

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 : Q2881

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-SP100-20250814	12
9.2) RW8-SP303-20250814	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) LB136898	41
14.3) METALS RAW DATA - PREP	193
14.3.1) PB169303	193
15) Analytical Runlogs	196
16) Standard Prep Logs	199

Table Of Contents for Q2881

17) Shipping Document	354
17.1) Chain Of Custody	355
17.2) Lab Certificate	356

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

Cover Page

Order ID : Q2881

Project ID : NWIRP Bethpage 112G08005-WE13

Client : Tetra Tech NUS, Inc.

Lab Sample Number

Q2881-01
Q2881-02

Client Sample Number

RW8-SP100-20250814
RW8-SP303-20250814

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

Signature :

APPROVED

By Nimisha Pandya, QA/QC Supervisor at 10:08 am, Aug 28, 2025

Date: 8/21/2025

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 # Q2881

Test Name: Metals Group4

A. Number of Samples and Date of Receipt:

2 Water samples were received on 08/15/2025.

B. Parameters:

According to the Chain of Custody document, the following analyses were requested: Metals Group4, SVOC-SIMGroup1, 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.

APPROVED

Signature By Nimisha Pandya, QA/QC Supervisor at 10:08 am, Aug 28, 2025

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: Q2881

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

REVIEWED

Sohil Jodhani, QA/QC Director , 8/28/2025, 9:12:16 AM

te

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: Q2881

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: 08/21/2025

LAB CHRONICLE

OrderID:	Q2881	OrderDate:	8/15/2025 10:55:00 AM
Client:	Tetra Tech NUS, Inc.	Project:	NWIRP Bethpage 112G08005-WE13
Contact:	Ernie Wu	Location:	J32

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
Q2881-01	RW8-SP100-2025081 4	Water			08/14/25			08/15/25
			Metals Group4	6010D		08/19/25	08/20/25	
Q2881-02	RW8-SP303-2025081 4	Water			08/14/25			08/15/25
			Metals Group4	6010D		08/19/25	08/20/25	

Hit Summary Sheet
SW-846

SDG No.:	Q2881	Order ID:	Q2881
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-SP100-20250814									
Q2881-01	RW8-SP100-20250814	Water	Iron	566		11.7	40.0	50.0	ug/L
Client ID : RW8-SP303-20250814									
Q2881-02	RW8-SP303-20250814	Water	Iron	53.5		11.7	40.0	50.0	ug/L



SAMPLE DATA

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	08/14/25
Project:	NWIRP Bethpage 112G08005-WE13	Date Received:	08/15/25
Client Sample ID:	RW8-SP100-20250814	SDG No.:	Q2881
Lab Sample ID:	Q2881-01	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	566		1	11.7	40.0	50.0	ug/L	08/19/25 10:02	08/20/25 16:02	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:	08/14/25
Project:	NWIRP Bethpage 112G08005-WE13	Date Received:	08/15/25
Client Sample ID:	RW8-SP303-20250814	SDG No.:	Q2881
Lab Sample ID:	Q2881-02	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	53.5		1	11.7	40.0	50.0	ug/L	08/19/25 10:02	08/20/25 16:06	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

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Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.

SDG No.: Q2881

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	3970	4000	99	90 - 110	P	08/20/2025	13:04	LB136898

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.

SDG No.: Q2881

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	103	100	103	80 - 120	P	08/20/2025	13:17	LB136898

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.

SDG No.: Q2881

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
CCV01	Iron	5020	5000	100	90 - 110	P	08/20/2025	13:47	LB136898
CCV02	Iron	5060	5000	101	90 - 110	P	08/20/2025	14:39	LB136898
CCV03	Iron	4950	5000	99	90 - 110	P	08/20/2025	15:45	LB136898
CCV04	Iron	4980	5000	100	90 - 110	P	08/20/2025	16:35	LB136898
CCV05	Iron	4930	5000	98	90 - 110	P	08/20/2025	17:09	LB136898



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.: Q2881

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	95.2	100	95	65 - 135	P	08/20/2025	13:26	LB136898



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.: Q2881

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	08/20/2025	13:21	LB136898

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc. **SDG No.:** Q2881
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	08/20/2025	13:51	LB136898
CCB02	Iron	23.4	+/-50	U	80.0	100	P	08/20/2025	14:43	LB136898
CCB03	Iron	23.4	+/-50	U	80.0	100	P	08/20/2025	15:49	LB136898
CCB04	Iron	23.4	+/-50	U	80.0	100	P	08/20/2025	16:39	LB136898
CCB05	Iron	23.4	+/-50	U	80.0	100	P	08/20/2025	17:13	LB136898

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q2881

Instrument: P4

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	LOD ug/L	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB169303BL		WATER		Batch Number:		PB169303		Prep Date:	08/19/2025	
	Iron	11.7	<25	U	40.0	50.0	P	08/20/2025	15:53	LB136898

Metals
- 4 -
INTERFERENCE CHECK SAMPLE

Client: <u>Tetra Tech NUS, Inc.</u>	SDG No.: <u>Q2881</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	08/20/2025	13:30	LB136898
ICSAB01	Iron	101000	99300	102	84400	114500	08/20/2025	13:34	LB136898



METAL QC DATA

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metals
- 5a -
MATRIX SPIKE SUMMARY

client: <u>Tetra Tech NUS, Inc.</u>	level: <u>low</u>	sdg no.: <u>Q2881</u>
contract: <u>TETR06</u>		lab code: <u>ACE</u>
matrix: <u>Water</u>	sample id: <u>Q2881-02</u>	client id: <u>RW8-SP303-20250814MS</u>
Percent Solids for Sample: <u>NA</u>	Spiked ID: <u>Q2881-02MS</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	1450		53.5		1500	93		P

metals
- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

client: <u>Tetra Tech NUS, Inc.</u>	level: <u>low</u>	sdg no.: <u>Q2881</u>
contract: <u>TETR06</u>		lab code: <u>ACE</u>
matrix: <u>Water</u>	sample id: <u>Q2881-02</u>	client id: <u>RW8-SP303-20250814MSD</u>
Percent Solids for Sample: <u>NA</u>	Spiked ID: <u>Q2881-02MSD</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	1420		53.5		1500	91		P



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

Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client:	<u>Tetra Tech NUS, Inc.</u>	Level:	<u>LOW</u>	SDG No.:	<u>Q2881</u>
Contract:	<u>TETR06</u>			Lab Code:	<u>ACE</u>
Matrix:	<u>Water</u>	Sample ID:	<u>Q2881-02</u>	Client ID:	<u>RW8-SP303-20250814DUP</u>
Percent Solids for Sample:	NA	Duplicate ID	Q2881-02DUP	Percent Solids for Spike Sample:	NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Iron	ug/L	20	53.5		62.9		16		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>Q2881</u>
Contract:	<u>TETR06</u>			Lab Code:	<u>ACE</u>
Matrix:	<u>Water</u>	Sample ID:	<u>Q2881-02MS</u>	Client ID:	<u>RW8-SP303-20250814MSD</u>
Percent Solids for Sample:	NA	Duplicate ID	Q2881-02MSD	Percent Solids for Spike Sample:	NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Iron	ug/L	20	1450		1420		2		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.: Q2881

Contract: TETR06

Lab Code: ACE

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB169303BS Iron	ug/L	1500	1520		101	87 - 115	P

Metals
-9 -
ICP SERIAL DILUTIONS

SAMPLE NO.

RW8-SP303-20250814L

Lab Name: Alliance **Contract:** TETR06
Lab Code: ACE **Lb No.:** lb136898 **Lab Sample ID :** Q2881-02L **SDG No.:** Q2881
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	53.5	63.4 J	18		P



METAL PREPARATION & INSTRUMENT DATA

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Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech NUS, Inc.

SDG No.: Q2881

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.: Q2881

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:				
		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.: Q2881

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.: Q2881

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:				
		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.: Q2881

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

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Metals
- 13 -

SAMPLE PREPARATION SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q2881

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: PB169303							
PB169303BL	PB169303BL	MB	WATER	08/19/2025	50.0	25.0	
PB169303BS	PB169303BS	LCS	WATER	08/19/2025	50.0	25.0	
Q2881-01	RW8-SP100-20250814	SAM	WATER	08/19/2025	50.0	25.0	
Q2881-02	RW8-SP303-20250814	SAM	WATER	08/19/2025	50.0	25.0	
Q2881-02DUP	RW8-SP303-20250814DUP	DUP	WATER	08/19/2025	50.0	25.0	
Q2881-02MS	RW8-SP303-20250814MS	MS	WATER	08/19/2025	50.0	25.0	
Q2881-02MSD	RW8-SP303-20250814MSD	MSD	WATER	08/19/2025	50.0	25.0	

metals
- 14 -
ANALYSIS RUN LOG

Client: Tetra Tech NUS, Inc.

Contract: TETR06

Lab code: ACE

Sdg no.: Q2881

Instrument id number: _____

Method: _____

Run number: LB136898

Start date: 08/20/2025

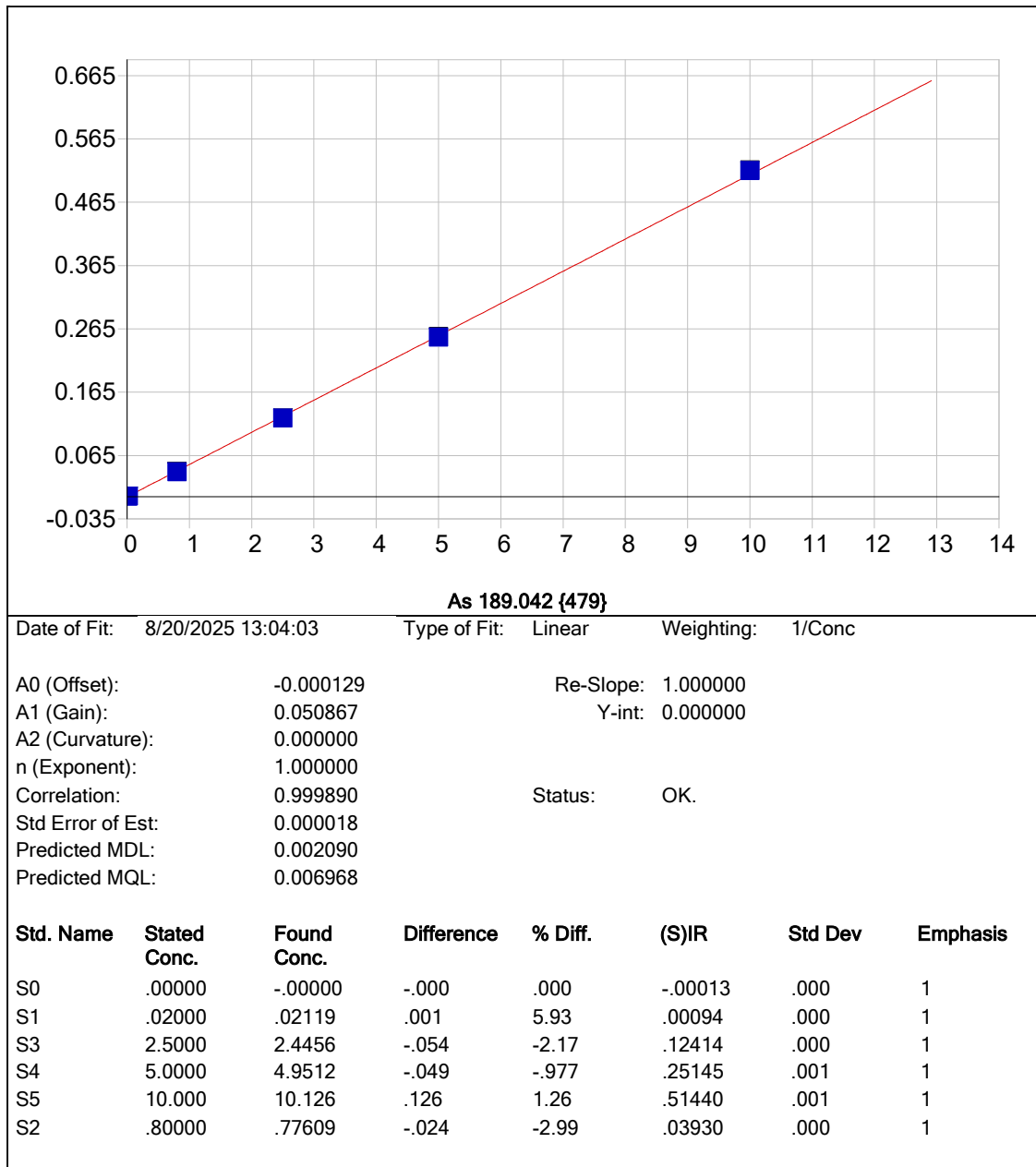
End date: 08/20/2025

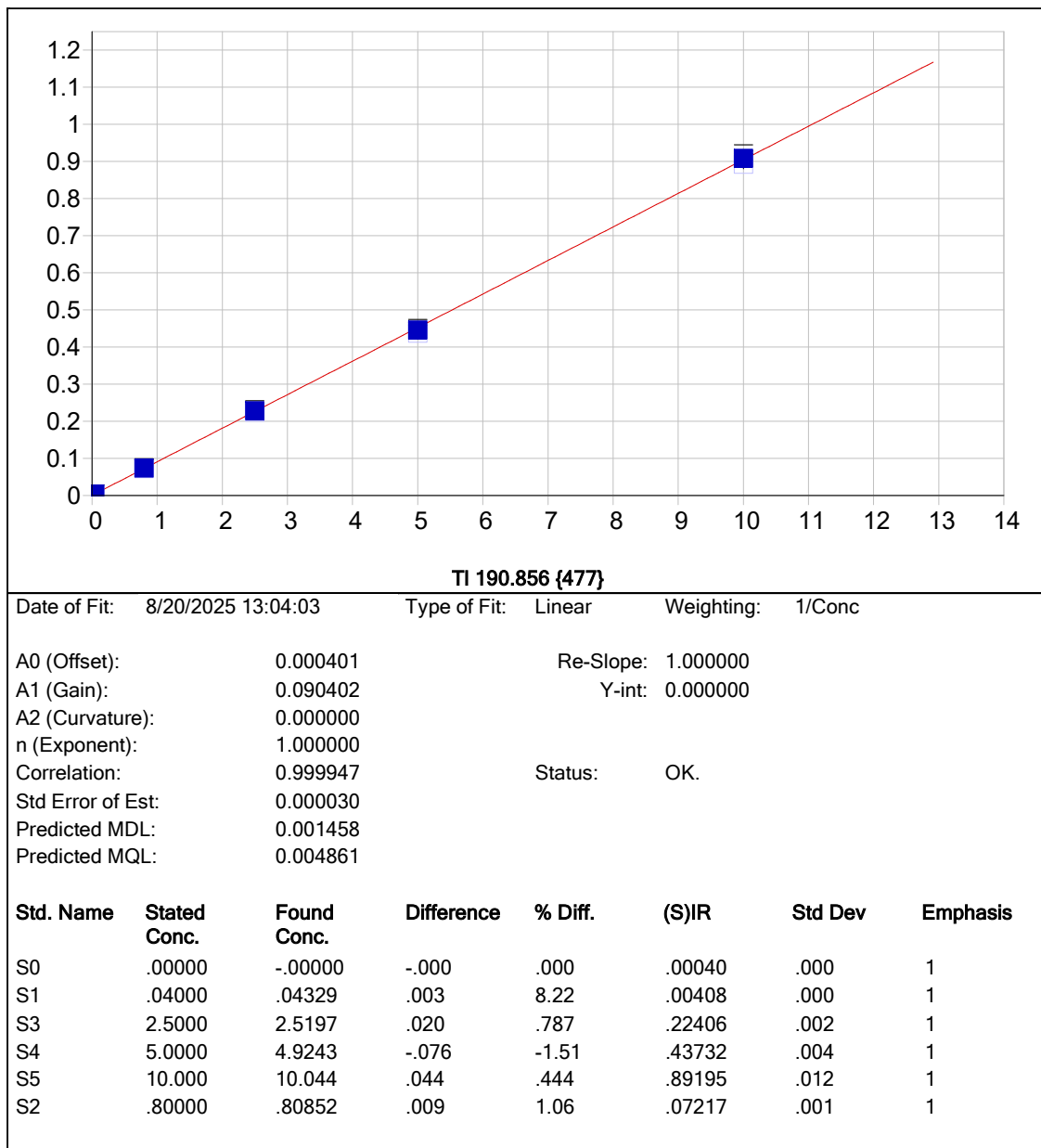
Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1238	Fe
S1	S1	1	1243	Fe
S2	S2	1	1247	Fe
S3	S3	1	1251	Fe
S4	S4	1	1255	Fe
S5	S5	1	1259	Fe
ICV01	ICV01	1	1304	Fe
LLICV01	LLICV01	1	1317	Fe
ICB01	ICB01	1	1321	Fe
CRI01	CRI01	1	1326	Fe
ICSA01	ICSA01	1	1330	Fe
ICSAB01	ICSAB01	1	1334	Fe
CCV01	CCV01	1	1347	Fe
CCB01	CCB01	1	1351	Fe
CCV02	CCV02	1	1439	Fe
CCB02	CCB02	1	1443	Fe
CCV03	CCV03	1	1545	Fe
CCB03	CCB03	1	1549	Fe
PB169303BL	PB169303BL	1	1553	Fe
PB169303BS	PB169303BS	1	1558	Fe
Q2881-01	RW8-SP100-20250814	1	1602	Fe
Q2881-02	RW8-SP303-20250814	1	1606	Fe
Q2881-02DUP	RW8-SP303-20250814DUP	1	1610	Fe
Q2881-02L	RW8-SP303-20250814L	5	1614	Fe
Q2881-02MS	RW8-SP303-20250814MS	1	1619	Fe
Q2881-02MSD	RW8-SP303-20250814MSD	1	1623	Fe
CCV04	CCV04	1	1635	Fe
CCB04	CCB04	1	1639	Fe
CCV05	CCV05	1	1709	Fe
CCB05	CCB05	1	1713	Fe

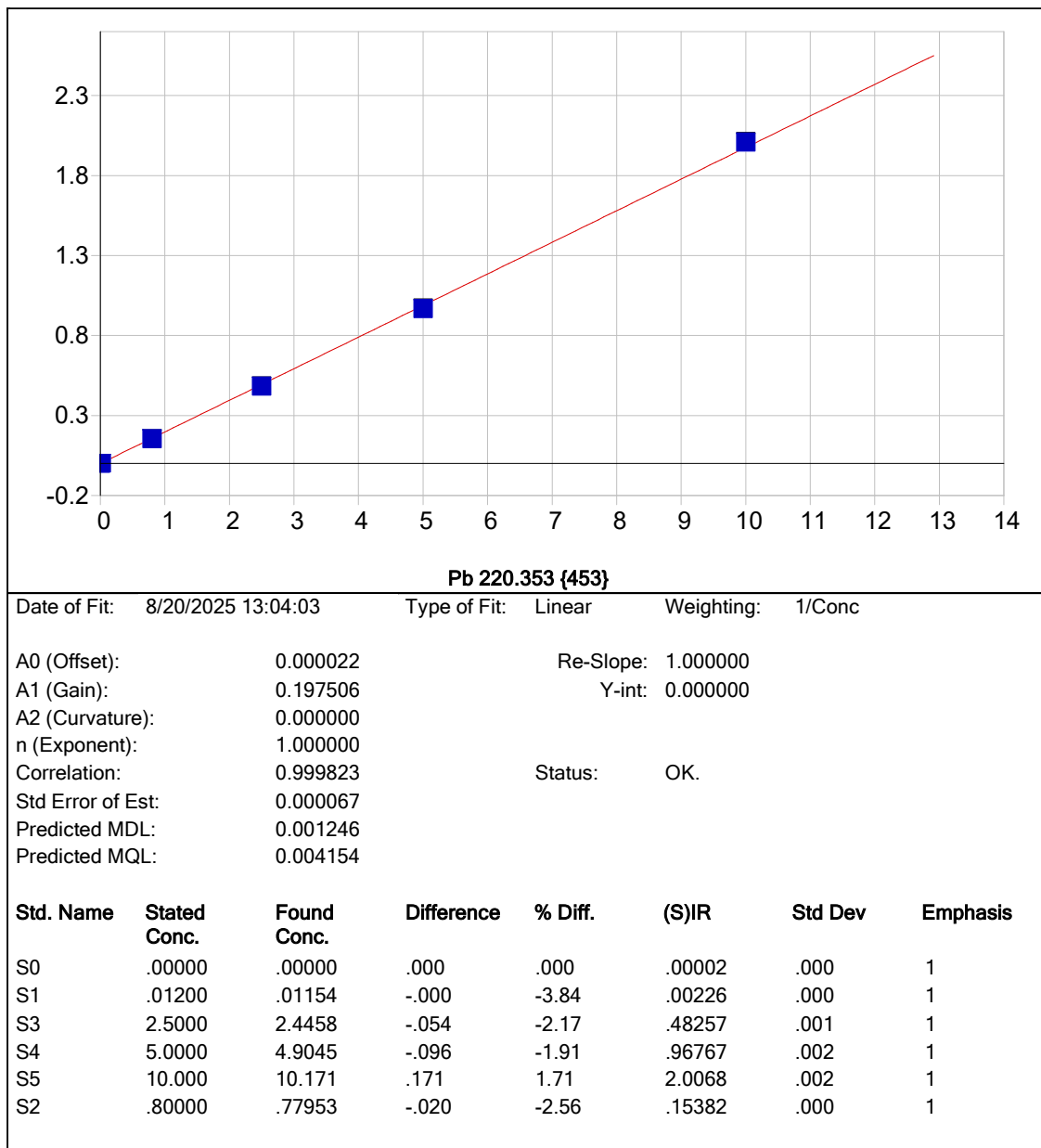


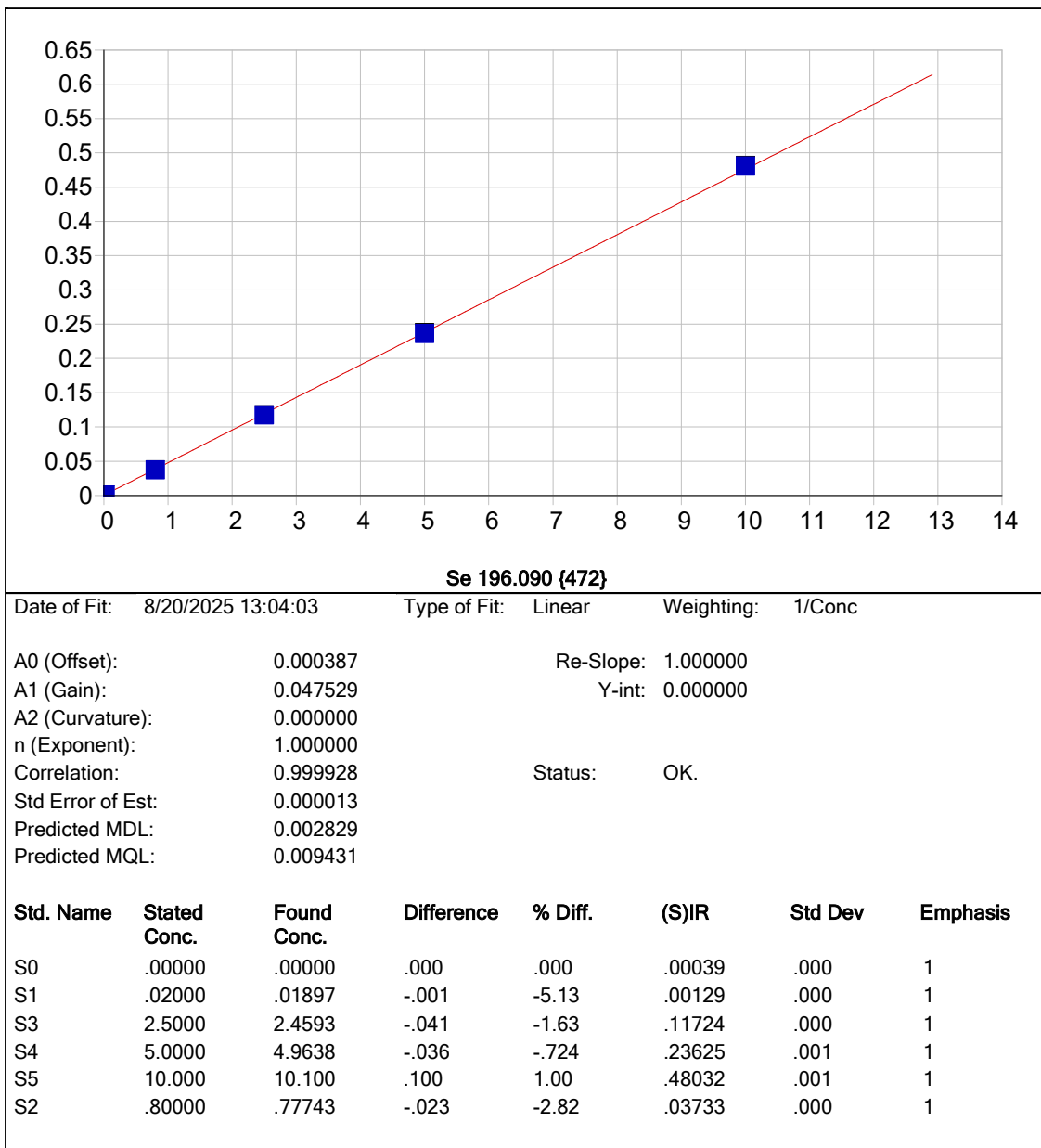
METAL RAW DATA

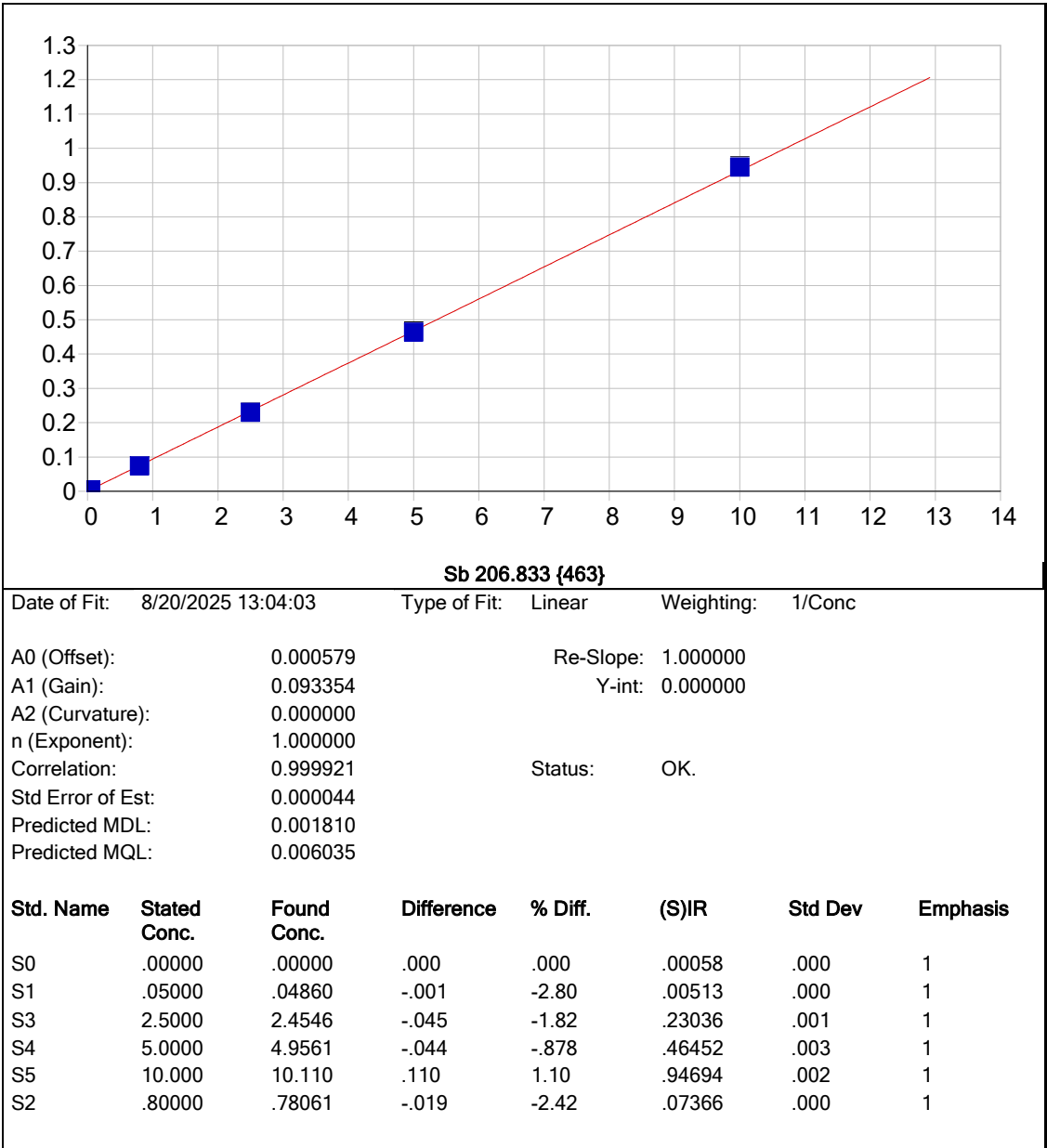
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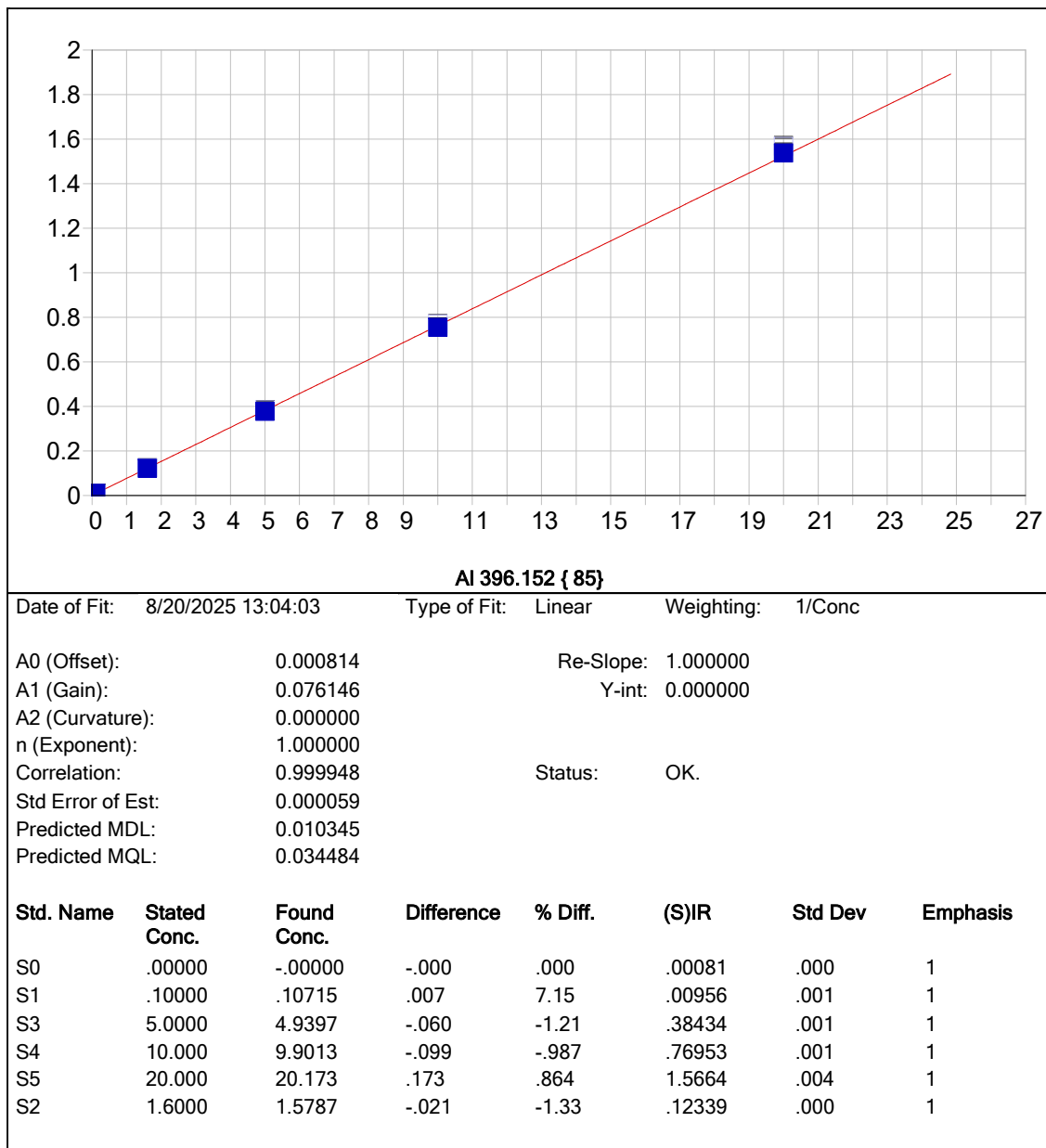


