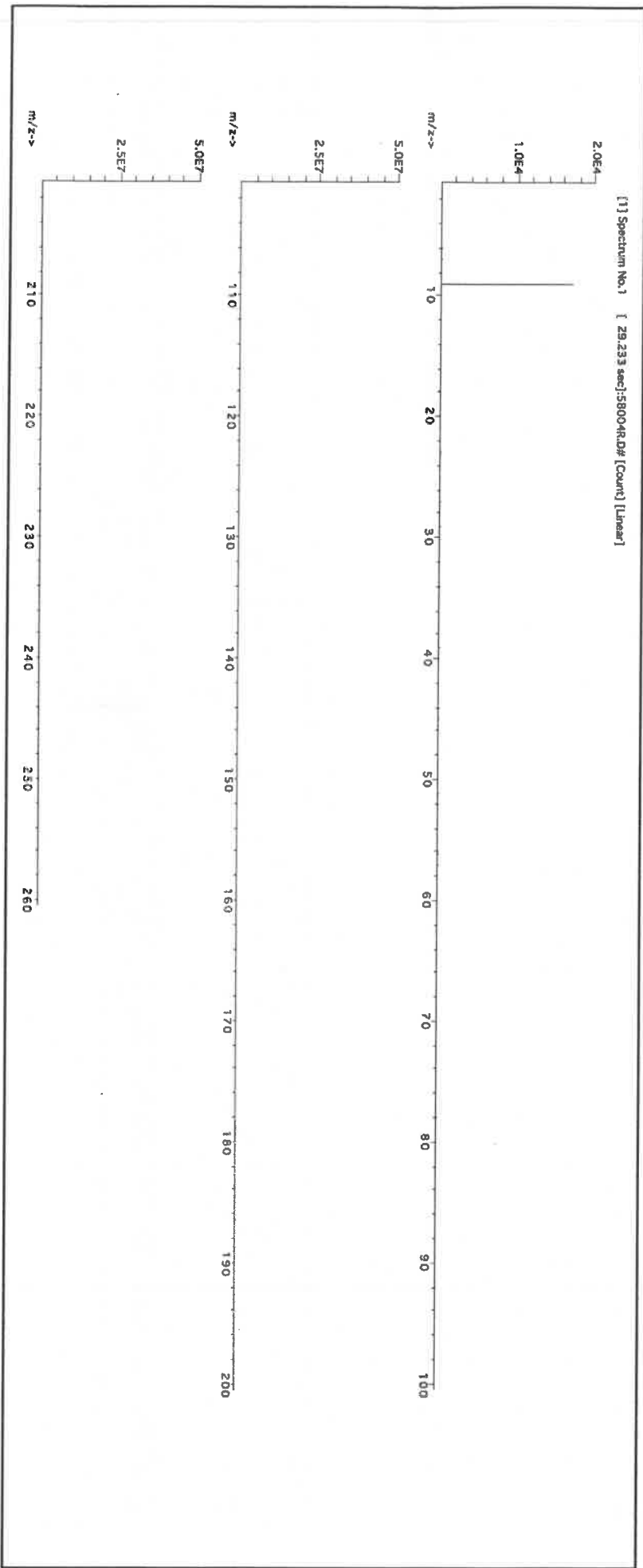
0.058 Flask Uncertainty

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
----------	-------------	-----	-----------------	-------------------	--------------------------	-----------------------	-----------------------	---------------------	----------------------------------	------	----------------	------	----------

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
---------------------------	-------	--------	--------	-------	-------	------	---------	--------	-----	------------	----------	------------------------	----





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM

CERTIFIED WEIGHT REPORT:

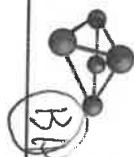
Part Number: 57050
Lot Number: 071123
Description: Tin (Sn)

Solvents: 21110221 Nitric Acid
22D0562008 Hydrochloric acid

Lot #

R-02509124

M599



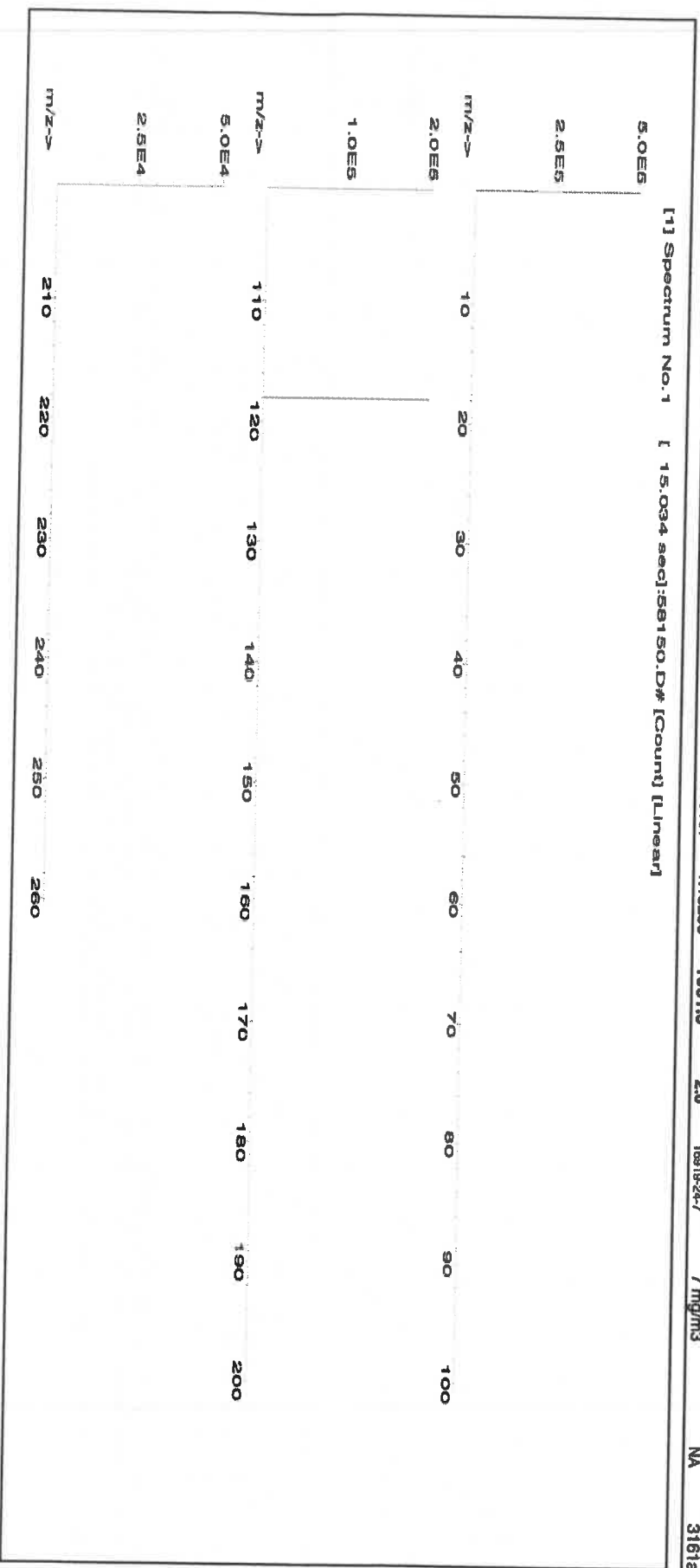
Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 499.93
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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

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

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

- * 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

Lot # 24002546
Solvent: Nitric Acid

2.0% Nitric Acid
40.0 (mL)

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

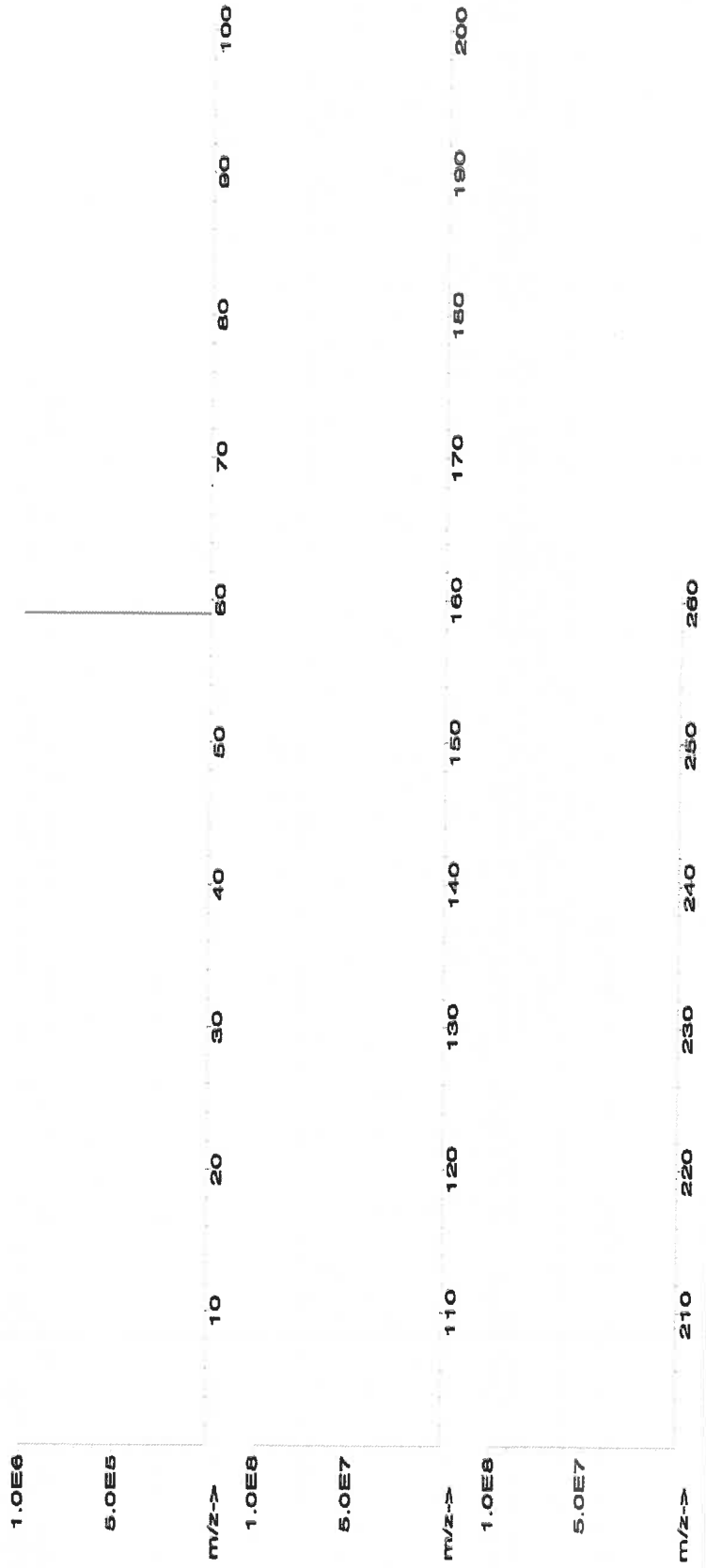
SDS Information

Expanded Uncertainty +/- (µg/mL)
Final Conc. (µg/mL)
Initial Conc. (µg/mL)
Nominal Conc. (µg/mL)
Pipette (mL)
Balance Uncertainty
Flask Uncertainty

NIST SRM
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 or-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

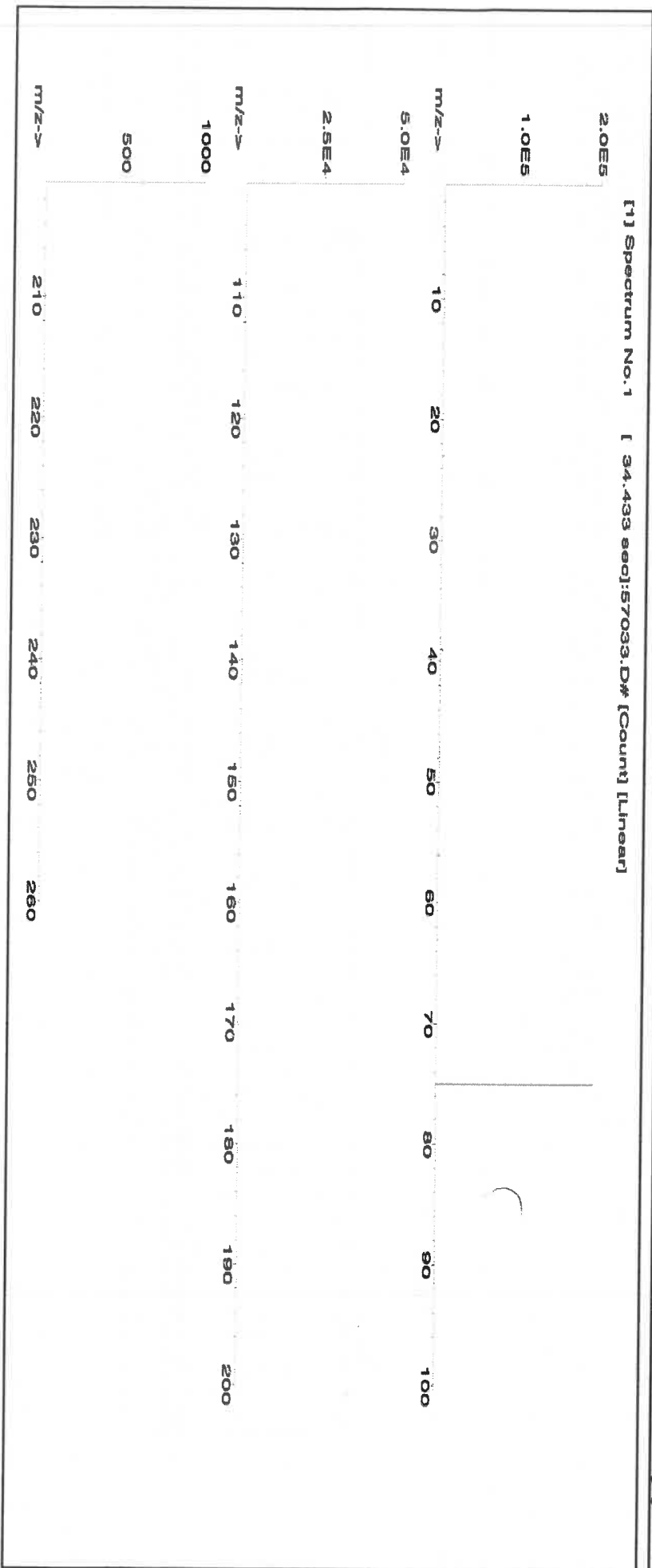
Expiration Date: 111326
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6LUTB
Volume shown below was diluted to (mL): 4000.0

