

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 : Q3017

ATTENTION : Ernie Wu



Laboratory Certification ID # 20012



1) METALS DATA	2
2) Signature Page	4
3) Case Narrative	5
4) Qualifier Page	7
5) Conformance/Non Conformance	8
6) QA Checklist	10
7) Chronicle	11
8) Hit Summary	12
9) Sample Data	14
9.1) TT-076-IDWGW-20250903	15
9.2) TT-077-IDWGW-20250903	16
9.3) TT-078-IDWGW-20250903	17
9.4) TT-079-IDWGW-20250903	18
10) METALS CALIBRATION DATA	19
10.1) Initial and Continuing Calibration Verification	20
10.2) CRDL Standard For AA & ICP	28
10.3) Initial and Continuing Calibration Blank Summary	29
10.4) Preparation Blank Summary	35
10.5) Interference Check Sample	37
11) METALS QC DATA	39
11.1) Matrix Spike Summary	40
11.2) Post Digest Spike Summary	42
11.3) Duplicate Sample Summary	43
11.4) Laboratory Control Sample Summary	45
11.5) ICP Serial Dilutions	47
12) METALS PREPARATION & INSTRUMENT DATA	48
12.1) ICP Interelement Correction Factors	49
13) PREPARATION & ANALYTICAL SUMMARY	54
13.1) Sample Preparation Summary	55
13.2) Analysis Run Log	57
14) METALS RAW DATA	59
14.1) METALS RAW DATA - ANALYTICAL	60
14.2) LB137103	60
14.3) LB137094	202
14.4) METALS RAW DATA - PREP	204

Table Of Contents for Q3017

14.4.1) PB169555	204
14.4.2) PB169582	207
15) Analytical Runlogs	210
16) Standard Prep Logs	216
17) Shipping Document	395
17.1) Chain Of Custody	396
17.2) Lab Certificate	397
17.3) Internal COC	398

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

Cover Page

Order ID : Q3017

Project ID : NWIRP Bethpage 112G08005-WE13

Client : Tetra Tech NUS, Inc.

Lab Sample Number

Q3017-01
Q3017-02
Q3017-03
Q3017-04
Q3017-05

Client Sample Number

BP-TB-20250903
TT-076-IDWGW-20250903
TT-077-IDWGW-20250903
TT-078-IDWGW-20250903
TT-079-IDWGW-20250903

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 2:17 pm, Sep 09, 2025

Date: 9/9/2025

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 # Q3017

Test Name: Mercury, Metals ICP-TAL

A. Number of Samples and Date of Receipt:

5 Water samples were received on 09/04/2025.

B. Parameters:

According to the Chain of Custody document, the following analyses were requested: Mercury, Metals ICP-TAL, METALS-TAL, PCB, pH and VOC-TCLVOA-10. This data package contains results for Mercury, Metals ICP-TAL.

C. Analytical Techniques:

The analysis of Metals ICP-TAL was based on method 6010D, digestion based on method 3010 (waters). The analysis and digestion of Mercury was based on method 7470A.

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 (TT-079-IDWGW-20250903MS) analysis met criteria for all compounds except for Barium, Manganese and Potassium due to Chemical Interference during Digestion process.

The Matrix Spike Duplicate (TT-079-IDWGW-20250903MSD) analysis met criteria for all compounds except for Barium, Manganese, Potassium and Zinc due to Chemical Interference during Digestion process.

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 Post Digest Spike (TT-079-IDWGW-20250903A) analysis met criteria for all compounds except for Barium, Manganese, Potassium and Zinc due to unknown chemical interference of matrix with the addition of spike amount after digestion and before analysis; matrix has suppression effect during addition of spike.

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



Sample Q3017-02, Q3017-03, Q3017-04 and Q3017- 05 were reported with direct dilution for Metals-ICP TAL as samples had viscous matrix and can block the sample introduction path. So, to avoid blocking of sample introduction and any other damage to instrument samples were diluted with 5X Straight Dilution.

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

Signature _____

APPROVED

By Nimisha Pandya, QA/QC Supervisor at 2:18 pm, Sep 09, 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: Q3017

MATRIX: Water

METHOD: 6010D,7470A

	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.			
The Matrix Spike (TT-079-IDWGW-20250903MS) analysis met criteria for all compounds except for Barium, Manganese and Potassium due to Chemical Interference during Digestion process. The Matrix Spike Duplicate (TT-079-IDWGW-20250903MSD) analysis met criteria for all compounds except for Barium, Manganese, Potassium and Zinc due to Chemical Interference during Digestion process.			
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.			

METALS CONFORMANCE/NON-CONFORMANCE SUMMARY (CONTINUED)

NA NO YES

ADDITIONAL COMMENTS:

The Post Digest Spike (TT-079-IDWGW-20250903A) analysis met criteria for all compounds except for Barium, Manganese, Potassium and Zinc due to unknown chemical interference of matrix with the addition of spike amount after digestion and before analysis; matrix has suppression effect during addition of spike.

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

Sample Q3017-02, Q3017-03 Q3017-,04 and Q3017- 05 were reported with direct dilution for Metals-ICP TAL as samples had viscous matrix and can block the sample introduction path. So, to avoid blocking of sample introduction and any other damage to instrument samples were diluted with 5X Straight Dilution.

REVIEWED

By Sohil Jodhani, QA/QC Director at 9:08 am, Sep 09, 2025

QA REVIEW

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: Q3017

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 Castody

✓

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: 09/09/2025

LAB CHRONICLE

OrderID:	Q3017	OrderDate:	9/4/2025 10:17:00 AM
Client:	Tetra Tech NUS, Inc.	Project:	NWIRP Bethpage 112G08005-WE13
Contact:	Ernie Wu	Location:	J12,VOA Lab

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
Q3017-02	TT-076-IDWGW-2025 0903	Water			09/03/25			09/04/25
			Mercury	7470A		09/05/25	09/05/25	
			Metals ICP-TAL	6010D		09/04/25	09/05/25	
Q3017-03	TT-077-IDWGW-2025 0903	Water			09/03/25			09/04/25
			Mercury	7470A		09/05/25	09/05/25	
			Metals ICP-TAL	6010D		09/04/25	09/05/25	
Q3017-04	TT-078-IDWGW-2025 0903	Water			09/03/25			09/04/25
			Mercury	7470A		09/05/25	09/05/25	
			Metals ICP-TAL	6010D		09/04/25	09/05/25	
Q3017-05	TT-079-IDWGW-2025 0903	Water			09/03/25			09/04/25
			Mercury	7470A		09/05/25	09/05/25	
			Metals ICP-TAL	6010D		09/04/25	09/05/25	

Hit Summary Sheet SW-846

SDG No.: Q3017 **Order ID:** Q3017
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 : TT-076-IDWGW-20250903									
Q3017-02	TT-076-IDWGW-20250903	Water	Aluminum	23900	D	28.4	200	250	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Barium	44.3	JD	36.4	62.5	250	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Calcium	9690	D	585	1250	5000	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Chromium	27.0	D	5.30	12.5	25.0	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Cobalt	7.07	JD	5.65	18.8	75.0	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Copper	24.3	JD	11.5	40.0	50.0	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Iron	11200	D	58.5	200	250	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Lead	22.4	JD	5.75	24.0	30.0	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Magnesium	3990	JD	610	1250	5000	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Manganese	168	D	14.9	37.5	50.0	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Nickel	18.9	JD	7.65	25.0	100	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Potassium	61600	D	2300	4000	5000	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Sodium	53600	D	2170	2500	5000	ug/L
Q3017-02	TT-076-IDWGW-20250903	Water	Vanadium	24.2	JD	15.7	50.0	100	ug/L
Client ID : TT-077-IDWGW-20250903									
Q3017-03	TT-077-IDWGW-20250903	Water	Aluminum	34900	D	28.4	200	250	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Barium	82.5	JD	36.4	62.5	250	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Beryllium	2.06	JD	1.40	3.75	15.0	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Calcium	12600	D	585	1250	5000	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Chromium	26.2	D	5.30	12.5	25.0	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Cobalt	8.47	JD	5.65	18.8	75.0	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Copper	20.0	JD	11.5	40.0	50.0	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Iron	21100	D	58.5	200	250	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Lead	32.5	D	5.75	24.0	30.0	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Magnesium	6400	D	610	1250	5000	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Manganese	495	D	14.9	37.5	50.0	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Mercury	0.11	J	0.076	0.16	0.20	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Nickel	16.6	JD	7.65	25.0	100	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Sodium	36400	D	2170	2500	5000	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Vanadium	24.9	JD	15.7	50.0	100	ug/L
Q3017-03	TT-077-IDWGW-20250903	Water	Zinc	60.6	JD	41.7	37.5	100	ug/L
Client ID : TT-078-IDWGW-20250903									
Q3017-04	TT-078-IDWGW-20250903	Water	Aluminum	34900	D	28.4	200	250	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Barium	89.2	JD	36.4	62.5	250	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Beryllium	1.92	JD	1.40	3.75	15.0	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Calcium	14100	D	585	1250	5000	ug/L

Hit Summary Sheet
SW-846

SDG No.: Q3017 **Order ID:** Q3017
Client: Tetra Tech NUS, Inc. **Project ID:** NWIRP Bethpage 112G08005-WE13

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	LOD	RDL	Units
Q3017-04	TT-078-IDWGW-20250903	Water	Chromium	29.8	D	5.30	12.5	25.0	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Cobalt	10.3	JD	5.65	18.8	75.0	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Copper	22.6	JD	11.5	40.0	50.0	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Iron	15500	D	58.5	200	250	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Lead	31.7	D	5.75	24.0	30.0	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Magnesium	5670	D	610	1250	5000	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Manganese	445	D	14.9	37.5	50.0	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Nickel	19.2	JD	7.65	25.0	100	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Potassium	3170	JD	2300	4000	5000	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Sodium	30600	D	2170	2500	5000	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Vanadium	32.0	JD	15.7	50.0	100	ug/L
Q3017-04	TT-078-IDWGW-20250903	Water	Zinc	60.6	JD	41.7	37.5	100	ug/L
Client ID : TT-079-IDWGW-20250903									
Q3017-05	TT-079-IDWGW-20250903	Water	Aluminum	21700	D	28.4	200	250	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Barium	167	JD	36.4	62.5	250	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Calcium	9470	D	585	1250	5000	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Chromium	23.2	JD	5.30	12.5	25.0	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Cobalt	12.9	JD	5.65	18.8	75.0	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Copper	22.9	JD	11.5	40.0	50.0	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Iron	9770	D	58.5	200	250	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Lead	23.8	JD	5.75	24.0	30.0	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Magnesium	4110	JD	610	1250	5000	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Manganese	291	D	14.9	37.5	50.0	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Nickel	17.0	JD	7.65	25.0	100	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Sodium	23800	D	2170	2500	5000	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Vanadium	22.9	JD	15.7	50.0	100	ug/L
Q3017-05	TT-079-IDWGW-20250903	Water	Zinc	46.1	JD	41.7	37.5	100	ug/L



SAMPLE DATA

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

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	09/03/25
Project:	NWIRP Bethpage 112G08005-WE13	Date Received:	09/04/25
Client Sample ID:	TT-076-IDWGW-20250903	SDG No.:	Q3017
Lab Sample ID:	Q3017-02	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.
7429-90-5	Aluminum	23900	D	5	28.4	200	250	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-36-0	Antimony	31.3	UD	5	16.9	31.3	125	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-38-2	Arsenic	37.5	UD	5	12.8	37.5	50.0	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-39-3	Barium	44.3	JDN	5	36.4	62.5	250	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-41-7	Beryllium	3.75	UD	5	1.40	3.75	15.0	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-43-9	Cadmium	3.75	UD	5	1.25	3.75	15.0	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-70-2	Calcium	9690	D	5	585	1250	5000	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-47-3	Chromium	27.0	D	5	5.30	12.5	25.0	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-48-4	Cobalt	7.07	JD	5	5.65	18.8	75.0	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-50-8	Copper	24.3	JD	5	11.5	40.0	50.0	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7439-89-6	Iron	11200	D	5	58.5	200	250	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7439-92-1	Lead	22.4	JD	5	5.75	24.0	30.0	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7439-95-4	Magnesium	3990	JD	5	610	1250	5000	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7439-96-5	Manganese	168	DN	5	14.9	37.5	50.0	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7439-97-6	Mercury	0.16	U	1	0.076	0.16	0.20	ug/L	09/05/25 09:20	09/05/25 15:43	7470A	
7440-02-0	Nickel	18.9	JD	5	7.65	25.0	100	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-09-7	Potassium	61600	DN	5	2300	4000	5000	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7782-49-2	Selenium	40.0	UD	5	24.1	40.0	50.0	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-22-4	Silver	12.5	UD	5	4.05	12.5	25.0	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-23-5	Sodium	53600	D	5	2170	2500	5000	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-28-0	Thallium	50.0	UD	5	10.9	50.0	100	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-62-2	Vanadium	24.2	JD	5	15.7	50.0	100	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010
7440-66-6	Zinc	37.5	UDN	5	41.7	37.5	100	ug/L	09/04/25 12:05	09/05/25 12:59	6010D	SW3010

Color Before:	Brown	Clarity Before:	Cloudy	Texture:
Color After:	Light brown	Clarity After:	Clear	Artifacts:
Comments:	METALS-TAL			

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:	09/03/25
Project:	NWIRP Bethpage 112G08005-WE13	Date Received:	09/04/25
Client Sample ID:	TT-077-IDWGW-20250903	SDG No.:	Q3017
Lab Sample ID:	Q3017-03	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.
7429-90-5	Aluminum	34900	D	5	28.4	200	250	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-36-0	Antimony	31.3	UD	5	16.9	31.3	125	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-38-2	Arsenic	37.5	UD	5	12.8	37.5	50.0	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-39-3	Barium	82.5	JDN	5	36.4	62.5	250	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-41-7	Beryllium	2.06	JD	5	1.40	3.75	15.0	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-43-9	Cadmium	3.75	UD	5	1.25	3.75	15.0	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-70-2	Calcium	12600	D	5	585	1250	5000	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-47-3	Chromium	26.2	D	5	5.30	12.5	25.0	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-48-4	Cobalt	8.47	JD	5	5.65	18.8	75.0	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-50-8	Copper	20.0	JD	5	11.5	40.0	50.0	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7439-89-6	Iron	21100	D	5	58.5	200	250	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7439-92-1	Lead	32.5	D	5	5.75	24.0	30.0	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7439-95-4	Magnesium	6400	D	5	610	1250	5000	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7439-96-5	Manganese	495	DN	5	14.9	37.5	50.0	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7439-97-6	Mercury	0.11	J	1	0.076	0.16	0.20	ug/L	09/05/25 09:20	09/05/25 15:46	7470A	
7440-02-0	Nickel	16.6	JD	5	7.65	25.0	100	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-09-7	Potassium	4000	UDN	5	2300	4000	5000	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7782-49-2	Selenium	40.0	UD	5	24.1	40.0	50.0	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-22-4	Silver	12.5	UD	5	4.05	12.5	25.0	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-23-5	Sodium	36400	D	5	2170	2500	5000	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-28-0	Thallium	50.0	UD	5	10.9	50.0	100	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-62-2	Vanadium	24.9	JD	5	15.7	50.0	100	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010
7440-66-6	Zinc	60.6	JDN	5	41.7	37.5	100	ug/L	09/04/25 12:05	09/05/25 13:03	6010D	SW3010

Color Before:	Brown	Clarity Before:	Cloudy	Texture:
Color After:	Light brown	Clarity After:	Clear	Artifacts:
Comments:	METALS-TAL			

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:	09/03/25
Project:	NWIRP Bethpage 112G08005-WE13	Date Received:	09/04/25
Client Sample ID:	TT-078-IDWGW-20250903	SDG No.:	Q3017
Lab Sample ID:	Q3017-04	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.
7429-90-5	Aluminum	34900	D	5	28.4	200	250	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-36-0	Antimony	31.3	UD	5	16.9	31.3	125	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-38-2	Arsenic	37.5	UD	5	12.8	37.5	50.0	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-39-3	Barium	89.2	JDN	5	36.4	62.5	250	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-41-7	Beryllium	1.92	JD	5	1.40	3.75	15.0	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-43-9	Cadmium	3.75	UD	5	1.25	3.75	15.0	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-70-2	Calcium	14100	D	5	585	1250	5000	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-47-3	Chromium	29.8	D	5	5.30	12.5	25.0	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-48-4	Cobalt	10.3	JD	5	5.65	18.8	75.0	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-50-8	Copper	22.6	JD	5	11.5	40.0	50.0	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7439-89-6	Iron	15500	D	5	58.5	200	250	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7439-92-1	Lead	31.7	D	5	5.75	24.0	30.0	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7439-95-4	Magnesium	5670	D	5	610	1250	5000	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7439-96-5	Manganese	445	DN	5	14.9	37.5	50.0	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7439-97-6	Mercury	0.16	U	1	0.076	0.16	0.20	ug/L	09/05/25 09:20	09/05/25 15:48	7470A	
7440-02-0	Nickel	19.2	JD	5	7.65	25.0	100	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-09-7	Potassium	3170	JDN	5	2300	4000	5000	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7782-49-2	Selenium	40.0	UD	5	24.1	40.0	50.0	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-22-4	Silver	12.5	UD	5	4.05	12.5	25.0	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-23-5	Sodium	30600	D	5	2170	2500	5000	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-28-0	Thallium	50.0	UD	5	10.9	50.0	100	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-62-2	Vanadium	32.0	JD	5	15.7	50.0	100	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010
7440-66-6	Zinc	60.6	JDN	5	41.7	37.5	100	ug/L	09/04/25 12:05	09/05/25 13:07	6010D	SW3010

Color Before:	Brown	Clarity Before:	Cloudy	Texture:
Color After:	Light brown	Clarity After:	Clear	Artifacts:
Comments:	METALS-TAL			

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:	09/03/25
Project:	NWIRP Bethpage 112G08005-WE13	Date Received:	09/04/25
Client Sample ID:	TT-079-IDWGW-20250903	SDG No.:	Q3017
Lab Sample ID:	Q3017-05	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.
7429-90-5	Aluminum	21700	D	5	28.4	200	250	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-36-0	Antimony	31.3	UD	5	16.9	31.3	125	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-38-2	Arsenic	37.5	UD	5	12.8	37.5	50.0	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-39-3	Barium	167	JDN	5	36.4	62.5	250	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-41-7	Beryllium	3.75	UD	5	1.40	3.75	15.0	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-43-9	Cadmium	3.75	UD	5	1.25	3.75	15.0	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-70-2	Calcium	9470	D	5	585	1250	5000	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-47-3	Chromium	23.2	JD	5	5.30	12.5	25.0	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-48-4	Cobalt	12.9	JD	5	5.65	18.8	75.0	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-50-8	Copper	22.9	JD	5	11.5	40.0	50.0	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7439-89-6	Iron	9770	D	5	58.5	200	250	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7439-92-1	Lead	23.8	JD	5	5.75	24.0	30.0	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7439-95-4	Magnesium	4110	JD	5	610	1250	5000	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7439-96-5	Manganese	291	DN	5	14.9	37.5	50.0	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7439-97-6	Mercury	0.16	U	1	0.076	0.16	0.20	ug/L	09/05/25 09:20	09/05/25 15:50	7470A	
7440-02-0	Nickel	17.0	JD	5	7.65	25.0	100	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-09-7	Potassium	4000	UDN	5	2300	4000	5000	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7782-49-2	Selenium	40.0	UD	5	24.1	40.0	50.0	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-22-4	Silver	12.5	UD	5	4.05	12.5	25.0	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-23-5	Sodium	23800	D	5	2170	2500	5000	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-28-0	Thallium	50.0	UD	5	10.9	50.0	100	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-62-2	Vanadium	22.9	JD	5	15.7	50.0	100	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010
7440-66-6	Zinc	46.1	JDN	5	41.7	37.5	100	ug/L	09/04/25 12:05	09/05/25 13:11	6010D	SW3010

Color Before:	Brown	Clarity Before:	Cloudy	Texture:
Color After:	Light brown	Clarity After:	Clear	Artifacts:
Comments:	METALS-TAL			

U = Not Detected

LOQ = Limit of Quantitation

MDL = Method Detection Limit

LOD = Limit of Detection

D = Dilution

Q = indicates LCS control criteria did not meet requirements

J = Estimated Value

B = Analyte Found in Associated Method Blank

* = indicates the duplicate analysis is not within control limits.

E = Indicates the reported value is estimated because of the presence of interference.

OR = Over Range

N = Spiked sample recovery not within control limits



METAL CALIBRATION DATA

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

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

Contract: TETR06

Lab Code: ACE

Initial Calibration Source: EPA

Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV21	Mercury	3.82	4.0	95	90 - 110	CV	09/05/2025	15:20	1b137094

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

Contract: TETR06

Lab Code: ACE

Initial Calibration Source: EPA

Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV60	Mercury	4.97	5.0	99	90 - 110	CV	09/05/2025	15:25	1b137094
CCV61	Mercury	5.04	5.0	101	90 - 110	CV	09/05/2025	15:55	1b137094
CCV62	Mercury	4.97	5.0	99	90 - 110	CV	09/05/2025	16:25	1b137094
CCV63	Mercury	5.07	5.0	102	90 - 110	CV	09/05/2025	16:41	1b137094

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

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	Aluminum	7890	8000	99	90 - 110	P	09/05/2025	11:44	LB137103
	Antimony	4070	4000	102	90 - 110	P	09/05/2025	11:44	LB137103
	Arsenic	3960	4000	99	90 - 110	P	09/05/2025	11:44	LB137103
	Barium	7880	8000	99	90 - 110	P	09/05/2025	11:44	LB137103
	Beryllium	202	200	101	90 - 110	P	09/05/2025	11:44	LB137103
	Cadmium	1960	2000	98	90 - 110	P	09/05/2025	11:44	LB137103
	Calcium	19700	20000	98	90 - 110	P	09/05/2025	11:44	LB137103
	Chromium	809	800	101	90 - 110	P	09/05/2025	11:44	LB137103
	Cobalt	1970	2000	99	90 - 110	P	09/05/2025	11:44	LB137103
	Copper	1010	1000	101	90 - 110	P	09/05/2025	11:44	LB137103
	Iron	3950	4000	99	90 - 110	P	09/05/2025	11:44	LB137103
	Lead	3880	4000	97	90 - 110	P	09/05/2025	11:44	LB137103
	Magnesium	19700	20000	99	90 - 110	P	09/05/2025	11:44	LB137103
	Manganese	1970	2000	98	90 - 110	P	09/05/2025	11:44	LB137103
	Nickel	1980	2000	99	90 - 110	P	09/05/2025	11:44	LB137103
	Potassium	19500	20000	97	90 - 110	P	09/05/2025	11:44	LB137103
	Selenium	4000	4000	100	90 - 110	P	09/05/2025	11:44	LB137103
	Silver	1010	1000	101	90 - 110	P	09/05/2025	11:44	LB137103
	Sodium	19200	20000	96	90 - 110	P	09/05/2025	11:44	LB137103
	Thallium	3830	4000	96	90 - 110	P	09/05/2025	11:44	LB137103
	Vanadium	1970	2000	98	90 - 110	P	09/05/2025	11:44	LB137103
	Zinc	1990	2000	100	90 - 110	P	09/05/2025	11:44	LB137103

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

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	Aluminum	111	100	111	80 - 120	P	09/05/2025	11:48	LB137103
	Antimony	52.2	50.0	104	80 - 120	P	09/05/2025	11:48	LB137103
	Arsenic	19.4	20.0	97	80 - 120	P	09/05/2025	11:48	LB137103
	Barium	102	100	102	80 - 120	P	09/05/2025	11:48	LB137103
	Beryllium	6.33	6.0	106	80 - 120	P	09/05/2025	11:48	LB137103
	Cadmium	6.02	6.0	100	80 - 120	P	09/05/2025	11:48	LB137103
	Calcium	2070	2000	104	80 - 120	P	09/05/2025	11:48	LB137103
	Chromium	9.77	10.0	98	80 - 120	P	09/05/2025	11:48	LB137103
	Cobalt	30.0	30.0	100	80 - 120	P	09/05/2025	11:48	LB137103
	Copper	21.7	20.0	108	80 - 120	P	09/05/2025	11:48	LB137103
	Iron	105	100	105	80 - 120	P	09/05/2025	11:48	LB137103
	Lead	10.9	12.0	91	80 - 120	P	09/05/2025	11:48	LB137103
	Magnesium	2200	2000	110	80 - 120	P	09/05/2025	11:48	LB137103
	Manganese	22.4	20.0	112	80 - 120	P	09/05/2025	11:48	LB137103
	Nickel	40.9	40.0	102	80 - 120	P	09/05/2025	11:48	LB137103
	Potassium	1980	2000	99	80 - 120	P	09/05/2025	11:48	LB137103
	Selenium	22.8	20.0	114	80 - 120	P	09/05/2025	11:48	LB137103
	Silver	10.3	10.0	103	80 - 120	P	09/05/2025	11:48	LB137103
	Sodium	1990	2000	100	80 - 120	P	09/05/2025	11:48	LB137103
	Thallium	42.2	40.0	106	80 - 120	P	09/05/2025	11:48	LB137103
	Vanadium	36.7	40.0	92	80 - 120	P	09/05/2025	11:48	LB137103
	Zinc	42.3	40.0	106	80 - 120	P	09/05/2025	11:48	LB137103

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

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

SDG No.: Q3017
Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Aluminum	9910	10000	99	90 - 110	P	09/05/2025	12:28	LB137103
	Antimony	4990	5000	100	90 - 110	P	09/05/2025	12:28	LB137103
	Arsenic	4950	5000	99	90 - 110	P	09/05/2025	12:28	LB137103
	Barium	9940	10000	99	90 - 110	P	09/05/2025	12:28	LB137103
	Beryllium	250	250	100	90 - 110	P	09/05/2025	12:28	LB137103
	Cadmium	2450	2500	98	90 - 110	P	09/05/2025	12:28	LB137103
	Calcium	24700	25000	99	90 - 110	P	09/05/2025	12:28	LB137103
	Chromium	994	1000	99	90 - 110	P	09/05/2025	12:28	LB137103
	Cobalt	2450	2500	98	90 - 110	P	09/05/2025	12:28	LB137103
	Copper	1240	1250	99	90 - 110	P	09/05/2025	12:28	LB137103
	Iron	4930	5000	99	90 - 110	P	09/05/2025	12:28	LB137103
	Lead	4880	5000	98	90 - 110	P	09/05/2025	12:28	LB137103
	Magnesium	24400	25000	98	90 - 110	P	09/05/2025	12:28	LB137103
	Manganese	2460	2500	98	90 - 110	P	09/05/2025	12:28	LB137103
	Nickel	2450	2500	98	90 - 110	P	09/05/2025	12:28	LB137103
	Potassium	24400	25000	98	90 - 110	P	09/05/2025	12:28	LB137103
	Selenium	4950	5000	99	90 - 110	P	09/05/2025	12:28	LB137103
	Silver	1240	1250	100	90 - 110	P	09/05/2025	12:28	LB137103
	Sodium	24200	25000	97	90 - 110	P	09/05/2025	12:28	LB137103
	Thallium	4760	5000	95	90 - 110	P	09/05/2025	12:28	LB137103
	Vanadium	2480	2500	99	90 - 110	P	09/05/2025	12:28	LB137103
	Zinc	2490	2500	100	90 - 110	P	09/05/2025	12:28	LB137103
CCV02	Aluminum	9830	10000	98	90 - 110	P	09/05/2025	13:20	LB137103
	Antimony	5090	5000	102	90 - 110	P	09/05/2025	13:20	LB137103
	Arsenic	5070	5000	101	90 - 110	P	09/05/2025	13:20	LB137103
	Barium	9800	10000	98	90 - 110	P	09/05/2025	13:20	LB137103
	Beryllium	241	250	96	90 - 110	P	09/05/2025	13:20	LB137103
	Cadmium	2470	2500	99	90 - 110	P	09/05/2025	13:20	LB137103
	Calcium	24500	25000	98	90 - 110	P	09/05/2025	13:20	LB137103
	Chromium	989	1000	99	90 - 110	P	09/05/2025	13:20	LB137103
	Cobalt	2470	2500	99	90 - 110	P	09/05/2025	13:20	LB137103
	Copper	1260	1250	101	90 - 110	P	09/05/2025	13:20	LB137103
	Iron	5030	5000	101	90 - 110	P	09/05/2025	13:20	LB137103
	Lead	4900	5000	98	90 - 110	P	09/05/2025	13:20	LB137103

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.

Contract: TETR06

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

SDG No.: Q3017

Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV02	Magnesium	24200	25000	97	90 - 110	P	09/05/2025	13:20	LB137103
	Manganese	2440	2500	98	90 - 110	P	09/05/2025	13:20	LB137103
	Nickel	2470	2500	99	90 - 110	P	09/05/2025	13:20	LB137103
	Potassium	25000	25000	100	90 - 110	P	09/05/2025	13:20	LB137103
	Selenium	5120	5000	102	90 - 110	P	09/05/2025	13:20	LB137103
	Silver	1250	1250	100	90 - 110	P	09/05/2025	13:20	LB137103
	Sodium	24700	25000	99	90 - 110	P	09/05/2025	13:20	LB137103
	Thallium	5410	5000	108	90 - 110	P	09/05/2025	13:20	LB137103
	Vanadium	2460	2500	98	90 - 110	P	09/05/2025	13:20	LB137103
	Zinc	2510	2500	100	90 - 110	P	09/05/2025	13:20	LB137103
CCV03	Aluminum	9840	10000	98	90 - 110	P	09/05/2025	14:29	LB137103
	Antimony	5090	5000	102	90 - 110	P	09/05/2025	14:29	LB137103
	Arsenic	5090	5000	102	90 - 110	P	09/05/2025	14:29	LB137103
	Barium	9960	10000	100	90 - 110	P	09/05/2025	14:29	LB137103
	Beryllium	240	250	96	90 - 110	P	09/05/2025	14:29	LB137103
	Cadmium	2470	2500	99	90 - 110	P	09/05/2025	14:29	LB137103
	Calcium	24500	25000	98	90 - 110	P	09/05/2025	14:29	LB137103
	Chromium	988	1000	99	90 - 110	P	09/05/2025	14:29	LB137103
	Cobalt	2470	2500	99	90 - 110	P	09/05/2025	14:29	LB137103
	Copper	1260	1250	101	90 - 110	P	09/05/2025	14:29	LB137103
	Iron	5100	5000	102	90 - 110	P	09/05/2025	14:29	LB137103
	Lead	4900	5000	98	90 - 110	P	09/05/2025	14:29	LB137103
	Magnesium	24400	25000	98	90 - 110	P	09/05/2025	14:29	LB137103
	Manganese	2450	2500	98	90 - 110	P	09/05/2025	14:29	LB137103
	Nickel	2480	2500	99	90 - 110	P	09/05/2025	14:29	LB137103
	Potassium	25300	25000	101	90 - 110	P	09/05/2025	14:29	LB137103
	Selenium	5160	5000	103	90 - 110	P	09/05/2025	14:29	LB137103
	Silver	1250	1250	100	90 - 110	P	09/05/2025	14:29	LB137103
	Sodium	25500	25000	102	90 - 110	P	09/05/2025	14:29	LB137103
	Thallium	5140	5000	103	90 - 110	P	09/05/2025	14:29	LB137103
CCV04	Vanadium	2470	2500	99	90 - 110	P	09/05/2025	14:29	LB137103
	Zinc	2520	2500	101	90 - 110	P	09/05/2025	14:29	LB137103
	Aluminum	9610	10000	96	90 - 110	P	09/05/2025	15:36	LB137103
	Antimony	5060	5000	101	90 - 110	P	09/05/2025	15:36	LB137103

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.