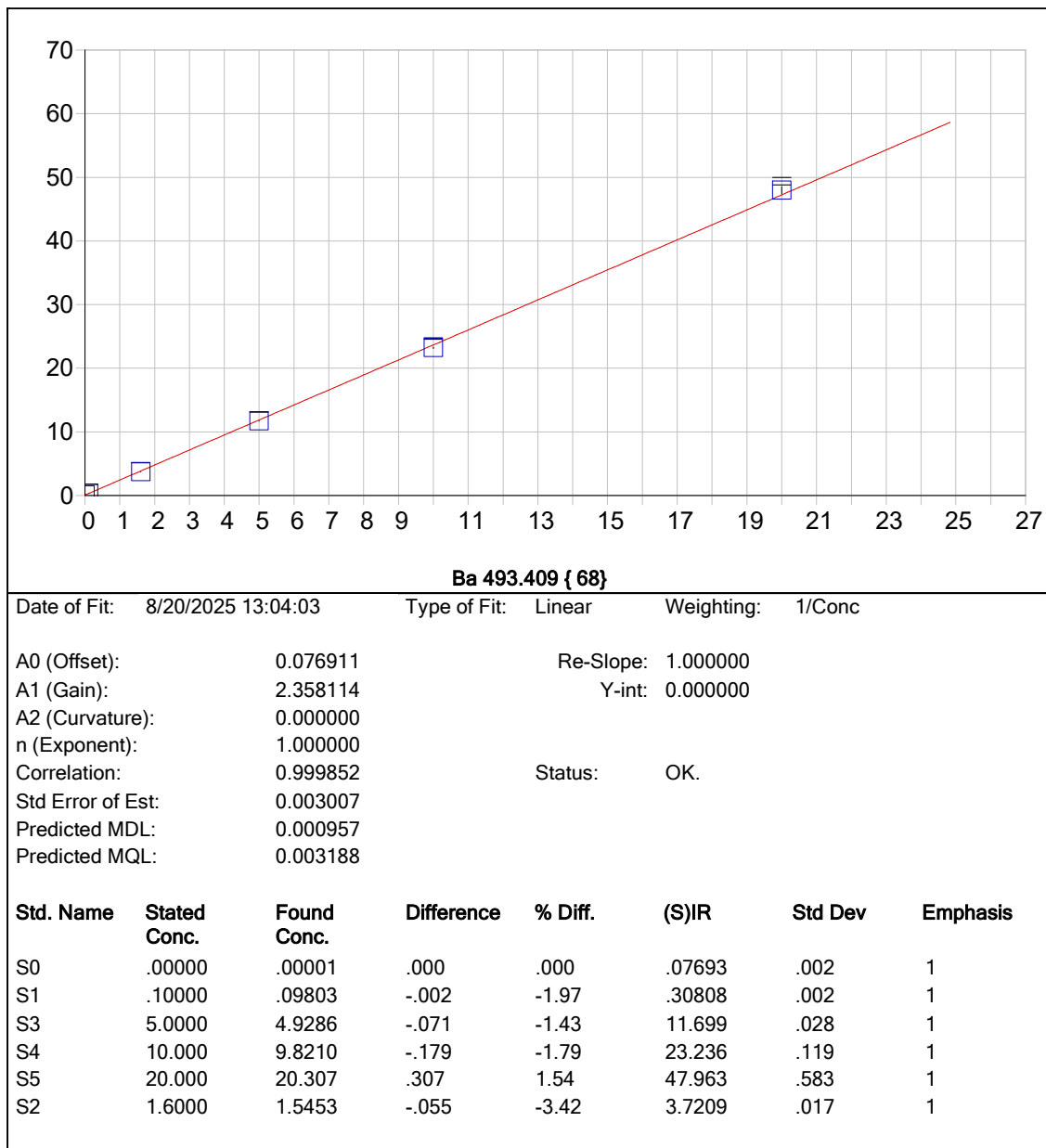


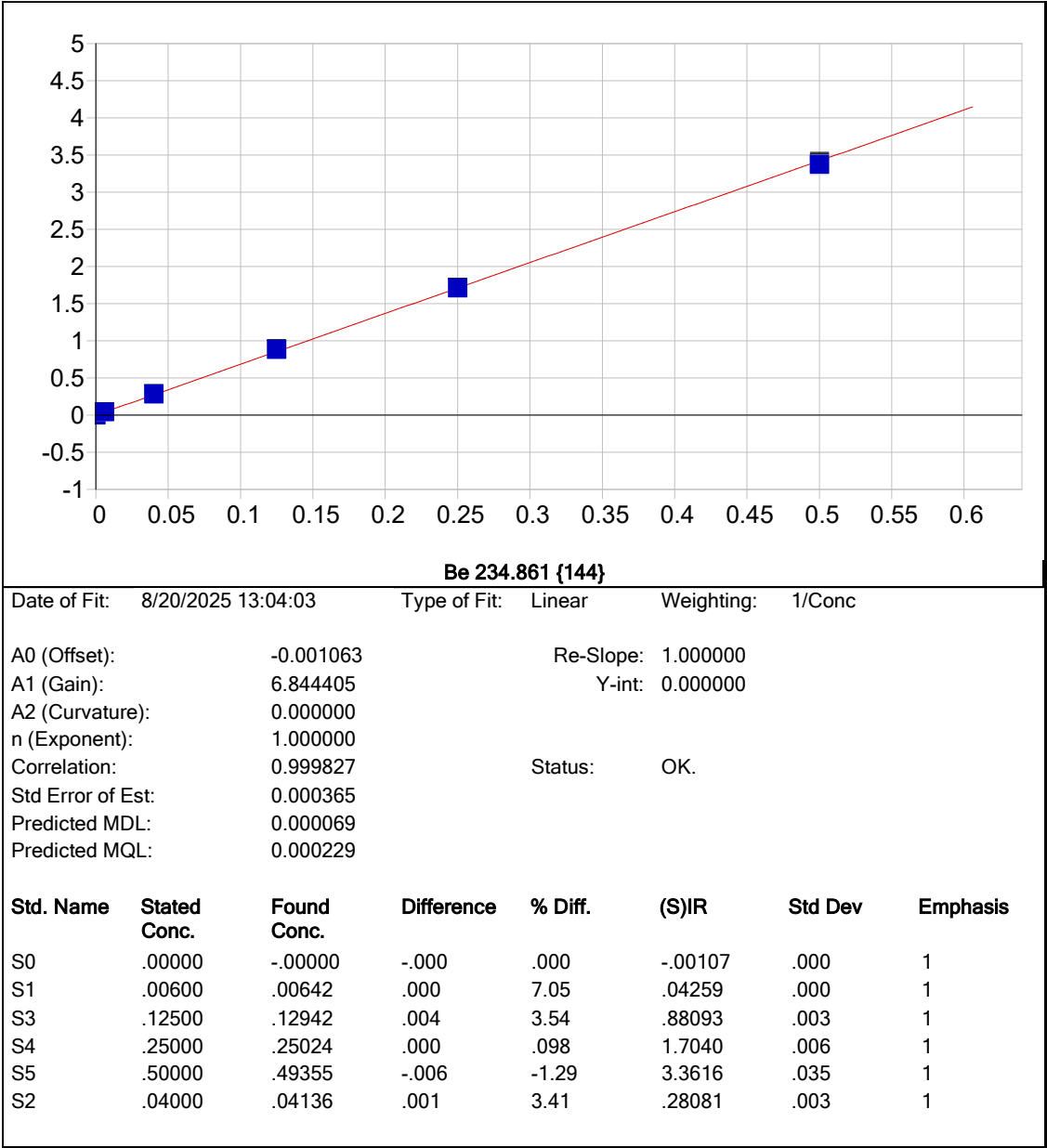


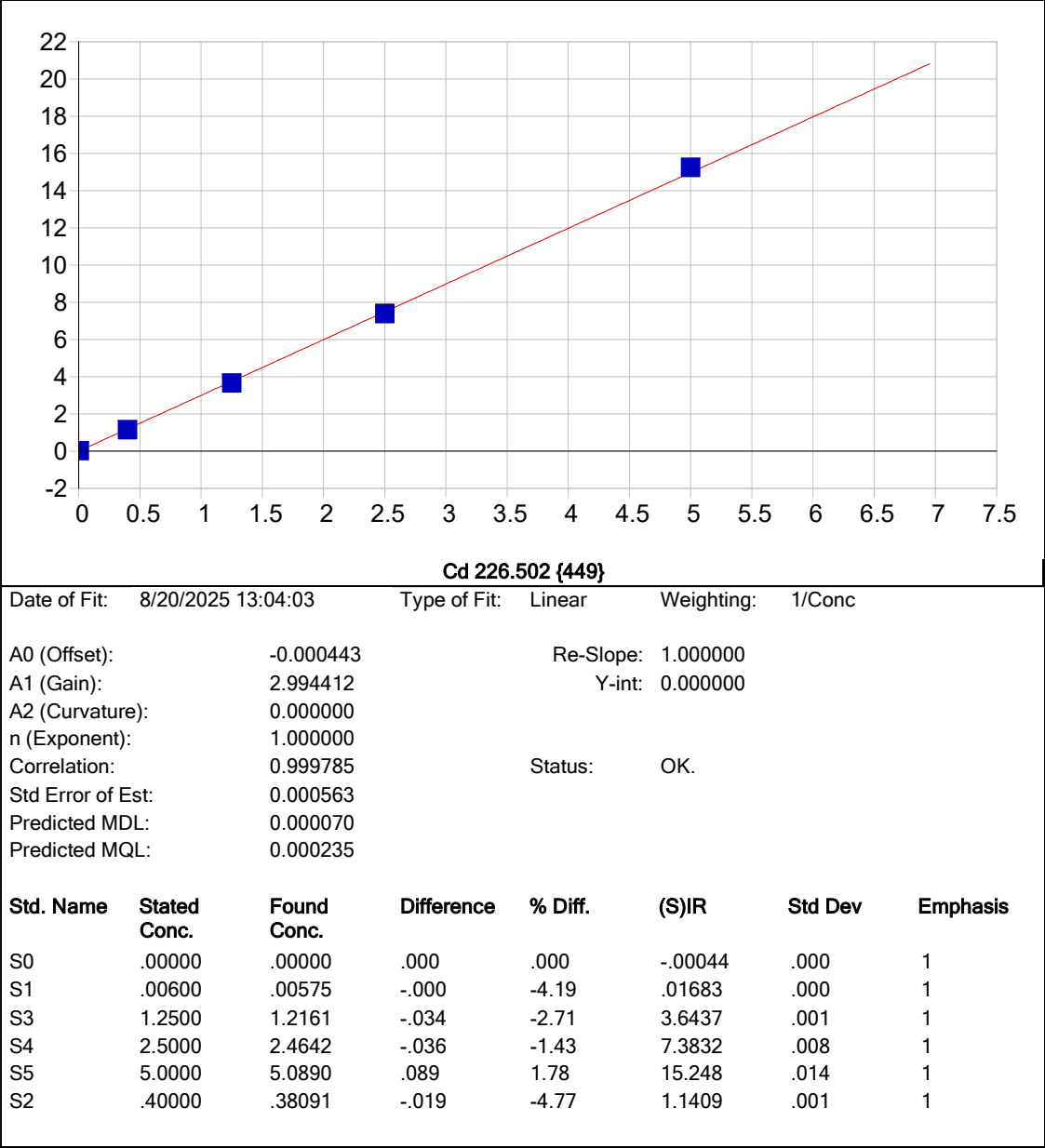


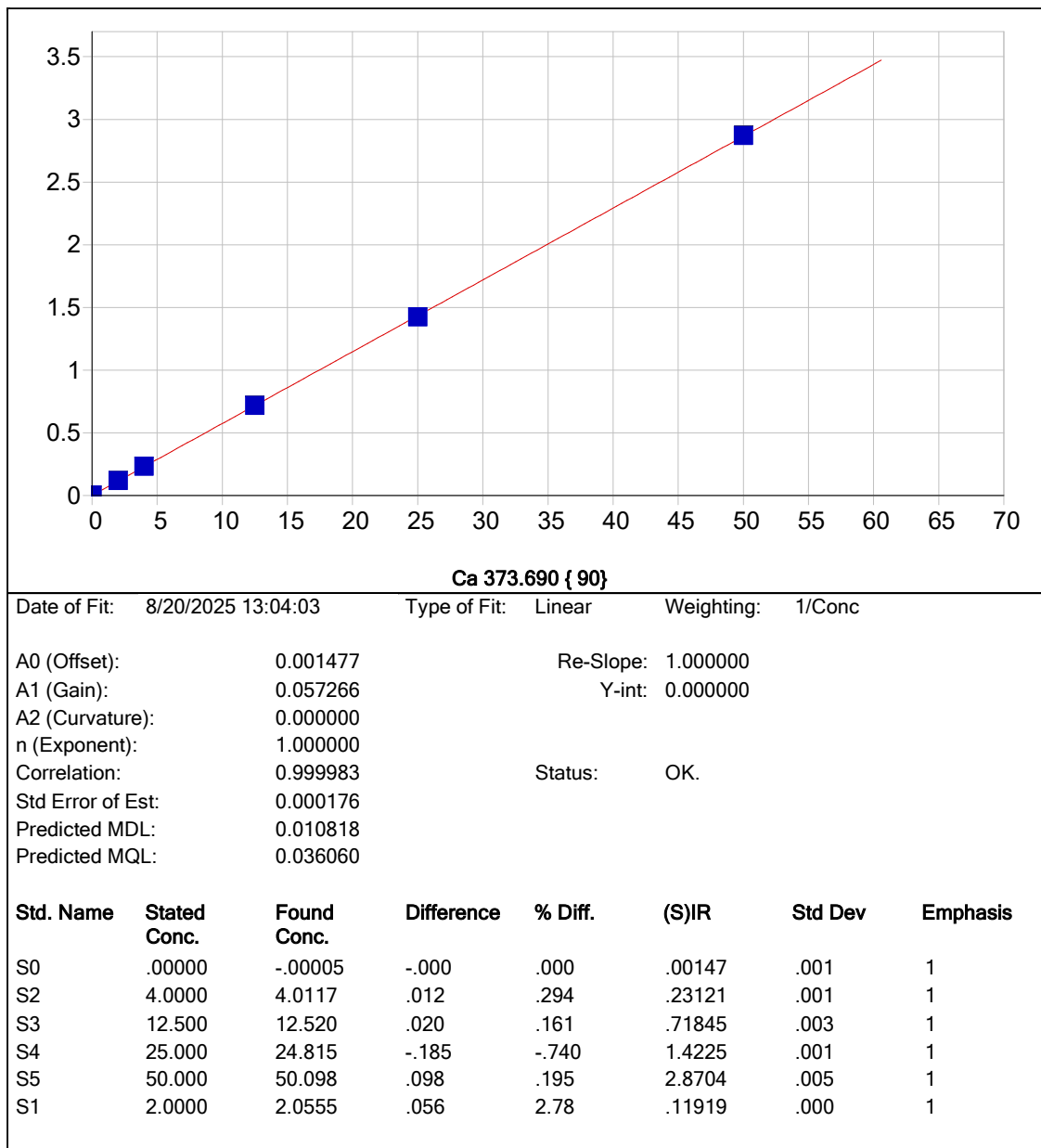


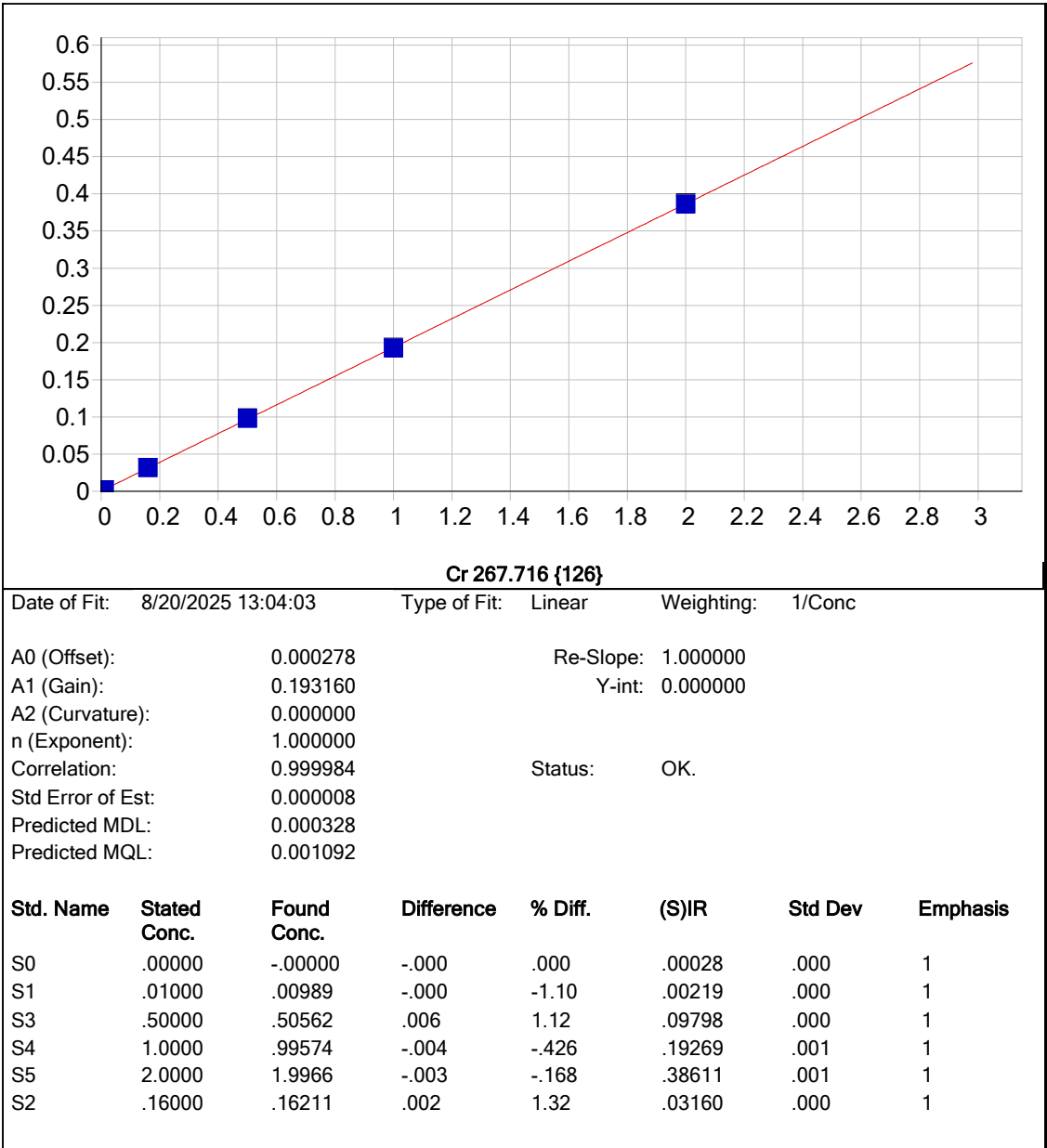


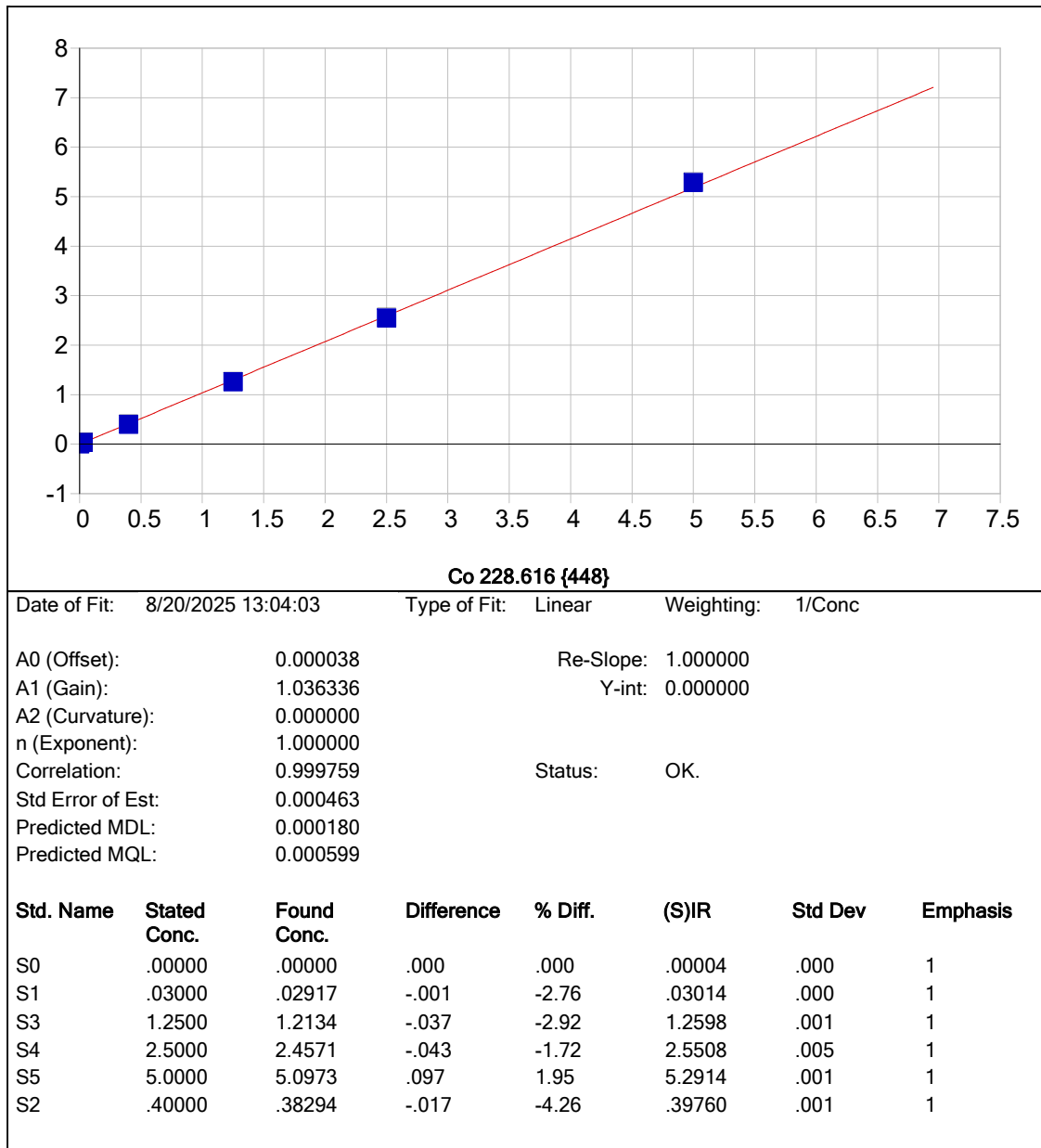


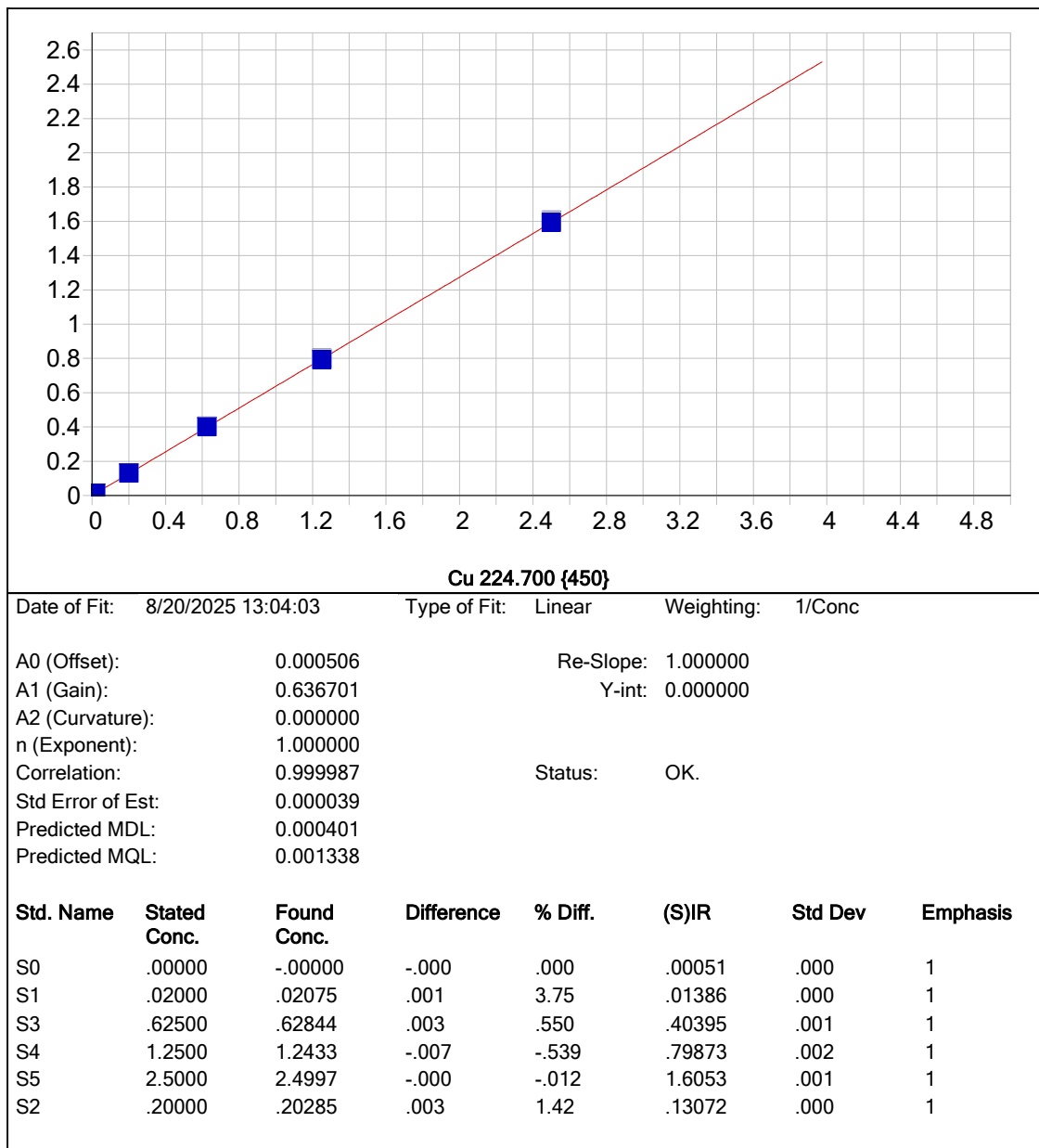


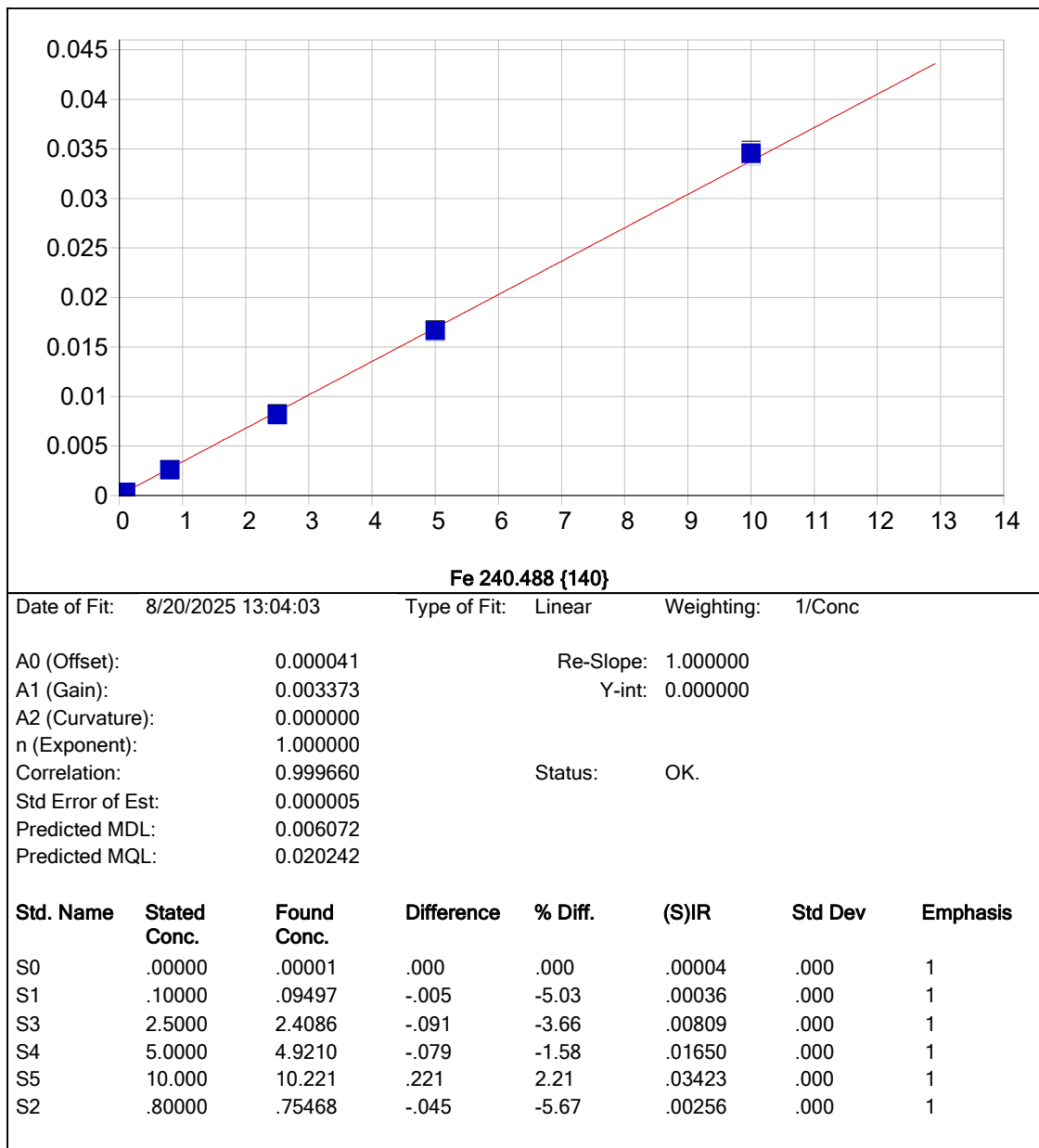


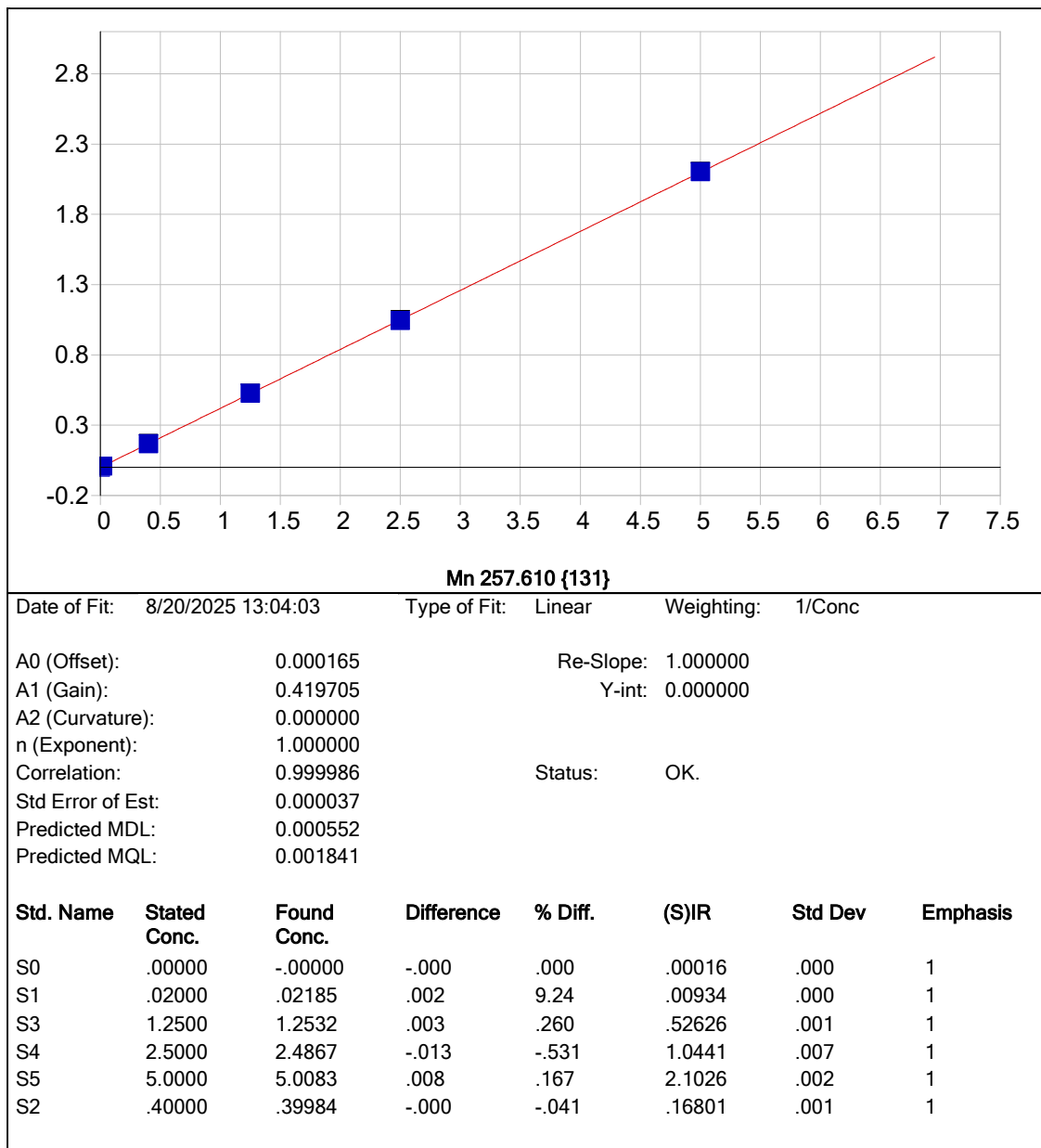


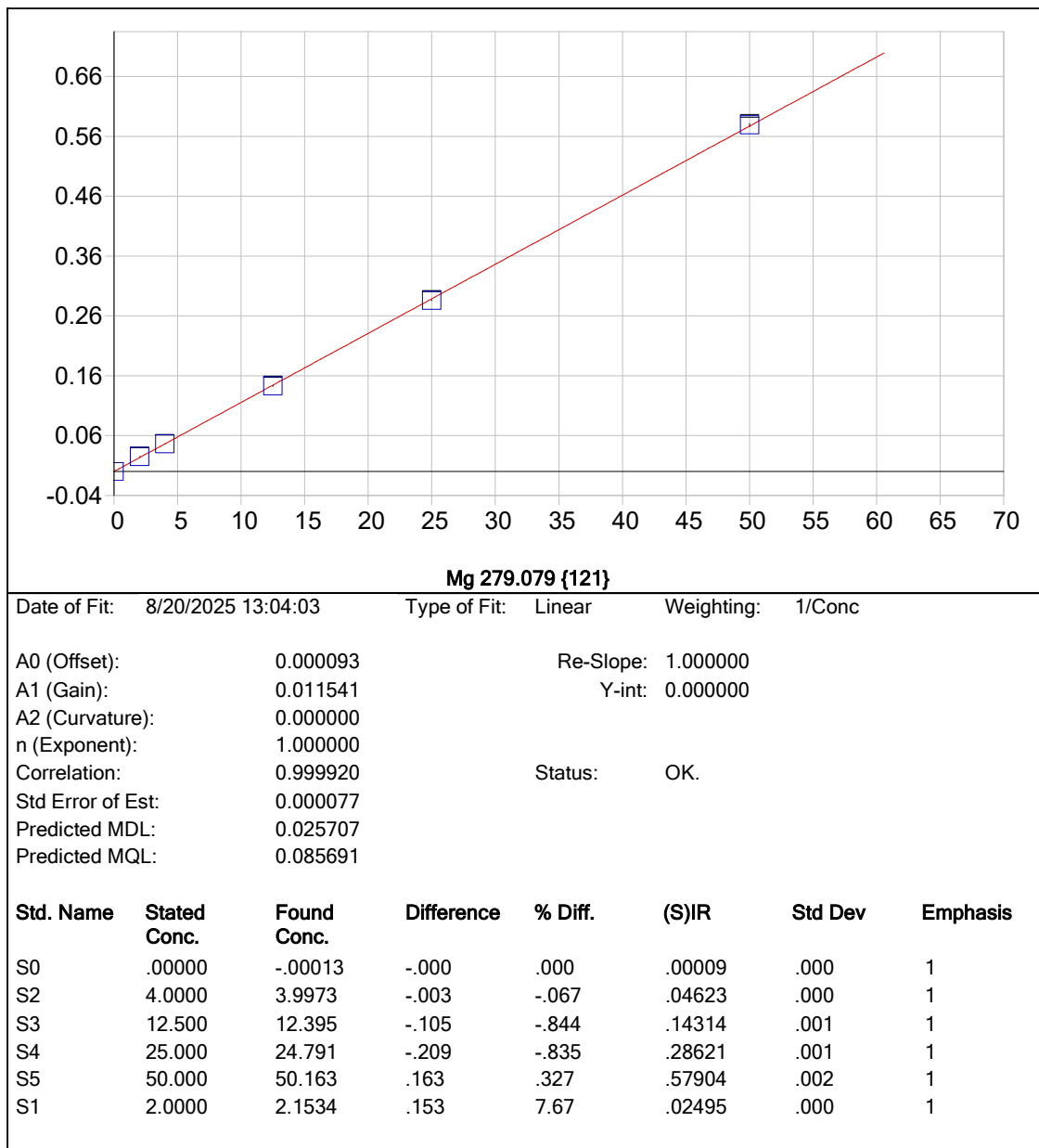


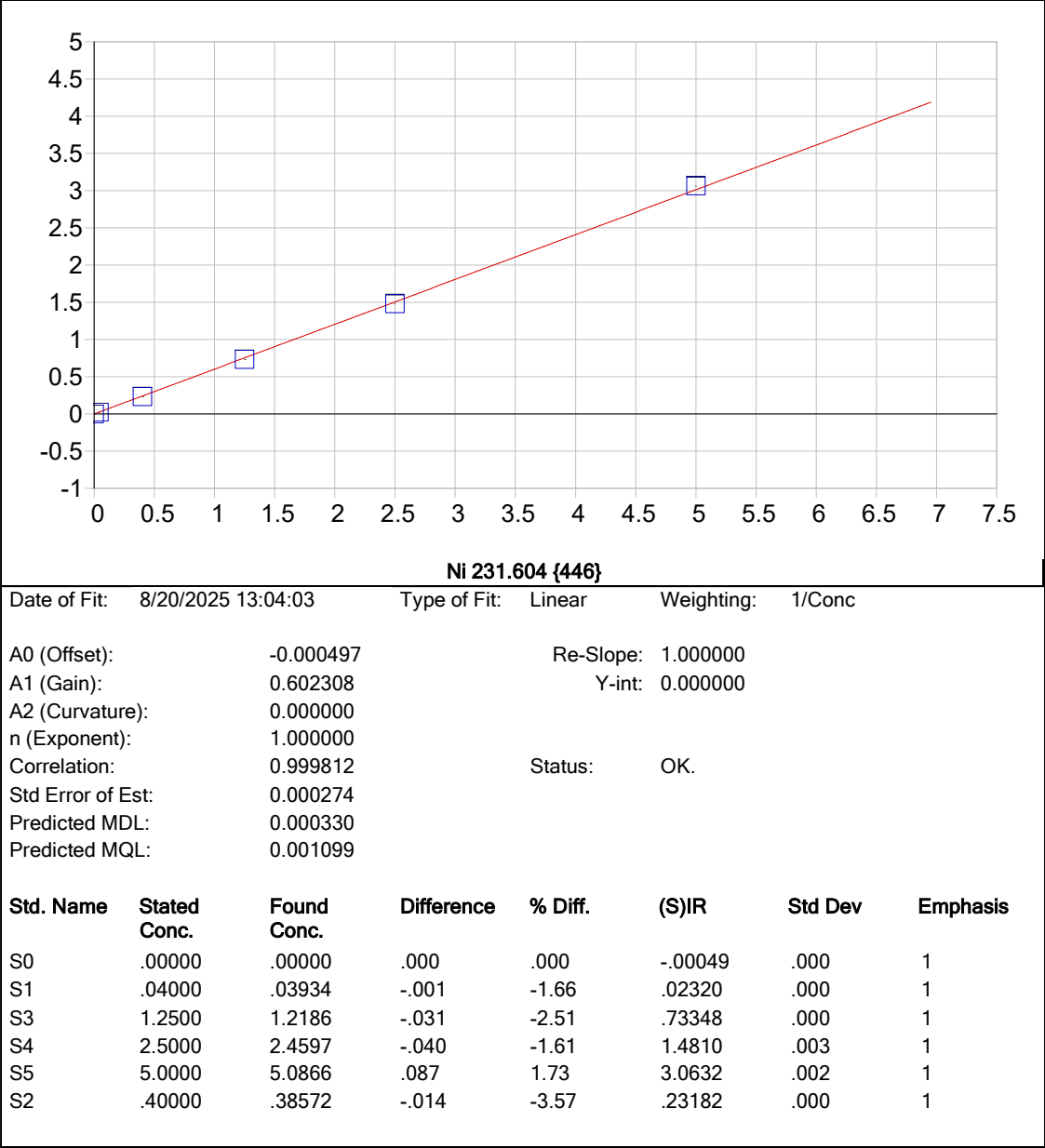


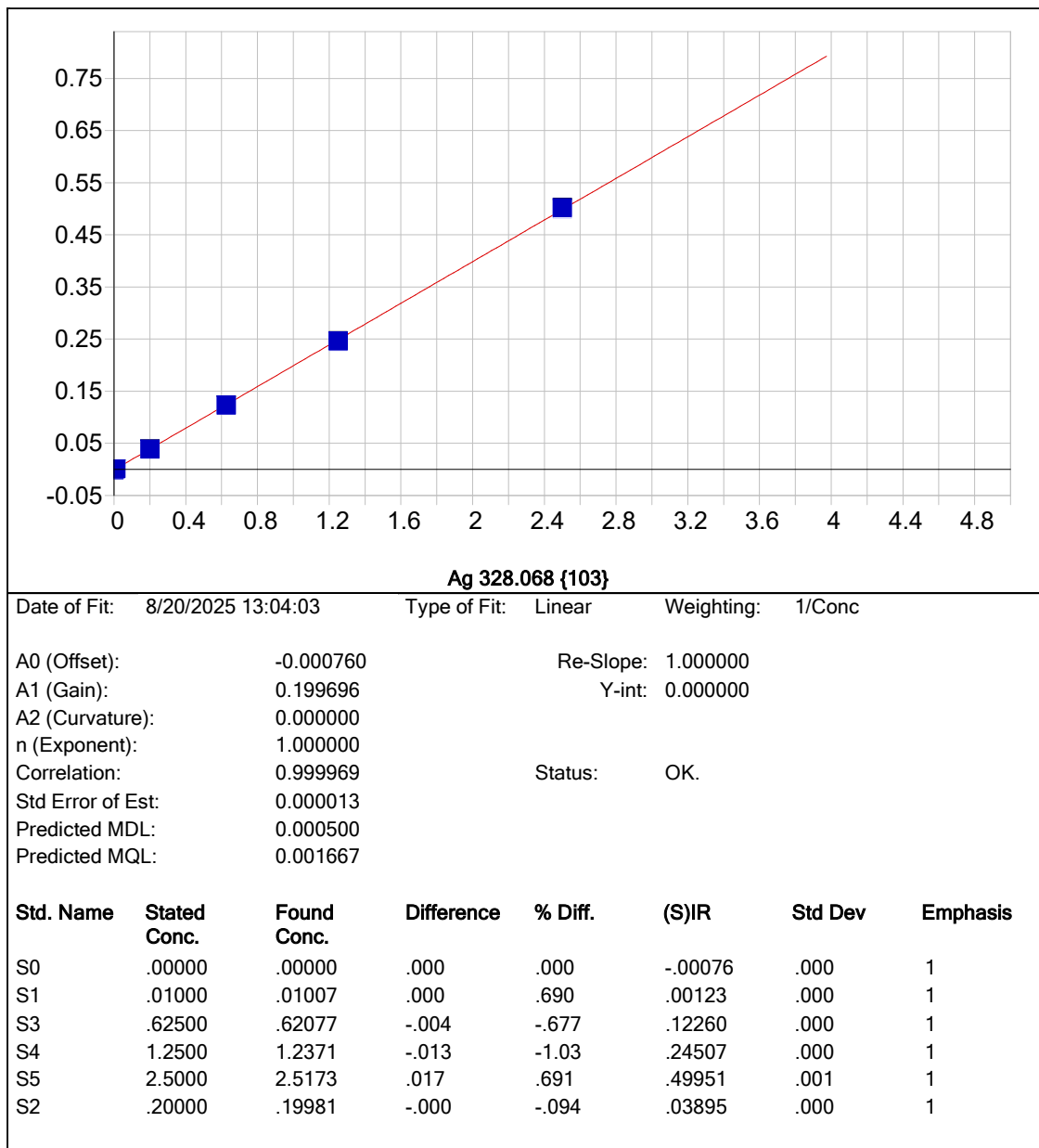




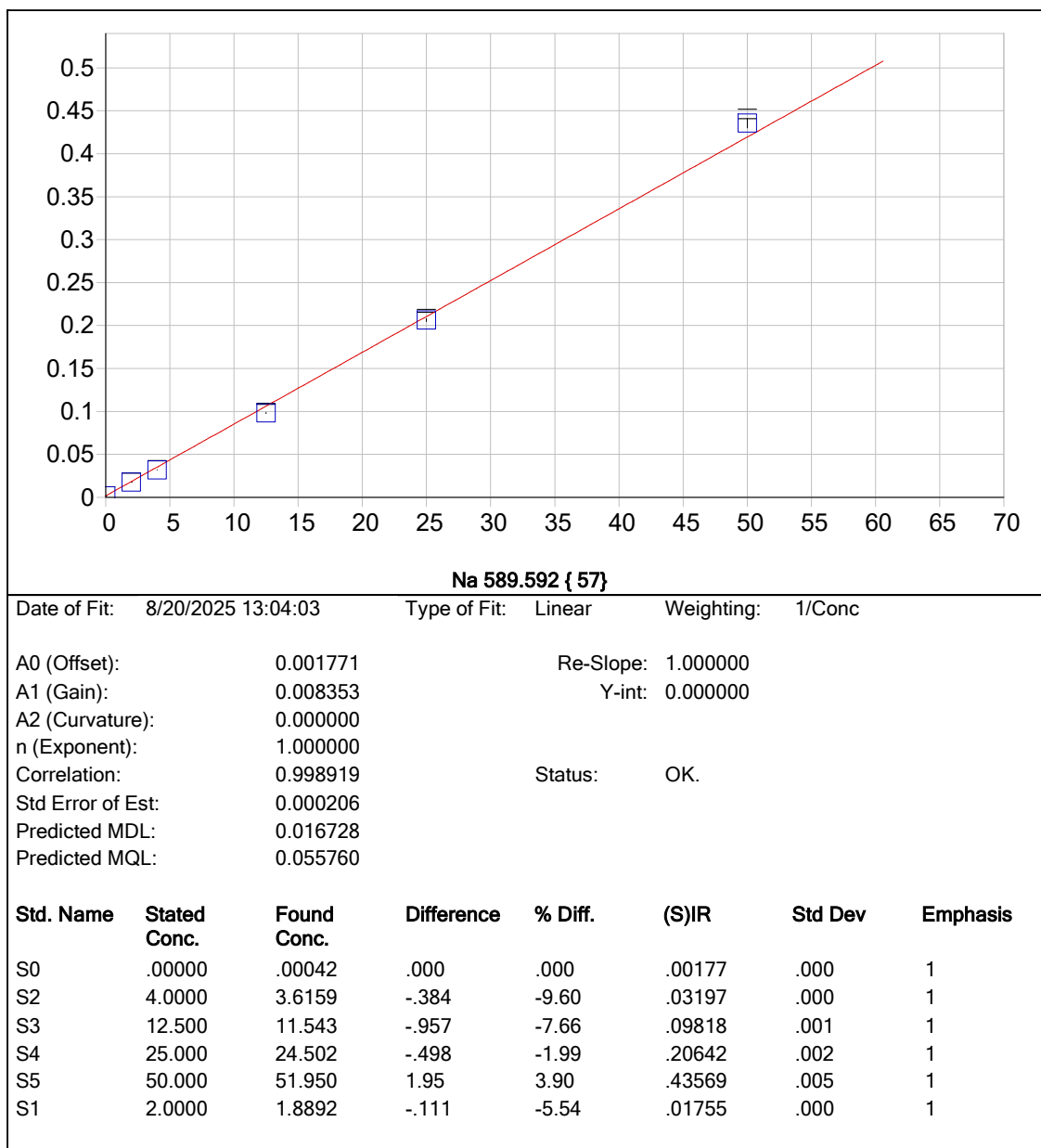


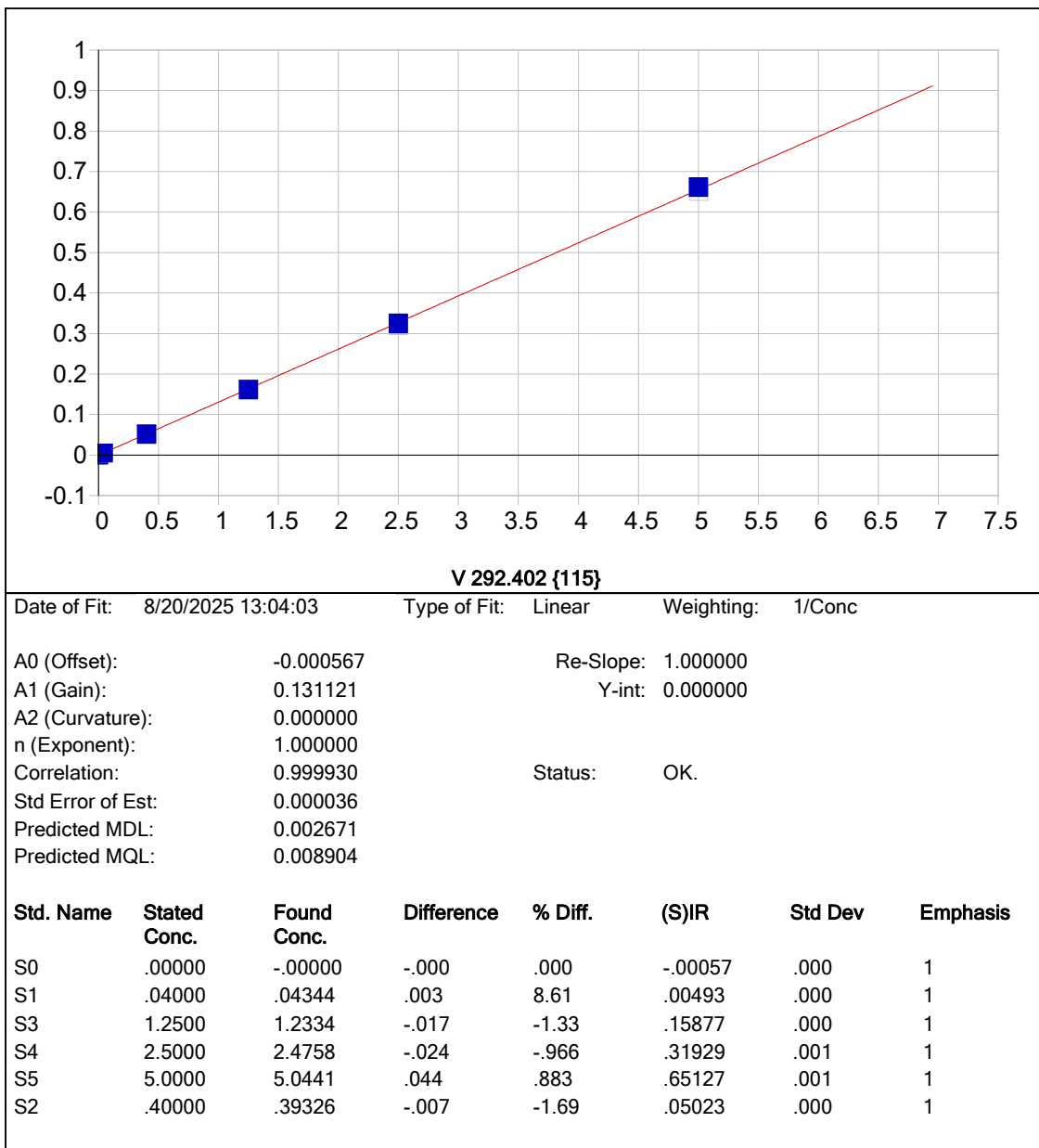


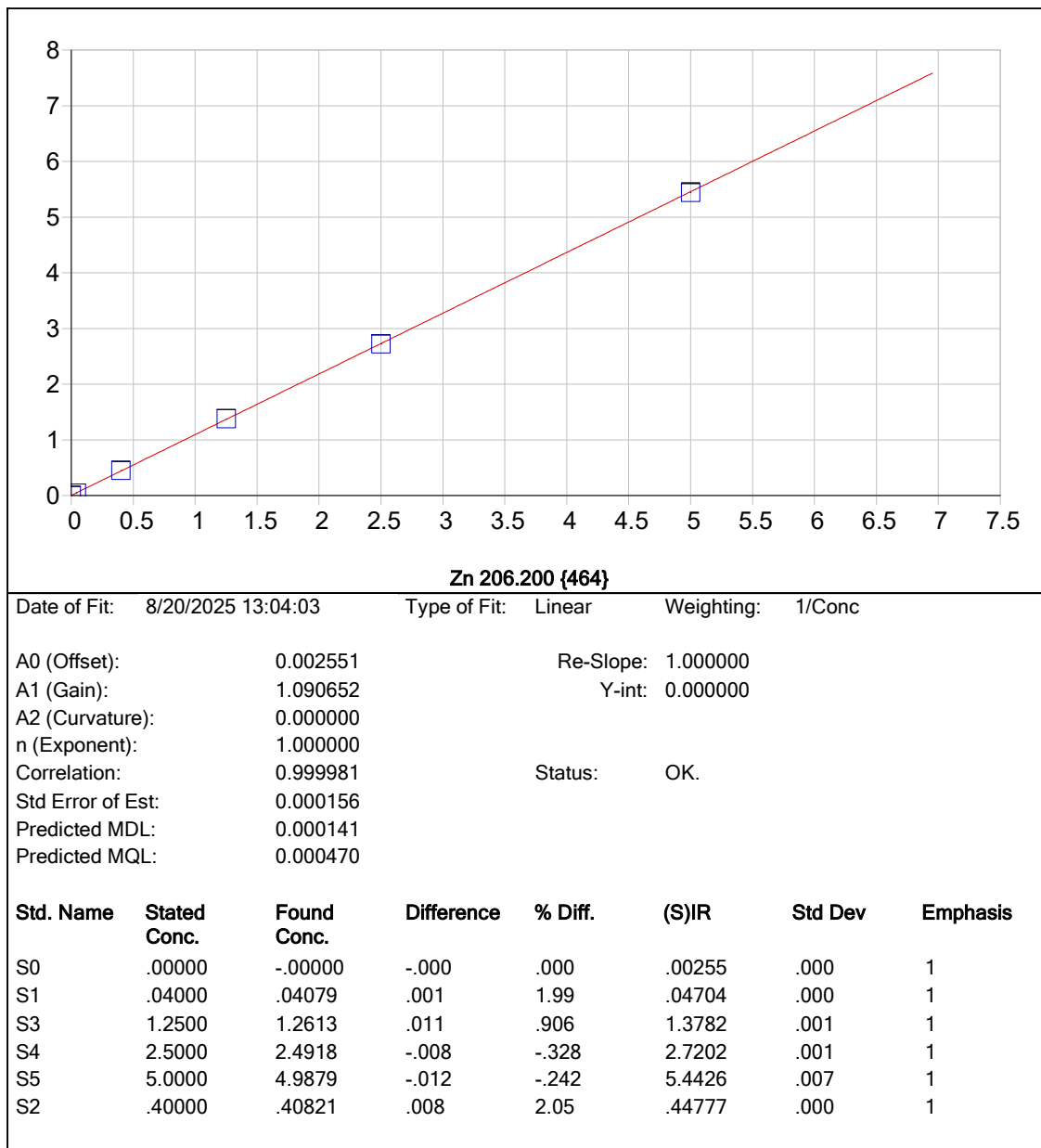


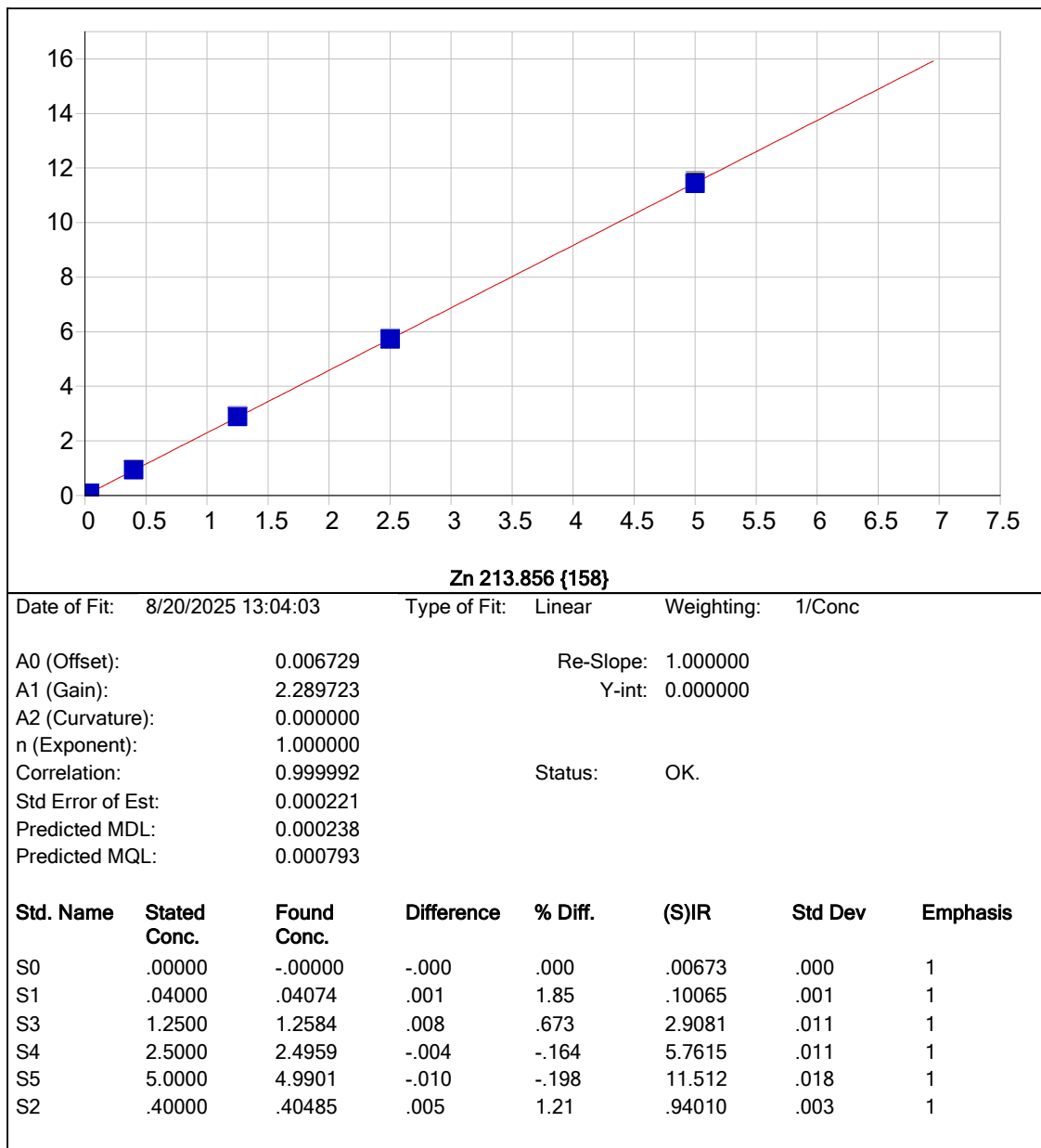


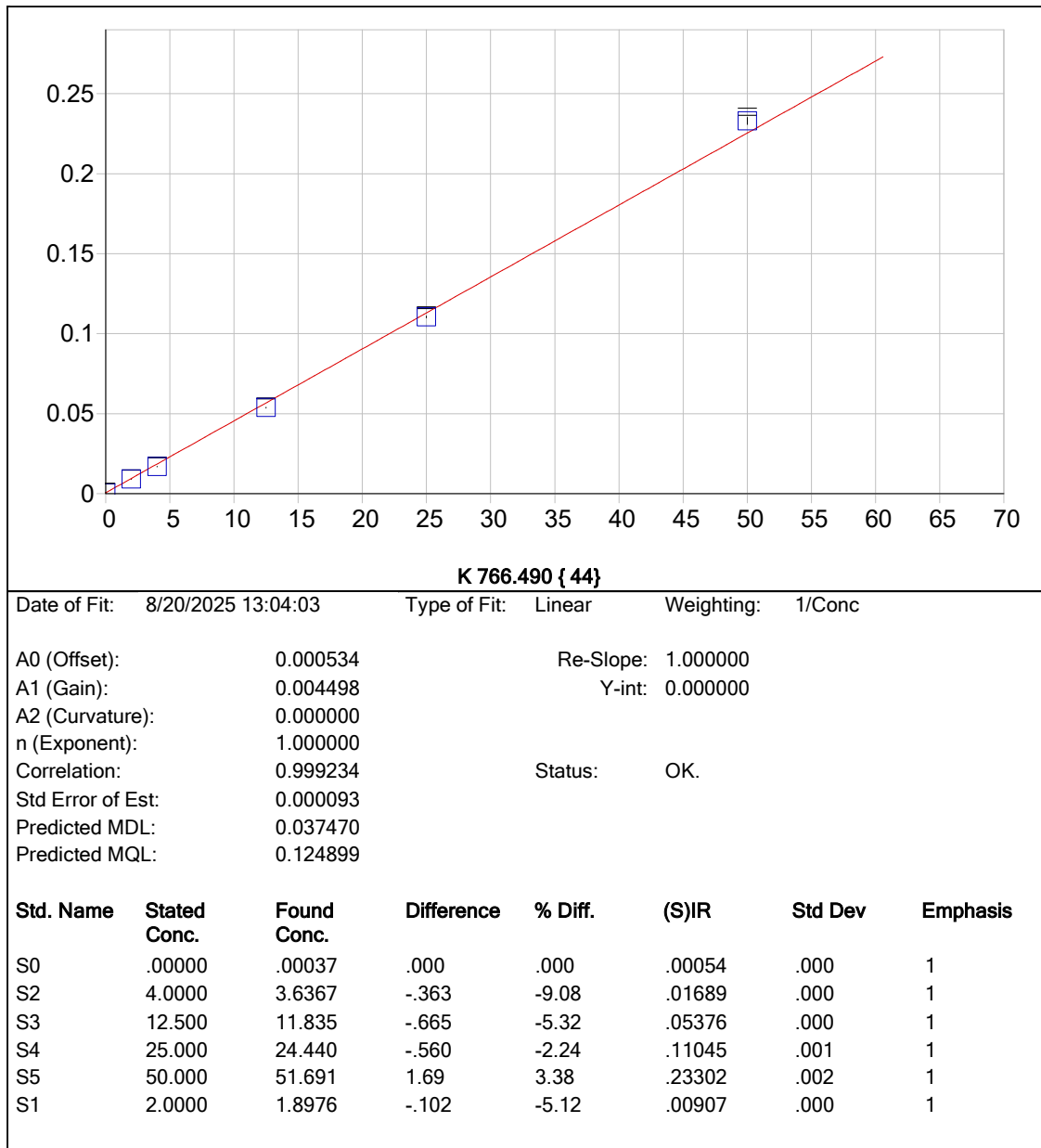
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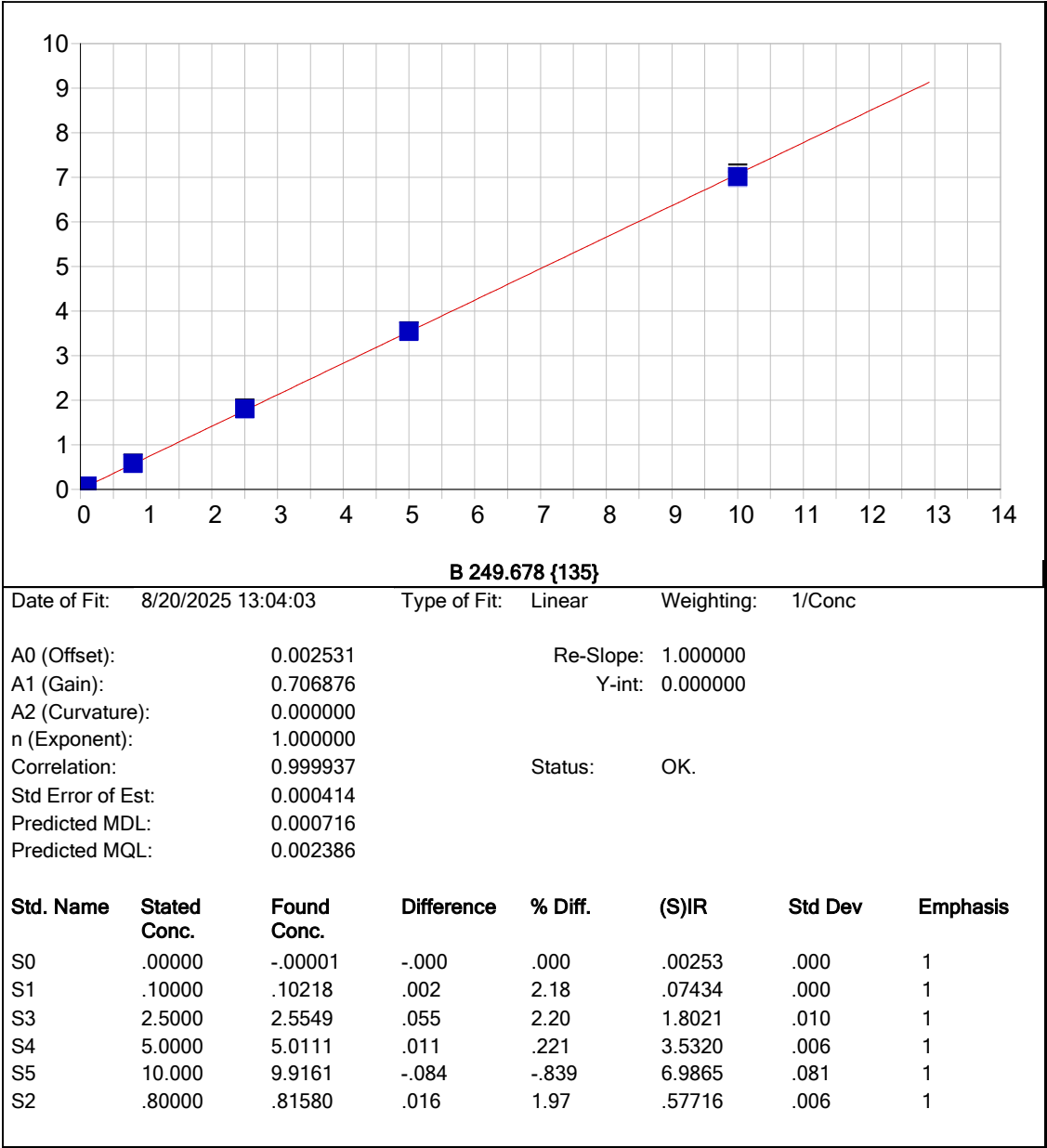