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

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

Solvent: MKB0857V Ammonium hydroxide

Lot #

AI: 021009124 M5814

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

2.0% 40.0 Ammonium hydroxide (mL)

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

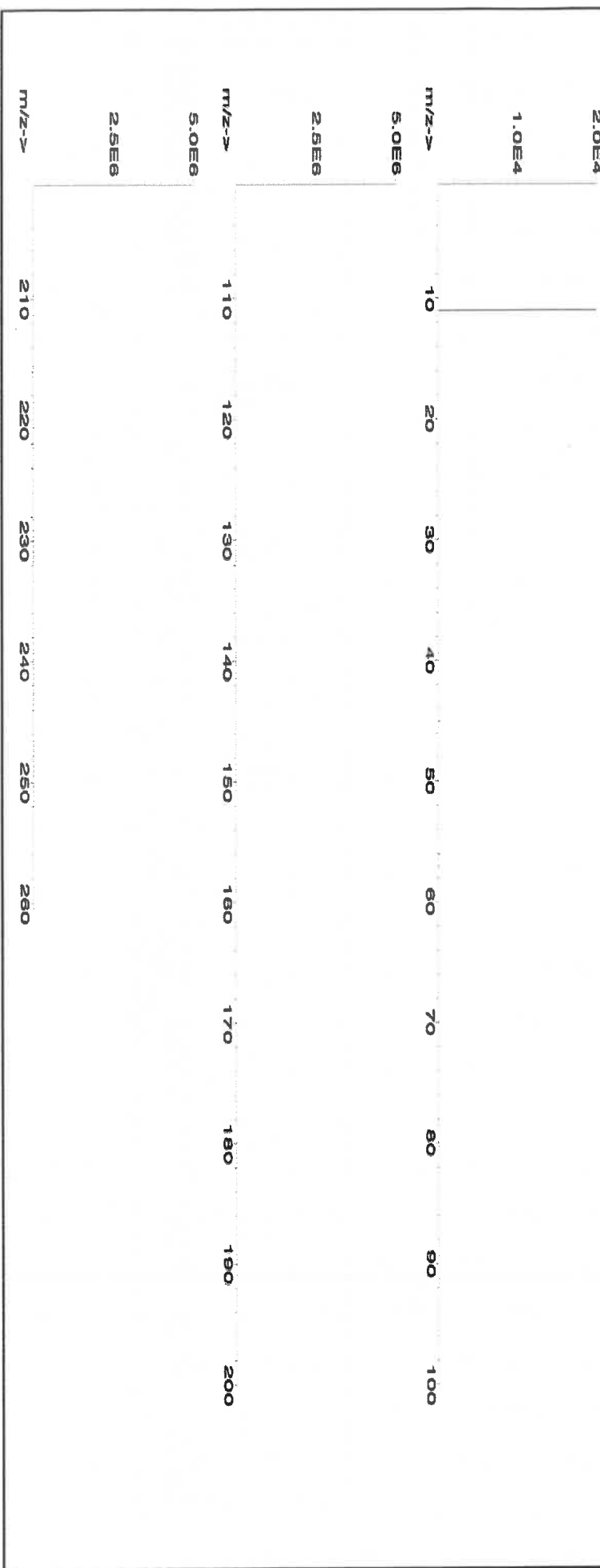
Formulated By:	Benson Chan
071123	
Reviewed By:	Pedro L. Rientas
071123	

SDS Information

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

[1] Spectrum No. 1 [12.275 sec]:56105.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

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

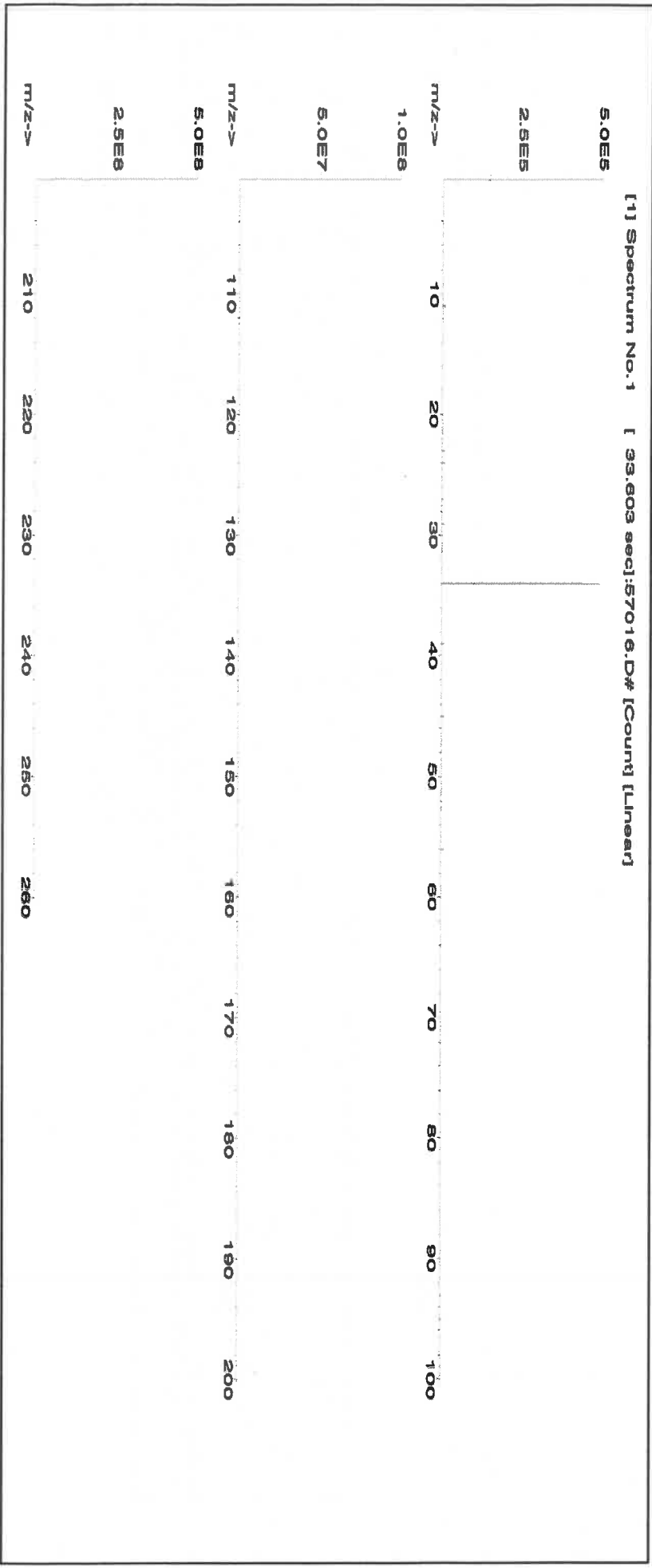
Solvent: 122923
ASTM Type 1 Water

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

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

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

Certified by:

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

[Signature]

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



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

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

Solvent: 24002546 Nitric Acid

Lot #

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

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

2% 40.0 (mL) Nitric Acid

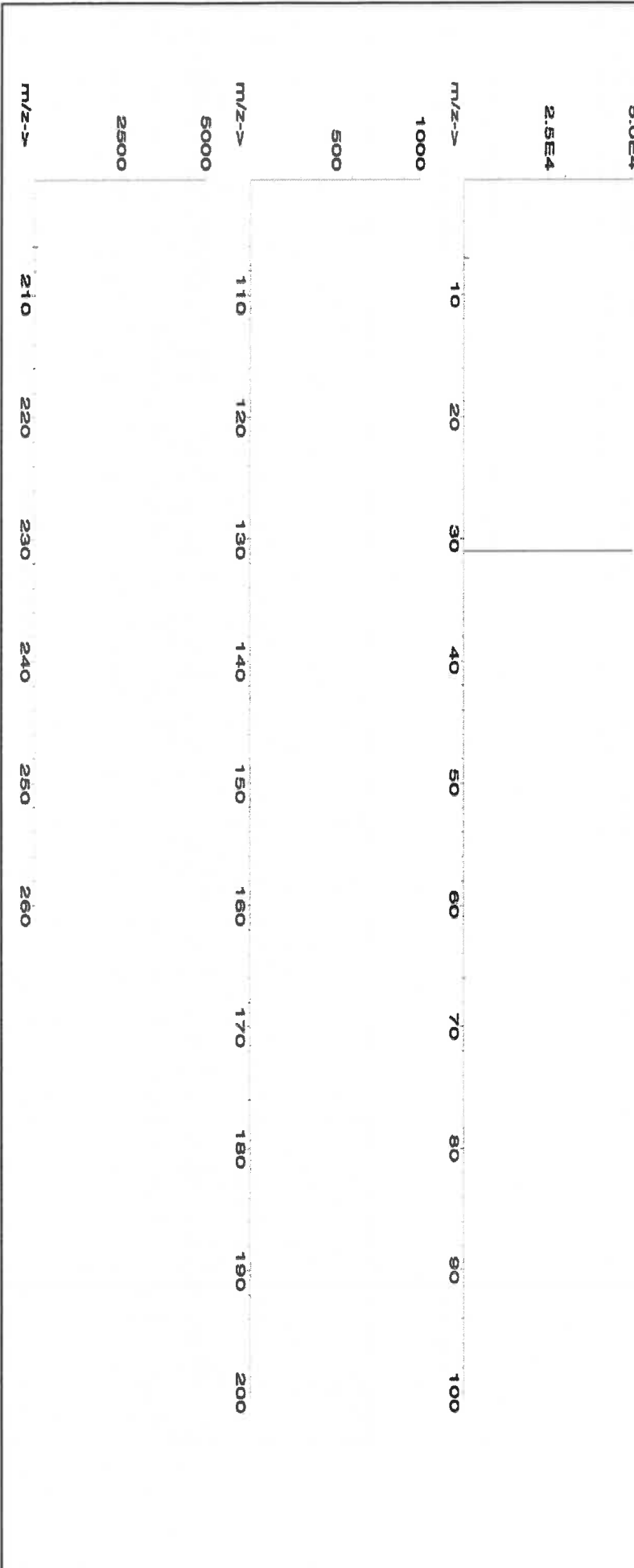
Weight shown below was diluted to (mL): 2000.02
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

SDS Information

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

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

Absolute Standards, Inc.

800-368-1131
www.absolutestandards.com



Certified Reference Material CRM

MS962 R10611424



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

CERTIFIED WEIGHT REPORT:

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

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

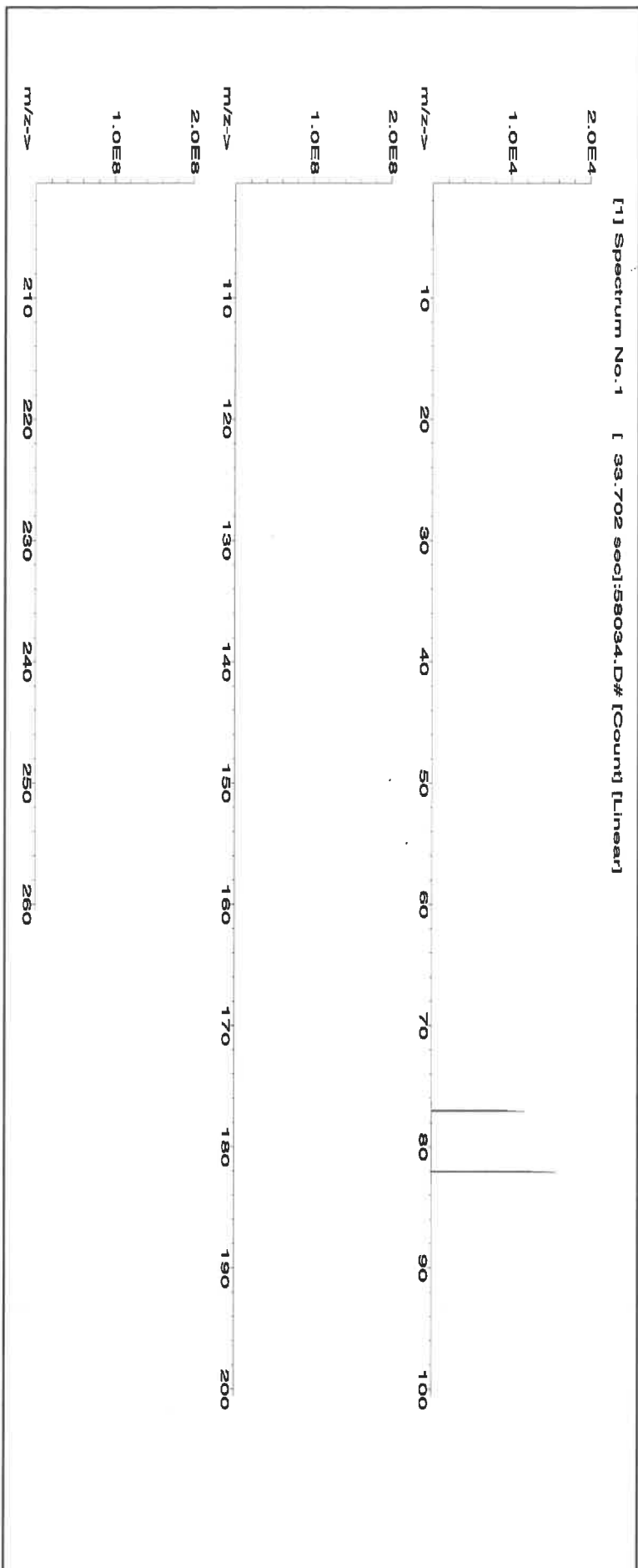
Expiration Date: **060627**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**

2.0%
40.0 (mL)
Nitric Acid

NIST Test Number: **6LUTB**
Volume shown below was diluted to (mL): **2000.07**
SE-05 Balance Uncertainty
0.100 Flask Uncertainty

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

SDS Information									
Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)
1. Selenium (Se)	58134	071223	0.1000	200.0	0.084	1000	10002.5	1000.0	2.2
						7782-49-2	0.2 mg/m3	or-tral 6700 mg/kg	3149





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * 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)**