Contract: TETR06

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

SDG No.: Q3017

Lab Code: ACE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV04	Arsenic	4970	5000	99	90 - 110	P	09/05/2025	15:36	LB137103
	Barium	9750	10000	98	90 - 110	P	09/05/2025	15:36	LB137103
	Beryllium	227	250	91	90 - 110	P	09/05/2025	15:36	LB137103
	Cadmium	2360	2500	94	90 - 110	P	09/05/2025	15:36	LB137103
	Calcium	23700	25000	95	90 - 110	P	09/05/2025	15:36	LB137103
	Chromium	965	1000	96	90 - 110	P	09/05/2025	15:36	LB137103
	Cobalt	2380	2500	95	90 - 110	P	09/05/2025	15:36	LB137103
	Copper	1220	1250	98	90 - 110	P	09/05/2025	15:36	LB137103
	Iron	5150	5000	103	90 - 110	P	09/05/2025	15:36	LB137103
	Lead	4720	5000	94	90 - 110	P	09/05/2025	15:36	LB137103
	Magnesium	23400	25000	94	90 - 110	P	09/05/2025	15:36	LB137103
	Manganese	2370	2500	95	90 - 110	P	09/05/2025	15:36	LB137103
	Nickel	2380	2500	95	90 - 110	P	09/05/2025	15:36	LB137103
	Potassium	25300	25000	101	90 - 110	P	09/05/2025	15:36	LB137103
	Selenium	5050	5000	101	90 - 110	P	09/05/2025	15:36	LB137103
	Silver	1230	1250	98	90 - 110	P	09/05/2025	15:36	LB137103
	Sodium	25300	25000	101	90 - 110	P	09/05/2025	15:36	LB137103
	Thallium	4960	5000	99	90 - 110	P	09/05/2025	15:36	LB137103
	Vanadium	2420	2500	97	90 - 110	P	09/05/2025	15:36	LB137103
	Zinc	2480	2500	99	90 - 110	P	09/05/2025	15:36	LB137103
CCV05	Aluminum	9650	10000	96	90 - 110	P	09/05/2025	16:06	LB137103
	Antimony	5070	5000	101	90 - 110	P	09/05/2025	16:06	LB137103
	Arsenic	4990	5000	100	90 - 110	P	09/05/2025	16:06	LB137103
	Barium	9650	10000	96	90 - 110	P	09/05/2025	16:06	LB137103
	Beryllium	230	250	92	90 - 110	P	09/05/2025	16:06	LB137103
	Cadmium	2360	2500	94	90 - 110	P	09/05/2025	16:06	LB137103
	Calcium	23600	25000	95	90 - 110	P	09/05/2025	16:06	LB137103
	Chromium	964	1000	96	90 - 110	P	09/05/2025	16:06	LB137103
	Cobalt	2380	2500	95	90 - 110	P	09/05/2025	16:06	LB137103
	Copper	1230	1250	98	90 - 110	P	09/05/2025	16:06	LB137103
	Iron	5120	5000	102	90 - 110	P	09/05/2025	16:06	LB137103
	Lead	4710	5000	94	90 - 110	P	09/05/2025	16:06	LB137103
	Magnesium	23400	25000	94	90 - 110	P	09/05/2025	16:06	LB137103
	Manganese	2360	2500	94	90 - 110	P	09/05/2025	16:06	LB137103

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

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
CCV05	Nickel	2390	2500	96	90 - 110	P	09/05/2025	16:06	LB137103
	Potassium	24700	25000	99	90 - 110	P	09/05/2025	16:06	LB137103
	Selenium	5060	5000	101	90 - 110	P	09/05/2025	16:06	LB137103
	Silver	1230	1250	98	90 - 110	P	09/05/2025	16:06	LB137103
	Sodium	24300	25000	97	90 - 110	P	09/05/2025	16:06	LB137103
	Thallium	4910	5000	98	90 - 110	P	09/05/2025	16:06	LB137103
	Vanadium	2410	2500	96	90 - 110	P	09/05/2025	16:06	LB137103
	Zinc	2470	2500	99	90 - 110	P	09/05/2025	16:06	LB137103

Metals

- 2b -

CRDL STANDARD FOR AA & ICP

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

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	Aluminum	109	100	109	65 - 135	P	09/05/2025	11:59	LB137103
	Antimony	52.2	50.0	104	65 - 135	P	09/05/2025	11:59	LB137103
	Arsenic	19.5	20.0	98	65 - 135	P	09/05/2025	11:59	LB137103
	Barium	99.4	100	99	65 - 135	P	09/05/2025	11:59	LB137103
	Beryllium	6.32	6.0	105	65 - 135	P	09/05/2025	11:59	LB137103
	Cadmium	6.07	6.0	101	65 - 135	P	09/05/2025	11:59	LB137103
	Calcium	2070	2000	104	65 - 135	P	09/05/2025	11:59	LB137103
	Chromium	10.3	10.0	103	65 - 135	P	09/05/2025	11:59	LB137103
	Cobalt	30.2	30.0	101	65 - 135	P	09/05/2025	11:59	LB137103
	Copper	21.8	20.0	109	65 - 135	P	09/05/2025	11:59	LB137103
	Iron	99.2	100	99	65 - 135	P	09/05/2025	11:59	LB137103
	Lead	12.3	12.0	102	65 - 135	P	09/05/2025	11:59	LB137103
	Magnesium	2190	2000	110	65 - 135	P	09/05/2025	11:59	LB137103
	Manganese	22.2	20.0	111	65 - 135	P	09/05/2025	11:59	LB137103
	Nickel	40.8	40.0	102	65 - 135	P	09/05/2025	11:59	LB137103
	Potassium	1870	2000	94	65 - 135	P	09/05/2025	11:59	LB137103
	Selenium	19.4	20.0	97	65 - 135	P	09/05/2025	11:59	LB137103
	Silver	10.6	10.0	106	65 - 135	P	09/05/2025	11:59	LB137103
	Sodium	1870	2000	94	65 - 135	P	09/05/2025	11:59	LB137103
	Thallium	41.8	40.0	104	65 - 135	P	09/05/2025	11:59	LB137103
	Vanadium	40.0	40.0	100	65 - 135	P	09/05/2025	11:59	LB137103
	Zinc	42.3	40.0	106	65 - 135	P	09/05/2025	11:59	LB137103
CRA	Mercury	0.23	0.2	114	70 - 130	CV	09/05/2025	15:29	lb137094



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.: Q3017

Contract: TETR06

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	LOD	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB21	Mercury	0.076	+/-0.2	U	0.16	0.20	CV	09/05/2025	15:23	lb137094

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

Contract: TETR06

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	LOD	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB60	Mercury	0.076	+/-0.2	U	0.16	0.20	CV	09/05/2025	15:27	lb137094
CCB61	Mercury	0.076	+/-0.2	U	0.16	0.20	CV	09/05/2025	15:57	lb137094
CCB62	Mercury	0.076	+/-0.2	U	0.16	0.20	CV	09/05/2025	16:27	lb137094
CCB63	Mercury	0.076	+/-0.2	U	0.16	0.20	CV	09/05/2025	16:43	lb137094

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

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	Aluminum	11.3	+/-50	U	80.0	100	P	09/05/2025	11:54	LB137103
	Antimony	6.76	+/-25	U	12.5	50.0	P	09/05/2025	11:54	LB137103
	Arsenic	5.12	+/-10	U	15.0	20.0	P	09/05/2025	11:54	LB137103
	Barium	14.6	+/-50	U	25.0	100	P	09/05/2025	11:54	LB137103
	Beryllium	0.56	+/-3	U	1.50	6.00	P	09/05/2025	11:54	LB137103
	Cadmium	0.50	+/-3	U	1.50	6.00	P	09/05/2025	11:54	LB137103
	Calcium	234	+/-1000	U	500	2000	P	09/05/2025	11:54	LB137103
	Chromium	2.12	+/-5	U	5.00	10.0	P	09/05/2025	11:54	LB137103
	Cobalt	2.26	+/-15	U	7.50	30.0	P	09/05/2025	11:54	LB137103
	Copper	4.60	+/-10	U	16.0	20.0	P	09/05/2025	11:54	LB137103
	Iron	23.4	+/-50	U	80.0	100	P	09/05/2025	11:54	LB137103
	Lead	2.30	+/-6	U	9.60	12.0	P	09/05/2025	11:54	LB137103
	Magnesium	244	+/-1000	U	500	2000	P	09/05/2025	11:54	LB137103
	Manganese	5.94	+/-10	U	15.0	20.0	P	09/05/2025	11:54	LB137103
	Nickel	3.06	+/-20	U	10.0	40.0	P	09/05/2025	11:54	LB137103
	Potassium	918	+/-1000	U	1600	2000	P	09/05/2025	11:54	LB137103
	Selenium	9.64	+/-10	U	16.0	20.0	P	09/05/2025	11:54	LB137103
	Silver	1.62	+/-5	U	5.00	10.0	P	09/05/2025	11:54	LB137103
	Sodium	868	+/-1000	U	1000	2000	P	09/05/2025	11:54	LB137103
	Thallium	4.38	+/-20	U	20.0	40.0	P	09/05/2025	11:54	LB137103
	Vanadium	6.26	+/-20	U	20.0	40.0	P	09/05/2025	11:54	LB137103
	Zinc	16.7	+/-20	U	15.0	40.0	P	09/05/2025	11:54	LB137103

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc. SDG No.: Q3017
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	Aluminum	11.3	+/-50	U	80.0	100	P	09/05/2025	12:32	LB137103
	Antimony	6.76	+/-25	U	12.5	50.0	P	09/05/2025	12:32	LB137103
	Arsenic	5.12	+/-10	U	15.0	20.0	P	09/05/2025	12:32	LB137103
	Barium	14.6	+/-50	U	25.0	100	P	09/05/2025	12:32	LB137103
	Beryllium	0.56	+/-3	U	1.50	6.00	P	09/05/2025	12:32	LB137103
	Cadmium	0.50	+/-3	U	1.50	6.00	P	09/05/2025	12:32	LB137103
	Calcium	234	+/-1000	U	500	2000	P	09/05/2025	12:32	LB137103
	Chromium	2.12	+/-5	U	5.00	10.0	P	09/05/2025	12:32	LB137103
	Cobalt	2.26	+/-15	U	7.50	30.0	P	09/05/2025	12:32	LB137103
	Copper	4.60	+/-10	U	16.0	20.0	P	09/05/2025	12:32	LB137103
	Iron	23.4	+/-50	U	80.0	100	P	09/05/2025	12:32	LB137103
	Lead	2.30	+/-6	U	9.60	12.0	P	09/05/2025	12:32	LB137103
	Magnesium	244	+/-1000	U	500	2000	P	09/05/2025	12:32	LB137103
	Manganese	5.94	+/-10	U	15.0	20.0	P	09/05/2025	12:32	LB137103
	Nickel	3.06	+/-20	U	10.0	40.0	P	09/05/2025	12:32	LB137103
	Potassium	918	+/-1000	U	1600	2000	P	09/05/2025	12:32	LB137103
	Selenium	9.64	+/-10	U	16.0	20.0	P	09/05/2025	12:32	LB137103
	Silver	1.62	+/-5	U	5.00	10.0	P	09/05/2025	12:32	LB137103
	Sodium	868	+/-1000	U	1000	2000	P	09/05/2025	12:32	LB137103
	Thallium	4.38	+/-20	U	20.0	40.0	P	09/05/2025	12:32	LB137103
	Vanadium	6.26	+/-20	U	20.0	40.0	P	09/05/2025	12:32	LB137103
	Zinc	18.9	+/-20	J	15.0	40.0	P	09/05/2025	12:32	LB137103
CCB02	Aluminum	11.3	+/-50	U	80.0	100	P	09/05/2025	13:24	LB137103
	Antimony	6.76	+/-25	U	12.5	50.0	P	09/05/2025	13:24	LB137103
	Arsenic	5.12	+/-10	U	15.0	20.0	P	09/05/2025	13:24	LB137103
	Barium	14.6	+/-50	U	25.0	100	P	09/05/2025	13:24	LB137103
	Beryllium	0.56	+/-3	U	1.50	6.00	P	09/05/2025	13:24	LB137103
	Cadmium	0.50	+/-3	U	1.50	6.00	P	09/05/2025	13:24	LB137103
	Calcium	234	+/-1000	U	500	2000	P	09/05/2025	13:24	LB137103
	Chromium	2.12	+/-5	U	5.00	10.0	P	09/05/2025	13:24	LB137103
	Cobalt	2.26	+/-15	U	7.50	30.0	P	09/05/2025	13:24	LB137103
	Copper	4.60	+/-10	U	16.0	20.0	P	09/05/2025	13:24	LB137103
	Iron	23.4	+/-50	U	80.0	100	P	09/05/2025	13:24	LB137103
	Lead	2.30	+/-6	U	9.60	12.0	P	09/05/2025	13:24	LB137103
	Magnesium	244	+/-1000	U	500	2000	P	09/05/2025	13:24	LB137103
	Manganese	5.94	+/-10	U	15.0	20.0	P	09/05/2025	13:24	LB137103
	Nickel	3.06	+/-20	U	10.0	40.0	P	09/05/2025	13:24	LB137103
	Potassium	918	+/-1000	U	1600	2000	P	09/05/2025	13:24	LB137103
	Selenium	9.64	+/-10	U	16.0	20.0	P	09/05/2025	13:24	LB137103

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

Contract: TETR06

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	LOD	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB02	Silver	1.62	+/-5	U	5.00	10.0	P	09/05/2025	13:24	LB137103
	Sodium	868	+/-1000	U	1000	2000	P	09/05/2025	13:24	LB137103
	Thallium	4.38	+/-20	U	20.0	40.0	P	09/05/2025	13:24	LB137103
	Vanadium	6.26	+/-20	U	20.0	40.0	P	09/05/2025	13:24	LB137103
	Zinc	16.7	+/-20	U	15.0	40.0	P	09/05/2025	13:24	LB137103
CCB03	Aluminum	11.3	+/-50	U	80.0	100	P	09/05/2025	14:33	LB137103
	Antimony	6.76	+/-25	U	12.5	50.0	P	09/05/2025	14:33	LB137103
	Arsenic	5.12	+/-10	U	15.0	20.0	P	09/05/2025	14:33	LB137103
	Barium	14.6	+/-50	U	25.0	100	P	09/05/2025	14:33	LB137103
	Beryllium	0.56	+/-3	U	1.50	6.00	P	09/05/2025	14:33	LB137103
	Cadmium	0.50	+/-3	U	1.50	6.00	P	09/05/2025	14:33	LB137103
	Calcium	234	+/-1000	U	500	2000	P	09/05/2025	14:33	LB137103
	Chromium	2.12	+/-5	U	5.00	10.0	P	09/05/2025	14:33	LB137103
	Cobalt	2.26	+/-15	U	7.50	30.0	P	09/05/2025	14:33	LB137103
	Copper	4.60	+/-10	U	16.0	20.0	P	09/05/2025	14:33	LB137103
	Iron	23.4	+/-50	U	80.0	100	P	09/05/2025	14:33	LB137103
	Lead	2.30	+/-6	U	9.60	12.0	P	09/05/2025	14:33	LB137103
	Magnesium	244	+/-1000	U	500	2000	P	09/05/2025	14:33	LB137103
	Manganese	5.94	+/-10	U	15.0	20.0	P	09/05/2025	14:33	LB137103
	Nickel	3.06	+/-20	U	10.0	40.0	P	09/05/2025	14:33	LB137103
	Potassium	918	+/-1000	U	1600	2000	P	09/05/2025	14:33	LB137103
	Selenium	9.64	+/-10	U	16.0	20.0	P	09/05/2025	14:33	LB137103
	Silver	1.62	+/-5	U	5.00	10.0	P	09/05/2025	14:33	LB137103
	Sodium	868	+/-1000	U	1000	2000	P	09/05/2025	14:33	LB137103
	Thallium	4.38	+/-20	U	20.0	40.0	P	09/05/2025	14:33	LB137103
	Vanadium	6.26	+/-20	U	20.0	40.0	P	09/05/2025	14:33	LB137103
	Zinc	16.7	+/-20	U	15.0	40.0	P	09/05/2025	14:33	LB137103
CCB04	Aluminum	16.5	+/-50	J	80.0	100	P	09/05/2025	15:40	LB137103
	Antimony	6.76	+/-25	U	12.5	50.0	P	09/05/2025	15:40	LB137103
	Arsenic	5.12	+/-10	U	15.0	20.0	P	09/05/2025	15:40	LB137103
	Barium	14.6	+/-50	U	25.0	100	P	09/05/2025	15:40	LB137103
	Beryllium	0.56	+/-3	U	1.50	6.00	P	09/05/2025	15:40	LB137103
	Cadmium	0.50	+/-3	U	1.50	6.00	P	09/05/2025	15:40	LB137103
	Calcium	234	+/-1000	U	500	2000	P	09/05/2025	15:40	LB137103
	Chromium	2.12	+/-5	U	5.00	10.0	P	09/05/2025	15:40	LB137103
	Cobalt	2.26	+/-15	U	7.50	30.0	P	09/05/2025	15:40	LB137103
	Copper	4.60	+/-10	U	16.0	20.0	P	09/05/2025	15:40	LB137103
	Iron	23.4	+/-50	U	80.0	100	P	09/05/2025	15:40	LB137103
	Lead	2.30	+/-6	U	9.60	12.0	P	09/05/2025	15:40	LB137103

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

Contract: TETR06

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	LOD	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB04	Magnesium	244	+/-1000	U	500	2000	P	09/05/2025	15:40	LB137103
	Manganese	5.94	+/-10	U	15.0	20.0	P	09/05/2025	15:40	LB137103
	Nickel	3.06	+/-20	U	10.0	40.0	P	09/05/2025	15:40	LB137103
	Potassium	918	+/-1000	U	1600	2000	P	09/05/2025	15:40	LB137103
	Selenium	9.64	+/-10	U	16.0	20.0	P	09/05/2025	15:40	LB137103
	Silver	1.62	+/-5	U	5.00	10.0	P	09/05/2025	15:40	LB137103
	Sodium	868	+/-1000	U	1000	2000	P	09/05/2025	15:40	LB137103
	Thallium	4.38	+/-20	U	20.0	40.0	P	09/05/2025	15:40	LB137103
	Vanadium	6.26	+/-20	U	20.0	40.0	P	09/05/2025	15:40	LB137103
	Zinc	16.7	+/-20	U	15.0	40.0	P	09/05/2025	15:40	LB137103
CCB05	Aluminum	11.3	+/-50	U	80.0	100	P	09/05/2025	16:15	LB137103
	Antimony	6.76	+/-25	U	12.5	50.0	P	09/05/2025	16:15	LB137103
	Arsenic	5.12	+/-10	U	15.0	20.0	P	09/05/2025	16:15	LB137103
	Barium	14.6	+/-50	U	25.0	100	P	09/05/2025	16:15	LB137103
	Beryllium	0.56	+/-3	U	1.50	6.00	P	09/05/2025	16:15	LB137103
	Cadmium	0.50	+/-3	U	1.50	6.00	P	09/05/2025	16:15	LB137103
	Calcium	234	+/-1000	U	500	2000	P	09/05/2025	16:15	LB137103
	Chromium	2.12	+/-5	U	5.00	10.0	P	09/05/2025	16:15	LB137103
	Cobalt	2.26	+/-15	U	7.50	30.0	P	09/05/2025	16:15	LB137103
	Copper	4.60	+/-10	U	16.0	20.0	P	09/05/2025	16:15	LB137103
	Iron	23.4	+/-50	U	80.0	100	P	09/05/2025	16:15	LB137103
	Lead	2.30	+/-6	U	9.60	12.0	P	09/05/2025	16:15	LB137103
	Magnesium	244	+/-1000	U	500	2000	P	09/05/2025	16:15	LB137103
	Manganese	5.94	+/-10	U	15.0	20.0	P	09/05/2025	16:15	LB137103
	Nickel	3.06	+/-20	U	10.0	40.0	P	09/05/2025	16:15	LB137103
	Potassium	918	+/-1000	U	1600	2000	P	09/05/2025	16:15	LB137103
	Selenium	9.64	+/-10	U	16.0	20.0	P	09/05/2025	16:15	LB137103
	Silver	1.62	+/-5	U	5.00	10.0	P	09/05/2025	16:15	LB137103
	Sodium	868	+/-1000	U	1000	2000	P	09/05/2025	16:15	LB137103
	Thallium	4.38	+/-20	U	20.0	40.0	P	09/05/2025	16:15	LB137103
	Vanadium	6.26	+/-20	U	20.0	40.0	P	09/05/2025	16:15	LB137103
	Zinc	16.7	+/-20	U	15.0	40.0	P	09/05/2025	16:15	LB137103

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

Instrument: CV1

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	LOD ug/L	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB169582BL		WATER		Batch Number:		PB169582		Prep Date:	09/05/2025	
	Mercury	0.076	<0.2	U	0.16	0.20	CV	09/05/2025	15:39	lb137094

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

Instrument: P4

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	LOD ug/L	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB169555BL	WATER			Batch Number:		PB169555		Prep Date:	09/04/2025	
	Aluminum	5.67	<25	U	40.0	50.0	P	09/05/2025	12:50	LB137103
	Antimony	3.38	<12.5	U	6.25	25.0	P	09/05/2025	12:50	LB137103
	Arsenic	2.56	<5	U	7.50	10.0	P	09/05/2025	12:50	LB137103
	Barium	7.28	<25	U	12.5	50.0	P	09/05/2025	12:50	LB137103
	Beryllium	0.28	<1.5	U	0.75	3.00	P	09/05/2025	12:50	LB137103
	Cadmium	0.25	<1.5	U	0.75	3.00	P	09/05/2025	12:50	LB137103
	Calcium	117	<500	U	250	1000	P	09/05/2025	12:50	LB137103
	Chromium	1.06	<2.5	U	2.50	5.00	P	09/05/2025	12:50	LB137103
	Cobalt	1.13	<7.5	U	3.75	15.0	P	09/05/2025	12:50	LB137103
	Copper	2.30	<5	U	8.00	10.0	P	09/05/2025	12:50	LB137103
	Iron	11.7	<25	U	40.0	50.0	P	09/05/2025	12:50	LB137103
	Lead	1.15	<3	U	4.80	6.00	P	09/05/2025	12:50	LB137103
	Magnesium	122	<500	U	250	1000	P	09/05/2025	12:50	LB137103
	Manganese	2.97	<5	U	7.50	10.0	P	09/05/2025	12:50	LB137103
	Nickel	1.53	<10	U	5.00	20.0	P	09/05/2025	12:50	LB137103
	Potassium	459	<500	U	800	1000	P	09/05/2025	12:50	LB137103
	Selenium	4.82	<5	U	8.00	10.0	P	09/05/2025	12:50	LB137103
	Silver	0.81	<2.5	U	2.50	5.00	P	09/05/2025	12:50	LB137103
	Sodium	434	<500	U	500	1000	P	09/05/2025	12:50	LB137103
	Thallium	2.19	<10	U	10.0	20.0	P	09/05/2025	12:50	LB137103
	Vanadium	3.13	<10	U	10.0	20.0	P	09/05/2025	12:50	LB137103
	Zinc	8.33	<10	U	7.50	20.0	P	09/05/2025	12:50	LB137103

Metals
- 4 -
INTERFERENCE CHECK SAMPLE

Client: <u>Tetra Tech NUS, Inc.</u>	SDG No.: <u>Q3017</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	Aluminum	248000	255000	97	216000	294000	09/05/2025	12:05	LB137103
	Antimony	-0.24			-50	50	09/05/2025	12:05	LB137103
	Arsenic	-1.25			-20	20	09/05/2025	12:05	LB137103
	Barium	1.09	6.0	18	-94	106	09/05/2025	12:05	LB137103
	Beryllium	1.54			-6	6	09/05/2025	12:05	LB137103
	Cadmium	1.16	1.0	116	-5	7	09/05/2025	12:05	LB137103
	Calcium	236000	245000	96	208000	282000	09/05/2025	12:05	LB137103
	Chromium	54.9	52.0	106	42	62	09/05/2025	12:05	LB137103
	Cobalt	2.02			-30	30	09/05/2025	12:05	LB137103
	Copper	12.2	2.0	610	-18	22	09/05/2025	12:05	LB137103
	Iron	100000	101000	99	85600	116500	09/05/2025	12:05	LB137103
	Lead	3.51			-12	12	09/05/2025	12:05	LB137103
	Magnesium	251000	255000	98	216000	294000	09/05/2025	12:05	LB137103
	Manganese	9.12	7.0	130	-13	27	09/05/2025	12:05	LB137103
	Nickel	7.09	2.0	354	-38	42	09/05/2025	12:05	LB137103
	Potassium	211			0	0	09/05/2025	12:05	LB137103
	Selenium	-1.22			-20	20	09/05/2025	12:05	LB137103
	Silver	1.98			-10	10	09/05/2025	12:05	LB137103
	Sodium	130			0	0	09/05/2025	12:05	LB137103
	Thallium	-4.42			-40	40	09/05/2025	12:05	LB137103
	Vanadium	1.68			-40	40	09/05/2025	12:05	LB137103
	Zinc	4.22			-40	40	09/05/2025	12:05	LB137103
ICSAB01	Aluminum	249000	247000	101	209000	285000	09/05/2025	12:09	LB137103
	Antimony	629	618	102	525	711	09/05/2025	12:09	LB137103
	Arsenic	105	104	101	88.4	120	09/05/2025	12:09	LB137103
	Barium	491	537	91	437	637	09/05/2025	12:09	LB137103
	Beryllium	543	495	110	420	570	09/05/2025	12:09	LB137103
	Cadmium	1010	972	104	826	1120	09/05/2025	12:09	LB137103
	Calcium	235000	235000	100	199000	271000	09/05/2025	12:09	LB137103
	Chromium	583	542	108	460	624	09/05/2025	12:09	LB137103
	Cobalt	509	476	107	404	548	09/05/2025	12:09	LB137103
	Copper	515	511	101	434	588	09/05/2025	12:09	LB137103
	Iron	95800	99300	96	84400	114500	09/05/2025	12:09	LB137103
	Lead	50.2	49.0	102	37	61	09/05/2025	12:09	LB137103
	Magnesium	251000	248000	101	210000	286000	09/05/2025	12:09	LB137103
	Manganese	496	507	98	430	584	09/05/2025	12:09	LB137103
	Nickel	1020	954	107	810	1100	09/05/2025	12:09	LB137103
	Potassium	-136			0	0	09/05/2025	12:09	LB137103
	Selenium	50.5	46.0	110	26	66	09/05/2025	12:09	LB137103
	Silver	224	201	111	170	232	09/05/2025	12:09	LB137103
	Sodium	195			0	0	09/05/2025	12:09	LB137103
	Thallium	111	108	103	68	148	09/05/2025	12:09	LB137103

Metals
- 4 -
INTERFERENCE CHECK SAMPLE

Client: Tetra Tech NUS, Inc. **SDG No.:** Q3017
Contract: TETR06 **Lab Code:** ACE
ICS Source: EPA **Instrument ID:** P4

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Low Limit (ug/L)	High Limit (ug/L)	Analysis Date	Analysis Time	Run Number
ICSAB01	Vanadium	487	491	99	417	565	09/05/2025	12:09	LB137103
	Zinc	1080	952	113	809	1095	09/05/2025	12:09	LB137103



METAL QC DATA

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

metals
- 5a -
MATRIX SPIKE SUMMARY

client: Tetra Tech NUS, Inc. **level:** low **sdg no.:** Q3017
contract: TETR06 **lab code:** ACE
matrix: Water **sample id:** Q3017-05 **client id:** TT-079-IDWGW-20250903MS
Percent Solids for Sample: NA **Spiked ID:** Q3017-05MS **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	86 - 115	14600	D	21700	D	1000	-710		P
Antimony	ug/L	88 - 113	398	D	125	UD	400	100		P
Arsenic	ug/L	87 - 113	385	D	50.0	UD	400	96		P
Barium	ug/L	88 - 113	244	JD	167	JD	100	77	N	P
Beryllium	ug/L	89 - 112	94.4	D	15.0	UD	100	93		P
Cadmium	ug/L	88 - 113	95.3	D	15.0	UD	100	95		P
Calcium	ug/L	87 - 113	9170	D	9470	D	500	-61		P
Chromium	ug/L	90 - 113	214	D	23.2	JD	200	96		P
Cobalt	ug/L	89 - 114	109	D	12.9	JD	100	96		P
Copper	ug/L	86 - 114	173	D	22.9	JD	150	100		P
Iron	ug/L	87 - 115	9320	D	9770	D	1500	-30		P
Lead	ug/L	86 - 113	485	D	23.8	JD	500	92		P
Magnesium	ug/L	85 - 113	4390	JD	4110	JD	1000	28		P
Manganese	ug/L	90 - 114	363	D	291	D	100	72	N	P
Mercury	ug/L	82 - 119	3.73		0.20	U	4.0	93		CV
Nickel	ug/L	88 - 113	256	D	17.0	JD	250	96		P
Potassium	ug/L	86 - 114	6290	D	5000	UD	5000	83	N	P
Selenium	ug/L	83 - 114	963	D	50.0	UD	1000	96		P
Silver	ug/L	84 - 115	36.2	D	25.0	UD	37.5	95		P
Sodium	ug/L	87 - 115	23000	D	23800	D	1500	-52		P
Thallium	ug/L	85 - 114	960	D	100	UD	1000	97		P
Vanadium	ug/L	90 - 111	161	D	22.9	JD	150	92		P
Zinc	ug/L	87 - 115	138	D	46.1	JD	100	92		P

metals
- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

client: Tetra Tech NUS, Inc. **level:** low **sdg no.:** Q3017
contract: TETR06 **lab code:** ACE
matrix: Water **sample id:** Q3017-05 **client id:** TT-079-IDWGW-20250903MSD
Percent Solids for Sample: NA **Spiked ID:** Q3017-05MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	86 - 115	14600	D	21700	D	1000	-714		P
Antimony	ug/L	88 - 113	395	D	125	UD	400	100		P
Arsenic	ug/L	87 - 113	387	D	50.0	UD	400	97		P
Barium	ug/L	88 - 113	228	JD	167	JD	100	62	N	P
Beryllium	ug/L	89 - 112	100	D	15.0	UD	100	99		P
Cadmium	ug/L	88 - 113	94.9	D	15.0	UD	100	95		P
Calcium	ug/L	87 - 113	8980	D	9470	D	500	-98		P
Chromium	ug/L	90 - 113	215	D	23.2	JD	200	96		P
Cobalt	ug/L	89 - 114	108	D	12.9	JD	100	95		P
Copper	ug/L	86 - 114	174	D	22.9	JD	150	101		P
Iron	ug/L	87 - 115	8610	D	9770	D	1500	-77		P
Lead	ug/L	86 - 113	484	D	23.8	JD	500	92		P
Magnesium	ug/L	85 - 113	4330	JD	4110	JD	1000	22		P
Manganese	ug/L	90 - 114	356	D	291	D	100	66	N	P
Mercury	ug/L	82 - 119	3.72		0.20	U	4.0	93		CV
Nickel	ug/L	88 - 113	256	D	17.0	JD	250	96		P
Potassium	ug/L	86 - 114	5810	D	5000	UD	5000	73	N	P
Selenium	ug/L	83 - 114	967	D	50.0	UD	1000	96		P
Silver	ug/L	84 - 115	37.3	D	25.0	UD	37.5	98		P
Sodium	ug/L	87 - 115	20100	D	23800	D	1500	-245		P
Thallium	ug/L	85 - 114	976	D	100	UD	1000	98		P
Vanadium	ug/L	90 - 111	161	D	22.9	JD	150	92		P
Zinc	ug/L	87 - 115	203	D	46.1	JD	100	157	N	P

Metals
- 5b -
POST DIGEST SPIKE SUMMARY

Client: <u>Tetra Tech NUS, Inc.</u>	SDG No.: <u>Q3017</u>	
Contract: <u>TETR06</u>	Lab Code: <u>ACE</u>	
Matrix: <u>Water</u>	Level: <u>LOW</u>	Client ID: <u>TT-079-IDWGW-20250903A</u>
Sample ID: <u>Q3017-05</u>	Spiked ID: <u>Q3017-05A</u>	

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Barium	ug/L	88 - 113	244	JD	167	JD	500	15	N	P
Manganese	ug/L	90 - 114	367	D	291	D	500	15	N	P
Potassium	ug/L	86 - 114	6260	D	5000	UD	25000	16	N	P
Zinc	ug/L	87 - 115	141	D	46.1	JD	500	19	N	P

Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech NUS, Inc. **Level:** LOW **SDG No.:** Q3017
Contract: TETR06 **Lab Code:** ACE
Matrix: Water **Sample ID:** Q3017-05 **Client ID:** TT-079-IDWGW-20250903DUP
Percent Solids for Sample: NA **Duplicate ID** Q3017-05DUP **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Aluminum	ug/L	20	21700	D	21800	D	0		P
Antimony	ug/L	20	125	UD	125	UD			P
Arsenic	ug/L	20	50.0	UD	50.0	UD			P
Barium	ug/L	20	167	JD	173	JD	4		P
Beryllium	ug/L	20	15.0	UD	15.0	UD			P
Cadmium	ug/L	20	15.0	UD	15.0	UD			P
Calcium	ug/L	20	9470	D	9740	D	3		P
Chromium	ug/L	20	23.2	JD	24.4	JD	5		P
Cobalt	ug/L	20	12.9	JD	13.3	JD	3		P
Copper	ug/L	20	22.9	JD	24.1	JD	5		P
Iron	ug/L	20	9770	D	9900	D	1		P
Lead	ug/L	20	23.8	JD	23.5	JD	1		P
Magnesium	ug/L	20	4110	JD	4280	JD	4		P
Manganese	ug/L	20	291	D	298	D	2		P
Mercury	ug/L	20	0.20	U	0.20	U			CV
Nickel	ug/L	20	17.0	JD	17.0	JD	0		P
Potassium	ug/L	20	5000	UD	5000	UD			P
Selenium	ug/L	20	50.0	UD	50.0	UD			P
Silver	ug/L	20	25.0	UD	25.0	UD			P
Sodium	ug/L	20	23800	D	24400	D	2		P
Thallium	ug/L	20	100	UD	100	UD			P
Vanadium	ug/L	20	22.9	JD	23.3	JD	2		P
Zinc	ug/L	20	46.1	JD	47.0	JD	2		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: Tetra Tech NUS, Inc. **Level:** LOW **SDG No.:** Q3017
Contract: TETR06 **Lab Code:** ACE
Matrix: Water **Sample ID:** Q3017-05MS **Client ID:** TT-079-IDWGW-20250903MSD
Percent Solids for Sample: NA **Duplicate ID** Q3017-05MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Aluminum	ug/L	20	14600	D	14600	D	0		P
Antimony	ug/L	20	398	D	395	D	1		P
Arsenic	ug/L	20	385	D	387	D	1		P
Barium	ug/L	20	244	JD	228	JD	7		P
Beryllium	ug/L	20	94.4	D	100	D	6		P
Cadmium	ug/L	20	95.3	D	94.9	D	0		P
Calcium	ug/L	20	9170	D	8980	D	2		P
Chromium	ug/L	20	214	D	215	D	0		P
Cobalt	ug/L	20	109	D	108	D	1		P
Copper	ug/L	20	173	D	174	D	1		P
Iron	ug/L	20	9320	D	8610	D	8		P
Lead	ug/L	20	485	D	484	D	0		P
Magnesium	ug/L	20	4390	JD	4330	JD	1		P
Manganese	ug/L	20	363	D	356	D	2		P
Mercury	ug/L	20	3.73		3.72		0		CV
Nickel	ug/L	20	256	D	256	D	0		P
Potassium	ug/L	20	6290	D	5810	D	8		P
Selenium	ug/L	20	963	D	967	D	0		P
Silver	ug/L	20	36.2	D	37.3	D	3		P
Sodium	ug/L	20	23000	D	20100	D	13		P
Thallium	ug/L	20	960	D	976	D	2		P
Vanadium	ug/L	20	161	D	161	D	0		P
Zinc	ug/L	20	138	D	203	D	38		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:	<u>Tetra Tech NUS, Inc.</u>	SDG No.:	<u>Q3017</u>
Contract:	<u>TETR06</u>	Lab Code:	<u>ACE</u>

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB169555BS							
Aluminum	ug/L	1000	971		97	86 - 115	P
Antimony	ug/L	400	396		99	88 - 113	P
Arsenic	ug/L	400	380		95	87 - 113	P
Barium	ug/L	100	94.2		94	88 - 113	P
Beryllium	ug/L	100	97.7		98	89 - 112	P
Cadmium	ug/L	100	93.4		93	88 - 113	P
Calcium	ug/L	500	469	J	94	87 - 113	P
Chromium	ug/L	200	194		97	90 - 113	P
Cobalt	ug/L	100	94.4		94	89 - 114	P
Copper	ug/L	150	150		100	86 - 114	P
Iron	ug/L	1500	1450		97	87 - 115	P
Lead	ug/L	500	463		93	86 - 113	P
Magnesium	ug/L	1000	972	J	97	85 - 113	P
Manganese	ug/L	100	98.3		98	90 - 114	P
Nickel	ug/L	250	238		95	88 - 113	P
Potassium	ug/L	5000	4730		95	86 - 114	P
Selenium	ug/L	1000	964		96	83 - 114	P
Silver	ug/L	37.5	36.8		98	84 - 115	P
Sodium	ug/L	1500	1400		93	87 - 115	P
Thallium	ug/L	1000	858		86	85 - 114	P
Vanadium	ug/L	150	146		97	90 - 111	P
Zinc	ug/L	100	97.8		98	87 - 115	P

Metals

- 7 -

LABORATORY CONTROL SAMPLE SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

Contract: TETR06

Lab Code: ACE

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB169582BS Mercury	ug/L	4.0	3.80		95	82 - 119	CV

Metals
-9 -
ICP SERIAL DILUTIONS

SAMPLE NO.