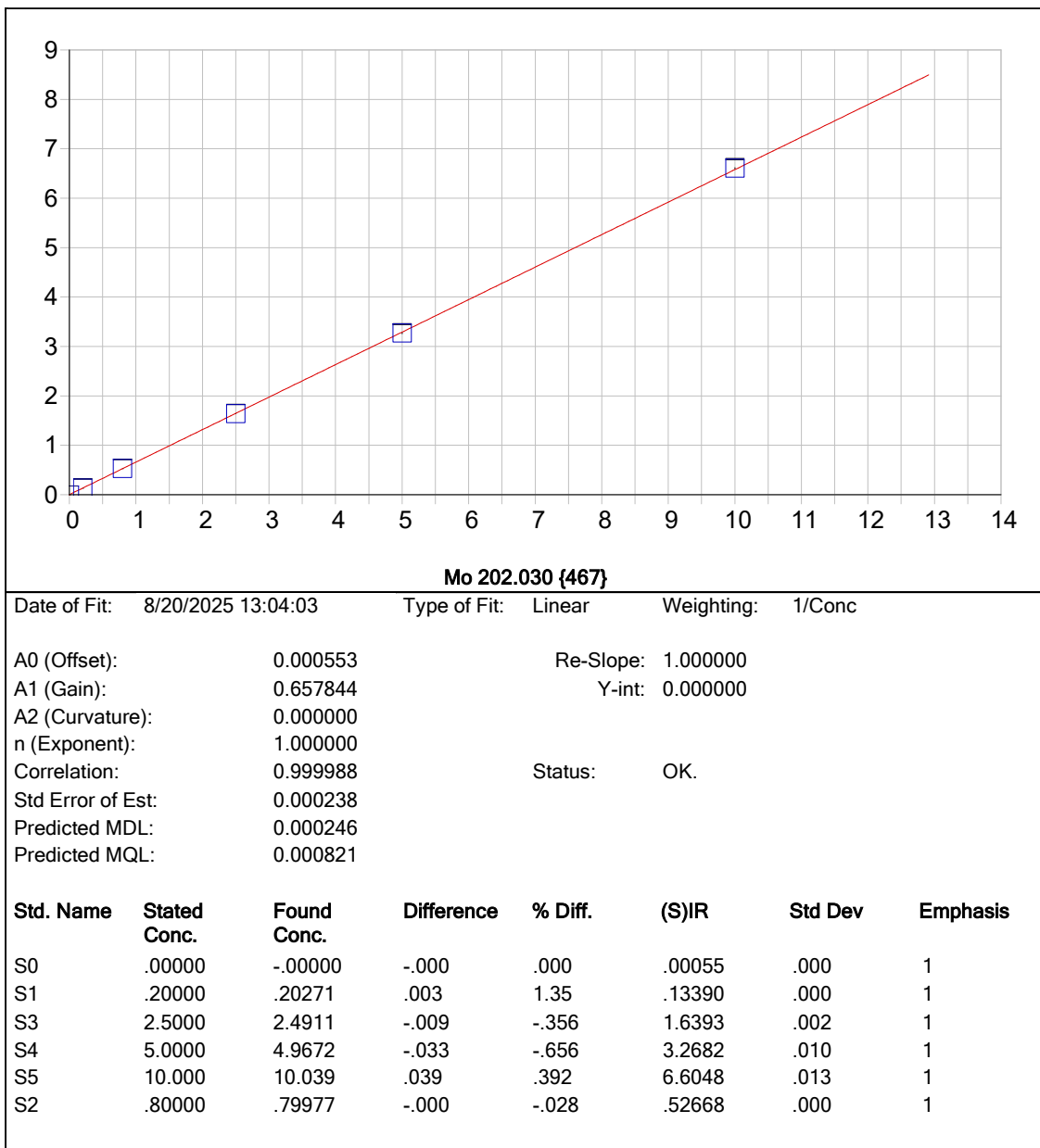




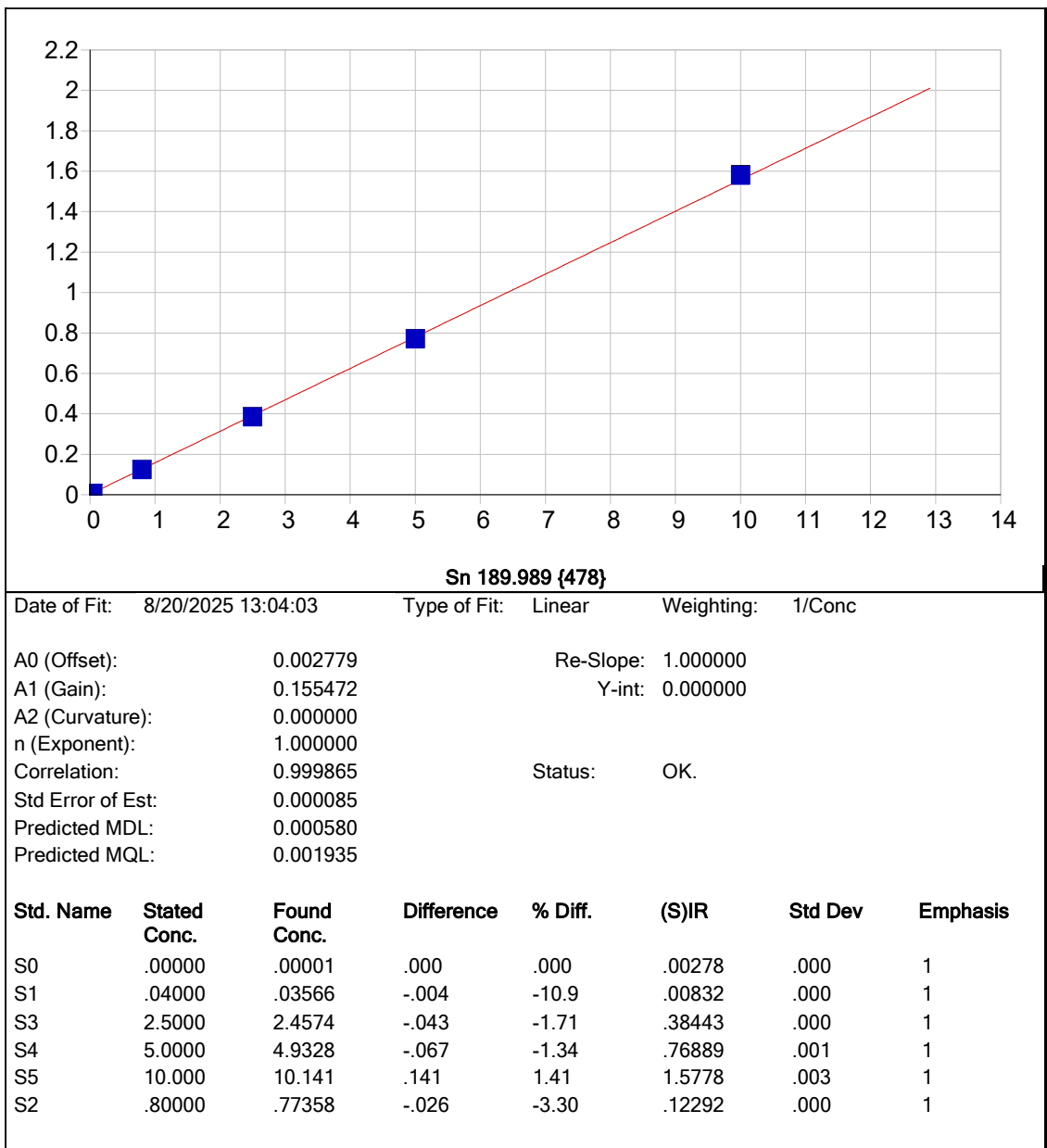


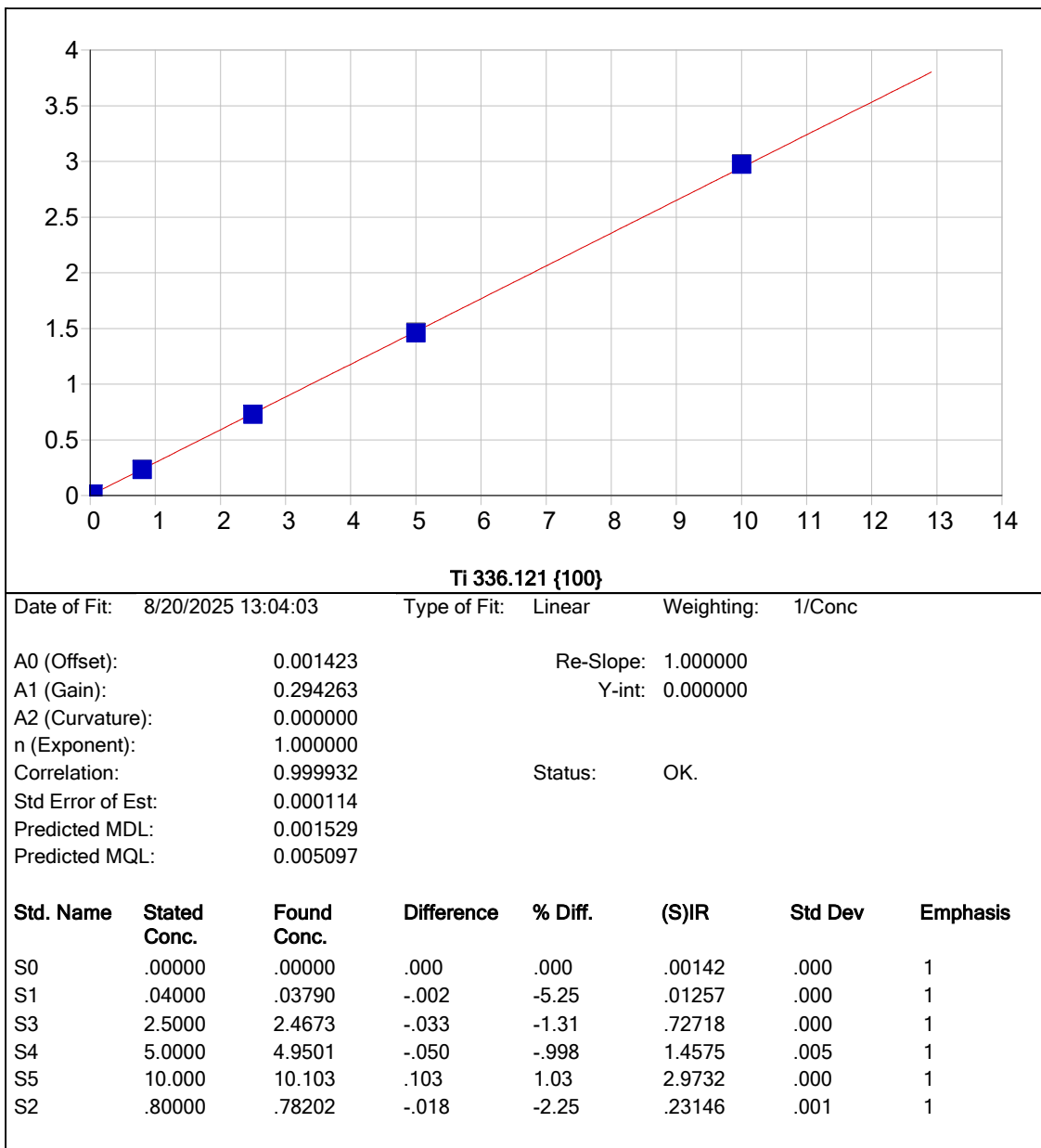


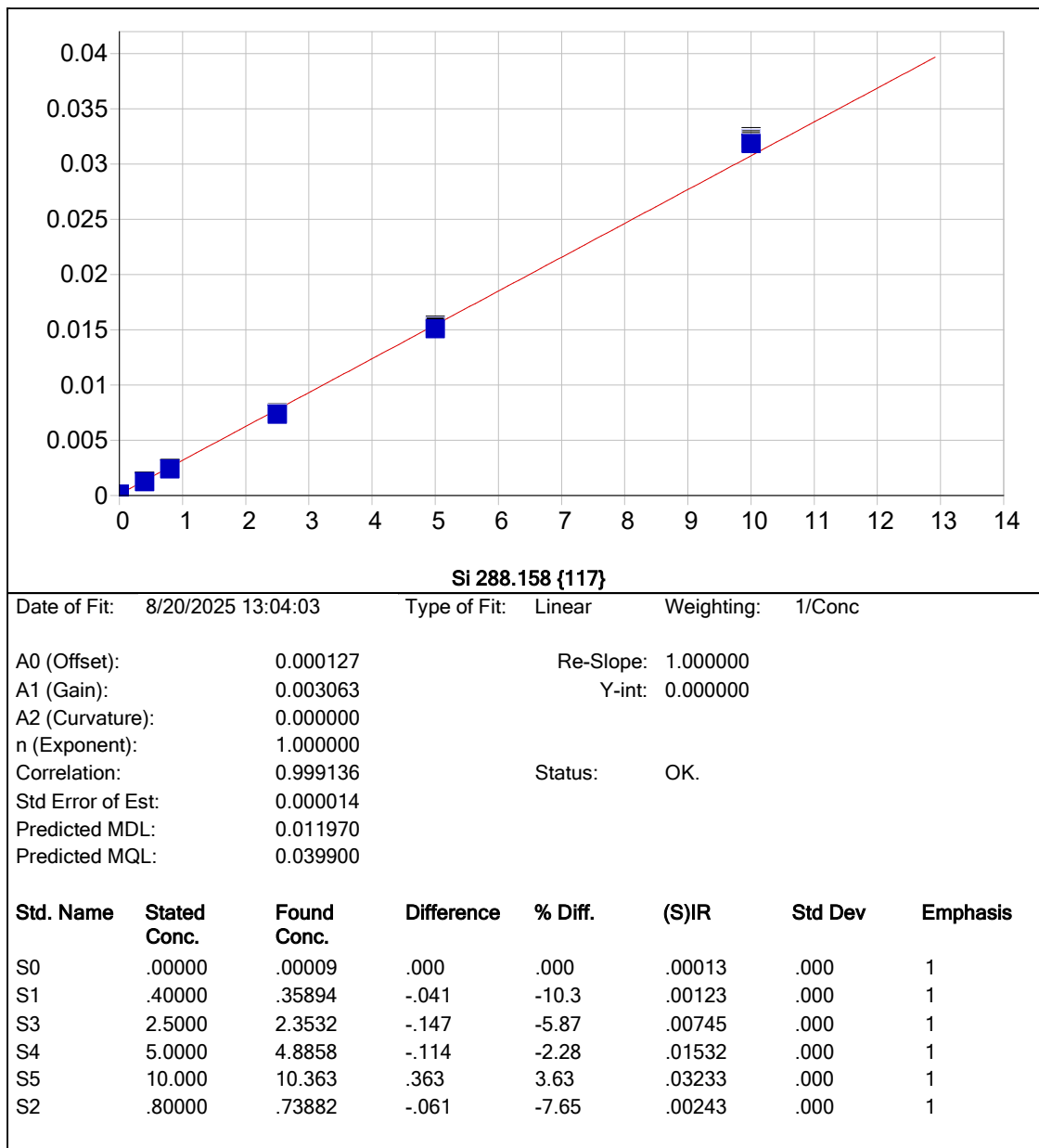


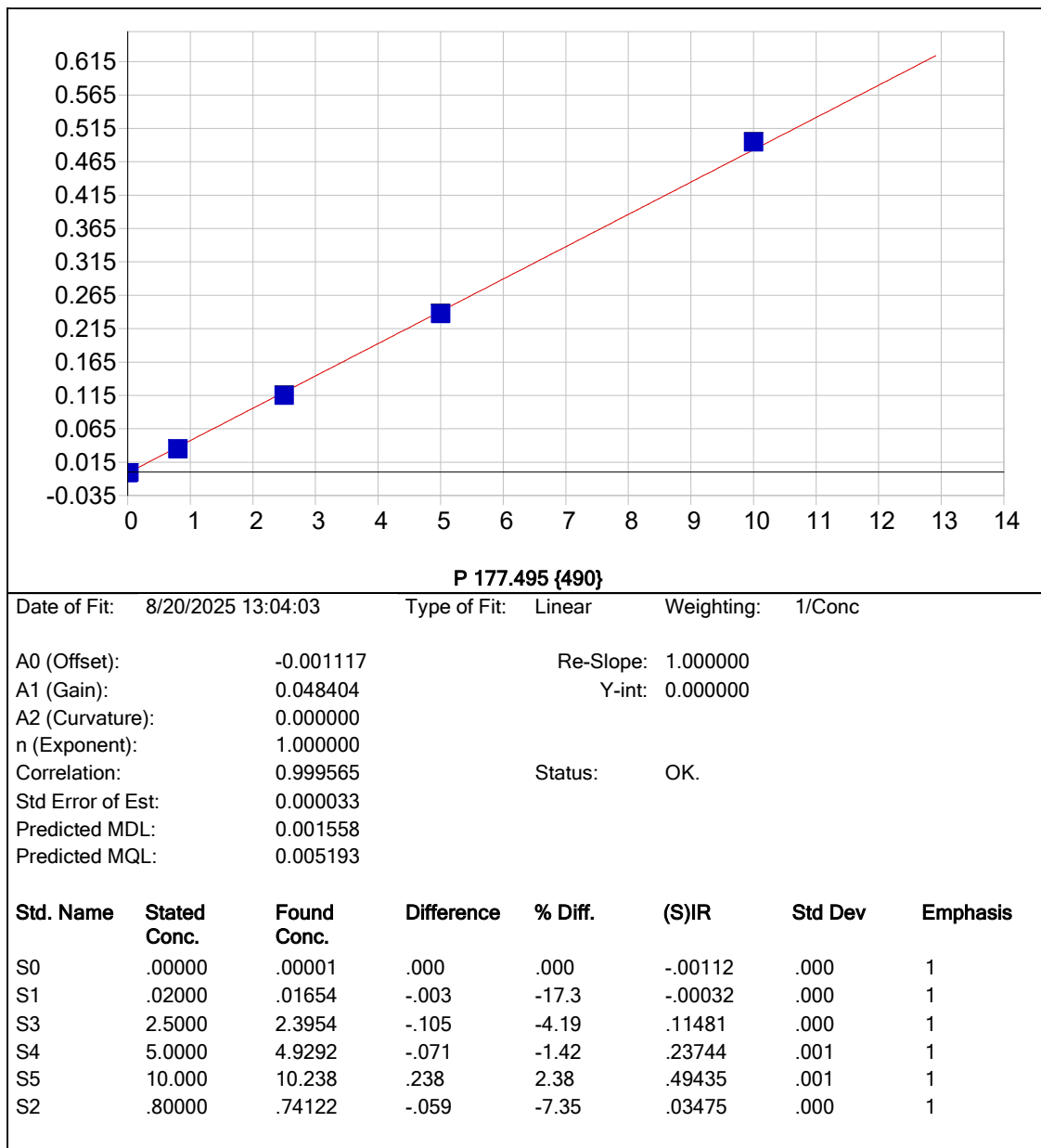


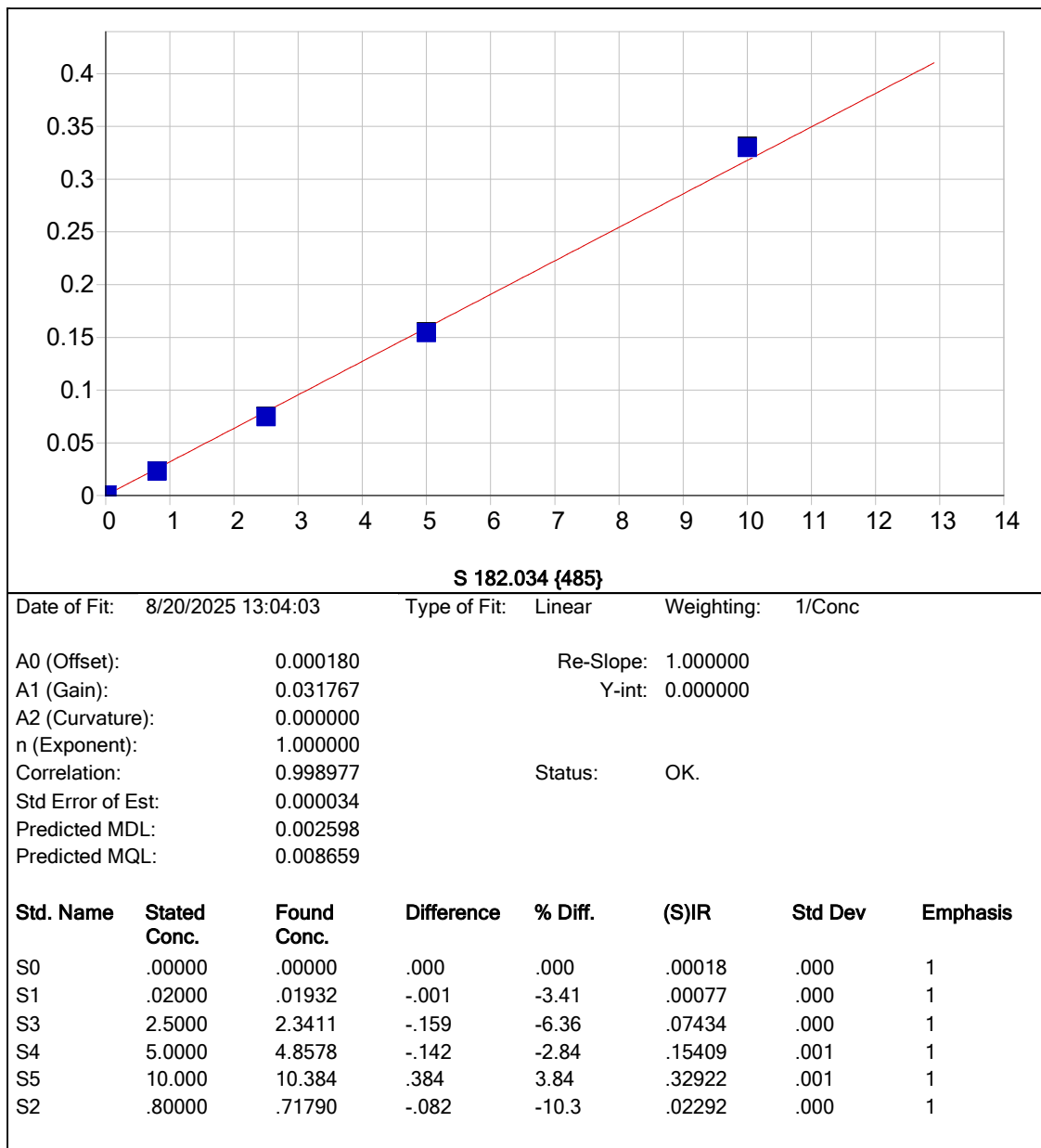
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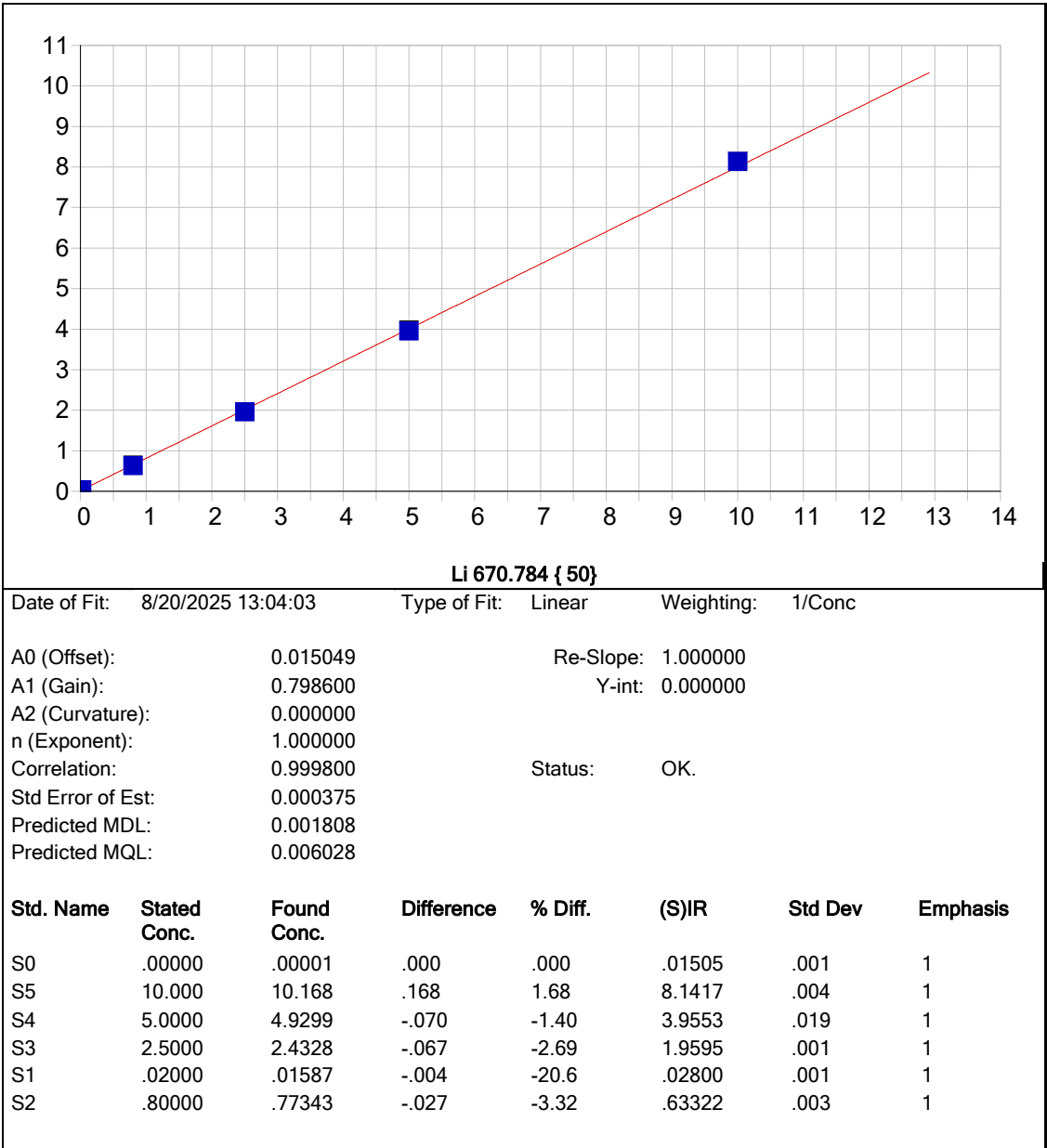


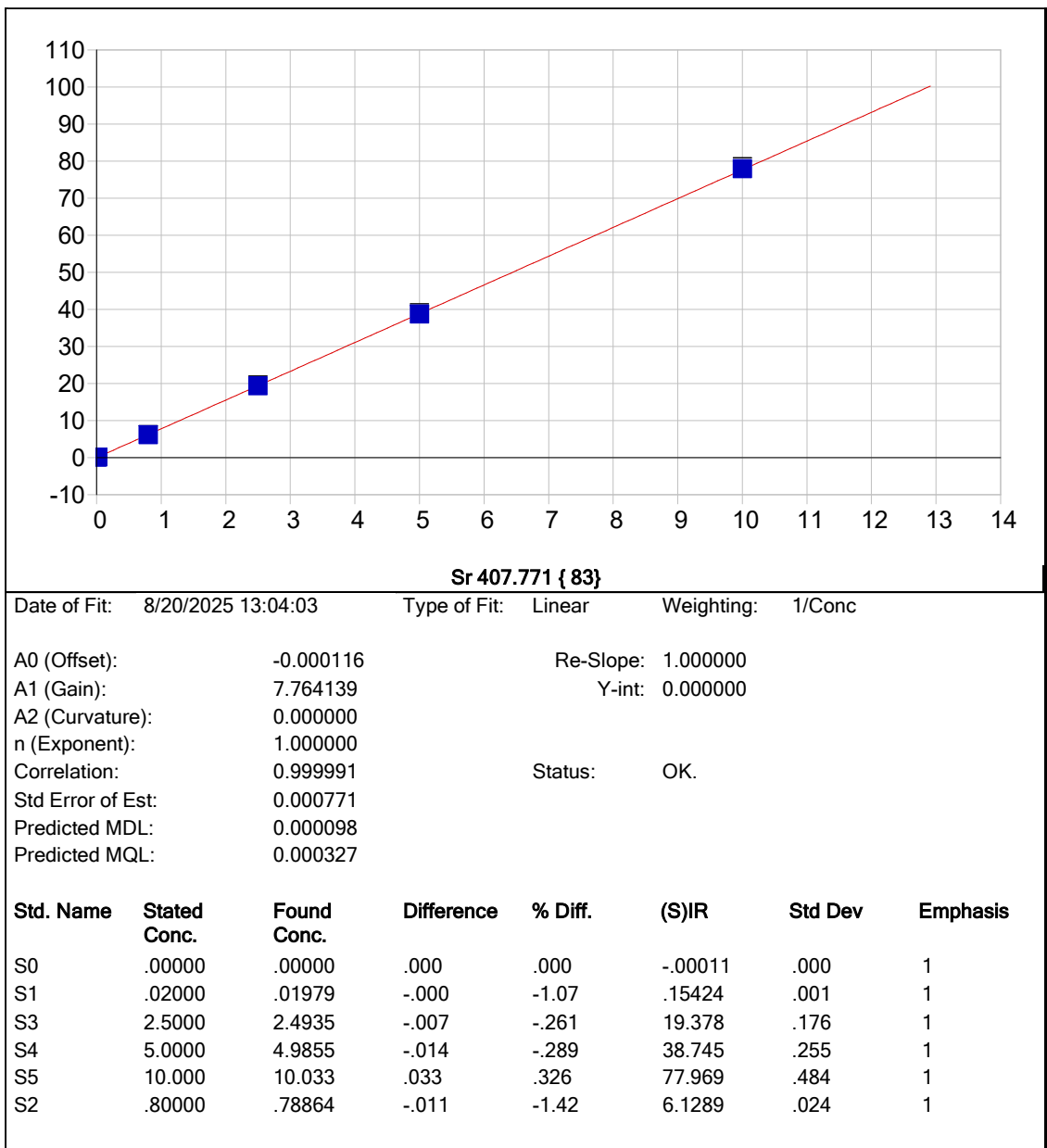


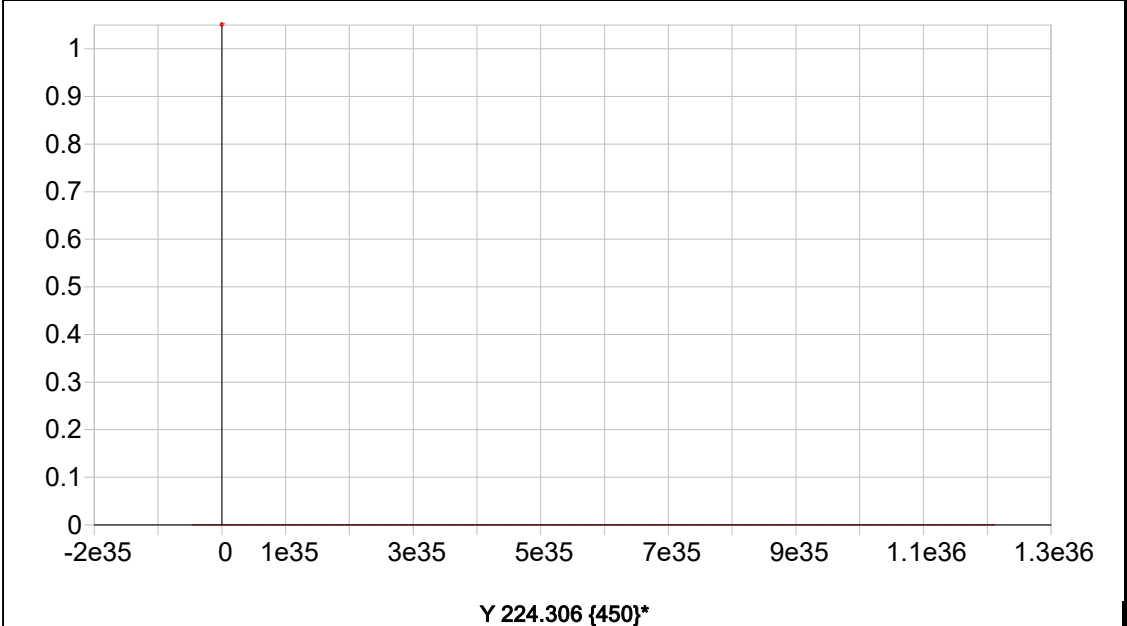




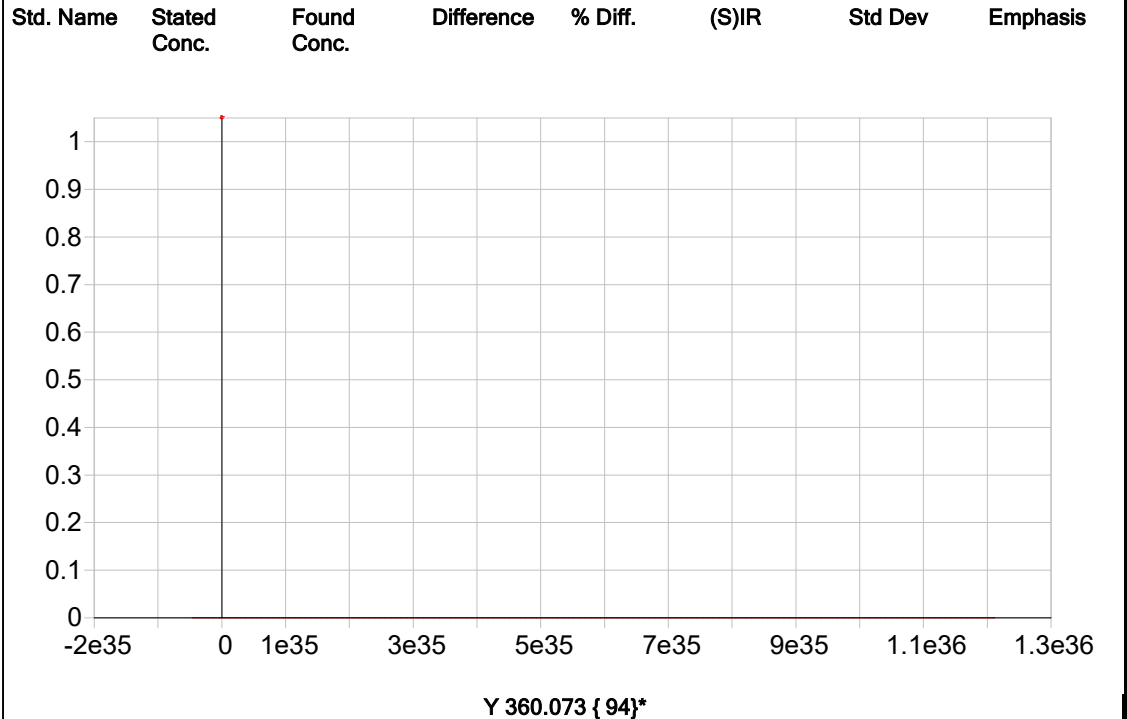




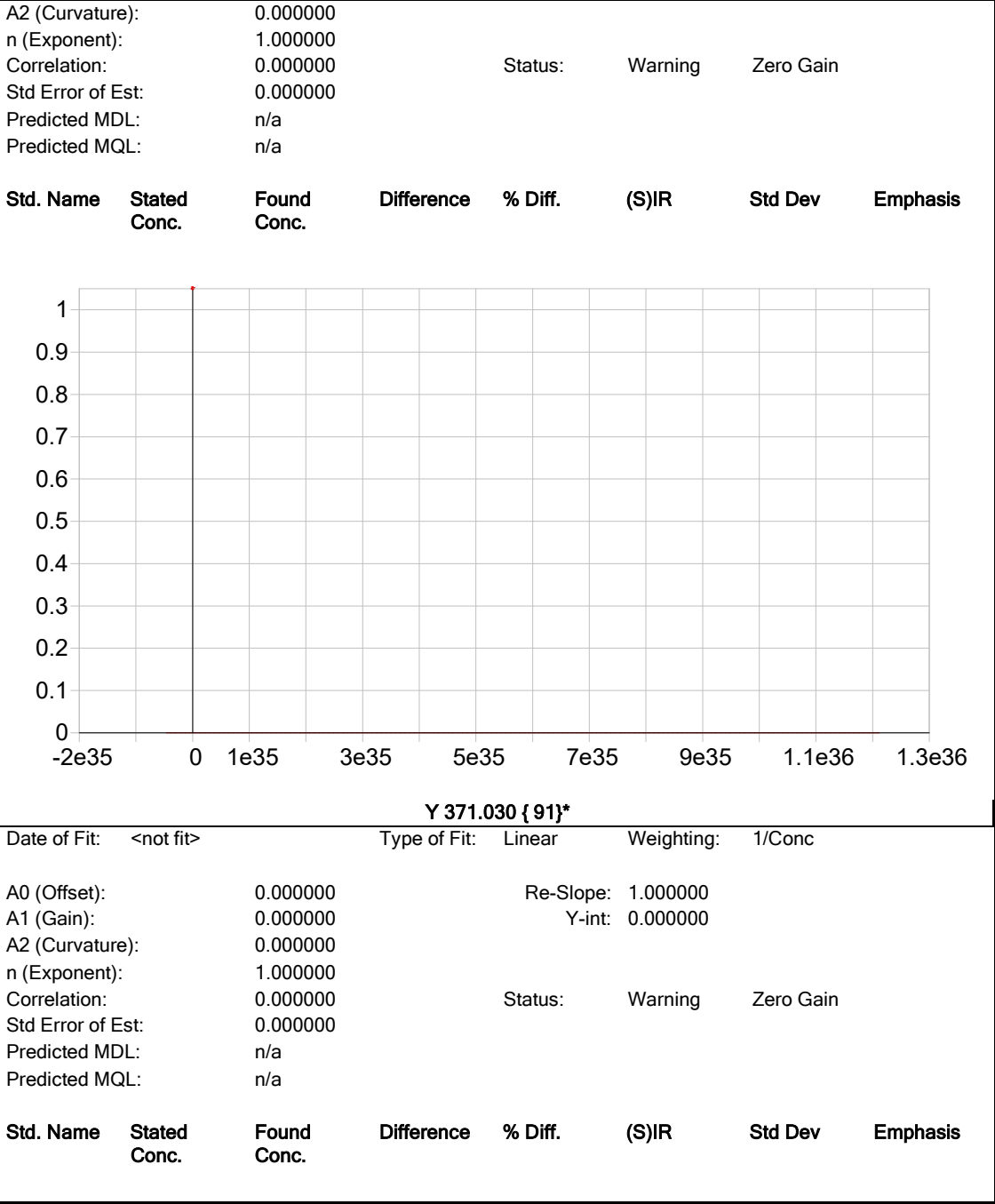


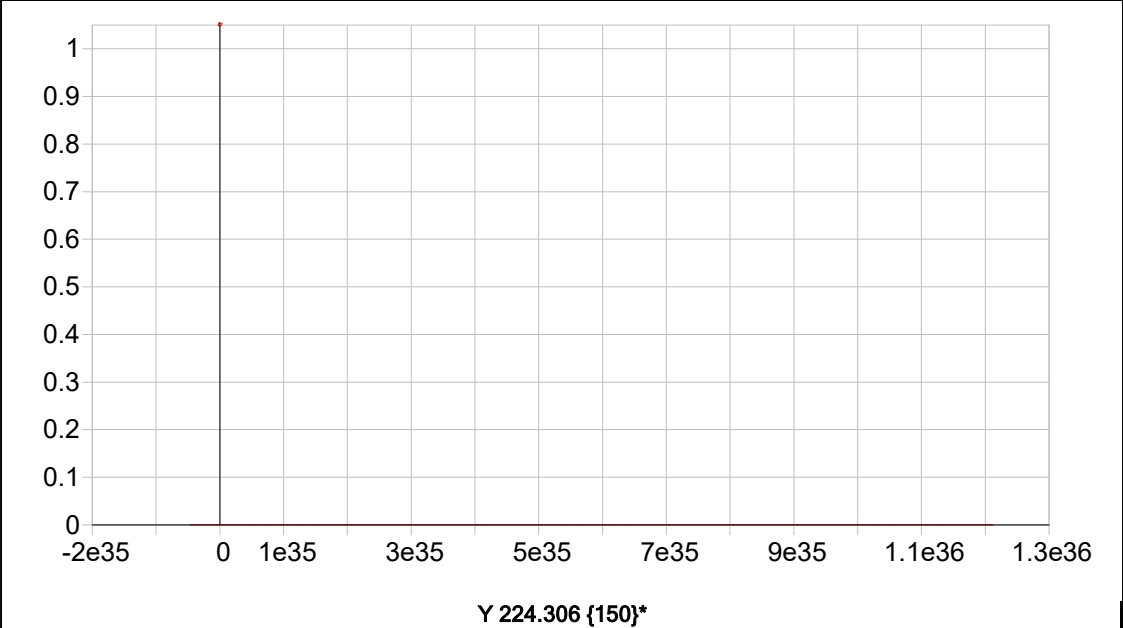


A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.000000	Status:	Warning Zero Gain
Std Error of Est:	0.000000		
Predicted MDL:	n/a		
Predicted MQL:	n/a		

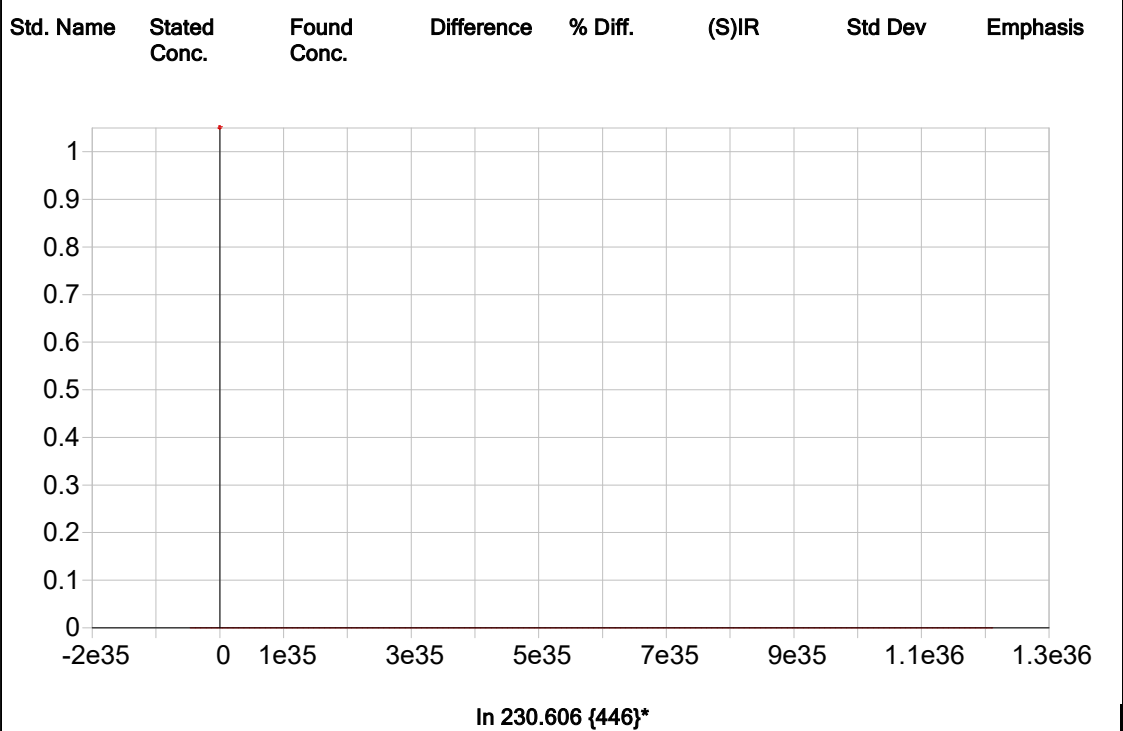


A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000





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

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Sample Name: S0 Acquired: 8/20/2025 12:38:48 Type: Cal
Method: 6010-200.7 NEW(v122) 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	-.00013	.00040	.00002	.00039	.00058	.00081	.07693	-.00107
Stddev	.00008	.00001	.00007	.00006	.00010	.00015	.00168	.00010
%RSD	60.388	2.2998	311.73	15.475	17.431	18.474	2.1875	9.5596
#1	-.00005	.00041	.00003	.00032	.00070	.00067	.07816	-.00115
#2	-.00014	.00041	.00009	.00043	.00053	.00097	.07501	-.00096
#3	-.00020	.00039	-.00005	.00042	.00051	.00081	.07761	-.00110
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	-.00044	.00147	.00028	.00004	.00051	.00004	.00016	.00009
Stddev	.00016	.00055	.00004	.00022	.00013	.00003	.00022	.00014
%RSD	36.062	37.213	14.390	538.51	26.640	70.542	131.87	147.08
#1	-.00062	.00087	.00028	-.00021	.00035	.00007	.00041	.00024
#2	-.00036	.00161	.00024	.00015	.00060	.00001	.00001	-.00003
#3	-.00034	.00194	.00032	.00019	.00056	.00005	.00007	.00007
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	-.00049	-.00076	.00177	-.00057	.00673	.00054	.00253	.00055
Stddev	.00015	.00008	.00007	.00013	.00018	.00019	.00008	.00008
%RSD	31.085	10.266	4.0198	23.332	2.7392	34.950	3.1769	14.516
#1	-.00033	-.00085	.00185	-.00052	.00653	.00060	.00244	.00057
#2	-.00063	-.00070	.00172	-.00072	.00689	.00032	.00255	.00062
#3	-.00053	-.00073	.00175	-.00046	.00676	.00068	.00259	.00046
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	.00278	.00142	.00013	-.00112	.00018	.01505	-.00011	
Stddev	.00013	.00047	.00002	.00008	.00010	.00052	.00025	
%RSD	4.8420	32.875	14.234	7.1108	57.111	3.4843	224.70	
#1	.00271	.00127	.00011	-.00114	.00024	.01564	-.00012	
#2	.00269	.00105	.00014	-.00118	.00024	.01464	-.00036	
#3	.00294	.00195	.00013	-.00103	.00006	.01487	.00014	

Sample Name: S0 Acquired: 8/20/2025 12:38:48 Type: Cal
Method: 6010-200.7 NEW(v122) 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	6256.0	107060.	10471.	4891.9	7868.1
Stddev	11.4	156.	38.	2.7	2.0
%RSD	.18205	.14572	.36071	.05620	.02491
#1	6258.4	107010.	10460.	4890.6	7870.2
#2	6265.9	106930.	10440.	4890.1	7866.4
#3	6243.5	107240.	10513.	4895.1	7867.8

Sample Name: S1 Acquired: 8/20/2025 12:43:11 Type: Cal
Method: 6010-200.7 NEW(v122) 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	.00094	.00408	.00226	.00129	.00513	.00956	.30808	.04259
Stddev	.00000	.00005	.00010	.00009	.00005	.00068	.00204	.00032
%RSD	.39114	1.2908	4.5381	6.7381	1.0657	7.1080	.66320	.75609
#1	.00094	.00405	.00232	.00121	.00514	.01012	.30594	.04294
#2	.00094	.00406	.00231	.00138	.00507	.00881	.30830	.04230
#3	.00095	.00414	.00214	.00128	.00517	.00976	.31001	.04255
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	.01683	.11919	.00219	.03014	.01386	.00036	.00934	.02495
Stddev	.00014	.00013	.00005	.00014	.00016	.00001	.00029	.00003
%RSD	.81582	.11044	2.3671	.45375	1.1687	2.1638	3.1363	.13914
#1	.01698	.11904	.00223	.03029	.01389	.00035	.00900	.02494
#2	.01679	.11929	.00213	.03010	.01369	.00036	.00950	.02492
#3	.01672	.11924	.00221	.03003	.01401	.00037	.00951	.02499
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	.02320	.00123	.01755	.00493	.10065	.00907	.07434	.13390
Stddev	.00006	.00011	.00007	.00007	.00078	.00008	.00038	.00026
%RSD	.24518	8.5252	.41613	1.5133	.77800	.92000	.51331	.19167
#1	.02326	.00115	.01750	.00485	.10076	.00898	.07440	.13374
#2	.02314	.00135	.01752	.00499	.09982	.00915	.07469	.13377
#3	.02319	.00120	.01763	.00496	.10137	.00907	.07393	.13420
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	.00832	.01257	.00123	-.00032	.00077	.02800	.15424	
Stddev	.00012	.00019	.00005	.00006	.00004	.00102	.00056	
%RSD	1.4615	1.5266	4.2022	18.894	5.8318	3.6505	.36262	
#1	.00818	.01272	.00124	-.00025	.00071	.02728	.15430	
#2	.00842	.01235	.00117	-.00036	.00079	.02756	.15478	
#3	.00835	.01263	.00127	-.00034	.00080	.02917	.15366	

Sample Name: S1 Acquired: 8/20/2025 12:43:11 Type: Cal
Method: 6010-200.7 NEW(v122) 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	6288.6	103260.	10558.	4846.4	7760.8
Stddev	5.5	41.	9.	8.1	4.2
%RSD	.08681	.04013	.08575	.16767	.05425
#1	6292.9	103260.	10552.	4855.8	7758.2
#2	6290.6	103300.	10554.	4842.5	7765.6
#3	6282.5	103210.	10569.	4841.0	7758.5

Sample Name: S2 Acquired: 8/20/2025 12:47:33 Type: Cal
Method: 6010-200.7 NEW(v122) 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	.03930	.07217	.15382	.03733	.07366	.12339	3.7209	.28081
Stddev	.00012	.00056	.00043	.00004	.00014	.00038	.0167	.00296
%RSD	.31377	.77381	.27987	.11783	.18701	.30783	.44967	1.0543
#1	.03945	.07186	.15346	.03729	.07366	.12295	3.7020	.27871
#2	.03925	.07184	.15371	.03732	.07379	.12356	3.7339	.28420
#3	.03922	.07282	.15430	.03737	.07352	.12365	3.7267	.27953
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	1.1409	.23121	.03160	.39760	.13072	.00256	.16801	.04623
Stddev	.0011	.00083	.00013	.00053	.00036	.00003	.00058	.00030
%RSD	.09387	.35801	.41697	.13338	.27835	1.0021	.34439	.64684
#1	1.1397	.23214	.03164	.39748	.13112	.00258	.16735	.04588
#2	1.1416	.23094	.03172	.39818	.13041	.00253	.16844	.04641
#3	1.1415	.23056	.03146	.39714	.13063	.00258	.16825	.04639
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	.23182	.03895	.03197	.05023	.94010	.01689	.57716	.52668
Stddev	.00042	.00008	.00024	.00030	.00303	.00010	.00554	.00043
%RSD	.18110	.20615	.74421	.60279	.32236	.59621	.96001	.08215
#1	.23134	.03893	.03193	.05033	.94220	.01678	.57455	.52696
#2	.23203	.03888	.03176	.05048	.94148	.01690	.58352	.52618
#3	.23210	.03904	.03223	.04989	.93663	.01699	.57340	.52690
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	.12292	.23146	.00243	.03475	.02292	.63322	6.1289	
Stddev	.00021	.00117	.00002	.00016	.00006	.00258	.0238	
%RSD	.16682	.50355	.66322	.45917	.25294	.40703	.38838	
#1	.12316	.23014	.00241	.03486	.02287	.63027	6.1043	
#2	.12283	.23188	.00244	.03457	.02298	.63502	6.1518	
#3	.12278	.23236	.00243	.03483	.02291	.63438	6.1307	

Sample Name: S2 Acquired: 8/20/2025 12:47:33 Type: Cal
Method: 6010-200.7 NEW(v122) 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	6221.8	106160.	10665.	4878.6	7568.0
Stddev	7.9	243.	88.	24.0	4.3
%RSD	.12652	.22849	.82897	.49157	.05644
#1	6213.6	105880.	10714.	4862.9	7566.9
#2	6222.5	106270.	10563.	4866.6	7564.4
#3	6229.3	106320.	10718.	4906.2	7572.7

Sample Name: S3 Acquired: 8/20/2025 12:51:37 Type: Cal
Method: 6010-200.7 NEW(v122) 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	.12414	.22406	.48257	.11724	.23036	.38434	11.699	.88093
Stddev	.00036	.00246	.00067	.00036	.00053	.00133	.028	.00269
%RSD	.28659	1.0998	.13841	.30712	.22821	.34724	.24005	.30565
#1	.12430	.22378	.48334	.11735	.23043	.38500	11.715	.88279
#2	.12373	.22175	.48224	.11684	.22981	.38280	11.715	.87784
#3	.12438	.22666	.48213	.11754	.23085	.38521	11.667	.88216
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	3.6437	.71845	.09798	1.2598	.40395	.00809	.52626	.14314
Stddev	.0010	.00267	.00047	.0011	.00060	.00009	.00062	.00104
%RSD	.02891	.37094	.48285	.08543	.14838	1.1123	.11784	.72381
#1	3.6429	.71875	.09751	1.2596	.40463	.00804	.52696	.14288
#2	3.6433	.71565	.09846	1.2588	.40351	.00820	.52605	.14226
#3	3.6449	.72096	.09797	1.2609	.40370	.00804	.52577	.14428
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	.73348	.12260	.09818	.15877	2.9081	.05376	1.8021	1.6393
Stddev	.00026	.00027	.00065	.00010	.0107	.00024	.0102	.0018
%RSD	.03526	.22014	.66446	.06017	.36846	.45132	.56690	.10917
#1	.73321	.12289	.09771	.15871	2.9199	.05358	1.8066	1.6386
#2	.73351	.12236	.09893	.15872	2.8991	.05404	1.7905	1.6380
#3	.73372	.12255	.09791	.15888	2.9052	.05367	1.8094	1.6414
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	.38443	.72718	.00745	.11481	.07434	1.9595	19.378	
Stddev	.00037	.00035	.00003	.00044	.00031	.0010	.176	
%RSD	.09605	.04848	.38465	.38389	.41730	.04964	.90983	
#1	.38401	.72758	.00742	.11461	.07411	1.9606	19.370	
#2	.38471	.72692	.00747	.11450	.07422	1.9587	19.206	
#3	.38458	.72704	.00747	.11531	.07470	1.9591	19.558	

Sample Name: S3 Acquired: 8/20/2025 12:51:37 Type: Cal
Method: 6010-200.7 NEW(v122) 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	6120.5	104150.	10584.	4786.4	7247.1
Stddev	10.3	362.	66.	7.8	14.3
%RSD	.16844	.34724	.62212	.16357	.19774
#1	6132.4	104540.	10585.	4782.8	7263.6
#2	6113.7	104070.	10650.	4781.1	7238.7
#3	6115.5	103830.	10518.	4795.4	7238.9

Sample Name: S4 Acquired: 8/20/2025 12:55:41 Type: Cal
Method: 6010-200.7 NEW(v122) 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	.25145	.43732	.96767	.23625	.46452	.76953	23.236	1.7040
Stddev	.00083	.00391	.00213	.00095	.00260	.00055	.119	.0061
%RSD	.32844	.89314	.21965	.40153	.55869	.07175	.51294	.35888
#1	.25085	.43646	.96522	.23574	.46213	.76994	23.342	1.7006
#2	.25110	.43391	.96874	.23566	.46417	.76976	23.107	1.7111
#3	.25239	.44158	.96905	.23734	.46728	.76890	23.259	1.7005
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	7.3832	1.4225	.19269	2.5508	.79873	.01650	1.0441	.28621
Stddev	.0078	.0008	.00060	.0049	.00159	.00007	.0069	.00069
%RSD	.10507	.05922	.31132	.19226	.19935	.44395	.66183	.24262
#1	7.3755	1.4226	.19226	2.5461	.79720	.01647	1.0414	.28617
#2	7.3831	1.4234	.19338	2.5505	.79859	.01644	1.0389	.28693
#3	7.3910	1.4217	.19244	2.5559	.80038	.01658	1.0519	.28554
Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.4810	.24507	.20642	.31929	5.7615	.11045	3.5320	3.2682
Stddev	.0033	.00030	.00169	.00109	.0105	.00060	.0063	.0097
%RSD	.22215	.12081	.81671	.34022	.18285	.54704	.17821	.29687
#1	1.4780	.24473	.20579	.31868	5.7734	.11025	3.5247	3.2604
#2	1.4806	.24524	.20515	.32054	5.7578	.10998	3.5358	3.2651
#3	1.4845	.24523	.20834	.31864	5.7533	.11113	3.5354	3.2791
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	.76889	1.4575	.01532	.23744	.15409	3.9553	38.745	
Stddev	.00140	.0053	.00008	.00058	.00075	.0191	.255	
%RSD	.18244	.36647	.53672	.24260	.48750	.48184	.65902	
#1	.76729	1.4552	.01524	.23698	.15389	3.9498	38.461	
#2	.76954	1.4537	.01532	.23725	.15346	3.9395	38.955	
#3	.76986	1.4636	.01541	.23808	.15492	3.9765	38.820	

Sample Name: S4 Acquired: 8/20/2025 12:55:41 Type: Cal
Method: 6010-200.7 NEW(v122) 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	6038.0	104170.	10843.	4728.7	7004.4
Stddev	13.1	183.	29.	12.1	13.4
%RSD	.21639	.17548	.27071	.25494	.19064
#1	6053.0	104220.	10840.	4719.8	7019.8
#2	6032.3	103970.	10815.	4723.9	6997.4
#3	6028.8	104320.	10873.	4742.4	6996.0

Sample Name: S5 Acquired: 8/20/2025 12:59:53 Type: Cal
Method: 6010-200.7 NEW(v122) 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	.51440	.89195	2.0068	.48032	.94694	1.5664	47.963	3.3616
Stddev	.00118	.01179	.0021	.00097	.00245	.0039	.583	.0350
%RSD	.22869	1.3215	.10465	.20148	.25913	.24684	1.2147	1.0398
#1	.51492	.90555	2.0086	.48062	.94543	1.5627	47.593	3.3327
#2	.51305	.88467	2.0073	.47924	.94561	1.5661	47.663	3.3518
#3	.51522	.88563	2.0044	.48111	.94977	1.5704	48.635	3.4005
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	15.248	2.8704	.38611	5.2914	1.6053	.03423	2.1026	.57904
Stddev	.014	.0051	.00139	.0014	.0011	.00034	.0021	.00219
%RSD	.08958	.17630	.35932	.02658	.07045	.99373	.10192	.37833
#1	15.263	2.8657	.38754	5.2924	1.6049	.03451	2.1002	.57738
#2	15.246	2.8697	.38478	5.2920	1.6045	.03433	2.1041	.57821
#3	15.235	2.8757	.38600	5.2898	1.6066	.03385	2.1035	.58152
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	3.0632	.49951	.43569	.65127	11.512	.23302	6.9865	6.6048
Stddev	.0016	.00065	.00549	.00123	.018	.00219	.0812	.0128
%RSD	.05236	.12928	1.2603	.18928	.15411	.93845	1.1621	.19441
#1	3.0647	.49982	.44012	.65012	11.532	.23460	6.9058	6.6047
#2	3.0634	.49877	.43740	.65111	11.507	.23393	6.9854	6.5920
#3	3.0615	.49994	.42955	.65257	11.498	.23052	7.0682	6.6177
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	1.5778	2.9732	.03233	.49435	.32922	8.1417	77.969	
Stddev	.0030	.0002	.00015	.00054	.00122	.0036	.484	
%RSD	.18799	.00661	.47217	.10999	.36967	.04467	.62037	
#1	1.5811	2.9732	.03244	.49496	.33051	8.1404	78.517	
#2	1.5767	2.9730	.03239	.49393	.32810	8.1458	77.601	
#3	1.5755	2.9734	.03216	.49415	.32905	8.1388	77.789	

Sample Name: S5 Acquired: 8/20/2025 12:59:53 Type: Cal
Method: 6010-200.7 NEW(v122) 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	5897.1	102290.	10903.	4616.5	6637.0
Stddev	7.6	279.	86.	22.0	10.8
%RSD	.12859	.27238	.78778	.47731	.16217
#1	5893.3	101980.	10979.	4593.7	6624.8
#2	5905.9	102360.	10921.	4617.9	6641.0
#3	5892.2	102520.	10810.	4637.7	6645.2

Sample Name: ICV01 Acquired: 8/20/2025 13:04:03 Type: Unk
Method: 6010-200.7 NEW(v122) 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	3.950731	3.920598	3.974574	3.988234	4.062391	7.804015
Stddev	.012953	.025265	.001029	.006994	.003972	.018181
%RSD	.3278645	.6444272	.0258883	.1753772	.0977785	.2329716
#1	3.963563	3.949437	3.974273	3.995734	4.064701	7.783229
#2	3.937660	3.902360	3.975720	3.981888	4.057804	7.811854
#3	3.950970	3.909997	3.973730	3.987081	4.064667	7.816962
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.744888	.2172733	1.956807	19.40919	.8087891	1.973282
Stddev	.085747	.0017318	.000969	.09296	.0014401	.001584
%RSD	1.107147	.7970799	.0495091	.4789259	.1780562	.0802600
#1	7.657758	.2167542	1.955755	19.31665	.8099856	1.971475
#2	7.829182	.2158603	1.957006	19.40838	.8091909	1.973940
#3	7.747724	.2192053	1.957661	19.50255	.8071908	1.974430
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.010912	3.974810	1.946811	19.35609	1.970252	1.012755
Stddev	.001531	.019732	.008587	.10116	.002545	.001388
%RSD	.1514003	.4964357	.4410961	.5226034	.1291902	.1370900
#1	1.011530	3.966218	1.939272	19.28622	1.967386	1.013667
#2	1.012038	3.997382	1.945002	19.30995	1.971121	1.011157
#3	1.009170	3.960830	1.956159	19.47208	1.972249	1.013441
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.90335	1.944991	2.011997	19.55215	4.067550	4.022571
Stddev	.07866	.006542	.003451	.08650	.034637	.002428
%RSD	.4161237	.3363651	.1715026	.4423855	.8515486	.0603651
#1	18.89300	1.937590	2.011575	19.51031	4.057411	4.023661
#2	18.98668	1.947382	2.015639	19.65161	4.039113	4.019789
#3	18.83038	1.950002	2.008776	19.49453	4.106125	4.024263

Sample Name: ICV01 Acquired: 8/20/2025 13:04:03 Type: Unk
Method: 6010-200.7 NEW(v122) 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	3.945727	3.903723	3.974838	F .0057284	F .0245904	F -.006851
Stddev	.004362	.016584	.011996	.0013709	.0036556	.000496
%RSD	.1105399	.4248305	.3018079	23.93233	14.86599	7.234621
#1	3.943969	3.886660	3.973836	.0054845	.0277725	-.006961
#2	3.942518	3.904726	3.987303	.0072049	.0254012	-.006309
#3	3.950693	3.919783	3.963373	.0044957	.0205974	-.007282
Elem	Sr4077					
Units	ppm					
Avg	F -.003297					
Stddev	.000055					
%RSD	1.671764					
#1	-.003290					
#2	-.003356					
#3	-.003246					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6202.883	105390.3	11232.78	4807.705	7286.035	
Stddev	4.773	200.8	74.19	23.017	5.314	
%RSD	.0769476	.1904876	.6604819	.4787460	.0729272	
#1	6201.303	105499.5	11288.17	4828.098	7291.296	
#2	6199.100	105158.6	11261.67	4782.749	7280.670	
#3	6208.246	105512.8	11148.48	4812.269	7286.138	

Sample Name: LLICV01 Acquired: 8/20/2025 13:17:31 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0200107	.0411097	.0119706	.0212397	.0492522	.1053737
Stddev	.0022923	.0005427	.0005698	.0018497	.0003157	.0038232
%RSD	11.45525	1.320225	4.759637	8.708558	.6409471	3.628226
#1	.0174006	.0417152	.0114279	.0191933	.0488979	.1033249
#2	.0216966	.0409471	.0119198	.0217335	.0495035	.1030115
#3	.0209348	.0406669	.0125641	.0227924	.0493553	.1097847
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0976588	.0061540	.0056018	2.047333	.0097031	.0286729
Stddev	.0014044	.0000792	.0001158	.016194	.0001417	.0001689
%RSD	1.438090	1.287239	2.067117	.7909659	1.459822	.5892104
#1	.0973850	.0061359	.0055195	2.065112	.0095396	.0284834
#2	.0964115	.0060854	.0057342	2.033426	.0097897	.0287277
#3	.0991800	.0062407	.0055515	2.043461	.0097799	.0288078
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0207980	.1033674	.0218540	2.155935	.0390527	.0103994
Stddev	.0001176	.0057768	.0002935	.031849	.0000175	.0006435
%RSD	.5656076	5.588596	1.342902	1.477270	.0447705	6.187764
#1	.0207209	.1083285	.0221143	2.185223	.0390485	.0111424
#2	.0207397	.0970253	.0219117	2.160552	.0390719	.0100291
#3	.0209334	.1047484	.0215360	2.122030	.0390377	.0100267
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.909510	.0426471	.0411891	1.869549	.1064304	.2031291
Stddev	.022319	.0008816	.0002913	.019244	.0008663	.0003000
%RSD	1.168850	2.067308	.7072536	1.029333	.8139810	.1476951
#1	1.917715	.0419069	.0414481	1.849539	.1061721	.2030183
#2	1.926566	.0424120	.0408737	1.871184	.1057226	.2034688
#3	1.884250	.0436225	.0412456	1.887923	.1073965	.2029003

Sample Name: LLICV01 Acquired: 8/20/2025 13:17:31 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0355182	.0388954	.3711363	.0189682	.0193628	F .0134595
Stddev	.0002852	.0007959	.0097743	.0007702	.0010373	.0013635
%RSD	.8029484	2.046203	2.633615	4.060685	5.357171	10.13007
#1	.0353767	.0391426	.3701338	.0181532	.0181688	.0144424
#2	.0353314	.0380052	.3813732	.0190674	.0198776	.0119029
#3	.0358465	.0395383	.3619019	.0196840	.0200420	.0140331
Elem	Sr4077					
Units	ppm					
Avg	.0200263					
Stddev	.0000728					
%RSD	.3636608					
#1	.0200747					
#2	.0200617					
#3	.0199426					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6386.956	108649.9	11292.05	4961.248	7967.511	
Stddev	6.732	417.8	46.30	29.767	5.108	
%RSD	.1054091	.3844988	.4100346	.5999900	.0641129	
#1	6387.811	108791.1	11329.07	4995.144	7965.509	
#2	6379.837	108179.8	11306.95	4949.235	7973.317	
#3	6393.220	108978.7	11240.14	4939.364	7963.707	

Sample Name: ICB01 Acquired: 8/20/2025 13:21:46 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.000166	-.000089	.0010528	-.001771	-.000082	.0029640	-.002077
Stddev	.001607	.000744	.0008031	.002630	.001076	.0049400	.000893
%RSD	970.2941	836.9244	76.28670	148.4820	1315.732	166.6676	42.99912
#1	-.001397	-.000740	.0016527	-.001202	.001155	.0042995	-.003105
#2	.001653	-.000249	.0013653	-.004639	-.000800	.0070989	-.001501
#3	-.000752	.000722	.0001404	.000527	-.000601	-.002506	-.001624
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000046	-.000020	.0016710	-.000547	-.000009	-.000258	-.007395
Stddev	.000018	.000070	.0045873	.000348	.000152	.000191	.001356
%RSD	38.66540	360.5021	274.5153	63.59398	1655.631	74.06555	18.33697
#1	-.000027	-.000055	-.000861	-.000655	.000135	-.000143	-.008960
#2	-.000063	.000062	.006966	-.000827	.000006	-.000153	-.006621
#3	-.000047	-.000066	-.001092	-.000158	-.000169	-.000479	-.006603
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0004335	-.006360	.0000091	.0000255	-.035463	.0036999	-.000755
Stddev	.0002584	.017742	.0002647	.0002194	.004277	.0016218	.000094
%RSD	59.60625	278.9611	2899.825	859.9056	12.05975	43.83429	12.39713
#1	.0002802	-.020922	-.000171	-.000150	-.038845	.0055710	-.000650
#2	.0007319	-.011558	.000313	.000271	-.036888	.0028322	-.000831
#3	.0002885	.013400	-.000115	-.000045	-.030655	.0026966	-.000783
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.105212	.0040936	-.000076	-.001627	-.000604	-.003766	.0001058
Stddev	.009079	.0005114	.000135	.000398	.000727	.009187	.0003945
%RSD	8.628946	12.49187	178.4348	24.48537	120.3116	243.9477	373.0690
#1	-.104829	.0041891	-.000149	-.001313	-.000693	.006554	.0002912
#2	-.096331	.0035412	.000080	-.001493	.000163	-.011051	.0003734
#3	-.114476	.0045505	-.000159	-.002075	-.001282	-.006801	-.000347

Sample Name: ICB01 Acquired: 8/20/2025 13:21:46 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.000476	-.008176	.0000061
Stddev	.000687	.000607	.0000470
%RSD	144.2895	7.429008	772.1921

#1	.000280	-.007867	-.000038
#2	-.001062	-.008876	.000000
#3	-.000646	-.007785	.000056

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6347.340	109311.0	11227.89	4920.485	8061.962
Stddev	7.405	151.8	65.78	13.718	4.808
%RSD	.1166621	.1388490	.5858550	.2787954	.0596417

#1	6355.068	109446.6	11292.41	4924.738	8061.489
#2	6340.307	109339.4	11230.34	4931.573	8066.990
#3	6346.645	109147.0	11160.92	4905.144	8057.408

Sample Name: CRI01 Acquired: 8/20/2025 13:26:14 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0213815	.0432944	.0124471	.0217557	.0505973	.0979956
Stddev	.0011286	.0011525	.0003071	.0016274	.0008812	.0116763
%RSD	5.278342	2.661938	2.467198	7.480298	1.741571	11.91511
#1	.0205293	.0446159	.0126638	.0228905	.0514821	.0845914
#2	.0226615	.0427694	.0125819	.0198912	.0505900	.1034396
#3	.0209538	.0424979	.0120957	.0224854	.0497198	.1059557
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0981940	.0063008	.0057193	2.052222	.0098876	.0291382
Stddev	.0007610	.0000480	.0000854	.003652	.0002277	.0000107
%RSD	.7750146	.7619377	1.492893	.1779316	2.302493	.0366701
#1	.0973223	.0063105	.0057666	2.056267	.0101063	.0291282
#2	.0987260	.0062487	.0056208	2.051228	.0099045	.0291370
#3	.0985337	.0063432	.0057706	2.049169	.0096519	.0291494
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0208905	.0952394	.0218861	2.161923	.0393962	.0099478
Stddev	.0002241	.0053007	.0002632	.015644	.0000495	.0001713
%RSD	1.072782	5.565644	1.202503	.7236194	.1256376	1.721661
#1	.0211436	.0891191	.0221872	2.144475	.0393594	.0097504
#2	.0208103	.0983600	.0217000	2.174697	.0394525	.0100360
#3	.0207175	.0982391	.0217710	2.166598	.0393767	.0100570
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.913876	.0426488	.0414916	1.830847	.1039878	.2052171
Stddev	.027515	.0011267	.0003169	.017310	.0003659	.0006594
%RSD	1.437661	2.641855	.7638961	.9454402	.3519016	.3213038
#1	1.945627	.0416100	.0417806	1.816906	.1039925	.2059771
#2	1.898976	.0424899	.0411527	1.825414	.1036196	.2048772
#3	1.897024	.0438465	.0415416	1.850221	.1043514	.2047971

Sample Name: CRI01 Acquired: 8/20/2025 13:26:14 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0357864	.0387948	.3705346	.0192278	.0187247	F .0135697
Stddev	.0003665	.0006269	.0080232	.0016092	.0010086	.0007256
%RSD	1.024224	1.616051	2.165312	8.369103	5.386356	5.347544
#1	.0355742	.0380930	.3612711	.0182099	.0176206	.0143790
#2	.0362096	.0392996	.3752784	.0210830	.0189558	.0133531
#3	.0355753	.0389917	.3750544	.0183905	.0195977	.0129770
Elem	Sr4077					
Units	ppm					
Avg	.0201501					
Stddev	.0000742					
%RSD	.3682824					
#1	.0201371					
#2	.0200833					
#3	.0202300					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6335.484	107334.8	11198.77	4877.106	7900.565	
Stddev	8.088	52.0	27.39	8.986	9.449	
%RSD	.1276570	.0484224	.2445436	.1842535	.1195961	
#1	6344.043	107292.2	11197.57	4866.742	7910.142	
#2	6334.440	107319.4	11226.74	4881.843	7900.303	
#3	6327.969	107392.7	11172.01	4882.733	7891.250	