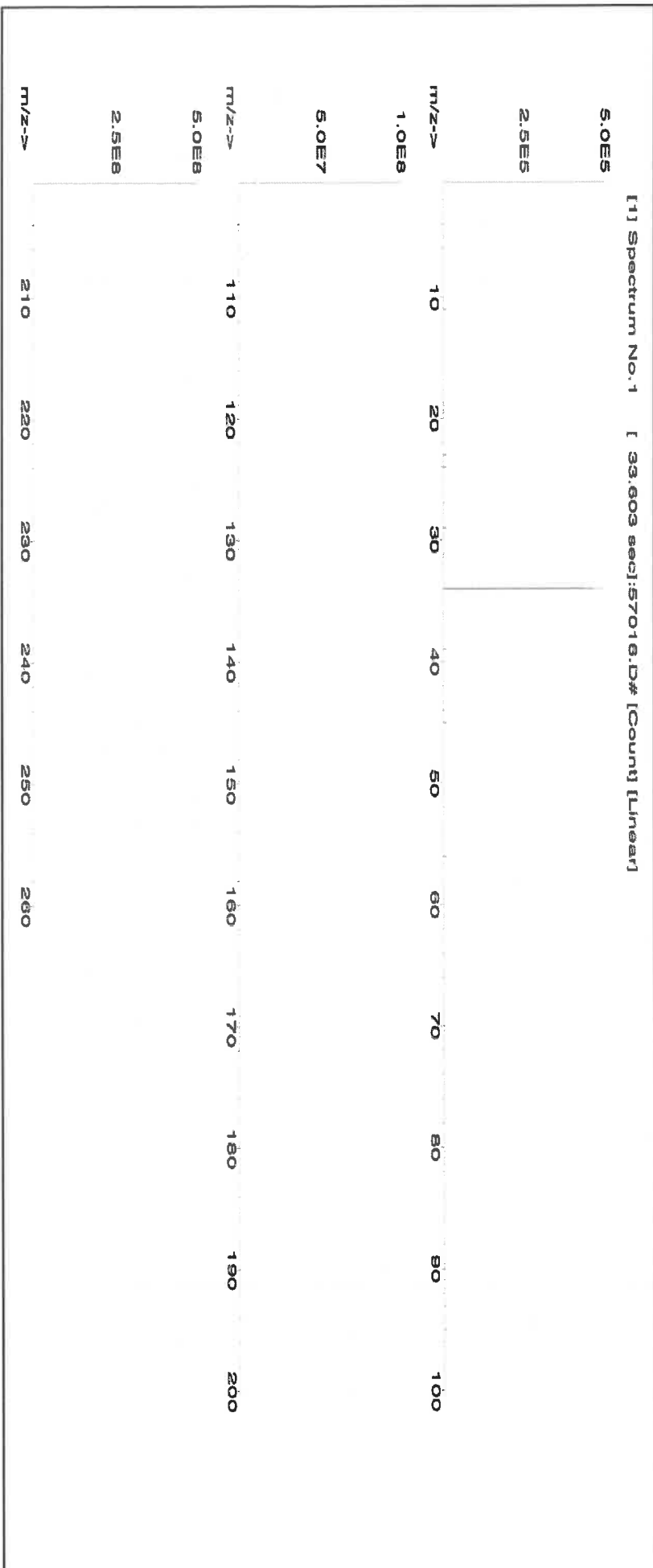
Lot #
Solvent: **122923** ASTM Type 1 Water

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

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



Absolute Standards, Inc.
800-368-1131
www.absolute-standards.com



Certified Reference Material CRM
M5970 M5971 R1 710124



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

CERTIFIED WEIGHT REPORT:

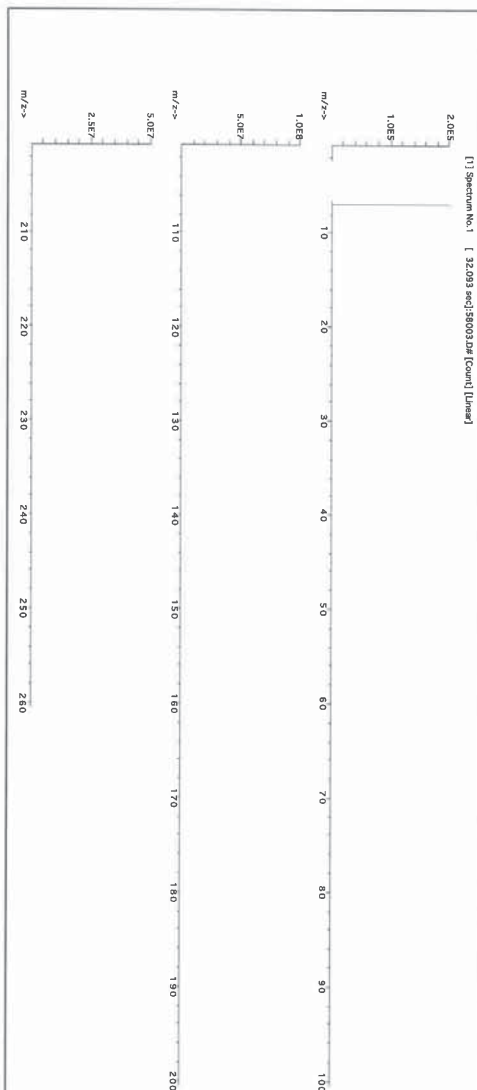
Part Number: 57003
Lot Number: 062124
Description: Lithium (Li)
Expiration Date: 06/21/27
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 250.11

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

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

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



Part # 57003 Lot # 062124

1 of 2

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

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



Certified Reference Material CRM



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

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

Trace Metals Verification by ICP-MS (µg/mL)															
Al	<0.02	Ca	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.02
Sb	<0.02	Ce	<0.2	Er	<0.02	In	<0.02	Mg	<0.02	Nb	<0.02	Rb	<0.02	Si	<0.02
As	<0.2	Ce	<0.02	Ba	<0.02	Ir	<0.02	Mn	<0.02	Os	<0.02	Rh	<0.02	Ag	<0.02
Ba	<0.02	Cr	<0.02	Gd	<0.02	La	<0.2	Hg	<0.2	Pd	<0.02	Ru	<0.02	Nd	<0.02
Be	<0.01	Co	<0.02	Ga	<0.02	Te	<0.2	Mo	<0.02	P	<0.02	Sr	<0.02	S	<0.02
Bi	<0.02	Cu	<0.02	Ge	<0.02	Ta	<0.02	Nd	<0.02	K	<0.2	Sn	<0.02	Ta	<0.02
B	<0.02	Ca	<0.02	Au	<0.02	Tb	<0.02								

(T) = Target analyte

Physical Characterization:

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

Certified by:

[Signature]

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

INORGANIC VENTURES
 Refine your results. Redefine your industry.

Certificate of Analysis

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

R: 2/22/24



INORGANIC VENTURES is accredited to ISO 17024, "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

1 000 µg/mL ea.

Titanium

Starting Material: Ti Metal

Starting Material Lot#: 2094

Starting Material Purity: 99.9975%

CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 5 µg/mL

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

Assay Method #1

1002 ± 4 µg/mL

ICP Assay NIST SRM 3162a Lot Number: 130925

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

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

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

$X_{CRM/RM} = (k_p) / (k_p + 1)$
 X_p = mean of Assay Method A with

$U_{CRM/RM}$ = the standard uncertainty of characterization Method A with

k = coverage factor = 2
 $U_{CRM/RM} = [(U_{CRM/RM}^2) / (U_{CRM/RM}^2 + U_{CRM/RM}^2)]^{1/2}$ where $U_{CRM/RM}$ and $U_{CRM/RM}$ are the errors from each characterization method

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)
 $U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty
 $U_{CRM/RM}$ = the known error from characterization

k = coverage factor = 2
 $U_{CRM/RM} = [(U_{CRM/RM}^2) / (U_{CRM/RM}^2 + U_{CRM/RM}^2)]^{1/2}$ where $U_{CRM/RM}$ and $U_{CRM/RM}$ are the errors from each characterization method

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)
 $U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty
 $U_{CRM/RM}$ = the known error from characterization

k = coverage factor = 2
 $U_{CRM/RM} = [(U_{CRM/RM}^2) / (U_{CRM/RM}^2 + U_{CRM/RM}^2)]^{1/2}$ where $U_{CRM/RM}$ and $U_{CRM/RM}$ are the errors from each characterization method

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)
 $U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty
 $U_{CRM/RM}$ = the known error from characterization

k = coverage factor = 2
 $U_{CRM/RM} = [(U_{CRM/RM}^2) / (U_{CRM/RM}^2 + U_{CRM/RM}^2)]^{1/2}$ where $U_{CRM/RM}$ and $U_{CRM/RM}$ are the errors from each characterization method

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)
 $U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty
 $U_{CRM/RM}$ = the known error from characterization

k = coverage factor = 2
 $U_{CRM/RM} = [(U_{CRM/RM}^2) / (U_{CRM/RM}^2 + U_{CRM/RM}^2)]^{1/2}$ where $U_{CRM/RM}$ and $U_{CRM/RM}$ are the errors from each characterization method

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)
 $U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty
 $U_{CRM/RM}$ = the known error from characterization

k = coverage factor = 2
 $U_{CRM/RM} = [(U_{CRM/RM}^2) / (U_{CRM/RM}^2 + U_{CRM/RM}^2)]^{1/2}$ where $U_{CRM/RM}$ and $U_{CRM/RM}$ are the errors from each characterization method

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)
 $U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty
 $U_{CRM/RM}$ = the known error from characterization

k = coverage factor = 2
 $U_{CRM/RM} = [(U_{CRM/RM}^2) / (U_{CRM/RM}^2 + U_{CRM/RM}^2)]^{1/2}$ where $U_{CRM/RM}$ and $U_{CRM/RM}$ are the errors from each characterization method

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)
 $U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty
 $U_{CRM/RM}$ = the known error from characterization

k = coverage factor = 2
 $U_{CRM/RM} = [(U_{CRM/RM}^2) / (U_{CRM/RM}^2 + U_{CRM/RM}^2)]^{1/2}$ where $U_{CRM/RM}$ and $U_{CRM/RM}$ are the errors from each characterization method

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)
 $U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty
 $U_{CRM/RM}$ = the known error from characterization

k = coverage factor = 2
 $U_{CRM/RM} = [(U_{CRM/RM}^2) / (U_{CRM/RM}^2 + U_{CRM/RM}^2)]^{1/2}$ where $U_{CRM/RM}$ and $U_{CRM/RM}$ are the errors from each characterization method

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)
 $U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty
 $U_{CRM/RM}$ = the known error from characterization

k = coverage factor = 2
 $U_{CRM/RM} = [(U_{CRM/RM}^2) / (U_{CRM/RM}^2 + U_{CRM/RM}^2)]^{1/2}$ where $U_{CRM/RM}$ and $U_{CRM/RM}$ are the errors from each characterization method

$U_{CRM/RM}$ = long term stability standard uncertainty (storage)
 $U_{CRM/RM}$ = bottle to bottle homogeneity standard uncertainty
 $U_{CRM/RM}$ = the known error from characterization

k = coverage factor = 2
 $U_{CRM/RM} = [(U_{CRM/RM}^2) / (U_{CRM/RM}^2 + U_{CRM/RM}^2)]^{1/2}$ where $U_{CRM/RM}$ and $U_{CRM/RM}$ are the errors from each characterization method

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

M Ag	<	0.000536	M Eu	<	0.000268	O Na	<	0.032670	M Se	<	0.001204	O Zn	<	0.003267
M Al	<	0.000872	O Fe	<	0.003225	O Nb	<	0.043560	O Si	<	0.004735	O Zr	<	0.043560
M As	<	0.008586	M Ga	<	0.000268	M Nd	<	0.000268	M Sm	<	0.000268			
M Au	<	0.004577	M Gd	<	0.000268	O Ni	<	0.010890	M Sn	<	0.000986			
O B	<	0.008929	M Ge	<	0.002146	M Os	<	0.000269	O Sr	<	0.000986			
M Ba	<	0.002683	M Hf	<	0.002161	O P	<	0.054450	M Ta	<	0.010560			
M Be	<	0.005366	M Hg	<	0.003231	M Pb	<	0.001073	M Tb	<	0.000268			
M Bi	<	0.001609	M Ho	<	0.000268	M Pd	<	0.000268	M Te	<	0.001341			
O Ca	<	0.000676	M In	<	0.002683	M Pr	<	0.000268	M Th	<	0.053663			
M Cd	<	0.000268	M Ir	<	0.000269	M Pt	<	0.000536	S Ti	<	0.000268			
M Co	<	0.000268	M K	<	0.001172	M Rb	<	0.000268	M Tl	<	0.000268			
M Cr	<	0.000752	O Li	<	0.000268	M Re	<	0.000268	M Tm	<	0.000268			
M Cs	<	0.000268	M Lu	<	0.000268	M Rh	<	0.000268	M U	<	0.000268			
O Cu	<	0.010890	O Mg	<	0.005445	I S	<	0.006976	M Y	<	0.002146			
M Dy	<	0.000268	O Mn	<	0.003267	M Sb	<	0.004900	M Yb	<	0.000536			
M Er	<	0.000268	M Mo	<	0.000774	O Sc	<	0.004900	M Yb	<	0.000536			

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Stability: 2-100 ppb levels stable (Alone or mixed with all other metals) as the Ti(F)6-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the Ti(F)6-2 chemically stable for years in 2-5% HNO3 / 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	14N17N2, 36Ar12C, 48Ca, 196X=2
ICP-OES 334.941 nm	0.0038 / 0.00028 µg/mL	1	Ru]]
ICP-OES 336.121 nm	0.0053 / 0.00034 µg/mL	1	Ce, Ar, Ni, Nb, Ta, Cr, U W, Mo, Co

HAZARDOUS INFORMATION

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

9.0 **HOMOGENEITY**

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

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

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

11.1 Certification Issue Date

June 17, 2022

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

11.2 Lot Expiration Date

- June 17, 2027

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

Certifying Officer:

Thomas Kozlikowski
Manager, Quality Control

TD978L

Paul Gaines
Chairman / Senior Technical Director

Paul R. Gaines

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, $X_{\text{CRM/RM}}$, 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)

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

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

M - Checked by ICP-MS

O - Checked by ICP-OES

i - Spectral Interference

n - Not Checked For

s - Solution Standard Element

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 21, 2023

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

11.2 Lot Expiration Date

- February 21, 2028

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

R: 2/22/24
MS997

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

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

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

December 21, 2022

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

11.2 Lot Expiration Date

- **December 21, 2027**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



Certificate of Analysis

R: 08/22/24 M6058, M6059

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: CHEM-CLP-4
Lot Number: V2-MEB746172
Matrix: 3% (v/v) HNO₃
3% (v/v) HF
Value / Analyte(s): 1 000 µg/mL ea:
Boron, Molybdenum,
Silicon, Tin,
Titanium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Boron, B	1 000 ± 5 µg/mL	Molybdenum, Mo	1 000 ± 5 µg/mL
Silicon, Si	1 000 ± 7 µg/mL	Tin, Sn	1 000 ± 5 µg/mL
Titanium, Ti	1 000 ± 6 µg/mL		

Density: 1.032 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
B	ICP Assay	3107	190605
B	Calculated		See Sec. 4.2
Mo	ICP Assay	traceable to 3134	U2-MO739068
Si	ICP Assay	Traceable to 3150	S2-SI702546
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	traceable to 3162a	T2-TI725816

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™)

see the Limited License to Use PCRM™ in the Inorganic Ventures [Terms and Conditions of Sale](https://www.inorganicventures.com/terms-and-conditions-sale).