TT-079-IDWGW-20250903L

Lab Name: Alliance **Contract:** TETR06
Lab Code: ACE **Lb No.:** lb137103 **Lab Sample ID :** Q3017-05L **SDG No.:** Q3017
Matrix (soil/water): Water **Level (low/med):** LOW
Concentration Units: ug/L

Analyte	Initial Sample Result (I)		Serial Dilution Result (S)		% Differ-ence	Q	M
Aluminum	21700	D	22200	D	2		P
Antimony	125	UD	625	UD			P
Arsenic	50.0	UD	250	UD			P
Barium	167	JD	1250	UD	100		P
Beryllium	15.0	UD	75.0	UD			P
Cadmium	15.0	UD	75.0	UD			P
Calcium	9470	D	9210	JD	3		P
Chromium	23.2	JD	125	UD	100		P
Cobalt	12.9	JD	375	UD	100		P
Copper	22.9	JD	250	UD	100		P
Iron	9770	D	9250	D	5		P
Lead	23.8	JD	150	UD	100		P
Magnesium	4110	JD	4150	JD	1		P
Manganese	291	D	291	D	0		P
Mercury	0.20	U	1.00	U			CV
Nickel	17.0	JD	500	UD	100		P
Potassium	5000	UD	25000	UD			P
Selenium	50.0	UD	250	UD			P
Silver	25.0	UD	125	UD			P
Sodium	23800	D	21100	JD	12		P
Thallium	100	UD	500	UD			P
Vanadium	22.9	JD	500	UD	100		P
Zinc	46.1	JD	500	UD	100		P



METAL PREPARATION & INSTRUMENT DATA

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

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

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
Aluminum	396.100	0.0000000	-0.0002060	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	0.0000000	0.0000000	-0.0000440	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000930	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	-0.0075970	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0007850	0.0000000	0.0000000
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0000920	0.0000000	0.0000380	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	-0.0001440	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	-0.0001490	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0001050	0.0000000	0.0000000

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

Contract: TETR06

Lab Code: ACE

Instrument ID:

Date:

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		As	Ba	Be	Cd	Co
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0002870
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0000000	0.0009530
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	-0.0039600
Lead	220.353	0.0000000	0.0003170	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	-0.0003570
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0054900
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

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
Aluminum	396.100	0.0000000	0.0000000	0.0000590	0.0000000	0.0396900
Antimony	206.833	0.0122000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	-0.0029000	0.0000000	0.0000000	0.0000000	0.0004900
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	-0.0000710	-0.0003400
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000070	0.0002200	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	-0.0007860
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0006510	0.0020500
Iron	240.488	0.0000000	0.0000000	0.0000730	0.0000000	-0.0015250
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0001400	-0.0008600
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0007460	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	-0.0000120
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0017400	-0.0100400
Vanadium	292.402	-0.0025100	0.0000000	0.0000000	0.0000000	-0.0072000
Zinc	213.800	0.0000000	0.0009010	0.0000000	0.0000000	0.0000000

Metals

- 11 -

ICP INTERELEMEN CORRECTION FACTORS

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

Contract: TETR06

Lab Code: ACE

Instrument ID:

Date:

Interement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interement Correction Factors For:				
		Na	Ni	Pb	Sb	Se
Aluminum	396.100	0.0000000	0.0000000	0.0012800	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	-0.0047000	0.0036100	0.0000000	0.0000000
Iron	240.488	0.0000000	-0.0017000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0006580	0.0000000	0.0000000	0.0001290
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0003330	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0067600	0.0000000	0.0000000	0.0000000

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

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
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	-0.0035600	-0.0007970	0.0000000	-0.0018900	0.0000000
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000630	0.0001280	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0001110	0.0000000
Cobalt	228.616	0.0000000	0.0018800	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0003840	0.0000000	0.0000000	0.0000000
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	-0.0003610	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	-0.0007420	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	-0.0039700	0.0000000	-0.0115600	0.0000000
Vanadium	292.402	0.0000000	0.0005320	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

METAL PREPARATION & ANALYICAL SUMMARY

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

Metals
- 13 -

SAMPLE PREPARATION SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

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: PB169555							
PB169555BL	PB169555BL	MB	WATER	09/04/2025	50.0	25.0	
PB169555BS	PB169555BS	LCS	WATER	09/04/2025	50.0	25.0	
Q3017-02	TT-076-IDWGW-20250903	SAM	WATER	09/04/2025	50.0	25.0	
Q3017-03	TT-077-IDWGW-20250903	SAM	WATER	09/04/2025	50.0	25.0	
Q3017-04	TT-078-IDWGW-20250903	SAM	WATER	09/04/2025	50.0	25.0	
Q3017-05	TT-079-IDWGW-20250903	SAM	WATER	09/04/2025	50.0	25.0	
Q3017-05DUP	TT-079-IDWGW-20250903DUP	DUP	WATER	09/04/2025	50.0	25.0	
Q3017-05MS	TT-079-IDWGW-20250903MS	MS	WATER	09/04/2025	50.0	25.0	
Q3017-05MSD	TT-079-IDWGW-20250903MSD	MSD	WATER	09/04/2025	50.0	25.0	

Metals
- 13 -

SAMPLE PREPARATION SUMMARY

Client: Tetra Tech NUS, Inc.

SDG No.: Q3017

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: PB169582							
PB169582BL	PB169582BL	MB	WATER	09/05/2025	30.0	30.0	
PB169582BS	PB169582BS	LCS	WATER	09/05/2025	30.0	30.0	
Q3017-02	TT-076-IDWGW-20250903	SAM	WATER	09/05/2025	30.0	30.0	
Q3017-03	TT-077-IDWGW-20250903	SAM	WATER	09/05/2025	30.0	30.0	
Q3017-04	TT-078-IDWGW-20250903	SAM	WATER	09/05/2025	30.0	30.0	
Q3017-05	TT-079-IDWGW-20250903	SAM	WATER	09/05/2025	30.0	30.0	
Q3017-05DUP	TT-079-IDWGW-20250903DUP	DUP	WATER	09/05/2025	30.0	30.0	
Q3017-05MS	TT-079-IDWGW-20250903MS	MS	WATER	09/05/2025	30.0	30.0	
Q3017-05MSD	TT-079-IDWGW-20250903MSD	MSD	WATER	09/05/2025	30.0	30.0	

metals
- 14 -
ANALYSIS RUN LOG

Client: Tetra Tech NUS, Inc.

Contract: TETR06

Lab code: ACE

Sdg no.: Q3017

Instrument id number: _____

Method: _____

Run number: lb137094

Start date: 09/05/2025

End date: 09/05/2025

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1442	HG
S0.2	S0.2	1	1449	HG
S2.5	S2.5	1	1452	HG
S5	S5	1	1454	HG
S7.5	S7.5	1	1456	HG
S10	S10	1	1501	HG
ICV21	ICV21	1	1520	HG
ICB21	ICB21	1	1523	HG
CCV60	CCV60	1	1525	HG
CCB60	CCB60	1	1527	HG
CRA	CRA	1	1529	HG
PB169582BL	PB169582BL	1	1539	HG
PB169582BS	PB169582BS	1	1541	HG
Q3017-02	TT-076-IDWGW-20250903	1	1543	HG
Q3017-03	TT-077-IDWGW-20250903	1	1546	HG
Q3017-04	TT-078-IDWGW-20250903	1	1548	HG
Q3017-05	TT-079-IDWGW-20250903	1	1550	HG
Q3017-05DUP	TT-079-IDWGW-20250903DUP	1	1553	HG
CCV61	CCV61	1	1555	HG
CCB61	CCB61	1	1557	HG
Q3017-05MS	TT-079-IDWGW-20250903MS	1	1602	HG
Q3017-05MSD	TT-079-IDWGW-20250903MSI	1	1604	HG
CCV62	CCV62	1	1625	HG
CCB62	CCB62	1	1627	HG
Q3017-05L	TT-079-IDWGW-20250903L	5	1630	HG
CCV63	CCV63	1	1641	HG
CCB63	CCB63	1	1643	HG

metals
- 14 -
ANALYSIS RUN LOG

Client: Tetra Tech NUS, Inc.

Contract: TETR06

Lab code: ACE

Sdg no.: Q3017

Instrument id number:
Method:
Run number: LB137103

Start date: 09/05/2025

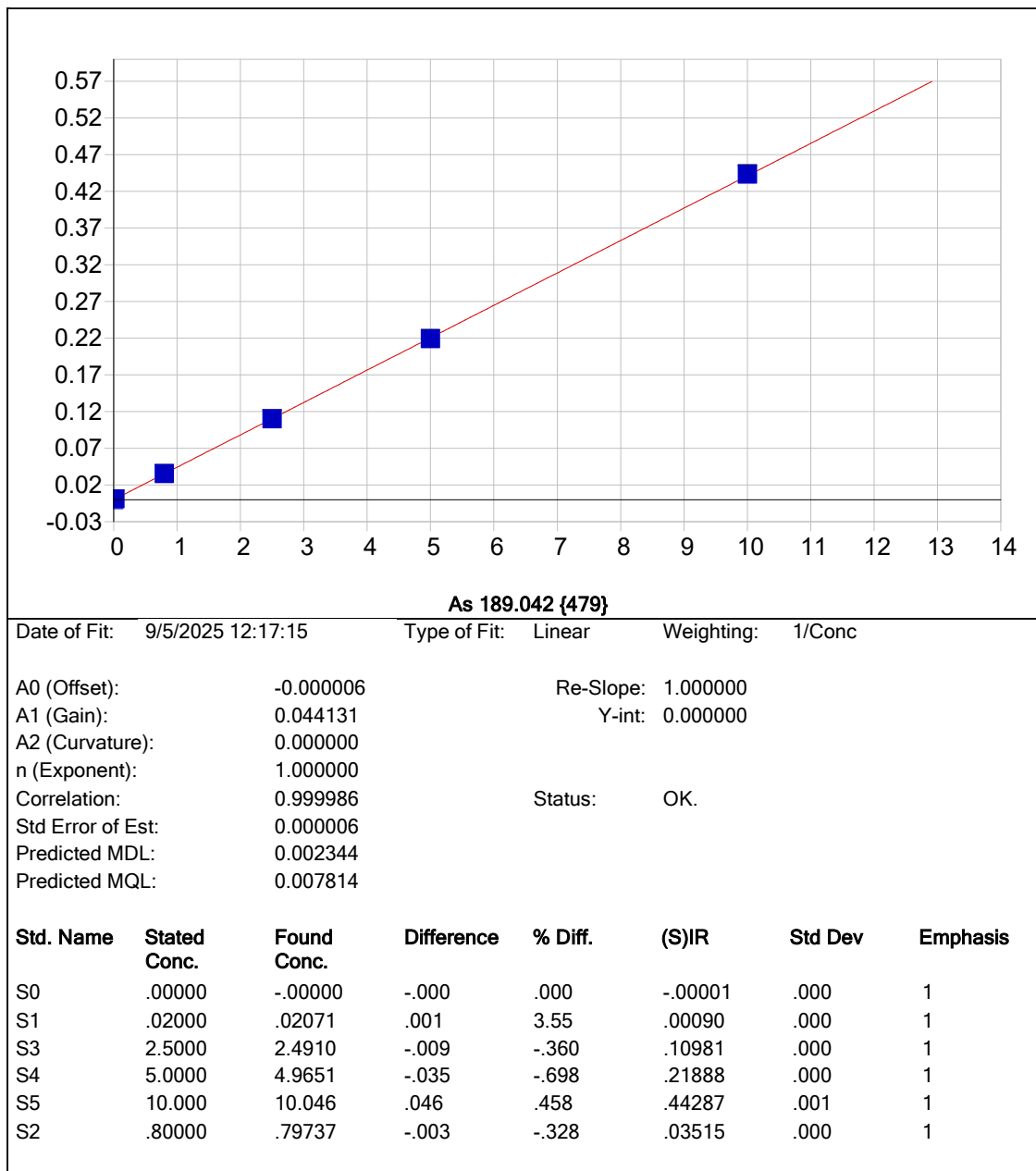
End date: 09/05/2025

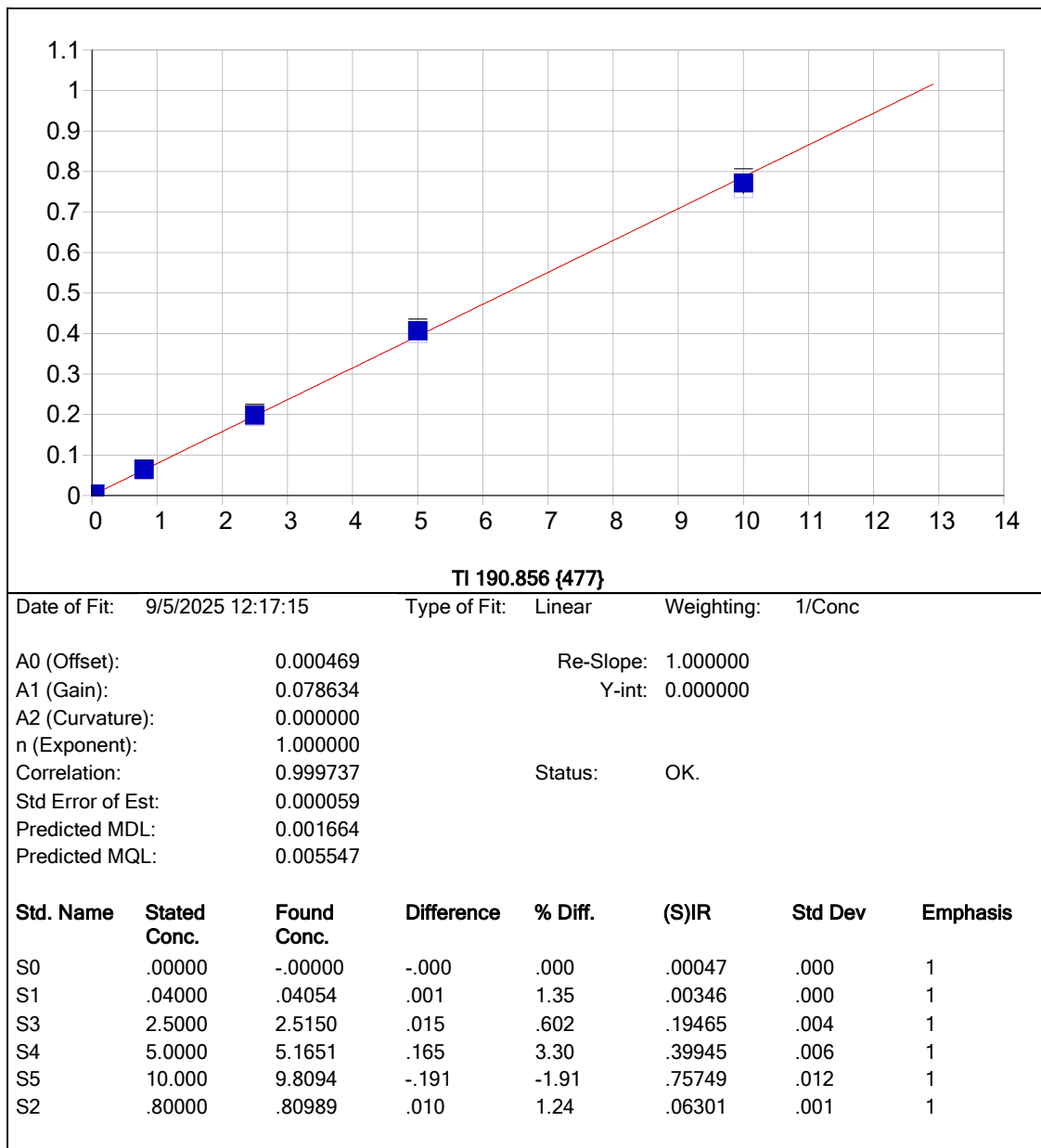
Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1119	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S1	S1	1	1124	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S2	S2	1	1128	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S3	S3	1	1132	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S4	S4	1	1136	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S5	S5	1	1140	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICV01	ICV01	1	1144	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
LLICV01	LLICV01	1	1148	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICB01	ICB01	1	1154	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CRI01	CRI01	1	1159	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICSA01	ICSA01	1	1205	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICSAB01	ICSAB01	1	1209	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV01	CCV01	1	1228	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB01	CCB01	1	1232	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
PB169555BL	PB169555BL	1	1250	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
PB169555BS	PB169555BS	1	1255	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q3017-02	TT-076-IDWGW-20250903	5	1259	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q3017-03	TT-077-IDWGW-20250903	5	1303	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q3017-04	TT-078-IDWGW-20250903	5	1307	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q3017-05	TT-079-IDWGW-20250903	5	1311	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q3017-05DUP	TT-079-IDWGW-20250903DUP	5	1316	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV02	CCV02	1	1320	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB02	CCB02	1	1324	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q3017-05L	TT-079-IDWGW-20250903L	25	1328	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q3017-05MS	TT-079-IDWGW-20250903MS	5	1333	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q3017-05MSD	TT-079-IDWGW-20250903MSI	5	1337	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q3017-05A	TT-079-IDWGW-20250903A	5	1341	Ba,K,Mn,Zn
CCV03	CCV03	1	1429	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB03	CCB03	1	1433	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV04	CCV04	1	1536	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB04	CCB04	1	1540	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV05	CCV05	1	1606	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB05	CCB05	1	1615	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn

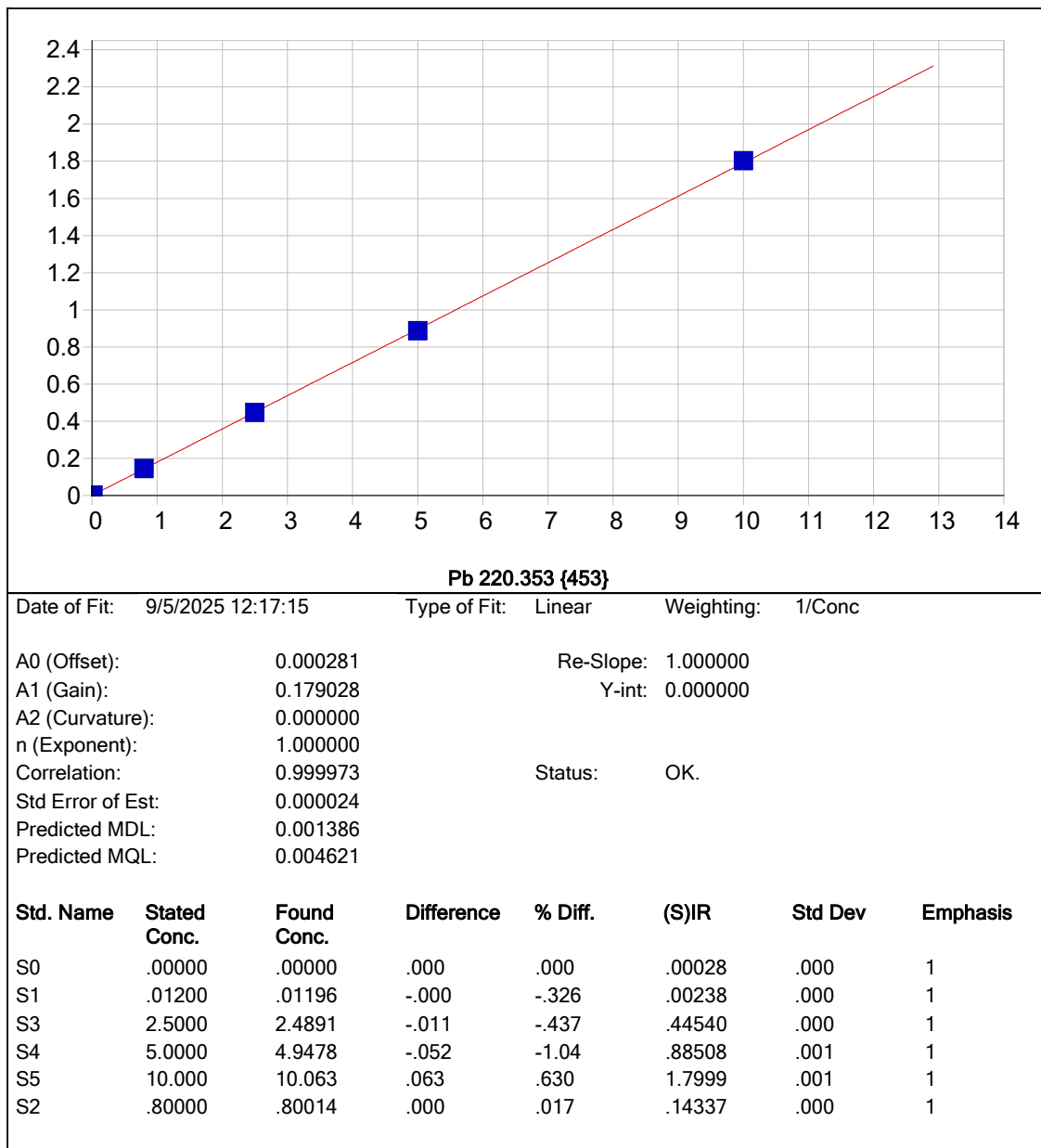


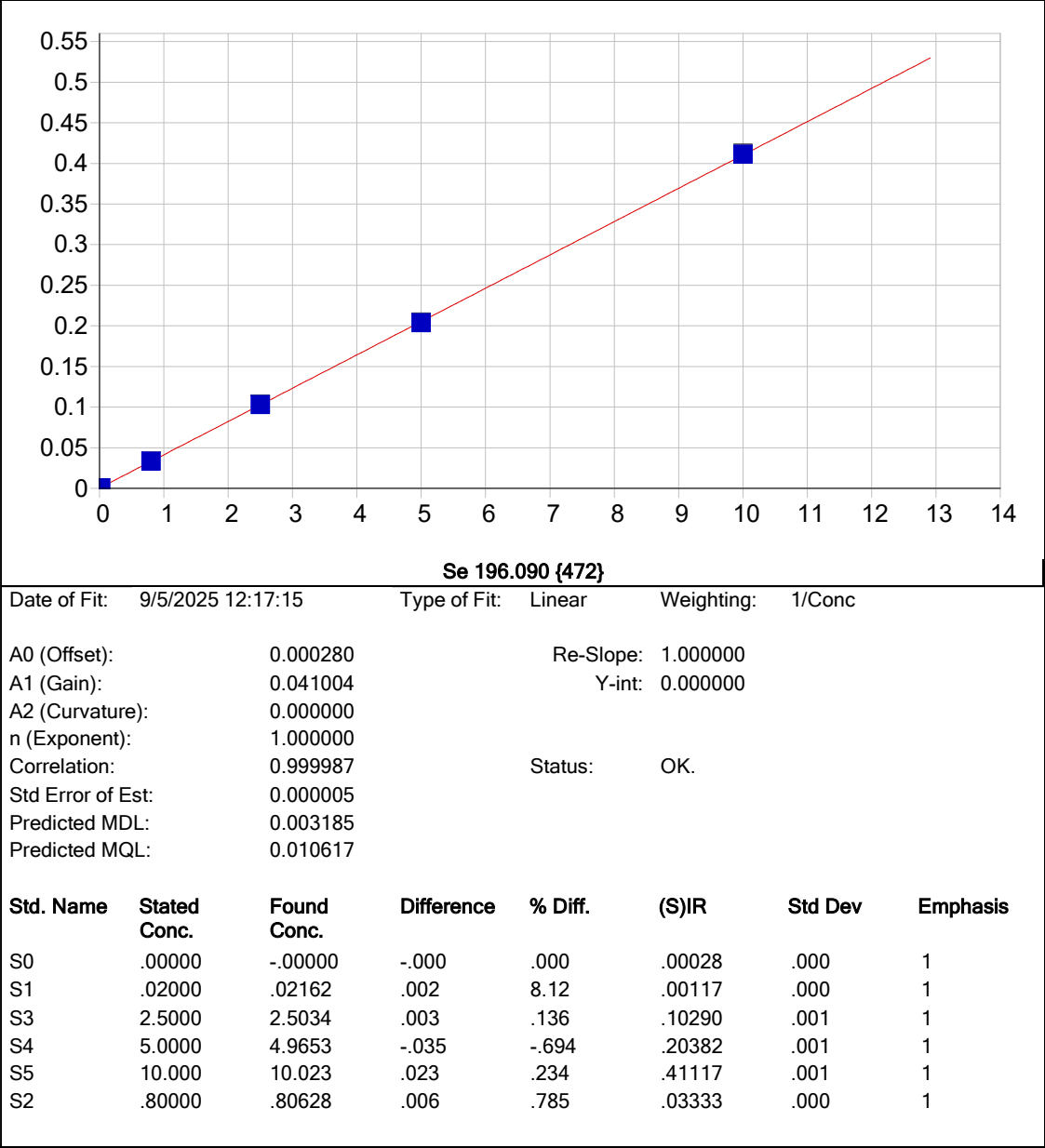
METAL RAW DATA

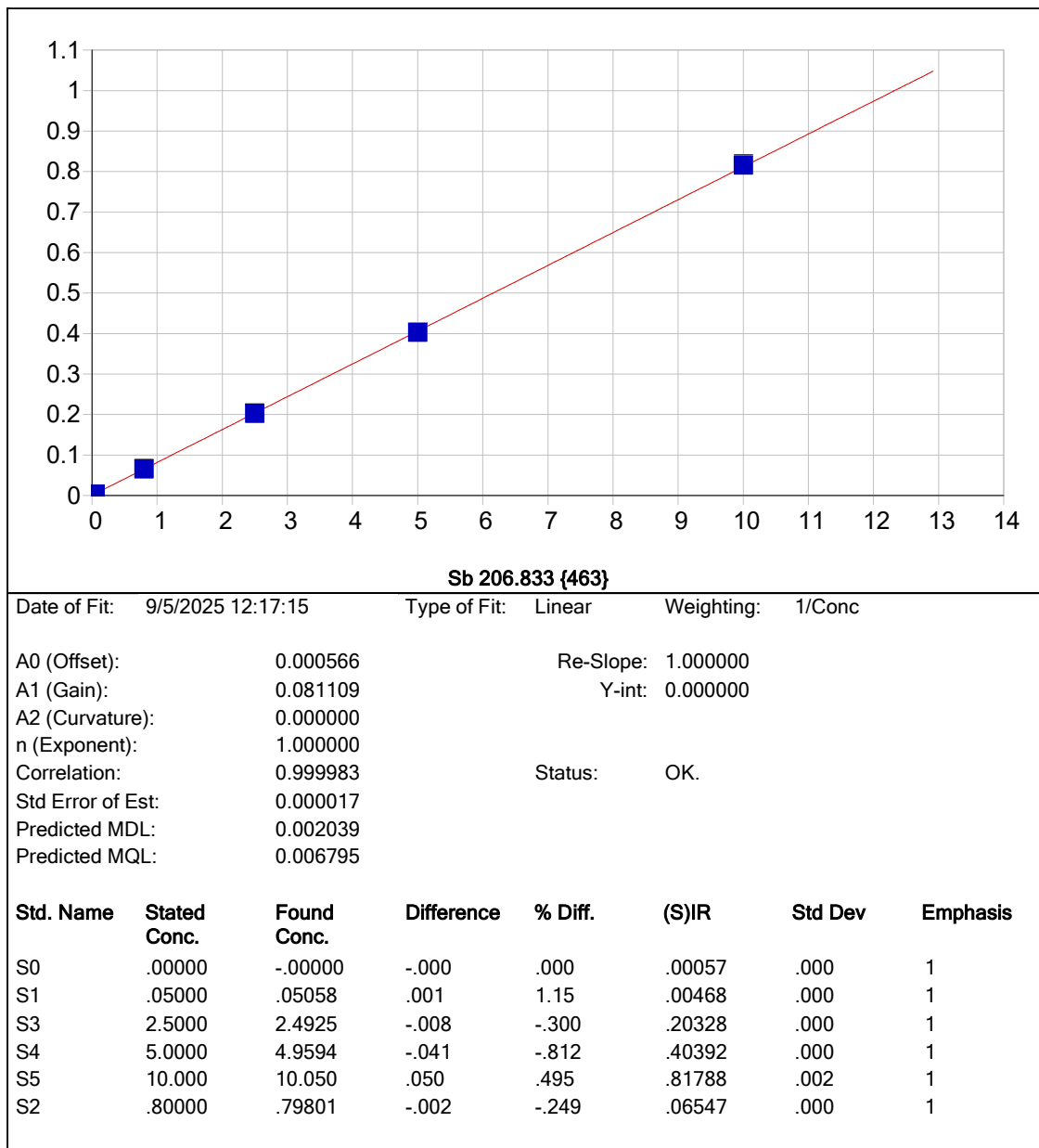
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17