Sample Name: ICSA01 Acquired: 8/20/2025 13:30:28 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSA01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0107216	-.003611	-.003403	-.000169	-.001474	246.5307
Stddev	.0004316	.001265	.002130	.002652	.001054	.3989
%RSD	4.025648	35.02748	62.59588	1565.457	71.52046	.1618055
#1	.0108416	-.002430	-.005770	-.002209	-.002684	246.6604
#2	.0102427	-.003456	-.001640	-.001128	-.000750	246.8486
#3	.0110805	-.004945	-.002799	.002829	-.000988	246.0831
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0018143	.0015005	.0023415	233.3394	.0599638	.0016905
Stddev	.0008732	.0001040	.0001051	.2845	.0001321	.0001875
%RSD	48.12966	6.929601	4.486729	.1219164	.2202745	11.08894
#1	.0010339	.0015950	.0024545	233.4850	.0599354	.0017910
#2	.0016517	.0015174	.0022468	233.5216	.0598482	.0014742
#3	.0027574	.0013891	.0023232	233.0116	.0601077	.0018061
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0046995	99.16501	.0089009	248.6924	.0061990	.0020872
Stddev	.0000193	.43535	.0002551	.3369	.0004365	.0002045
%RSD	.4112696	.4390185	2.865629	.1354769	7.041207	9.798253
#1	.0047191	99.01029	.0091745	248.7741	.0066729	.0019076
#2	.0046805	98.82815	.0086696	248.9809	.0061110	.0020443
#3	.0046990	99.65659	.0088587	248.3221	.0058133	.0023098
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0740643	.0050139	.0019908	.0847051	.0514203	.0009541
Stddev	.0140620	.0037738	.0001134	.0250065	.0025518	.0001798
%RSD	18.98616	75.26568	5.694587	29.52179	4.962550	18.84429
#1	.0643956	.0042865	.0019002	.0623229	.0516546	.0007533
#2	.0676015	.0090984	.0019544	.0800975	.0487594	.0011001
#3	.0901958	.0016568	.0021179	.1116950	.0538468	.0010089

Sample Name: ICSA01 Acquired: 8/20/2025 13:30:28 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSA01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.004166	-.005658	.0189780	.0076384	-.009131	F -.032952
Stddev	.000469	.000829	.0028752	.0010715	.002754	.000496
%RSD	11.26661	14.65115	15.15038	14.02788	30.16249	1.503871
#1	-.003852	-.004764	.0189357	.0064145	-.011709	-.033471
#2	-.003940	-.006401	.0218741	.0084074	-.009455	-.032900
#3	-.004705	-.005810	.0161241	.0080935	-.006229	-.032484
Elem	Sr4077					
Units	ppm					
Avg	.0019887					
Stddev	.0007777					
%RSD	39.10438					
#1	.0024173					
#2	.0024577					
#3	.0010910					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	5644.727	95345.32	10819.40	4366.562	6297.248	
Stddev	8.228	63.48	43.27	6.059	8.715	
%RSD	.1457697	.0665764	.3998944	.1387694	.1383997	
#1	5637.158	95365.60	10814.66	4373.198	6287.246	
#2	5653.485	95396.18	10778.70	4361.324	6303.214	
#3	5643.537	95274.18	10864.84	4365.164	6301.282	

Sample Name: ICSAB01 Acquired: 8/20/2025 13:34:39 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.1085343	.0990293	.0384338	.0474153	.5870785	249.6700
Stddev	.0013678	.0026180	.0016519	.0005988	.0017569	.3746
%RSD	1.260256	2.643683	4.298047	1.262972	.2992648	.1500303
#1	.1089890	.0984171	.0365367	.0467713	.5867579	249.3455
#2	.1069970	.1018991	.0392106	.0475194	.5855039	249.5846
#3	.1096168	.0967716	.0395542	.0479553	.5889736	250.0799
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4747686	.4818464	.9632126	235.7419	.5525261	.4842859
Stddev	.0023796	.0020221	.0007682	.6963	.0016127	.0009506
%RSD	.5012041	.4196467	.0797541	.2953645	.2918739	.1962857
#1	.4720303	.4799381	.9626167	235.0556	.5507626	.4838479
#2	.4759413	.4816355	.9629414	235.7222	.5528900	.4836333
#3	.4763343	.4839656	.9640796	236.4478	.5539258	.4853766
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4747409	100.7582	.4760143	251.3987	.9640116	.2120207
Stddev	.0010399	.2690	.0016252	.5196	.0009756	.0003700
%RSD	.2190497	.2670058	.3414127	.2066654	.1011997	.1745308
#1	.4745463	100.4518	.4744097	250.8823	.9634459	.2124457
#2	.4738121	100.9555	.4776593	251.3924	.9634508	.2117703
#3	.4758644	100.8674	.4759737	251.9213	.9651381	.2118461
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0271386	.4749297	1.024479	-.189415	F .0534853	F .0012380
Stddev	.0112917	.0022120	.001557	.048561	.0011568	.0001367
%RSD	41.60747	.4657574	.1519840	25.63735	2.162735	11.04160
#1	.0168923	.4723859	1.022991	-.144150	.0540408	.0011275
#2	.0392448	.4760023	1.024349	-.183386	.0521556	.0013909
#3	.0252787	.4764010	1.026097	-.240709	.0542596	.0011957

Sample Name: ICSAB01 Acquired: 8/20/2025 13:34:39 Type: Unk
Method: 6010-200.7 NEW(v122) 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	F -.004788	F -.007886	F .0105158	F .0096879	F .0009868	F -.035570
Stddev	.000443	.000624	.0071533	.0003182	.0044355	.001057
%RSD	9.257119	7.913767	68.02391	3.284411	449.5057	2.970692
#1	-.005250	-.008142	.0172925	.0094155	-.001178	-.034888
#2	-.004366	-.007175	.0030377	.0100376	-.001950	-.036787
#3	-.004749	-.008341	.0112172	.0096105	.006089	-.035035
Elem	Sr4077					
Units	ppm					
Avg	F .0011171					
Stddev	.0003300					
%RSD	29.54104					
#1	.0007538					
#2	.0013982					
#3	.0011992					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	5578.489	95302.34	10910.31	4331.233	6233.546	
Stddev	8.370	220.61	39.72	19.860	7.291	
%RSD	.1500441	.2314816	.3640588	.4585399	.1169715	
#1	5575.347	95530.30	10949.61	4326.142	6234.966	
#2	5587.975	95286.81	10911.16	4353.144	6240.023	
#3	5572.144	95089.91	10870.18	4314.414	6225.649	

Sample Name: ICSADLX20 Acquired: 8/20/2025 13:38:43 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0010520	.0000161	-.000096	.0016678	-.000214	11.86645	-.001788
Stddev	.0019184	.0013632	.000206	.0020880	.000791	.01416	.000837
%RSD	182.3610	8447.124	214.5676	125.2007	369.1609	.1193592	46.78531
#1	.0030160	-.000901	.000078	.0012021	-.000689	11.87504	-.000877
#2	.0009574	-.000633	-.000323	.0039493	.000698	11.85010	-.001964
#3	-.000817	.001583	-.000043	-.000148	-.000652	11.87421	-.002522
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001351	.0001001	11.69763	.0025204	.0000328	.0003611	4.592607
Stddev	.0000475	.0000511	.00862	.0002533	.0000664	.0002667	.024054
%RSD	35.12214	51.00681	.0736723	10.05052	202.4445	73.87592	.5237568
#1	.0001367	.0001034	11.70054	.0028129	-.000044	.0000854	4.620111
#2	.0000869	.0001494	11.70441	.0023761	.000074	.0003798	4.582208
#3	.0001818	.0000474	11.68793	.0023723	.000068	.0006179	4.575502
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007187	12.21834	.0001521	.0003802	-.102598	.0042989	-.000684
Stddev	.0002330	.03431	.0000616	.0002764	.005999	.0014602	.000030
%RSD	32.41995	.2808383	40.47928	72.70600	5.847426	33.96622	4.350195
#1	.0004614	12.24632	.0001823	.0000857	-.097763	.0032605	-.000687
#2	.0007792	12.18005	.0001927	.0006341	-.100720	.0059685	-.000653
#3	.0009154	12.22866	.0000813	.0004208	-.109312	.0036677	-.000712
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.341534	.0020643	.0000687	-.002580	-.001489	.0003705	.0004246
Stddev	.047032	.0003562	.0001808	.000667	.000740	.0048153	.0007496
%RSD	13.77070	17.25734	263.0247	25.86054	49.66271	1299.507	176.5437
#1	-.317731	.0021619	-.000090	-.002355	-.001399	-.000925	-.000343
#2	-.395709	.0023616	.000266	-.002054	-.002269	.005701	.000463
#3	-.311162	.0016694	.000030	-.003330	-.000799	-.003664	.001154

Sample Name: ICSADLX20 Acquired: 8/20/2025 13:38:43 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.002129	-.010749	.0003012
Stddev	.001180	.001532	.0001000
%RSD	55.40977	14.25604	33.18642
#1	-.002137	-.012303	.0002141
#2	-.003305	-.010703	.0004104
#3	-.000946	-.009240	.0002793

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6206.252	106968.2	11111.82	4833.306	7633.684
Stddev	7.826	282.4	53.29	26.309	5.908
%RSD	.1261053	.2640229	.4795835	.5443228	.0773940
#1	6197.586	106643.1	11108.64	4809.406	7631.705
#2	6208.366	107108.1	11166.64	4861.496	7629.019
#3	6212.804	107153.3	11060.20	4829.017	7640.327

Sample Name: ICSABDLX20 Acquired: 8/20/2025 13:42:59 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0050447	.0058553	.0020430	.0013526	.0280631	12.17426	.0218190
Stddev	.0009747	.0000813	.0007122	.0005265	.0009026	.01973	.0011566
%RSD	19.32070	1.388024	34.85947	38.91971	3.216319	.1620339	5.301005
#1	.0055310	.0059460	.0019186	.0016940	.0281525	12.16089	.0204925
#2	.0039225	.0057890	.0028092	.0007464	.0271191	12.19692	.0226167
#3	.0056805	.0058310	.0014012	.0016176	.0289177	12.16498	.0223477
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0242346	.0453717	12.01291	.0268346	.0229340	.0240977	4.825151
Stddev	.0000538	.0000516	.01778	.0002201	.0000242	.0003365	.010133
%RSD	.2218626	.1136552	.1480250	.8203407	.1053315	1.396561	.2100093
#1	.0241911	.0454278	11.99240	.0266827	.0229579	.0238512	4.813911
#2	.0242947	.0453610	12.02408	.0267339	.0229096	.0244811	4.833588
#3	.0242179	.0453264	12.02224	.0270870	.0229344	.0239608	4.827954
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0244269	12.52539	.0460076	.0095155	-.100478	.0281114	.0489873
Stddev	.0002449	.01397	.0001602	.0001183	.009425	.0013010	.0000952
%RSD	1.002754	.1115497	.3482032	1.243124	9.380200	4.627937	.1943583
#1	.0241927	12.50939	.0459151	.0093940	-.092182	.0296090	.0490967
#2	.0244066	12.53154	.0461926	.0095222	-.110726	.0274641	.0489232
#3	.0246814	12.53523	.0459152	.0096303	-.098525	.0272610	.0489421
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.307211	.0014851	.0001010	-.003112	-.001201	-.002797	.0002037
Stddev	.026706	.0000448	.0001131	.000343	.000739	.004629	.0006533
%RSD	8.692877	3.017691	112.0217	11.01580	61.51830	165.4719	320.7817
#1	-.310119	.0014335	.0001355	-.002875	-.000585	-.001553	.0007788
#2	-.279171	.0015072	-.000025	-.003505	-.002021	.001082	.0003389
#3	-.332344	.0015146	.000193	-.002957	-.000998	-.007921	-.000507

Sample Name: ICSABDLX20 Acquired: 8/20/2025 13:42:59 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.001005	-.011257	.0002360
Stddev	.000617	.001247	.0000251
%RSD	61.40195	11.07298	10.63282
#1	-.001521	-.012687	.0002650
#2	-.001173	-.010400	.0002212
#3	-.000321	-.010685	.0002219

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6224.420	106486.8	11282.08	4820.977	7649.068
Stddev	7.788	342.7	79.12	13.781	10.711
%RSD	.1251157	.3218071	.7012924	.2858621	.1400303
#1	6231.787	106882.4	11373.18	4821.136	7660.545
#2	6225.204	106298.6	11230.51	4807.118	7647.320
#3	6216.270	106279.6	11242.55	4834.679	7639.338

Sample Name: CCV01 Acquired: 8/20/2025 13:47:11 Type: Unk
Method: 6010-200.7 NEW(v122) 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	4.982209	4.974882	4.900644	5.008231	4.981173	9.924865	9.806624
Stddev	.008849	.066959	.012002	.002014	.006120	.016351	.116245
%RSD	.1776078	1.345945	.2449006	.0402064	.1228699	.1647493	1.185372
#1	4.978075	4.991822	4.900251	5.010540	4.978145	9.929908	9.940241
#2	4.992368	5.031743	4.888844	5.007317	4.988217	9.906587	9.728742
#3	4.976184	4.901079	4.912837	5.006837	4.977157	9.938101	9.750887
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.462164	2.470373	24.77337	1.008736	2.462184	1.247200	5.015588
Stddev	.0009505	.005344	.04476	.002523	.004267	.000611	.042987
%RSD	.3860476	.2163333	.1806966	.2501634	.1732863	.0490136	.8570610
#1	2.454827	2.470151	24.80261	1.010048	2.460922	1.247286	5.047000
#2	2.458762	2.465143	24.72183	1.005826	2.458690	1.246550	5.033166
#3	2.472902	2.475824	24.79566	1.010332	2.466939	1.247764	4.966598
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.467940	24.67880	2.463563	1.243869	24.99949	2.483950	2.524049
Stddev	.007180	.09081	.005660	.000547	.20795	.003431	.002577
%RSD	.2909318	.3679612	.2297316	.0439547	.8317992	.1381142	.1020943
#1	2.474264	24.76272	2.463418	1.243947	25.08831	2.485710	2.521287
#2	2.469422	24.58239	2.457978	1.243287	25.14827	2.479997	2.524474
#3	2.460135	24.69127	2.469294	1.244372	24.76188	2.486144	2.526388
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.82432	4.896276	5.007942	4.938841	4.942733	5.028054	4.917674
Stddev	.15653	.022706	.004623	.008222	.008914	.012319	.007907
%RSD	.6305517	.4637321	.0923206	.1664725	.1803436	.2450114	.1607863
#1	24.91581	4.873144	5.009712	4.944931	4.946766	5.037317	4.926328
#2	24.91358	4.897157	5.011419	4.929488	4.948918	5.032772	4.915864
#3	24.64358	4.918529	5.002695	4.942102	4.932516	5.014073	4.910828

Sample Name: CCV01 Acquired: 8/20/2025 13:47:11 Type: Unk
Method: 6010-200.7 NEW(v122) 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	4.880336	4.910950	4.981938
Stddev	.014535	.019555	.048481
%RSD	.2978221	.3981925	.9731410
#1	4.875734	4.920778	4.946473
#2	4.896615	4.923640	4.962159
#3	4.868659	4.888430	5.037182

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6039.484	103441.3	11067.21	4659.752	7021.969
Stddev	3.664	10.7	43.03	14.747	5.798
%RSD	.0606646	.0103594	.3888206	.3164762	.0825728
#1	6039.213	103430.4	11100.83	4673.266	7022.441
#2	6035.964	103441.7	11082.08	4661.969	7027.517
#3	6043.276	103451.8	11018.72	4644.023	7015.950

Sample Name: CCB01 Acquired: 8/20/2025 13:51:22 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0031211	.0002393	-.000613	.0012661	.0000124	.0032407	-.002109
Stddev	.0005517	.0003417	.000880	.0016052	.0007010	.0040605	.000279
%RSD	17.67679	142.7630	143.6995	126.7763	5649.787	125.2971	13.22749
#1	.0026528	.0004406	-.000149	.0027064	-.000690	.0027355	-.002191
#2	.0037293	.0004326	-.001628	-.000464	.000016	-.000544	-.002338
#3	.0029811	-.000155	-.000061	.001556	.000712	.007530	-.001799
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000033	-.000019	.0076088	-.000358	-.000065	-.000253	-.001411
Stddev	.000065	.000062	.0080637	.000226	.000113	.000022	.002909
%RSD	196.5634	334.5723	105.9785	63.24584	175.5915	8.881910	206.1850
#1	-.000052	.000047	.0168942	-.000167	.000024	-.000227	-.004153
#2	-.000087	-.000077	.0023671	-.000298	-.000193	-.000268	-.001721
#3	.000039	-.000026	.0035650	-.000608	-.000025	-.000264	.001641
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0003500	-.013399	.0000418	.0003118	-.092431	.0031382	-.000450
Stddev	.0005090	.020421	.0001219	.0004490	.015235	.0018229	.000267
%RSD	145.4450	152.4120	291.6309	144.0331	16.48211	58.08671	59.40967
#1	.0001679	-.023359	.0001509	.0000841	-.109180	.0021889	-.000262
#2	.0009250	.010091	-.000090	.0008290	-.088714	.0052398	-.000756
#3	-.000043	-.026928	.000064	.0000221	-.079399	.0019859	-.000332
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.329523	.0049995	.0002195	-.001419	-.000795	.0007522	.0017190
Stddev	.010472	.0008820	.0001580	.000537	.000848	.0051997	.0007114
%RSD	3.178050	17.64197	71.96556	37.85443	106.6507	691.2833	41.38790
#1	-.326194	.0060162	.0003371	-.002014	.000160	.0004100	.0011565
#2	-.321120	.0045433	.0000400	-.000971	-.001086	.0061145	.0025187
#3	-.341256	.0044390	.0002815	-.001272	-.001460	-.004268	.0014817

Sample Name: CCB01 Acquired: 8/20/2025 13:51:22 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0009326	-.008267	.0000330
Stddev	.0011053	.000736	.0000253
%RSD	118.5219	8.907452	76.68498

#1	.0016004	-.008913	.0000542
#2	-.000343	-.007465	.0000399
#3	.001541	-.008423	.0000050

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6357.856	106960.5	11368.33	4832.067	8062.234
Stddev	4.940	442.7	16.83	23.000	3.524
%RSD	.0776927	.4138661	.1480167	.4759880	.0437097

#1	6353.786	107369.3	11352.00	4841.715	8060.793
#2	6363.352	107021.9	11385.62	4848.672	8059.660
#3	6356.430	106490.3	11367.38	4805.815	8066.251

Sample Name: LR-1 Acquired: 8/20/2025 13:55:41 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.002853	.0092239	.0123243	-.015435	.0152064	.1346766	-.014022
Stddev	.002774	.0034874	.0027590	.003027	.0047058	.0127261	.000780
%RSD	97.23952	37.80791	22.38683	19.61083	30.94595	9.449411	5.561343
#1	-.003250	.0073318	.0154358	-.015341	.0143655	.1239467	-.014723
#2	-.005406	.0070915	.0113610	-.012456	.0202759	.1487367	-.014162
#3	.000099	.0132483	.0101761	-.018508	.0109778	.1313464	-.013182
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001265	.0004411	2116.212	.0114847	-.000354	.0026692	.4317345
Stddev	.0000368	.0001135	12.958	.0001392	.000214	.0010111	.0058454
%RSD	29.06406	25.72773	.6123233	1.211895	60.41775	37.87940	1.353943
#1	.0001378	.0003809	2102.609	.0114208	-.000598	.0020170	.4364228
#2	.0000854	.0005719	2117.617	.0116444	-.000265	.0021566	.4335957
#3	.0001563	.0003703	2128.411	.0113890	-.000199	.0038339	.4251851
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0135153	2141.241	.0087689	-.001825	2520.792	.0077642	.0466987
Stddev	.0006013	15.331	.0002582	.000387	24.351	.0031000	.0006747
%RSD	4.449286	.7159669	2.944066	21.18501	.9660159	39.92750	1.444717
#1	.0130945	2124.080	.0088375	-.001558	2542.754	.0106540	.0474777
#2	.0132473	2146.062	.0089858	-.001649	2525.017	.0044898	.0463110
#3	.0142040	2153.582	.0084834	-.002269	2494.604	.0081487	.0463074
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.883755	.0107534	.0027068	-.015081	-.098087	-.023129	.0141968
Stddev	.362972	.0007183	.0003425	.000144	.003424	.008926	.0025440
%RSD	5.272884	6.679850	12.65201	.9538060	3.490312	38.59274	17.91940
#1	6.478402	.0115807	.0030937	-.014976	-.100736	-.032521	.0135523
#2	6.994151	.0103914	.0025840	-.015022	-.094221	-.014757	.0170010
#3	7.178713	.0102882	.0024427	-.015245	-.099304	-.022108	.0120370

Sample Name: LR-1 Acquired: 8/20/2025 13:55:41 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.1963370	-.324070	.0588717
Stddev	.0049202	.000471	.0001388
%RSD	2.505976	.1454296	.2358250
#1	.1949565	-.323526	.0588982
#2	.2018000	-.324322	.0587215
#3	.1922546	-.324362	.0589953

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3883.147	70369.92	10109.58	2992.139	4123.195
Stddev	6.468	146.55	73.97	4.038	8.856
%RSD	.1665625	.2082513	.7316507	.1349410	.2147796
#1	3885.543	70470.97	10175.32	2991.604	4128.673
#2	3888.076	70201.85	10123.94	2988.394	4127.934
#3	3875.823	70436.94	10029.49	2996.417	4112.978

Sample Name: LR-2 Acquired: 8/20/2025 14:00:20 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba493
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2336146	-.368988	-.129733	-.002700	-.159858	1916.710	.0216716
Stddev	.0023697	.004984	.007806	.012855	.008941	15.670	.000549
%RSD	1.014370	1.350717	6.017060	476.1469	5.593255	.8175370	2.53603
#1	.2343658	-.370251	-.126148	.009558	-.168349	1900.512	.021300
#2	.2309603	-.363494	-.138688	-.001578	-.160698	1931.792	.021411
#3	.2355176	-.373219	-.124363	-.016079	-.150526	1917.826	.022303
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe240
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0425345	.1441347	^ *****	-.045888	.0882619	.1573745	2788.900
Stddev	.0005407	.0029395	-----	.000908	.0002522	.0179528	29.37
%RSD	1.271288	2.039440	-----	1.977950	.2857296	11.40772	1.05311
#1	.0419123	.1407597	12.90992	-.046897	.0884143	.1367041	2822.45
#2	.0427997	.1461356	^ -----	-.045138	.0884006	.1690717	2767.87
#3	.0428914	.1455086	13.00495	-.045630	.0879708	.1663476	2776.36
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn213
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.184732	1.048704	.0591209	^ *****	2.655464	.0503486	.1059880
Stddev	.002093	.019614	.0009403	-----	.013176	.0029510	.0026301
%RSD	1.132733	1.870261	1.590422	-----	.4961940	5.861064	2.481500
#1	-.185195	1.059862	.0601641	^ -----	2.666212	.0492254	.1037242
#2	-.186554	1.060194	.0583387	^ -----	2.640764	.0481242	.1053666
#3	-.182447	1.026058	.0588599	^ -----	2.659415	.0536962	.1088731
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1846.272	^ *****	-.015848	.0240792	.0028031	.5038142	.1197687
Stddev	14.222	-----	.001001	.0047301	.0009499	.0034730	.0081434
%RSD	.7703240	-----	6.315408	19.64380	33.88778	.6893386	6.799262
#1	1862.005	^ -----	-.016036	.0211151	.0020622	.5065167	.1105587
#2	1834.327	^ -----	-.014767	.0215883	.0024730	.4998970	.1260160
#3	1842.485	^ -----	-.016742	.0295342	.0038740	.5050288	.1227313

Sample Name: LR-2 Acquired: 8/20/2025 14:00:20 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-410218	k .2777913	-2.67327
Stddev	.011119	.0020199	.02818
%RSD	2.710587	.7271196	1.054089

#1	-420683	.2801178	-2.70547
#2	-398543	k .2764855	-2.65311
#3	-411429	.2767706	-2.66122

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4862.378	81073.85	10536.38	3699.208	4112.073
Stddev	8.453	173.45	84.16	19.077	4.493
%RSD	.1738422	.2139433	.7987834	.5157021	.1092709

#1	4867.088	81112.44	10633.28	3697.630	4115.731
#2	4867.427	81224.75	10494.44	3719.025	4113.431
#3	4852.619	80884.35	10481.44	3680.969	4107.057

Sample Name: LR-3 Acquired: 8/20/2025 14:04:48 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0962229	.0088544	224.4396	-.000482	.1152296	.1229048	-.001407
Stddev	.0022896	.0008476	.6747	.001475	.0039150	.0054409	.001283
%RSD	2.379454	9.572620	.3006163	305.8871	3.397582	4.426953	91.17262
#1	.0940906	.0079012	225.2052	-.001646	.1181705	.1276408	-.001330
#2	.0986426	.0095233	223.9321	-.000978	.1107858	.1241118	-.002726
#3	.0959356	.0091386	224.1814	.001177	.1167324	.1169617	-.000164
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.004556	-.001671	.2431928	23.83954	.0060383	52.50632	.1312486
Stddev	.000042	.000025	.0013855	.08663	.0000882	.06715	.0095435
%RSD	.9129819	1.516196	.5697313	.3634071	1.460276	.1278957	7.271343
#1	-.004510	-.001689	.2441342	23.88440	.0059959	52.57645	.1400258
#2	-.004565	-.001642	.2438425	23.89455	.0061397	52.44261	.1326305
#3	-.004592	-.001682	.2416018	23.73968	.0059793	52.49990	.1210894
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.21645	-.183298	23.42704	.0048770	.1823358	-.034120	29.44924
Stddev	.28891	.015704	.03088	.0002649	.0151045	.001922	.08379
%RSD	.5991912	8.567633	.1318114	5.430573	8.283910	5.632387	.2845281
#1	48.48607	-.181108	23.45547	.0047550	.1650538	-.034046	29.52016
#2	48.25179	-.199982	23.39419	.0051809	.1930129	-.032237	29.47079
#3	47.91150	-.168804	23.43147	.0046952	.1889407	-.036078	29.35678
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4318858	.0045906	-.014111	-.011844	-.043680	-.131864	.1281622
Stddev	.0522918	.0005194	.000244	.000467	.000474	.009712	.0020233
%RSD	12.10778	11.31332	1.730309	3.940125	1.084624	7.364818	1.578718
#1	.3729772	.0045312	-.013831	-.012378	-.043586	-.142216	.1299240
#2	.4728190	.0051371	-.014276	-.011642	-.044194	-.130420	.1286102
#3	.4498612	.0041035	-.014228	-.011513	-.043261	-.122955	.1259525

Sample Name: LR-3 Acquired: 8/20/2025 14:04:48 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0527295	-.006484	.0004198
Stddev	.0014280	.002378	.0000524
%RSD	2.708127	36.67345	12.48682
#1	.0535626	-.003781	.0004704
#2	.0510806	-.008254	.0003657
#3	.0535453	-.007415	.0004233

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5964.477	109010.9	11304.33	4723.982	7714.965
Stddev	21.506	558.8	47.65	12.294	24.456
%RSD	.3605672	.5125818	.4215280	.2602557	.3170005
#1	5942.698	108811.6	11249.57	4734.782	7691.607
#2	5965.035	108579.0	11336.41	4710.602	7712.898
#3	5985.699	109641.9	11327.00	4726.562	7740.389

Sample Name: Q2892-02 Acquired: 8/20/2025 14:09:42 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.2048661	-.020961	1.390924	.0077696	-.013187	193.8884
Stddev	.0013170	.002997	.002810	.0006708	.003071	1.6631
%RSD	.6428576	14.29906	.2020590	8.633169	23.28823	.8577479
#1	.2044200	-.023953	1.394060	.0078841	-.016620	194.0971
#2	.2063483	-.017959	1.390077	.0070490	-.012243	192.1309
#3	.2038301	-.020969	1.388634	.0083757	-.010699	195.4374
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9628243	.0170110	.0235429	35.30456	.3868533	.1958166
Stddev	.0009143	.0000632	.0000688	.02908	.0016695	.0000986
%RSD	.0949589	.3715875	.2922498	.0823627	.4315619	.0503429
#1	.9620578	.0169652	.0236065	35.28120	.3884503	.1958060
#2	.9638362	.0169848	.0234698	35.33713	.3869900	.1959201
#3	.9625788	.0170831	.0235524	35.29537	.3851197	.1957238
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8536550	338.6152	8.193195	92.84369	.3323223	.0114016
Stddev	.0010906	.4289	.008354	.12414	.0004562	.0002751
%RSD	.1277618	.1266604	.1019627	.1337057	.1372601	2.412506
#1	.8526582	339.0269	8.185500	92.94321	.3327973	.0114275
#2	.8548199	338.6478	8.202080	92.70459	.3322817	.0111146
#3	.8534868	338.1709	8.192005	92.88327	.3318877	.0116629
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.932406	.6902276	2.321387	35.63925	.2367685	.0174825
Stddev	.002292	.0011755	.006634	.09851	.0007571	.0002924
%RSD	.0330625	.1703047	.2857686	.2764150	.3197772	1.672802
#1	6.934045	.6901592	2.324478	35.72814	.2358949	.0173990
#2	6.929787	.6890878	2.325911	35.65629	.2372344	.0172409
#3	6.933387	.6914358	2.313772	35.53334	.2371763	.0178076

Sample Name: Q2892-02 Acquired: 8/20/2025 14:09:42 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0262144	9.088549	F 11.35298	8.713168	2.093306	.3701813
Stddev	.0001974	.004281	.06328	.003655	.010555	.0002229
%RSD	.7531024	.0471017	.5573946	.0419478	.5042073	.0602138
#1	.0260613	9.092557	11.39278	8.716849	2.105455	.3704385
#2	.0264372	9.089051	11.38614	8.713116	2.086393	.3700590
#3	.0261447	9.084039	11.28000	8.709540	2.088069	.3700462
Elem	Sr4077					
Units	ppm					
Avg	-.092323					
Stddev	.000259					
%RSD	.2808283					
#1	-.092556					
#2	-.092044					
#3	-.092368					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	7476.478	128672.2	15210.67	5734.075	6421.353	
Stddev	10.089	522.1	33.40	39.844	9.087	
%RSD	.1349414	.4057981	.2196125	.6948718	.1415107	
#1	7471.758	128098.8	15173.79	5694.300	6411.249	
#2	7469.614	128797.4	15219.31	5733.935	6423.956	
#3	7488.061	129120.3	15238.90	5773.988	6428.855	

Sample Name: Q2892-02DUP Acquired: 8/20/2025 14:15:13 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.2064987	-.022467	1.385831	.0042857	-.014141	195.6674
Stddev	.0019947	.003546	.002579	.0037909	.000274	1.3594
%RSD	.9659759	15.78178	.1861087	88.45383	1.935830	.6947677
#1	.2048682	-.023369	1.386594	.0015493	-.013828	194.4526
#2	.2087229	-.018558	1.382957	.0086127	-.014260	195.4139
#3	.2059051	-.025475	1.387943	.0026951	-.014335	197.1358
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9662049	.0170096	.0233193	35.33301	.3887274	.1954963
Stddev	.0029377	.0000895	.0002238	.05246	.0016806	.0005277
%RSD	.3040421	.5264878	.9597977	.1484606	.4323432	.2699152
#1	.9641206	.0170749	.0234955	35.27365	.3903318	.1957560
#2	.9695647	.0169075	.0230675	35.37311	.3888706	.1948891
#3	.9649293	.0170464	.0233950	35.35228	.3869797	.1958438
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8482489	340.9807	8.205715	92.76648	.3319744	.0116429
Stddev	.0012365	1.6692	.007028	.15643	.0006493	.0000815
%RSD	.1457701	.4895209	.0856527	.1686310	.1955781	.6996383
#1	.8493983	339.5430	8.197605	92.60324	.3316245	.0116625
#2	.8469407	342.8113	8.210035	92.78113	.3315752	.0117129
#3	.8484079	340.5877	8.209505	92.91507	.3327236	.0115535
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.979227	.6932141	2.334690	35.79366	.2530418	.0173184
Stddev	.073666	.0029391	.001958	.28652	.0067387	.0001828
%RSD	1.055508	.4239868	.0838764	.8004643	2.663097	1.055693
#1	6.907123	.6948640	2.334062	35.60439	.2492482	.0174785
#2	7.054362	.6898207	2.336885	36.12329	.2608222	.0173576
#3	6.976195	.6949575	2.333122	35.65329	.2490550	.0171192

Sample Name: Q2892-02DUP Acquired: 8/20/2025 14:15:13 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0264233	9.103807	F 11.37325	8.764164	2.092588	.3713261
Stddev	.0013502	.019089	.06805	.031474	.014919	.0011727
%RSD	5.109976	.2096838	.5983693	.3591252	.7129317	.3158237
#1	.0248732	9.092425	11.29658	8.755339	2.085674	.3700794
#2	.0270535	9.125846	11.42651	8.738044	2.082380	.3714914
#3	.0273433	9.093151	11.39666	8.799109	2.109709	.3724073

Elem	Sr4077
Units	ppm
Avg	-.094391
Stddev	.000797
%RSD	.8443527
#1	-.093695
#2	-.095261
#3	-.094218

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7508.741	127822.0	15191.75	5711.719	6451.386
Stddev	10.343	430.0	37.90	27.840	7.331
%RSD	.1377405	.3363943	.2494777	.4874122	.1136273
#1	7520.046	127965.1	15152.14	5711.849	6459.334
#2	7499.754	127338.7	15227.67	5683.815	6449.933
#3	7506.423	128162.2	15195.42	5739.494	6444.890

Sample Name: Q2892-02MS Acquired: 8/20/2025 14:23:25 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.8375885	1.968027	2.524403	1.560339	.1876213	220.7237
Stddev	.0028986	.023585	.003959	.003120	.0027111	.8697
%RSD	.3460639	1.198406	.1568121	.1999384	1.444968	.3940315
#1	.8405856	1.983515	2.522682	1.563262	.1890543	219.7679
#2	.8347997	1.940883	2.521596	1.557054	.1893152	220.9347
#3	.8373801	1.979682	2.528931	1.560701	.1844945	221.4685
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.251939	.1686884	.2344521	40.03896	.7346454	.4134228
Stddev	.007134	.0013880	.0002904	.13216	.0025962	.0007532
%RSD	.5698523	.8228426	.1238837	.3300763	.3533997	.1821893
#1	1.244684	.1670914	.2342510	39.91161	.7330328	.4129824
#2	1.252187	.1693687	.2343202	40.02982	.7332630	.4129934
#3	1.258946	.1696050	.2347851	40.17545	.7376403	.4142925
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6365308	342.0404	8.256953	107.5364	.8843806	.0735351
Stddev	.0006000	1.2277	.049335	.3484	.0010063	.0006350
%RSD	.0942599	.3589395	.5974981	.3239554	.1137892	.8635963
#1	.6360410	342.1362	8.210105	107.2630	.8838967	.0740371
#2	.6372001	340.7676	8.252308	107.4176	.8855375	.0728212
#3	.6363514	343.2175	8.308446	107.9286	.8837077	.0737471
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.14914	.9678536	2.624146	55.74369	.4151518	.3361824
Stddev	.02359	.0063598	.002300	.12086	.0063510	.0005428
%RSD	.2324284	.6571011	.0876435	.2168049	1.529804	.1614715
#1	10.15287	.9637258	2.626512	55.69497	.4212581	.3356427
#2	10.12391	.9646576	2.621918	55.65481	.4085815	.3361761
#3	10.17065	.9751775	2.624008	55.88131	.4156159	.3367284

Sample Name: Q2892-02MS Acquired: 8/20/2025 14:23:25 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.7222629	F 11.25956	F 12.22122	F 15.90150	2.135907	.6128346
Stddev	.0023544	.05172	.05124	.02695	.003741	.0028524
%RSD	.3259692	.4593524	.4192421	.1694696	.1751429	.4654428
#1	.7220149	11.21741	12.27839	15.92081	2.137425	.6097156
#2	.7200423	11.24399	12.20583	15.87071	2.131646	.6134775
#3	.7247314	11.31728	12.17945	15.91298	2.138651	.6153106

Elem	Sr4077
Units	ppm
Avg	.0823944
Stddev	.0021762
%RSD	2.641239
#1	.0798854
#2	.0835274
#3	.0837704

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7528.231	129849.1	15192.09	5769.563	6319.371
Stddev	5.478	279.9	114.32	4.511	3.143
%RSD	.0727668	.2155715	.7524927	.0781808	.0497333
#1	7527.947	130141.2	15321.01	5764.706	6319.554
#2	7522.901	129823.0	15152.22	5773.620	6316.141
#3	7533.846	129583.2	15103.05	5770.363	6322.418

Sample Name: Q2892-02MSD Acquired: 8/20/2025 14:27:28 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.8417563	1.938457	2.534799	1.537513	.1793907	223.2255
Stddev	.0024605	.037017	.004635	.002183	.0008653	2.0142
%RSD	.2923067	1.909600	.1828363	.1419846	.4823811	.9023260
#1	.8398327	1.980873	2.530064	1.540033	.1797096	223.5286
#2	.8409073	1.921820	2.539326	1.536194	.1784111	221.0769
#3	.8445289	1.912677	2.535007	1.536311	.1800513	225.0710
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.250926	.1656916	.2347031	40.17379	.7314897	.4205492
Stddev	.006507	.0009292	.0003529	.09213	.0027438	.0004887
%RSD	.5201927	.5608185	.1503598	.2293209	.3750994	.1161956
#1	1.248599	.1646966	.2345715	40.07415	.7338578	.4201653
#2	1.258277	.1665368	.2351029	40.25588	.7284829	.4203829
#3	1.245902	.1658413	.2344349	40.19135	.7321284	.4210993
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6299674	348.9118	8.295371	100.7823	.9105036	.0729152
Stddev	.0024795	1.7894	.030255	.3795	.0017048	.0005123
%RSD	.3935971	.5128562	.3647255	.3765675	.1872423	.7025561
#1	.6275063	350.8611	8.265309	100.4014	.9090166	.0734877
#2	.6299310	347.3436	8.325816	100.7851	.9123643	.0725000
#3	.6324650	348.5306	8.294989	101.1604	.9101300	.0727580
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.951618	.9550917	2.665477	50.09854	.4220437	.3305565
Stddev	.074688	.0011110	.007495	.37901	.0106968	.0006461
%RSD	.7505098	.1163294	.2811763	.7565253	2.534530	.1954594
#1	10.03731	.9563034	2.662221	50.53549	.4325864	.3309314
#2	9.91717	.9548506	2.674049	49.90135	.4111991	.3298105
#3	9.90038	.9541209	2.660161	49.85879	.4223455	.3309277

Sample Name: Q2892-02MSD Acquired: 8/20/2025 14:27:28 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.7158128	F 10.51572	9.867020	F 16.17619	2.342128	.5831440
Stddev	.0024995	.01783	.105925	.06258	.005426	.0029802
%RSD	.3491894	.1695726	1.073526	.3868792	.2316616	.5110498
#1	.7186905	10.49814	9.969282	16.22307	2.345327	.5810570
#2	.7145657	10.53379	9.757777	16.10513	2.335864	.5865571
#3	.7141821	10.51522	9.874001	16.20038	2.345195	.5818180

Elem	Sr4077
Units	ppm
Avg	.0758663
Stddev	.0028175
%RSD	3.713736
#1	.0733332
#2	.0789008
#3	.0753650

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7631.020	131251.8	15482.12	5840.786	6337.835
Stddev	10.556	430.5	98.62	4.416	10.888
%RSD	.1383318	.3280257	.6370010	.0756089	.1717898
#1	7634.827	130870.7	15595.88	5842.615	6350.407
#2	7639.144	131718.8	15429.71	5835.749	6331.647
#3	7619.088	131165.9	15420.77	5843.993	6331.451

Sample Name: Q2892-02A Acquired: 8/20/2025 14:31:30 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.8108756	1.860993	2.287975	1.512771	.5943811	191.8246
Stddev	.0028123	.028447	.002351	.006173	.0008449	3.5189
%RSD	.3468231	1.528565	.1027537	.4080340	.1421491	1.834421
#1	.8079156	1.888503	2.285742	1.518792	.5951504	188.3079
#2	.8135122	1.831694	2.287756	1.506457	.5945160	195.3456
#3	.8111989	1.862782	2.290429	1.513062	.5934768	191.8202
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.098907	.1608942	.2176169	35.58813	.6922371	.3908026
Stddev	.007795	.0005901	.0003226	.15579	.0011401	.0008311
%RSD	.7093014	.3667558	.1482487	.4377483	.1647040	.2126724
#1	1.100273	.1602208	.2176875	35.54227	.6910951	.3905985
#2	1.090519	.1611411	.2172648	35.46043	.6933754	.3900925
#3	1.105928	.1613208	.2178983	35.76170	.6922409	.3917167
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.053362	338.5843	8.227334	93.22776	.8195785	.0727969
Stddev	.001286	2.9146	.056958	.38451	.0005076	.0015711
%RSD	.1221276	.8608197	.6923077	.4124427	.0619374	2.158122
#1	1.052394	340.0548	8.219142	92.87939	.8190792	.0739112
#2	1.054822	335.2274	8.174915	93.16355	.8195621	.0710000
#3	1.052871	340.4707	8.287945	93.64033	.8200941	.0734795
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.265395	.9061653	2.456981	43.45782	.4395870	.3248953
Stddev	.115855	.0054693	.002830	.30576	.0102166	.0003544
%RSD	1.250401	.6035692	.1151818	.7035718	2.324137	.1090894
#1	9.345751	.9024614	2.453879	43.70097	.4444628	.3251846
#2	9.132591	.9035873	2.457644	43.11456	.4278460	.3245000
#3	9.317842	.9124472	2.459421	43.55795	.4464523	.3250015

Sample Name: Q2892-02A Acquired: 8/20/2025 14:31:30 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.6935053	9.111678	F 11.83901	F 14.12949	2.034842	.5206410
Stddev	.0014316	.042075	.02004	.05014	.011280	.0024309
%RSD	.2064309	.4617686	.1692777	.3548907	.5543353	.4669108
#1	.6938920	9.112871	11.85695	14.16961	2.046377	.5204568
#2	.6919201	9.069019	11.84269	14.07327	2.023836	.5183075
#3	.6947038	9.153144	11.81738	14.14557	2.034315	.5231588
Elem	Sr4077					
Units	ppm					
Avg	.0559738					
Stddev	.0010723					
%RSD	1.915784					
#1	.0547424					
#2	.0564778					
#3	.0567014					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	7490.812	126749.5	15069.15	5699.320	6465.583	
Stddev	4.714	216.7	96.21	16.442	3.188	
%RSD	.0629308	.1709930	.6384466	.2884933	.0493066	
#1	7491.138	126892.5	15179.10	5710.592	6467.468	
#2	7495.355	126855.8	15027.93	5706.914	6467.380	
#3	7485.943	126500.2	15000.42	5680.453	6461.903	

Sample Name: CCV02 Acquired: 8/20/2025 14:39:41 Type: Unk
Method: 6010-200.7 NEW(v122) 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	4.964567	5.052485	4.857183	5.008876	4.992450	9.853631	9.762197
Stddev	.017600	.064552	.004039	.008603	.004335	.001565	.165075
%RSD	.3545113	1.277638	.0831629	.1717563	.0868384	.0158803	1.690960
#1	4.968811	5.099510	4.855090	5.004967	4.991985	9.855427	9.671726
#2	4.979657	5.079058	4.861839	5.018739	4.988366	9.852561	9.662136
#3	4.945233	4.978888	4.854619	5.002921	4.996999	9.852905	9.952728
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2433466	2.448582	24.48854	1.002469	2.444131	1.243195	5.062771
Stddev	.0013145	.004403	.01853	.002293	.002878	.000708	.013589
%RSD	.5401744	.1798078	.0756520	.2287347	.1177417	.0569395	.2684173
#1	.2424801	2.444543	24.48975	1.004541	2.440809	1.243226	5.057789
#2	.2427006	2.453275	24.46944	1.000005	2.445848	1.243886	5.078148
#3	.2448591	2.447929	24.50643	1.002862	2.445737	1.242472	5.052375
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.439007	24.24725	2.447154	1.250457	25.18476	2.461153	2.506119
Stddev	.006061	.08114	.003704	.000693	.17526	.009819	.005150
%RSD	.2484998	.3346398	.1513721	.0554566	.6958999	.3989662	.2054972
#1	2.442138	24.20155	2.442879	1.249706	25.37121	2.456513	2.503547
#2	2.432021	24.19926	2.449400	1.251073	25.15967	2.454515	2.512048
#3	2.442862	24.34093	2.449185	1.250592	25.02339	2.472433	2.502762
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.28372	4.844309	5.029153	4.906165	4.921247	5.067349	4.847495
Stddev	.05178	.027141	.007588	.016789	.011916	.013425	.023157
%RSD	.2048042	.5602758	.1508766	.3421954	.2421347	.2649300	.4777146
#1	25.33426	4.819189	5.033029	4.900817	4.927186	5.052466	4.858489
#2	25.28613	4.840638	5.034020	4.924976	4.907529	5.071033	4.863108
#3	25.23078	4.873099	5.020410	4.892702	4.929027	5.078546	4.820889

Sample Name: CCV02 Acquired: 8/20/2025 14:39:41 Type: Unk
Method: 6010-200.7 NEW(v122) 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	4.832470	4.832344	4.957914
Stddev	.030122	.016084	.027552
%RSD	.6233330	.3328327	.5557199
#1	4.843428	4.849872	4.929499
#2	4.855578	4.818264	4.984513
#3	4.798402	4.828895	4.959729

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6102.014	103882.7	11360.20	4665.742	7129.425
Stddev	6.103	172.3	34.49	10.442	5.915
%RSD	.1000143	.1658827	.3036377	.2238035	.0829676
#1	6097.905	103683.9	11367.89	4659.221	7129.538
#2	6099.111	103976.2	11390.20	4660.219	7123.454
#3	6109.027	103988.1	11322.51	4677.786	7135.283

Sample Name: CCB02 Acquired: 8/20/2025 14:43:52 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.000870	.0001037	-.000200	-.001250	-.001598	-.000178	-.003024
Stddev	.000970	.0015160	.000769	.000883	.001778	.004958	.000924
%RSD	111.5564	1461.711	385.2148	70.63132	111.2521	2791.889	30.55272
#1	-.000750	.0011761	-.000049	-.000259	-.003646	-.000690	-.003526
#2	-.001894	-.001631	-.001033	-.001539	-.000713	.005017	-.003589
#3	.000035	.000766	.000483	-.001951	-.000437	-.004860	-.001958
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000029	.0000325	.0061993	-.000354	-.000141	-.000198	.0004676
Stddev	.000013	.0000375	.0020178	.000278	.000167	.000130	.0078024
%RSD	44.82549	115.1586	32.54910	78.47689	118.8237	65.71668	1668.790
#1	-.000044	.0000623	.0072461	-.000459	.000010	-.000068	-.003288
#2	-.000019	-.000010	.0038732	-.000039	-.000320	-.000197	.009438
#3	-.000024	.000045	.0074786	-.000563	-.000112	-.000328	-.004747
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002879	-.011116	-.000178	.0001549	.0075663	.0033587	-.000816
Stddev	.0001752	.015300	.000028	.0003545	.0063204	.0007568	.000147
%RSD	60.86263	137.6334	15.46286	228.8040	83.53415	22.53232	18.05782
#1	.0001190	-.018076	-.000208	-.000187	.0002785	.0031169	-.000831
#2	.0002759	.006426	-.000153	.000521	.0108718	.0027524	-.000955
#3	.0004688	-.021699	-.000174	.000131	.0115484	.0042069	-.000662
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.095337	.0042111	.0003254	-.001987	-.000114	.0020744	.0011428
Stddev	.022569	.0005014	.0001607	.000798	.001729	.0121540	.0002445
%RSD	23.67270	11.90763	49.38017	40.15983	1523.566	585.8987	21.39387
#1	-.093552	.0047825	.0002764	-.001806	.001175	.0161035	.0014045
#2	-.118745	.0040063	.0001950	-.002860	-.002079	-.004611	.0011039
#3	-.073714	.0038445	.0005049	-.001295	.000564	-.005269	.0009201

Sample Name: CCB02 Acquired: 8/20/2025 14:43:52 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0013555	-.007083	-.000014
Stddev	.0016010	.002149	.000036
%RSD	118.1122	30.34337	262.2772

#1	.0021899	-.004972	-.000024
#2	-.000490	-.009268	-.000043
#3	.002367	-.007008	.000026

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6379.986	109751.6	11461.98	4931.758	8123.485
Stddev	10.597	524.6	17.36	33.093	6.727
%RSD	.1660960	.4779930	.1514477	.6710172	.0828074

#1	6391.417	110055.6	11480.51	4922.723	8128.195
#2	6378.050	110053.3	11459.34	4968.430	8115.781
#3	6370.490	109145.8	11446.09	4904.121	8126.480

Sample Name: PB169301BL Acquired: 8/20/2025 14:48:10 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.000512	.0005984	.0002162	.0001640	-.001332	.0041184	-.002732
Stddev	.000904	.0007365	.0003527	.0014074	.001527	.0043359	.000653
%RSD	176.5278	123.0761	163.1555	858.2136	114.6627	105.2805	23.90910
#1	-.001339	-.000220	-.000182	.0015675	-.003035	.0068469	-.002027
#2	-.000649	.000806	.000490	-.001247	-.000879	.0063895	-.003316
#3	.000453	.001209	.000340	.000172	-.000083	-.000881	-.002852
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000052	.0000089	.0053283	-.000441	-.000188	-.000433	-.008146
Stddev	.000025	.0000627	.0130869	.000088	.000258	.000125	.004304
%RSD	47.33789	703.6047	245.6116	19.87641	137.5223	28.92646	52.83844
#1	-.000047	-.000060	.0001684	-.000360	.000073	-.000543	-.012113
#2	-.000079	.000023	-.004392	-.000429	-.000194	-.000297	-.003569
#3	-.000030	.000063	.020209	-.000534	-.000443	-.000459	-.008757
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001910	-.020747	-.000253	.0004080	-.040079	.0017530	-.000977
Stddev	.0001400	.024722	.000153	.0000510	.006985	.0017333	.000137
%RSD	73.31978	119.1599	60.63881	12.49093	17.42694	98.87546	14.05983
#1	.0002410	-.028858	-.000190	.0003741	-.048139	.0014901	-.000865
#2	.0002992	-.040395	-.000141	.0004666	-.035795	.0001662	-.001131
#3	.0000328	.007012	-.000427	.0003834	-.036303	.0036028	-.000937
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.162401	.0012839	-.000084	-.002225	-.000325	-.001854	.0011973
Stddev	.011563	.0000476	.000064	.000407	.001064	.007550	.0016794
%RSD	7.120206	3.706104	75.81630	18.28511	326.9986	407.1772	140.2694
#1	-.175382	.0012364	-.000133	-.002560	-.000250	.002803	.0006720
#2	-.158616	.0012837	-.000108	-.002344	.000699	.002199	-.000157
#3	-.153204	.0013316	-.000012	-.001772	-.001425	-.010565	.003076

Sample Name: PB169301BL Acquired: 8/20/2025 14:48:10 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0006611	-.008043	-.000015
Stddev	.0002200	.000327	.000074
%RSD	33.27169	4.071978	504.5244

#1	.0006856	-.008134	.000061
#2	.0004299	-.007679	-.000019
#3	.0008678	-.008314	-.000086

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6320.415	109572.3	11248.50	4860.195	8047.716
Stddev	9.991	281.4	28.07	23.381	1.485
%RSD	.1580827	.2568565	.2495625	.4810683	.0184482

#1	6321.533	109397.7	11243.14	4844.548	8049.297
#2	6329.801	109422.3	11223.49	4848.966	8046.352
#3	6309.912	109897.0	11278.86	4887.072	8047.500

Sample Name: PB169301BS Acquired: 8/20/2025 14:52:29 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.7684913	1.980923	.9336362	1.954503	.7922616	1.952506	.1874326
Stddev	.0025386	.051431	.0013655	.006795	.0026346	.009570	.0020050
%RSD	.3303372	2.596328	.1462506	.3476416	.3325418	.4901408	1.069725

#1	.7661622	1.950930	.9330835	1.949012	.7892747	1.963392	.1894203
#2	.7681145	2.040310	.9326338	1.962102	.7932548	1.948708	.1874668
#3	.7711973	1.951529	.9351914	1.952396	.7942552	1.945417	.1854108

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1990020	.1865071	1.009493	.4004236	.1907414	.3034701	2.909883
Stddev	.0013718	.0000346	.011883	.0018303	.0000968	.0011253	.024360
%RSD	.6893482	.0185629	1.177078	.4570959	.0507365	.3708169	.8371564

#1	.1987371	.1865057	1.022971	.4022070	.1907083	.3022125	2.935410
#2	.2004869	.1864733	1.000530	.4005140	.1906656	.3038158	2.907354
#3	.1977819	.1865425	1.004979	.3985497	.1908504	.3043821	2.886887

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1968728	1.959029	.4800866	.0738567	2.710051	.2944111	.2060566
Stddev	.0018721	.007295	.0011867	.0002524	.028079	.0033072	.0006019
%RSD	.9509188	.3724000	.2471860	.3418135	1.036097	1.123310	.2920999

#1	.1986452	1.951609	.4789766	.0739244	2.728314	.2926990	.2064864
#2	.1970584	1.959286	.4799460	.0735773	2.677719	.2982232	.2063146
#3	.1949148	1.966193	.4813374	.0740684	2.724121	.2923109	.2053687

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.290000	.2912877	.4024715	.6621054	.1896803	.8794658	5.385195
Stddev	.063737	.0021189	.0003489	.0007888	.0012136	.0184618	.012892
%RSD	.6860869	.7274266	.0866835	.1191408	.6397934	2.099208	.2394046

#1	9.318228	.2910155	.4020700	.6616427	.1910149	.8684890	5.382895
#2	9.217023	.2935296	.4026436	.6616572	.1893827	.8691279	5.399083
#3	9.334749	.2893181	.4027008	.6630162	.1886432	.9007805	5.373608

Sample Name: PB169301BS Acquired: 8/20/2025 14:52:29 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0016548	.1895921	.1899373
Stddev	.0021219	.0011275	.0013408
%RSD	128.2336	.5946786	.7058988

#1	-.000634	.1890860	.1914291
#2	.002042	.1908840	.1895498
#3	.003556	.1888065	.1888329

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6278.664	108318.0	11332.72	4830.578	7758.809
Stddev	19.563	67.0	52.82	12.674	19.136
%RSD	.3115795	.0618832	.4660908	.2623607	.2466299

#1	6292.885	108328.7	11337.06	4816.528	7769.078
#2	6286.754	108378.9	11277.86	4841.148	7770.618
#3	6256.354	108246.2	11383.23	4834.058	7736.731

Sample Name: Q2892-02LX5 Acquired: 8/20/2025 14:56:29 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0479101	-.002099	.2735407	-.000172	-.005051	46.48324	.2246085
Stddev	.0007099	.001504	.0006603	.003263	.001455	.02357	.0020585
%RSD	1.481637	71.64357	.2414074	1900.245	28.80723	.0506990	.9164705
#1	.0484457	-.002089	.2727803	.003181	-.006697	46.50259	.2234609
#2	.0481796	-.003608	.2738715	-.003336	-.003938	46.49015	.2269850
#3	.0471049	-.000600	.2739702	-.000360	-.004517	46.45700	.2233797
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0043514	.0029067	8.762137	.0937841	.0364012	.2175413	77.79362
Stddev	.0001071	.0000220	.022002	.0001024	.0001639	.0003553	.28013
%RSD	2.460812	.7567434	.2511017	.1091972	.4503169	.1633298	.3600896
#1	.0044666	.0029226	8.759774	.0936660	.0363954	.2175916	77.58140
#2	.0042549	.0029159	8.785225	.0938467	.0362403	.2171636	78.11114
#3	.0043327	.0028816	8.741412	.0938398	.0365680	.2178688	77.68833
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.017588	22.91832	.0639905	.0016993	1.445761	.1702877	.5639462
Stddev	.009691	.07553	.0005386	.0003372	.034582	.0022352	.0002866
%RSD	.4803464	.3295745	.8417159	19.84203	2.391940	1.312571	.0508267
#1	2.014133	23.00421	.0634592	.0013103	1.407361	.1678399	.5641475
#2	2.028533	22.86224	.0645361	.0019078	1.474446	.1722201	.5640731
#3	2.010097	22.88852	.0639761	.0018798	1.455477	.1708032	.5636181
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.513086	.0315946	.0039236	.0029807	2.194960	2.459324	1.630483
Stddev	.011295	.0009975	.0000839	.0006425	.012986	.016213	.005250
%RSD	.1503372	3.157256	2.137600	21.55434	.5916373	.6592410	.3219789
#1	7.500045	.0311923	.0039063	.0036243	2.188577	2.442674	1.624476
#2	7.519431	.0327305	.0040148	.0023393	2.209902	2.460238	1.632781
#3	7.519782	.0308612	.0038498	.0029785	2.186400	2.475061	1.634192