<https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

August 12, 2024

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

11.2 Lot Expiration Date

- **August 12, 2029**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

Certificate of Analysis

M6074
M6075
M6076
M6077

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

F: 540-585-3012

info@inorganicventures.com

EXP: 9/6/2029

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: CHEM-CLP-4
Lot Number: V2-MEB746762
Matrix: 3% (v/v) HNO₃
3% (v/v) HF
Value / Analyte(s): 1 000 µg/mL ea:
Boron, Molybdenum,
Silicon, Tin,
Titanium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Boron, B	1 000 ± 5 µg/mL	Molybdenum, Mo	1 000 ± 5 µg/mL
Silicon, Si	1 000 ± 7 µg/mL	Tin, Sn	1 000 ± 5 µg/mL
Titanium, Ti	1 000 ± 6 µg/mL		

Density: 1.033 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
B	ICP Assay	3107	190605
B	Calculated		See Sec. 4.2
Mo	ICP Assay	traceable to 3134	U2-MO739068
Si	ICP Assay	Traceable to 3150	S2-SI702546
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	traceable to 3162a	T2-TI725816

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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



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 WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58025
101124
Manganese (Mn)

Lot #
Solvent: Nitric Acid

24002546
2% 80.0 (mL) Nitric Acid

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

Expiration Date: 101127
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 4000.2 0.10 Flask Uncertainty

Compound

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

1. Manganese(II) nitrate hydrate (Mn) IN031 MMN02020A1 1000 99.999 0.10 20.8 19.2322 19.2344 1000.1 2.0 15710-66-4 5 mg/m3 or-rel >300mg/kg 3132

[1] Spectrum No.1 [34.243 sec]:57025.D# [Count] [Linear]

5.0E6													
2.5E6													
m/z->	10	20	30	40	50	60	70	80	90	100			
1.0E6													
5.0E7													
m/z->	110	120	130	140	150	160	170	180	190	200			
1.0E6													
5.0E7													
m/z->	210	220	230	240	250	260							



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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

M6137
R-71013124

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution
Catalog Number: CGSI1
Lot Number: V2-SI744713
Matrix: tr. HNO₃
tr. HF
Value / Analyte(s): 1 000 µg/mL ea:
Silicon
Starting Material: Silica
Starting Material Lot#: 1771
Starting Material Purity: 99.9981%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 999 ± 6 µg/mL
Density: 1.003 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	999 ± 5 µg/mL ICP Assay NIST SRM Traceable to 3150 Lot Number: S2-SI702546
Assay Method #2	1000 ± 7 µg/mL Calculated NIST SRM Lot Number: See Sec. 4.2

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

M	Ag	<	0.000310	M	Eu	<	0.000310	O	Na		0.001656	M	Se	<	0.022000	M	Zn	<	0.002500
M	Al		0.010787	M	Fe	<	0.027000	M	Nb	<	0.001300	s	Si	<		O	Zr	<	0.001900
M	As	<	0.001900	M	Ga	<	0.001300	M	Nd	<	0.000310	M	Sm	<	0.000310				
M	Au	<	0.000910	M	Gd	<	0.000310	M	Ni	<	0.005500	M	Sn		0.000096				
M	B		0.016180	M	Ge	<	0.001900	M	Os	<	0.000610	O	Sr		0.000092				
M	Ba		0.000096	M	Hf		0.000423	i	P	<		M	Ta		0.002542				
O	Be	<	0.000570	M	Hg	<	0.000610	M	Pb	<	0.000310	M	Tb	<	0.000310				
M	Bi	<	0.000310	M	Ho	<	0.000610	M	Pd	<	0.000610	M	Te	<	0.000910				
O	Ca		0.011557	M	In	<	0.000310	M	Pr	<	0.000310	M	Th	<	0.001900				
M	Cd	<	0.000310	M	Ir	<	0.000310	M	Pt	<	0.000310	M	Ti		0.001078				
M	Ce	<	0.000610	O	K		0.000577	M	Rb	<	0.009100	M	Tl	<	0.000310				
M	Co	<	0.001600	M	La	<	0.000310	M	Re	<	0.000310	M	Tm	<	0.000310				
M	Cr	<	0.010000	O	Li	<	0.000460	M	Rh	<	0.000310	M	U	<	0.000310				
M	Cs	<	0.000310	M	Lu	<	0.000310	M	Ru	<	0.000310	O	V	<	0.001300				
M	Cu	<	0.002500	O	Mg		0.001348	O	S	<	0.570000	M	W	<	0.001900				
M	Dy	<	0.000310	M	Mn	<	0.002500	M	Sb	<	0.000310	M	Y	<	0.000310				
M	Er	<	0.000310	M	Mo	<	0.000310	O	Sc	<	0.000590	M	Yb	<	0.000310				

M - Checked by ICP-MS

O - Checked by ICP-OES

i - Spectral Interference

n - Not Checked For

s - Solution Standard Element

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form In Solution - 28.09 +4 6 Si(OH)x(F)y2-

Chemical Compatibility -Soluble in HCl, HF, H3PO4 H2SO4 and HNO3 as the Si(OH)x(F)y2-. Avoid neutral to basic media. Unstable at ppm levels with metals that would pull F- away (i.e. Do not mix with Alkaline or Rare Earths, or high levels of transition elements unless they are fluorinated. Stable with most inorganic anions with a tendency to hydrolyze forming silicic acid (silicic acid is soluble up to ∼100 ppm in water) in all dilute acids except HF.

Stability - 2-100 ppb levels - stability unknown - (alone or mixed with all other metals) as the Si(OH)x(F)y2-. 1-10,000 ppm single element solutions as the Si(OH)x(F)y2- chemically stable for years in 2-5 % HNO3 / trace HF in a LDPE container.

Si Containing Samples (Preparation and Solution) -Metal (Soluble in 1:1:1 H2O / HF / HNO3); Oxide - SiO2, amorphous (dissolve by heating in 1:1:1 H2O / HF / HNO3); Oxide - quartz (fuse in Pt0 with Na2CO3); Geological Samples(fuse in Pt0with Na2CO3 followed by HCl solution of the fuseate); Organic Matrices containing silicates and non volatile silicon compounds (dry ash at 4500C in Pt0 and dissolve by gently warming with 1:1:1 H2O / HF / H2SO4 or fuse / ash with Na2CO3 and dissolve fuseate with HCl / H2O); Silicone Oils - dimethyl silicones depolymerize to form volatile monomer units when heated (Measure directly in alcoholic KOH / xylene mixture where sample is treated first with the KOH at 60-1000C to "unzip" the Si- O-Si polymeric structure or digest with conc. H2SO4 / H2O2 followed by cooling and dissolution of the dehydrated silica with HF.) Note that the direct analysis of silicone oils in an organic solvent will result in false high results due to high vapor pressure of volatile monomer units like hexamethylcyclotrisiloxane. The KOH forms the K2+Si(CH3)2O= salt which is not volatile at room temperature.

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

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 28 amu	4000 - 8000 ppt	N/A	N2, 12C16O
ICP-OES 212.412 nm	0.02/0.01 µg/mL	1	Hf, Os, Mo, Ta
ICP-OES 251.611 nm	0.012/0.003 µg/mL	1	Ta, U, Zn, Th
ICP-OES 288.158 nm	0.03/0.004 µg/mL	1	Ta, Ce, Cr, Cd, Th

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 10, 2024

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

11.2 Lot Expiration Date

- July 10, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Muzzammil Khan
Stock Laboratory Supervisor



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





CERTIFIED WEIGHT REPORT:

Part Number: **58126** Lot # **R-113125**
Lot Number: **011025** Solvent: **24012496 Nitric Acid**
Description: **Iron (Fe)** **M6140** 2% 40.0 (mL) Nitric Acid

Expiration Date:

01/10/28

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

10000

NIST Test Number:

6U7B

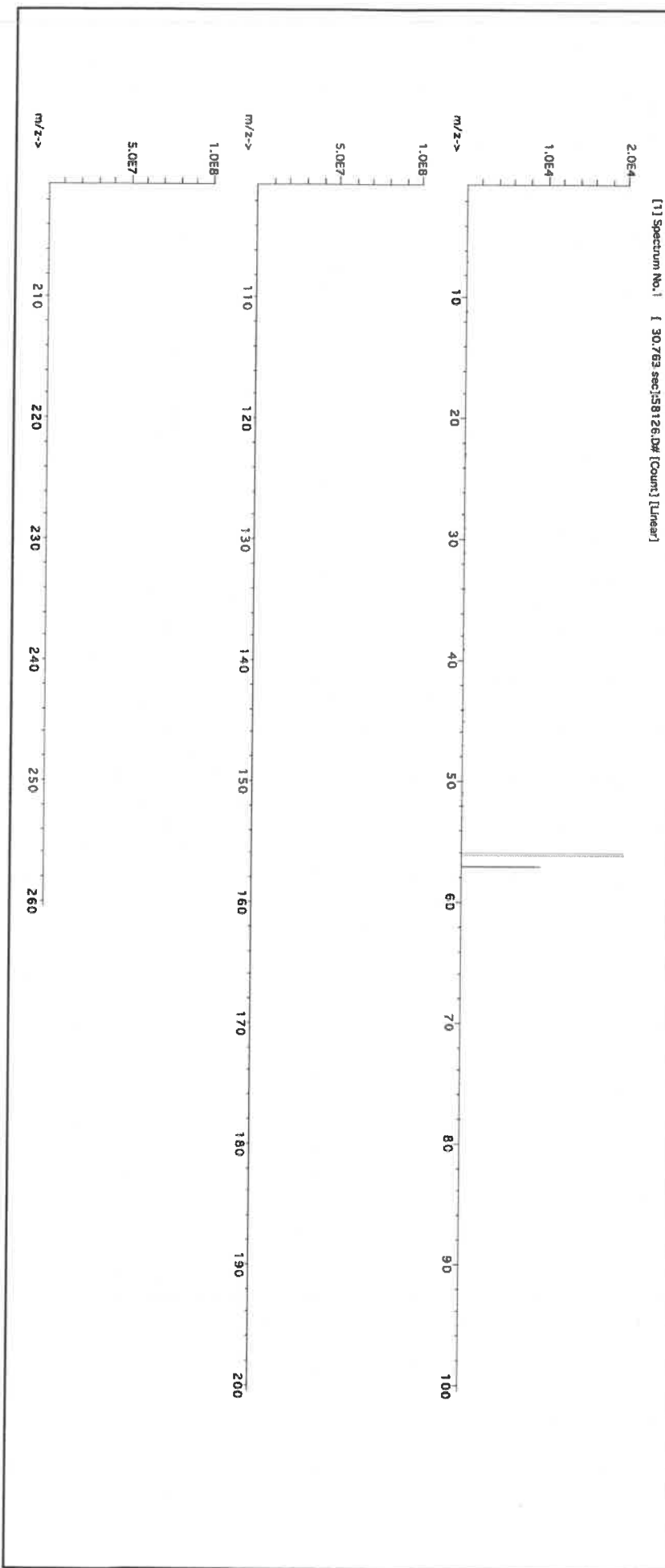
Weight shown below was diluted to (mL): 2000.07

5E-05 Balance Uncertainty
0.100 Flask Uncertainty

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

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

1. Iron(III) nitrate nonahydrate (Fe) IN028 FED082023A1 10000 99.999 0.10 13.0 153.8534 ##### 10000.2 20.0 7782-61-8 1 mg/m³ or-rel 3250mg/kg 3126A





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

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

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

Giovanni Caporaso	
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
Nitric Acid

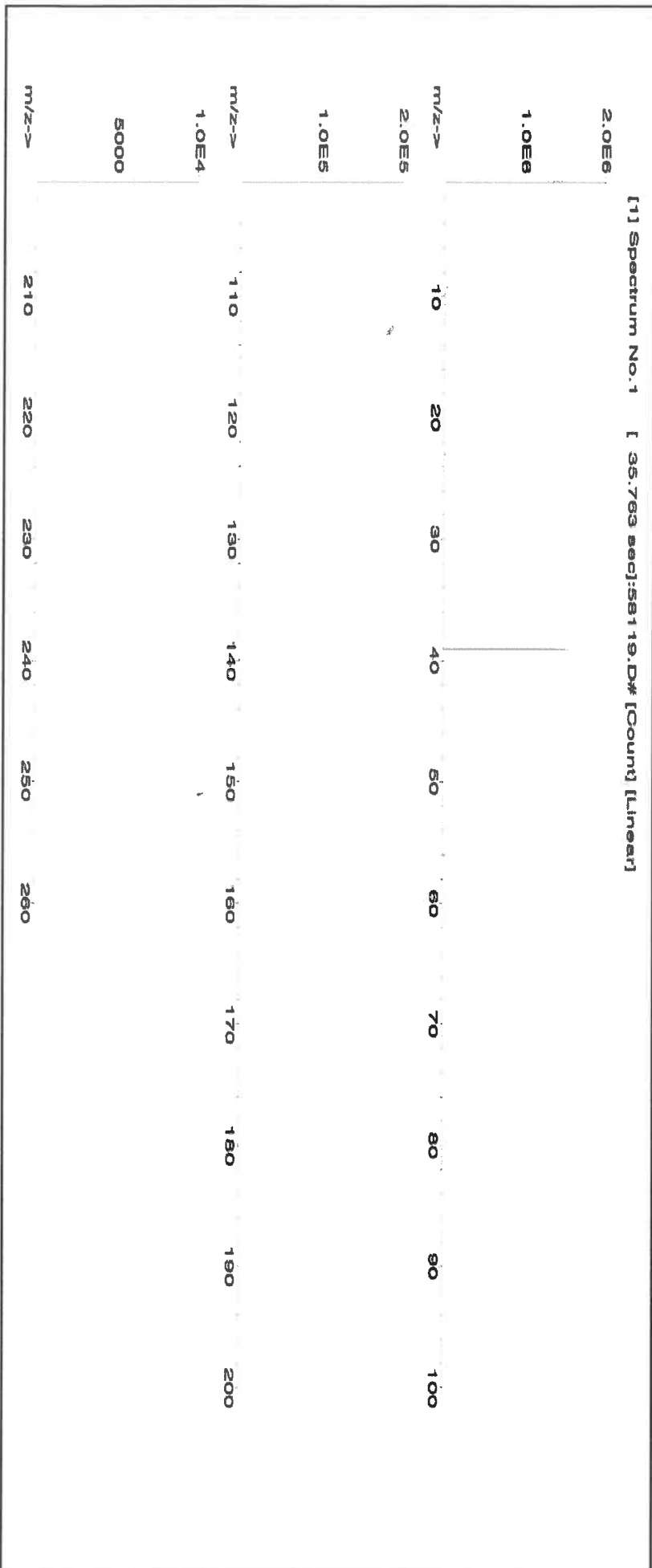
Weight shown below was diluted to (mL):