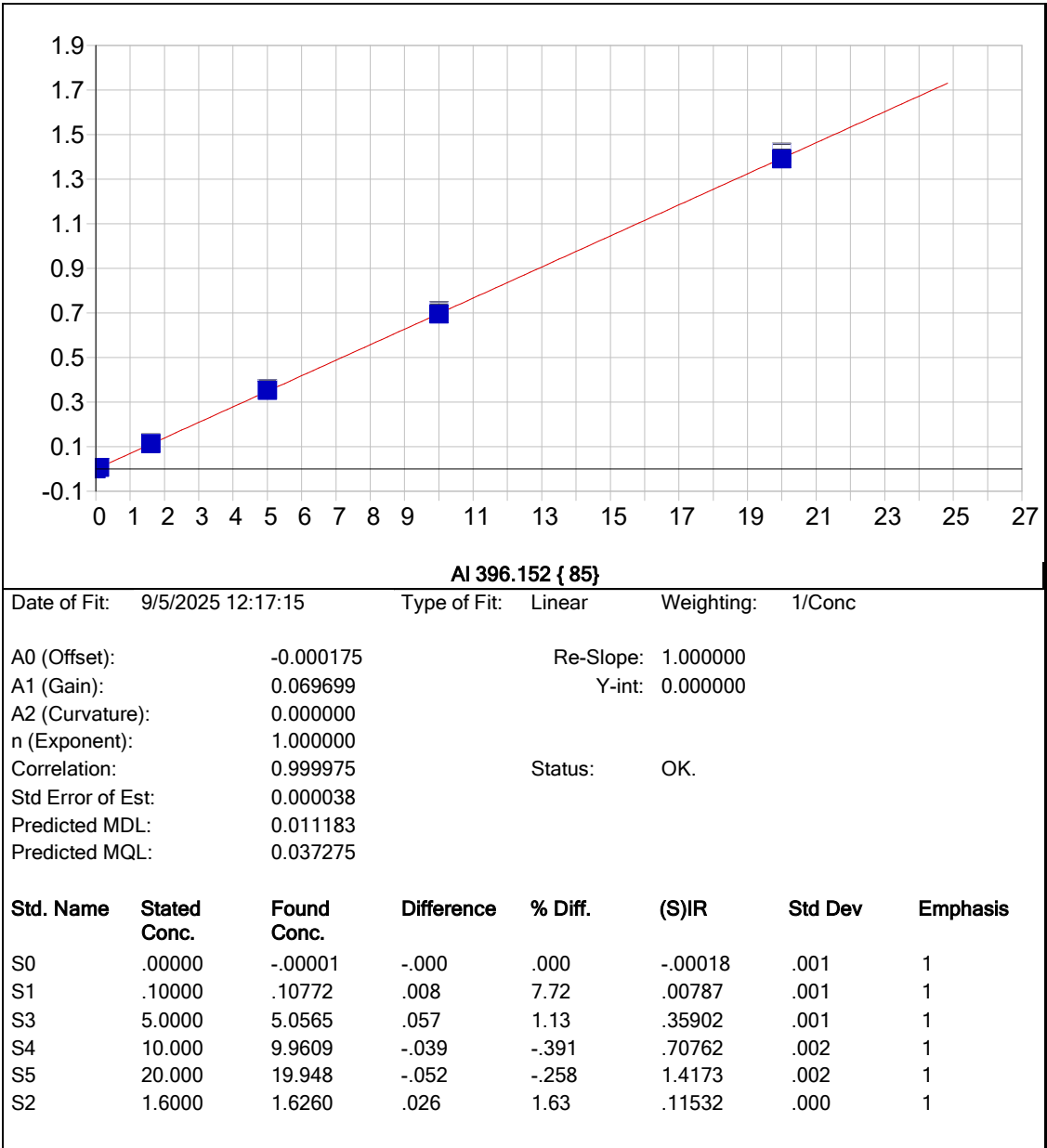


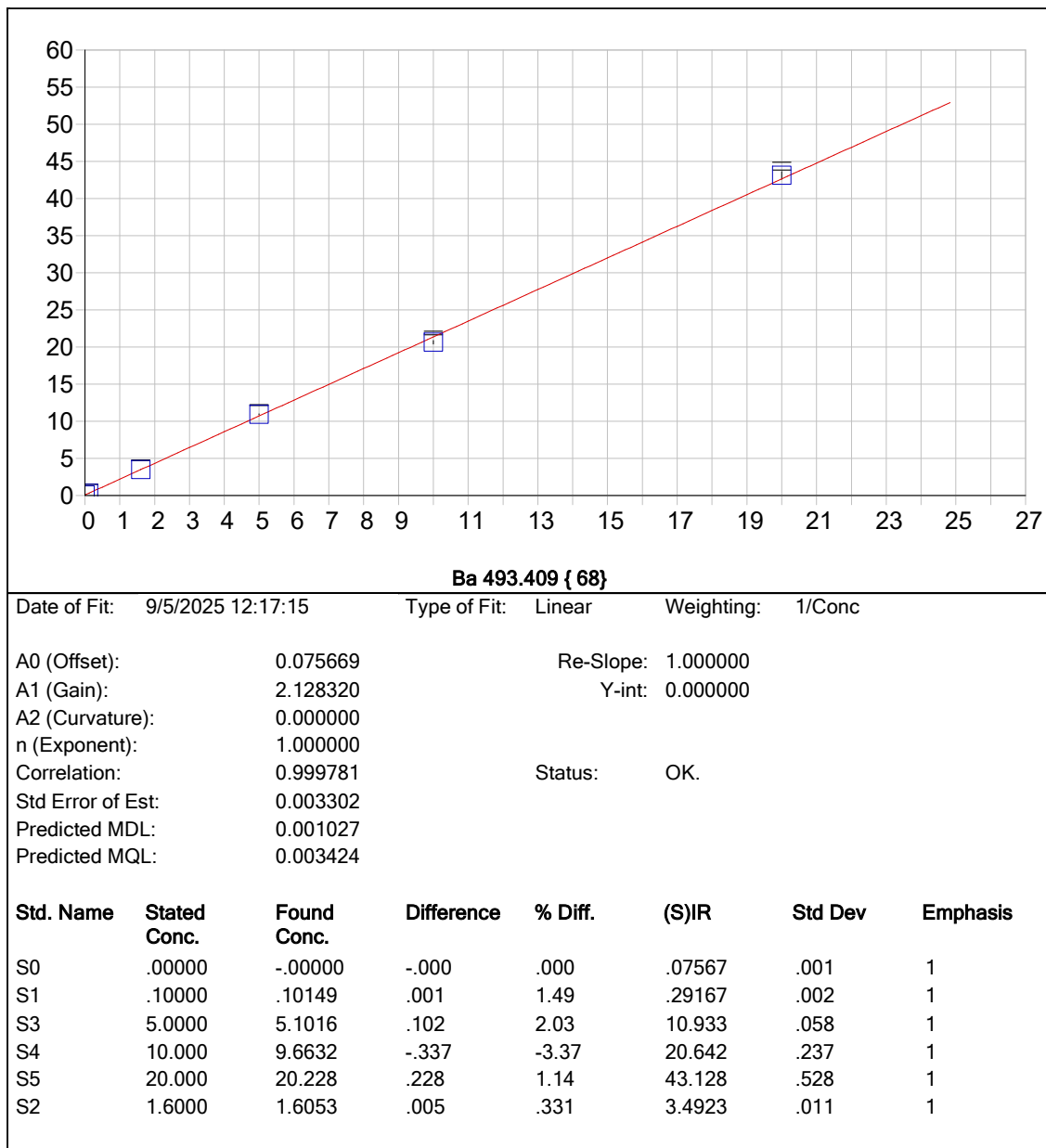


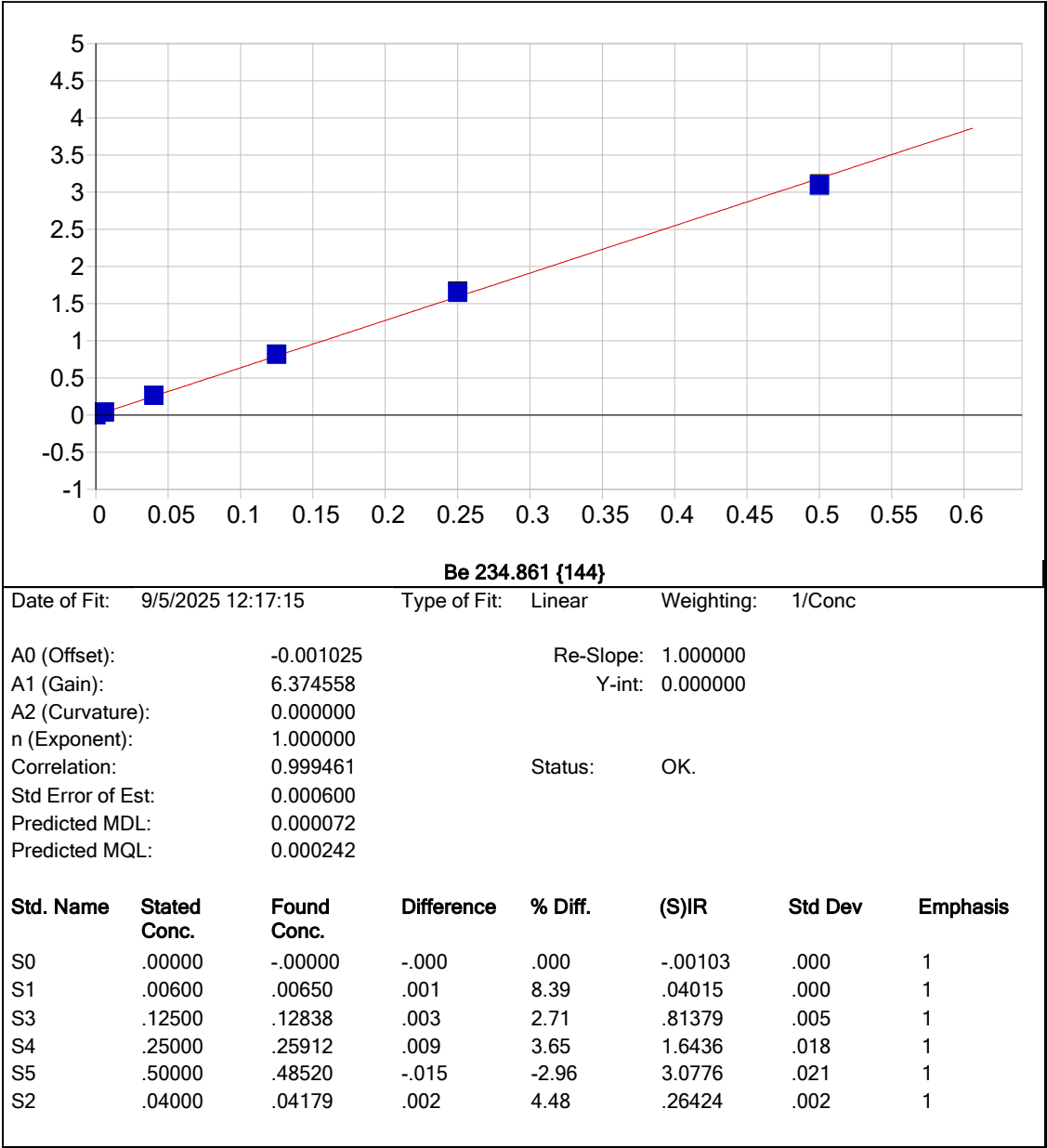


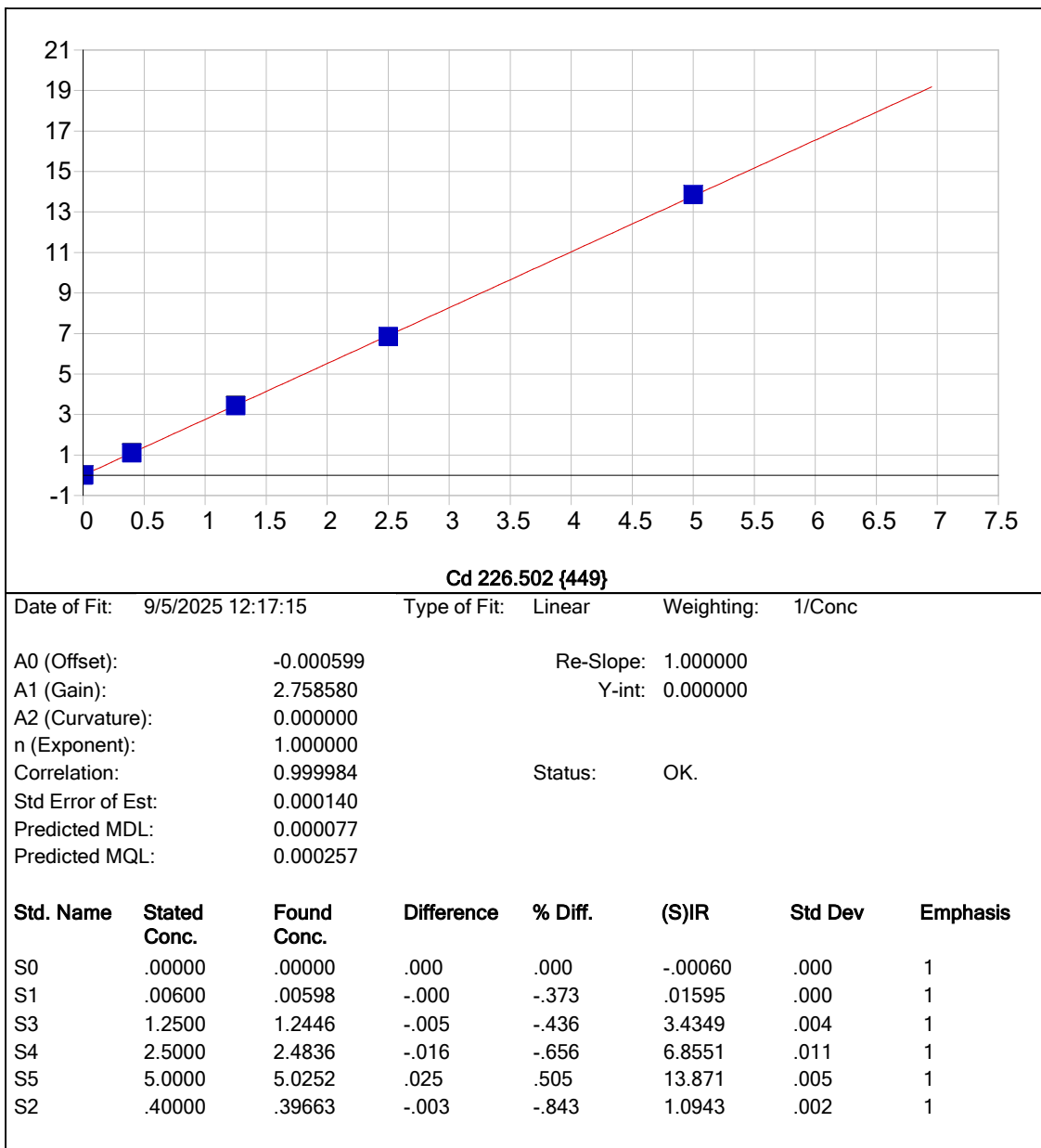


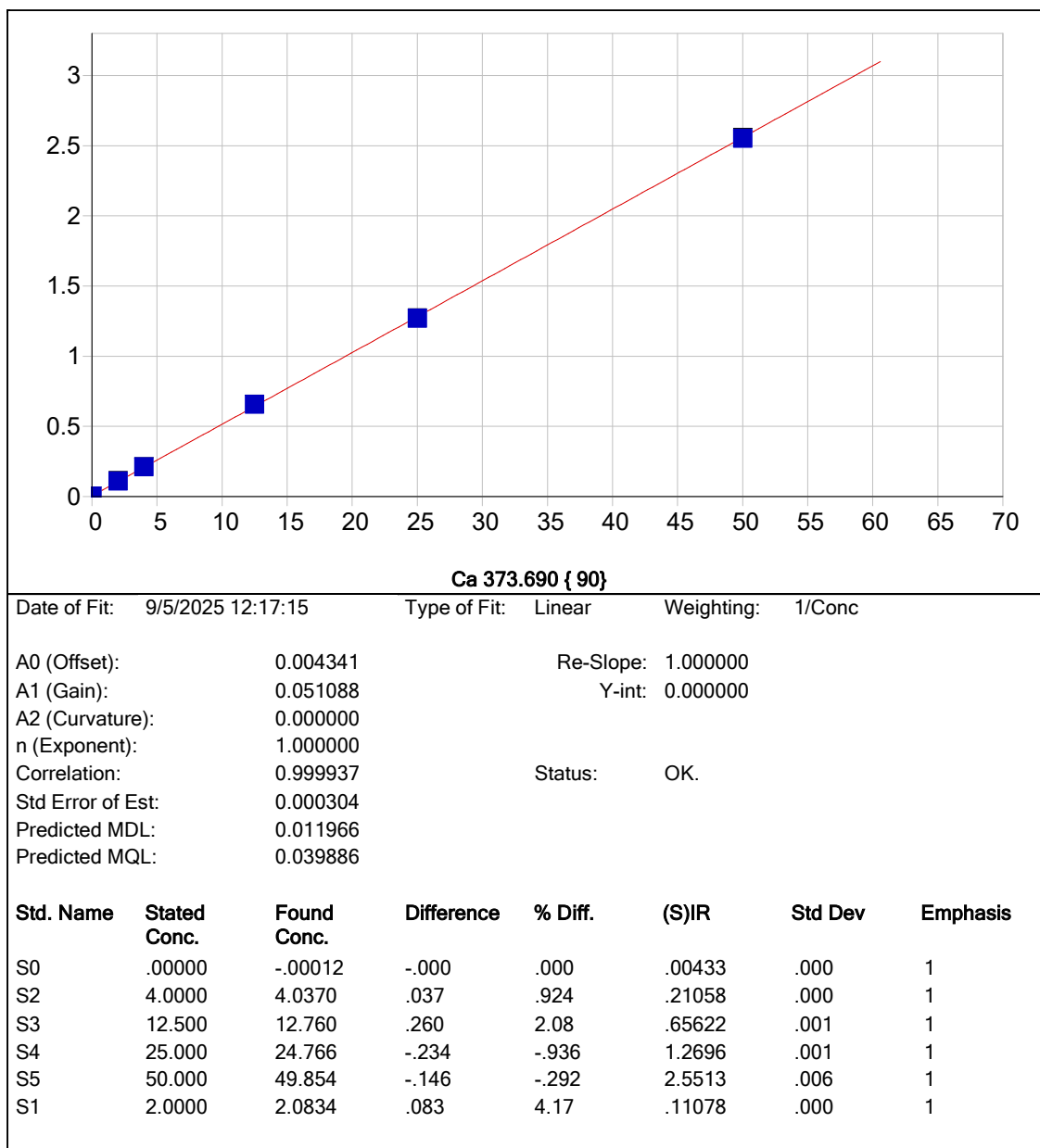
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17