Sample Name: Q2892-02LX5 Acquired: 8/20/2025 14:56:29 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.3785300	.0791288	-.018822
Stddev	.0020709	.0023328	.000104
%RSD	.5471010	2.948049	.5537915
#1	.3772029	.0767113	-.018743
#2	.3774709	.0813664	-.018782
#3	.3809163	.0793088	-.018940

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6500.665	112070.4	12119.69	5033.124	7338.356
Stddev	5.025	72.5	22.20	14.018	8.171
%RSD	.0773000	.0646822	.1831882	.2785131	.1113420
#1	6496.699	112007.8	12094.08	5016.965	7335.592
#2	6506.316	112149.8	12133.47	5040.392	7347.550
#3	6498.979	112053.6	12131.51	5042.016	7331.926

Sample Name: Q2818-04 Acquired: 8/20/2025 15:00:34 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0374491	.0024814	.0354177	-.004809	-.004759	49.63469
Stddev	.0023460	.0009634	.0015182	.000870	.000437	.04192
%RSD	6.264420	38.82661	4.286529	18.09084	9.183934	.0844661
#1	.0388301	.0015390	.0356603	-.005631	-.004288	49.59154
#2	.0347404	.0024406	.0368001	-.003898	-.004840	49.67527
#3	.0387768	.0034646	.0337929	-.004900	-.005151	49.63726
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0599800	.0126183	.0084234	103.8756	.0532410	.0918263
Stddev	.0006249	.0000710	.0000173	.1339	.0002110	.0002651
%RSD	1.041849	.5628421	.2057390	.1289378	.3963007	.2887073
#1	.0606887	.0125798	.0084432	103.8686	.0532648	.0916303
#2	.0597434	.0127003	.0084113	104.0129	.0530191	.0921279
#3	.0595080	.0125748	.0084156	103.7453	.0534391	.0917206
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1169761	47.09003	5.038371	20.19779	.0527505	.0007198
Stddev	.0001268	.13510	.011751	.03417	.0001707	.0004160
%RSD	.1084240	.2869016	.2332394	.1691874	.3235463	57.79089
#1	.1170068	47.24556	5.046349	20.19482	.0527482	.0010890
#2	.1168367	47.00184	5.043887	20.23335	.0525809	.0002691
#3	.1170848	47.02268	5.024876	20.16520	.0529222	.0008012
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.74846	.4482502	3.978617	23.88313	.5507732	-.000911
Stddev	.06493	.0018786	.013899	.15001	.0013712	.000099
%RSD	.5092966	.4191027	.3493443	.6280867	.2489510	10.91826
#1	12.81781	.4462591	3.977289	24.05506	.5501715	-.000982
#2	12.73843	.4499914	3.965430	23.77895	.5523424	-.000797
#3	12.68913	.4484999	3.993133	23.81538	.5498059	-.000953

Sample Name: Q2818-04 Acquired: 8/20/2025 15:00:34 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.016795	.0031398	8.318259	F 36.32405	F 401.6404	-.025979
Stddev	.000431	.0004974	.036005	.15810	2.1034	.000285
%RSD	2.565097	15.84129	.4328436	.4352535	.5237025	1.096912
#1	-.016435	.0025702	8.345978	36.44555	401.9242	-.026308
#2	-.017272	.0034884	8.277565	36.14530	399.4096	-.025833
#3	-.016677	.0033607	8.331235	36.38130	403.5875	-.025798
Elem	Sr4077					
Units	ppm					
Avg	.6234871					
Stddev	.0026206					
%RSD	.4203083					
#1	.6258613					
#2	.6239249					
#3	.6206753					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	8408.621	144268.8	16160.61	6395.816	7097.325	
Stddev	5.556	292.5	27.37	40.784	9.656	
%RSD	.0660711	.2027285	.1693758	.6376623	.1360543	
#1	8410.018	144186.1	16191.25	6415.043	7107.187	
#2	8402.501	144593.7	16138.58	6423.431	7087.888	
#3	8413.346	144026.5	16151.99	6348.972	7096.901	

Sample Name: Q2818-05 Acquired: 8/20/2025 15:04:36 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0618296	-.040852	.0237567	-.000692	-.020938	40.21758
Stddev	.0025021	.003141	.0017041	.003170	.000382	.03206
%RSD	4.046676	7.689195	7.173020	457.8564	1.826130	.0797280
#1	.0646554	-.039388	.0256563	.002824	-.020573	40.25452
#2	.0609377	-.038710	.0232510	-.003331	-.020907	40.20128
#3	.0598958	-.044458	.0223626	-.001570	-.021336	40.19694
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0530809	.0144082	.0198173	89.53644	.3489483	.1223010
Stddev	.0005416	.0000327	.0001365	.04732	.0006833	.0001751
%RSD	1.020382	.2271999	.6888698	.0528520	.1958052	.1431786
#1	.0533728	.0143928	.0198804	89.54276	.3489395	.1224905
#2	.0524559	.0144458	.0196606	89.58029	.3482694	.1221451
#3	.0534139	.0143860	.0199108	89.48628	.3496359	.1222676
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3864758	313.8214	5.092060	16.28130	.5480729	.0069192
Stddev	.0007853	.2666	.012575	.02431	.0003389	.0003604
%RSD	.2032017	.0849635	.2469500	.1493241	.0618307	5.209319
#1	.3873517	313.5138	5.078587	16.26497	.5478858	.0065058
#2	.3858347	313.9632	5.103485	16.26970	.5484640	.0070839
#3	.3862409	313.9872	5.094110	16.30924	.5478688	.0071679
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.288948	.3913326	3.321910	19.80967	.4943762	.0008525
Stddev	.025718	.0027687	.008520	.05292	.0034067	.0000599
%RSD	.2768613	.7075013	.2564706	.2671584	.6890934	7.027032
#1	9.286787	.3940251	3.320250	19.75478	.4975986	.0009157
#2	9.315678	.3914792	3.331138	19.86038	.4908111	.0007964
#3	9.264380	.3884936	3.314343	19.81385	.4947190	.0008456

Sample Name: Q2818-05 Acquired: 8/20/2025 15:04:36 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.014927	-.002497	8.633685	F 21.41018	F 372.7321	.0033166
Stddev	.000806	.000312	.018826	.20394	2.9891	.0013157
%RSD	5.397512	12.50741	.2180515	.9525405	.8019468	39.67094
#1	-.015856	-.002202	8.626899	21.63163	375.0189	.0040414
#2	-.014491	-.002824	8.619192	21.36880	373.8276	.0041105
#3	-.014432	-.002465	8.654963	21.23009	369.3498	.0017978
Elem	Sr4077					
Units	ppm					
Avg	.2712377					
Stddev	.0009336					
%RSD	.3442177					
#1	.2704546					
#2	.2722709					
#3	.2709875					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	7785.835	136976.1	15437.59	5988.558	6939.559	
Stddev	4.550	71.4	11.59	5.159	9.303	
%RSD	.0584355	.0521081	.0750955	.0861433	.1340560	
#1	7790.834	137016.2	15439.77	5985.796	6929.744	
#2	7784.732	137018.4	15425.06	5985.368	6940.685	
#3	7781.938	136893.7	15447.94	5994.510	6948.248	

Sample Name: Q2818-05DUP Acquired: 8/20/2025 15:08:39 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0662286	-.043817	.0211924	-.000678	-.020922	41.01495
Stddev	.0008329	.002390	.0020857	.003098	.001166	.09471
%RSD	1.257572	5.453834	9.841643	456.6317	5.573481	.2309195
#1	.0671903	-.041147	.0223946	-.003590	-.022187	41.11568
#2	.0657444	-.045756	.0187841	.002577	-.019890	40.92770
#3	.0657511	-.044548	.0223986	-.001023	-.020690	41.00148
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0541724	.0145885	.0180552	91.29210	.3641794	.1259697
Stddev	.0005631	.0000202	.0001277	.13240	.0011040	.0002882
%RSD	1.039529	.1382530	.7070093	.1450308	.3031585	.2288244
#1	.0546862	.0146117	.0179748	91.42387	.3652973	.1261982
#2	.0542606	.0145791	.0179884	91.15908	.3630898	.1260651
#3	.0535704	.0145747	.0182023	91.29335	.3641510	.1256459
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3828499	338.3039	5.215679	16.64974	.5652697	.0113173
Stddev	.0001639	1.2835	.016288	.01313	.0016860	.0006610
%RSD	.0428171	.3793804	.3122818	.0788554	.2982629	5.840774
#1	.3829685	337.4819	5.221953	16.66197	.5644453	.0108747
#2	.3829184	337.6470	5.197187	16.63586	.5641546	.0110001
#3	.3826629	339.7829	5.227896	16.65139	.5672093	.0120771
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.08873	.3981231	3.484399	21.37595	.6179963	.0010211
Stddev	.05667	.0014055	.007300	.07078	.0073246	.0002785
%RSD	.5617596	.3530293	.2094956	.3311290	1.185210	27.27528
#1	10.04509	.3995322	3.476660	21.31578	.6106870	.0010620
#2	10.06831	.3967212	3.485375	21.35814	.6179657	.0012769
#3	10.15278	.3981160	3.491161	21.45394	.6253360	.0007244

Sample Name: Q2818-05DUP Acquired: 8/20/2025 15:08:39 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.014151	-.002251	9.343312	F 22.05654	F 382.2240	.0040880
Stddev	.000193	.000904	.027577	.12550	2.6196	.0013131
%RSD	1.366016	40.15356	.2951520	.5689815	.6853578	32.12052
#1	-.014083	-.002109	9.311632	21.93639	379.4445	.0030592
#2	-.014000	-.003217	9.361938	22.04644	382.5804	.0055669
#3	-.014369	-.001426	9.356366	22.18678	384.6472	.0036378
Elem	Sr4077					
Units	ppm					
Avg	.2588158					
Stddev	.0010341					
%RSD	.3995406					
#1	.2589704					
#2	.2577131					
#3	.2597638					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	7889.838	129998.9	15519.90	5843.422	6960.644	
Stddev	5.491	180.0	39.84	22.997	5.788	
%RSD	.0695944	.1384475	.2566937	.3935467	.0831503	
#1	7894.413	130188.5	15474.20	5866.089	6964.296	
#2	7891.353	129977.9	15538.17	5844.067	6963.666	
#3	7883.749	129830.4	15547.32	5820.109	6953.971	

Sample Name: Q2818-05A Acquired: 8/20/2025 15:24:51 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.6863638	1.871445	.9497124	1.599349	.5881448	41.40286
Stddev	.0025814	.063999	.0029276	.008016	.0023923	.08952
%RSD	.3760931	3.419748	.3082619	.5012204	.4067555	.2162122
#1	.6884797	1.813673	.9515626	1.594475	.5902588	41.42642
#2	.6834877	1.860424	.9463371	1.594971	.5886279	41.30392
#3	.6871238	1.940239	.9512374	1.608601	.5855479	41.47824
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2031786	.1602716	.2126609	89.70706	.6499333	.3179470
Stddev	.0007649	.0007444	.0005703	.25213	.0014352	.0007208
%RSD	.3764759	.4644583	.2681511	.2810597	.2208244	.2267010
#1	.2040610	.1602095	.2127099	89.88403	.6505388	.3186595
#2	.2027043	.1595602	.2120677	89.41837	.6509665	.3172182
#3	.2027704	.1610451	.2132050	89.81877	.6482945	.3179632
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6067831	314.1422	5.213352	17.71171	1.032700	.0661234
Stddev	.0023005	1.3134	.014283	.05178	.002761	.0003071
%RSD	.3791340	.4181027	.2739620	.2923486	.2673624	.4644743
#1	.6064052	315.1531	5.228108	17.69573	1.034363	.0664778
#2	.6046950	314.6159	5.199596	17.66980	1.029513	.0659340
#3	.6092492	312.6576	5.212352	17.76960	1.034225	.0659585
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.70917	.6178813	3.431938	27.67394	.6931137	.3112344
Stddev	.08878	.0000299	.002855	.22513	.0034773	.0003289
%RSD	.7582194	.0048441	.0831873	.8134940	.5016890	.1056748
#1	11.76613	.6179112	3.428944	27.81925	.6914893	.3109923
#2	11.75451	.6178813	3.434630	27.78795	.6971059	.3111020
#3	11.60688	.6178513	3.432241	27.41462	.6907460	.3116088

Sample Name: Q2818-05A Acquired: 8/20/2025 15:24:51 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.6457911	.1391467	9.346867	F 26.49448	F 371.4874	.1599798
Stddev	.0003232	.0011171	.013998	.12668	2.5867	.0009338
%RSD	.0500433	.8028427	.1497621	.4781278	.6963115	.5837034
#1	.6456357	.1400948	9.357166	26.37518	368.9210	.1609311
#2	.6461626	.1394301	9.352505	26.48083	371.4473	.1590645
#3	.6455750	.1379151	9.330929	26.62743	374.0939	.1599437
Elem	Sr4077					
Units	ppm					
Avg	.4190822					
Stddev	.0020308					
%RSD	.4845751					
#1	.4214265					
#2	.4179596					
#3	.4178606					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	7720.995	134923.5	15197.19	5924.117	6879.307	
Stddev	4.629	251.6	112.37	14.590	5.089	
%RSD	.0599493	.1864813	.7393938	.2462883	.0739758	
#1	7717.762	135008.6	15228.88	5939.887	6875.461	
#2	7718.926	135121.5	15290.30	5911.098	6877.383	
#3	7726.297	134640.3	15072.38	5921.366	6885.078	

Sample Name: Q2818-05LX5 Acquired: 8/20/2025 15:32:55 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0135485	-.009150	.0026915	-.002226	-.004604	9.393418
Stddev	.0007143	.000563	.0005206	.001842	.001640	.012634
%RSD	5.272274	6.153851	19.34346	82.73713	35.61836	.1345031
#1	.0142446	-.009245	.0023762	-.000130	-.005933	9.393183
#2	.0128173	-.009660	.0024058	-.002962	-.005107	9.406167
#3	.0135835	-.008546	.0032924	-.003585	-.002771	9.380902
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0088529	.0035086	.0023784	21.37225	.0826845	.0227449
Stddev	.0006732	.0000406	.0000562	.08721	.0000937	.0000702
%RSD	7.604819	1.156571	2.363196	.4080307	.1132875	.3086072
#1	.0094691	.0034623	.0023648	21.32960	.0827909	.0227338
#2	.0089552	.0035380	.0023304	21.47258	.0826145	.0228200
#3	.0081343	.0035255	.0024402	21.31459	.0826481	.0226809
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0943574	72.26772	1.228556	3.921377	.1035735	.0009685
Stddev	.0003092	.14668	.006659	.019227	.0006122	.0003771
%RSD	.3277326	.2029666	.5420591	.4903131	.5910286	38.93487
#1	.0940376	72.17125	1.221941	3.903218	.1030951	.0007700
#2	.0943796	72.43652	1.235259	3.941519	.1033620	.0014033
#3	.0946549	72.19540	1.228468	3.919394	.1042633	.0007321
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.011276	.0950435	.7863928	4.331546	.1104885	.0001098
Stddev	.018200	.0008414	.0027023	.034781	.0004366	.0002338
%RSD	.9048923	.8853051	.3436359	.8029635	.3951150	212.8182
#1	1.990327	.0958296	.7837157	4.291407	.1102455	.0002032
#2	2.020294	.0951451	.7891196	4.352789	.1102275	.0002825
#3	2.023205	.0941560	.7863431	4.350441	.1109925	-.000156

Sample Name: Q2818-05LX5 Acquired: 8/20/2025 15:32:55 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.006194	-.000765	1.904185	4.127167	F 74.81011	-.005126
Stddev	.000527	.000748	.008275	.012455	.29734	.000407
%RSD	8.510592	97.77066	.4345568	.3017691	.3974635	7.947507
#1	-.005615	-.000230	1.896282	4.124697	74.57163	-.004717
#2	-.006319	-.001620	1.912787	4.116132	74.71543	-.005532
#3	-.006647	-.000445	1.903485	4.140671	75.14326	-.005129
Elem	Sr4077					
Units	ppm					
Avg	.0641938					
Stddev	.0003594					
%RSD	.5598663					
#1	.0638420					
#2	.0645604					
#3	.0641789					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6614.529	114346.3	12210.35	5093.877	7600.690	
Stddev	11.254	237.7	53.44	26.403	18.425	
%RSD	.1701375	.2079038	.4376973	.5183266	.2424126	
#1	6615.973	114316.3	12232.15	5115.902	7599.221	
#2	6624.992	114125.0	12149.45	5064.608	7619.805	
#3	6602.624	114597.6	12249.45	5101.122	7583.043	

Sample Name: Q2818-05MS Acquired: 8/20/2025 15:37:08 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.6726270	1.845047	.9337112	1.570809	.5779820	40.75386
Stddev	.0024548	.011935	.0042532	.001767	.0006438	.03216
%RSD	.3649623	.6468763	.4555140	.1125001	.1113886	.0789076
#1	.6700929	1.858693	.9311813	1.572413	.5777453	40.76362
#2	.6727941	1.836551	.9386216	1.568915	.5774901	40.71796
#3	.6749941	1.839898	.9313307	1.571098	.5787107	40.78001
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1997316	.1589324	.2086217	88.54608	.6409163	.3121346
Stddev	.0009338	.0005866	.0004314	.19094	.0009293	.0007512
%RSD	.4675193	.3690539	.2068072	.2156417	.1449994	.2406815
#1	.2008023	.1590056	.2082223	88.68661	.6419607	.3117709
#2	.1993063	.1583127	.2090793	88.32868	.6401805	.3129985
#3	.1990862	.1594789	.2085636	88.62294	.6406078	.3116345
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5975749	309.6065	5.167896	17.45689	1.013517	.0647819
Stddev	.0020769	.8252	.022284	.03346	.000728	.0003562
%RSD	.3475610	.2665410	.4311913	.1916751	.0718393	.5498946
#1	.5952824	310.5416	5.189143	17.46184	1.013081	.0651740
#2	.5981114	308.9800	5.144704	17.42123	1.014358	.0644781
#3	.5993310	309.2980	5.169840	17.48760	1.013113	.0646936
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.54634	.6048524	3.388758	27.34417	.6817065	.3068142
Stddev	.07575	.0023288	.004846	.15309	.0049026	.0008455
%RSD	.6560436	.3850181	.1429980	.5598590	.7191724	.2755620
#1	11.63301	.6064328	3.383675	27.52071	.6845748	.3064445
#2	11.49281	.6021781	3.393326	27.26364	.6760456	.3062166
#3	11.51319	.6059465	3.389273	27.24816	.6844992	.3077816

Sample Name: Q2818-05MS Acquired: 8/20/2025 15:37:08 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.6342748	.1381742	9.121811	F 25.98300	F 365.2993	.1576257
Stddev	.0019948	.0004007	.023678	.05367	.1826	.0004896
%RSD	.3145069	.2899942	.2595771	.2065560	.0499856	.3105921
#1	.6323350	.1385945	9.131672	25.97889	365.2186	.1573855
#2	.6363205	.1381316	9.138965	26.03860	365.5084	.1573026
#3	.6341688	.1377965	9.094796	25.93150	365.1710	.1581889
Elem	Sr4077					
Units	ppm					
Avg	.4170627					
Stddev	.0029015					
%RSD	.6956975					
#1	.4199347					
#2	.4141325					
#3	.4171208					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	7830.919	136868.9	15339.37	6024.676	7002.897	
Stddev	13.972	393.9	50.77	8.636	6.182	
%RSD	.1784239	.2877826	.3309677	.1433506	.0882793	
#1	7837.167	136425.2	15292.39	6014.880	7009.982	
#2	7840.676	137004.0	15393.23	6031.190	6998.601	
#3	7814.912	137177.4	15332.49	6027.958	7000.107	

Sample Name: Q2818-05MSD Acquired: 8/20/2025 15:41:10 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.6673061	1.739634	.9389860	1.547024	.5757149	43.46283
Stddev	.0040457	.101634	.0018501	.009273	.0019681	.01427
%RSD	.6062689	5.842253	.1970351	.5994140	.3418573	.0328306
#1	.6719011	1.815890	.9406761	1.557625	.5734499	43.46360
#2	.6657381	1.778761	.9392725	1.543030	.5770076	43.47670
#3	.6642792	1.624252	.9370093	1.540417	.5766873	43.44819
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2015113	.1566737	.2120683	94.22648	.6598351	.3242728
Stddev	.0006691	.0004818	.0000830	.15317	.0011123	.0003850
%RSD	.3320497	.3075384	.0391360	.1625524	.1685657	.1187171
#1	.2022786	.1568822	.2121578	94.39388	.6589470	.3245857
#2	.2012063	.1561228	.2120530	94.09335	.6610826	.3238430
#3	.2010491	.1570163	.2119939	94.19222	.6594757	.3243898
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6183534	330.5122	5.471058	18.46637	1.064386	.0645027
Stddev	.0009495	.4872	.015594	.06738	.001832	.0005531
%RSD	.1535573	.1474156	.2850360	.3648743	.1721474	.8574740
#1	.6194314	330.8995	5.487829	18.42076	1.063017	.0650522
#2	.6176411	330.6719	5.456995	18.43459	1.063673	.0639461
#3	.6179879	329.9651	5.468349	18.54376	1.066468	.0645100
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.24330	.6265696	3.610456	28.67076	.7143507	.3056113
Stddev	.04637	.0016496	.005768	.17532	.0036939	.0008125
%RSD	.3787450	.2632713	.1597496	.6114919	.5171001	.2658474
#1	12.28973	.6284736	3.603803	28.79604	.7112012	.3064079
#2	12.24319	.6256621	3.613540	28.74584	.7184165	.3056420
#3	12.19699	.6255730	3.614027	28.47040	.7134343	.3047839

Sample Name: Q2818-05MSD Acquired: 8/20/2025 15:41:10 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.6473065	.1369292	9.860299	F 27.67274	F 388.3373	.1556508
Stddev	.0033595	.0007815	.039766	.11456	4.7329	.0013275
%RSD	.5189998	.5706928	.4032971	.4139677	1.218772	.8528392
#1	.6511844	.1377880	9.845671	27.79480	393.1753	.1565397
#2	.6454559	.1362600	9.905308	27.65587	388.1197	.1562877
#3	.6452792	.1367396	9.829919	27.56755	383.7170	.1541249
Elem	Sr4077					
Units	ppm					
Avg	.4290572					
Stddev	.0035688					
%RSD	.8317668					
#1	.4331416					
#2	.4274886					
#3	.4265414					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	7799.453	136397.1	15422.75	5947.031	6818.817	
Stddev	2.293	339.9	45.36	24.775	2.433	
%RSD	.0294032	.2491956	.2940905	.4165975	.0356833	
#1	7797.315	136764.1	15454.11	5975.613	6821.465	
#2	7799.170	136093.1	15443.41	5933.795	6818.306	
#3	7801.875	136334.1	15370.74	5931.685	6816.680	

Sample Name: CCV03 Acquired: 8/20/2025 15:45:09 Type: Unk
Method: 6010-200.7 NEW(v122) 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	5.007315	4.778010	4.898519	5.053180	5.033378	9.769302	9.556323
Stddev	.010077	.026492	.007823	.017798	.010632	.025840	.135770
%RSD	.2012431	.5544476	.1597050	.3522129	.2112397	.2644984	1.420739
#1	4.996677	4.755865	4.897502	5.037057	5.023168	9.799130	9.598682
#2	5.016716	4.807358	4.891253	5.072278	5.044388	9.755047	9.665864
#3	5.008553	4.770806	4.906800	5.050206	5.032577	9.753731	9.404423
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2505592	2.467868	24.09964	1.019062	2.461485	1.250662	4.950934
Stddev	.0007802	.002283	.00553	.001425	.003081	.000308	.014454
%RSD	.3113993	.0925031	.0229490	.1397956	.1251831	.0245960	.2919468
#1	.2511229	2.467792	24.09612	1.017714	2.462015	1.250307	4.943711
#2	.2496687	2.465623	24.10601	1.018920	2.458174	1.250855	4.967576
#3	.2508860	2.470187	24.09678	1.020552	2.464268	1.250824	4.941515
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.387289	24.11324	2.468693	1.259497	22.89269	2.441554	2.527550
Stddev	.007264	.05789	.003597	.004041	.12277	.003667	.009641
%RSD	.3042618	.2400629	.1457156	.3208770	.5362830	.1501724	.3814482
#1	2.378902	24.17819	2.467179	1.255572	22.79233	2.437381	2.516418
#2	2.391402	24.09447	2.466101	1.259274	23.02958	2.443022	2.532959
#3	2.391562	24.06707	2.472800	1.263646	22.85615	2.444259	2.533272
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.47144	4.941882	5.051217	4.929315	4.821648	5.100357	4.920614
Stddev	.15441	.009886	.004678	.001229	.005878	.008548	.006496
%RSD	.6309987	.2000518	.0926033	.0249233	.1219162	.1676025	.1320201
#1	24.30968	4.947399	5.048621	4.928000	4.824635	5.094847	4.916989
#2	24.61728	4.930469	5.056616	4.929512	4.825432	5.110205	4.916740
#3	24.48736	4.947779	5.048413	4.930434	4.814875	5.096021	4.928114

Sample Name: CCV03 Acquired: 8/20/2025 15:45:09 Type: Unk
Method: 6010-200.7 NEW(v122) 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	5.040846	4.592629	4.856853
Stddev	.016904	.010175	.063749
%RSD	.3353316	.2215449	1.312559
#1	5.052083	4.591751	4.816865
#2	5.049050	4.603214	4.823325
#3	5.021407	4.582922	4.930370

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6028.447	102176.7	11052.98	4591.252	7044.908
Stddev	6.235	109.0	34.10	24.983	17.590
%RSD	.1034311	.1066596	.3085487	.5441442	.2496774
#1	6031.783	102286.9	11034.00	4608.224	7046.695
#2	6032.303	102069.0	11092.35	4602.967	7061.535
#3	6021.253	102174.1	11032.59	4562.564	7026.493

Sample Name: CCB03 Acquired: 8/20/2025 15:49:22 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0015874	-.000061	.0000524	-.001239	-.000664	.0022425
Stddev	.0004672	.001417	.0010224	.000892	.001747	.0026051
%RSD	29.43364	2311.634	1951.715	71.99534	263.0574	116.1669
#1	.0015993	-.001678	.0009828	-.002244	-.000459	.0051700
#2	.0011143	.000963	.0002166	-.000931	-.002504	.0001796
#3	.0020485	.000532	-.001042	-.000541	.000971	.0013781
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003035	-.000055	.0000109	.0010063	-.000450	-.000036
Stddev	.000756	.000034	.0000346	.0037528	.000329	.000125
%RSD	24.90666	62.02063	317.5191	372.9301	73.13871	344.2550
#1	-.003447	-.000026	.0000266	-.003180	-.000622	.000094
#2	-.003495	-.000093	-.000029	.002131	-.000658	-.000048
#3	-.002163	-.000047	.000035	.004068	-.000071	-.000155
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000319	.0002328	.0009010	-.028058	-.000193	.0004199
Stddev	.000192	.0052018	.0002303	.010000	.000184	.0004708
%RSD	60.28900	2234.065	25.56345	35.63969	95.22368	112.1235
#1	-.000540	-.002343	.0006540	-.018539	-.000253	.0004599
#2	-.000201	.006220	.0009390	-.038478	.000013	.0008694
#3	-.000214	-.003178	.0011099	-.027157	-.000339	-.000070
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0276476	.0026750	-.000641	.1422258	.0044476	.0002299
Stddev	.0345698	.0031535	.000077	.0590281	.0004811	.0001696
%RSD	125.0370	117.8879	11.99404	41.50307	10.81746	73.78596
#1	-.009529	-.000615	-.000594	.0794544	.0047592	.0000345
#2	.058826	.005672	-.000599	.1506088	.0038935	.0003389
#3	.033646	.002968	-.000730	.1966142	.0046901	.0003162

Sample Name: CCB03 Acquired: 8/20/2025 15:49:22 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB03 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002017	.0002648	.1044758	.0004228	F .0901592	-.007389
Stddev	.000487	.0008356	.1388919	.0001374	.0049594	.000417
%RSD	24.15179	315.5334	132.9416	32.50715	5.500670	5.637733
#1	-.002158	-.000698	.0273287	.0003924	.0947773	-.006909
#2	-.002418	.000799	.2648164	.0005729	.0907827	-.007622
#3	-.001475	.000694	.0212825	.0003031	.0849176	-.007638

Elem	Sr4077
Units	ppm
Avg	.0001177
Stddev	.0001203
%RSD	102.1705
#1	.0000830
#2	.0000186
#3	.0002515

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6342.990	109512.0	11217.58	4861.381	8083.949
Stddev	15.347	264.6	23.17	6.047	19.245
%RSD	.2419473	.2416445	.2065673	.1243956	.2380648
#1	6349.728	109706.5	11200.56	4863.301	8085.695
#2	6325.427	109210.7	11243.97	4854.607	8063.891
#3	6353.815	109618.9	11208.21	4866.235	8102.262

Sample Name: PB169303BL Acquired: 8/20/2025 15:53:41 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0005820	-.000799	-.000566	-.000593	-.000809	-.004698
Stddev	.0013260	.000269	.000940	.002766	.000777	.010529
%RSD	227.8522	33.68139	166.2372	466.1851	96.03710	224.1190
#1	.0013407	-.000839	-.001624	.002465	-.001693	-.007248
#2	.0013544	-.001045	-.000246	-.001325	-.000228	-.013719
#3	-.000949	-.000512	.000173	-.002920	-.000507	.006872
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003160	-.000052	-.000005	-.000035	-.000520	-.000091
Stddev	.001215	.000026	.000030	.008641	.000253	.000050
%RSD	38.44752	49.36426	651.7586	24637.61	48.58443	55.43980
#1	-.002694	-.000078	.000002	.009813	-.000693	-.000125
#2	-.002248	-.000049	-.000037	-.003570	-.000637	-.000114
#3	-.004539	-.000028	.000022	-.006349	-.000230	-.000033
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000263	-.002318	.0002111	-.004866	-.000057	.0005426
Stddev	.000176	.002186	.0005137	.007237	.000153	.0002733
%RSD	67.17161	94.29892	243.3850	148.7168	268.2482	50.36511
#1	-.000453	-.000721	.0006305	-.004473	.000087	.0008575
#2	-.000105	-.004810	.0003646	.002166	-.000218	.0003666
#3	-.000230	-.001424	-.000362	-.012291	-.000040	.0004038
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0071618	.0021764	-.000972	.0811552	.0015383	-.000012
Stddev	.0195120	.0007432	.000227	.0431357	.0002746	.000109
%RSD	272.4444	34.14765	23.32373	53.15210	17.85411	891.0586
#1	-.008616	.0014673	-.000777	.0528566	.0012634	-.000130
#2	.001122	.0029495	-.000919	.0598070	.0015388	.000009
#3	.028980	.0021125	-.001221	.1308022	.0018127	.000084

Sample Name: PB169303BL Acquired: 8/20/2025 15:53:41 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.002120	-.000182	.0018828	.0004238	F .0603502	-.007666
Stddev	.000135	.000374	.0055760	.0009469	.0032289	.001580
%RSD	6.357853	205.3478	296.1562	223.4402	5.350267	20.61355
#1	-.002261	.000082	.0017761	.0003583	.0632991	-.007583
#2	-.002108	-.000610	-.003639	.0014017	.0608516	-.009285
#3	-.001992	-.000018	.007511	-.000489	.0569000	-.006128

Elem	Sr4077
Units	ppm
Avg	-.000006
Stddev	.000038
%RSD	642.7489
#1	-.000000
#2	.000029
#3	-.000046

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6356.387	110216.7	11330.99	4897.193	8086.713
Stddev	8.422	348.5	15.85	23.053	7.543
%RSD	.1324981	.3161819	.1398793	.4707371	.0932725
#1	6362.107	110322.2	11318.46	4906.962	8082.081
#2	6360.338	109827.7	11348.80	4870.864	8095.416
#3	6346.715	110500.3	11325.70	4913.752	8082.641

Sample Name: PB169303BS Acquired: 8/20/2025 15:58:00 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.7798616	1.974867	.9469622	1.982125	.7794342	2.004153
Stddev	.0053502	.099028	.0017656	.014804	.0026546	.002157
%RSD	.6860489	5.014418	.1864453	.7468996	.3405841	.1076183

#1	.7753933	2.017820	.9489527	1.978655	.7763702	2.001900
#2	.7784011	1.861615	.9463486	1.969364	.7808898	2.006199
#3	.7857905	2.045167	.9455853	1.998357	.7810426	2.004358

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1912461	.2028442	.1895678	1.026760	.4100419	.1936529
Stddev	.0010053	.0002549	.0001851	.009401	.0002601	.0004632
%RSD	.5256382	.1256595	.0976172	.9156428	.0634425	.2392070

#1	.1900959	.2027380	.1896671	1.036095	.4103421	.1941162
#2	.1916861	.2026596	.1893543	1.026891	.4098829	.1931898
#3	.1919564	.2031350	.1896821	1.017294	.4099007	.1936526

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3093409	3.031308	.2005006	1.975678	.4880593	.0753505
Stddev	.0006230	.003746	.0004824	.008792	.0002194	.0005121
%RSD	.2013991	.1235680	.2405766	.4450207	.0449610	.6796316

#1	.3091382	3.035356	.2003552	1.965605	.4883048	.0758048
#2	.3088446	3.030602	.2001076	1.979612	.4878822	.0754512
#3	.3100401	3.027966	.2010389	1.981815	.4879909	.0747955

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.823797	.2988580	.2108897	9.751599	.2959665	.3946253
Stddev	.021281	.0022179	.0006185	.050237	.0003373	.0016380
%RSD	.7536132	.7421119	.2932907	.5151682	.1139797	.4150690

#1	2.808557	.2984484	.2113294	9.702931	.2963273	.3940772
#2	2.814725	.3012521	.2111573	9.748595	.2959130	.3933316
#3	2.848111	.2968735	.2101824	9.803271	.2956590	.3964670

Sample Name: PB169303BS Acquired: 8/20/2025 15:58:00 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.6492152	.1861974	.8994007	5.460416	F .0484551	.1922401
Stddev	.0029627	.0010339	.0087382	.036771	.0010335	.0019145
%RSD	.4563505	.5552658	.9715603	.6734021	2.132861	.9958756

#1	.6495628	.1851898	.8905121	5.439017	.0479657	.1900329
#2	.6460940	.1861468	.9079803	5.439357	.0477572	.1932377
#3	.6519887	.1872557	.8997095	5.502875	.0496424	.1934498

Elem	Sr4077
Units	ppm
Avg	.1930608
Stddev	.0004906
%RSD	.2541253

#1	.1925280
#2	.1934939
#3	.1931606

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6287.492	106218.8	11293.34	4809.793	7752.446
Stddev	4.095	216.9	27.50	3.425	9.527
%RSD	.0651303	.2042409	.2434805	.0712124	.1228864

#1	6287.471	106330.7	11292.10	4808.314	7745.768
#2	6283.407	106356.9	11321.43	4807.355	7748.215
#3	6291.597	105968.7	11266.48	4813.709	7763.355

Sample Name: Q2881-01 Acquired: 8/20/2025 16:02:00 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.001433	-.001988	.0050607	.0014664	-.000549	.0478653	.0011208
Stddev	.001213	.001036	.0012155	.0021843	.001164	.0031199	.0007738
%RSD	84.63479	52.10172	24.01855	148.9605	211.9729	6.518091	69.04092
#1	-.002831	-.001683	.0054060	.0010964	-.000070	.0446973	.0020076
#2	-.000657	-.001139	.0060662	-.000509	.000299	.0509348	.0007729
#3	-.000812	-.003142	.0037099	.003812	-.001876	.0479638	.0005820
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000114	.0000179	3.795015	-.000107	.0060428	.0142734	1.131198
Stddev	.000054	.0000518	.004171	.000067	.0001944	.0003103	.003647
%RSD	47.11084	289.7730	.1099030	62.63434	3.217745	2.174199	.3223714
#1	-.000062	.0000497	3.793764	-.000169	.0058183	.0143836	1.127088
#2	-.000170	-.000042	3.799668	-.000117	.0061572	.0139230	1.132461
#3	-.000111	.000046	3.791612	-.000036	.0061529	.0145136	1.134045
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0157154	1.469035	.0072678	.0001355	12.08933	.0027760	.0295800
Stddev	.0002710	.026786	.0000596	.0001698	.07262	.0013825	.0002687
%RSD	1.724446	1.823389	.8203985	125.2978	.6006847	49.80158	.9085336
#1	.0160086	1.499854	.0073364	.0000140	12.03673	.0011796	.0298834
#2	.0156633	1.451357	.0072286	.0003295	12.05908	.0035684	.0294847
#3	.0154742	1.455893	.0072383	.0000630	12.17219	.0035799	.0293719
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5267241	.0083004	.0005060	-.016282	-.000545	5.324327	.0065369
Stddev	.0260761	.0005183	.0001457	.000484	.000899	.029524	.0007317
%RSD	4.950623	6.243821	28.78929	2.972322	165.0278	.5545109	11.19304
#1	.5231359	.0077139	.0004151	-.016707	-.000092	5.321795	.0071526
#2	.5544086	.0084903	.0004289	-.015755	-.001581	5.296151	.0067301
#3	.5026280	.0086968	.0006741	-.016384	.000037	5.355035	.0057280

Sample Name: Q2881-01 Acquired: 8/20/2025 16:02:00 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.695664	-.013335	.0194870
Stddev	.018475	.000721	.0001230
%RSD	.3934534	5.407682	.6311082
#1	4.681231	-.013363	.0194128
#2	4.689275	-.012601	.0196290
#3	4.716486	-.014042	.0194193

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6358.851	110617.5	11494.03	4859.150	7961.357
Stddev	10.944	449.6	55.35	10.890	9.099
%RSD	.1720989	.4064529	.4815779	.2241212	.1142909
#1	6346.216	110687.6	11448.93	4846.624	7954.162
#2	6365.307	111027.9	11477.36	4864.444	7971.585
#3	6365.031	110136.9	11555.80	4866.381	7958.324

Sample Name: Q2881-02 Acquired: 8/20/2025 16:06:17 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.002823	-.000943	.0016932	.0012803	.0010497	.0539177	-.000764
Stddev	.000720	.000702	.0005488	.0008144	.0007496	.0050546	.000586
%RSD	25.50487	74.47204	32.41362	63.61062	71.40827	9.374695	76.65511
#1	-.002982	-.000715	.0018592	.0003528	.0007045	.0545539	-.000574
#2	-.003450	-.001731	.0010805	.0016099	.0005350	.0586242	-.001422
#3	-.002037	-.000383	.0021398	.0018783	.0019098	.0485752	-.000297
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000107	.0000530	4.088617	-.000148	.0065447	.0045239	.1070616
Stddev	.000042	.0000843	.015247	.000153	.0000543	.0002662	.0025056
%RSD	39.49229	159.1160	.3729214	103.6171	.8303515	5.885021	2.340374
#1	-.000060	.0001502	4.097027	.000029	.0065303	.0042194	.1076434
#2	-.000143	.0000002	4.071017	-.000228	.0064990	.0046393	.1043163
#3	-.000118	.0000085	4.097808	-.000246	.0066048	.0047129	.1092252
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0188846	1.607884	.0072994	.0001705	12.15598	.0022121	.0282346
Stddev	.0004392	.021055	.0001525	.0004759	.01565	.0026766	.0002215
%RSD	2.325710	1.309478	2.089759	279.1181	.1287808	120.9989	.7846182
#1	.0190640	1.624250	.0071436	-.000008	12.16061	.0006189	.0283594
#2	.0183840	1.584131	.0074484	-.000191	12.16880	.0053022	.0283655
#3	.0192056	1.615271	.0073063	.000710	12.13853	.0007151	.0279788
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6315239	.0079561	.0004042	-.015770	.0007541	5.608318	.0083677
Stddev	.0052933	.0003093	.0001087	.000153	.0010240	.008702	.0015004
%RSD	.8381811	3.887578	26.90046	.9689758	135.7835	.1551586	17.93060
#1	.6262729	.0076218	.0003316	-.015936	-.000395	5.615877	.0100999
#2	.6314403	.0082321	.0005293	-.015636	.001086	5.610271	.0075301
#3	.6368585	.0080143	.0003518	-.015737	.001571	5.598805	.0074731

Sample Name: Q2881-02 Acquired: 8/20/2025 16:06:17 Type: Unk
Method: 6010-200.7 NEW(v122) 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	5.121587	-.015099	.0220459
Stddev	.032560	.000790	.0001085
%RSD	.6357381	5.231298	.4920469
#1	5.095039	-.015954	.0221401
#2	5.157917	-.014397	.0219273
#3	5.111806	-.014947	.0220703

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6352.649	110934.0	11306.74	4866.629	7936.678
Stddev	4.191	100.7	34.02	11.301	2.743
%RSD	.0659660	.0907577	.3008982	.2322065	.0345613
#1	6349.265	111050.2	11294.00	4853.644	7938.859
#2	6357.336	110872.7	11345.29	4874.241	7937.577
#3	6351.344	110879.3	11280.93	4872.001	7933.599

Sample Name: Q2881-02DUP Acquired: 8/20/2025 16:10:34 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.001543	-.001578	.0021606	.0019649	.0012934	.0551826	.0002673
Stddev	.000553	.000829	.0009206	.0009593	.0006149	.0102380	.0006829
%RSD	35.81337	52.52526	42.60599	48.82261	47.54194	18.55293	255.4772
#1	-.001137	-.002299	.0010977	.0009271	.0018686	.0669744	-.000335
#2	-.002173	-.000672	.0026984	.0028191	.0013663	.0485579	.001009
#3	-.001320	-.001762	.0026858	.0021484	.0006453	.0500154	.000128
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000150	.0000196	4.370477	.0019269	.0068983	.0048716	.1257415
Stddev	.000057	.0000653	.005116	.0000913	.0001532	.0001482	.0040744
%RSD	38.44892	333.4741	.1170509	4.740971	2.221399	3.041132	3.240296
#1	-.000178	-.000018	4.371577	.0020290	.0067213	.0048318	.1210523
#2	-.000187	-.000019	4.364901	.0018530	.0069891	.0050356	.1284169
#3	-.000083	.000095	4.374954	.0018986	.0069843	.0047475	.1277552
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0270532	1.682501	.0080591	-.000074	13.52001	.0038388	.0294606
Stddev	.0005082	.012638	.0002588	.000159	.03292	.0016597	.0002484
%RSD	1.878440	.7511149	3.211664	216.1354	.2434589	43.23539	.8430958
#1	.0268363	1.677552	.0081331	-.000213	13.54999	.0019804	.0296228
#2	.0276339	1.696864	.0077713	-.000108	13.52526	.0051735	.0291746
#3	.0266895	1.673086	.0082729	.000100	13.48479	.0043625	.0295843
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7025677	.0075995	.0003818	-.014933	.0001462	6.054510	.0100178
Stddev	.0044231	.0008804	.0002393	.000069	.0010588	.015620	.0002053
%RSD	.6295553	11.58548	62.67160	.4600935	724.3841	.2579864	2.049035
#1	.6974771	.0070535	.0003747	-.014855	-.000819	6.039633	.0101788
#2	.7054707	.0071298	.0006245	-.014982	-.000021	6.053117	.0100878
#3	.7047554	.0086152	.0001461	-.014963	.001278	6.070779	.0097866

Sample Name: Q2881-02DUP Acquired: 8/20/2025 16:10:34 Type: Unk
Method: 6010-200.7 NEW(v122) 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	5.385817	-.013578	.0234303
Stddev	.016927	.002137	.0000236
%RSD	.3142966	15.73585	.1008071

#1	5.366277	-.011655	.0234164
#2	5.395153	-.015878	.0234576
#3	5.396021	-.013200	.0234169

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6275.253	108693.6	11358.40	4788.673	7841.135
Stddev	10.767	129.7	37.12	5.322	13.041
%RSD	.1715767	.1193006	.3268370	.1111372	.1663183

#1	6276.438	108784.8	11371.68	4783.219	7847.262
#2	6285.379	108545.2	11316.46	4793.852	7849.983
#3	6263.943	108750.9	11387.05	4788.949	7826.158

Sample Name: Q2881-02LX5 Acquired: 8/20/2025 16:14:49 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0003588	-.000824	.0002896	.0006237	-.002461	.0080431	-.002197
Stddev	.0013000	.001593	.0013521	.0011632	.000983	.0053918	.000425
%RSD	362.3775	193.2966	466.8769	186.4973	39.95971	67.03610	19.32320
#1	.0001212	.000983	-.001168	-.000591	-.001996	.0037075	-.002654
#2	-.000806	-.001429	.000534	.001728	-.003591	.0140804	-.001815
#3	.001761	-.002026	.001503	.000734	-.001796	.0063414	-.002122
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000034	-.000014	.9088734	-.000292	.0013520	.0008614	.0253596
Stddev	.000030	.000025	.0038764	.000574	.0000247	.0002354	.0026288
%RSD	89.42252	182.0867	.4265004	196.6533	1.827672	27.32871	10.36603
#1	-.000052	.000002	.9109827	.000358	.0013257	.0007172	.0276231
#2	.000001	-.000001	.9112377	-.000504	.0013556	.0007340	.0224763
#3	-.000051	-.000043	.9043998	-.000730	.0013747	.0011330	.0259794
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0048388	.3493109	.0015208	.0003621	2.733006	.0019844	.0051514
Stddev	.0003588	.0275183	.0002104	.0001311	.008256	.0014662	.0001225
%RSD	7.415815	7.877878	13.83543	36.20012	.3020666	73.88310	2.377746
#1	.0052188	.3198406	.0012786	.0004915	2.741942	.0036701	.0050142
#2	.0047918	.3537561	.0016585	.0002294	2.731411	.0012781	.0051903
#3	.0045057	.3743360	.0016253	.0003653	2.725664	.0010052	.0052497
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0504125	.0011808	.0001052	-.005237	.0002152	1.245364	.0021566
Stddev	.0322807	.0006472	.0000925	.000254	.0011422	.008436	.0004046
%RSD	64.03302	54.80838	87.93960	4.845903	530.7985	.6774324	18.75887
#1	.0151228	.0009137	.0000201	-.005072	-.000015	1.235730	.0022959
#2	.0576642	.0019188	.0002036	-.005109	-.000794	1.248935	.0017008
#3	.0784505	.0007099	.0000917	-.005529	.001455	1.251428	.0024732

Sample Name: Q2881-02LX5 Acquired: 8/20/2025 16:14:49 Type: Unk
Method: 6010-200.7 NEW(v122) 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	1.157389	-.009482	.0048856
Stddev	.017981	.000605	.0000518
%RSD	1.553623	6.382258	1.059569
#1	1.173868	-.010102	.0049427
#2	1.160088	-.009450	.0048417
#3	1.138210	-.008893	.0048725

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6383.128	110168.2	11333.06	4865.322	8025.918
Stddev	4.125	203.3	27.32	13.346	7.907
%RSD	.0646279	.1845797	.2410943	.2743148	.0985160
#1	6382.656	109974.7	11325.72	4850.001	8034.968
#2	6379.259	110149.8	11310.16	4871.542	8020.348
#3	6387.469	110380.2	11363.30	4874.423	8022.439

Sample Name: Q2881-02MS Acquired: 8/20/2025 16:19:08 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.7381503	1.821396	.8694930	1.822598	.7427555	1.938088	.1831413
Stddev	.0024113	.018842	.0016154	.006549	.0019948	.006166	.0006972
%RSD	.3266706	1.034461	.1857826	.3593220	.2685736	.3181293	.3806798
#1	.7408611	1.842636	.8706346	1.820178	.7438749	1.937784	.1838385
#2	.7362443	1.806694	.8676447	1.817604	.7404524	1.944400	.1831414
#3	.7373456	1.814858	.8701996	1.830013	.7439393	1.932079	.1824441
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1830952	.1758302	5.088816	.3913895	.1895926	.2909710	2.901044
Stddev	.0007606	.0000919	.007178	.0012957	.0003332	.0008872	.011535
%RSD	.4154141	.0522772	.1410511	.3310489	.1757424	.3049152	.3976298
#1	.1835672	.1757900	5.090882	.3928571	.1892490	.2911148	2.897610
#2	.1835007	.1757653	5.094735	.3904037	.1896147	.2917775	2.891614
#3	.1822178	.1759354	5.080832	.3909078	.1899143	.2900207	2.913906
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2144788	3.496864	.4621975	.0675169	15.67888	.2856271	.2237178
Stddev	.0010070	.022904	.0004117	.0010096	.02853	.0011684	.0002990
%RSD	.4694934	.6549966	.0890790	1.495341	.1819455	.4090676	.1336373
#1	.2144481	3.519695	.4626605	.0682812	15.67973	.2862626	.2240479
#2	.2155007	3.497010	.4618725	.0678972	15.64994	.2842787	.2236401
#3	.2134875	3.473887	.4620594	.0663724	15.70698	.2863401	.2234653
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.662278	.2578335	.4038248	.6163397	.1820259	6.610523	4.990816
Stddev	.019151	.0002256	.0006623	.0006190	.0012805	.019146	.013740
%RSD	.1982084	.0874857	.1640124	.1004310	.7034666	.2896291	.2753131
#1	9.684275	.2580556	.4039580	.6162129	.1817381	6.617767	5.006680
#2	9.649315	.2578401	.4031059	.6157940	.1834258	6.588812	4.983039
#3	9.653243	.2576046	.4044103	.6170123	.1809138	6.624990	4.982727

Sample Name: Q2881-02MS Acquired: 8/20/2025 16:19:08 Type: Unk
Method: 6010-200.7 NEW(v122) 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	5.314715	.1708354	.2031649
Stddev	.010725	.0017882	.0005100
%RSD	.2017936	1.046746	.2510153
#1	5.318828	.1690576	.2036452
#2	5.302543	.1726338	.2032197
#3	5.322775	.1708147	.2026297

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6301.008	110127.4	11446.45	4818.440	7773.372
Stddev	4.567	384.5	60.27	10.832	15.547
%RSD	.0724876	.3491261	.5265094	.2247935	.1999979
#1	6306.038	109697.1	11389.95	4830.754	7789.603
#2	6299.868	110437.1	11439.50	4814.177	7771.897
#3	6297.119	110248.1	11509.88	4810.388	7758.615

Sample Name: Q2881-02MSD Acquired: 8/20/2025 16:23:07 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.7227484	1.765213	.8443304	1.782994	.7312795	1.866827	.1794753
Stddev	.0021720	.018219	.0016320	.001567	.0009255	.014119	.0017119
%RSD	.3005244	1.032092	.1932876	.0879136	.1265589	.7563152	.9538520
#1	.7204580	1.753966	.8436017	1.781461	.7313534	1.867348	.1788673
#2	.7230086	1.786233	.8431897	1.782929	.7303192	1.852455	.1781503
#3	.7247786	1.755441	.8461998	1.784593	.7321658	1.880679	.1814082
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1779364	.1712299	4.968939	.3808537	.1839677	.2833374	2.832392
Stddev	.0013018	.0001881	.012276	.0009708	.0002961	.0000993	.010671
%RSD	.7315964	.1098266	.2470608	.2548940	.1609248	.0350319	.3767513
#1	.1772673	.1710209	4.961742	.3818830	.1836868	.2832494	2.844290
#2	.1771053	.1712836	4.961961	.3807238	.1839395	.2834450	2.823669
#3	.1794367	.1713853	4.983114	.3799545	.1842769	.2833178	2.829217
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2137651	3.377922	.4490855	.0656672	15.38241	.2796133	.2166814
Stddev	.0008954	.030384	.0007474	.0003264	.09998	.0009016	.0004378
%RSD	.4188731	.8994829	.1664296	.4970803	.6499784	.3224364	.2020315
#1	.2129597	3.390472	.4484833	.0657264	15.47316	.2804142	.2165803
#2	.2136065	3.343273	.4488512	.0653152	15.39886	.2797887	.2171608
#3	.2147293	3.400019	.4499220	.0659599	15.27523	.2786369	.2163030
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.479602	.2508619	.3976607	.6026003	.1788256	6.483940	4.845965
Stddev	.043562	.0023958	.0006273	.0016788	.0011702	.008493	.012389
%RSD	.4595331	.9550417	.1577417	.2785907	.6544047	.1309893	.2556458
#1	9.529406	.2490576	.3972876	.6010129	.1784296	6.488388	4.833763
#2	9.460806	.2499478	.3973095	.6024304	.1779047	6.489286	4.845600
#3	9.448593	.2535802	.3983849	.6043576	.1801425	6.474147	4.858532

Sample Name: Q2881-02MSD Acquired: 8/20/2025 16:23:07 Type: Unk
Method: 6010-200.7 NEW(v122) 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	5.158675	.1659085	.1977870
Stddev	.018870	.0005969	.0009633
%RSD	.3657831	.3597685	.4870199
#1	5.137000	.1652217	.1985331
#2	5.167593	.1663017	.1966996
#3	5.171433	.1662021	.1981284

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6291.687	110416.0	11497.21	4858.928	7772.396
Stddev	9.087	293.6	54.48	35.074	15.153
%RSD	.1444224	.2659372	.4738461	.7218516	.1949545
#1	6289.609	110194.5	11514.58	4819.802	7778.304
#2	6301.633	110304.4	11540.88	4869.428	7783.704
#3	6283.820	110749.0	11436.16	4887.552	7755.179

Sample Name: Q2881-02A Acquired: 8/20/2025 16:27:04 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.7772262	1.971551	.9133421	1.930501	.7815287	2.044403	.1937596
Stddev	.0025544	.027109	.0028797	.003379	.0011183	.005014	.0018717
%RSD	.3286527	1.375019	.3152870	.1750327	.1430888	.2452639	.9659927
#1	.7775245	1.978779	.9121524	1.933439	.7824329	2.043816	.1921772
#2	.7796183	1.994315	.9112478	1.931256	.7818750	2.049684	.1958256
#3	.7745358	1.941561	.9166259	1.926808	.7802782	2.039708	.1932759
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1911850	.1852388	5.154899	.4130848	.1984734	.3060373	3.144183
Stddev	.0007185	.0003139	.005109	.0019482	.0004404	.0005831	.016994
%RSD	.3758225	.1694426	.0991042	.4716214	.2218711	.1905458	.5405000
#1	.1911651	.1849097	5.159502	.4113393	.1979701	.3053783	3.124957
#2	.1919132	.1852719	5.155791	.4151866	.1986628	.3064868	3.157199
#3	.1904766	.1855348	5.149402	.4127286	.1987875	.3062466	3.150393
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2174879	3.575599	.4866599	.0694288	16.31972	.3033517	.2365926
Stddev	.0005552	.019045	.0009990	.0005089	.11918	.0005511	.0012808
%RSD	.2552661	.5326365	.2052727	.7329025	.7303059	.1816578	.5413615
#1	.2168861	3.566701	.4856951	.0690466	16.18704	.3033464	.2357932
#2	.2175974	3.562631	.4865947	.0700064	16.41769	.3039054	.2380699
#3	.2179802	3.597464	.4876898	.0692335	16.35444	.3028033	.2359146
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.41536	.2710821	.4230092	.6435876	.1885016	6.910515	5.260383
Stddev	.06581	.0012433	.0002475	.0002327	.0009449	.017234	.006137
%RSD	.6318935	.4586512	.0584991	.0361625	.5012434	.2493871	.1166699
#1	10.34042	.2715180	.4232033	.6438427	.1874625	6.900567	5.253802
#2	10.46377	.2720487	.4227306	.6433868	.1893092	6.900563	5.265950
#3	10.44188	.2696795	.4230937	.6435332	.1887330	6.930415	5.261396

Sample Name: Q2881-02A Acquired: 8/20/2025 16:27:04 Type: Unk
Method: 6010-200.7 NEW(v122) 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	5.224338	.1816664	.2138239
Stddev	.016341	.0007488	.0006127
%RSD	.3127797	.4121793	.2865486
#1	5.239369	.1810667	.2131628
#2	5.226700	.1814268	.2143727
#3	5.206945	.1825056	.2139363

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6272.888	107502.4	11509.41	4800.024	7748.698
Stddev	.967	242.3	26.09	21.625	3.881
%RSD	.0154097	.2253991	.2266839	.4505234	.0500904
#1	6273.814	107767.9	11510.33	4806.736	7751.722
#2	6271.886	107293.3	11482.86	4775.839	7744.321
#3	6272.964	107446.0	11535.02	4817.498	7750.050

Sample Name: Q2814-01 Acquired: 8/20/2025 16:31:02 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0003099	-.001713	.0069933	.0016998	.0034726	.9349769
Stddev	.0020081	.000719	.0001246	.0012500	.0009081	.0053510
%RSD	648.0577	41.97522	1.782004	73.54042	26.14939	.5723117
#1	-.001566	-.002534	.0068965	.0007034	.0041191	.9374555
#2	.000067	-.001404	.0069496	.0012936	.0024344	.9288360
#3	.002428	-.001199	.0071339	.0031025	.0038642	.9386392
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0741388	-.000074	.0001957	45.03411	.0061468	.0001160
Stddev	.0010403	.000019	.0000723	.11692	.0001317	.0001109
%RSD	1.403225	25.53618	36.94868	.2596183	2.142728	95.52886
#1	.0746063	-.000064	.0002716	44.94114	.0062031	-.000010
#2	.0748632	-.000096	.0001276	45.16537	.0062410	.000159
#3	.0729467	-.000063	.0001880	44.99583	.0059963	.000199
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0073040	1.924042	.0359256	25.45586	.0018767	.0001393
Stddev	.0002487	.020286	.0008708	.04056	.0003226	.0003008
%RSD	3.405356	1.054348	2.423970	.1593501	17.19157	216.0049
#1	.0071206	1.904775	.0356153	25.48047	.0020683	.0002120
#2	.0072044	1.922138	.0369090	25.47806	.0015042	.0003970
#3	.0075871	1.945213	.0352524	25.40904	.0020576	-.000191
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	137.7688	.0078666	.0320256	27.30660	.1727379	.0035157
Stddev	.5903	.0022332	.0002403	.05721	.0005493	.0001008
%RSD	.4284916	28.38821	.7502223	.2095226	.3180228	2.867879
#1	137.0872	.0053061	.0322701	27.26546	.1732227	.0034148
#2	138.1205	.0094112	.0320168	27.28239	.1728498	.0036164
#3	138.0985	.0088825	.0317898	27.37193	.1721413	.0035159