4000.1
0.15
Flask Uncertainty

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

1. Potassium nitrate (K) IN034 KD062022A1 10000 99.999 0.10 37.7 106.1040 ##### 10001.1 20.0 7757-79-1 5 mg/m3 orl-rat 3750 mg/kg 3141a

[1] Spectrum No. 1 [35.763 sec]:58119.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

Part Number: 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 0.10 Flask Uncertainty

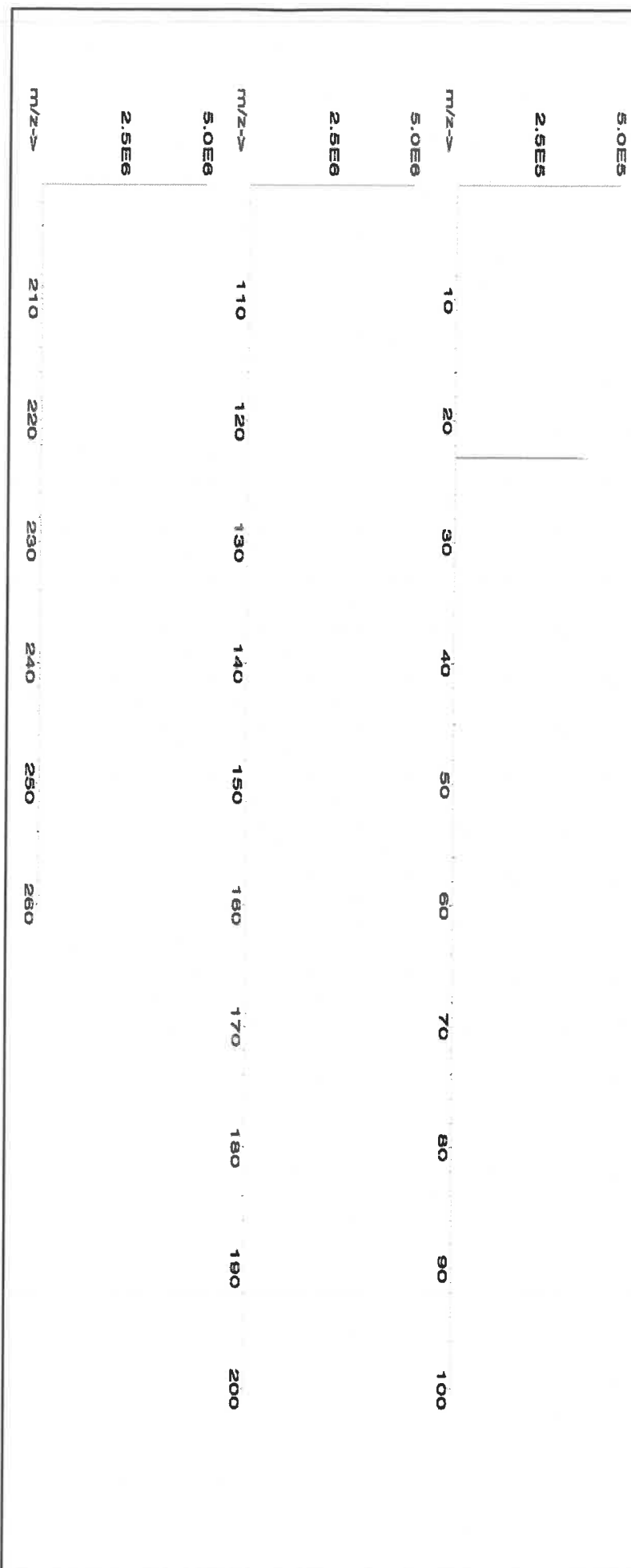
Formulated By:	Benson Chan	072424
Reviewed By:	Pedro L. Renteria	072424

SDS Information

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

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

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

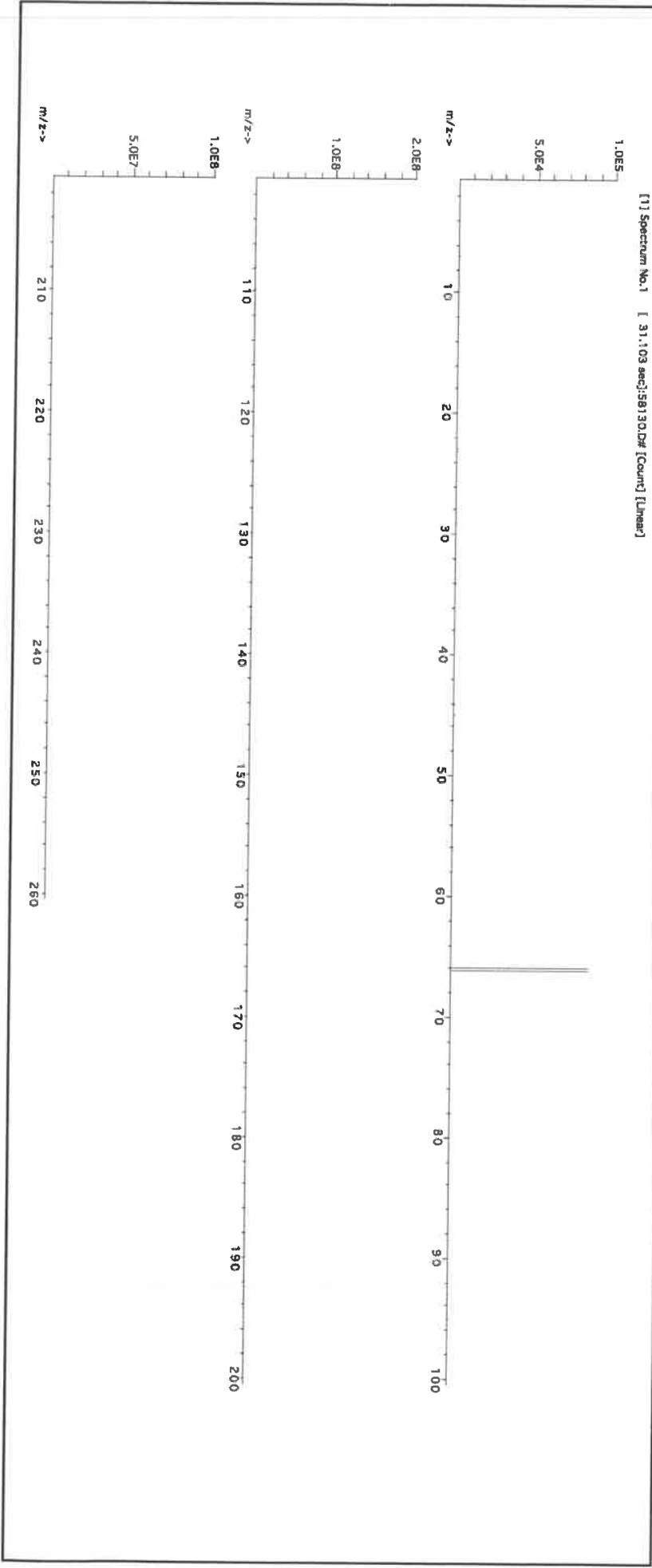
Lot # 24012496
Nitric Acid
2%
40.0 (mL)
Nitric Acid

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

121724
121724

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

1. Zinc nitrate hexahydrate (Zn)	IN016 ZNE0302021A1	1000	99.999	0.10	24.3	8.2308	8.2311	1000.0	2.0	10196-18-6	1 mg/m3	or-rat 1190mg/kg	3168
----------------------------------	--------------------	------	--------	------	------	--------	--------	--------	-----	------------	---------	------------------	------





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

avantor™



M6151

R → 11/15/25

Material No.: 9530-33
Batch No.: 22G2862015
Manufactured Date: 2022-06-15
Retest Date: 2027-06-14
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
ACS – Assay (as HCl) (by acid–base titrn)	36.5 – 38.0 %	37.9 %
ACS – Color (APHA)	≤ 10	5
ACS – Residue after Ignition	≤ 3 ppm	< 1 ppm
ACS – Specific Gravity at 60°/60°F	1.185 – 1.192	1.191
ACS – Bromide (Br)	≤ 0.005 %	< 0.005 %
ACS – Extractable Organic Substances	≤ 5 ppm	< 1 ppm
ACS – Free Chlorine (as Cl ₂)	≤ 0.5 ppm	< 0.5 ppm
Phosphate (PO ₄)	≤ 0.05 ppm	< 0.03 ppm
Sulfate (SO ₄)	≤ 0.5 ppm	< 0.3 ppm
Sulfite (SO ₃)	≤ 0.8 ppm	0.3 ppm
Ammonium (NH ₄)	≤ 3 ppm	< 1 ppm
Trace Impurities – Arsenic (As)	≤ 0.010 ppm	< 0.003 ppm
Trace Impurities – Aluminum (Al)	≤ 10.0 ppb	1.3 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 3.0 ppb
Trace Impurities – Barium (Ba)	≤ 1.0 ppb	0.2 ppb
Trace Impurities – Beryllium (Be)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Bismuth (Bi)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 20.0 ppb	< 5.0 ppb
Trace Impurities – Cadmium (Cd)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	163.0 ppb
Trace Impurities – Chromium (Cr)	≤ 1.0 ppb	0.7 ppb
Trace Impurities – Cobalt (Co)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Copper (Cu)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Gallium (Ga)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Germanium (Ge)	≤ 3.0 ppb	< 2.0 ppb
Trace Impurities – Gold (Au)	≤ 4.0 ppb	0.6 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 15 ppb	6 ppb

>>> Continued on page 2 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

 **avantor™**



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

Test	Specification	Result
Trace Impurities – Lead (Pb)	≤ 1.0 ppb	< 0.5 ppb
Trace Impurities – Lithium (Li)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Magnesium (Mg)	≤ 10.0 ppb	2.9 ppb
Trace Impurities – Manganese (Mn)	≤ 1.0 ppb	< 0.4 ppb
Trace Impurities – Mercury (Hg)	≤ 0.5 ppb	0.1 ppb
Trace Impurities – Molybdenum (Mo)	≤ 10.0 ppb	< 3.0 ppb
Trace Impurities – Nickel (Ni)	≤ 4.0 ppb	< 0.3 ppb
Trace Impurities – Niobium (Nb)	≤ 1.0 ppb	0.8 ppb
Trace Impurities – Potassium (K)	≤ 9.0 ppb	< 2.0 ppb
Trace Impurities – Selenium (Se), For Information Only		< 1.0 ppb
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	< 10.0 ppb
Trace Impurities – Silver (Ag)	≤ 1.0 ppb	0.5 ppb
Trace Impurities – Sodium (Na)	≤ 100.0 ppb	2.3 ppb
Trace Impurities – Strontium (Sr)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Tantalum (Ta)	≤ 1.0 ppb	1.6 ppb
Trace Impurities – Thallium (Tl)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Tin (Sn)	≤ 5.0 ppb	4.0 ppb
Trace Impurities – Titanium (Ti)	≤ 1.0 ppb	1.5 ppb
Trace Impurities – Vanadium (V)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Zinc (Zn)	≤ 5.0 ppb	0.8 ppb
Trace Impurities – Zirconium (Zr)	≤ 1.0 ppb	0.3 ppb

>>> Continued on page 3 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA–ANALYZED® Reagent
For Trace Metal Analysis

 **avantor**™

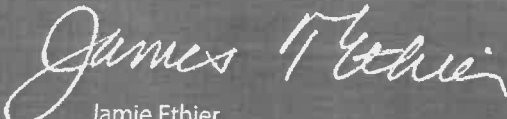


Material No.: 9530-33
Batch No.: 22G2862015

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

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

avantor™



R- 0210212025

m - 6158

Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO ₃)	69.0 – 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	1 ppm
Chloride (Cl)	≤ 0.08 ppm	< 0.03 ppm
Phosphate (PO ₄)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO ₄)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities – Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Bismuth (Bi)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	2.3 ppb
Trace Impurities – Chromium (Cr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Germanium (Ge)	≤ 20 ppb	< 10 ppb
Trace Impurities – Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 100 ppb	100 ppb
Trace Impurities – Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities – Lead (Pb)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities – Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

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



m-6162

Material No.: 9606-03
Batch No.: 24H0162012
Manufactured Date: 2024-06-28
Retest Date: 2029-06-27
Revision No.: 0

R. Date :- 04/27/2025

Certificate of Analysis

Test	Specification	Result
Assay (HNO ₃)	69.0 – 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	< 1 ppm
Chloride (Cl)	≤ 0.08 ppm	0.03 ppm
Phosphate (PO ₄)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO ₄)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities – Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Bismuth (Bi)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	0.1 ppb
Trace Impurities – Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	0.3 ppb
Trace Impurities – Chromium (Cr)	≤ 30.0 ppb	0.1 ppb
Trace Impurities – Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Germanium (Ge)	≤ 20 ppb	< 1 ppb
Trace Impurities – Gold (Au)	≤ 20 ppb	< 1 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities – Lead (Pb)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities – Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Nickel (Ni)	≤ 20.0 ppb	< 1.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

avantor™



Material No.: 9606-03
Batch No.: 24H0162012

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	< 1 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	1 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 1.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	13 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	5 par/ml

>>> Continued on page 3 >>>



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

Joak

285 of 344

300 Technology Drive
 Christiansburg, VA 24073 USA
 inorganicventures.com

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution		
Catalog Number:	QCP-CICV-1		
Lot Number:	V2-MEB744107		
Matrix:	7% (v/v) HNO ₃		
Value / Analyte(s):	2 500 µg/mL ea:		
	Calcium,	Potassium,	
	Magnesium,	Sodium,	
	1 000 µg/mL ea:		
	Aluminum,	Barium,	
	500 µg/mL ea:		
	Iron,		
	250 µg/mL ea:		
	Nickel,	Vanadium,	
	Zinc,	Cobalt,	
	Manganese,		
	125 µg/mL ea:		
	Silver,	Copper,	
	100 µg/mL ea:		
	Chromium,		
	25 µg/mL ea:		
	Beryllium		