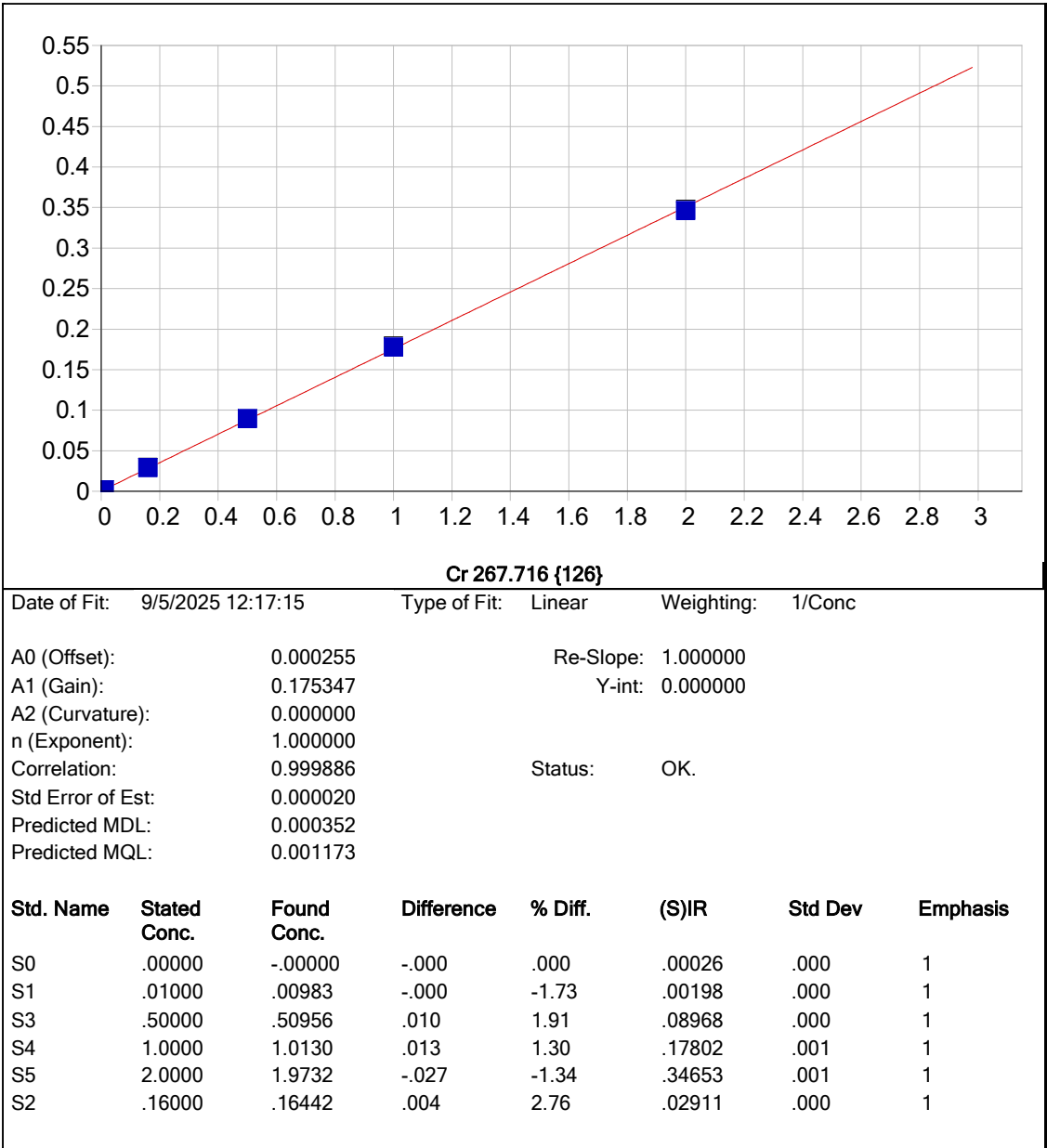


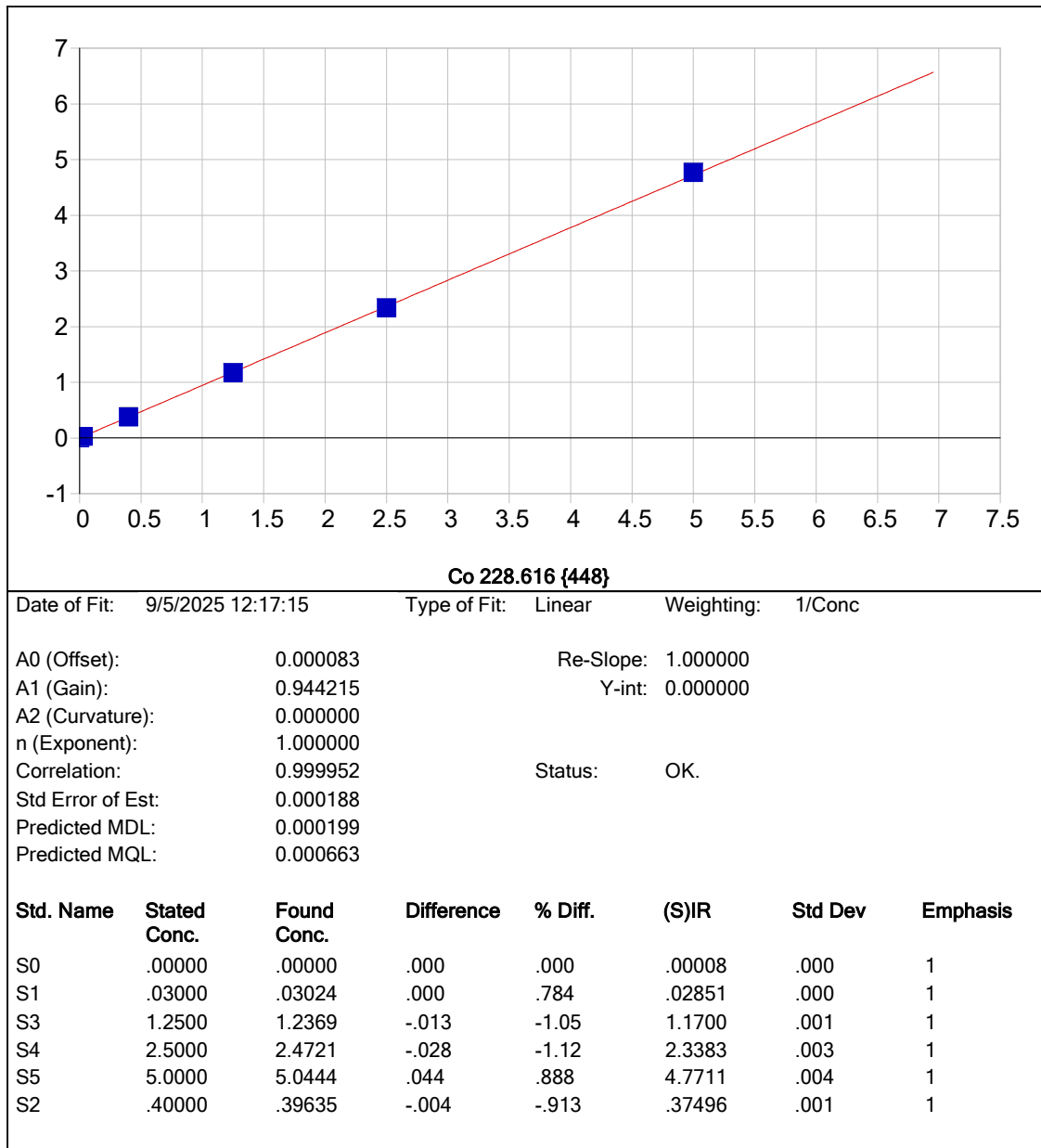


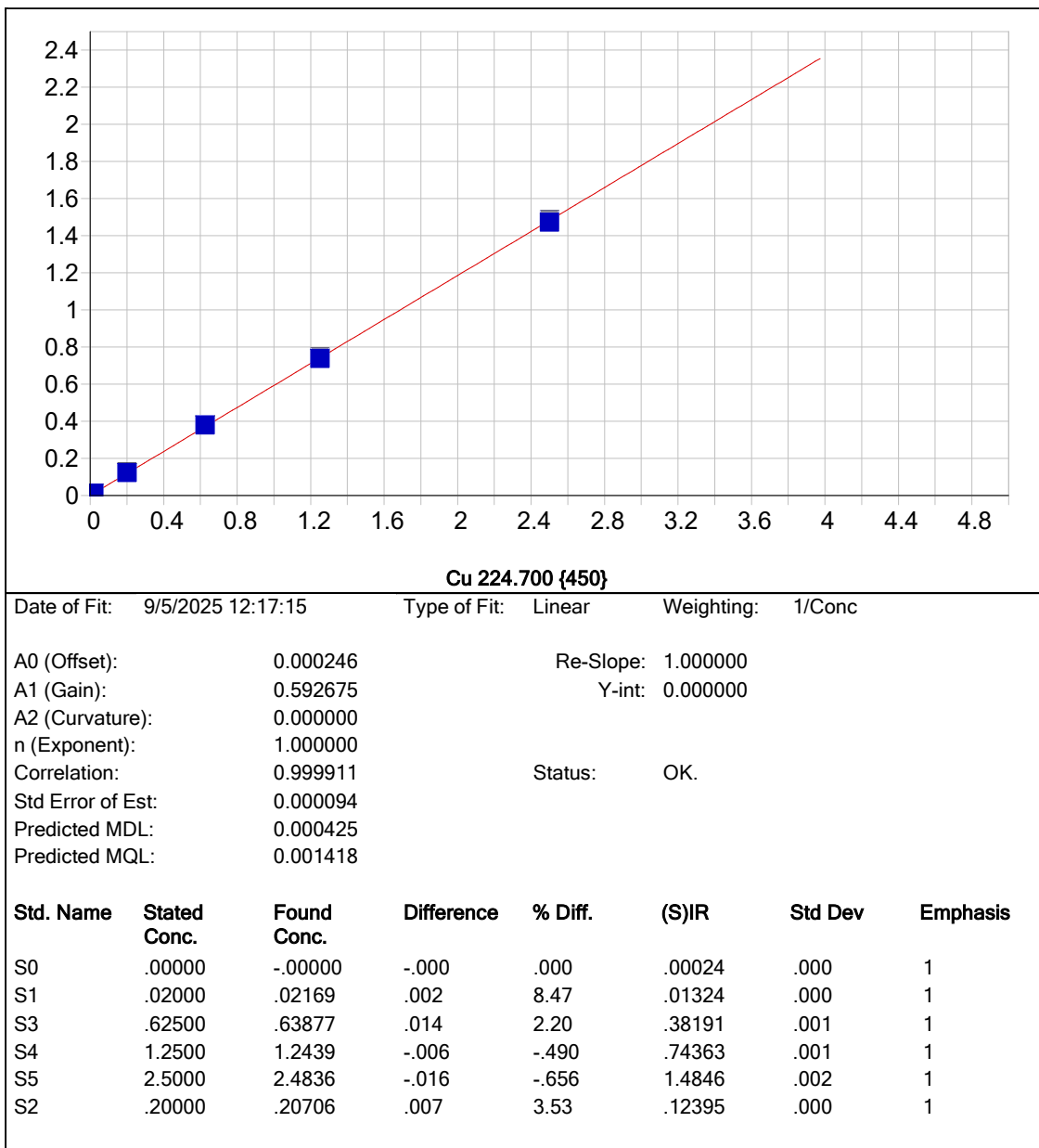


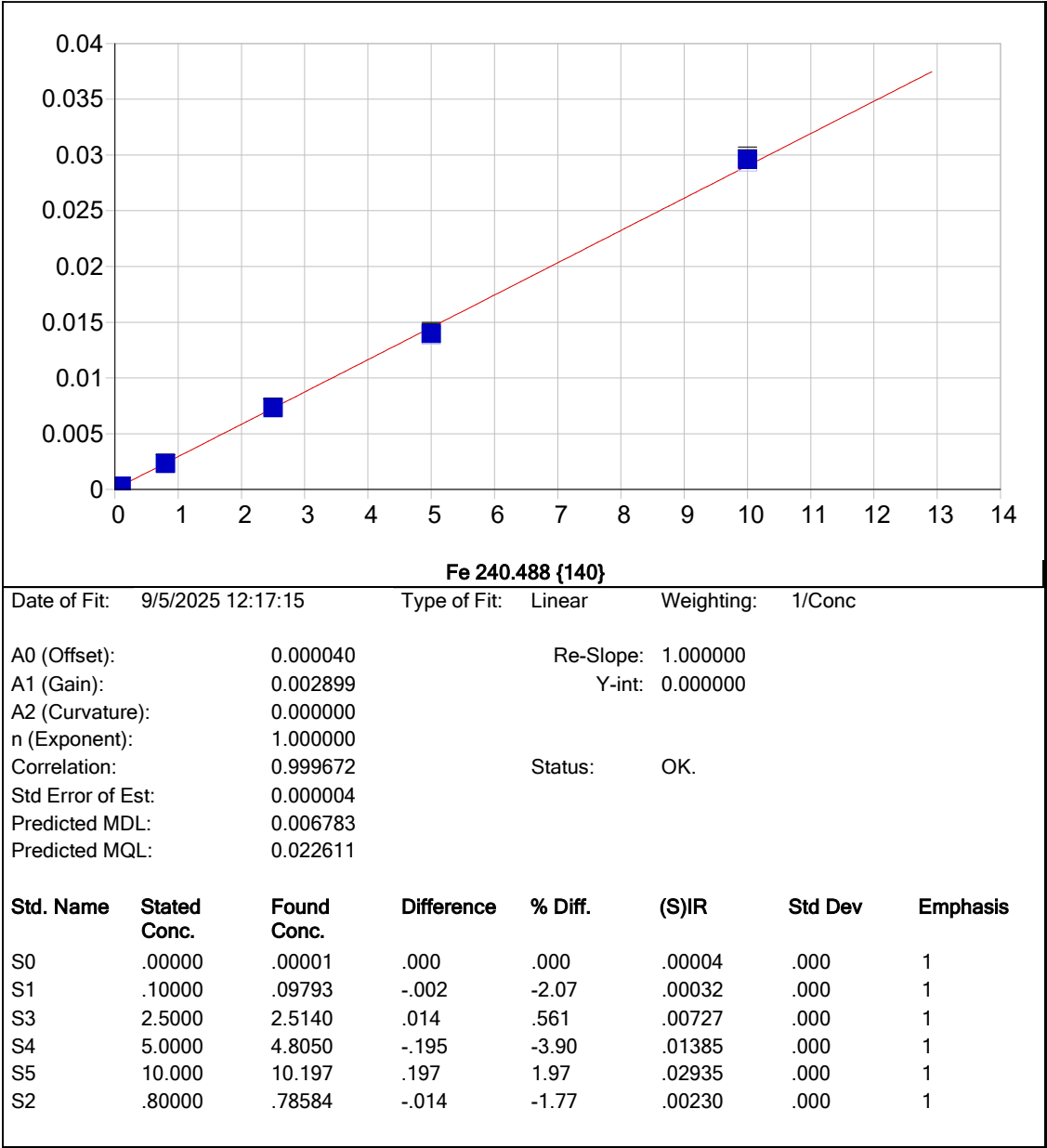


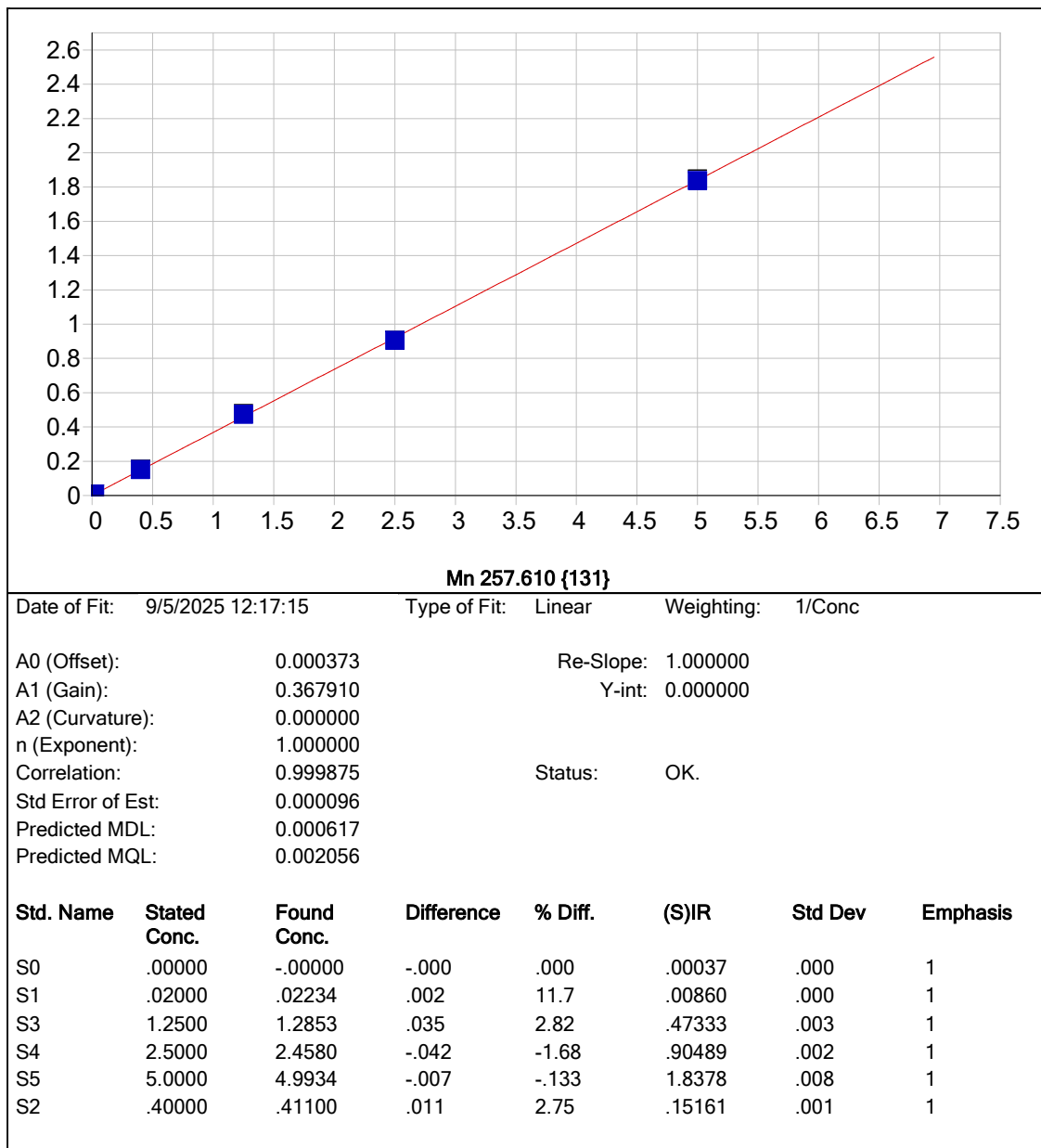




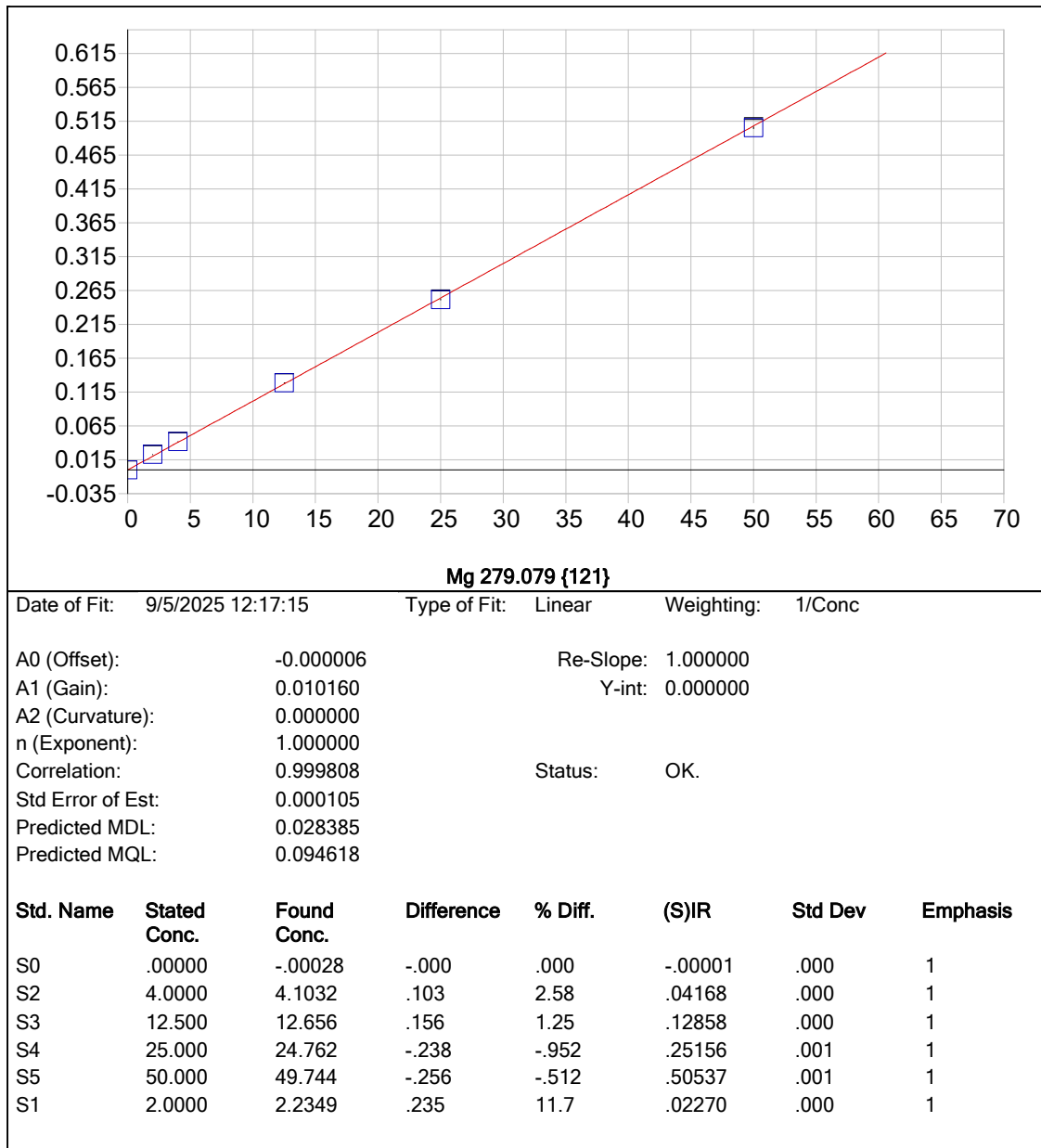


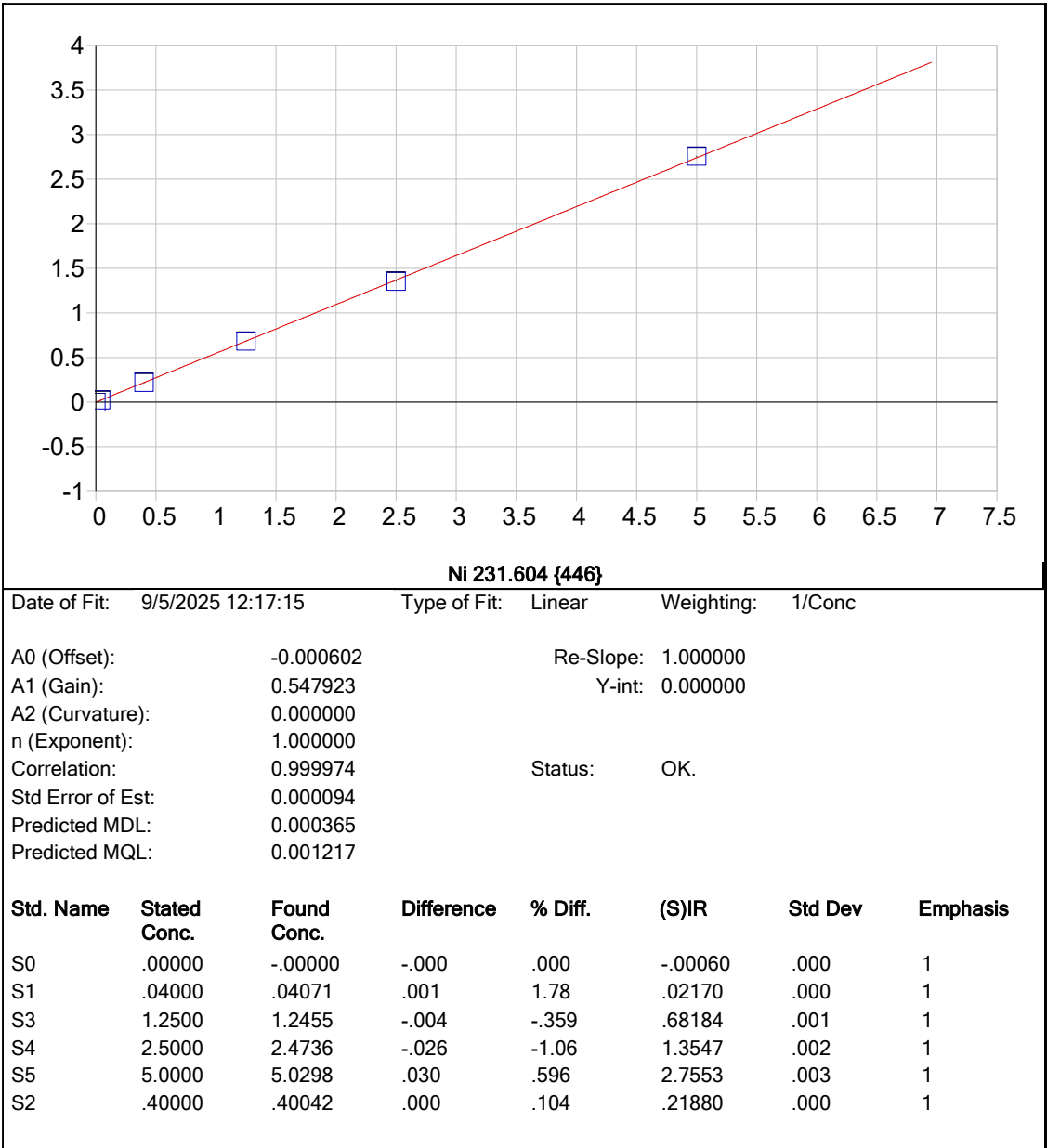


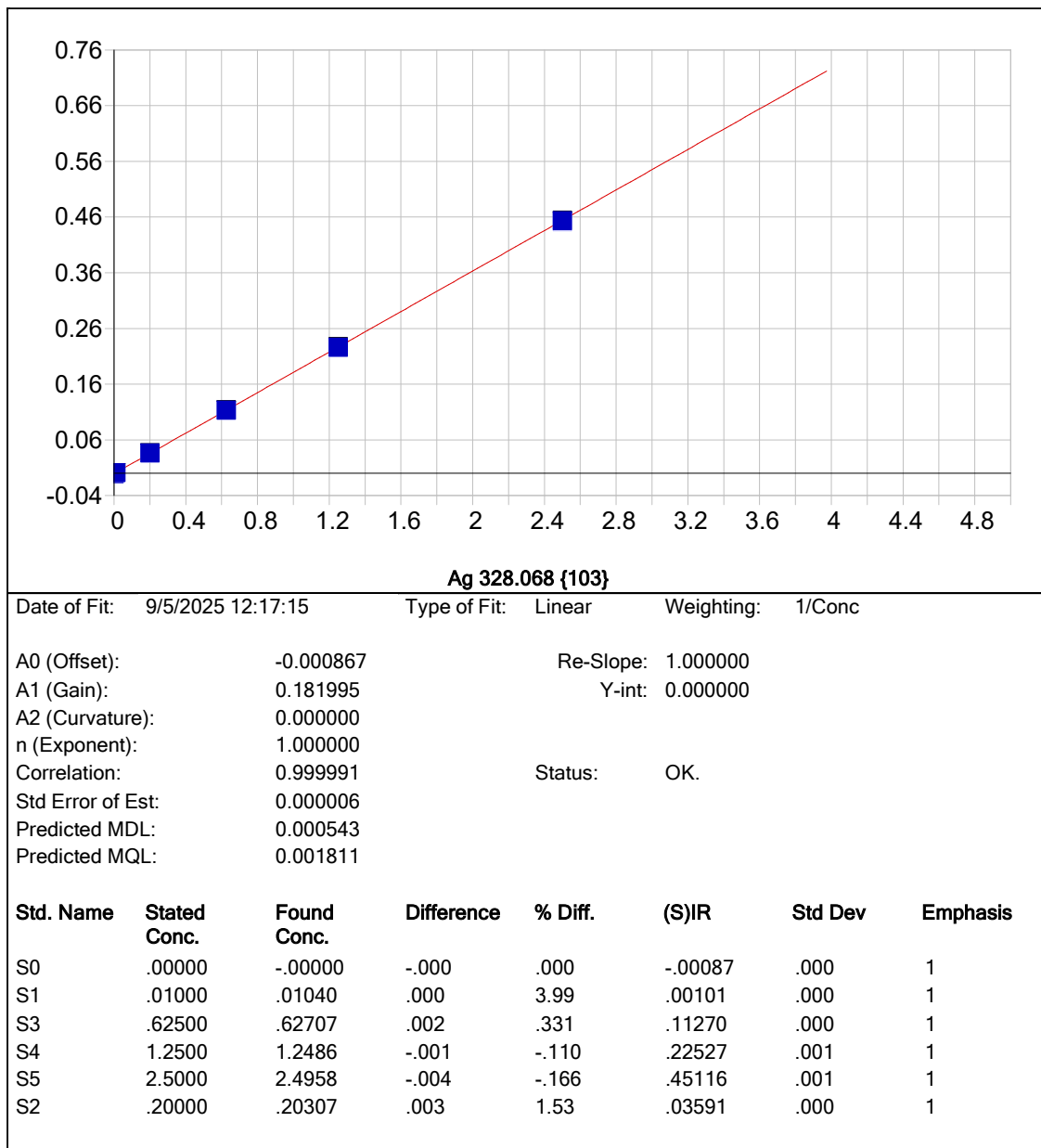




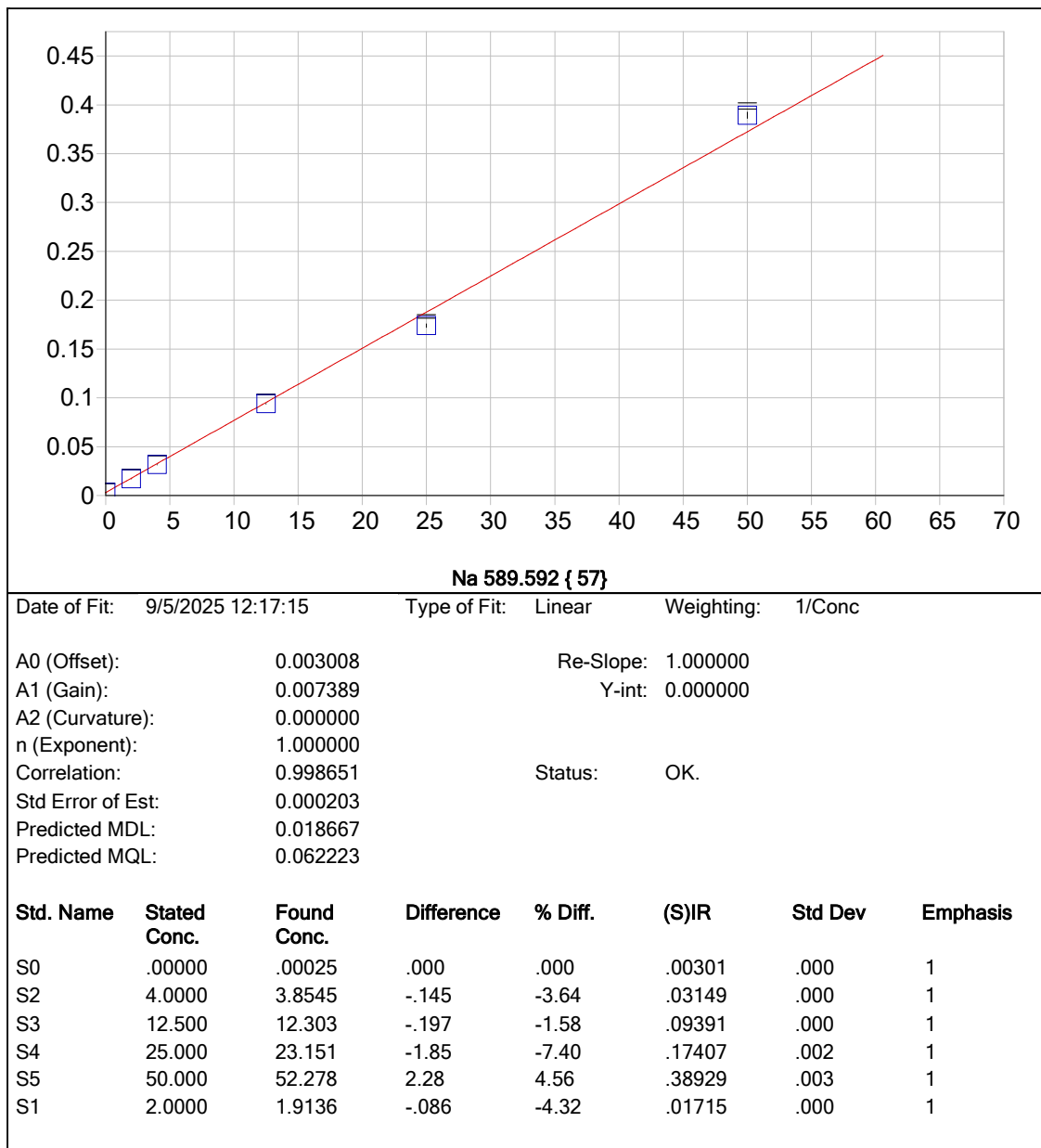
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17



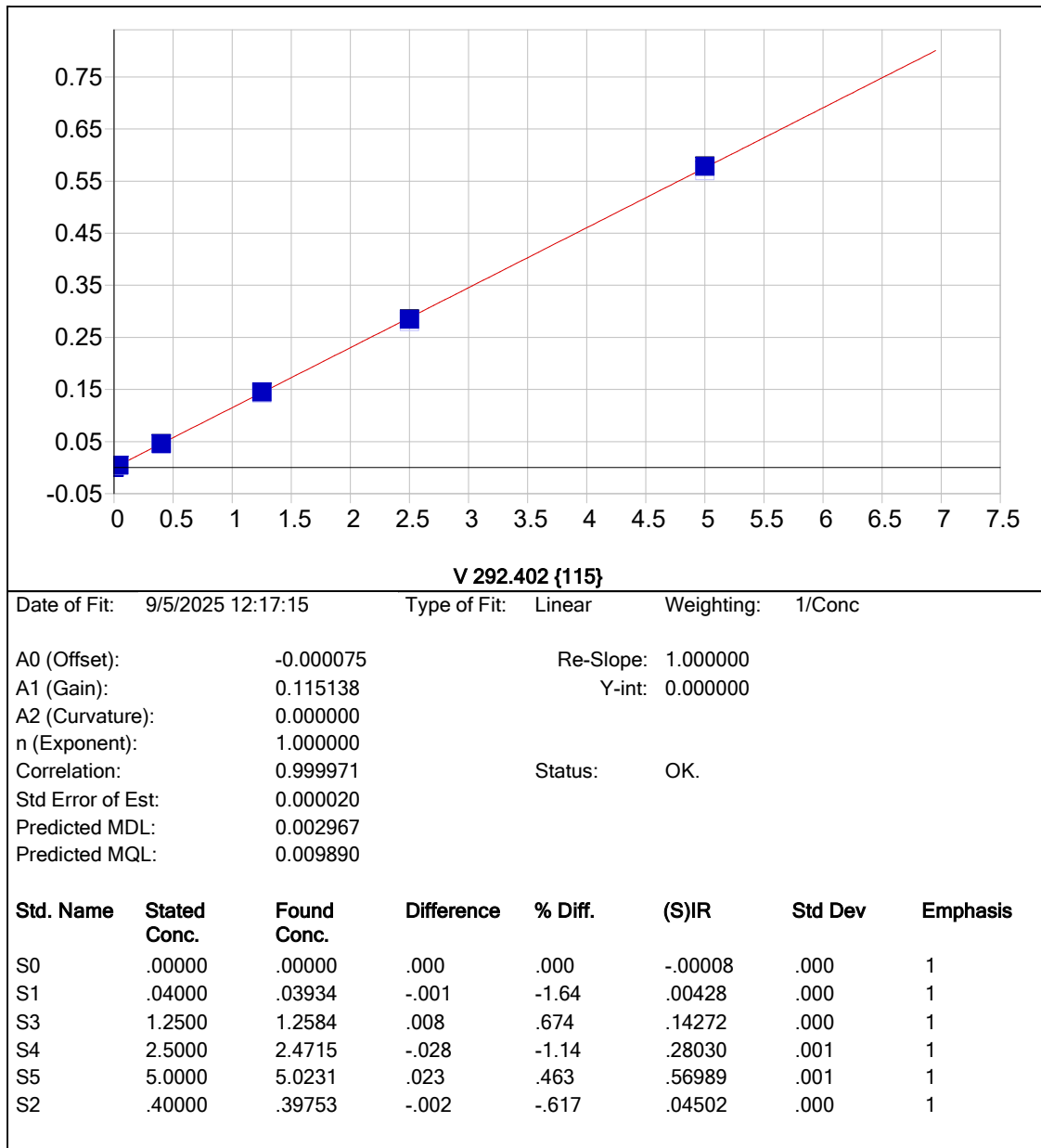




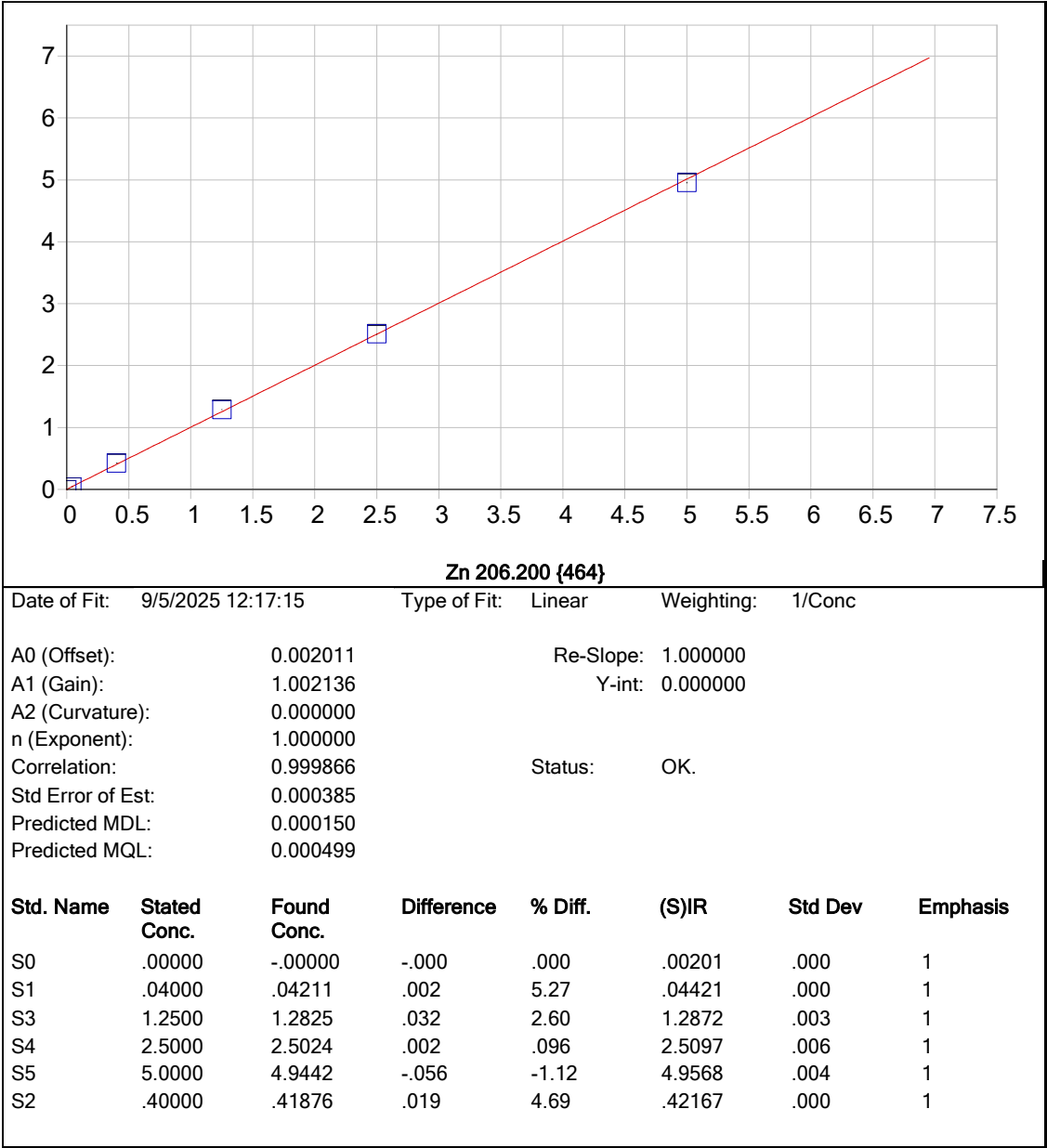
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17

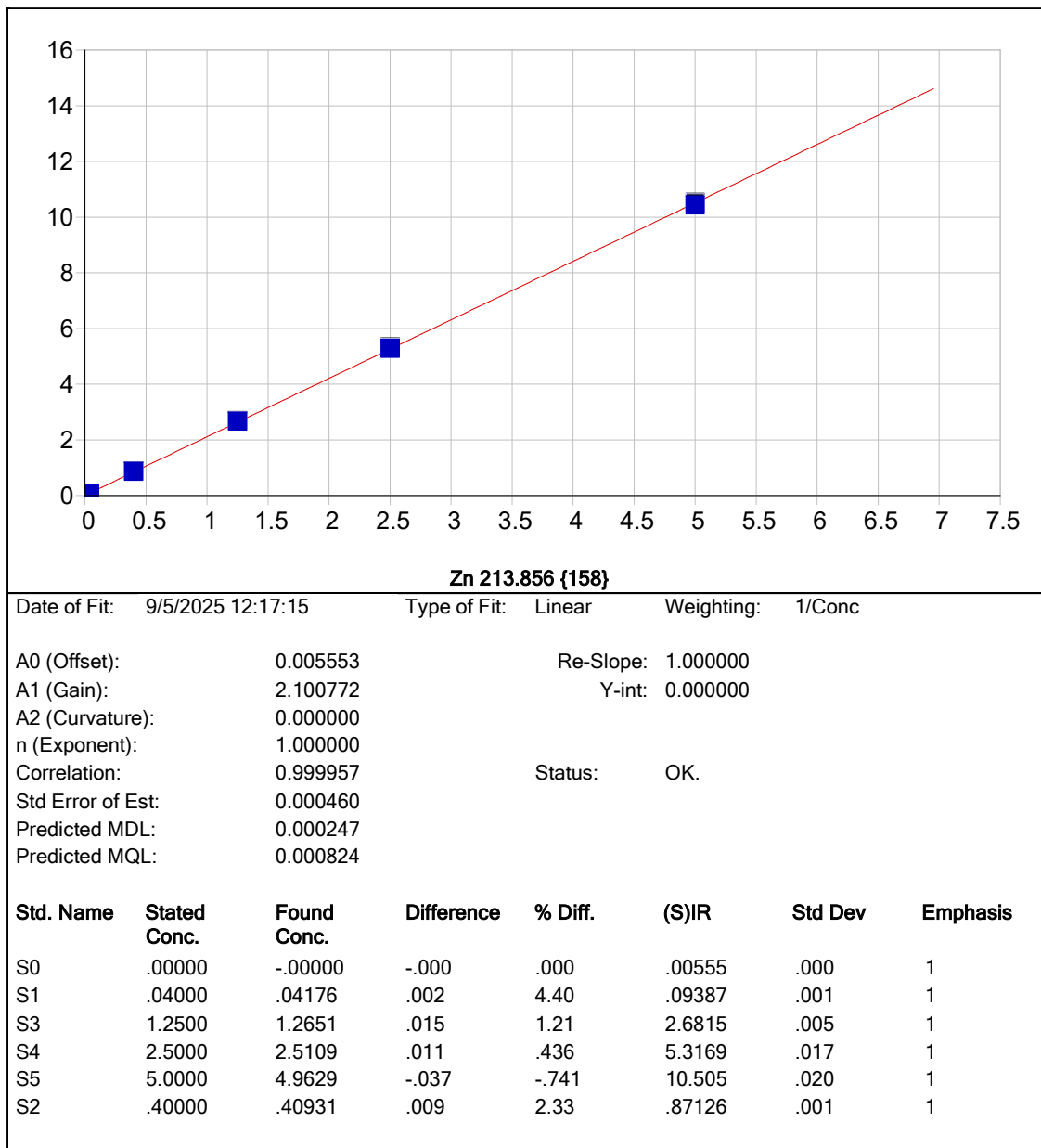


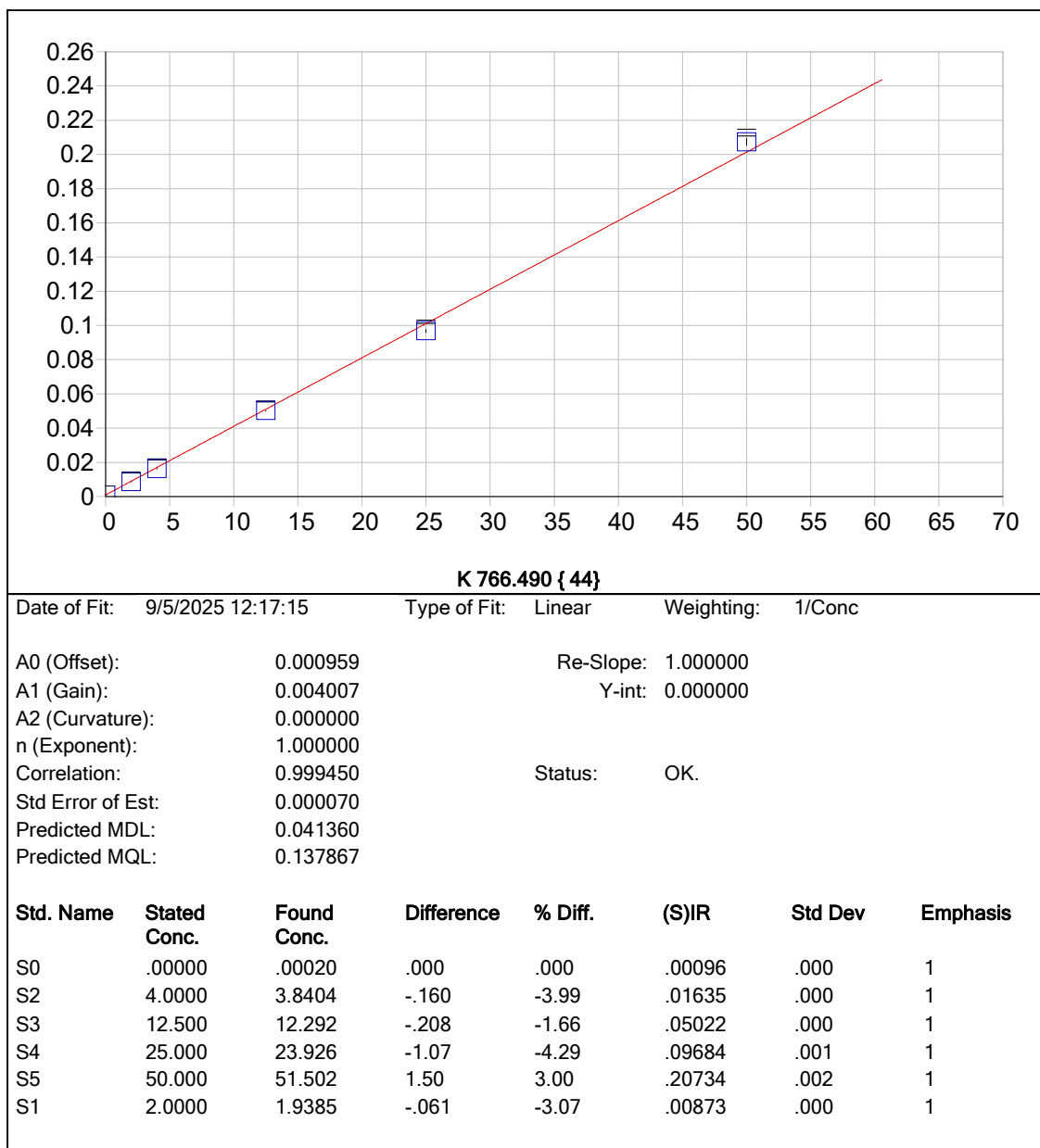
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17