Sample Name: Q2814-01 Acquired: 8/20/2025 16:31:02 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.015055	.0338486	F 13.25954	1.042958	4.270758	-.018078
Stddev	.000653	.0007611	.09573	.004133	.015688	.001364
%RSD	4.337140	2.248625	.7219387	.3963227	.3673405	7.544353
#1	-.015498	.0344688	13.17594	1.047665	4.283735	-.019591
#2	-.014305	.0329992	13.23872	1.039921	4.275215	-.017703
#3	-.015363	.0340777	13.36396	1.041287	4.253323	-.016941
Elem	Sr4077					
Units	ppm					
Avg	.3749724					
Stddev	.0021097					
%RSD	.5626317					
#1	.3746567					
#2	.3772221					
#3	.3730383					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	5916.784	102117.4	11088.09	4549.645	6989.462	
Stddev	2.038	390.8	30.82	37.027	7.259	
%RSD	.0344427	.3826650	.2779487	.8138476	.1038561	
#1	5914.661	102200.8	11068.85	4553.487	6983.826	
#2	5916.966	102459.8	11071.78	4584.601	6997.653	
#3	5918.725	101691.7	11123.64	4510.846	6986.906	

Sample Name: CCV04 Acquired: 8/20/2025 16:35:17 Type: Unk
Method: 6010-200.7 NEW(v122) 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	5.052088	5.148766	4.929721	5.091073	5.052871	9.867562	9.767982
Stddev	.028574	.104411	.028974	.033635	.026837	.009533	.076229
%RSD	.5655956	2.027882	.5877312	.6606675	.5311224	.0966125	.7803998
#1	5.037864	5.083242	4.902991	5.079414	5.033532	9.856588	9.774234
#2	5.084983	5.269173	4.960510	5.128986	5.083510	9.873803	9.840892
#3	5.033417	5.093883	4.925662	5.064819	5.041571	9.872294	9.688819
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2471579	2.484598	24.59102	1.005860	2.476198	1.255739	4.977099
Stddev	.0006800	.013485	.02104	.000886	.011949	.006329	.008757
%RSD	.2751229	.5427621	.0855675	.0881111	.4825549	.5039929	.1759395
#1	.2466057	2.471157	24.60851	1.005061	2.464175	1.249711	4.986569
#2	.2469506	2.498127	24.56767	1.005706	2.488072	1.262331	4.969296
#3	.2479174	2.484509	24.59690	1.006813	2.476347	1.255174	4.975432
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.431889	24.54368	2.483240	1.249076	23.81423	2.473984	2.525421
Stddev	.009780	.05496	.013927	.000733	.20270	.004768	.006206
%RSD	.4021734	.2239394	.5608305	.0586825	.8511738	.1927429	.2457283
#1	2.441377	24.50180	2.468943	1.249574	24.04814	2.477534	2.531160
#2	2.421841	24.52331	2.496764	1.249418	23.69024	2.468564	2.526266
#3	2.432450	24.60592	2.484013	1.248234	23.70430	2.475853	2.518836
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.79694	4.919787	5.084770	4.987489	4.897649	4.976035	4.960306
Stddev	.04728	.016763	.027188	.027146	.012934	.014692	.039215
%RSD	.1906687	.3407213	.5346932	.5442742	.2640941	.2952561	.7905677
#1	24.82207	4.904878	5.065353	4.967446	4.912249	4.961618	4.936060
#2	24.74240	4.916552	5.115843	5.018382	4.887624	4.975500	5.005548
#3	24.82634	4.937932	5.073116	4.976641	4.893073	4.990987	4.939310

Sample Name: CCV04 Acquired: 8/20/2025 16:35:17 Type: Unk
Method: 6010-200.7 NEW(v122) 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	4.981653	4.747346	4.920480		
Stddev	.031923	.017030	.059266		
%RSD	.6408097	.3587166	1.204467		
#1	4.963136	4.760944	4.866735		
#2	5.018514	4.728246	4.910663		
#3	4.963309	4.752850	4.984041		
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6061.915	105522.1	11297.17	4721.360	7064.292
Stddev	29.066	34.8	28.12	22.732	34.586
%RSD	.4794921	.0329835	.2488683	.4814802	.4895915
#1	6085.412	105539.6	11326.12	4704.912	7098.864
#2	6029.411	105544.6	11295.41	4711.867	7029.692
#3	6070.920	105482.0	11269.97	4747.300	7064.321

Sample Name: CCB04 Acquired: 8/20/2025 16:39:28 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000475	-.000495	.0004625	.0003753	-.000974	.0030327
Stddev	.001609	.001268	.0005123	.0006468	.000610	.0057079
%RSD	339.1047	256.4340	110.7598	172.3694	62.64853	188.2141
#1	-.001572	.000824	-.000046	-.000182	-.001255	-.002824
#2	-.001224	-.000603	.000978	.000223	-.000274	.003342
#3	.001373	-.001705	.000456	.001085	-.001393	.008580
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003118	-.000085	.0000228	.0042483	-.000544	-.000107
Stddev	.000984	.000037	.0000489	.0046477	.000246	.000095
%RSD	31.55861	43.60070	214.2145	109.4017	45.14507	88.88505
#1	-.002441	-.000113	.0000601	.0001642	-.000729	.000002
#2	-.004246	-.000043	.0000409	.0093055	-.000265	-.000154
#3	-.002666	-.000099	-.000033	.0032752	-.000638	-.000171
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000327	-.006028	.0005548	-.010587	.0002811	.0004798
Stddev	.000295	.000899	.0000212	.015219	.0001224	.0001382
%RSD	90.04151	14.90723	3.822983	143.7452	43.54965	28.79566
#1	-.000621	-.005025	.0005425	.005981	.0001918	.0003925
#2	-.000330	-.006761	.0005793	-.013798	.0002310	.0006391
#3	-.000031	-.006299	.0005425	-.023944	.0004207	.0004078
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0285990	.0032238	-.000221	.0805686	.0043257	.0002796
Stddev	.0169256	.0006119	.000039	.0641514	.0005309	.0002561
%RSD	59.18249	18.98036	17.84852	79.62328	12.27303	91.59690
#1	.0090615	.0027189	-.000217	.0079081	.0040711	.0004177
#2	.0379299	.0039043	-.000184	.1044195	.0039702	-.000016
#3	.0388055	.0030482	-.000263	.1293783	.0049360	.000437

Sample Name: CCB04 Acquired: 8/20/2025 16:39:28 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001875	-.000442	.0121152	-.000014	F .0261418	-.007019
Stddev	.000434	.000568	.0063614	.000789	.0015133	.001009
%RSD	23.12934	128.4322	52.50764	5788.459	5.788680	14.37808
#1	-.001564	-.000553	.0050403	-.000501	.0274876	-.008140
#2	-.001690	-.000947	.0173634	.000897	.0264341	-.006734
#3	-.002371	.000173	.0139420	-.000437	.0245037	-.006182
Elem	Sr4077					
Units	ppm					
Avg	.0000980					
Stddev	.0000489					
%RSD	49.87574					
#1	.0001278					
#2	.0000416					
#3	.0001246					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6354.006	109665.6	11034.70	4873.821	8076.835	
Stddev	5.138	240.7	28.04	21.776	5.518	
%RSD	.0808630	.2194679	.2540960	.4467899	.0683227	
#1	6359.906	109924.2	11049.74	4875.058	8083.199	
#2	6351.597	109624.4	11002.35	4851.453	8073.926	
#3	6350.515	109448.2	11052.01	4894.952	8073.380	

Sample Name: Q2814-03 Acquired: 8/20/2025 16:43:47 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0217787	-.002187	.0522537	.0047643	.0033479	18.62827
Stddev	.0012250	.000371	.0012258	.0028328	.0015860	.01717
%RSD	5.624740	16.94136	2.345957	59.46007	47.37332	.0921862
#1	.0215734	-.001784	.0514911	.0077082	.0028093	18.63118
#2	.0206694	-.002512	.0536677	.0020575	.0021014	18.60983
#3	.0230934	-.002265	.0516022	.0045271	.0051331	18.64381
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0611836	.0008127	.0009804	35.81063	.0310581	.0043343
Stddev	.0004068	.0000540	.0000342	.06646	.0000744	.0000633
%RSD	.6648312	6.643176	3.486950	.1855903	.2395923	1.460605
#1	.0610170	.0008610	.0009789	35.82103	.0310321	.0043489
#2	.0608865	.0008225	.0009469	35.73958	.0310002	.0042650
#3	.0616472	.0007544	.0010153	35.87128	.0311420	.0043891
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0418878	16.38794	.2572641	14.33233	.0142630	.0010630
Stddev	.0004163	.15977	.0010044	.02389	.0003204	.0002525
%RSD	.9938887	.9748981	.3904084	.1666735	2.246108	23.75231
#1	.0419050	16.32893	.2570829	14.33953	.0143748	.0007795
#2	.0414632	16.26606	.2563627	14.30567	.0145125	.0011455
#3	.0422953	16.56881	.2583467	14.35179	.0139017	.0012638
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	79.12875	.0395913	.1673440	9.478936	.1586491	.0032422
Stddev	.52962	.0032372	.0002775	.047854	.0008597	.0001458
%RSD	.6693183	8.176524	.1658256	.5048434	.5418674	4.497027
#1	78.89477	.0406129	.1672213	9.444424	.1592237	.0032523
#2	78.75642	.0421944	.1676617	9.458819	.1590629	.0033826
#3	79.73507	.0359665	.1671490	9.533564	.1576608	.0030915

Sample Name: Q2814-03 Acquired: 8/20/2025 16:43:47 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.014757	.6024015	F 23.55158	2.694794	5.044351	-.005808
Stddev	.000371	.0020721	.22807	.011641	.029716	.001414
%RSD	2.517228	.3439740	.9684060	.4319755	.5890905	24.34889
#1	-.015183	.6039902	23.48367	2.707926	5.075757	-.005748
#2	-.014501	.6000578	23.36518	2.685743	5.040616	-.007252
#3	-.014586	.6031566	23.80590	2.690713	5.016679	-.004425
Elem	Sr4077					
Units	ppm					
Avg	.1506185					
Stddev	.0002558					
%RSD	.1698271					
#1	.1507725					
#2	.1503232					
#3	.1507597					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6067.221	103732.4	11153.23	4664.505	7151.557	
Stddev	10.232	153.0	57.84	10.476	16.761	
%RSD	.1686489	.1475357	.5185860	.2245920	.2343672	
#1	6055.408	103619.5	11106.45	4676.570	7132.228	
#2	6073.343	103906.6	11135.34	4659.235	7160.370	
#3	6072.911	103671.2	11217.90	4657.711	7162.072	

Sample Name: Q2814-22 Acquired: 8/20/2025 16:47:55 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0006515	-.001398	.0003394	.0020946	.0033435	.0398809
Stddev	.0016170	.001002	.0011691	.0023535	.0025587	.0079037
%RSD	248.2096	71.68796	344.4583	112.3589	76.52804	19.81829
#1	.0001495	-.002367	-.000958	.0042156	.0061952	.0463774
#2	.0024600	-.001462	.000666	-.000437	.0012483	.0310815
#3	-.000655	-.000366	.001310	.002505	.0025871	.0421837
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0550895	-.000151	.0000666	41.40174	.0008411	-.000396
Stddev	.0008912	.000021	.0000198	.13302	.0002417	.000106
%RSD	1.617737	13.66315	29.72916	.3212860	28.73187	26.71268
#1	.0548555	-.000173	.0000455	41.43924	.0007862	-.000492
#2	.0560743	-.000131	.0000695	41.51198	.0011055	-.000414
#3	.0543386	-.000149	.0000847	41.25399	.0006316	-.000283
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0104719	.0349873	.0080960	23.60127	.0007293	.0000161
Stddev	.0001022	.0050762	.0002424	.10353	.0001640	.0002092
%RSD	.9758884	14.50867	2.993900	.4386532	22.48670	1299.438
#1	.0105473	.0300437	.0079287	23.56984	.0005570	.0002360
#2	.0105129	.0347318	.0079852	23.71687	.0007474	-.000181
#3	.0103556	.0401864	.0083739	23.51710	.0008835	-.000007
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	130.8633	.0057501	.0237107	25.29151	.1708207	.0024760
Stddev	.3246	.0005209	.0001070	.07742	.0006139	.0001987
%RSD	.2480456	9.058455	.4512061	.3061138	.3594007	8.024982
#1	130.5347	.0053389	.0237212	25.21590	.1709224	.0025249
#2	131.1838	.0055756	.0235988	25.28799	.1713774	.0026457
#3	130.8713	.0063358	.0238120	25.37063	.1701622	.0022574

Sample Name: Q2814-22 Acquired: 8/20/2025 16:47:55 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.016537	-.000873	F 11.23132	.8053637	4.226290	-.017609
Stddev	.000315	.000310	.01485	.0022384	.012424	.000825
%RSD	1.904163	35.51178	.1322156	.2779303	.2939591	4.686739
#1	-.016817	-.000873	11.21590	.8074264	4.231392	-.018016
#2	-.016196	-.000563	11.23254	.8029836	4.212128	-.016659
#3	-.016598	-.001184	11.24552	.8056811	4.235350	-.018151
Elem	Sr4077					
Units	ppm					
Avg	.3447642					
Stddev	.0014678					
%RSD	.4257410					
#1	.3447916					
#2	.3462181					
#3	.3432829					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	5958.082	103380.0	11158.81	4630.086	6993.512	
Stddev	2.589	76.2	60.06	6.640	12.041	
%RSD	.0434509	.0737014	.5382620	.1434004	.1721712	
#1	5956.779	103365.4	11131.08	4637.752	7000.150	
#2	5961.064	103312.1	11117.62	4626.360	7000.773	
#3	5956.404	103462.4	11227.73	4626.147	6979.613	

Sample Name: Q2814-23 Acquired: 8/20/2025 16:52:09 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0031780	-.000543	.0127019	.0017224	.0027934	.5956646	.0213885
Stddev	.0012436	.001511	.0005470	.0014119	.0001096	.0058991	.0005848
%RSD	39.13105	278.0610	4.306127	81.97038	3.924341	.9903367	2.734134
#1	.0022392	.000901	.0132677	.0003610	.0026967	.5971445	.0212370
#2	.0027065	-.000419	.0121760	.0031798	.0027710	.5891665	.0220341
#3	.0045884	-.002112	.0126619	.0016265	.0029125	.6006829	.0208943
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000153	.0003280	39.52109	.0019792	-.000070	.1470114	.0777607
Stddev	.000110	.0000931	.09068	.0001296	.000121	.0001889	.0015244
%RSD	71.86977	28.38891	.2294377	6.545728	172.2442	.1285177	1.960305
#1	-.000027	.0002414	39.42235	.0018305	.000069	.1468537	.0764047
#2	-.000203	.0003161	39.60062	.0020395	-.000130	.1472208	.0794106
#3	-.000229	.0004265	39.54031	.0020676	-.000149	.1469597	.0774669
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0405737	14.70714	.0022815	.0002129	91.98060	.0092889	.0397045
Stddev	.0000877	.06583	.0002573	.0002194	.44853	.0026365	.0001454
%RSD	.2161606	.4476058	11.27826	103.0672	.4876401	28.38384	.3660732
#1	.0406712	14.66637	.0025144	.0001495	92.41278	.0064243	.0396070
#2	.0405012	14.67197	.0023249	.0000322	92.01167	.0098283	.0398716
#3	.0405485	14.78309	.0020053	.0004571	91.51733	.0116140	.0396349
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.526774	.1872066	.0019461	-.015969	-.000272	9.880860	1.082686
Stddev	.029000	.0012185	.0000645	.000603	.001280	.037928	.001901
%RSD	.3044000	.6508742	3.313597	3.775579	471.1032	.3838540	.1755364
#1	9.551317	.1858422	.0020086	-.016429	.000662	9.913010	1.082995
#2	9.534231	.1875909	.0019500	-.015286	-.001731	9.890541	1.084413
#3	9.494774	.1881865	.0018798	-.016191	.000253	9.839030	1.080650

Sample Name: Q2814-23 Acquired: 8/20/2025 16:52:09 Type: Unk
Method: 6010-200.7 NEW(v122) 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	5.915526	-.020449	.1806446
Stddev	.005216	.001201	.0003039
%RSD	.0881830	5.873059	.1682565

#1	5.921390	-.019148	.1804433
#2	5.911402	-.020683	.1809943
#3	5.913785	-.021516	.1804963

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6082.023	104271.4	11184.74	4692.837	7226.191
Stddev	8.508	248.6	68.88	13.115	6.167
%RSD	.1398893	.2384248	.6158633	.2794786	.0853476

#1	6090.919	104490.6	11264.22	4682.141	7228.445
#2	6081.184	104001.3	11147.55	4707.470	7230.914
#3	6073.965	104322.3	11142.45	4688.901	7219.213

Sample Name: Q2815-20 Acquired: 8/20/2025 16:56:22 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0240717	-.004490	.1050691	.0062142	.0042926	25.91292
Stddev	.0015378	.001692	.0004962	.0014585	.0010301	.04843
%RSD	6.388344	37.69443	.4723099	23.46994	23.99594	.1869104
#1	.0248835	-.002537	.1056391	.0045533	.0048868	25.95910
#2	.0250335	-.005537	.1048354	.0068034	.0031032	25.86251
#3	.0222981	-.005395	.1047329	.0072859	.0048877	25.91717
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1216148	.0056817	.0024382	75.65848	.0773608	.0091066
Stddev	.0003682	.0000836	.0000515	.14927	.0000395	.0001123
%RSD	.3027734	1.470776	2.113135	.1972980	.0511008	1.232943
#1	.1217900	.0056176	.0023905	75.64952	.0773153	.0089849
#2	.1211917	.0056514	.0024928	75.51389	.0773861	.0091287
#3	.1218627	.0057762	.0024312	75.81203	.0773811	.0092061
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0617113	31.05451	.3208699	12.22032	.0316383	.0016056
Stddev	.0003485	.07197	.0003441	.03171	.0004852	.0002736
%RSD	.5646754	.2317540	.1072315	.2595234	1.533437	17.04149
#1	.0613377	31.09540	.3212195	12.24290	.0316211	.0019191
#2	.0617687	31.09672	.3208587	12.18406	.0321318	.0014145
#3	.0620275	30.97141	.3205316	12.23400	.0311619	.0014833
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	28.28671	.0714547	.3735011	9.621208	.1025343	.0069589
Stddev	.01340	.0021693	.0004103	.035363	.0009337	.0003439
%RSD	.0473865	3.035930	.1098442	.3675539	.9105862	4.941988
#1	28.27152	.0696277	.3730539	9.610661	.1015958	.0072680
#2	28.29175	.0738522	.3735894	9.660644	.1034630	.0070203
#3	28.29686	.0708840	.3738601	9.592318	.1025441	.0065885

Sample Name: Q2815-20 Acquired: 8/20/2025 16:56:22 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.015361	.7881832	F 39.20197	2.197841	F 10.17426	.0132221
Stddev	.000397	.0027773	.09751	.003568	.02965	.0008892
%RSD	2.584713	.3523728	.2487442	.1623387	.2914617	6.724840
#1	-.015130	.7909940	39.12325	2.195843	10.19217	.0122189
#2	-.015133	.7881148	39.31105	2.201961	10.19058	.0139132
#3	-.015819	.7854406	39.17161	2.195720	10.14003	.0135341
Elem	Sr4077					
Units	ppm					
Avg	.3852554					
Stddev	.0012630					
%RSD	.3278316					
#1	.3866239					
#2	.3841347					
#3	.3850076					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6099.968	105625.7	11361.48	4748.695	7154.251	
Stddev	6.440	55.4	45.72	5.916	.325	
%RSD	.1055724	.0524587	.4024289	.1245752	.0045475	
#1	6101.776	105593.2	11313.95	4751.833	7153.888	
#2	6105.311	105594.3	11405.15	4741.872	7154.350	
#3	6092.818	105689.7	11365.33	4752.381	7154.516	

Sample Name: Q2815-25 Acquired: 8/20/2025 17:00:28 Type: Unk
Method: 6010-200.7 NEW(v122) 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	.0058836	-.001055	.0002186	.0001954	.0024374	.1262662
Stddev	.0012157	.001265	.0005671	.0041941	.0011454	.0090185
%RSD	20.66303	119.9217	259.4402	2146.542	46.99383	7.142422
#1	.0071009	-.001550	.0008580	-.000862	.0016503	.1309976
#2	.0046694	.000383	.0000213	.004817	.0037515	.1158667
#3	.0058805	-.001998	-.000224	-.003369	.0019104	.1319345
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0209617	-.000135	.0001088	66.50006	.0009846	.0004793
Stddev	.0003347	.000054	.0000336	.11722	.0002215	.0001243
%RSD	1.596756	39.96709	30.93630	.1762691	22.49940	25.94232
#1	.0211664	-.000145	.0001071	66.53802	.0007967	.0003507
#2	.0211432	-.000183	.0001433	66.36856	.0012288	.0004883
#3	.0205754	-.000076	.0000760	66.59359	.0009281	.0005989
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0138930	.0300416	.0897540	8.230929	.0024788	.0003303
Stddev	.0004775	.0023279	.0006162	.023740	.0004416	.0004360
%RSD	3.437006	7.748876	.6865588	.2884279	17.81394	131.9935
#1	.0133448	.0274444	.0890528	8.236806	.0029594	-.000103
#2	.0142183	.0307401	.0900000	8.204802	.0023864	.000324
#3	.0141159	.0319403	.0902093	8.251179	.0020908	.000769
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.44803	.0157602	.0365656	6.965964	.1218824	.0038590
Stddev	.17904	.0021922	.0001638	.072938	.0004097	.0001841
%RSD	.7035357	13.90944	.4479004	1.047057	.3361066	4.771125
#1	25.36247	.0170400	.0367459	6.901429	.1221950	.0040088
#2	25.32782	.0170117	.0365248	6.951365	.1214187	.0036534
#3	25.65379	.0132290	.0364261	7.045096	.1220335	.0039147

Sample Name: Q2815-25 Acquired: 8/20/2025 17:00:28 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.016698	-.001836	F 16.14529	.4084977	5.515582	-.024173
Stddev	.000057	.000611	.08663	.0033430	.060824	.001715
%RSD	.3387573	33.25001	.5365384	.8183603	1.102768	7.093131
#1	-.016633	-.001355	16.08211	.4047193	5.445443	-.022756
#2	-.016738	-.001630	16.10973	.4110712	5.547483	-.023685
#3	-.016722	-.002523	16.24404	.4097025	5.553819	-.026079
Elem	Sr4077					
Units	ppm					
Avg	.3562528					
Stddev	.0009313					
%RSD	.2614224					
#1	.3564914					
#2	.3552253					
#3	.3570415					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6151.012	107170.6	11282.90	4742.015	7429.871	
Stddev	7.113	399.3	36.74	22.808	3.811	
%RSD	.1156348	.3726115	.3256614	.4809698	.0512996	
#1	6158.783	107298.2	11255.59	4766.012	7432.298	
#2	6144.824	107490.5	11324.67	4739.413	7431.837	
#3	6149.428	106723.0	11268.44	4720.620	7425.478	

Sample Name: PB169301TB Acquired: 8/20/2025 17:04:42 Type: Unk
Method: 6010-200.7 NEW(v122) 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	-.002140	-.001250	.0008032	.0014581	.0004702	-.013752	-.003300
Stddev	.001071	.000804	.0005481	.0012925	.0014639	.005334	.000372
%RSD	50.03515	64.30374	68.24121	88.64141	311.3647	38.78631	11.28297
#1	-.003358	-.001119	.0012188	.0000447	-.001169	-.012961	-.003384
#2	-.001351	-.000520	.0001820	.0017499	.001649	-.019437	-.002893
#3	-.001710	-.002112	.0010088	.0025797	.000930	-.008858	-.003623
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000093	-.000005	.0016975	-.000679	-.000106	-.000152	-.000509
Stddev	.000047	.000017	.0074158	.000358	.000108	.000350	.005122
%RSD	50.65583	327.6591	436.8704	52.70615	102.2487	230.1489	1005.423
#1	-.000114	-.000014	.0089619	-.001061	-.000060	.000241	.002765
#2	-.000039	.000014	.0019916	-.000626	-.000028	-.000428	-.006412
#3	-.000127	-.000016	-.005861	-.000351	-.000229	-.000269	.002119
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0014885	-.012566	-.000165	.0002311	-.191429	.0043945	-.000369
Stddev	.0000681	.010595	.000031	.0001654	.004220	.0027393	.000225
%RSD	4.574451	84.31291	18.63026	71.53502	2.204614	62.33442	61.04630
#1	.0015011	-.006447	-.000198	.0000806	-.195980	.0040026	-.000135
#2	.0014150	-.006452	-.000136	.0004081	-.190665	.0018723	-.000585
#3	.0015495	-.024800	-.000162	.0002047	-.187644	.0073086	-.000388
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.397097	-.000078	.0000427	-.016517	-.000429	-.014704	.0009953
Stddev	.023022	.000462	.0001684	.000110	.001027	.014869	.0013485
%RSD	5.797574	590.6855	394.4523	.6636453	239.3351	101.1245	135.4834
#1	-.371180	.000388	.0001483	-.016413	.000288	-.031610	-.000556
#2	-.415180	-.000535	-.000152	-.016506	.000030	-.008850	.001885
#3	-.404930	-.000087	.000131	-.016632	-.001605	-.003652	.001657

Sample Name: PB169301TB Acquired: 8/20/2025 17:04:42 Type: Unk
Method: 6010-200.7 NEW(v122) 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	8.566890	-.015333	.0000072
Stddev	.049563	.000507	.0000736
%RSD	.5785464	3.308806	1020.177

#1	8.622732	-.015600	-.000068
#2	8.528116	-.014748	.000011
#3	8.549823	-.015652	.000079

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6597.152	110848.8	11773.42	4989.496	8460.050
Stddev	4.562	574.3	14.53	39.595	5.307
%RSD	.0691480	.5181226	.1234219	.7935734	.0627282

#1	6600.783	110216.4	11784.77	4946.367	8457.917
#2	6598.642	111337.9	11778.45	5024.202	8466.091
#3	6592.032	110992.1	11757.05	4997.919	8456.141

Sample Name: CCV05 Acquired: 8/20/2025 17:09:00 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV05 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.988917	5.029429	4.916765	5.024130	4.991234	9.860197	9.693877
Stddev	.003750	.077790	.004643	.006462	.004655	.003628	.042120
%RSD	.0751569	1.546704	.0944369	.1286136	.0932570	.0367982	.4344978
#1	4.992738	5.112878	4.912991	5.031589	4.994913	9.856724	9.692168
#2	4.985243	5.016491	4.915353	5.020240	4.986001	9.863963	9.736825
#3	4.988770	4.958919	4.921950	5.020561	4.992788	9.859905	9.652638
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2513909	2.482989	24.46243	1.014986	2.472796	1.250606	4.927202
Stddev	.0007661	.002488	.03839	.000765	.001847	.000960	.015556
%RSD	.3047537	.1002198	.1569367	.0753798	.0746812	.0767732	.3157175
#1	.2520476	2.480432	24.50632	1.014144	2.470703	1.250095	4.922266
#2	.2515759	2.485403	24.43507	1.015639	2.474197	1.250009	4.914713
#3	.2505492	2.483131	24.44590	1.015176	2.473486	1.251713	4.944628
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.424829	24.50149	2.476442	1.252056	23.43871	2.464836	2.536996
Stddev	.009388	.06595	.001739	.000659	.12198	.006901	.005363
%RSD	.3871571	.2691594	.0702350	.0526625	.5204122	.2799598	.2114015
#1	2.433315	24.53719	2.474889	1.252058	23.45075	2.463899	2.539427
#2	2.414745	24.54189	2.478321	1.252714	23.31116	2.458453	2.530848
#3	2.426427	24.42539	2.476115	1.251395	23.55422	2.472158	2.540713
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.56762	4.969698	5.062463	4.972081	4.863941	4.944930	4.926962
Stddev	.14711	.014236	.006158	.004472	.017382	.024485	.013487
%RSD	.5988119	.2864519	.1216357	.0899426	.3573747	.4951587	.2737313
#1	24.50309	4.985986	5.069142	4.971147	4.874870	4.916657	4.935613
#2	24.46379	4.963474	5.057012	4.976946	4.843896	4.958988	4.933851
#3	24.73597	4.959634	5.061234	4.968149	4.873055	4.959144	4.911422

Sample Name: CCV05 Acquired: 8/20/2025 17:09:00 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV05 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	4.904548	4.694384	4.893141
Stddev	.017494	.016981	.049015
%RSD	.3566819	.3617283	1.001711
#1	4.917940	4.701498	4.849565
#2	4.910948	4.675003	4.883651
#3	4.884755	4.706650	4.946207

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6089.243	103617.1	11027.01	4664.715	7085.665
Stddev	16.745	95.7	38.12	10.953	18.971
%RSD	.2749988	.0923446	.3456809	.2348115	.2677329
#1	6104.387	103654.4	10992.83	4652.615	7107.140
#2	6092.084	103508.4	11020.09	4667.578	7078.665
#3	6071.260	103688.5	11068.12	4673.953	7071.188

Sample Name: CCB05 Acquired: 8/20/2025 17:13:12 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB05 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001061	.0005517	.0006540	-.001009	-.000680	-.001434
Stddev	.001299	.0000901	.0001803	.002349	.000483	.004206
%RSD	122.3911	16.34103	27.57635	232.6600	70.99688	293.3022
#1	.000304	.0005192	.0004589	.001220	-.000123	.003124
#2	-.002281	.0004823	.0006886	-.000787	-.000979	-.002262
#3	-.001207	.0006536	.0008146	-.003461	-.000938	-.005164
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001389	-.000027	.0000408	.0011462	-.000185	-.000076
Stddev	.001125	.000017	.0000147	.0108421	.000209	.000146
%RSD	81.01107	62.78884	36.15193	945.9365	113.0787	192.5595
#1	-.002007	-.000014	.0000486	-.008317	-.000424	-.000238
#2	-.000090	-.000046	.0000238	.012976	-.000096	.000044
#3	-.002070	-.000020	.0000500	-.001220	-.000035	-.000033
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000446	-.007317	.0004652	-.017445	-.000045	.0004840
Stddev	.000238	.003837	.0003689	.021745	.000160	.0004534
%RSD	53.25139	52.44711	79.31561	124.6503	354.1563	93.67346
#1	-.000511	-.008843	.0002057	-.003474	-.000161	.0005708
#2	-.000645	-.010156	.0008875	-.042499	.000138	.0008878
#3	-.000183	-.002951	.0003022	-.006362	-.000112	-.000006
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0521629	.0035252	-.000923	.0756746	.0042506	.0004999
Stddev	.0204943	.0015340	.000080	.0847813	.0008001	.0000891
%RSD	39.28907	43.51478	8.678222	112.0339	18.82268	17.81669
#1	.0288777	.0040969	-.000879	-.018798	.0051587	.0005538
#2	.0674617	.0046911	-.001015	.100684	.0036496	.0005488
#3	.0601493	.0017874	-.000875	.145138	.0039434	.0003971

Sample Name: CCB05 Acquired: 8/20/2025 17:13:12 Type: Unk
Method: 6010-200.7 NEW(v122) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB05 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002010	-.001117	.0123610	.0007288	F .0202850	-.006745
Stddev	.000321	.000551	.0120712	.0015597	.0023101	.000834
%RSD	15.95860	49.34322	97.65569	214.0016	11.38815	12.36637
#1	-.002335	-.000564	.0111450	-.000872	.0204553	-.007399
#2	-.002003	-.001122	.0009438	.000814	.0225053	-.007030
#3	-.001693	-.001666	.0249942	.002244	.0178945	-.005806
Elem	Sr4077					
Units	ppm					
Avg	.0002383					
Stddev	.0000270					
%RSD	11.33842					
#1	.0002694					
#2	.0002254					
#3	.0002202					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6308.810	108487.6	11182.78	4828.382	8044.106	
Stddev	7.383	131.2	24.69	27.032	5.948	
%RSD	.1170238	.1208976	.2207726	.5598560	.0739380	
#1	6301.884	108595.8	11210.83	4807.391	8048.012	
#2	6307.968	108341.7	11164.35	4818.869	8047.045	
#3	6316.577	108525.1	11173.16	4858.884	8037.261	

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: 08/19/2025 Time : 10:02 Temp : 97 °C

End Digest Date: 08/19/2025 Time : 13:10 Temp : 98 °C

Digestion tube ID: M5595

Block thermometer ID: MET-DIG. #1

Dig Technician Signature: *SL*

Supervisor Signature: *SA*

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
08/19/25 14:10	<i>SL met dis</i>	<i>SA (metals 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
PB169303BL	PBW303	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	17
PB169303BS	LCS303	<2	50	25	Colorless	Colorless	Clear	Clear	M6180,M6181	18
Q2881-01	RW8-SP100-20250814	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	19
Q2881-02	RW8-SP303-20250814	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	20
Q2881-02MS	RW8-SP303-20250814MS	<2	50	25	Colorless	Colorless	Clear	Clear	M6180,M6181	22
Q2881-02MSD	RW8-SP303-20250814MSD	<2	50	25	Colorless	Colorless	Clear	Clear	M6180,M6181	23
Q2881-02DUP	RW8-SP303-20250814DUP	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	21

WORKLIST(Hardcopy Internal Chain)

Worklist Name : PB169303 Worklist ID : 191346 Department : Digestion Date : 08-19-2025 09:34:13

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q2881-01	RW8-SP100-20250814	Water	Metals Group4	1:1 HNO3 to pH < 2	TETTR06	J32	08/14/2025	6010D
Q2881-02	RW8-SP303-20250814	Water	Metals Group4	1:1 HNO3 to pH < 2	TETTR06	J32	08/14/2025	6010D

Date/Time 08/19/25 09:50
Raw Sample Received by: SLS met d's
Raw Sample Relinquished by: CFC

Date/Time 08/19/25 10:50
Raw Sample Received by: CFC
Raw Sample Relinquished by: SLS met d's

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB136898

Review By	jaswal	Review On	8/21/2025 9:30:15 AM
Supervise By	MOHAN	Supervise On	8/21/2025 5:53:36 PM
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	08/20/25 12:38		Jaswal	OK
2	S1	S1	CAL2	08/20/25 12:43		Jaswal	OK
3	S2	S2	CAL3	08/20/25 12:47		Jaswal	OK
4	S3	S3	CAL4	08/20/25 12:51		Jaswal	OK
5	S4	S4	CAL5	08/20/25 12:55		Jaswal	OK
6	S5	S5	CAL6	08/20/25 12:59		Jaswal	OK
7	ICV01	ICV01	ICV	08/20/25 13:04		Jaswal	OK
8	LLICV01	LLICV01	LLICV	08/20/25 13:17		Jaswal	OK
9	ICB01	ICB01	ICB	08/20/25 13:21		Jaswal	OK
10	CRI01	CRI01	CRDL	08/20/25 13:26		Jaswal	OK
11	ICSA01	ICSA01	ICSA	08/20/25 13:30		Jaswal	OK
12	ICSAB01	ICSAB01	ICSAB	08/20/25 13:34		Jaswal	OK
13	ICSADL	ICSADL	ICSA	08/20/25 13:38		Jaswal	OK
14	ICSABDL	ICSABDL	ICSAB	08/20/25 13:42		Jaswal	OK
15	CCV01	CCV01	CCV	08/20/25 13:47		Jaswal	OK
16	CCB01	CCB01	CCB	08/20/25 13:51		Jaswal	OK
17	LR-1	LR-1	HIGH STD	08/20/25 13:55		Jaswal	OK
18	LR-2	LR-2	HIGH STD	08/20/25 14:00		Jaswal	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB136898

Review By	jaswal	Review On	8/21/2025 9:30:15 AM
Supervise By	MOHAN	Supervise On	8/21/2025 5:53:36 PM

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	08/20/25 14:04		Jaswal	OK
20	Q2892-02	1-FLOOR-NORTH-EA	SAM	08/20/25 14:09		Jaswal	OK
21	Q2892-02DUP	1-FLOOR-NORTH-EA	DUP	08/20/25 14:15		Jaswal	OK
22	Q2892-02MS	1-FLOOR-NORTH-EA	MS	08/20/25 14:23		Jaswal	OK
23	Q2892-02MSD	1-FLOOR-NORTH-EA	MSD	08/20/25 14:27		Jaswal	OK
24	Q2892-02A	1-FLOOR-NORTH-EA	PS	08/20/25 14:31		Jaswal	OK
25	CCV02	CCV02	CCV	08/20/25 14:39		Jaswal	OK
26	CCB02	CCB02	CCB	08/20/25 14:43		Jaswal	OK
27	PB169301BL	PB169301BL	MB	08/20/25 14:48		Jaswal	OK
28	PB169301BS	PB169301BS	LCS	08/20/25 14:52		Jaswal	OK
29	Q2892-02L	1-FLOOR-NORTH-EA	SD	08/20/25 14:56		Jaswal	OK
30	Q2818-04	B-2-5-1	SAM	08/20/25 15:00		Jaswal	OK
31	Q2818-05	B-3-5-2	SAM	08/20/25 15:04		Jaswal	OK
32	Q2818-05DUP	B-3-5-2DUP	DUP	08/20/25 15:08		Jaswal	OK
33	Q2818-05A	B-3-5-2A	PS	08/20/25 15:24		Jaswal	OK
34	Q2818-05L	B-3-5-2L	SD	08/20/25 15:32		Jaswal	OK
35	Q2818-05MS	B-3-5-2MS	MS	08/20/25 15:37		Jaswal	OK
36	Q2818-05MSD	B-3-5-2MSD	MSD	08/20/25 15:41		Jaswal	OK
37	CCV03	CCV03	CCV	08/20/25 15:45		Jaswal	OK
38	CCB03	CCB03	CCB	08/20/25 15:49		Jaswal	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB136898

Review By	jaswal	Review On	8/21/2025 9:30:15 AM
Supervise By	MOHAN	Supervise On	8/21/2025 5:53:36 PM
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	PB169303BL	PB169303BL	MB	08/20/25 15:53		Jaswal	OK
40	PB169303BS	PB169303BS	LCS	08/20/25 15:58		Jaswal	OK
41	Q2881-01	RW8-SP100-2025081	SAM	08/20/25 16:02		Jaswal	OK
42	Q2881-02	RW8-SP303-2025081	SAM	08/20/25 16:06		Jaswal	OK
43	Q2881-02DUP	RW8-SP303-2025081	DUP	08/20/25 16:10		Jaswal	OK
44	Q2881-02L	RW8-SP303-2025081	SD	08/20/25 16:14		Jaswal	OK
45	Q2881-02MS	RW8-SP303-2025081	MS	08/20/25 16:19		Jaswal	OK
46	Q2881-02MSD	RW8-SP303-2025081	MSD	08/20/25 16:23		Jaswal	OK
47	Q2881-02A	RW8-SP303-2025081	PS	08/20/25 16:27		Jaswal	OK
48	Q2814-01	TW-84SB-E	SAM	08/20/25 16:31		Jaswal	OK
49	CCV04	CCV04	CCV	08/20/25 16:35		Jaswal	OK
50	CCB04	CCB04	CCB	08/20/25 16:39		Jaswal	OK
51	Q2814-03	TW-17M-W	SAM	08/20/25 16:43		Jaswal	OK
52	Q2814-22	TW-84SB-E	SAM	08/20/25 16:47		Jaswal	OK
53	Q2814-23	TW-17M-W	SAM	08/20/25 16:52		Jaswal	OK
54	Q2815-20	TW-11M-W	SAM	08/20/25 16:56	Not use	Jaswal	Not Ok
55	Q2815-25	TW-11M-W	SAM	08/20/25 17:00		Jaswal	OK
56	PB169301TB	PB169301TB	MB	08/20/25 17:04		Jaswal	OK
57	CCV05	CCV05	CCV	08/20/25 17:09		Jaswal	OK
58	CCB05	CCB05	CCB	08/20/25 17:13		Jaswal	OK

Prep Standard - Chemical Standard Summary

Order ID : Q2881
Test : Metals Group4

Prepbatch ID : PB169303,
Sequence ID/Qc Batch ID: LB136898,

Standard ID :
MP85156,MP86640,MP86641,MP86642,MP86643,MP86646,MP86647,MP86648,MP86651,MP86653,MP86655,MP866
56,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,M614
2,M6144,M6145,M6146,M6151,M6158,M6159,M6162,M6163,M6164,M6165,M6171,M6174,M6176,M6177,M6178,M61
79,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	Sarabjit Jaswal

A)

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	Sarabjit Jaswal

A)

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

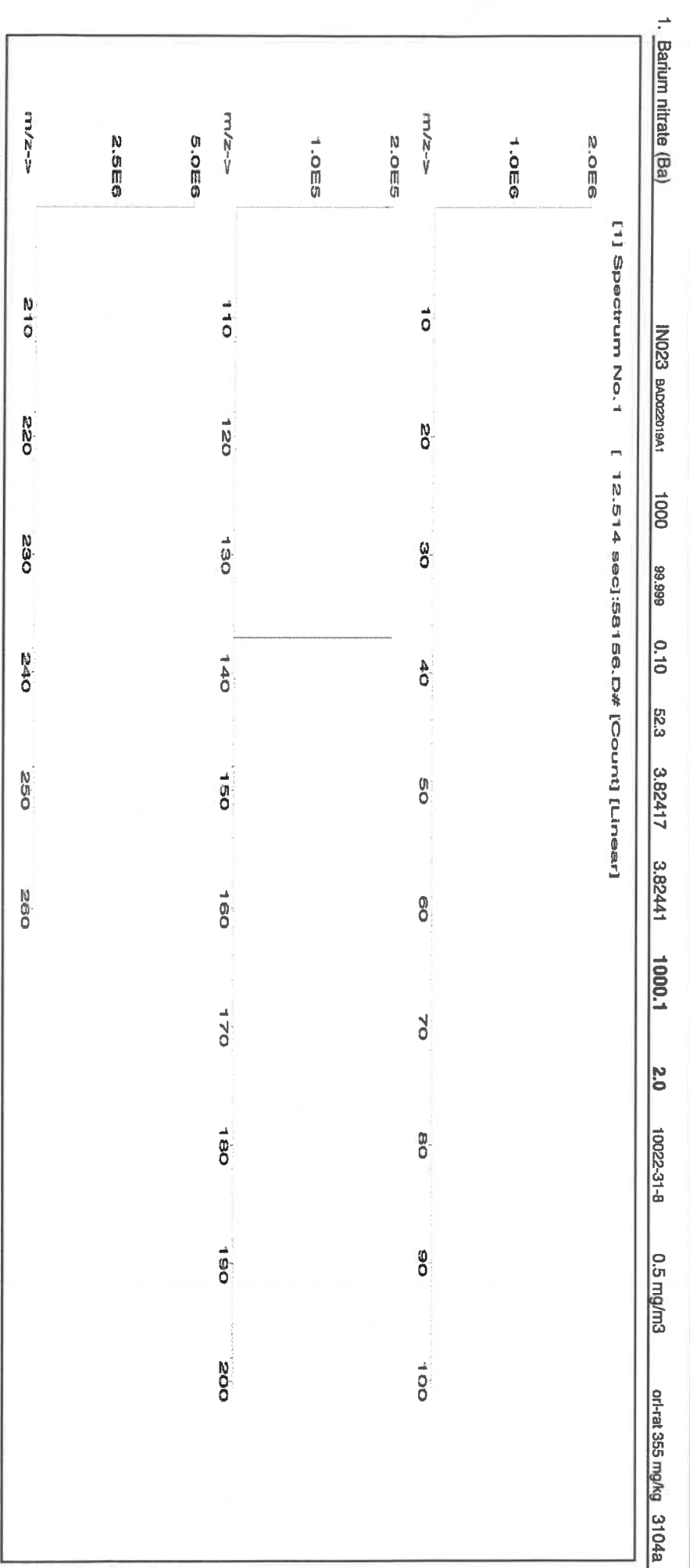


CERTIFIED WEIGHT REPORT:

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

Formulated By: Giovanni Esposito
Reviewed By: Pedro L. Renterias
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	2.0





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

2% 80.0 mL Nitric Acid

5E-05 Balance Uncertainty
0.06 Flask Uncertainty

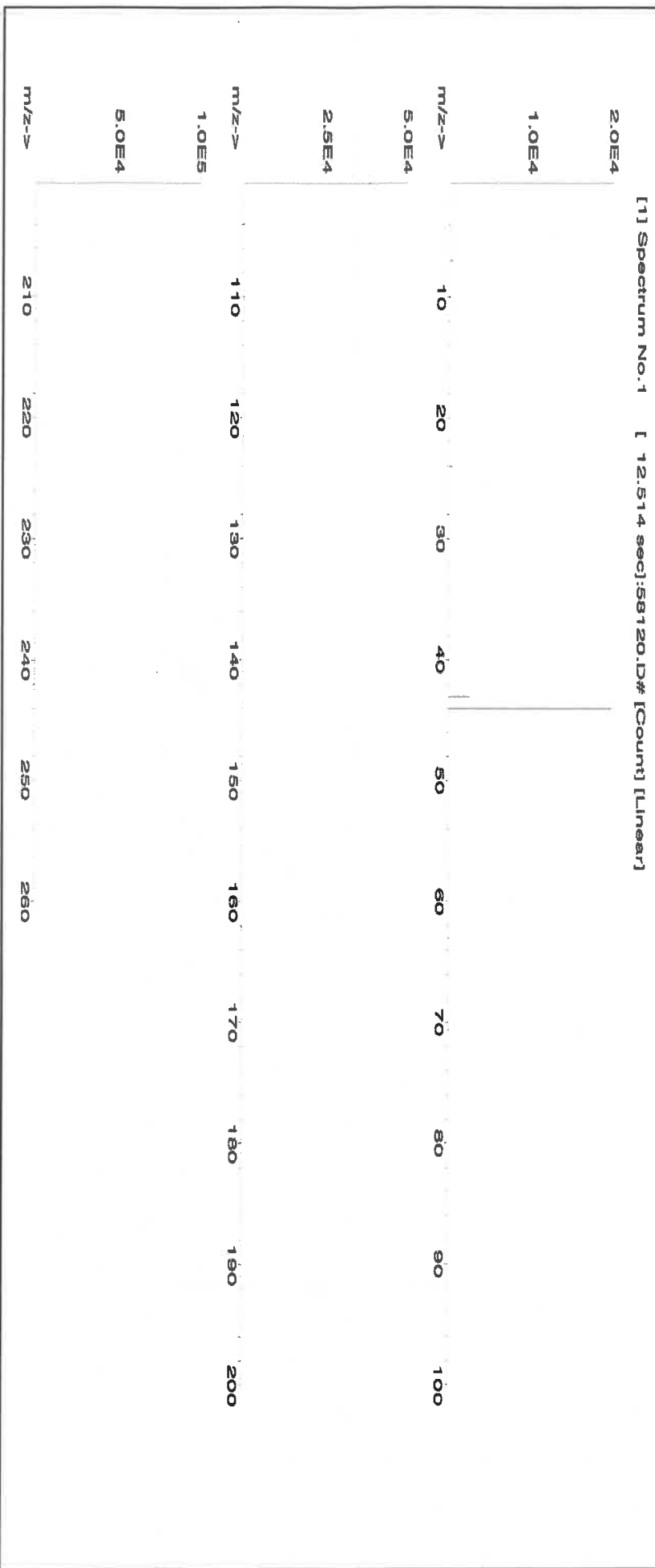
<i>Giovanni Caporaso</i>	
Formulated By:	Giovanni Esposito 122223
Reviewed By:	<i>Pedro L. Renteria</i> 122223

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 20/11/2021 M6085 / M6086 / M6087

CERTIFIED WEIGHT REPORT:

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

Solvent: 24002546 Nitric Acid

Lot #

2% 80.0 Nitric Acid (mL)

Expiration Date: 082327

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 10000

NIST Test Number: 6UTB

5E-05 Balance Uncertainty

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

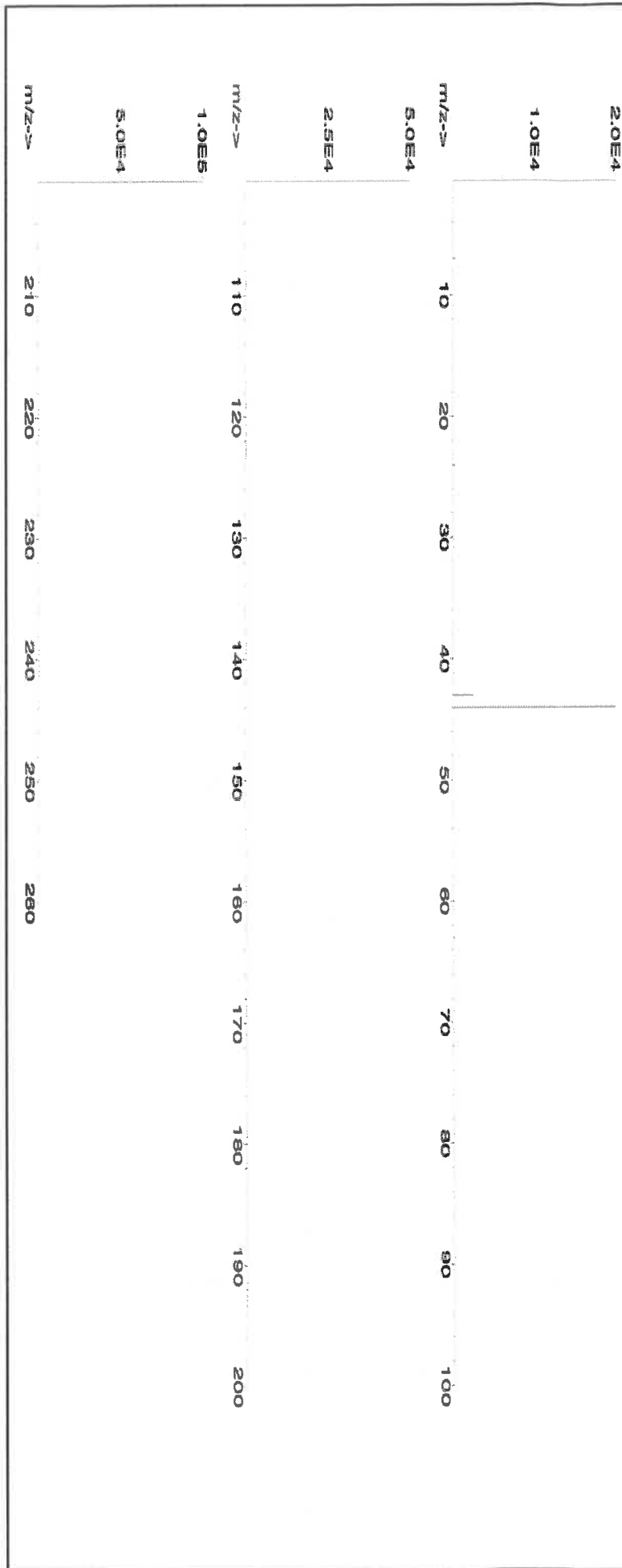
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	Pedro L. Rentas
	082324

SDS Information

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

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



M6028



CERTIFIED WEIGHT REPORT:

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

Solvent: 24002546 Nitric Acid
Lot #

Expiration Date: 070127

2% 40.0 Nitric Acid (mL)

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test Number: 6UTB

5E-05 Balance Uncertainty

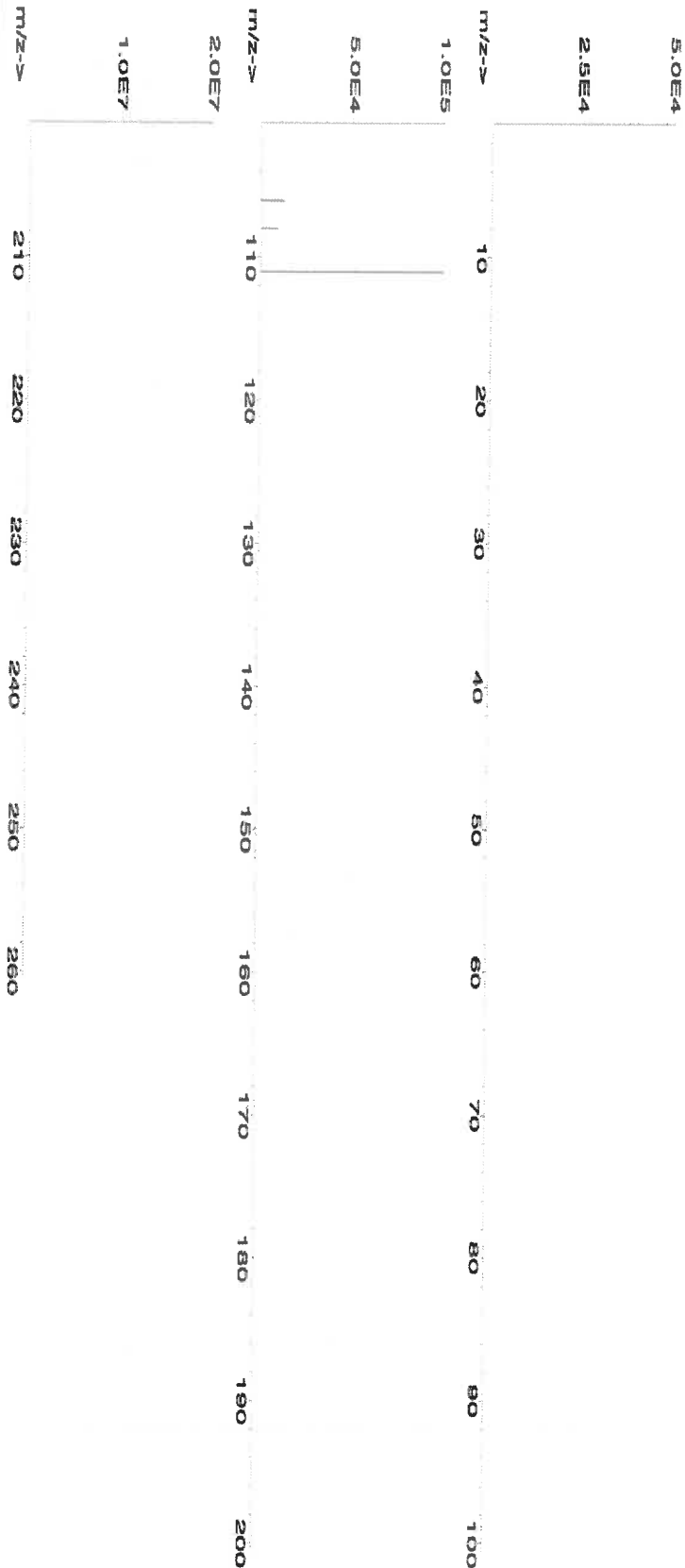
Weight shown below was diluted to (mL): 2000.07 0.100 Flask Uncertainty

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

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
Cadmium nitrate tetrahydrate (Cd)	INO24 CDM09221A1	1000	99.999	0.10	36.5	5.4797	5.4804	1000.1	2.0	10022-68-1	0.01 mg/m3	or-rat 60.2mg/kg	3108

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

Part Number:
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)

Lot #

21110221

Formulated By:
Reviewed By:

Lawrence Barry
020623
Reviewed By:
020623

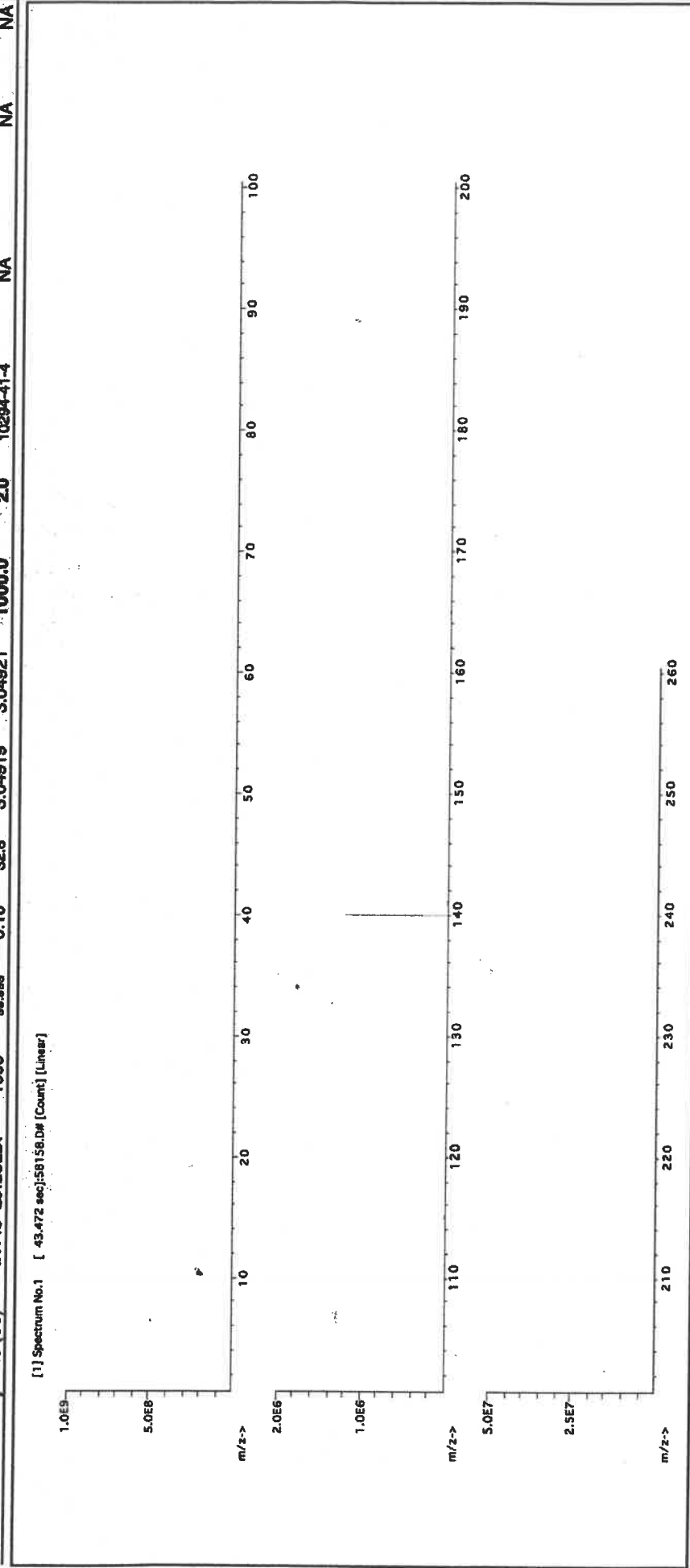
SDS Information

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

2.0
1000.0
3.04921
3.04919
32.8
0.10
99.999
1000
IN146

OSHA PEL (TWA)
CAS#
LD50
NA
NA
NA
NA
NA
NA

1. Cerium nitrate hexahydrate (Ce) [43.472 sec] 58158.D# [Count] [Linear]





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.02	Tb	<0.02	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	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	<0.02	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.