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	1 000 ± 4 µg/mL	Barium, Ba	1 000 ± 6 µg/mL
Beryllium, Be	24.98 ± 0.12 µg/mL	Calcium, Ca	2 500 ± 8 µg/mL
Chromium, Cr	99.9 ± 0.6 µg/mL	Cobalt, Co	250.2 ± 1.2 µg/mL
Copper, Cu	125.0 ± 0.5 µg/mL	Iron, Fe	500.0 ± 2.2 µg/mL
Magnesium, Mg	2 500 ± 11 µg/mL	Manganese, Mn	249.9 ± 1.1 µg/mL
Nickel, Ni	250.0 ± 1.2 µg/mL	Potassium, K	2 500 ± 11 µg/mL
Silver, Ag	125.0 ± 0.6 µg/mL	Sodium, Na	2 500 ± 11 µg/mL
Vanadium, V	250.0 ± 1.1 µg/mL	Zinc, Zn	249.9 ± 1.1 µg/mL

Density: 1.081 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Be	Calculated		See Sec. 4.2
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	120618
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	200413
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
V	ICP Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Note: This solution contains Silver (Ag), please refer to our Sample Preparation Guide for more information (<https://www.inorganicventures.com/sample-preparation-guide/samples-containing-silver>)

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

May 22, 2024

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

11.2 Lot Expiration Date

- **May 22, 2029**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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-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

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

June 01, 2023

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

11.2 Lot Expiration Date

- June 01, 2028

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



300 Technology Drive
 Christiansburg, VA 24073 USA
 inorganicventures.com

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
 Catalog Number: QCP-CICV-3
 Lot Number: V2-MEB749572
 Matrix: 7% (v/v) HNO₃
 Value / Analyte(s):
 500 µg/mL ea:
 Arsenic, Lead,
 Selenium, Thallium,
 250 µg/mL ea:
 Cadmium

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Arsenic, As	500.0 ± 3.1 µg/mL	Cadmium, Cd	250.1 ± 1.1 µg/mL
Lead, Pb	500.0 ± 2.3 µg/mL	Selenium, Se	500.0 ± 3.2 µg/mL
Thallium, Tl	500.0 ± 3.0 µg/mL		

Density: 1.040 g/mL (measured at 20 ± 4 °C)

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 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:

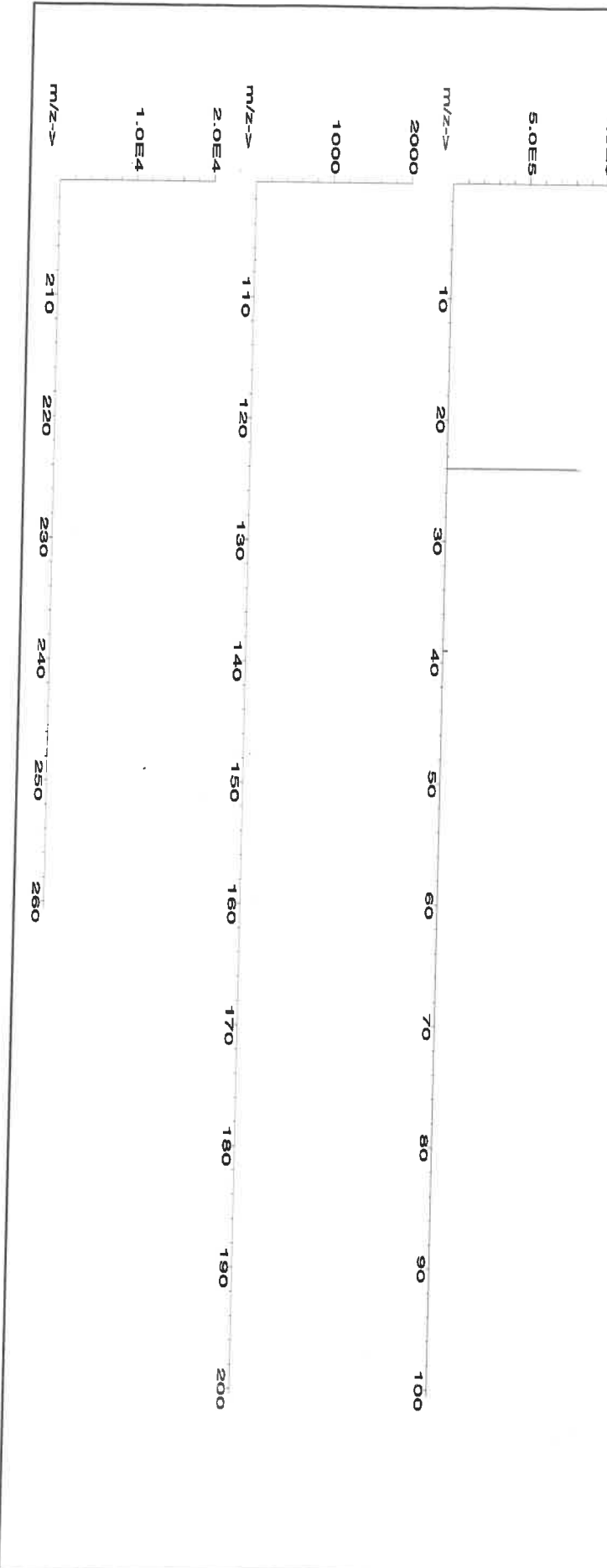
Part Number: 58112 **Lot #** M 6171
Lot Number: 011525 **Solvent:** 24012496 Nitric Acid
Description: Magnesium (Mg)
Expiration Date: 011528 2% 40.0 Nitric Acid
Recommended Storage: Ambient (20 °C) (mL)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB 5E-05 Balance Uncertainty
Weight shown below was diluted to (mL): 2000.07 0.100 Flask Uncertainty

Formulated By:	Benson Chan	011525
Reviewed By:	Pedro L. Rentas	011525

Compound

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)	LDSO	NIST SRM
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

[1] Spectrum No. 1 [19.923 sec]:58112.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

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

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:

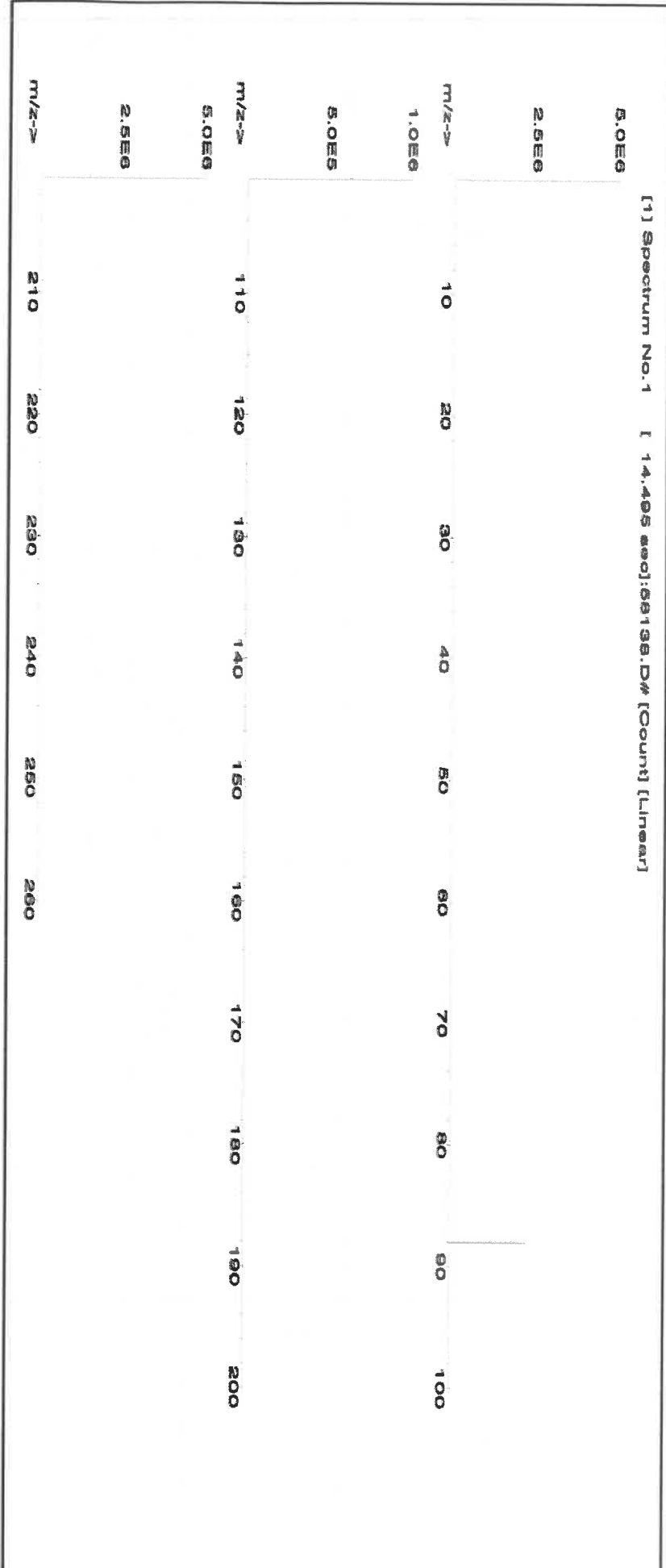
Part Number: 57038 **Lot #** 24002546 **Nitric Acid**
Lot Number: 092724
Description: Strontium (Sr)
Expiration Date: 092727 **2%** **40.0 (mL)** **Nitric Acid**
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 8UTB
Weight shown below was diluted to (mL): 2000.07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

Formulated By: Benson Chan **092724**
Reviewed By: Pedro L. Rentas **092724**

SDS Information

Compound	Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Uncertainty	(Solvent Safety Info. On Attached pg.)	NIST	
	RM#	Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Weight (g)	Conc. (µg/mL)			+/- (µg/mL)

1. Strontium nitrate (Sr) IN017 SR2022018A1 1000 99.997 0.10 41.2 4.85470 4.85481 1000.0 2.0 10042-76-9 NA or-rel >2000mg/kg 3153a





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57042
080525
Molybdenum (Mo)

Solvent

Ammonium hydroxide
ASTM Type 1 Water

Expiration Date:

080528

Recommended Storage:
Ambient (15 - 30 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

1999.41

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

R → 8/6/25
M6177

10.0
Ammonium hydroxide

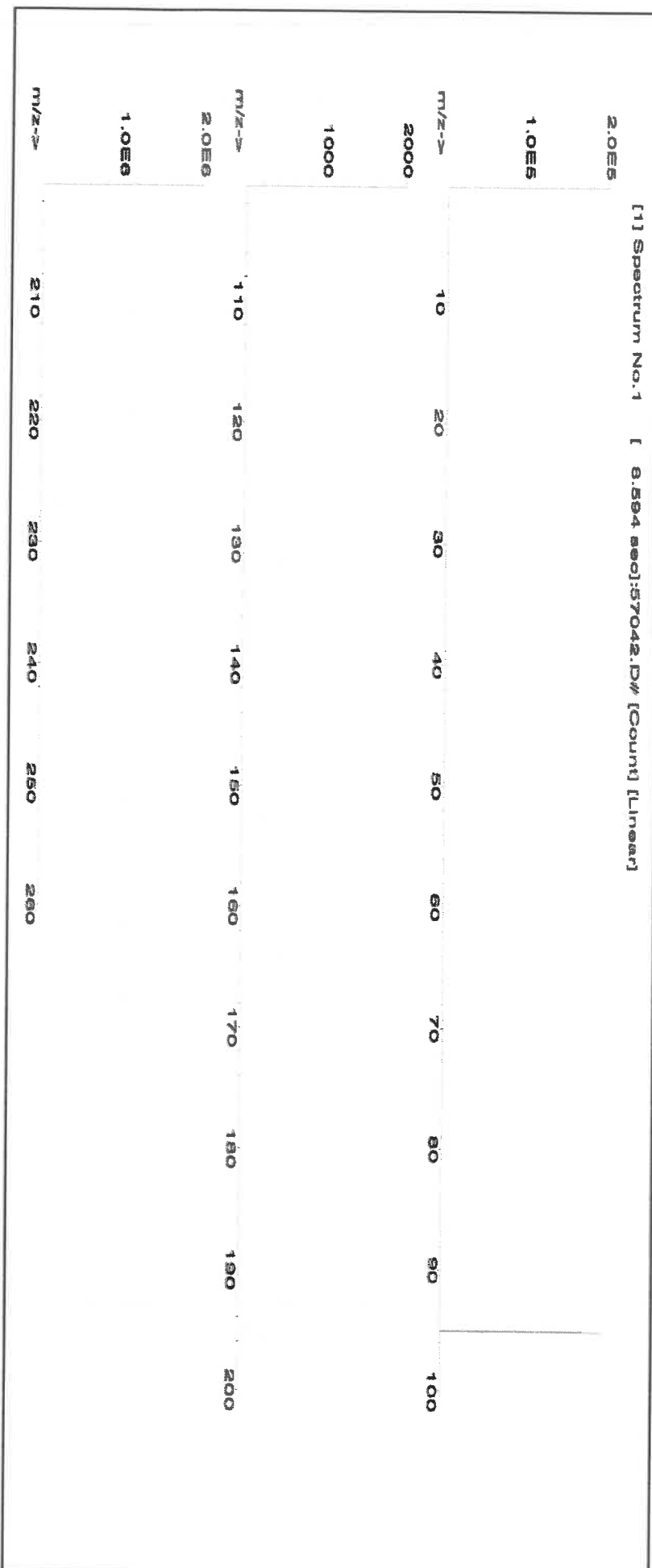
Formulated By:	Benson Chan	080525
Reviewed By:	Pedro L. Renteria	080525

SDS Information

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

1. Ammonium molybdate (Mo) 58142 112322 0.1000 200.0 0.084 1000 10001.4 1000.5 2.2 13106-76-8 5 mg(Mo)/mL 0.1-0.3 333 mg/kg 3134

[1] Spectrum No. 1 [8.594 sec]:57042.D# [Count] [Linear]





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

Trace Metals Verification by ICP-MS (µg/mL)															
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<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
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<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
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Te	<0.02
														Tb	<0.02
														Ti	<0.02
														Th	<0.02
														Tm	<0.02
														Sn	<0.02
														Tl	<0.02
														U	<0.02
														V	<0.02
														Yb	<0.02
														Y	<0.02
														Zn	<0.02
														Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware, and the highest purity raw materials are used in the preparation of all standards.
- * All standard containers are meticulously cleaned prior to use.
- * Standards are prepared gravimetrically using balances that are calibrated 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 Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57082
031525
Lead (Pb)

Lot #

Nitric Acid

Expiration Date:

031528

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL):

2000.07

0.10 Flask Uncertainty

2%
40.0 (mL)