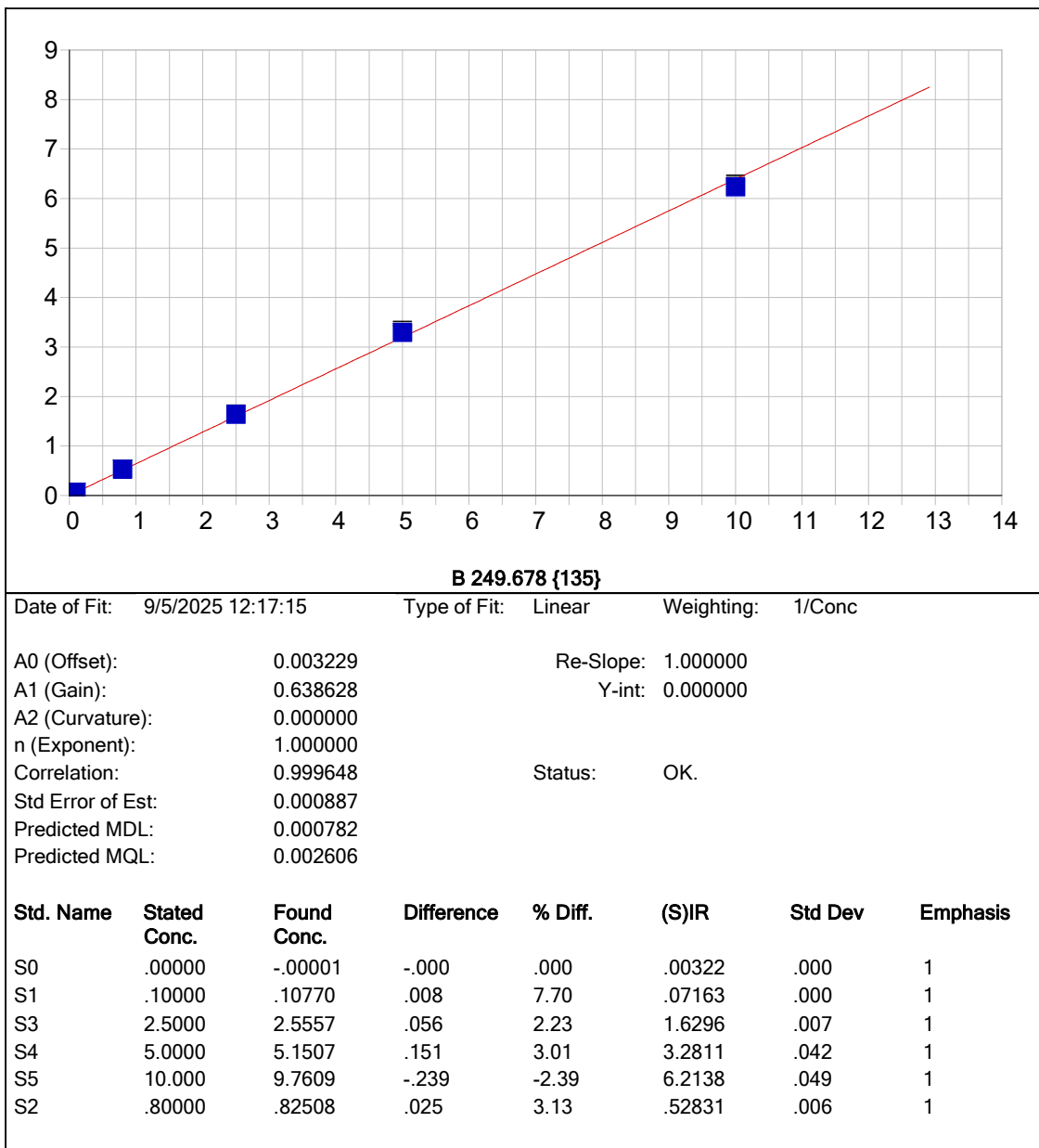


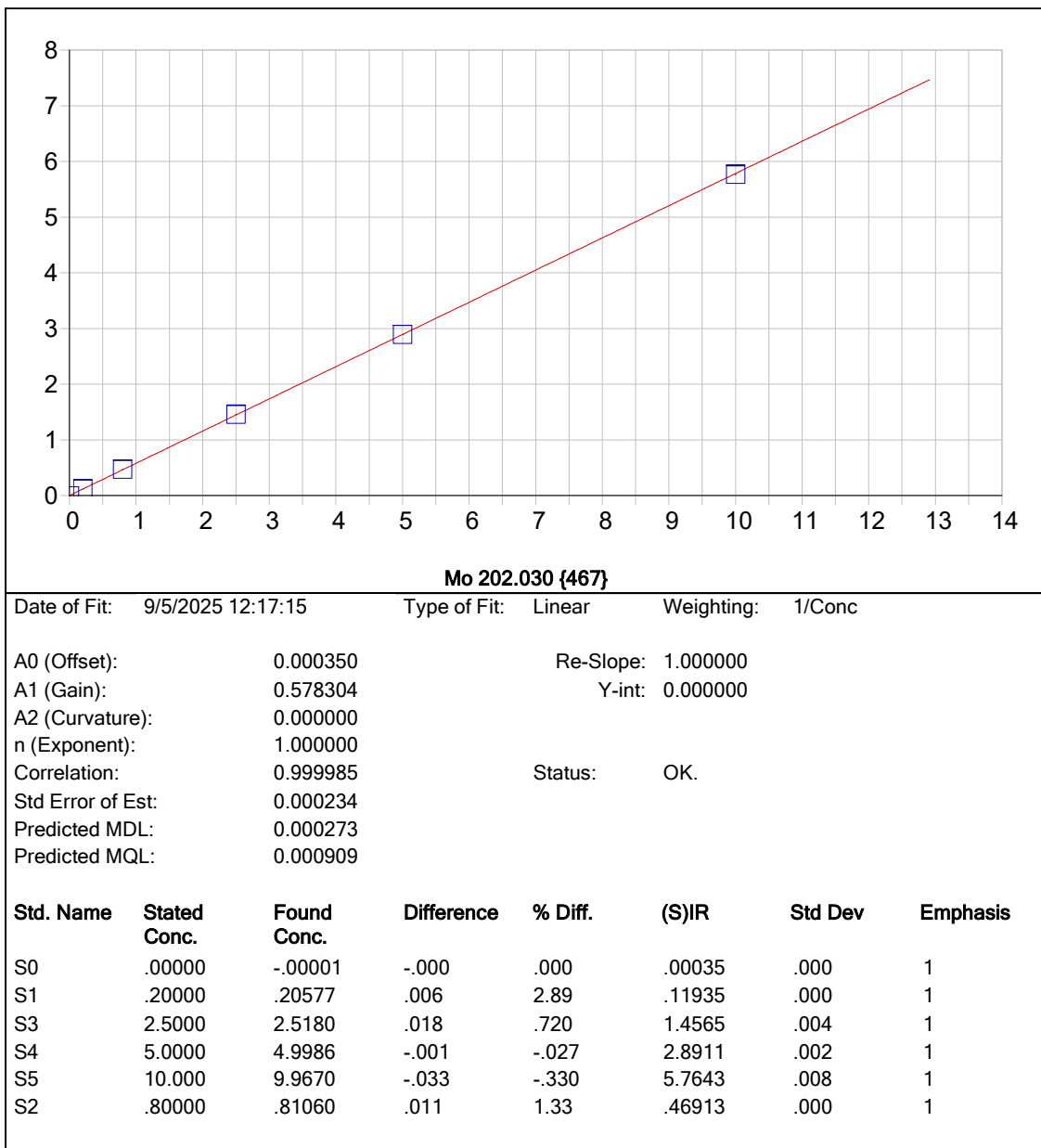
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17