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- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).



CERTIFIED WEIGHT REPORT:

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

Lot # 21110221
Solvent: Nitric Acid

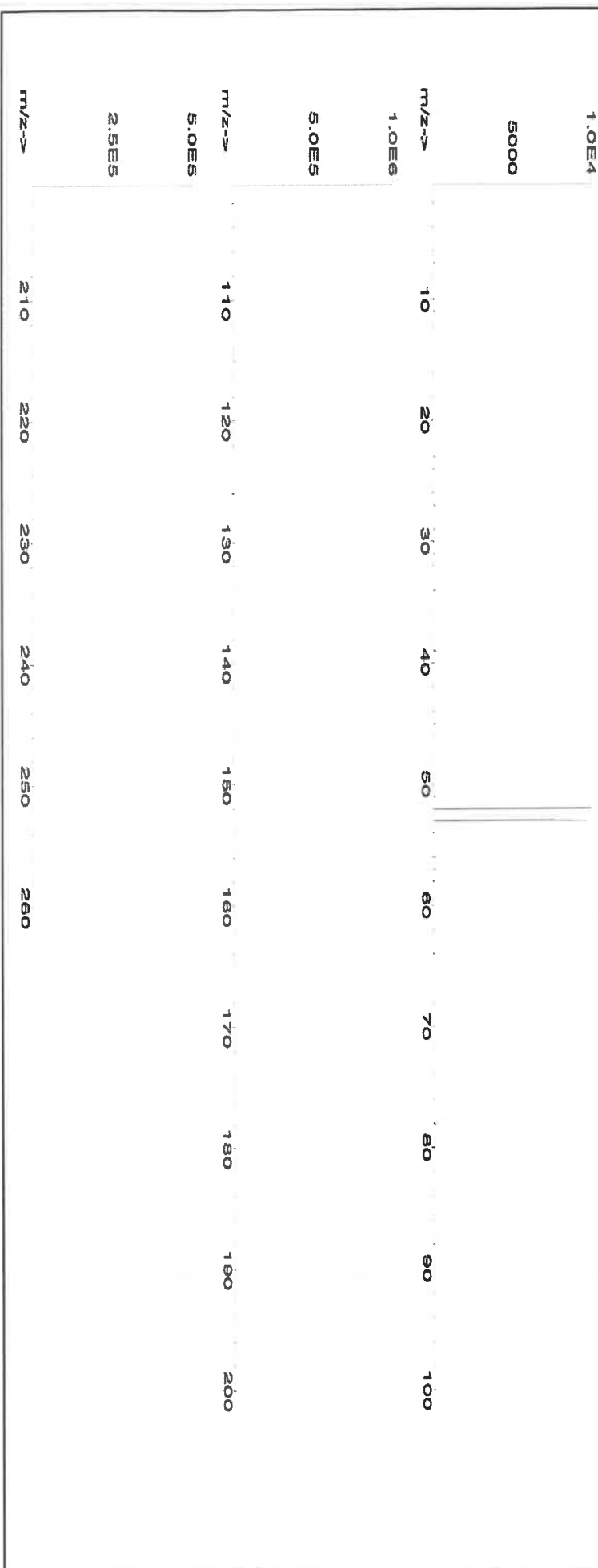
Formulated By:	Lawrence Barry
	060523
Reviewed By:	Pedro L. Ruelas
	060523

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

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

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

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





Certified Reference Material CRM



ANAB ISO 17034 Accredited
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https://AbsoluteStandards.com

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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<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



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

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

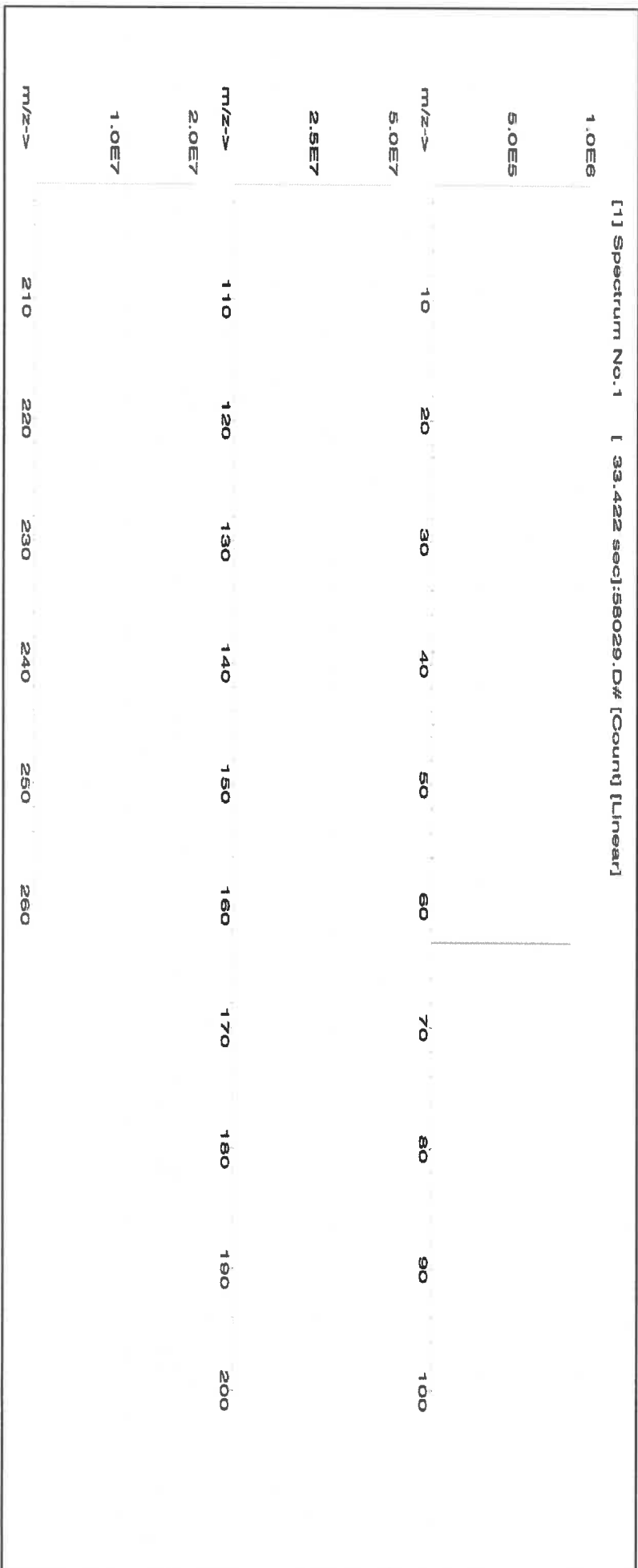
Reviewed By: *[Signature]* Pedro L. Rentas 102523

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	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:

John P. Jones

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



CERTIFIED WEIGHT REPORT:

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

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

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

2.0%
40.0 (mL)
Nitric Acid

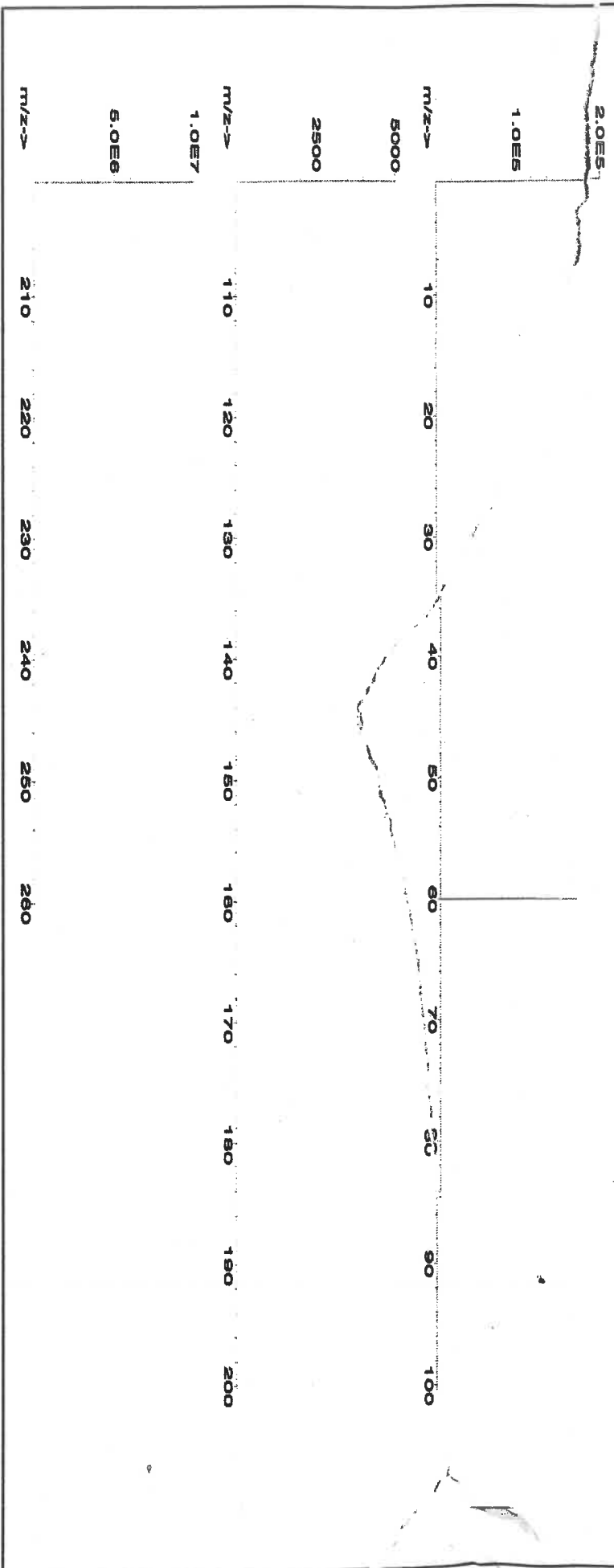
Volume shown below was diluted to (mL): **2000.02**
Balance Uncertainty: **5E-05**
Flask Uncertainty: **0.056**

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]:56028.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	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	Tb	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

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

Lot # 24002546
Solvent: Nitric Acid

Expiration Date:

102526

2.0%

40.0 (mL)

Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

2000.02

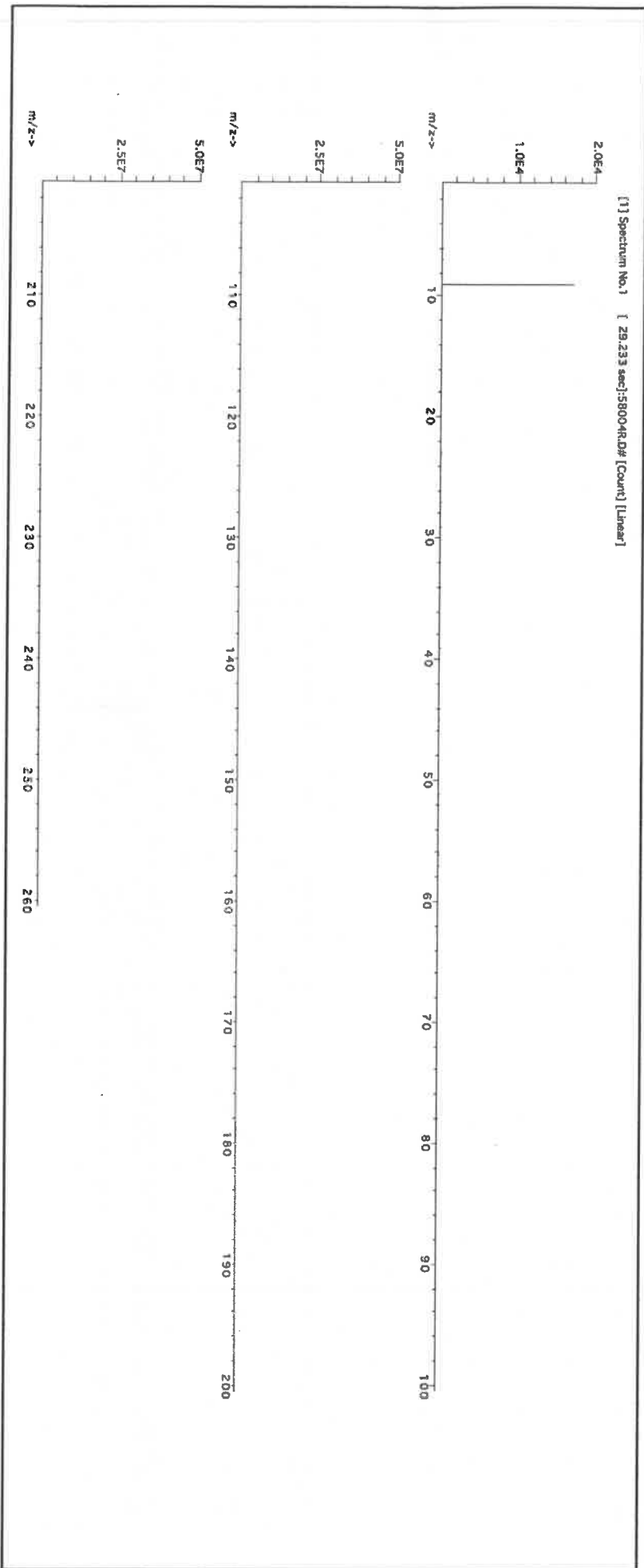
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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

SDS Information

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

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	<0.02	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Ta	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Tl	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM

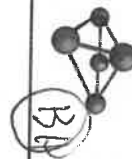
CERTIFIED WEIGHT REPORT:

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

Solvents: 21110221 Nitric Acid
22D0562008 Hydrochloric acid

Lot #

2.02509124
M599



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

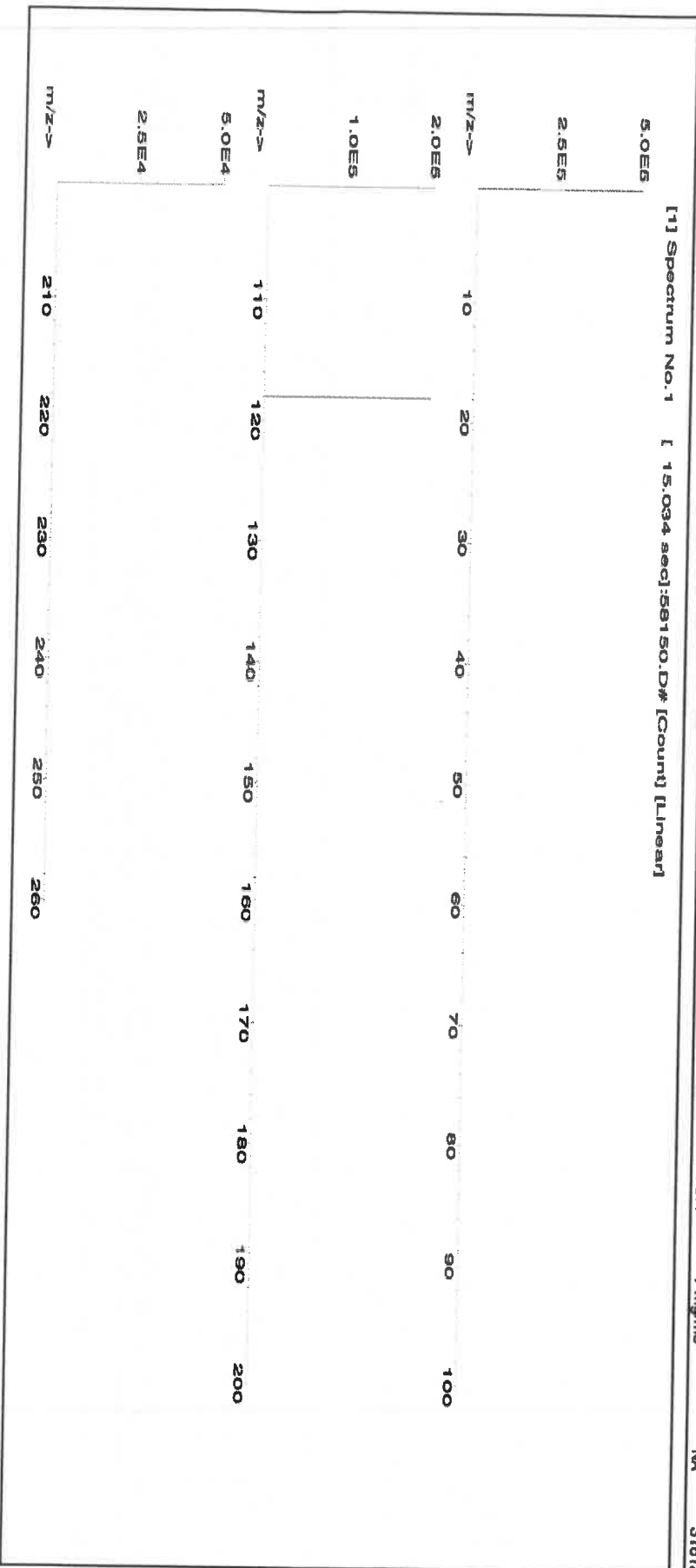
Weight shown below was diluted to (mL): 499.93
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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

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

1. Ammonium hexafluoroantimonate(V) (Sn) IN010 SMD042023A1 1000 99.999 0.10 44.2 1.13107 1.13286 1001.6 2.0 16919-24-7 7 mg/m3 NA 3161a

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





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

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

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

(T) = Target analyte

Physical Characterization:

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
(mL)

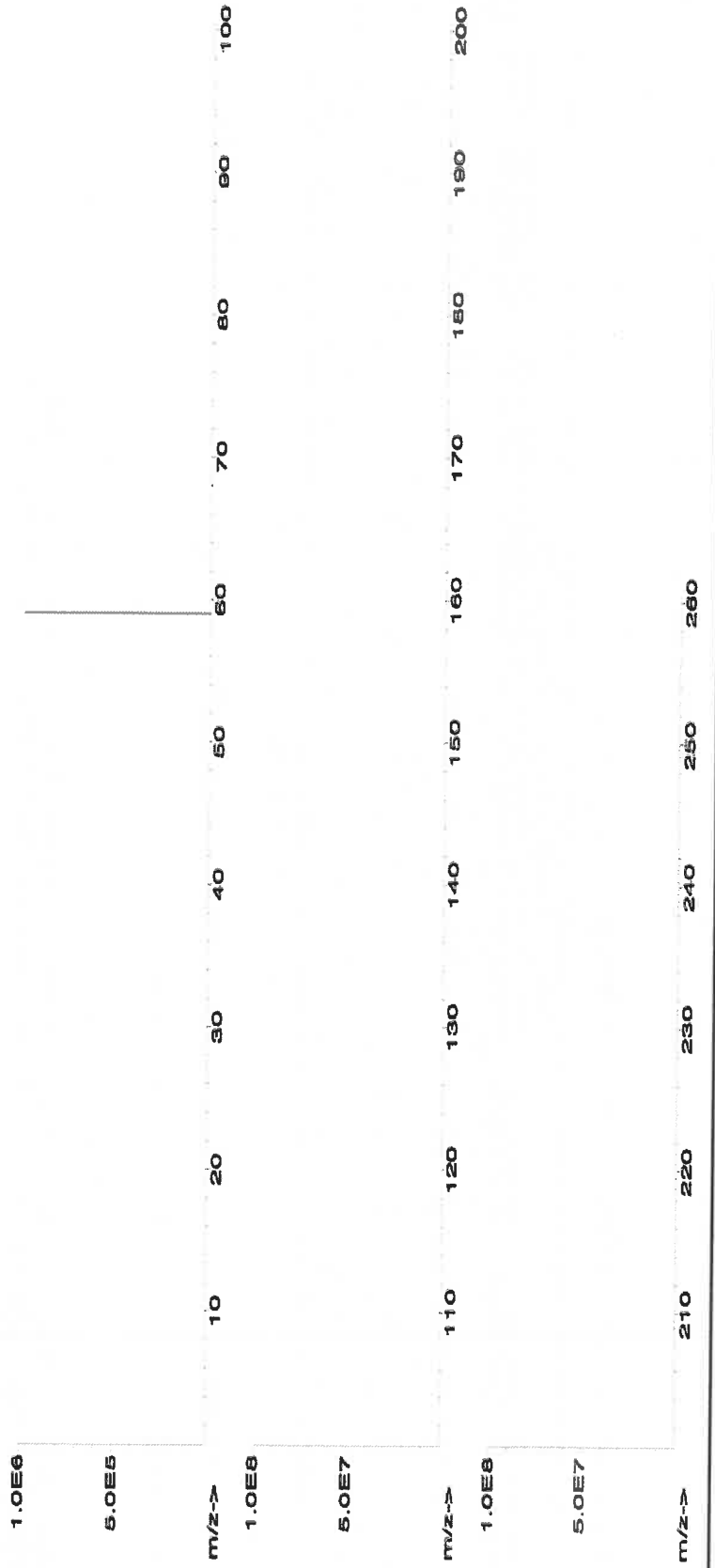
Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas

SDS Information

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

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

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





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.02	Os	<0.01	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.2	Na	<0.02	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	T	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.2	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.
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- * All standard containers are meticulously cleaned prior to use.
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- * All standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).



Certified Reference Material CRM

AR: 02/09/24

M5801

BA



CERTIFIED WEIGHT REPORT:

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

Lot # 24002546
Solvent: Nitric Acid

Expiration Date:

111326

2.0%

80.0 (mL)

Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6LUTB

Volume shown below was diluted to (mL):

4000.0

5E-05

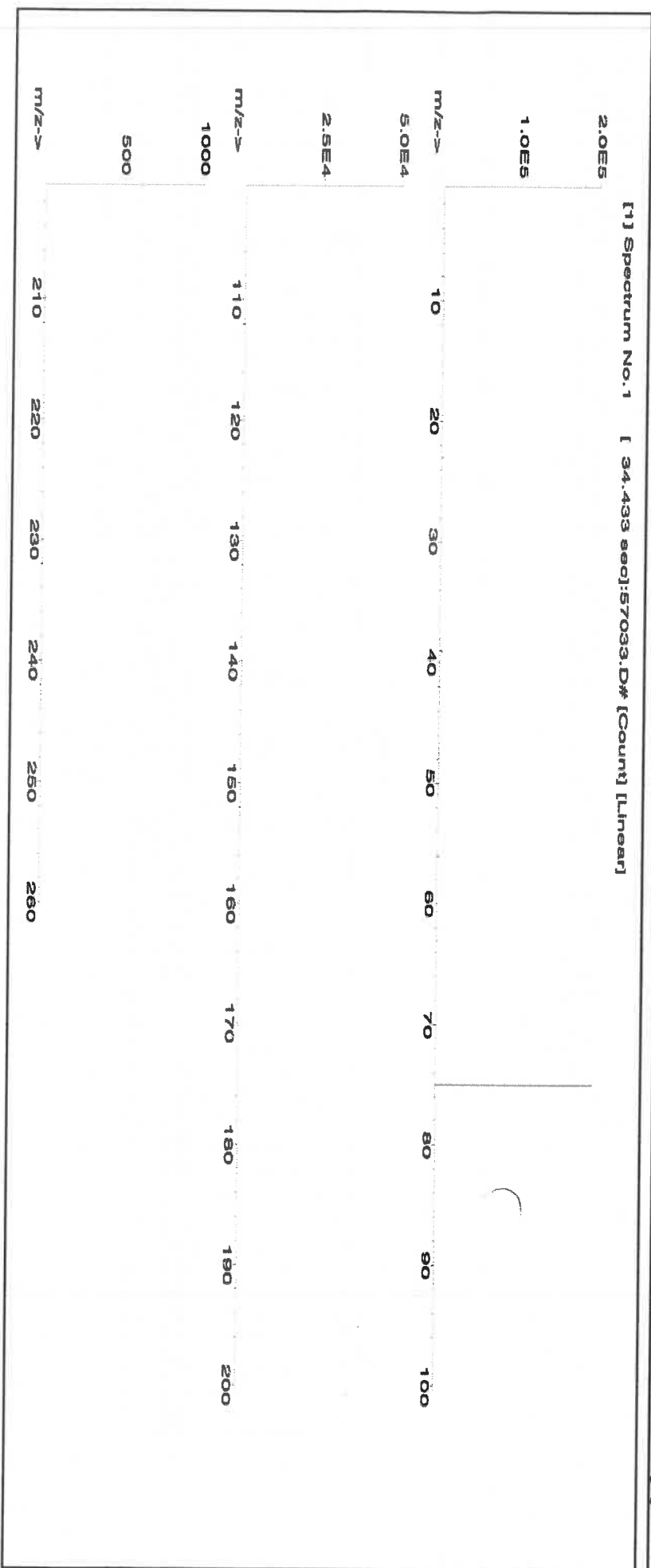
Balance Uncertainty
Flask Uncertainty

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

(Solvent Safety Info. On Attached pg.)
CAS# OSHA PEL (TWA) LD50 SRM

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).



CERTIFIED WEIGHT REPORT:

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

Solvent: MKB0857V Ammonium hydroxide

Lot #

AI: 021009124 M5814

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

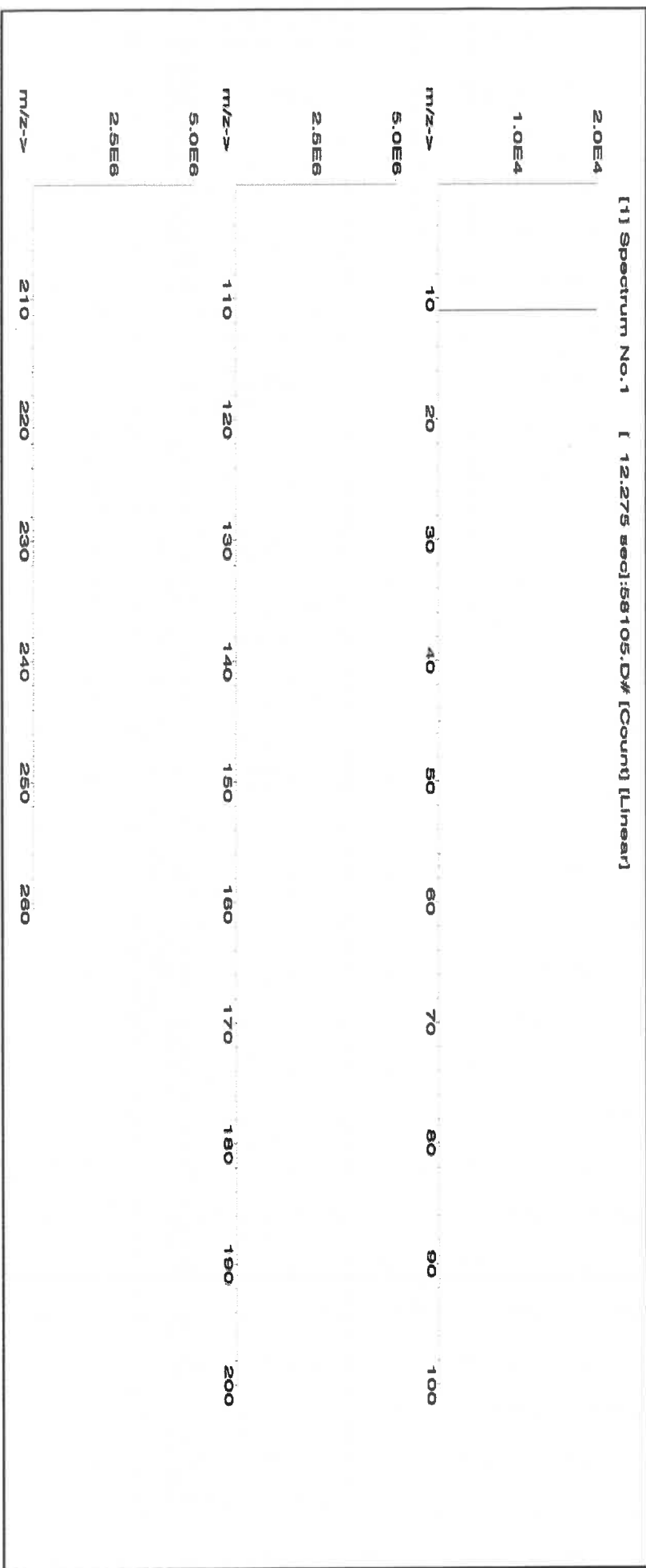
2.0% 40.0 (mL) Ammonium hydroxide

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

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

SDS Information									
Compound	Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Expanded
	Number	Conc. (µg/mL)	(%)	Purity (%)	(%)	Weight (g)	Weight (g)	Conc. (µg/mL)	+/- (µg/mL)
									(Solvent Safety Info. On Attached pg.)
									LD50
									NIST SRM

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

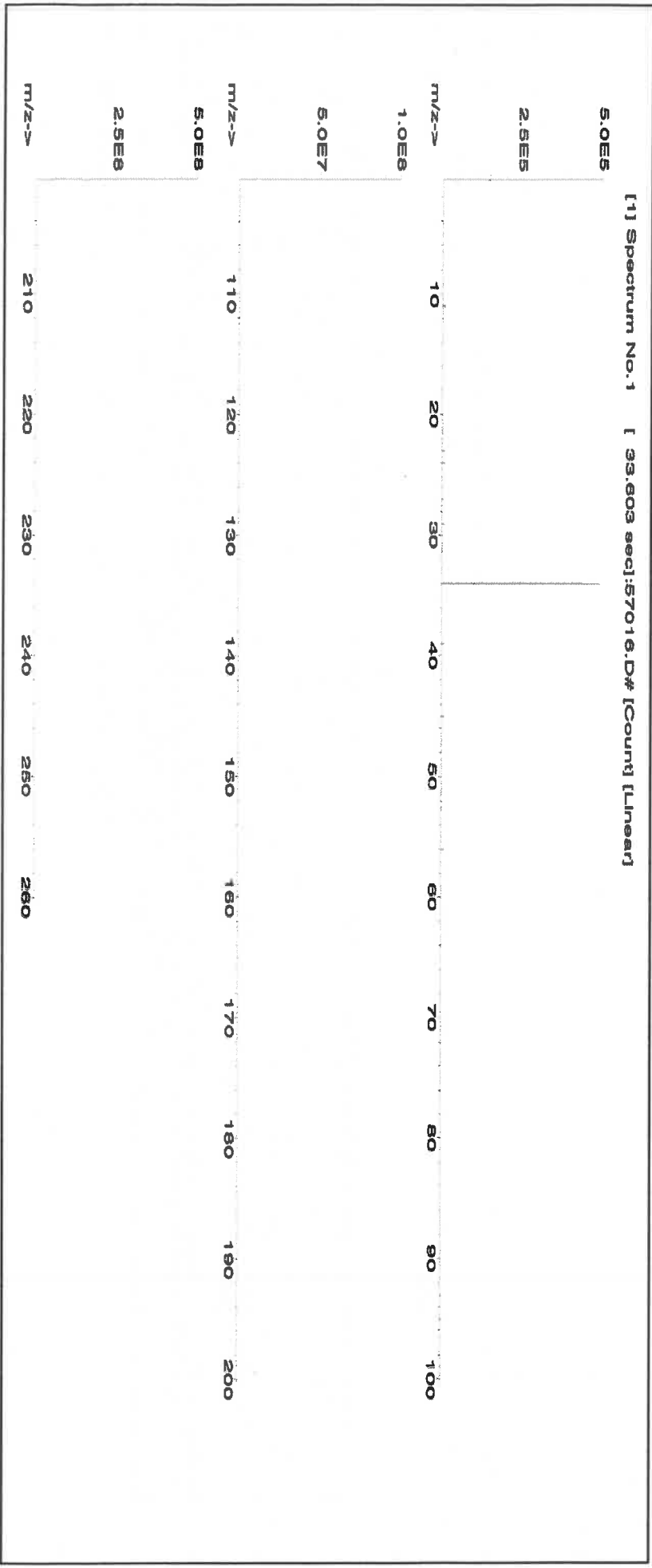
Solvent: 122923
ASTM Type 1 Water

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

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

Compound	SDS Information											
	Expanded (Solvent Safety Info. On Attached pg.)											
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 sulfate (S) IN117 SLBR225V 1000 99.9 0.10 24.3 16.4979 16.4980 1000.0 2.0 7783-20-2 NA or-rel 4250mg/kg 3181





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

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

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

(T) = Target analyte

Physical Characterization:

Certified by:

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

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

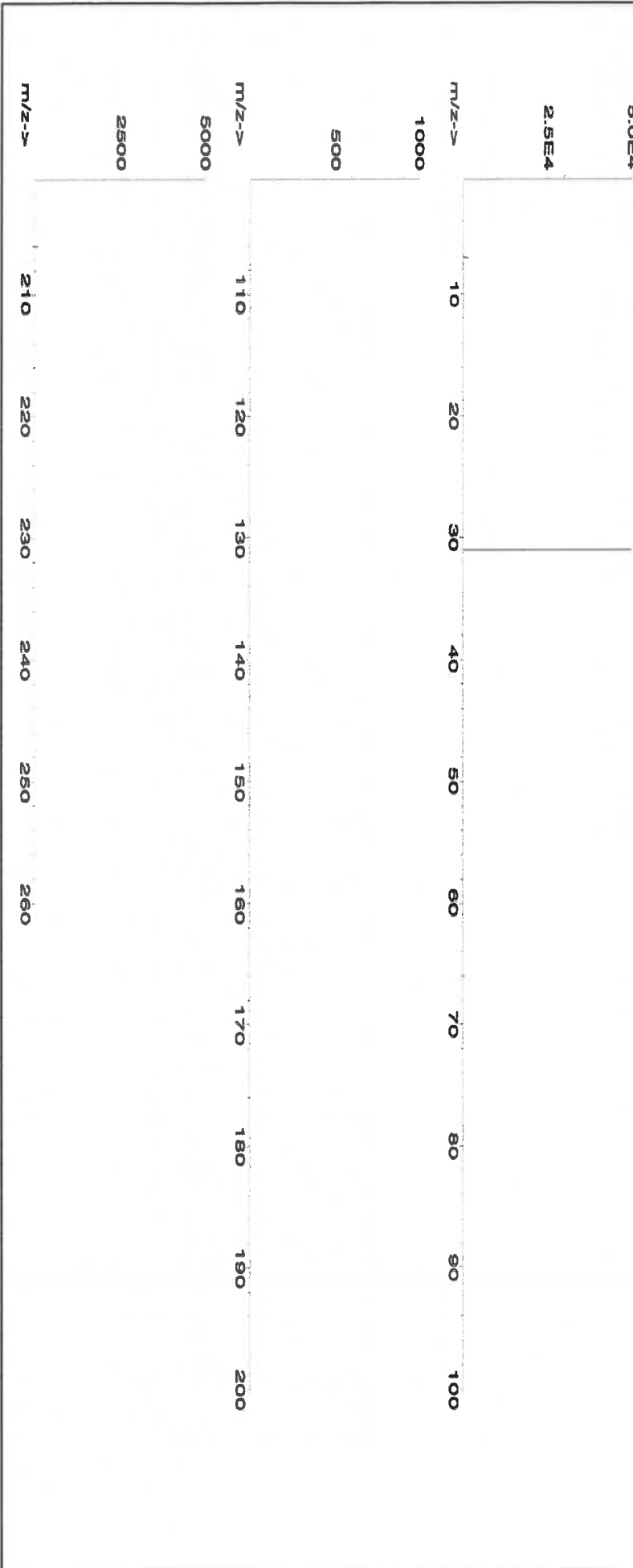
Weight shown below was diluted to (mL): 2000.02
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

SDS Information

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	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).
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- * All Standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certified Reference Material CRM



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CERTIFIED WEIGHT REPORT:

Part Number:

57034

Lot Number:

060624

Description:

Selenium (Se)

Lot #

24002546

Solvent:

Nitric Acid

2.0%

40.0

(mL)

Nitric Acid

(mL)

Formulated By:

Benson Chan

060624

Expiration Date:

060627

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

2000.07

SE-05

Balance Uncertainty

0.100

Flask Uncertainty

SDS Information

Compound

Part Number

Lot Number

Dilution Factor

Initial Vol. (mL)

Pipette (mL)

Uncertainty

Nominal Conc. (µg/mL)

Initial Conc. (µg/mL)

Final Conc. (µg/mL)

Expanded Uncertainty

+/- (µg/mL)

CAS#

OSHA PEL (TWA)

LDSO

NIST SRM

1. Selenium (Se)

58134

071223

0.1000

200.0

0.084

1000

10002.5

1000.0

2.2

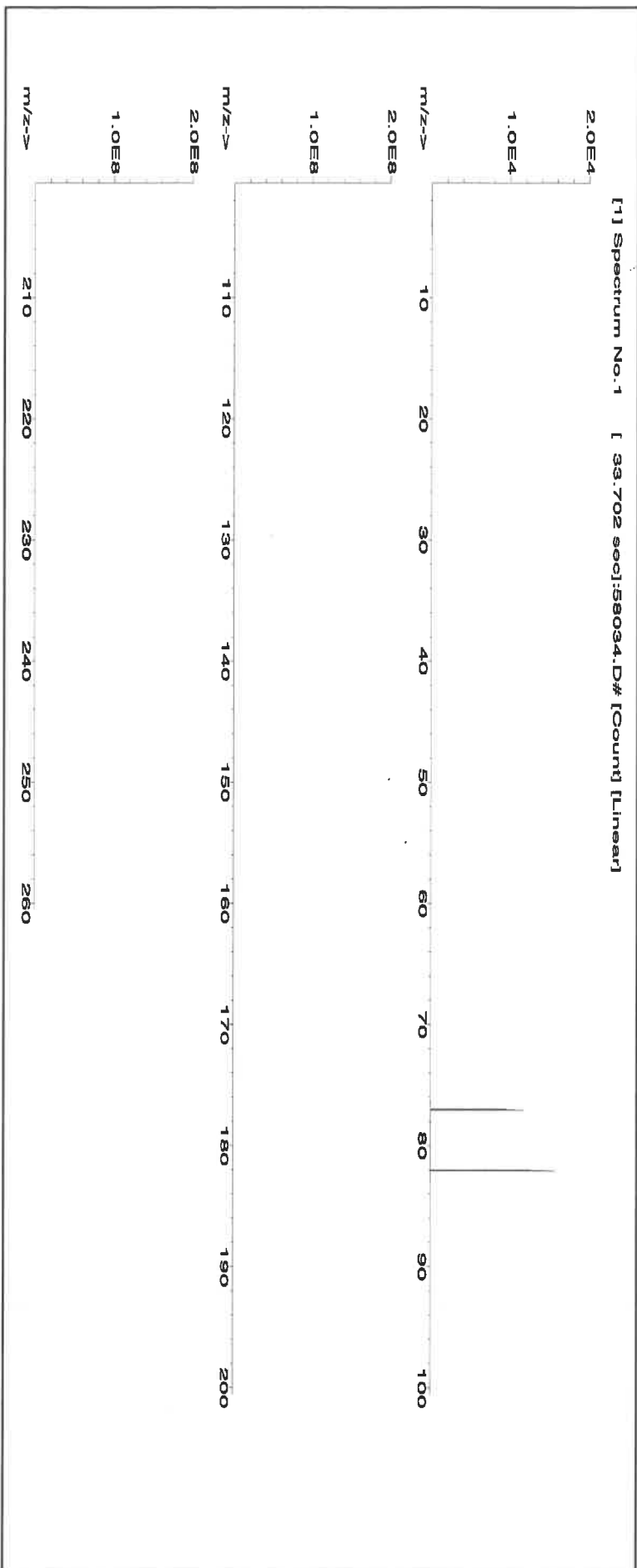
7782-49-2

0.2 mg/m3

or-tral 6700 mg/kg

3149

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

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

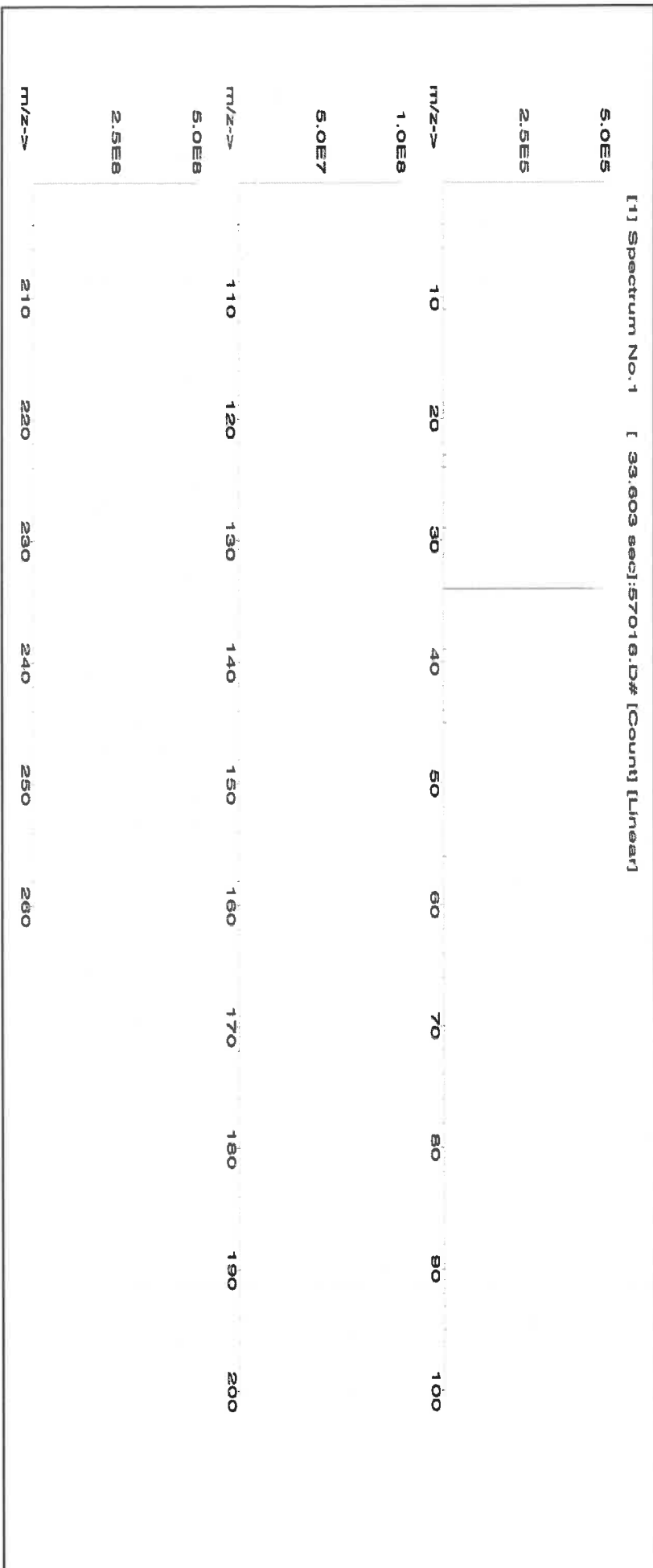
Lot #
Solvent: **122923** ASTM Type 1 Water

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		NIST SRM
									±	(µg/mL)	

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



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Certified Reference Material CRM
M5970 M5971 R1 710124



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CERTIFIED WEIGHT REPORT:

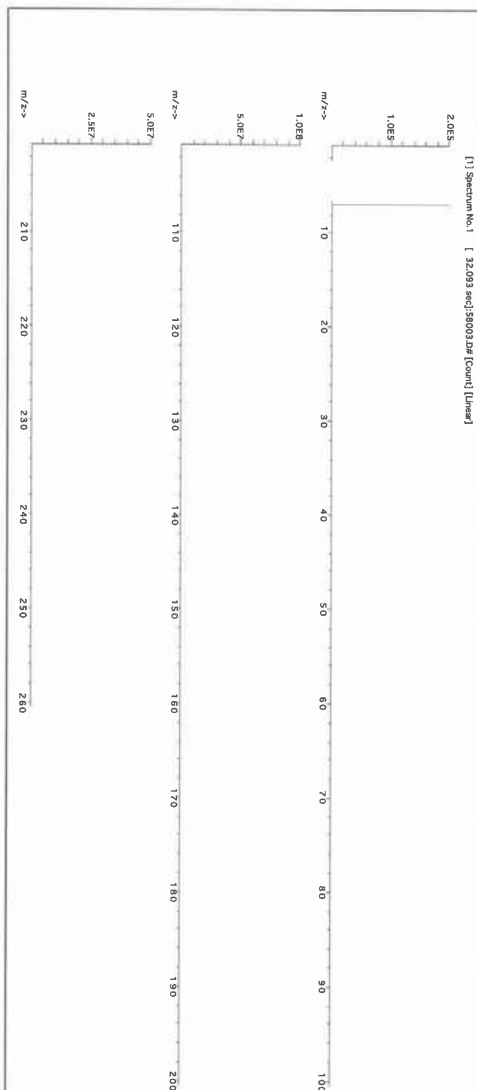
Part Number: 57003
Lot Number: 062124
Description: Lithium (Li)
Expiration Date: 06/21/27
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 250.11

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

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 F: 540-585-3012
 info@inorganicventures.com



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Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

1.0 ACCREDITATION / REGISTRATION

2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution

Catalog Number: CGT1

Lot Number: T2-T1719972

Matrix: 2% (v/v) HNO₃

Value / Analyte(s): tr. HF

Starting Material: 1 000 µg/mL ea.

Starting Material: Titanium

Starting Material: Ti Metal

Starting Material Lot#: 2094

Starting Material Purity: 99.9975%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 5 µg/mL

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

Assay Information:

Assay Method #1 1002 ± 4 µg/mL

ICP Assay NIST SRM 3162a Lot Number: 130925

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

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

Characterization of CRM/RM by Two or More Methods

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

$X_{CRM/RM} = 2(w) / (w_1 + w_2)$

w_1 = the weighting factors for each method calculated using the inverse square of the variance

$w_1 = (1/u_{CRM}^2) / (1/u_{CRM}^2 + 1/u_{CRM}^2)$

$u_{CRM} = \sqrt{(u_{CRM}^2 + u_{CRM}^2 + u_{CRM}^2 + u_{CRM}^2 + u_{CRM}^2 + u_{CRM}^2)}$

$u_{CRM} = \sqrt{(u_{CRM}^2 + u_{CRM}^2 + u_{CRM}^2 + u_{CRM}^2 + u_{CRM}^2 + u_{CRM}^2)}$

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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	<	0.000268	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 Th	<	0.001341			
O Ca	<	0.000676	M In	<	0.002683	M Pr	<	0.000268	M Tl	<	0.053663			
M Cd	<	0.000268	M Ir	<	0.000269	M Pt	<	0.000536	S Ti	<				
M Co	<	0.000268	M K	<	0.001172	M Rb	<	0.000268	M Tl	<	0.000268			
M Cr	<	0.000752	O Li	<	0.000268	M Re	<	0.000268	M Tm	<	0.000268			
M Cs	<	0.000268	M Lu	<	0.000268	M Rh	<	0.000268	M U	<	0.000268			
O Cu	<	0.010890	O Mg	<	0.005445	I S	<	0.006976	M Y	<	0.002146			
M Dy	<	0.000268	O Mn	<	0.003267	M Sb	<	0.004900	M Yb	<	0.000536			
M Er	<	0.000268	M Mo	<	0.000774	O Sc	<	0.004900	M Yb	<	0.000536			

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

Ti Containing Samples (Preparation and Solution) - Metal (Soluble in H2O / HF caution - powder reacts violently): Oxide - low temperature history anatase or rutile (Dissolved by heating in 1:1:1 H2O / HF / H2SO4); 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,
ICP-OES 334.941 nm	0.0038 / 0.00028 µg/mL	1	48Ca, 196X=2
ICP-OES 336.121 nm	0.0053 / 0.00034 µg/mL	1	W, Mo, Co
			Nb, Ta, Cr, U
			Ce, Ar, Ni
			Ru]]

(where X = Zr, Mo,

8.0 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 homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

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

11.1 Certification Issue Date

June 17, 2022

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

11.2 Lot Expiration Date

- June 17, 2027

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- 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

Thomas Kozlikowski
Manager, Quality Control

TD978L

Certifying Officer:

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
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M5985
R: 6/14/24

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

Assay Information:

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

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{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)

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
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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:

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

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

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

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

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

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EXP: 9/6/2029

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: CHEM-CLP-4
Lot Number: V2-MEB746762
Matrix: 3% (v/v) HNO₃
3% (v/v) HF
Value / Analyte(s): 1 000 µg/mL ea:
Boron, Molybdenum,
Silicon, Tin,
Titanium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

Density: 1.033 g/mL (measured at 20 ± 4 °C)

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 06, 2024

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

11.2 Lot Expiration Date

- September 06, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

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Certificate Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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EXP: 9/6/2029

1.0 ACCREDITATION / REGISTRATION

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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
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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

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

X_a = mean of Assay Method A with

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

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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.

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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.

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7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 06, 2024

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

11.2 Lot Expiration Date

- September 06, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





CERTIFIED WEIGHT REPORT:

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

R-71113128

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

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

2% **80.0** **Nitric Acid**
(mL)

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

Compound

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

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
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inorganicventures.com

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F: 540-585-3012
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M6137
R-71013124

1.0 ACCREDITATION / REGISTRATION

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2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution
Catalog Number: CGSI1
Lot Number: V2-SI744713
Matrix: tr. HNO₃
tr. HF
Value / Analyte(s): 1 000 µg/mL ea:
Silicon
Starting Material: Silica
Starting Material Lot#: 1771
Starting Material Purity: 99.9981%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 999 ± 6 µg/mL
Density: 1.003 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	999 ± 5 µg/mL ICP Assay NIST SRM Traceable to 3150 Lot Number: S2-SI702546
Assay Method #2	1000 ± 7 µg/mL Calculated NIST SRM Lot Number: See Sec. 4.2

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

M	Ag	<	0.000310	M	Eu	<	0.000310	O	Na		0.001656	M	Se	<	0.022000	M	Zn	<	0.002500
M	Al		0.010787	M	Fe	<	0.027000	M	Nb	<	0.001300	s	Si	<		O	Zr	<	0.001900
M	As	<	0.001900	M	Ga	<	0.001300	M	Nd	<	0.000310	M	Sm	<	0.000310				
M	Au	<	0.000910	M	Gd	<	0.000310	M	Ni	<	0.005500	M	Sn		0.000096				
M	B		0.016180	M	Ge	<	0.001900	M	Os	<	0.000610	O	Sr		0.000092				
M	Ba		0.000096	M	Hf		0.000423	i	P	<		M	Ta		0.002542				
O	Be	<	0.000570	M	Hg	<	0.000610	M	Pb	<	0.000310	M	Tb	<	0.000310				
M	Bi	<	0.000310	M	Ho	<	0.000610	M	Pd	<	0.000610	M	Te	<	0.000910				
O	Ca		0.011557	M	In	<	0.000310	M	Pr	<	0.000310	M	Th	<	0.001900				
M	Cd	<	0.000310	M	Ir	<	0.000310	M	Pt	<	0.000310	M	Ti		0.001078				
M	Ce	<	0.000610	O	K		0.000577	M	Rb	<	0.009100	M	Tl	<	0.000310				
M	Co	<	0.001600	M	La	<	0.000310	M	Re	<	0.000310	M	Tm	<	0.000310				
M	Cr	<	0.010000	O	Li	<	0.000460	M	Rh	<	0.000310	M	U	<	0.000310				
M	Cs	<	0.000310	M	Lu	<	0.000310	M	Ru	<	0.000310	O	V	<	0.001300				
M	Cu	<	0.002500	O	Mg		0.001348	O	S	<	0.570000	M	W	<	0.001900				
M	Dy	<	0.000310	M	Mn	<	0.002500	M	Sb	<	0.000310	M	Y	<	0.000310				
M	Er	<	0.000310	M	Mo	<	0.000310	O	Sc	<	0.000590	M	Yb	<	0.000310				

M - Checked by ICP-MS

O - Checked by ICP-OES

i - Spectral Interference

n - Not Checked For

s - Solution Standard Element

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form In Solution - 28.09 +4 6 Si(OH)x(F)y2-

Chemical Compatibility -Soluble in HCl, HF, H3PO4 H2SO4 and HNO3 as the Si(OH)x(F)y2-. Avoid neutral to basic media. Unstable at ppm levels with metals that would pull F- away (i.e. Do not mix with Alkaline or Rare Earths, or high levels of transition elements unless they are fluorinated. Stable with most inorganic anions with a tendency to hydrolyze forming silicic acid (silicic acid is soluble up to ∼100 ppm in water) in all dilute acids except HF.

Stability - 2-100 ppb levels - stability unknown - (alone or mixed with all other metals) as the Si(OH)x(F)y2-. 1-10,000 ppm single element solutions as the Si(OH)x(F)y2- chemically stable for years in 2-5 % HNO3 / trace HF in a LDPE container.

Si Containing Samples (Preparation and Solution) -Metal (Soluble in 1:1:1 H2O / HF / HNO3); Oxide - SiO2, amorphous (dissolve by heating in 1:1:1 H2O / HF / HNO3); Oxide - quartz (fuse in Pt0 with Na2CO3); Geological Samples(fuse in Pt0with Na2CO3 followed by HCl solution of the fuseate); Organic Matrices containing silicates and non volatile silicon compounds (dry ash at 4500C in Pt0 and dissolve by gently warming with 1:1:1 H2O / HF / H2SO4 or fuse / ash with Na2CO3 and dissolve fuseate with HCl / H2O); Silicone Oils - dimethyl silicones depolymerize to form volatile monomer units when heated (Measure directly in alcoholic KOH / xylene mixture where sample is treated first with the KOH at 60-1000C to "unzip" the Si- O-Si polymeric structure or digest with conc. H2SO4 / H2O2 followed by cooling and dissolution of the dehydrated silica with HF.) Note that the direct analysis of silicone oils in an organic solvent will result in false high results due to high vapor pressure of volatile monomer units like hexamethylcyclotrisiloxane. The KOH forms the K2+Si(CH3)2O= salt which is not volatile at room temperature.

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

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 28 amu	4000 - 8000 ppt	N/A	N2, 12C16O
ICP-OES 212.412 nm	0.02/0.01 µg/mL	1	Hf, Os, Mo, Ta
ICP-OES 251.611 nm	0.012/0.003 µg/mL	1	Ta, U, Zn, Th
ICP-OES 288.158 nm	0.03/0.004 µg/mL	1	Ta, Ce, Cr, Cd, Th

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 10, 2024

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

11.2 Lot Expiration Date

- July 10, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Muzzammil Khan
Stock Laboratory Supervisor



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58126
011025
Iron (Fe)

R-11B125
M6140

Lot #
Solvent: 24012496 Nitric Acid

Expiration Date:

011028

2% 40.0 (mL)

Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

10000

NIST Test Number:

6U7B

5E-05 Balance Uncertainty

Weight shown below was diluted to (mL):

2000.07

0.100 Flask Uncertainty

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

Compound

Lot
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)

LDSO

NIST

SFM

SDS Information
(Solvent Safety Info. On Attached pg.)