Nitric Acid

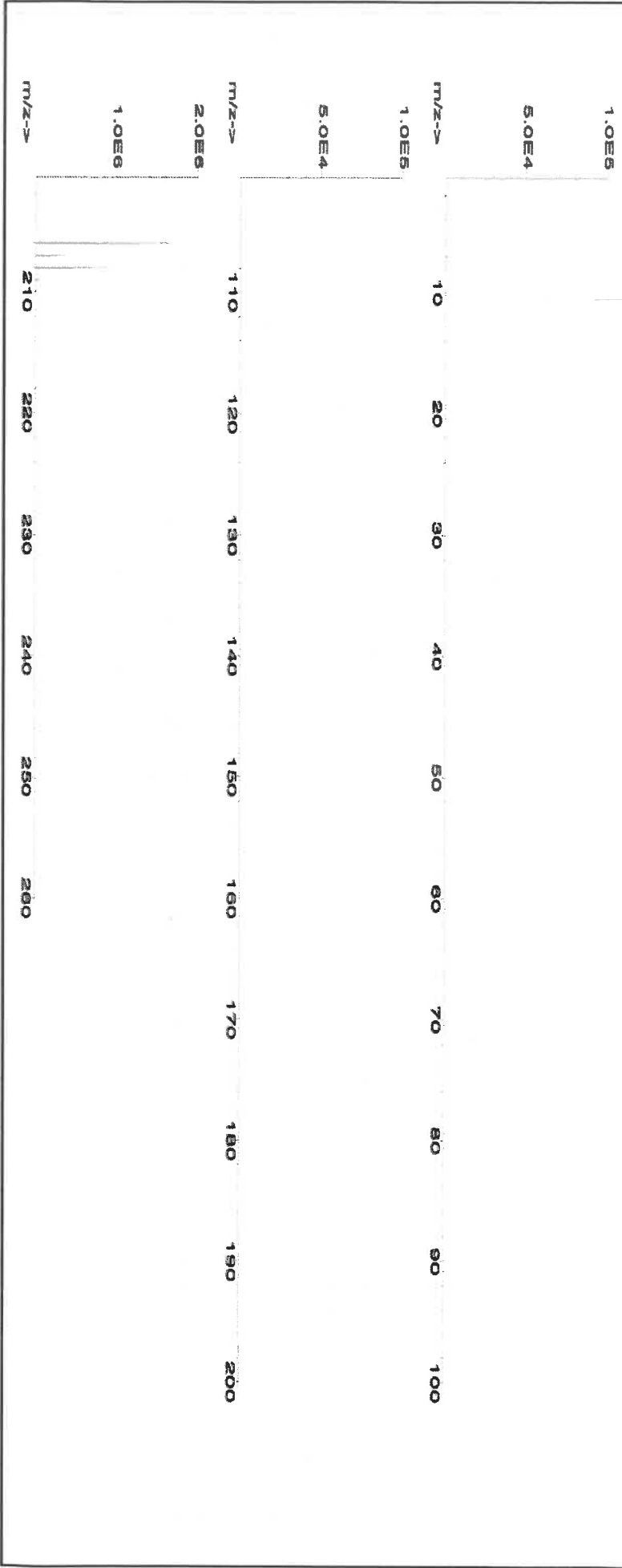
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	<i>Pedro L. Renteria</i>
	Pedro L. Renteria
	031525

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
----------	-----	-----------------------	------------	------------------------	-----------	-------------------	-------------------	----------------------	----------------------------------	------	----------------	------	----------

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 Intra-rat 93 mg/kg 3128

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

M6179
R → 612/24

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution
Catalog Number: CGY10
Lot Number: V2-Y740548
Matrix: 2% (v/v) HNO₃
Value / Analyte(s): 10 000 µg/mL ea:
Yttrium
Starting Material: Yttrium Oxide
Starting Material Lot#: 2661 and 06230520YL
Starting Material Purity: 99.9984%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10000 ± 30 µg/mL
Density: 1.032 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	10011 ± 25 µg/mL EDTA NIST SRM 928 Lot Number: 928
Assay Method #2	9997 ± 50 µg/mL ICP Assay NIST SRM 3167a Lot Number: 190730
Assay Method #3	9984 ± 31 µg/mL Calculated NIST SRM Lot Number: See Sec. 4.2

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

M	Ag	<	0.004600	M	Eu	0.009037	M	Na	0.086360	M	Se	<	0.005200	M	Zn	0.030125	
M	Al		0.014862	O	Fe	0.002410	M	Nb	<	0.000570	O	Si	0.024100	O	Zr	<	0.002600
M	As	<	0.003500	M	Ga	<	0.000570	M	Nd	0.000923	M	Sm	0.000461				
M	Au	<	0.001700	M	Gd	<	0.003500	M	Ni	<	0.005700	M	Sn	<	0.002300		
O	B		0.002209	M	Ge	<	0.005200	M	Os	<	0.001200	M	Sr	<	0.004600		
O	Ba	<	0.002500	M	Hf	<	0.000570	n	P	<		M	Ta	<	0.000570		
O	Be	<	0.001400	M	Hg	<	0.000570	M	Pb	0.005020	M	Tb	0.001044				
M	Bi	<	0.003500	M	Ho	0.009037	M	Pd	<	0.005100	M	Te	<	0.002300			
O	Ca		0.009841	M	In	<	0.002300	M	Pr	<	0.002300	M	Th	<	0.000570		
M	Cd	<	0.000570	M	Ir	<	0.000570	M	Pt	<	0.000570	M	Ti	<	0.003500		
M	Ce	<	0.002300	O	K	0.018677	M	Rb	<	0.000570	M	Tl	<	0.000570			
M	Co	<	0.000570	M	La	0.000461	M	Re	<	0.000570	M	Tm	<	0.003500			
M	Cr	<	0.004000	O	Li	<	0.009300	M	Rh	<	0.008000	M	U	<	0.000570		
M	Cs	<	0.000570	M	Lu	0.000582	M	Ru	<	0.000570	M	V	0.001265				
M	Cu		0.002610	O	Mg	0.001486	n	S	<		M	W	<	0.002300			
M	Dy		0.003815	M	Mn	0.000582	M	Sb	0.005422	s	Y	<					
M	Er		0.003615	M	Mo	<	0.005700	M	Sc	<	0.001200	M	Yb	0.001827			

M - Checked by ICP-MS

O - Checked by ICP-OES

i - Spectral Interference

n - Not Checked For

s - Solution Standard Element

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form In Solution - 88.91 +3 6 Y(OH)(H₂O)_{x+2}

Chemical Compatibility -Soluble in HCl, H₂SO₄ and HNO₃. Avoid HF, H₃PO₄ and neutral to basic media. Stable with most metals and inorganic anions forming an insoluble carbonate, oxide, oxalate, and fluoride. Avoid mixing with elements / solutions containing moderate amounts of fluoride.

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

Y Containing Samples (Preparation and Solution) - Metal (Soluble in acids); Oxide (Dissolve by heating in H₂O / HNO₃); Ores (Carbonate fusion in PtO followed by HCl dissolution); Organic Matrices (Dry ash and dissolve in 1:1 H₂O / HCl or HNO₃).

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

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 89 amu	0.8 ppt	N/A	73Ge16O, 178Hf+2
ICP-OES 360.073 nm	0.005 / 0.000036 µg/mL	1	Ce, Th
ICP-OES 371.030 nm	0.004 / 0.00007 µg/mL	1	Ce
ICP-OES 377.433 nm	0.005 / 0.0009 µg/mL	1	Ta, Th

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 20, 2024

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

11.2 Lot Expiration Date

- February 20, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Muzzammil Khan
Stock Laboratory Supervisor



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: WW-LFS-1
Lot Number: W2-MEB752149
Matrix: 5% (v/v) HNO₃

M6180
R-37/22/23

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	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
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:

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

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

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° - 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; 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



300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

Certificate of Analysis

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

M6181
R → 7/22/28

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

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:

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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





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.



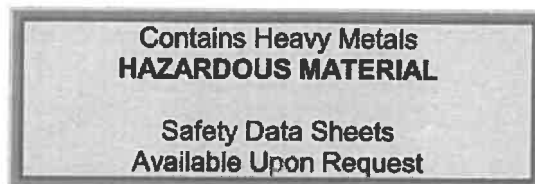
Instructions for QATS Reference Material: ICP-AES ICS

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.



Certified Reference Material CRM

M6027



CERTIFIED WEIGHT REPORT:

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

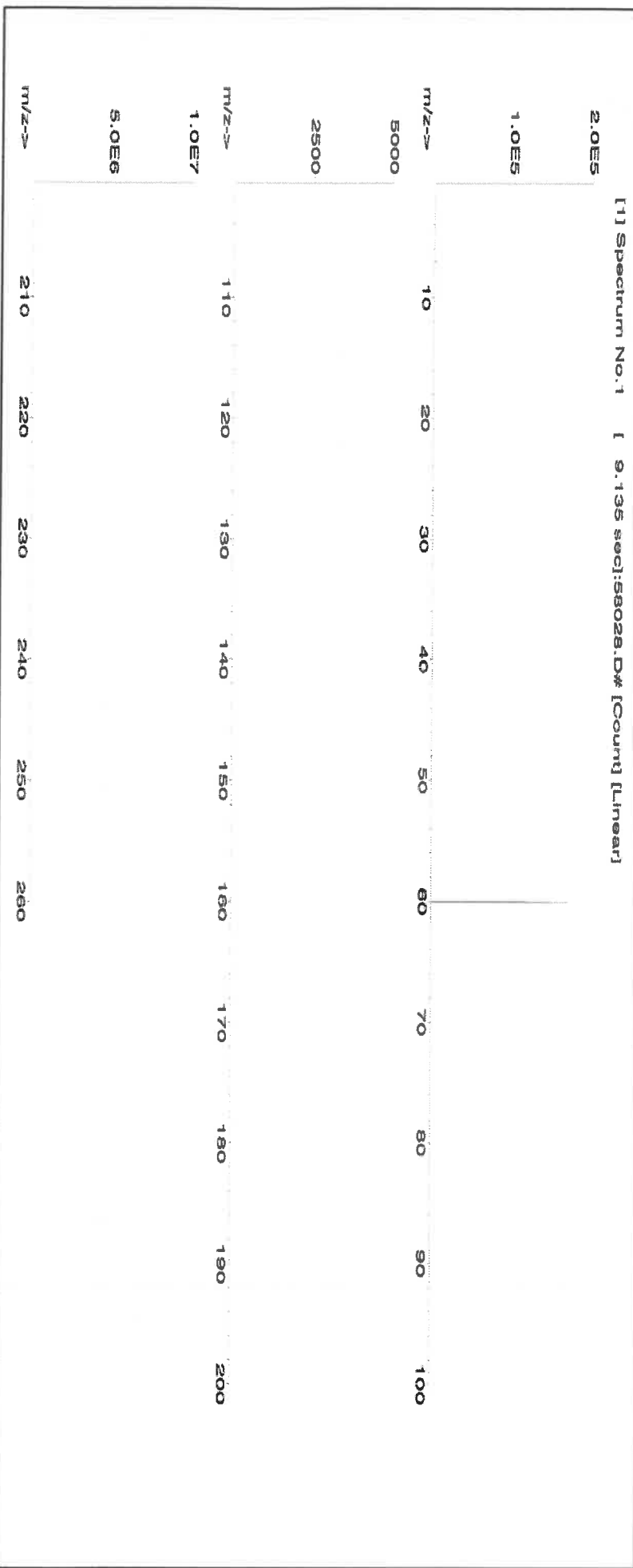
Lot # **24002546**
Solvent: **Nitric Acid**

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

Expiration Date: **062027**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6UTB**
Volume shown below was diluted to (mL): **2000.07**
5E-05 Balance Uncertainty
0.100 Flask Uncertainty

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

1. Nickel(II) nitrate hexahydrate (NI) 58128 062023 0.1000 200.0 0.084 1000 10000.4 1000.0 2.2 13478-00-7 1 mg/m3 orl-rat 1620 mg/kg 3136





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM

M6030



CERTIFIED WEIGHT REPORT:

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

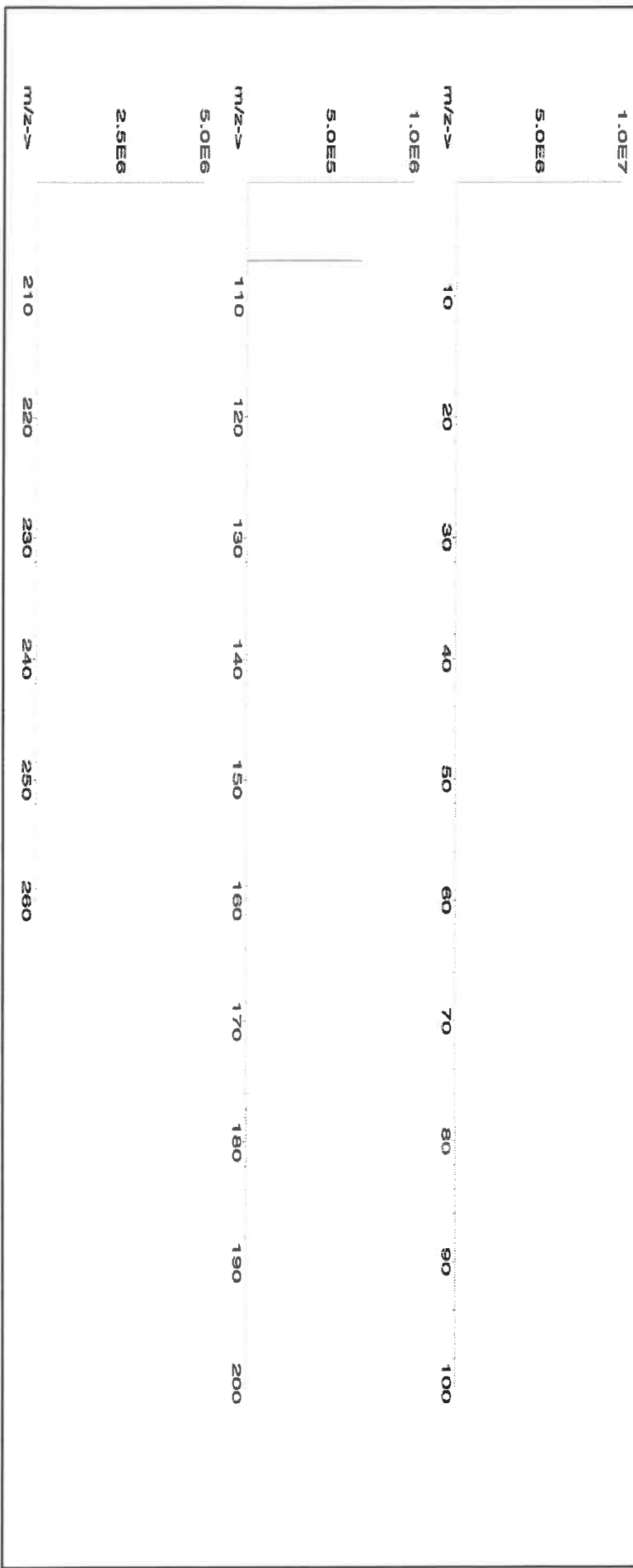
Solvent: 24002546 Nitric Acid
Lot #

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

Expiration Date: 122826
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 4000.30
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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	99.9999	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).