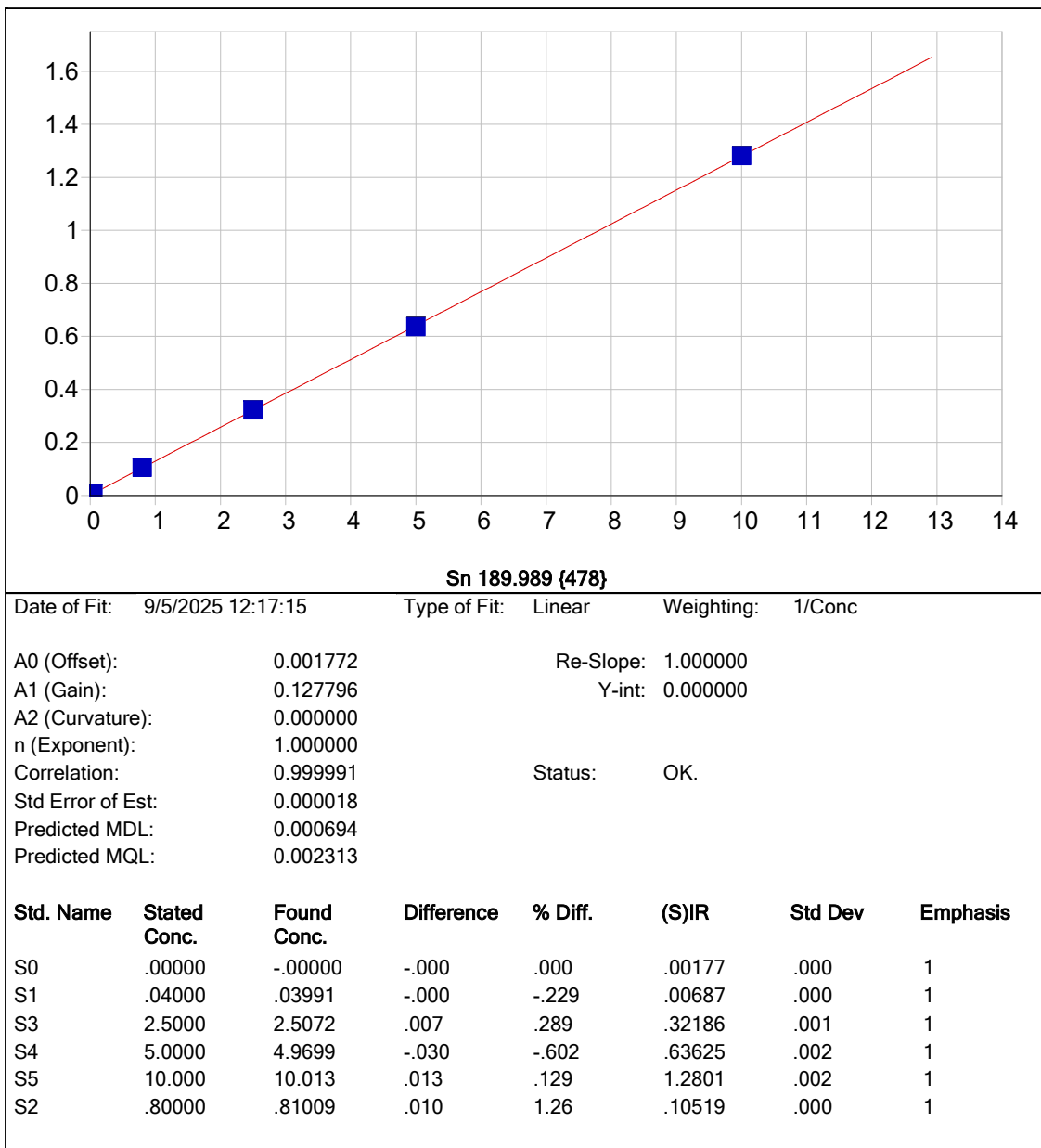


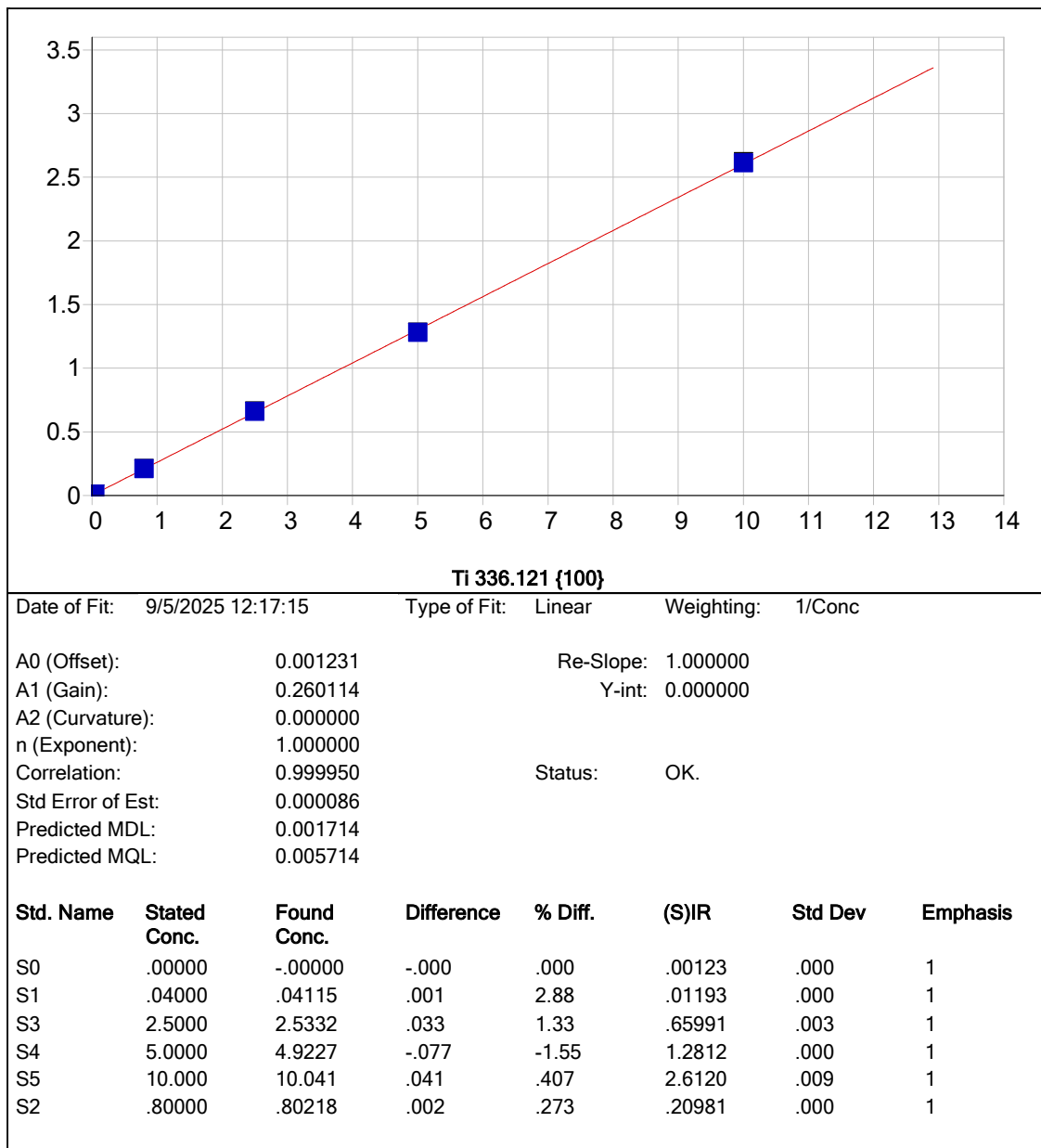


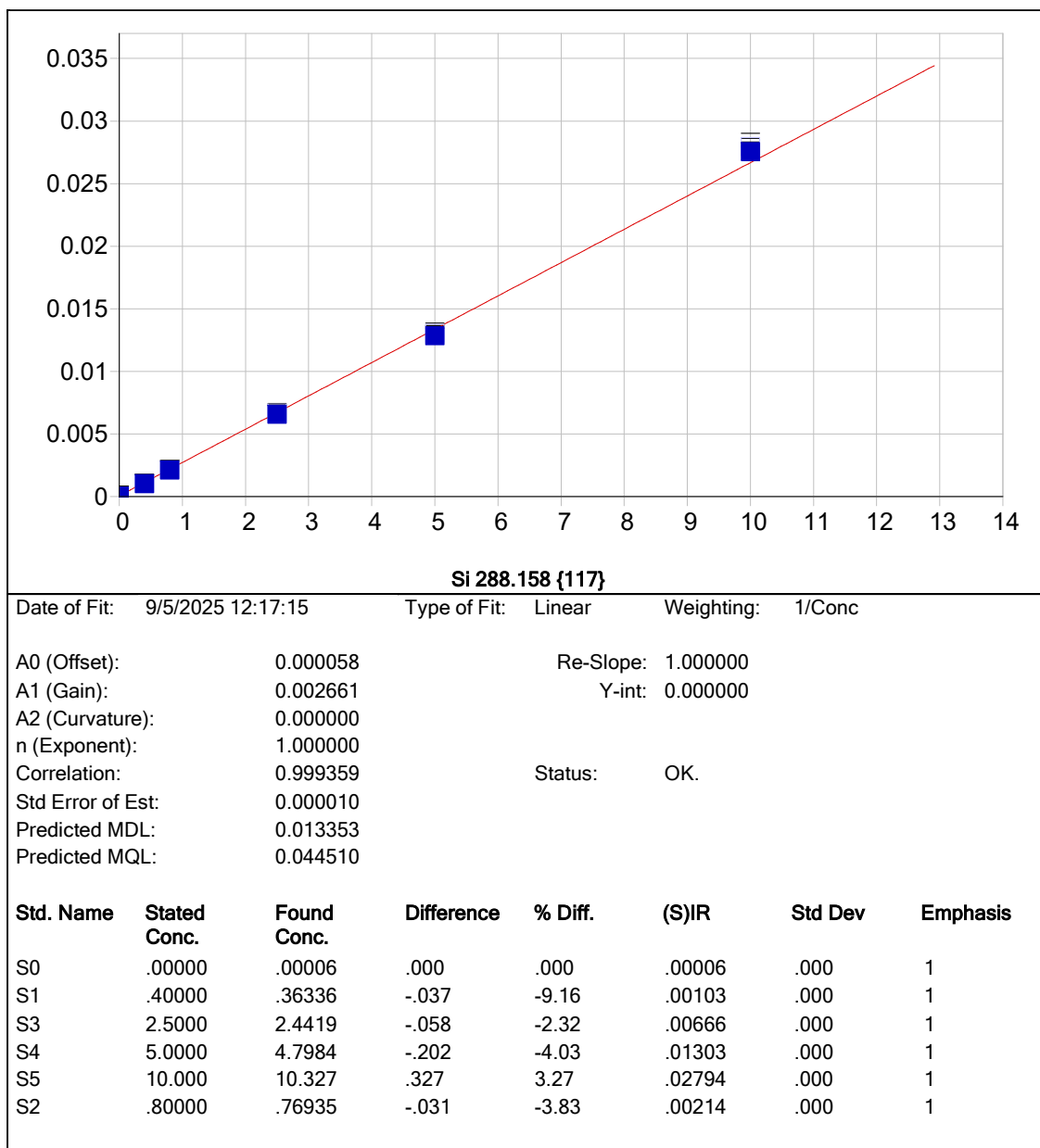


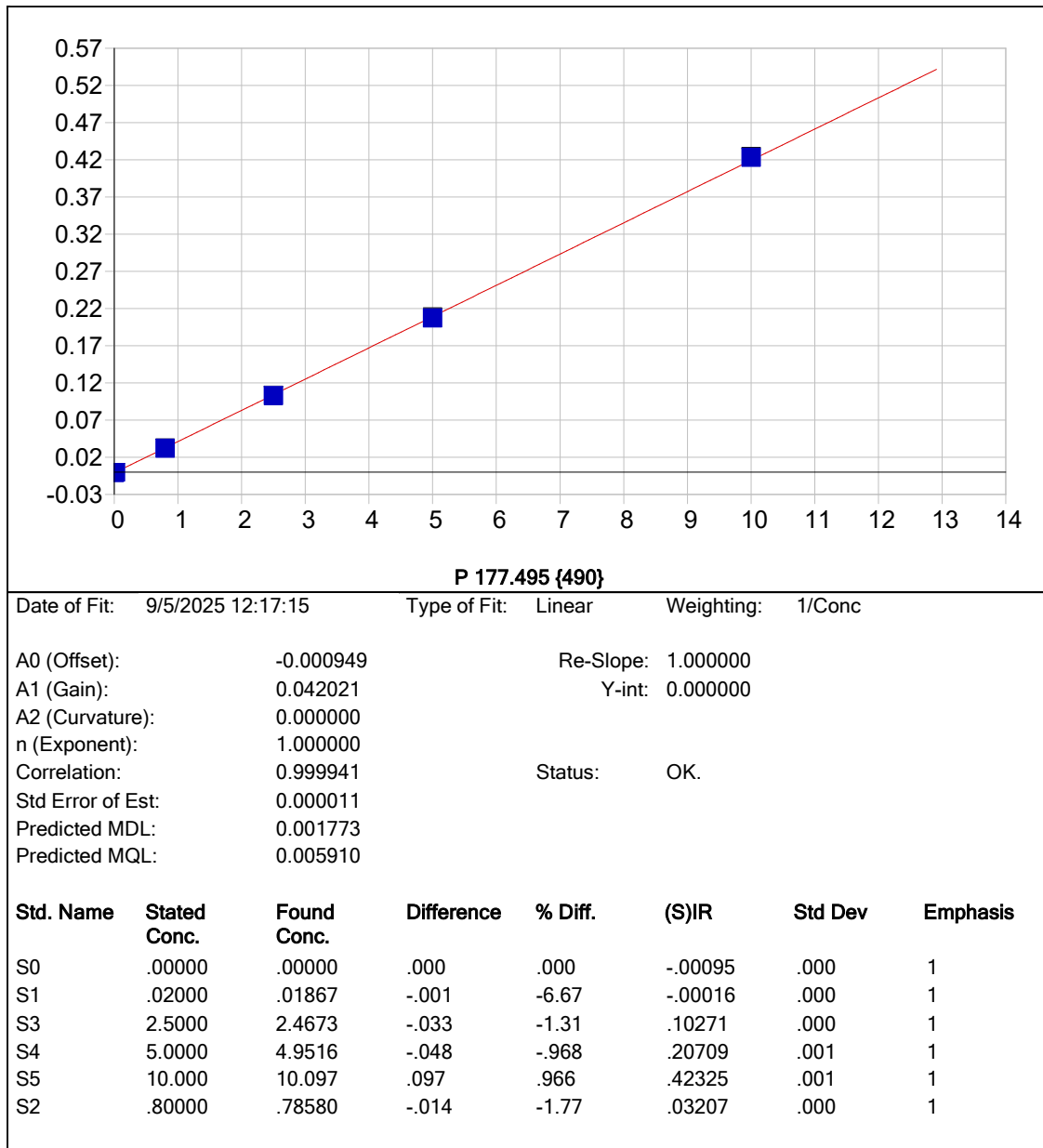


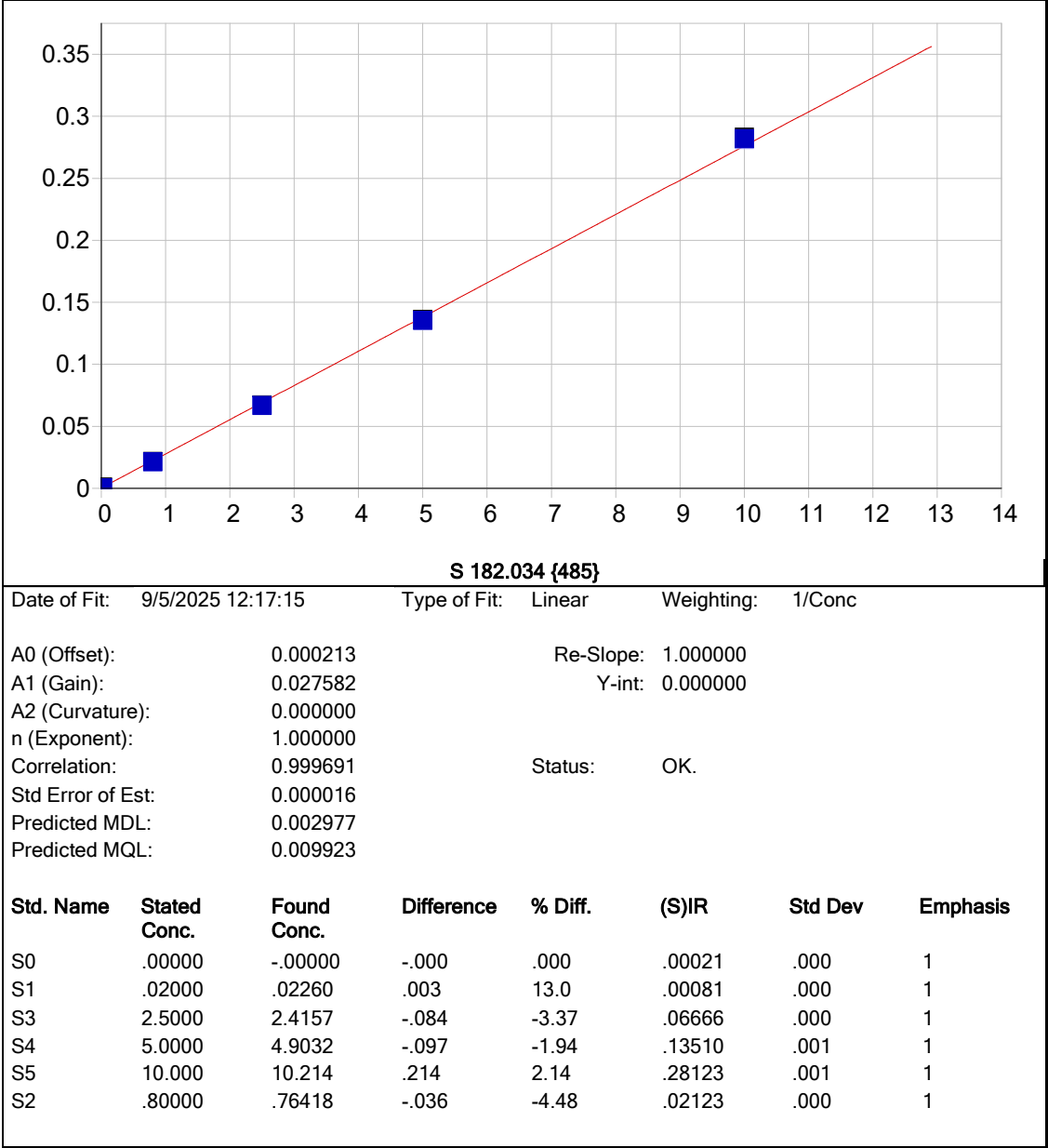


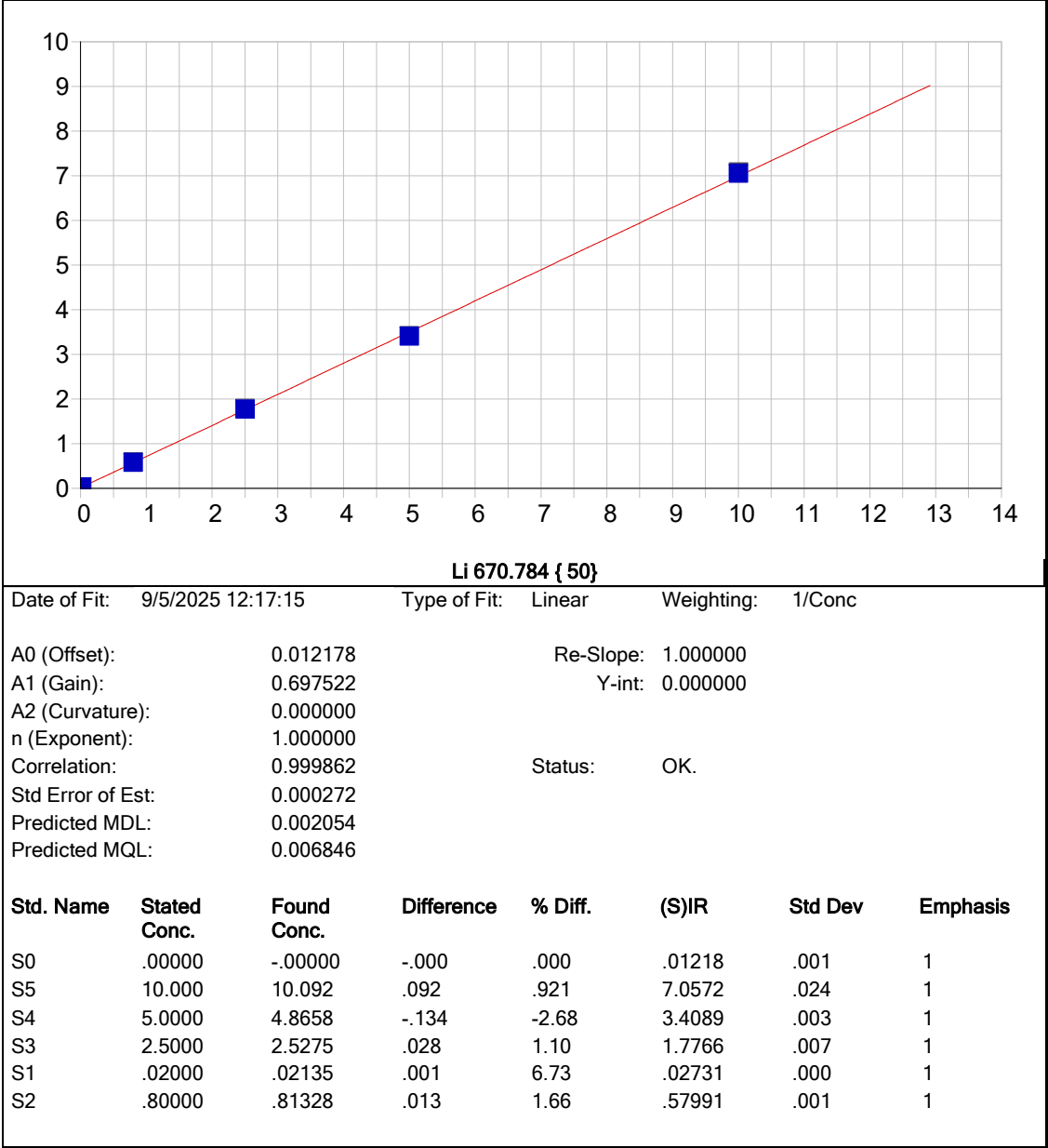


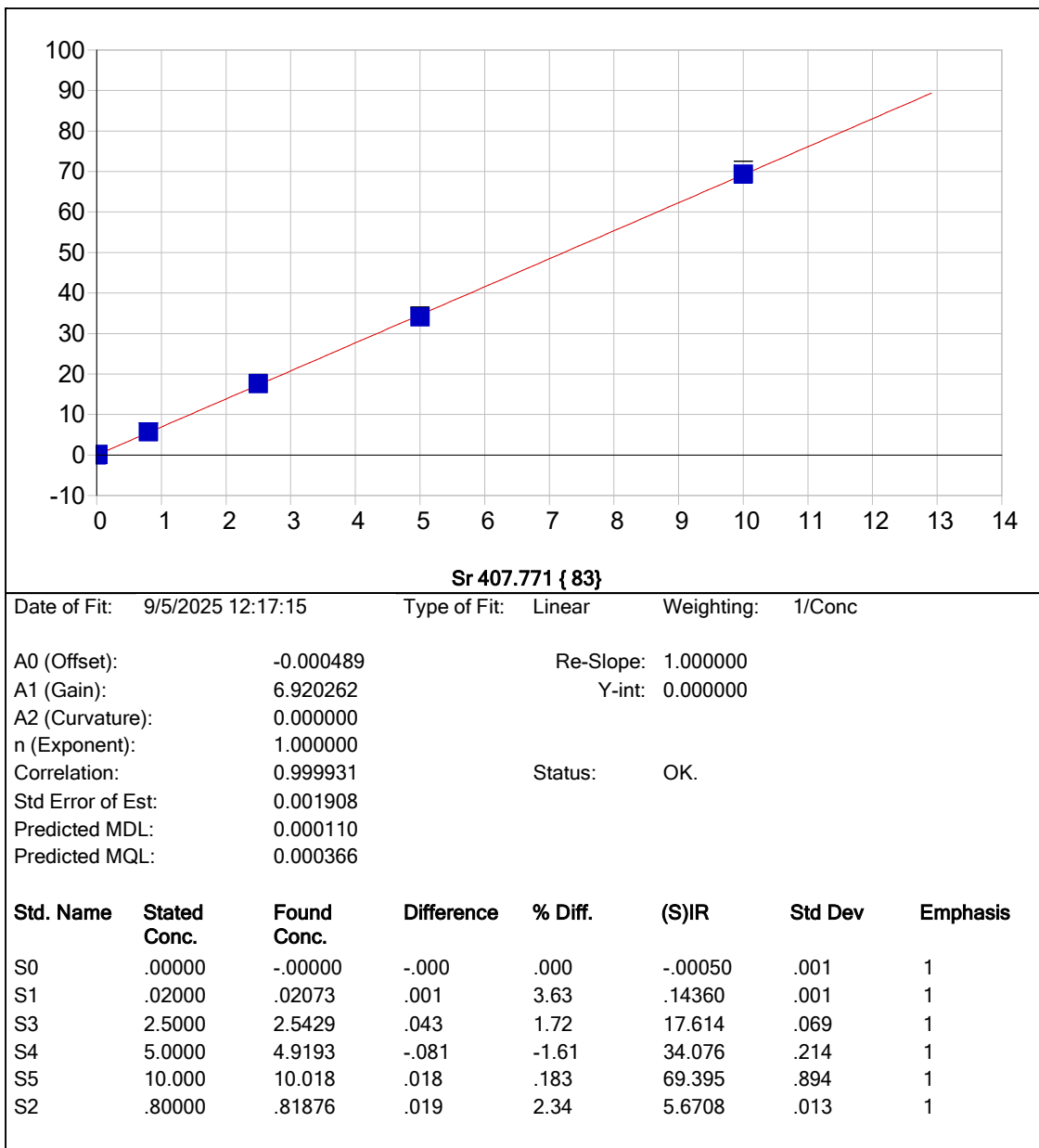


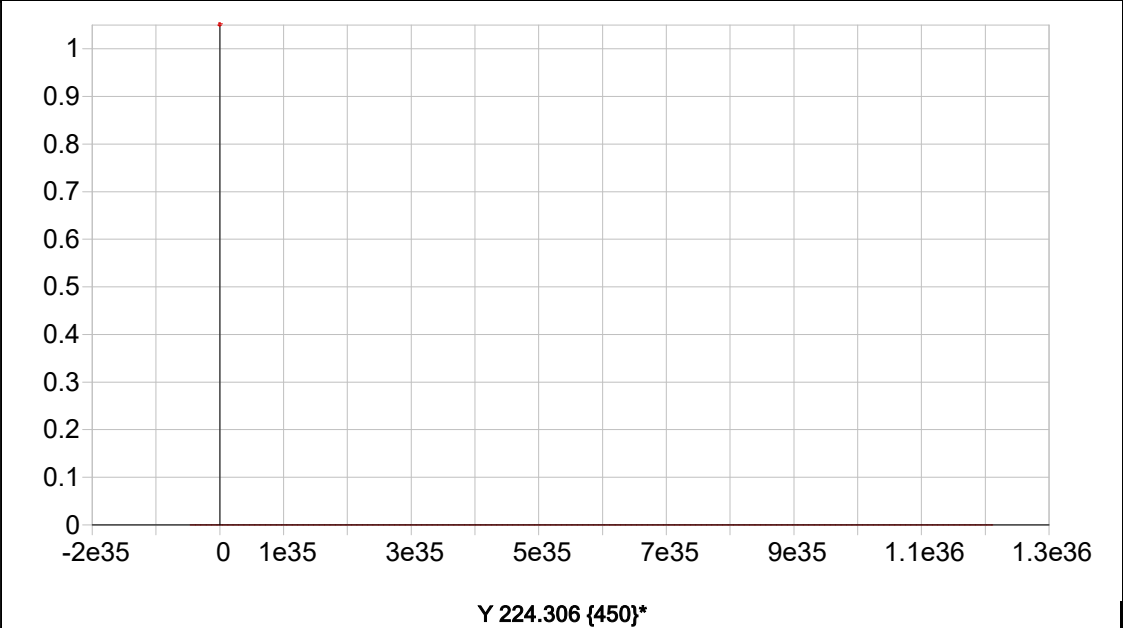




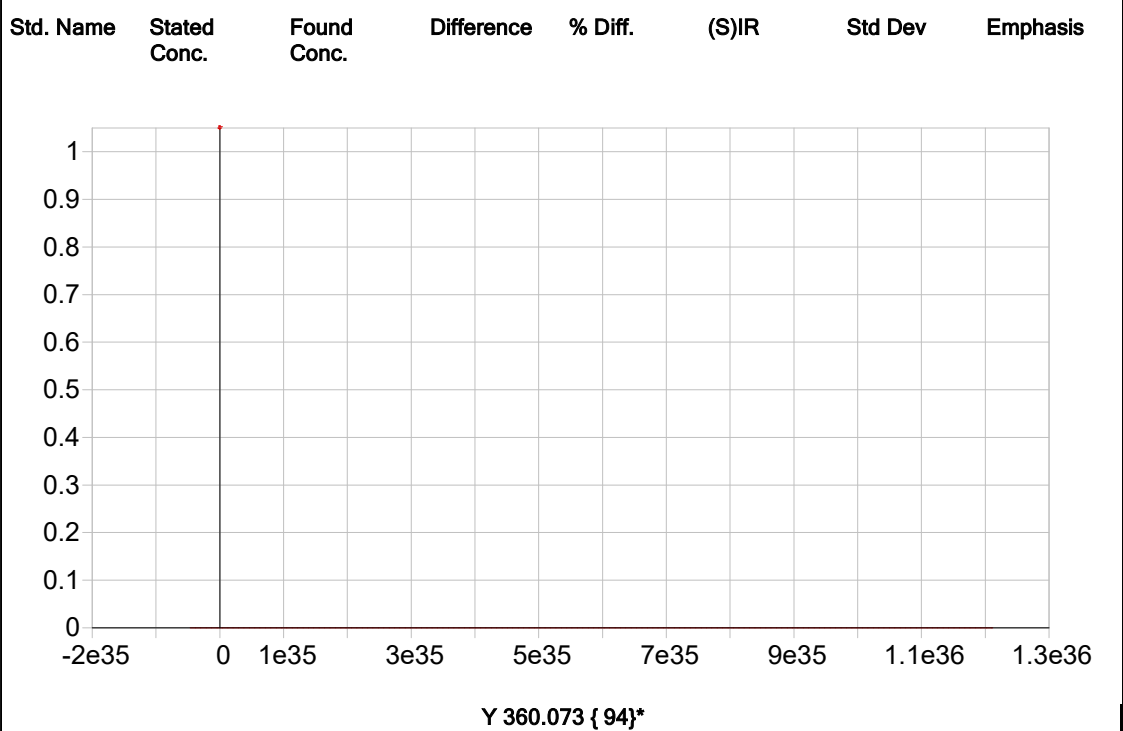




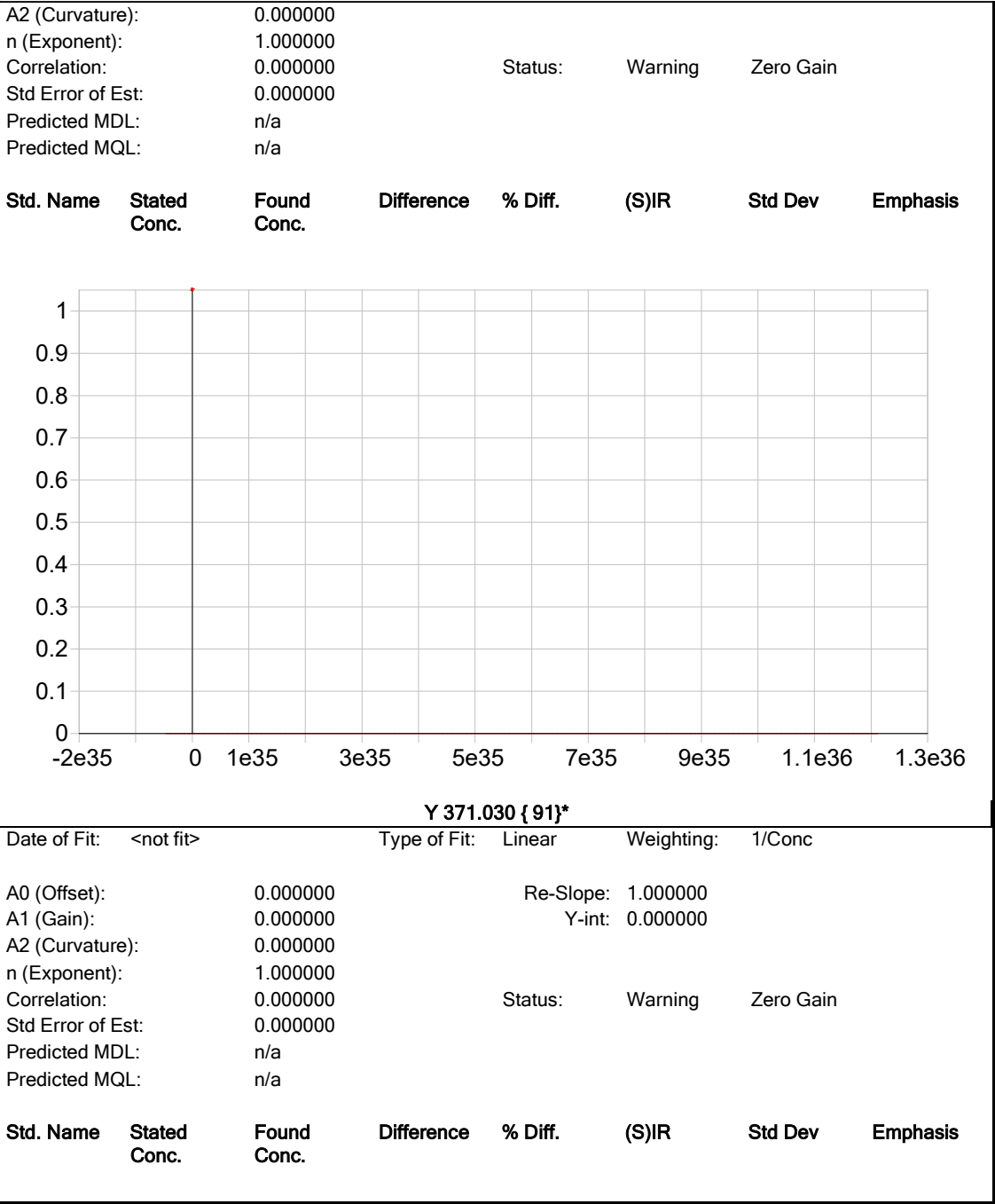


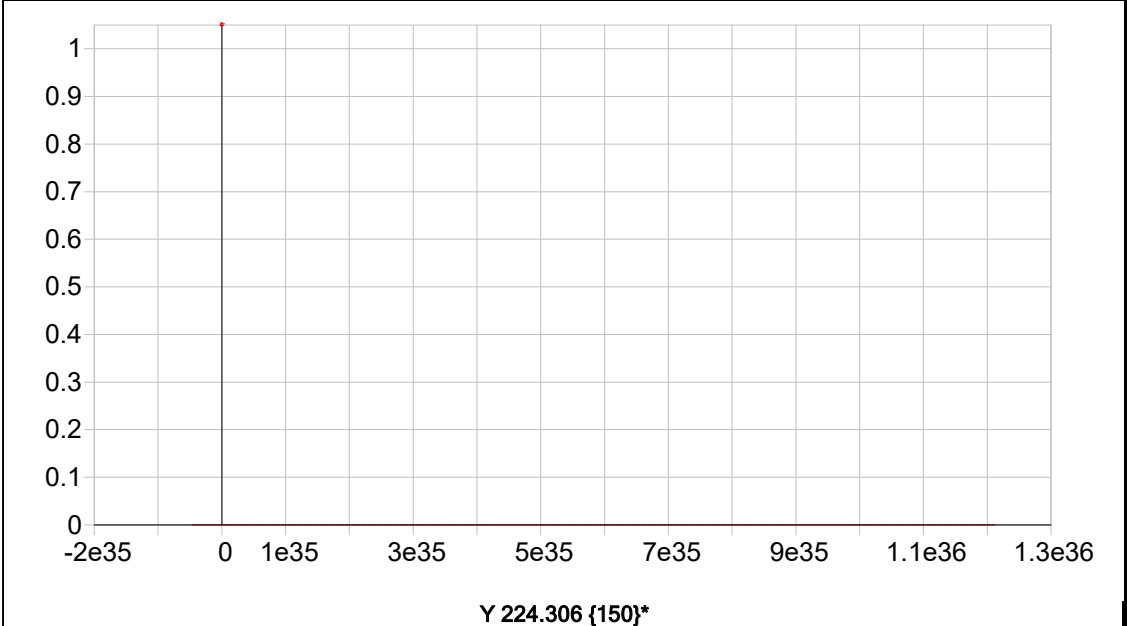


Date of Fit:	9/5/2025 12:17:15	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000	Re-Slope:	1.000000		
A1 (Gain):	0.000000	Y-int:	0.000000		
A2 (Curvature):	0.000000				
n (Exponent):	1.000000				
Correlation:	0.000000	Status:	Warning	Zero Gain	
Std Error of Est:	0.000000				
Predicted MDL:	n/a				
Predicted MQL:	n/a				

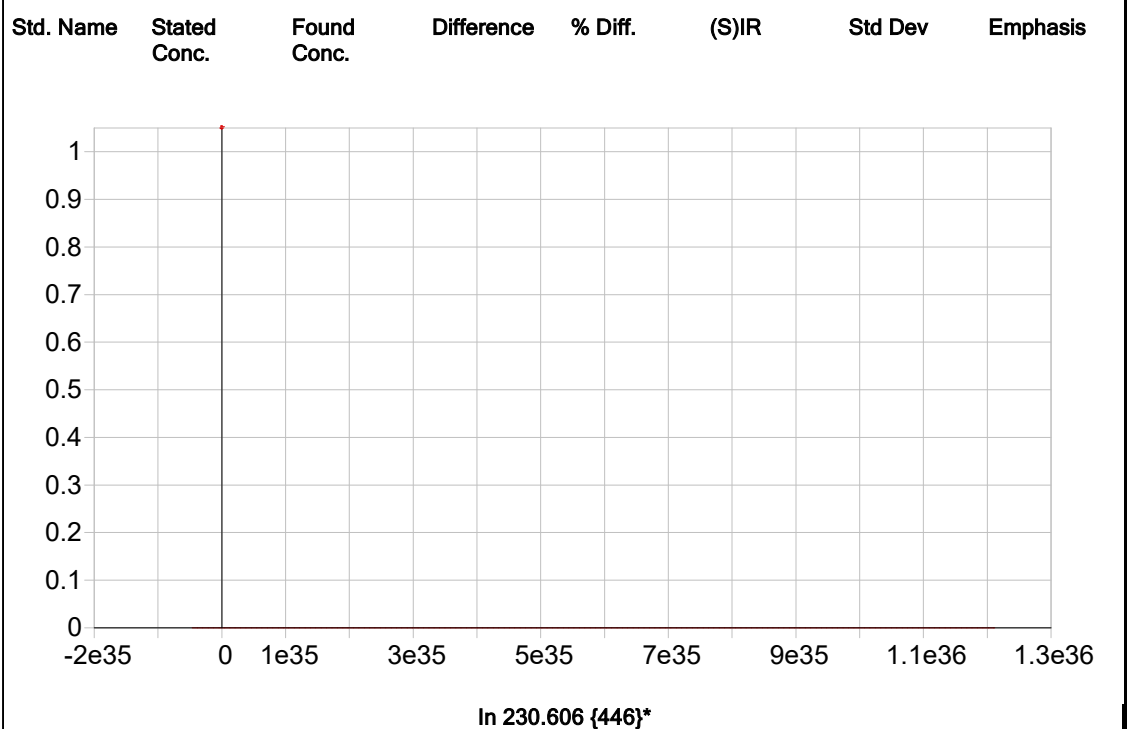


Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000	Re-Slope:	1.000000		
A1 (Gain):	0.000000	Y-int:	0.000000		





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



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

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

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

Sample Name: S0 Acquired: 9/5/2025 11:19:42 Type: Cal
Method: 6010-200.7 NEW(v148) 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	-.00001	.00047	.00028	.00028	.00057	-.00018	.07567	-.00109
Stddev	.00007	.00008	.00009	.00001	.00001	.00057	.00075	.00038
%RSD	1269.7	16.225	33.315	2.4872	2.3185	324.14	.98982	35.163
#1	-.00006	.00039	.00038	.00028	.00055	-.00079	.07502	-.00066
#2	-.00004	.00047	.00019	.00027	.00057	-.00007	.07649	-.00140
#3	.00008	.00054	.00028	.00029	.00057	.00034	.07549	-.00121
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	-.00060	.00433	.00026	.00008	.00024	.00004	.00037	-.00001
Stddev	.00011	.00023	.00001	.00013	.00011	.00001	.00011	.00024
%RSD	18.783	5.4089	5.3372	156.85	43.535	21.390	28.334	2692.1
#1	-.00073	.00461	.00027	-.00007	.00020	.00003	.00042	-.00029
#2	-.00054	.00420	.00026	.00017	.00036	.00004	.00025	.00015
#3	-.00053	.00420	.00024	.00015	.00016	.00005	.00044	.00011
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	-.00060	-.00087	.00301	-.00008	.00555	.00096	.00322	.00035
Stddev	.00023	.00009	.00033	.00022	.00024	.00008	.00040	.00005
%RSD	38.520	10.782	10.878	289.63	4.2734	8.4372	12.303	15.284
#1	-.00087	-.00094	.00263	-.00033	.00528	.00089	.00355	.00039
#2	-.00046	-.00076	.00321	.00004	.00564	.00094	.00333	.00036
#3	-.00048	-.00089	.00318	.00006	.00573	.00105	.00278	.00029
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	.00177	.00123	.00006	-.00095	.00021	.01218	-.00050	
Stddev	.00002	.00047	.00003	.00002	.00005	.00136	.00076	
%RSD	1.0294	38.210	53.444	2.0153	21.498	11.166	153.58	
#1	.00175	.00071	.00008	-.00093	.00019	.01069	-.00086	
#2	.00179	.00137	.00007	-.00096	.00027	.01250	.00038	
#3	.00177	.00161	.00002	-.00096	.00018	.01335	-.00102	

Sample Name: S0 Acquired: 9/5/2025 11:19:42 Type: Cal
Method: 6010-200.7 NEW(v148) 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	6390.4	110250.	10682.	5101.2	7807.4
Stddev	14.6	331.	38.	25.7	14.1
%RSD	.22802	.30024	.35181	.50443	.18044
#1	6387.3	110570.	10719.	5129.2	7793.3
#2	6406.3	109910.	10644.	5095.8	7821.4
#3	6377.6	110260.	10682.	5078.6	7807.4

Sample Name: S1 Acquired: 9/5/2025 11:24:05 Type: Cal
Method: 6010-200.7 NEW(v148) 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	.00090	.00346	.00238	.00117	.00468	.00787	.29167	.04765
Stddev	.00007	.00004	.00006	.00002	.00009	.00061	.00183	.00025
%RSD	7.7123	1.2561	2.4501	1.7457	1.8673	7.7576	.62833	.52274
#1	.00094	.00342	.00245	.00117	.00458	.00795	.29188	.04762
#2	.00082	.00350	.00236	.00114	.00471	.00845	.29339	.04792
#3	.00095	.00344	.00234	.00118	.00474	.00723	.28974	.04742
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	.01595	.11078	.00198	.02851	.01324	.00032	.00860	.02270
Stddev	.00014	.00038	.00002	.00009	.00007	.00000	.00027	.00005
%RSD	.89935	.34209	1.2503	.30987	.51325	1.0852	3.1862	.21100
#1	.01591	.11107	.00201	.02859	.01322	.00032	.00874	.02269
#2	.01610	.11035	.00196	.02842	.01318	.00032	.00828	.02275
#3	.01582	.11091	.00197	.02853	.01331	.00032	.00877	.02266
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	.02170	.00101	.01715	.00428	.09387	.00873	.07163	.11935
Stddev	.00014	.00006	.00011	.00042	.00067	.00021	.00005	.00022
%RSD	.65732	6.0485	.64215	9.7618	.70872	2.4398	.07503	.18276
#1	.02181	.00094	.01710	.00437	.09352	.00848	.07163	.11911
#2	.02154	.00104	.01707	.00465	.09346	.00885	.07169	.11952
#3	.02176	.00105	.01727	.00383	.09464	.00885	.07158	.11943
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	.00687	.01193	.00103	-.00016	.00081	.02731	.14360	
Stddev	.00005	.00031	.00001	.00004	.00001	.00016	.00137	
%RSD	.76114	2.6127	1.1438	26.699	1.7766	.57548	.95166	
#1	.00681	.01187	.00102	-.00021	.00080	.02749	.14515	
#2	.00692	.01165	.00104	-.00016	.00081	.02718	.14308	
#3	.00687	.01226	.00102	-.00012	.00083	.02727	.14257	

Sample Name: S1 Acquired: 9/5/2025 11:24:05 Type: Cal
Method: 6010-200.7 NEW(v148) 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	6232.4	107890.	10458.	4995.6	7506.3
Stddev	14.2	195.	31.	6.9	13.7
%RSD	.22843	.18046	.29996	.13891	.18299
#1	6248.7	107670.	10468.	4995.7	7522.2
#2	6223.0	108030.	10483.	5002.5	7498.8
#3	6225.4	107980.	10423.	4988.6	7498.0

Sample Name: S2 Acquired: 9/5/2025 11:28:23 Type: Cal
Method: 6010-200.7 NEW(v148) 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	.03515	.06301	.14337	.03333	.06547	.11532	3.4923	.31157
Stddev	.00010	.00055	.00003	.00008	.00037	.00030	.0113	.00254
%RSD	.28963	.87930	.02423	.23109	.56019	.26151	.32448	.81615
#1	.03503	.06252	.14340	.03328	.06515	.11503	3.4886	.31132
#2	.03517	.06289	.14333	.03329	.06587	.11563	3.5050	.31424
#3	.03523	.06361	.14337	.03342	.06538	.11531	3.4832	.30917
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	1.0943	.21058	.02911	.37496	.12395	.00230	.15161	.04168
Stddev	.0016	.00015	.00008	.00062	.00036	.00001	.00087	.00021
%RSD	.14503	.06891	.25848	.16596	.29285	.50359	.57599	.51099
#1	1.0929	.21073	.02919	.37443	.12356	.00229	.15108	.04151
#2	1.0939	.21057	.02908	.37481	.12403	.00229	.15262	.04192
#3	1.0960	.21044	.02905	.37565	.12427	.00231	.15114	.04161
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	.21880	.03591	.03149	.04502	.87126	.01635	.52831	.46913
Stddev	.00024	.00015	.00020	.00023	.00090	.00029	.00588	.00034
%RSD	.10839	.42328	.64512	.51952	.10313	1.7928	1.1131	.07202
#1	.21899	.03600	.03133	.04519	.87160	.01615	.52844	.46877
#2	.21853	.03574	.03142	.04513	.87193	.01621	.53412	.46917
#3	.21886	.03601	.03172	.04476	.87024	.01669	.52236	.46944
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	.10519	.20981	.00214	.03207	.02123	.57991	5.6708	
Stddev	.00017	.00046	.00004	.00006	.00022	.00130	.0127	
%RSD	.15985	.22014	1.8202	.20130	1.0260	.22459	.22328	
#1	.10501	.21021	.00211	.03199	.02098	.57903	5.6691	
#2	.10524	.20993	.00212	.03209	.02136	.58140	5.6843	
#3	.10533	.20931	.00218	.03211	.02136	.57929	5.6591	

Sample Name: S2 Acquired: 9/5/2025 11:28:23 Type: Cal
Method: 6010-200.7 NEW(v148) 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	6092.5	106270.	10562.	4915.2	7243.5
Stddev	5.0	160.	71.	29.4	3.3
%RSD	.08192	.15067	.67190	.59797	.04517
#1	6089.2	106340.	10567.	4900.6	7239.7
#2	6090.1	106380.	10489.	4949.0	7245.5
#3	6098.3	106090.	10631.	4896.0	7245.2

Sample Name: S3 Acquired: 9/5/2025 11:32:25 Type: Cal
Method: 6010-200.7 NEW(v148) 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	.10981	.19465	.44540	.10290	.20328	.35902	10.933	.96109
Stddev	.00040	.00443	.00039	.00052	.00027	.00107	.058	.00564
%RSD	.36665	2.2747	.08834	.50306	.13110	.29752	.52705	.58646
#1	.10991	.19393	.44496	.10245	.20297	.36012	10.953	.96374
#2	.10937	.19063	.44552	.10279	.20345	.35896	10.978	.96492
#3	.11015	.19940	.44572	.10346	.20342	.35799	10.868	.95462
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	3.4349	.65622	.08968	1.1700	.38191	.00727	.47333	.12858
Stddev	.0039	.00052	.00028	.0008	.00104	.00004	.00265	.00009
%RSD	.11480	.07895	.31048	.06385	.27138	.53315	.56078	.06817
#1	3.4341	.65668	.08983	1.1699	.38203	.00730	.47484	.12862
#2	3.4314	.65632	.08984	1.1693	.38082	.00728	.47488	.12863
#3	3.4392	.65566	.08935	1.1708	.38289	.00722	.47026	.12847
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	.68184	.11270	.09391	.14272	2.6815	.05022	1.6296	1.4565
Stddev	.00081	.00018	.00030	.00031	.0045	.00026	.0070	.0036
%RSD	.11896	.15698	.31762	.21574	.16919	.52474	.42845	.24973
#1	.68190	.11270	.09374	.14261	2.6867	.05003	1.6279	1.4549
#2	.68100	.11288	.09426	.14307	2.6783	.05010	1.6373	1.4539
#3	.68262	.11253	.09374	.14248	2.6796	.05052	1.6237	1.4607
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	.32186	.65991	.00666	.10271	.06666	1.7766	17.614	
Stddev	.00061	.00261	.00004	.00042	.00033	.0068	.069	
%RSD	.19105	.39501	.54137	.41228	.49029	.38470	.39446	
#1	.32221	.66184	.00668	.10263	.06643	1.7787	17.553	
#2	.32115	.66096	.00668	.10234	.06653	1.7821	17.598	
#3	.32221	.65695	.00662	.10317	.06704	1.7689	17.690	

Sample Name: S3 Acquired: 9/5/2025 11:32:25 Type: Cal
Method: 6010-200.7 NEW(v148) 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	6144.9	106090.	10717.	4874.3	7216.0
Stddev	8.2	212.	61.	19.7	11.0
%RSD	.13277	.19949	.56787	.40400	.15211
#1	6139.9	105920.	10678.	4857.7	7207.4
#2	6154.3	106040.	10686.	4869.2	7228.3
#3	6140.6	106330.	10787.	4896.1	7212.2

Sample Name: S4 Acquired: 9/5/2025 11:36:29 Type: Cal
Method: 6010-200.7 NEW(v148) 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	.21888	.39945	.88508	.20382	.40392	.70762	20.642	1.9409
Stddev	.00021	.00638	.00091	.00057	.00036	.00232	.237	.0237
%RSD	.09722	1.5972	.10288	.28168	.08862	.32762	1.1498	1.2213
#1	.21876	.39382	.88478	.20319	.40367	.70819	20.869	1.9305
#2	.21875	.39817	.88436	.20396	.40433	.70507	20.395	1.9241
#3	.21913	.40638	.88610	.20431	.40376	.70960	20.662	1.9680
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	6.8551	1.2696	.17802	2.3383	.74363	.01385	.90489	.25156
Stddev	.0108	.0015	.00085	.0027	.00144	.00018	.00162	.00056
%RSD	.15754	.11688	.47794	.11447	.19412	1.3048	.17895	.22450
#1	6.8484	1.2680	.17713	2.3365	.74321	.01376	.90303	.25127
#2	6.8494	1.2697	.17883	2.3370	.74245	.01405	.90567	.25121
#3	6.8676	1.2710	.17810	2.3414	.74524	.01372	.90598	.25222
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	1.3547	.22527	.17407	.28030	5.3169	.09684	3.2811	2.8911
Stddev	.0025	.00062	.00181	.00100	.0173	.00090	.0421	.0021
%RSD	.18146	.27502	1.0385	.35587	.32561	.92916	1.2828	.07087
#1	1.3523	.22462	.17345	.27951	5.3010	.09653	3.2606	2.8900
#2	1.3547	.22533	.17611	.27996	5.3144	.09785	3.2531	2.8898
#3	1.3572	.22586	.17265	.28142	5.3353	.09614	3.3295	2.8934
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	.63625	1.2812	.01303	.20709	.13510	3.4089	34.076	
Stddev	.00177	.0002	.00011	.00118	.00064	.0032	.214	
%RSD	.27822	.01270	.81527	.56837	.47362	.09399	.62779	
#1	.63492	1.2812	.01299	.20587	.13461	3.4053	33.990	
#2	.63557	1.2811	.01315	.20718	.13486	3.4101	33.918	
#3	.63826	1.2814	.01295	.20822	.13582	3.4114	34.319	

Sample Name: S4 Acquired: 9/5/2025 11:36:29 Type: Cal
Method: 6010-200.7 NEW(v148) 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	6168.4	104620.	10514.	4808.6	7132.3
Stddev	6.5	439.	62.	18.5	9.9
%RSD	.10511	.41933	.58609	.38506	.13849
#1	6169.2	104780.	10521.	4806.0	7136.1
#2	6174.4	104120.	10572.	4791.5	7139.7
#3	6161.5	104950.	10449.	4828.2	7121.1