1 mg/m³

or-rel 3250mg/kg 3126A

1. Iron(III) nitrate nonahydrate (Fe)

IN028 FED082023A1

10000

99.999

0.10

13.0

153.8534

#####

10000.2

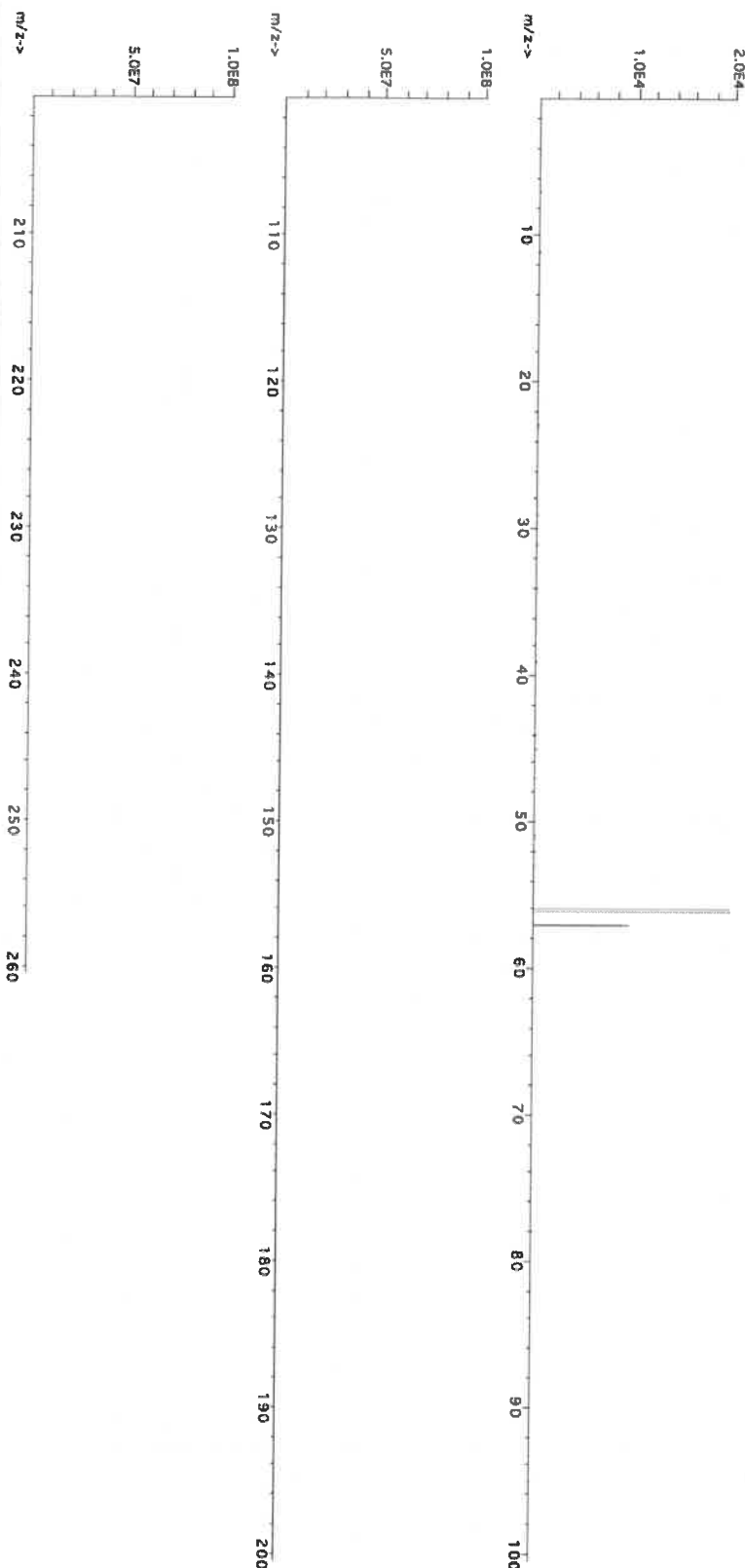
20.0

7782-61-8

1 mg/m³

or-rel 3250mg/kg 3126A

[1] Spectrum No.1 [30.763 sec]58126.D# [Count] [Linear]





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

Trace Metals Verification by ICP-MS (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	<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	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	T	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
														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).



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57119
103024
Potassium (K)

Lot #
24002546
Nitric Acid

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

103027
Ambient (20 °C)
10000
6UTB

M6141
M6142
M6143

2%
80.0 (mL)
Nitric Acid

Weight shown below was diluted to (mL):

4000.1 0.15 Flask Uncertainty

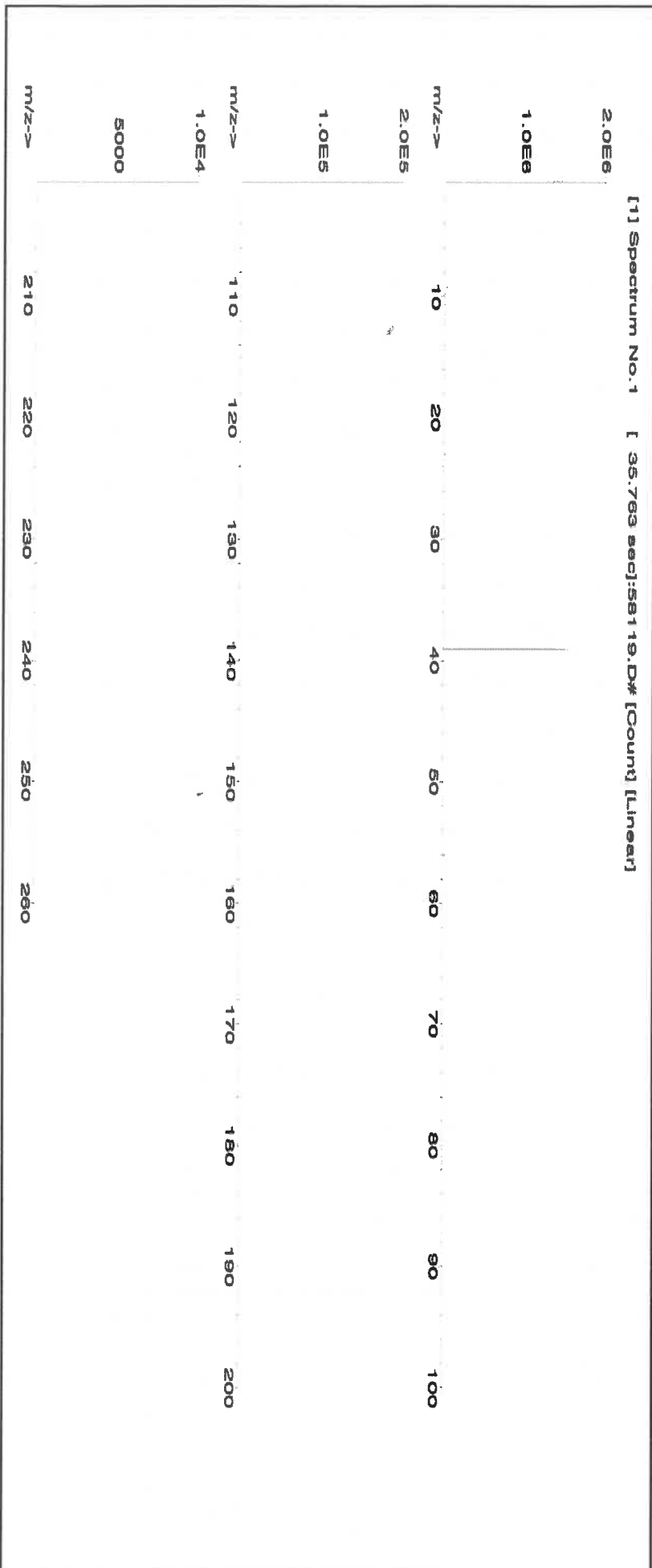
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
Reviewed By:	Pedro L. Renteria
	103024

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. 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-1113/25
Lot Number: 072424 **Solvent:** Nitric Acid
Description: Sodium (Na)

Expiration Date: 072427 **2%** **80.0** **Nitric Acid**
Recommended Storage: Ambient (20 °C) (mL)

Nominal Concentration (µg/mL): 10000

NIST Test Number: 6UTB **5E-05** **Balance Uncertainty**

Weight shown below was diluted to (mL): 4000.2 **0.10** **Flask Uncertainty**

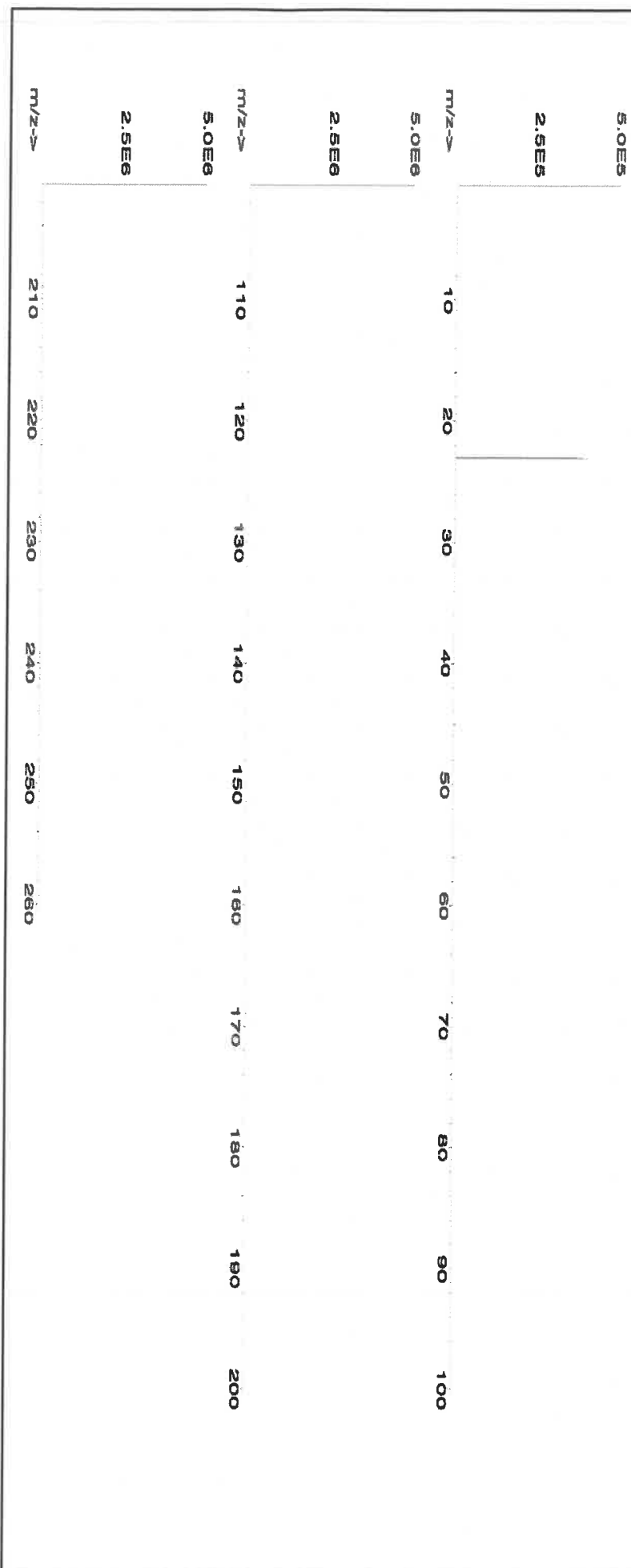
Formulated By:	Benson Chan	072424
Reviewed By:	Pedro L. Renteria	072424

SDS Information

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

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

Part Number: **58030** Lot # **24012496**
Lot Number: **121724** Nitric Acid
Description: **Zinc (Zn)**

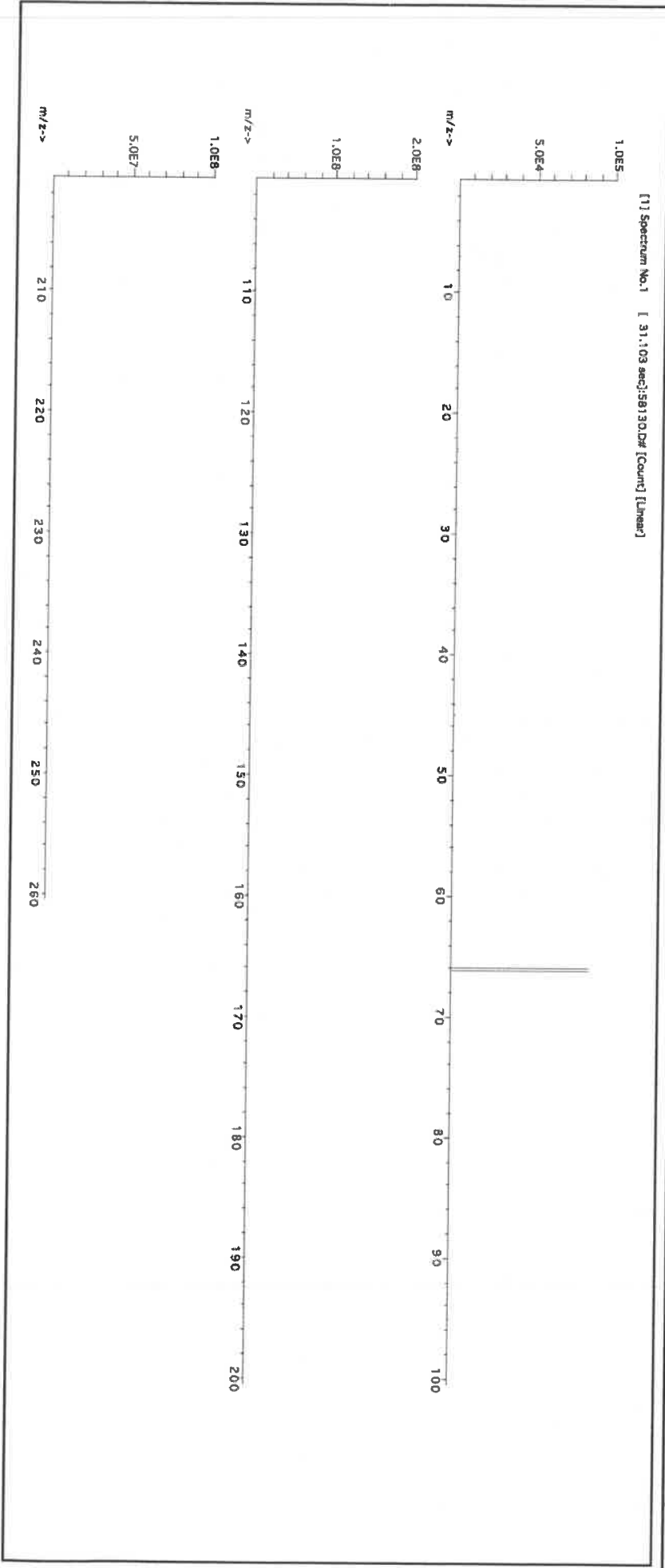
Expiration Date: **121727** 2% 40.0 (mL) Nitric Acid

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

NIST Test Number: **6UTB** 5E-05 Balance Uncertainty
Weight shown below was diluted to (mL): **2000.1** 0.10 Flask Uncertainty

<i>Aleah O Brady</i>	
Formulated By:	Aleah O'Brady
Reviewed By:	<i>Pedro L. Rentias</i>
	Pedro L. Rentias
	121724

SDS Information									
Expanded					(Solvent Safety Info. On Attached pg.)				
Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)
1. Zinc nitrate hexahydrate (Zn)	IN016	ZNE032021A1	1000	99.999	0.10	24.3	8.2308	8.2311	1000.0
							2.0	10196-18-6	1 mg/m3
									or-rat 1190mg/kg 3168





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

avantor™



M6151

R → 11/15/25

Material No.: 9530-33
Batch No.: 22G2862015
Manufactured Date: 2022-06-15
Retest Date: 2027-06-14
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
ACS – Assay (as HCl) (by acid–base titrn)	36.5 – 38.0 %	37.9 %
ACS – Color (APHA)	≤ 10	5
ACS – Residue after Ignition	≤ 3 ppm	< 1 ppm
ACS – Specific Gravity at 60°/60°F	1.185 – 1.192	1.191
ACS – Bromide (Br)	≤ 0.005 %	< 0.005 %
ACS – Extractable Organic Substances	≤ 5 ppm	< 1 ppm
ACS – Free Chlorine (as Cl ₂)	≤ 0.5 ppm	< 0.5 ppm
Phosphate (PO ₄)	≤ 0.05 ppm	< 0.03 ppm
Sulfate (SO ₄)	≤ 0.5 ppm	< 0.3 ppm
Sulfite (SO ₃)	≤ 0.8 ppm	0.3 ppm
Ammonium (NH ₄)	≤ 3 ppm	< 1 ppm
Trace Impurities – Arsenic (As)	≤ 0.010 ppm	< 0.003 ppm
Trace Impurities – Aluminum (Al)	≤ 10.0 ppb	1.3 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 3.0 ppb
Trace Impurities – Barium (Ba)	≤ 1.0 ppb	0.2 ppb
Trace Impurities – Beryllium (Be)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Bismuth (Bi)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 20.0 ppb	< 5.0 ppb
Trace Impurities – Cadmium (Cd)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	163.0 ppb
Trace Impurities – Chromium (Cr)	≤ 1.0 ppb	0.7 ppb
Trace Impurities – Cobalt (Co)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Copper (Cu)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Gallium (Ga)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Germanium (Ge)	≤ 3.0 ppb	< 2.0 ppb
Trace Impurities – Gold (Au)	≤ 4.0 ppb	0.6 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 15 ppb	6 ppb

>>> Continued on page 2 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

 **avantorsm**



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

Test	Specification	Result
Trace Impurities – Lead (Pb)	≤ 1.0 ppb	< 0.5 ppb
Trace Impurities – Lithium (Li)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Magnesium (Mg)	≤ 10.0 ppb	2.9 ppb
Trace Impurities – Manganese (Mn)	≤ 1.0 ppb	< 0.4 ppb
Trace Impurities – Mercury (Hg)	≤ 0.5 ppb	0.1 ppb
Trace Impurities – Molybdenum (Mo)	≤ 10.0 ppb	< 3.0 ppb
Trace Impurities – Nickel (Ni)	≤ 4.0 ppb	< 0.3 ppb
Trace Impurities – Niobium (Nb)	≤ 1.0 ppb	0.8 ppb
Trace Impurities – Potassium (K)	≤ 9.0 ppb	< 2.0 ppb
Trace Impurities – Selenium (Se), For Information Only		< 1.0 ppb
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	< 10.0 ppb
Trace Impurities – Silver (Ag)	≤ 1.0 ppb	0.5 ppb
Trace Impurities – Sodium (Na)	≤ 100.0 ppb	2.3 ppb
Trace Impurities – Strontium (Sr)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Tantalum (Ta)	≤ 1.0 ppb	1.6 ppb
Trace Impurities – Thallium (Tl)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Tin (Sn)	≤ 5.0 ppb	4.0 ppb
Trace Impurities – Titanium (Ti)	≤ 1.0 ppb	1.5 ppb
Trace Impurities – Vanadium (V)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Zinc (Zn)	≤ 5.0 ppb	0.8 ppb
Trace Impurities – Zirconium (Zr)	≤ 1.0 ppb	0.3 ppb

>>> Continued on page 3 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA–ANALYZED® Reagent
For Trace Metal Analysis

 **avantor**™

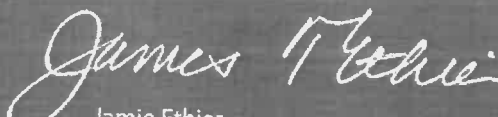


Material No.: 9530-33
Batch No.: 22G2862015

Test	Specification	Result

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

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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 >>>



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1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution		
Catalog Number:	QCP-CICV-1		
Lot Number:	V2-MEB744107		
Matrix:	7% (v/v) HNO ₃		
Value / Analyte(s):	2 500 µg/mL ea:		
	Calcium,	Potassium,	
	Magnesium,	Sodium,	
	1 000 µg/mL ea:		
	Aluminum,	Barium,	
	500 µg/mL ea:		
	Iron,		
	250 µg/mL ea:		
	Nickel,	Vanadium,	
	Zinc,	Cobalt,	
	Manganese,		
	125 µg/mL ea:		
	Silver,	Copper,	
	100 µg/mL ea:		
	Chromium,		
	25 µg/mL ea:		
	Beryllium		

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	1 000 ± 4 µg/mL	Barium, Ba	1 000 ± 6 µg/mL
Beryllium, Be	24.98 ± 0.12 µg/mL	Calcium, Ca	2 500 ± 8 µg/mL
Chromium, Cr	99.9 ± 0.6 µg/mL	Cobalt, Co	250.2 ± 1.2 µg/mL
Copper, Cu	125.0 ± 0.5 µg/mL	Iron, Fe	500.0 ± 2.2 µg/mL
Magnesium, Mg	2 500 ± 11 µg/mL	Manganese, Mn	249.9 ± 1.1 µg/mL
Nickel, Ni	250.0 ± 1.2 µg/mL	Potassium, K	2 500 ± 11 µg/mL
Silver, Ag	125.0 ± 0.6 µg/mL	Sodium, Na	2 500 ± 11 µg/mL
Vanadium, V	250.0 ± 1.1 µg/mL	Zinc, Zn	249.9 ± 1.1 µg/mL

Density: 1.081 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Be	Calculated		See Sec. 4.2
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	120618
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	200413
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
V	ICP Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Note: This solution contains Silver (Ag), please refer to our Sample Preparation Guide for more information (<https://www.inorganicventures.com/sample-preparation-guide/samples-containing-silver>)

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

May 22, 2024

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

11.2 Lot Expiration Date

- **May 22, 2029**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: QCP-CICV-2
Lot Number: U2-MEB733713
Matrix: 3% (w/v) Tartaric acid
1% (v/v) HNO₃
Value / Analyte(s): 500 µg/mL ea:
Antimony

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	500.0 ± 2.8 µg/mL		

Density: 1.017 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Sb	ICP Assay	3102a	140911

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 02, 2025

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

11.2 Lot Expiration Date

- **January 02, 2030**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

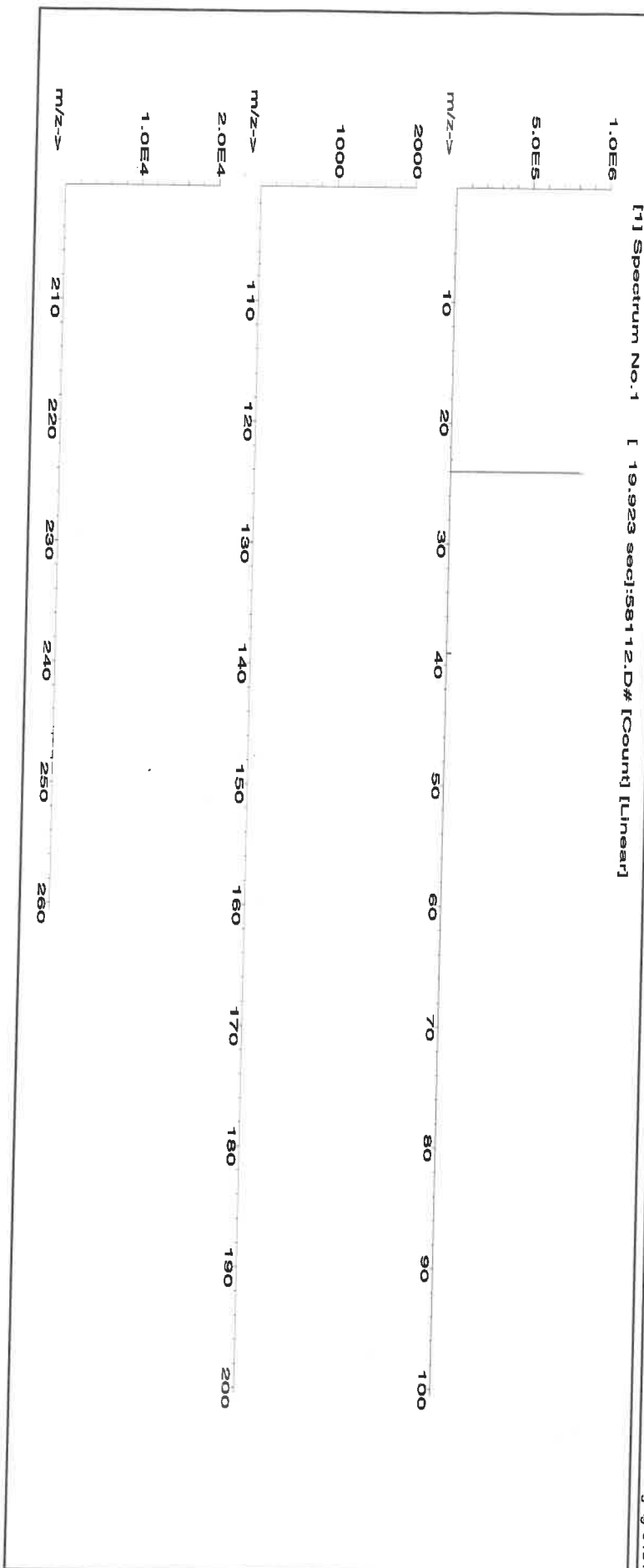
Part Number: 58112
Lot Number: 011525
Description: Magnesium (Mg)
Solvent: 24012496 Nitric Acid

Expiration Date: 011528
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	011525
Reviewed By:	Pedro L. Rentas	011525

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. Magnesium nitrate hexahydrate (Mg) IN030 MGD05023A1 10000 99.999 0.10 8.51 234.9183 234.9195 10000.1 20.0 13446-18-9 NA off-ret 5440 mg/kg 3131a





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

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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

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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

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 Number: 092724
Description: Strontium (Sr)
Expiration Date: 092727
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 8UTB
Weight shown below was diluted to (mL): 2000.07
5E-05 Balance Uncertainty
0.100 Flask Uncertainty

R-5816125

M 6/7/26

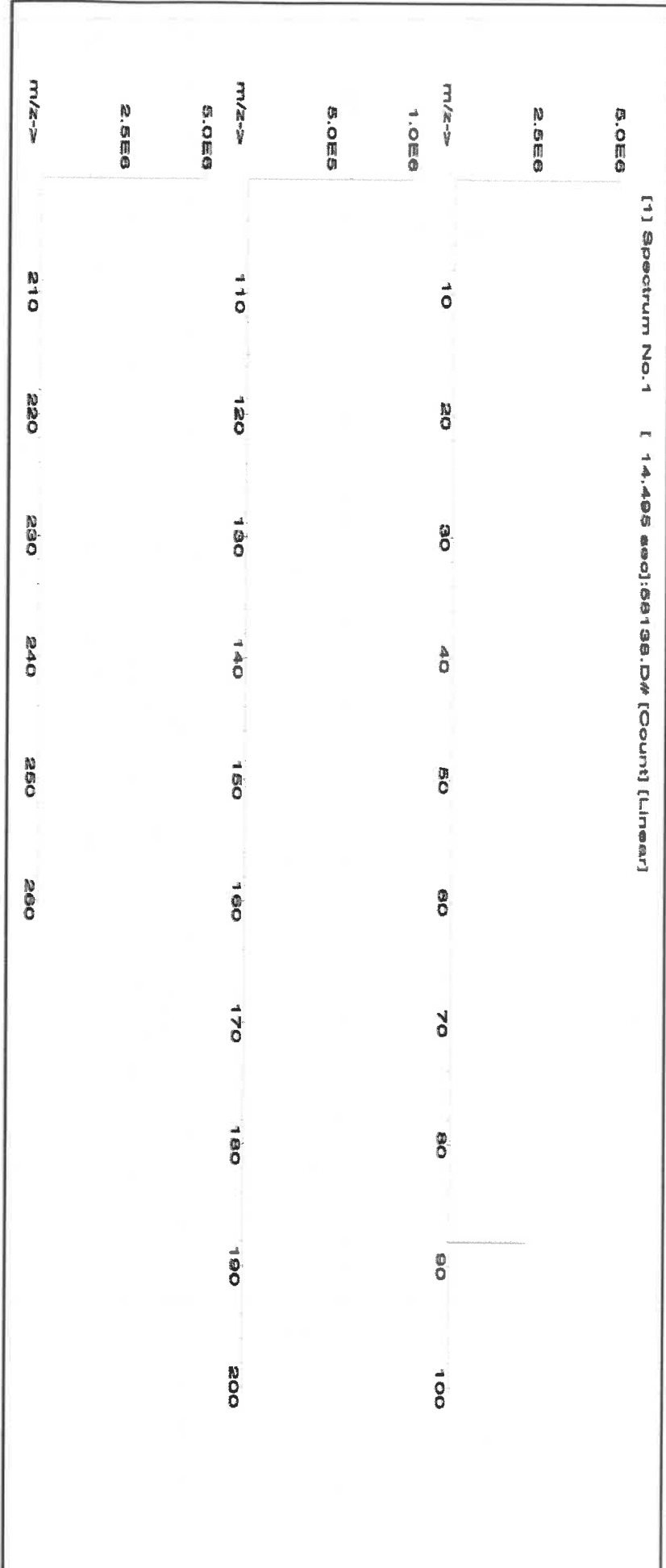
Lot # 24002546
Solvent: Nitric Acid
40.0 (mL)
Nitric Acid

Formulated By:	Benson Chan
	092724
Reviewed By:	Pedro L. Rentas
	092724

SDS Information

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

1. Strontium nitrate (Sr) IN017 SR2022018A1 1000 99.997 0.10 41.2 4.85470 4.85481 1000.0 2.0 10042-76-9 NA or-rel >2000mg/kg 3153a





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57042
080525
Molybdenum (Mo)

Solvent

Ammonium hydroxide
ASTM Type 1 Water

Expiration Date:

080528

Recommended Storage:

Ambient (15 - 30 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

1999.41

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

R → 8/6/25
M6177

0.5%

10.0 (mL)

Ammonium hydroxide

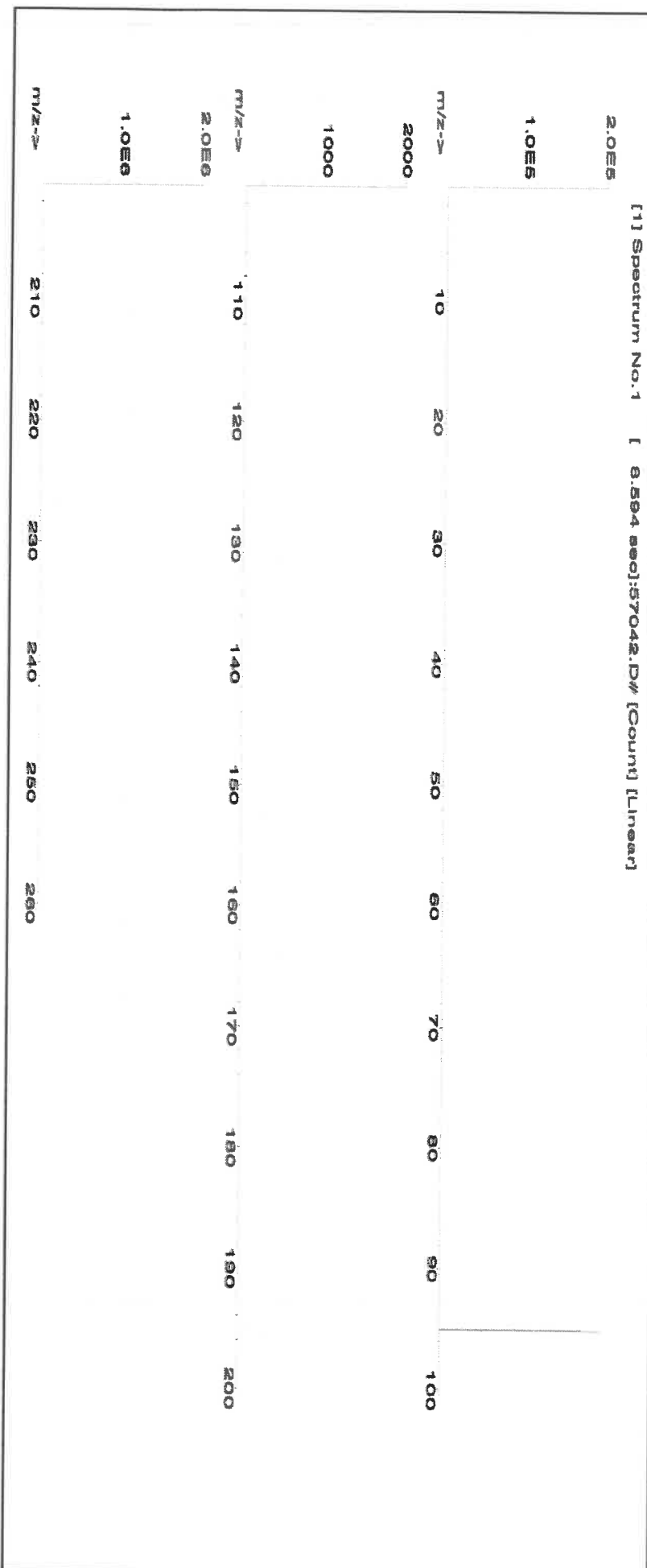
Formulated By:	Benson Chan	080525
Reviewed By:	Pedro L. Renteria	080525

SDS Information

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

1. Ammonium molybdate (Mo) 58142 112322 0.1000 200.0 0.084 1000 10001.4 1000.5 2.2 13106-76-8 5 mg(Mo)/mL 0.1-0.3 333 mg/kg 3134

[1] Spectrum No. 1 [8.594 sec]:57042.D# [Count] [Linear]





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

Trace Metals Verification by ICP-MS (µg/mL)															
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2
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	Ce	<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.

[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 by an ISO17025 certified organization with weights traceable through NIST to the SI kilogram (see above).
- * Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- * All standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).
- Rev 1.0, 2/25/2025



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57082
031525
Lead (Pb)

Lot #

Nitric Acid

Expiration Date:

031528

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL):

2000.07

5E-05 Balance Uncertainty
0.10 Flask Uncertainty

2%

40.0 (mL)

Nitric Acid

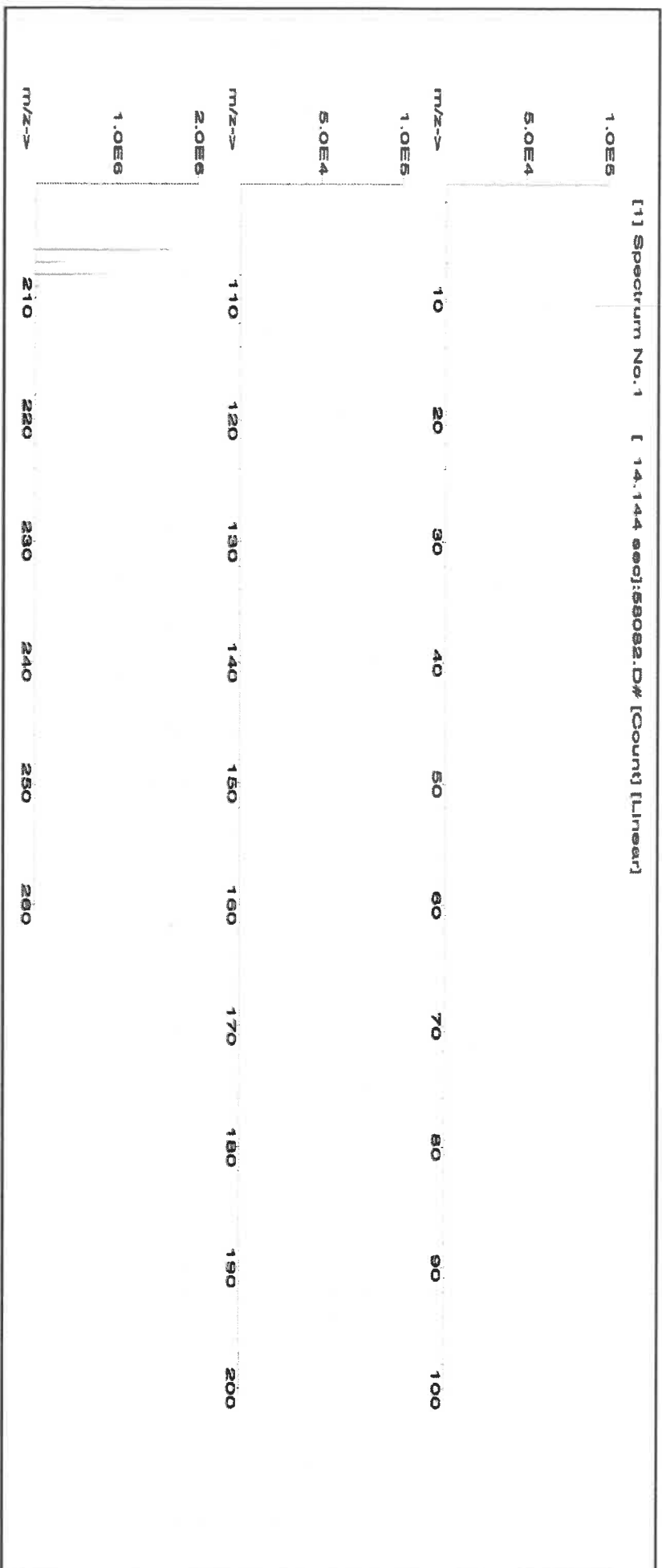
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
	031525
Reviewed By:	<i>Pedro L. Renteria</i>
	Pedro L. Renteria
	031525

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 Intrins-ral 93 mg/kg 3128

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





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

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

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

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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



300 Technology Drive
Christiansburg, VA 24073 USA
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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

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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.



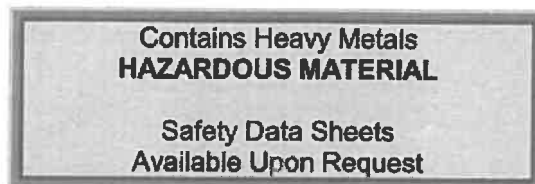
Instructions for QATS Reference Material: ICP-AES ICS

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**

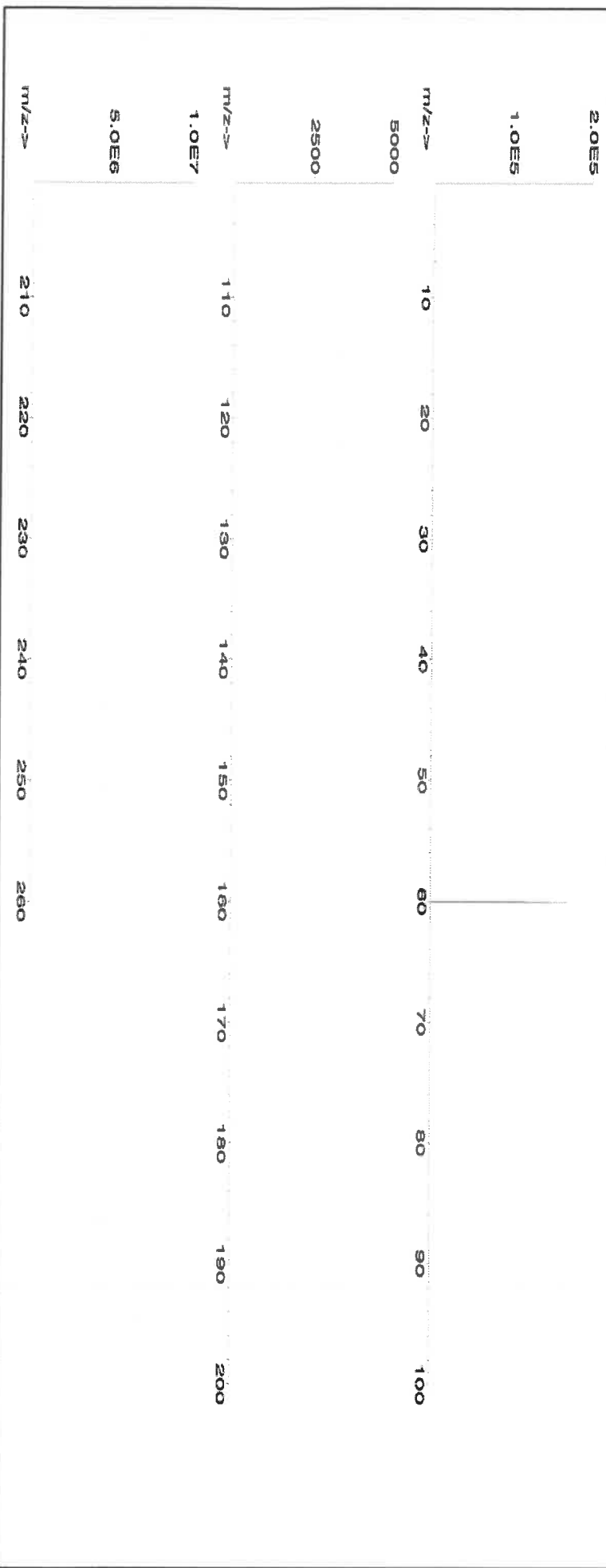
Formulated By:	Benson Chan
062024	
Reviewed By:	Pedro L. Rentes
062024	

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

[1] Spectrum No.1 [9.136 sec]:58028.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM

M6030



CERTIFIED WEIGHT REPORT:

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

Lot #
Solvent: 24002546 Nitric Acid

Expiration Date: 122826

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test Number: 6UTB

2% 80.0 (mL) Nitric Acid

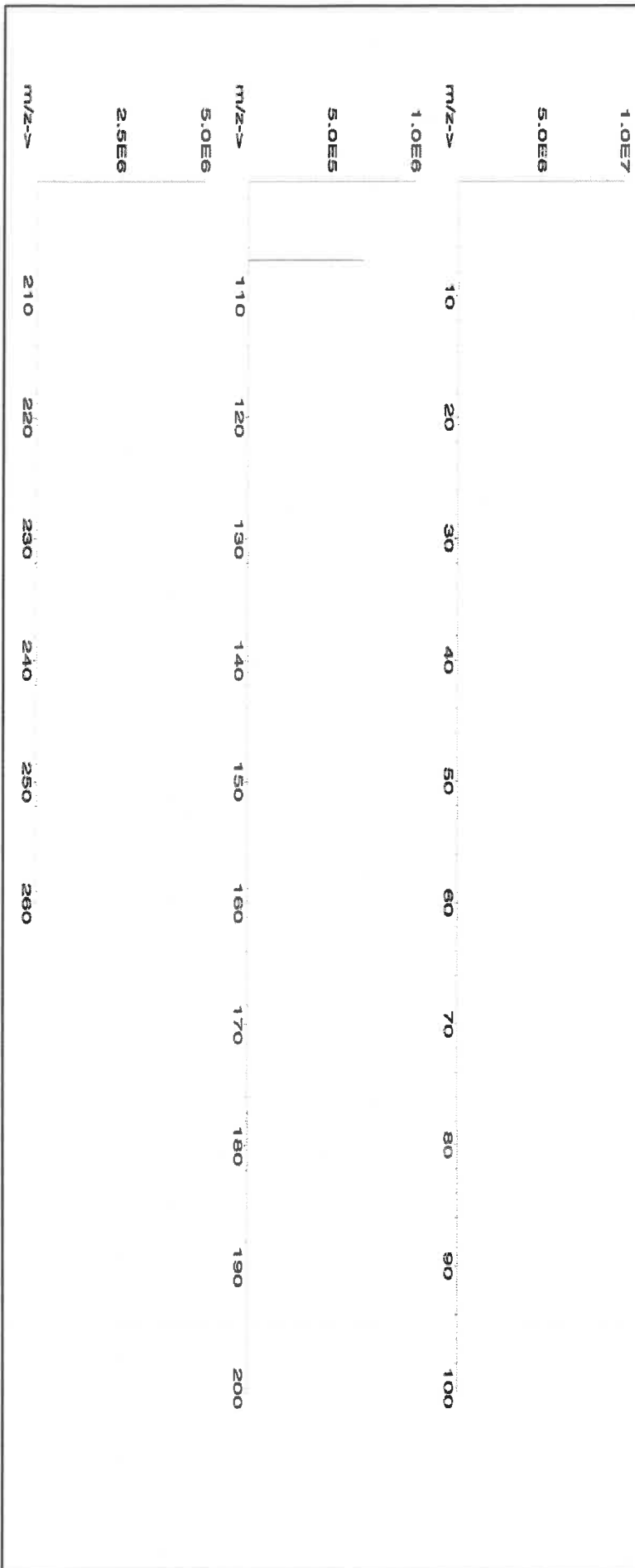
Weight shown below was diluted to (mL): 4000.30 0.058 Balance Uncertainty Flask Uncertainty

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

Compound	SDS Information				NIST SRM
	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	

1. Silver nitrate (Ag)	IN035	J0612AGAI	1000.0	99.999	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 #

24002546

Solvent:

Nitric Acid

Lot Number:

071724

Description:

Antimony (Sb)

Expiration Date:

071727

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UJB

Volume shown below was diluted to (mL):

2000.26

5E-05

Balance Uncertainty

0.058

F flask Uncertainty

Formulated By:

Giovanni Esposito

071724

Reviewed By:

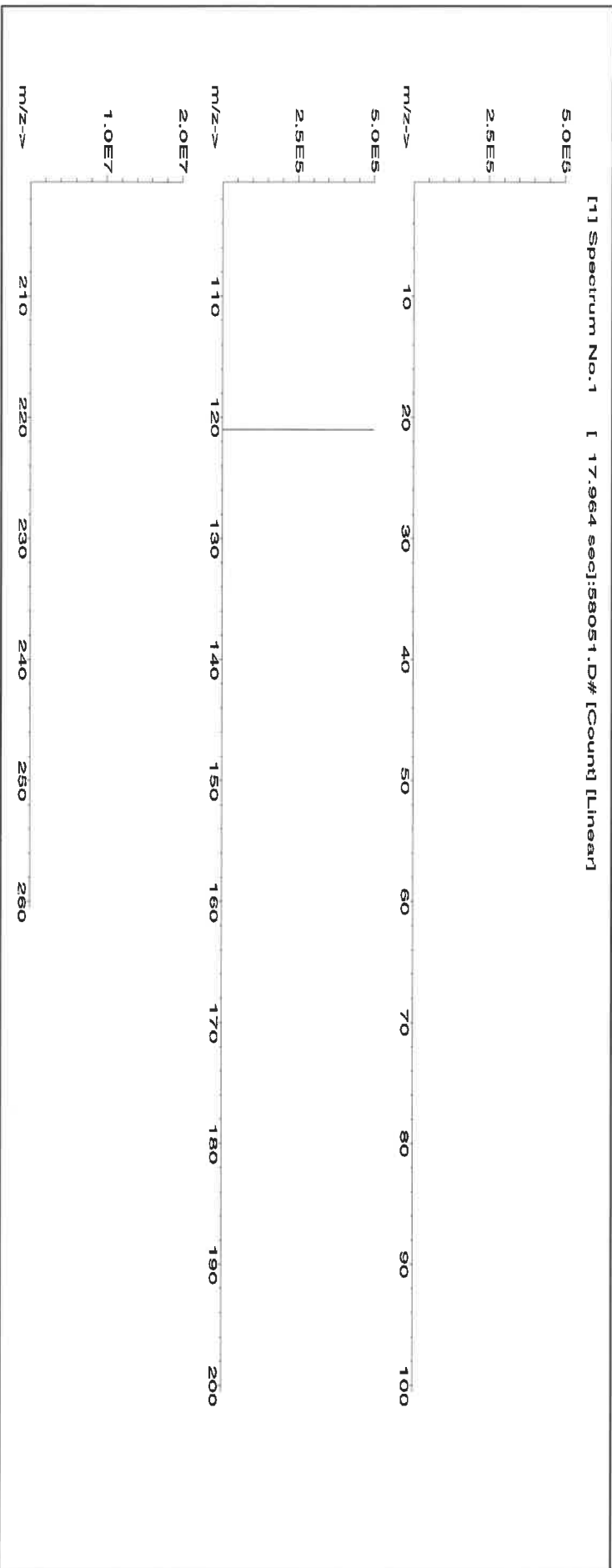
Pedro L. Rentas

071724

SDS Information

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

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



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Certified Reference Material CRM

M6023



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

CERTIFIED WEIGHT REPORT:

Part Number: 57081
Lot Number: 062724
Description: Thallium (TI)

Lot #

Solvent: 24002546 Nitric Acid

Alieah O'Brady
Formulated By: Alieah O'Brady 062724

Expiration Date:

062727

2% 40.0 Nitric Acid (mL)

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test Number: 6U7B

5E-05 Balance Uncertainty

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

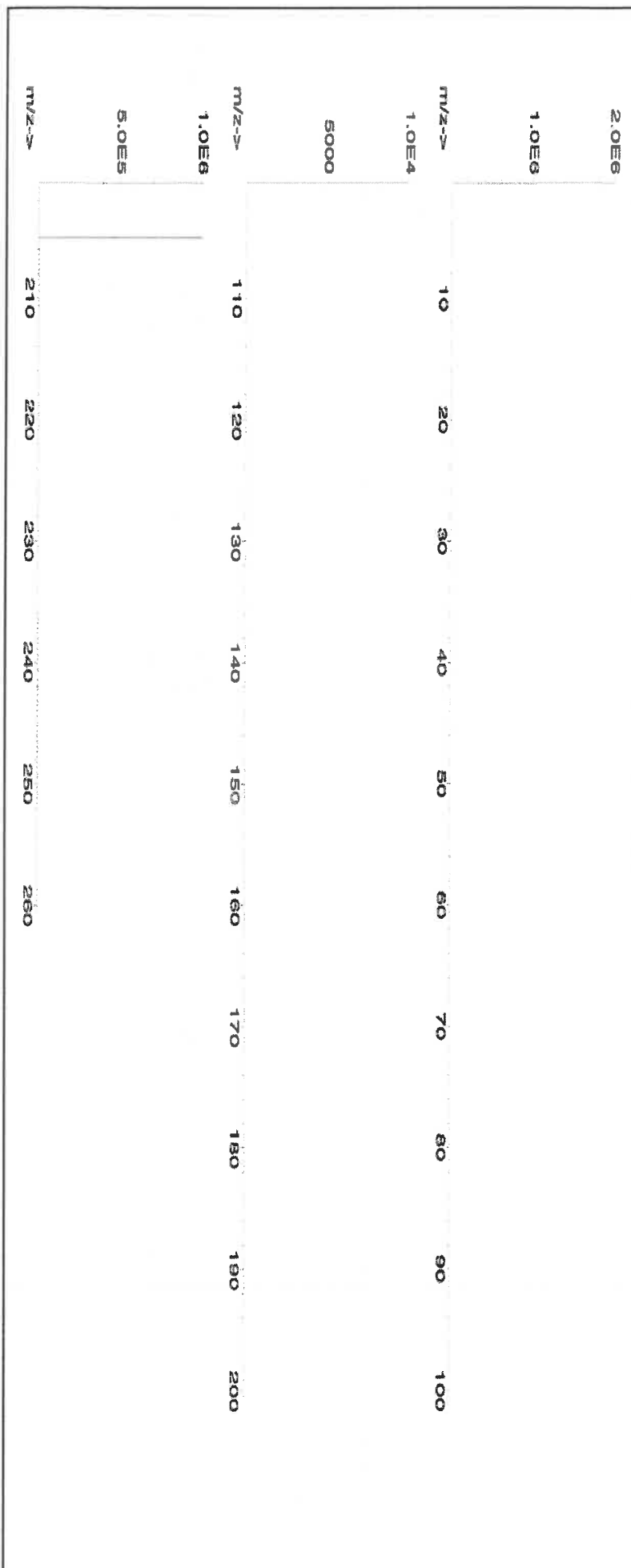
Pedro L. Renteria
Reviewed By: Pedro L. Renterias 062724

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



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

CERTIFIED WEIGHT REPORT:

Part Number: **57023**
Lot Number: **062424**
Description: **Vanadium (V)**

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

<i>Aleah O'Brady</i>	
Formulated By:	Aleah O'Brady
Reviewed By:	Pedro L. Rantas
	062424

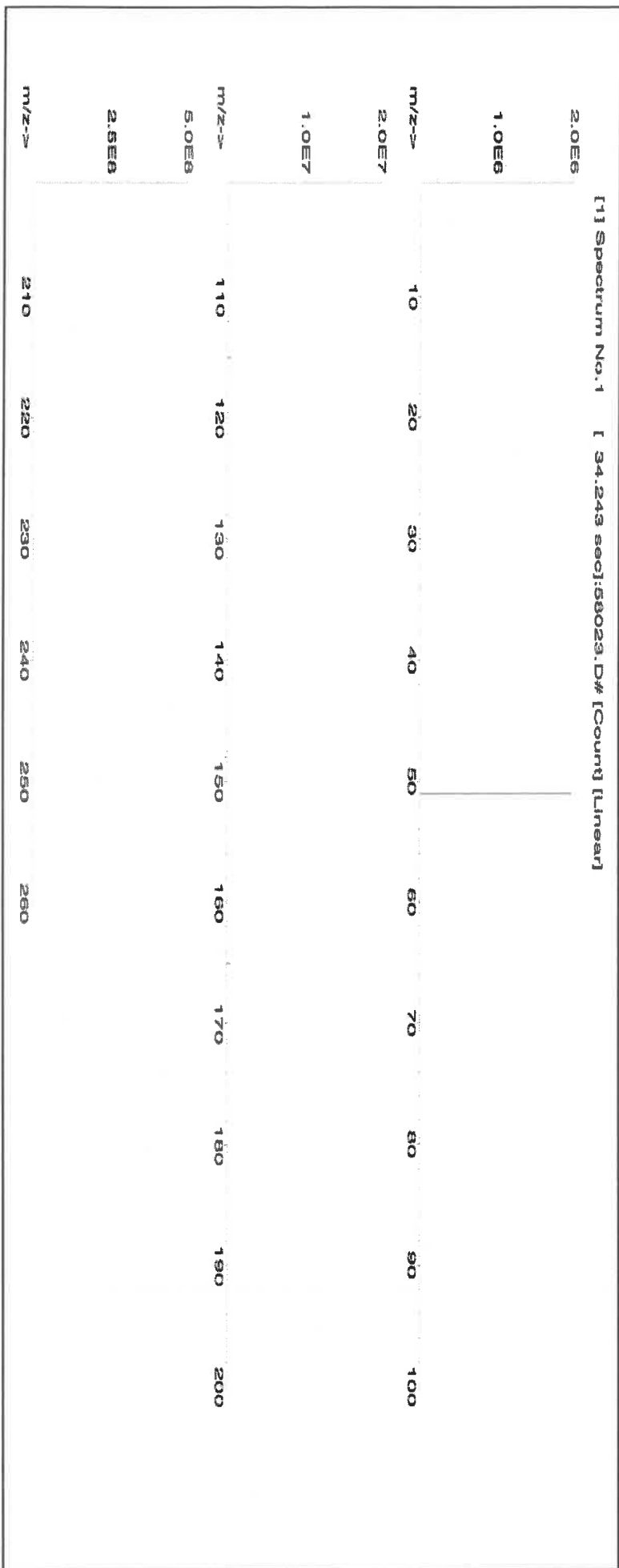
Expiration Date: **062427**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6UTB**

2.0%
40.0 (mL)
Nitric Acid

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

SDS Information									
(Solvent Safety Info. On Attached pg.)									
Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)
1. Ammonium metavanadate (V)	58123	021224	0.1000	200.0	0.084	1000	10000.3	1000.0	2.2
						7803-55-6		0.05 mg/m3	or -rat 58.1mg/kg
									3165

[1] Spectrum No.1 [34.243 sec]:58023.D# [Count] [Linear]





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

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

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

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- 3
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CHEMTECH CHAIN OF CUSTODY RECORD		284 Sheffield Street, Mountainside, NJ 07092 (908) 789-8900 Fax: (908) 78-8922 www.chemtech.net		Chemtech Project Number: 22881																															
				COC Number:																															
CLIENT INFORMATION		PROJECT INFORMATION		BILLING INFORMATION																															
COMPANY: Tetra Tech		PROJECT NAME: NWIRP Bethpage		BILL TO: PO#																															
ADDRESS: 4433 Corporation Ln, Suite 300		PROJECT #: 112G08005-WE13 LOCATION: RW8		ADDRESS:																															
CITY: Virginia Beach STATE: VA ZIP: 23462		PROJECT MANAGER: Ernie Wu		CITY: STATE: ZIP:																															
ATTENTION: Ernie Wu		E-MAIL: ernie.wu@tetratech.com		ATTENTION: PHONE:																															
PHONE: 757-466-4901 FAX: 757-461-4148		PHONE: 757-466-4901 FAX: 757-461-4148																																	
DATA TURNAROUND INFORMATION		DATA DELIVERABLE INFORMATION		ANALYSIS																															
FAX: _____ 10 _____ DAYS* HARD COPY: _____ 10 _____ DAYS* EDD _____ 10 _____ DAYS* * TO BE APPROVED BY CHEMTECH STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS		☐ RESEULTS ONLY ☐ USEPA CLP ☐ RESULTS + QC ☐ New York State ASP "B" ☐ New Jersey REDUCED ☐ New York State ASP "A" ☐ New Jersey CLP ☐ Other _____ ☐ EDD Format _____		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">1,4-Dioxane SW846 8270</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>SM</td> <td>Iron, Total</td> <td>TSS</td> <td>TDS</td> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td></td> </tr> </table>		1,4-Dioxane SW846 8270										SM	Iron, Total	TSS	TDS							1	2	3	4	5	6	7	8	9	
1,4-Dioxane SW846 8270																																			
SM	Iron, Total	TSS	TDS																																
1	2	3	4	5	6	7	8	9																											
				PRESERVATIVES																															
				COMMENTS																															
CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP GRAB	SAMPLE COLLECTION DATE TIME	# of Bottles																														
1.	RW8-SP100-20250814	GW		x	8/14/25 13:05	4	x	x	x	x								<-- Specify Preservatives A-HCl B-HNO3 C-H2SO4 D-NaOH E-ICE F-Other																	
2.	RW8-SP303-20250814	GW		x	8/14/25 13:13	4	x	x	x	x																									
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8.																																			
9.																																			
10.																																			
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE PROSESSION INCLUDING COURIER DELIVERY																																			
RELINQUISHED BY SAMPLER		DATE/TIME		RECEIVED 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:																													
1.		8/14/25 15:46		Deery																															
RELINQUISHED BY		DATE/TIME		RECEIVED BY																															
2.				2.																															
RELINQUISHED BY		DATE/TIME		RECEIVED FOR LAB BY																															
3.				3.																															
						SHIPPED VIA: CLIENT: ☐ Hand Delivered ☐ Overnight CHEMTECH: ☐ Picked Up ☐ Overnight						Shipment Complete ☐ YES ☐ NO																							
WHITE - CHEMTECH COPYFOR 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	T104704488