R: 10/18/24
Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

Part Number: 57051
Lot Number: 071724
Description: Antimony (Sb)
Expiration Date: 071727
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6LJB
Volume shown below was diluted to (mL): 2000.26
Balance Uncertainty: 5E-05
Flask Uncertainty: 0.058

Lot # 24002546
Solvent: Nitric Acid

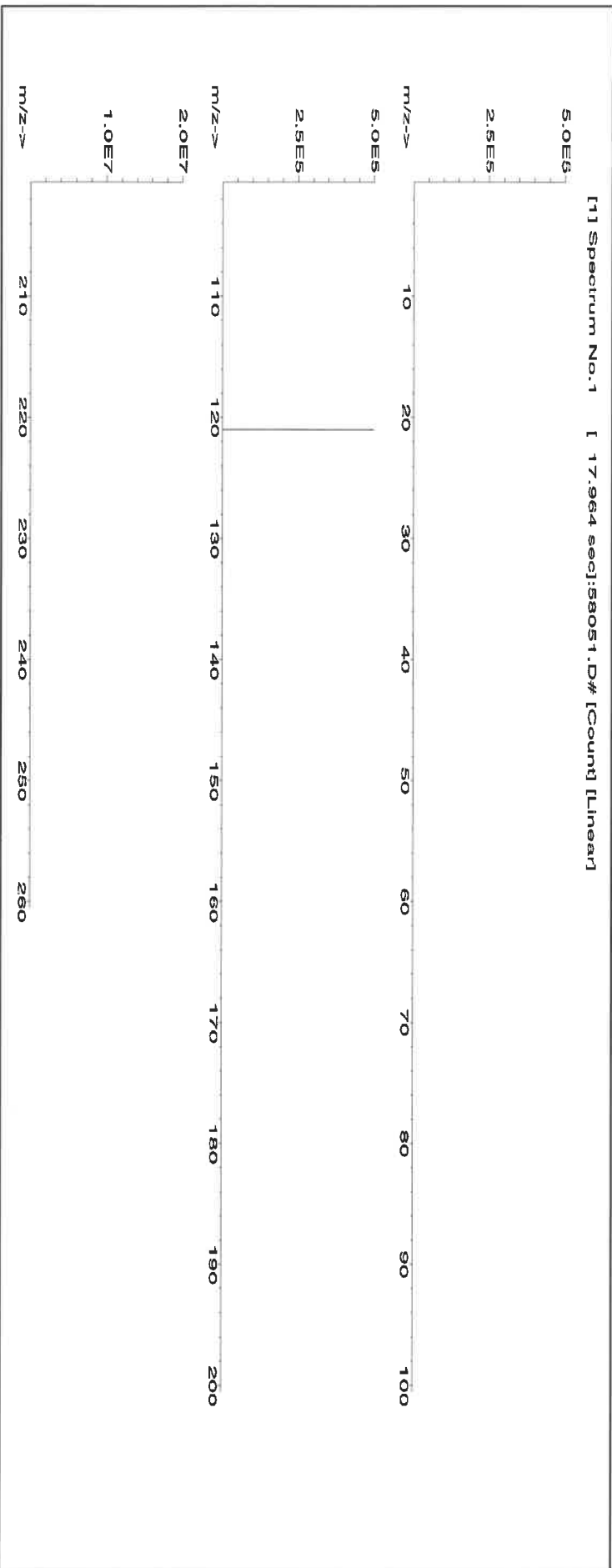
Giovanni Esposito
Formulated By: Giovanni Esposito
Reviewed By: Pedro L. Rentas

Final 40.0 mL Nitric Acid
Expanded Uncertainty ± (µg/mL)
CAS# OSHA PEL (TWA) LD50

SDS Information

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

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





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
Sb	T	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<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
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<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
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02
														Tb	<0.02
														Te	<0.02
														Tl	<0.02
														Th	<0.02
														Tm	<0.02
														Sn	<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:

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

Certified by:

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

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

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



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 0.10 Balance Uncertainty Flask Uncertainty

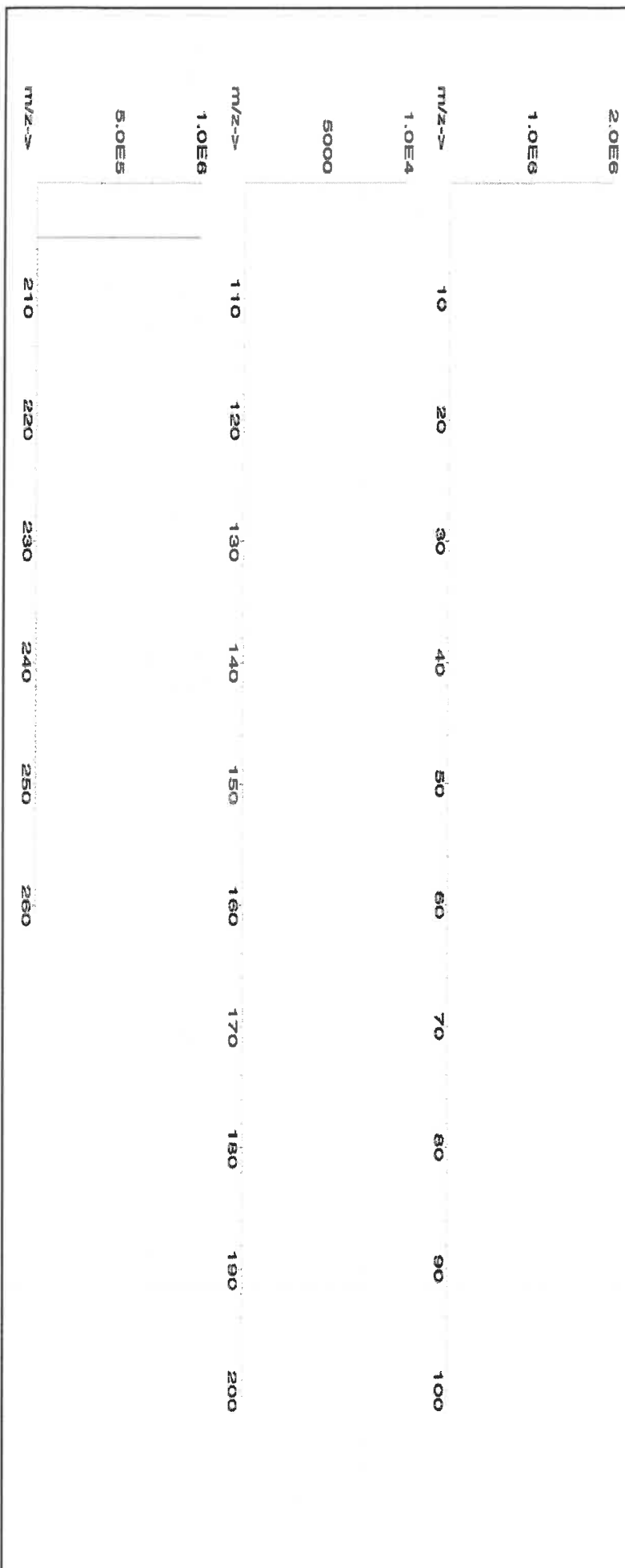
<i>Aleah O'Brady</i>	
Formulated By:	Aleah O'Brady
	062724
Reviewed By:	<i>Pedro L. Rendas</i>
	Pedro L. Rendas
	062724

SDS Information

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

1. Thallium nitrate (TI) IN037 BCCF4399 1000 99.999 0.10 77.0 2.5975 2.5977 1000.1 2.0 10102-45-1 0.1 mg/m3 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:

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



Certified Reference Material CRM

M6021



CERTIFIED WEIGHT REPORT:

Part Number: 57023
Lot Number: 062424
Description: Vanadium (V)

Lot # 24002546
Solvent: Nitric Acid

Aleah O'Brady	
Formulated By:	Aleah O'Brady
Reviewed By:	Pedro L. Rantas
	062424

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

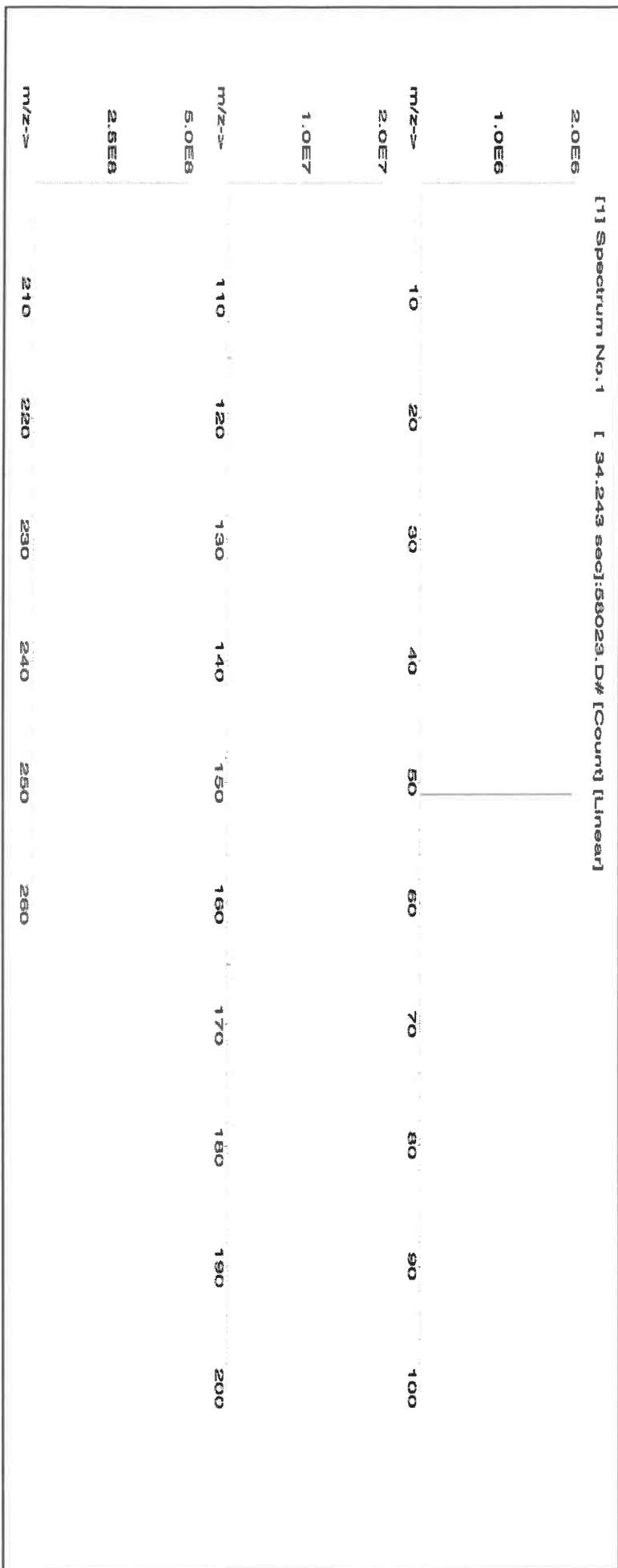
2.0% 40.0 (mL) Nitric Acid

Volume shown below was diluted to (mL): 2000.3

5E-05 Balance Uncertainty
0.06 Flask Uncertainty

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

[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			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).



SHIPPING DOCUMENTS

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

CHEMTECH

CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092

(908) 789-8900 Fax: (908) 78-8922

www.chemtech.net

Chemtech Project Number:

Q 2937

COC Number:

CLIENT INFORMATION

COMPANY: Tetra Tech

ADDRESS: 4433 Corporation Ln, Suite 300

CITY: Virginia Beach STATE: VA ZIP: 23462

ATTENTION: Ernie Wu

PHONE: 757-466-4901

FAX: 757-461-4148

PROJECT INFORMATION

PROJECT NAME: NWIRP Bethpage

PROJECT #: 112G08005-WE13 LOCATION: RW8

PROJECT MANAGER: Ernie Wu

E-MAIL: ernie.wu@tetrattech.com

PHONE: 757-466-4901

FAX: 757-461-4148

BILLING INFORMATION

BILL TO:

PO#

ADDRESS:

CITY:

STATE:

ZIP:

ATTENTION:

PHONE:

ANALYSIS

1,4-Dioxane SW846 8270
SIM

Iron, Total

TSS

TDS

1

2

3

4

5

6

7

8

9

DATA TURNAROUND INFORMATION

FAX: 10 DAYS*

HARD COPY: 10 DAYS*

EDD: 10 DAYS*

* TO BE APPROVED BY CHEMTECH

STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

☐ RESULTS ONLY☐ RESULTS + QC☐ New Jersey REDUCED☐ New Jersey CLP☐ EDD Format☐ USEPA CLP☐ New York State ASP "B"☐ New York State ASP "A"☐ Other

PRESERVATIVES

1

2

3

4

5

6

7

8

9

COMMENTS

<-- Specify Preservatives
A-HCl B-HNO3
C-H2SO4 D-NaOH
E-ICE F-OtherCHEMTECH
SAMPLE
IDPROJECT
SAMPLE IDENTIFICATIONSAMPLE
MATRIXSAMPLE
TYPESAMPLE
COLLECTION

of Bottles

COMP
GRABDATE
TIME

1

2

3

4

5

6

7

8

9

1.

RW8-SP100-20250821

GW

X

8/21/25

13:05

2

X

X

pH 1.3

2.

RW8-SP303-20250821

GW

X

8/21/25

13:13

4

X

X

X

X

pH 1.3

3.

4.

5.

6.

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

RELINQUISHED BY

DATE/TIME

RECEIVED BY

RELINQUISHED BY

DATE/TIME

RECEIVED FOR LAB BY

Conditions of bottles or coolers at receipt: ☐ Compliant ☐ Non Compliant ☐ Cooler Temp

MeOH extraction requires an additional 4oz. Jar for percent solid

☐ Ice in Cooler?:

Comments:

Page _____ of _____

SHIPPED VIA: CLIENT: ☐ Hand Delivered ☐ OvernightCHEMTECH: ☐ Picked Up ☐ Overnight

Shipment Complete

☐ YES ☐ NO

WHITE - CHEMTECH COPY FOR RETURN TO CLIENT

YELLOW - CHEMTECH COPY

PINK - SAMPLER COPY

Laboratory Certification

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