Sample Name: S5 Acquired: 9/5/2025 11:40:40 Type: Cal
Method: 6010-200.7 NEW(v148) Mode: IR Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Ti1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.44287	.75749	1.7999	.41117	.81788	1.4173	43.128	3.6283
Stddev	.00073	.01224	.0009	.00092	.00151	.0024	.528	.0249
%RSD	.16563	1.6157	.04969	.22341	.18516	.16872	1.2252	.68520
#1	.44280	.76914	1.7989	.41193	.81833	1.4190	43.172	3.6570
#2	.44217	.75859	1.8001	.41015	.81619	1.4183	43.634	3.6123
#3	.44363	.74474	1.8006	.41143	.81912	1.4145	42.580	3.6157
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	13.871	2.5513	.34653	4.7711	1.4846	.02935	1.8378	.50537
Stddev	.005	.0062	.00098	.0040	.0021	.00030	.0084	.00144
%RSD	.03529	.24422	.28238	.08491	.14243	1.0258	.45970	.28518
#1	13.870	2.5496	.34573	4.7692	1.4847	.02908	1.8391	.50424
#2	13.867	2.5582	.34762	4.7683	1.4824	.02968	1.8456	.50699
#3	13.876	2.5461	.34624	4.7757	1.4866	.02930	1.8288	.50488
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	2.7553	.45116	.38929	.56989	10.505	.20734	6.2138	5.7643
Stddev	.0028	.00115	.00320	.00054	.020	.00196	.0490	.0077
%RSD	.10197	.25416	.82280	.09544	.19481	.94694	.78909	.13386
#1	2.7543	.45217	.38770	.57021	10.505	.20547	6.2704	5.7690
#2	2.7532	.45139	.39298	.57019	10.525	.20939	6.1849	5.7554
#3	2.7585	.44991	.38719	.56926	10.484	.20717	6.1860	5.7685
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	1.2801	2.6120	.02794	.42325	.28123	7.0572	69.395	
Stddev	.0019	.0086	.00033	.00067	.00108	.0239	.894	
%RSD	.14849	.32944	1.1975	.15763	.38254	.33902	1.2889	
#1	1.2822	2.6110	.02756	.42294	.28221	7.0602	70.182	
#2	1.2786	2.6211	.02819	.42280	.28008	7.0795	68.422	
#3	1.2794	2.6040	.02807	.42402	.28141	7.0319	69.580	

Sample Name: S5 Acquired: 9/5/2025 11:40:40 Type: Cal
Method: 6010-200.7 NEW(v148) 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	6023.8	105190.	11098.	4758.8	6819.1
Stddev	2.5	477.	77.	30.1	6.1
%RSD	.04099	.45358	.68954	.63246	.08878
#1	6026.4	105270.	11023.	4763.3	6824.0
#2	6021.5	104680.	11096.	4726.7	6812.3
#3	6023.6	105620.	11176.	4786.4	6820.9

Sample Name: ICV01 Acquired: 9/5/2025 11:44:50 Type: Unk
Method: 6010-200.7 NEW(v148) 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	3.963875	3.831821	3.875689	3.999507	4.069728	7.892277
Stddev	.005657	.076933	.004357	.011124	.011436	.024274
%RSD	.1427204	2.007751	.1124167	.2781442	.2809909	.3075626
#1	3.958870	3.743417	3.875936	3.994003	4.076468	7.908732
#2	3.962741	3.868447	3.879917	3.992208	4.056524	7.903700
#3	3.970013	3.883598	3.871213	4.012310	4.076192	7.864399
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.884466	.2018632	1.964839	19.66265	.8088353	1.973902
Stddev	.111123	.0003526	.001756	.09284	.0017902	.001218
%RSD	1.409387	.1746927	.0893616	.4721649	.2213343	.0617176
#1	7.990874	.2019061	1.966651	19.68754	.8084495	1.975270
#2	7.893361	.2021925	1.964721	19.74050	.8072694	1.973500
#3	7.769164	.2014911	1.963145	19.55990	.8107870	1.972935
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.013086	3.946733	1.967010	19.72714	1.977423	1.014289
Stddev	.001343	.009370	.010274	.11830	.001267	.001645
%RSD	.1326028	.2374065	.5223148	.5996665	.0640913	.1621545
#1	1.014275	3.953981	1.969624	19.79308	1.978886	1.014030
#2	1.011629	3.936152	1.975725	19.79778	1.976726	1.012790
#3	1.013355	3.950066	1.955682	19.59057	1.976657	1.016048
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	19.20344	1.967379	1.989663	19.47211	3.935956	3.973521
Stddev	.07216	.005067	.002654	.02024	.008054	.003842
%RSD	.3757825	.2575442	.1333766	.1039231	.2046216	.0966792
#1	19.23894	1.972841	1.987678	19.49350	3.933040	3.971713
#2	19.25097	1.966462	1.988633	19.46955	3.945062	3.970917
#3	19.12040	1.962833	1.992677	19.45327	3.929766	3.977933

Sample Name: ICV01 Acquired: 9/5/2025 11:44:50 Type: Unk
Method: 6010-200.7 NEW(v148) 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	3.930883	3.915343	F 3.719345	F .0059282	F .0267995	F -.004231
Stddev	.007167	.015658	.014619	.0018907	.0010880	.001149
%RSD	.1823310	.3999080	.3930623	31.89429	4.059797	27.15036
#1	3.922613	3.923553	3.721674	.0047629	.0256762	-.005555
#2	3.935306	3.925188	3.703702	.0081097	.0268741	-.003495
#3	3.934728	3.897288	3.732661	.0049119	.0278484	-.003643
Elem	Sr4077					
Units	ppm					
Avg	F -.003554					
Stddev	.000031					
%RSD	.8785869					
#1	-.003527					
#2	-.003588					
#3	-.003546					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6206.261	106536.2	11087.85	4916.576	7248.489	
Stddev	11.011	88.0	33.34	2.896	15.058	
%RSD	.1774104	.0826390	.3006790	.0589110	.2077402	
#1	6193.703	106605.1	11092.95	4919.094	7231.931	
#2	6214.262	106566.4	11052.26	4913.411	7252.172	
#3	6210.817	106437.0	11118.35	4917.224	7261.363	

Sample Name: LLICV01 Acquired: 9/5/2025 11:48:56 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0194359	.0422237	.0109113	.0227921	.0521983	.1109408	.1015943
Stddev	.0020852	.0016911	.0012109	.0013920	.0012994	.0055379	.0008349
%RSD	10.72839	4.005200	11.09784	6.107356	2.489432	4.991741	.8218277
#1	.0201554	.0427219	.0099216	.0238949	.0532412	.1086845	.1007175
#2	.0170862	.0403394	.0105507	.0232535	.0526110	.1172506	.1023798
#3	.0210659	.0436098	.0122616	.0212280	.0507426	.1068872	.1016855
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0063298	.0060171	2.070533	.0097722	.0299655	.0216898	.1046269
Stddev	.0000328	.0000194	.009934	.0002429	.0001076	.0003239	.0038976
%RSD	.5174892	.3226548	.4797855	2.485361	.3591977	1.493425	3.725189
#1	.0062974	.0060388	2.081517	.0097876	.0300680	.0220033	.1001264
#2	.0063293	.0060111	2.067906	.0100070	.0299752	.0213564	.1068854
#3	.0063629	.0060014	2.062177	.0095220	.0298534	.0217098	.1068689
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0223797	2.195972	.0408751	.0103365	1.993067	.0367055	.0422967
Stddev	.0006152	.027568	.0001501	.0010499	.017401	.0017571	.0001400
%RSD	2.749013	1.255389	.3671968	10.15681	.8730599	4.786980	.3309923
#1	.0224753	2.169876	.0409964	.0108112	1.983848	.0368115	.0421771
#2	.0229415	2.224807	.0407072	.0110652	2.013137	.0384071	.0422622
#3	.0217222	2.193231	.0409216	.0091331	1.982215	.0348978	.0424507
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.980273	.1173036	.2084341	.0391559	.0399526	.3947653	.0191205
Stddev	.040014	.0013306	.0007864	.0007261	.0007748	.0062875	.0007680
%RSD	2.020645	1.134310	.3773105	1.854382	1.939374	1.592721	4.016523
#1	1.951445	.1171525	.2081304	.0383208	.0394241	.4019800	.0182970
#2	1.963416	.1187033	.2078448	.0396376	.0395916	.3904554	.0192472
#3	2.025958	.1160550	.2093271	.0395094	.0408420	.3918605	.0198172

Sample Name: LLICV01 Acquired: 9/5/2025 11:48:56 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0206904	.0197084	.0207138
Stddev	.0010355	.0011936	.0000711
%RSD	5.004860	6.056125	.3430721
#1	.0195138	.0189184	.0207125
#2	.0214632	.0191254	.0207855
#3	.0210941	.0210814	.0206434

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6419.961	110542.7	11388.40	5040.365	7822.469
Stddev	9.195	47.1	36.51	10.803	22.354
%RSD	.1432226	.0426294	.3206223	.2143234	.2857666
#1	6410.145	110489.5	11405.80	5032.918	7803.136
#2	6421.365	110559.2	11346.44	5035.423	7817.324
#3	6428.373	110579.3	11412.97	5052.755	7846.947

Sample Name: ICB01 Acquired: 9/5/2025 11:54:13 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.002419	-.000293	-.001138	.0011425	-.000324	.0019234	-.002220
Stddev	.001881	.000681	.001477	.0017525	.001757	.0067105	.000135
%RSD	77.74975	232.6416	129.8680	153.3917	542.1340	348.8885	6.061109
#1	-.004587	.000433	-.002427	.0025973	-.002102	-.005783	-.002105
#2	-.001435	-.000392	-.001460	-.000803	-.000280	.005081	-.002368
#3	-.001234	-.000919	.000474	.001633	.001410	.006473	-.002188
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000268	.0000314	-.045893	-.000247	.0001339	-.000199	-.007670
Stddev	.0000448	.0000712	.005194	.000287	.0000938	.000328	.001931
%RSD	166.8283	226.9135	11.31692	116.1361	70.03577	164.7997	25.17612
#1	-.000010	.0000533	-.041753	-.000284	.0002252	.000162	-.009663
#2	.000077	-.000048	-.044205	-.000513	.0001386	-.000280	-.007539
#3	.000014	.000089	-.051721	.000057	.0000379	-.000479	-.005807
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000032	-.014360	-.000393	.0003982	-.093889	-.000375	-.000766
Stddev	.000497	.016223	.000176	.0004422	.019761	.002593	.000238
%RSD	1541.387	112.9723	44.85424	111.0570	21.04730	690.8855	31.06861
#1	-.000287	-.023984	-.000542	-.000006	-.107800	-.003143	-.000667
#2	.000540	.004370	-.000198	.000330	-.102597	.000020	-.001038
#3	-.000350	-.023468	-.000439	.000871	-.071270	.001997	-.000594
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.090415	.0083732	-.000070	-.000121	.0008538	.0211662	.0000022
Stddev	.018855	.0005595	.000212	.000397	.0014673	.0130716	.0012164
%RSD	20.85402	6.682541	301.1988	328.7025	171.8579	61.75678	56592.97
#1	-.112100	.0087030	.000084	-.000578	.0020814	.0354112	-.001009
#2	-.077888	.0086895	.000016	.000092	-.000771	.0097222	.001352
#3	-.081257	.0077272	-.000312	.000124	.001251	.0183652	-.000336

Sample Name: ICB01 Acquired: 9/5/2025 11:54:13 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0012893	-.004989	-.000103
Stddev	.0002798	.000143	.000091
%RSD	21.69926	2.870447	89.05247
#1	.0013264	-.005052	-.000207
#2	.0015486	-.004825	-.000040
#3	.0009928	-.005090	-.000060

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6288.383	111488.3	11094.42	5052.428	7653.458
Stddev	5.003	139.3	23.24	16.305	4.490
%RSD	.0795649	.1249217	.2094300	.3227197	.0586668
#1	6292.578	111563.7	11083.11	5034.176	7653.825
#2	6289.725	111327.6	11079.02	5057.553	7657.753
#3	6282.845	111573.6	11121.15	5065.556	7648.795

Sample Name: CRI01 Acquired: 9/5/2025 11:59:47 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0195054	.0418135	.0122627	.0194411	.0522040	.1092140	.0993588
Stddev	.0022434	.0007647	.0008447	.0016373	.0009925	.0057760	.0003034
%RSD	11.50126	1.828841	6.888509	8.421946	1.901248	5.288707	.3054081
#1	.0218319	.0425467	.0121613	.0207224	.0511952	.1158684	.0995018
#2	.0193287	.0410208	.0131536	.0200045	.0531794	.1054970	.0995644
#3	.0173556	.0418731	.0114734	.0175965	.0522374	.1062767	.0990103
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0063224	.0060673	2.071586	.0103368	.0302018	.0218355	.0992489
Stddev	.0000274	.0000504	.006365	.0001667	.0001681	.0001361	.0066297
%RSD	.4329920	.8310910	.3072614	1.612618	.5565149	.6234371	6.679892
#1	.0062911	.0060466	2.076771	.0101783	.0303292	.0218313	.1068950
#2	.0063342	.0060305	2.064482	.0103214	.0300113	.0217016	.0957512
#3	.0063419	.0061248	2.073506	.0105106	.0302648	.0219738	.0951005
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0221810	2.192418	.0408422	.0106437	1.872699	.0399847	.0422587
Stddev	.0003180	.013517	.0000403	.0001975	.020163	.0022655	.0002562
%RSD	1.433608	.6165252	.0986058	1.855216	1.076687	5.665982	.6062849
#1	.0218517	2.179945	.0408879	.0108196	1.849938	.0390993	.0423609
#2	.0222048	2.190529	.0408268	.0106815	1.879839	.0382956	.0419672
#3	.0224863	2.206780	.0408119	.0104301	1.888321	.0425593	.0424481
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.871109	.1087414	.2074096	.0398145	.0398794	.3818050	.0184432
Stddev	.055516	.0008403	.0005598	.0006112	.0009318	.0159095	.0008422
%RSD	2.966991	.7727197	.2698778	1.535014	2.336510	4.166907	4.566371
#1	1.837534	.1077732	.2067733	.0404741	.0407896	.3981369	.0174778
#2	1.840605	.1092796	.2078263	.0397022	.0399210	.3663547	.0188246
#3	1.935188	.1091714	.2076291	.0392674	.0389275	.3809235	.0190272

Sample Name: CRI01 Acquired: 9/5/2025 11:59:47 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0235879	.0171381	.0205092
Stddev	.0014835	.0019737	.0000498
%RSD	6.289241	11.51628	.2426540
#1	.0245941	.0148787	.0204538
#2	.0242855	.0185258	.0205502
#3	.0218842	.0180098	.0205235

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6332.400	110975.9	11346.05	5012.146	7662.155
Stddev	7.328	187.4	37.40	25.018	21.005
%RSD	.1157250	.1688654	.3296253	.4991516	.2741411
#1	6332.333	110806.6	11389.11	4989.421	7652.138
#2	6325.105	111177.3	11321.72	5038.955	7648.034
#3	6339.761	110943.8	11327.31	5008.064	7686.294

Sample Name: ICSA01 Acquired: 9/5/2025 12:05:50 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.001250	-.004415	.0035053	-.001224	-.000237	248.4983
Stddev	.001094	.003257	.0017823	.000457	.005353	.1464
%RSD	87.51512	73.76011	50.84724	37.32603	2259.480	.0589173
#1	-.001986	-.005217	.0033351	-.000927	.005319	248.3575
#2	.000007	-.000833	.0053666	-.001750	-.005360	248.6498
#3	-.001772	-.007197	.0018141	-.000995	-.000669	248.4878
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0010942	.0015447	.0011635	236.1867	.0548786	.0020153
Stddev	.0008228	.0000374	.0000691	.2341	.0003294	.0001722
%RSD	75.19489	2.423522	5.939752	.0991086	.6002459	8.542936
#1	.0001827	.0015455	.0010943	236.4509	.0546851	.0021813
#2	.0017820	.0015817	.0012325	236.1039	.0546918	.0020271
#3	.0013179	.0015069	.0011637	236.0053	.0552590	.0018376
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0122236	100.3664	.0091171	250.9077	.0070930	.0019785
Stddev	.0004162	.3737	.0002260	.0988	.0002060	.0001942
%RSD	3.404639	.3723043	2.479075	.0393576	2.904663	9.814190
#1	.0117713	100.6904	.0088665	250.8976	.0071539	.0022027
#2	.0123091	100.4512	.0091794	250.8145	.0072617	.0018660
#3	.0125903	99.9576	.0093055	251.0112	.0068634	.0018668
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1297208	.0016790	.0042173	.2110654	.0738385	.0024111
Stddev	.0191108	.0014756	.0000699	.0382471	.0022750	.0002194
%RSD	14.73230	87.88748	1.658395	18.12096	3.081009	9.100799
#1	.1084841	.0007358	.0041780	.1677874	.0764640	.0026569
#2	.1351450	.0033795	.0041758	.2250823	.0724532	.0023414
#3	.1455332	.0009216	.0042980	.2403266	.0725982	.0022350

Sample Name: ICSA01 Acquired: 9/5/2025 12:05:50 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.003860	-.003987	.0200706	.0074725	-.004539	F -.031256
Stddev	.000287	.001307	.0045860	.0023887	.001694	.000279
%RSD	7.424891	32.77481	22.84932	31.96615	37.32036	.8936915
#1	-.004191	-.003954	.0236950	.0063361	-.002609	-.031448
#2	-.003709	-.005311	.0149149	.0102172	-.005231	-.030935
#3	-.003681	-.002698	.0216020	.0058641	-.005778	-.031385
Elem	Sr4077					
Units	ppm					
Avg	.0033331					
Stddev	.0005169					
%RSD	15.50689					
#1	.0035164					
#2	.0027495					
#3	.0037333					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	5893.662	98836.27	11026.45	4483.203	6682.918	
Stddev	4.383	176.82	26.20	10.163	7.277	
%RSD	.0743673	.1789046	.2376031	.2266938	.1088827	
#1	5888.603	98938.32	11051.41	4494.935	6674.677	
#2	5896.307	98632.09	11028.76	4477.125	6685.619	
#3	5896.076	98938.40	10999.17	4477.547	6688.457	

Sample Name: ICSAB01 Acquired: 9/5/2025 12:09:59 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.1045072	.1106985	.0502405	.0504999	.6287147	248.8882
Stddev	.0015160	.0018071	.0013893	.0039660	.0015122	.2746
%RSD	1.450571	1.632424	2.765302	7.853515	.2405254	.1103494

#1	.1061997	.1086208	.0504540	.0459731	.6274036	248.7872
#2	.1040479	.1115703	.0487569	.0533632	.6283716	248.6783
#3	.1032741	.1119043	.0515108	.0521635	.6303690	249.1990

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4909034	.5430011	1.013938	234.9616	.5827040	.5090360
Stddev	.0019932	.0016676	.001245	.4387	.0009668	.0011673
%RSD	.4060242	.3071022	.1227548	.1867205	.1659153	.2293253

#1	.4931144	.5445475	1.013725	235.4682	.5837269	.5089627
#2	.4892444	.5432216	1.012813	234.7118	.5818053	.5079071
#3	.4903515	.5412343	1.015275	234.7050	.5825799	.5102383

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5148092	95.76282	.4964820	251.0176	1.015302	.2236177
Stddev	.0007497	.31850	.0029845	.4002	.001884	.0006605
%RSD	.1456330	.3325903	.6011224	.1594506	.1855696	.2953943

#1	.5145849	96.12807	.4995896	251.4765	1.015012	.2243745
#2	.5141972	95.54299	.4962183	250.7408	1.013579	.2231569
#3	.5156454	95.61739	.4936382	250.8355	1.017314	.2233217

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1945460	.4871866	1.084517	-.136370	1.052342	1.016797
Stddev	.0080395	.0054839	.002446	.048215	.002481	.002448
%RSD	4.132432	1.125617	.2255370	35.35578	.2357215	.2407971

#1	.1953063	.4933306	1.086017	-.177711	1.054013	1.014467
#2	.1861534	.4854415	1.081694	-.083407	1.049491	1.016575
#3	.2021783	.4827877	1.085838	-.147993	1.053521	1.019349

Sample Name: ICSAB01 Acquired: 9/5/2025 12:09:59 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.9931427	.9676988	.9733848	F .0108012	F .0066340	F -.032239
Stddev	.0012583	.0012766	.0101209	.0017661	.0010824	.001585
%RSD	.1267015	.1319234	1.039762	16.35135	16.31631	4.916970
#1	.9933428	.9662503	.9783629	.0125843	.0066859	-.030563
#2	.9917963	.9686601	.9617390	.0090525	.0076896	-.033715
#3	.9942889	.9681860	.9800526	.0107668	.0055266	-.032439
Elem	Sr4077					
Units	ppm					
Avg	F .0066606					
Stddev	.0001858					
%RSD	2.789678					
#1	.0067718					
#2	.0067638					
#3	.0064461					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	5753.380	97560.38	10435.98	4475.391	6507.618	
Stddev	3.575	192.15	9.32	10.682	9.177	
%RSD	.0621432	.1969509	.0892861	.2386728	.1410171	
#1	5752.985	97391.91	10425.34	4477.707	6501.393	
#2	5757.136	97769.65	10439.90	4484.725	6518.157	
#3	5750.017	97519.57	10442.70	4463.742	6503.306	

Sample Name: ICSADLX20 Acquired: 9/5/2025 12:13:59 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.002052	-.001786	-.000155	.0000620	-.000047	12.55411	-.000182
Stddev	.002071	.000464	.001464	.0014208	.000385	.01381	.000984
%RSD	100.9271	25.97407	944.2442	2291.153	826.5090	.1100164	541.0687
#1	-.004211	-.001916	-.001823	.0000974	-.000222	12.54239	-.000569
#2	-.000082	-.001271	.000442	-.001376	.000395	12.55060	.000936
#3	-.001863	-.002171	.000916	.001465	-.000313	12.56933	-.000913
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001755	.0000303	12.45694	.0025188	.0001536	.0010578	5.079249
Stddev	.0000103	.0000639	.02837	.0004848	.0002418	.0004485	.030688
%RSD	5.844874	210.8345	.2277574	19.24687	157.3657	42.39603	.6041769
#1	.0001871	.0000850	12.43143	.0030221	.0003618	.0014749	5.072566
#2	.0001679	.0000458	12.45189	.0024792	.0002108	.0005834	5.052453
#3	.0001714	-.000040	12.48750	.0020550	-.000112	.0011152	5.112727
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000065	12.95711	.0004074	.0002962	-.154437	.0012753	-.000226
Stddev	.000348	.03562	.0002780	.0004452	.011511	.0023314	.000233
%RSD	535.9377	.2749143	68.24712	150.2943	7.453285	182.8133	102.8078
#1	-.000466	12.92194	.0000908	.0007245	-.167726	-.001295	-.000126
#2	.000112	12.95623	.0005196	.0003284	-.147991	.003255	-.000492
#3	.000159	12.99316	.0006117	-.000164	-.147593	.001866	-.000060
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.414203	.0067511	.0003639	-.001315	-.000146	.0168427	-.001005
Stddev	.047395	.0005756	.0000072	.000500	.000487	.0024343	.002136
%RSD	11.44245	8.525880	1.989250	38.04483	333.8990	14.45337	212.6657
#1	-.456305	.0074144	.0003579	-.001670	.000339	.0167372	-.003206
#2	-.362872	.0063830	.0003619	-.001532	-.000635	.0193280	-.000867
#3	-.423433	.0064560	.0003719	-.000743	-.000142	.0144628	.001060

Sample Name: ICSADLX20 Acquired: 9/5/2025 12:13:59 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.001030	-.007485	.0001154
Stddev	.001559	.000556	.0000964
%RSD	151.3894	7.425799	83.56883
#1	-.002671	-.007249	.0000042
#2	.000432	-.008120	.0001658
#3	-.000850	-.007087	.0001762

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6420.353	107617.9	11323.40	4949.592	7824.153
Stddev	7.016	109.0	38.85	14.358	20.507
%RSD	.1092850	.1013023	.3431353	.2900811	.2621049
#1	6416.243	107738.6	11368.10	4944.102	7808.978
#2	6416.362	107588.6	11297.70	4938.789	7815.998
#3	6428.455	107526.6	11304.40	4965.885	7847.484

Sample Name: ICSABDLX20 Acquired: 9/5/2025 12:18:15 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0019019	.0054444	.0015394	.0035084	.0284184	12.51118	.0242707
Stddev	.0025579	.0005133	.0007840	.0027160	.0006888	.04244	.0001192
%RSD	134.4945	9.428296	50.92735	77.41363	2.423941	.3392229	.4909040
#1	-.000904	.0051532	.0009527	.0004276	.0276237	12.50536	.0243382
#2	.004103	.0060371	.0012358	.0055568	.0287862	12.55624	.0241332
#3	.002507	.0051428	.0024298	.0045407	.0288453	12.47196	.0243409
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0265144	.0491227	12.41461	.0286330	.0246605	.0268080	4.980472
Stddev	.0000954	.0000764	.01230	.0000966	.0002647	.0003116	.021384
%RSD	.3598592	.1554910	.0990380	.3373462	1.073189	1.162168	.4293604
#1	.0266245	.0490368	12.40446	.0285305	.0243602	.0270108	4.977078
#2	.0264549	.0491830	12.42828	.0287224	.0248598	.0269640	5.003350
#3	.0264639	.0491483	12.41108	.0286462	.0247615	.0264493	4.960988
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0266456	12.89710	.0496320	.0105814	-.147109	.0225048	.0526439
Stddev	.0003683	.02233	.0001533	.0004123	.010579	.0011594	.0005259
%RSD	1.382098	.1731014	.3088242	3.896619	7.190937	5.151713	.9990715
#1	.0262293	12.87189	.0495347	.0109276	-.158648	.0232767	.0524208
#2	.0269291	12.91438	.0498087	.0101252	-.137869	.0230662	.0532446
#3	.0267783	12.90502	.0495526	.0106912	-.144810	.0211716	.0522663
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.391655	.0546061	.0509863	.0467623	.0497773	.0533578	.0000434
Stddev	.043042	.0006944	.0003337	.0009528	.0010377	.0037027	.0007394
%RSD	10.98989	1.271703	.6545388	2.037547	2.084709	6.939298	1703.662
#1	-.370012	.0541172	.0512553	.0472515	.0508557	.0527910	.0007076
#2	-.363729	.0543003	.0510907	.0473712	.0496908	.0499712	.0001759
#3	-.441224	.0554010	.0506128	.0456643	.0487857	.0573112	-.000753

Sample Name: ICSABDLX20 Acquired: 9/5/2025 12:18:15 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0001612	-.006496	.0002764
Stddev	.0018628	.001067	.0000840
%RSD	1155.242	16.42498	30.39939
#1	-.001463	-.007347	.0002192
#2	-.000247	-.005299	.0002370
#3	.002194	-.006843	.0003728

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6409.238	108673.5	11248.06	4965.629	7809.664
Stddev	8.883	450.2	15.88	18.612	8.423
%RSD	.1385902	.4142687	.1411803	.3748244	.1078508
#1	6403.629	108838.8	11266.38	4976.393	7805.589
#2	6404.606	108164.0	11239.70	4944.137	7804.054
#3	6419.479	109017.7	11238.12	4976.358	7819.350

Sample Name: CCV01 Acquired: 9/5/2025 12:28:24 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	1
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	2
Avg	4.954462	4.757610	4.876110	4.954890	4.991049	9.910054	9.937441	3
Stddev	.009886	.067917	.029052	.013562	.018225	.007006	.097961	4
%RSD	.1995349	1.427539	.5957997	.2737139	.3651456	.0706983	.9857782	5
#1	4.958793	4.793811	4.881641	4.968744	4.990427	9.917143	10.04928	6
#2	4.961443	4.679261	4.901999	4.954287	5.009576	9.909885	9.89623	7
#3	4.943149	4.799757	4.844690	4.941640	4.973143	9.903133	9.86682	8
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	9
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	10
Avg	2.495677	2.447911	24.72401	9.9942093	2.446194	1.241511	4.933593	11
Stddev	.0009805	.011702	.02450	.0017750	.012806	.005976	.027278	12
%RSD	.3928847	.4780320	.0990792	.1785349	.5235188	.4813651	.5528993	13
#1	2.2505285	2.452993	24.69916	9.9945526	2.451093	1.242088	4.913270	14
#2	2.2485686	2.456212	24.74813	9.9957876	2.455829	1.247177	4.964595	15
#3	2.2496060	2.434527	24.72473	9.9922877	2.431662	1.235267	4.922915	16
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138	17
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
Avg	2.463442	24.41396	2.452329	1.244092	24.16171	2.481711	2.490986	
Stddev	.010675	.07818	.012245	.002720	.19492	.005175	.008246	
%RSD	.4333288	.3202402	.4993161	.2186207	.8067363	.2085153	.3310235	
#1	2.453262	24.38200	2.457755	1.245176	24.11241	2.478981	2.483455	
#2	2.474551	24.35683	2.460923	1.246103	24.37655	2.478472	2.499797	
#3	2.462513	24.50306	2.438308	1.240997	23.99618	2.487679	2.489706	
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774	
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
Avg	24.42637	4.977086	4.970820	4.866566	4.933393	4.928010	4.921294	
Stddev	.14626	.025747	.018144	.023459	.006946	.021221	.011455	
%RSD	.5987869	.5173085	.3650140	.4820370	.1407946	.4306143	.2327654	
#1	24.35626	5.005060	4.978398	4.876779	4.927635	4.904004	4.924832	
#2	24.59449	4.954382	4.983947	4.883186	4.941107	4.935758	4.930562	
#3	24.32836	4.971814	4.950115	4.839732	4.931436	4.944268	4.908487	

Sample Name: CCV01 Acquired: 9/5/2025 12:28:24 Type: Unk
Method: 6010-200.7 NEW(v148) 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	4.778279	4.879465	5.009881
Stddev	.008605	.014924	.055429
%RSD	.1800779	.3058492	1.106384
#1	4.788205	4.874403	4.946460
#2	4.773715	4.896261	5.049053
#3	4.772918	4.867730	5.034130

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6201.696	107877.5	11184.67	4909.968	7208.929
Stddev	36.375	108.8	47.81	41.151	50.397
%RSD	.5865347	.1008810	.4274473	.8381080	.6990862
#1	6177.833	107988.3	11179.98	4957.461	7172.752
#2	6183.692	107873.3	11234.65	4884.912	7187.543
#3	6243.562	107770.8	11139.38	4887.531	7266.492

Sample Name: CCB01 Acquired: 9/5/2025 12:32:34 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.003509	.0005169	-.000872	.0030735	-.000213	.0068854	-.003336
Stddev	.000729	.0003835	.000764	.0015783	.000788	.0049155	.001221
%RSD	20.78187	74.19145	87.63515	51.35161	369.9443	71.39011	36.59747
#1	-.004310	.0007774	-.000617	.0023970	.000659	.0039748	-.004439
#2	-.003334	.0006969	-.001732	.0048773	-.000873	.0041207	-.003544
#3	-.002884	.0000765	-.000269	.0019462	-.000425	.0125607	-.002024
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000076	.0000707	-.028076	-.000492	-.000025	.0010228	.0196287
Stddev	.0000238	.0000438	.008314	.000092	.000054	.0002310	.0033957
%RSD	314.3773	61.94831	29.61121	18.80143	211.5879	22.58679	17.29979
#1	.0000270	.0000316	-.021482	-.000500	-.000046	.0011106	.0232821
#2	.0000147	.0001180	-.025330	-.000395	-.000066	.0007607	.0165689
#3	-.000019	.0000625	-.037415	-.000580	.000036	.0011970	.0190351
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0006680	-.020543	.0011915	.0001155	-.179045	-.002444	.0189355
Stddev	.0001849	.010556	.0003696	.0000640	.011839	.001524	.0002055
%RSD	27.67366	51.38644	31.01576	55.42996	6.612140	62.33679	1.085269
#1	.0005007	-.015656	.0014288	.0001357	-.185746	-.001542	.0191450
#2	.0008665	-.013316	.0007657	.0000438	-.165376	-.004203	.0187343
#3	.0006368	-.032657	.0013800	.0001670	-.186014	-.001587	.0189274
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.342103	.0084277	.0005311	.0062580	.0009692	.0203932	.0007721
Stddev	.024872	.0006616	.0001253	.0004403	.0008894	.0101355	.0012974
%RSD	7.270338	7.850204	23.59917	7.035995	91.76668	49.70065	168.0399
#1	-.367613	.0090524	.0004727	.0063023	.0019888	.0159282	-.000344
#2	-.340776	.0084961	.0004456	.0057971	.0005655	.0132567	.000464
#3	-.317922	.0077345	.0006749	.0066744	.0003532	.0319946	.002196

Sample Name: CCB01 Acquired: 9/5/2025 12:32:34 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0056755	-.006396	-.000030
Stddev	.0016153	.002207	.000028
%RSD	28.46068	34.50966	94.94029
#1	.0046644	-.003960	-.000046
#2	.0048238	-.006964	.000003
#3	.0075384	-.008263	-.000046

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6547.687	113608.5	11729.58	5081.535	8226.209
Stddev	10.605	242.5	74.86	11.345	13.780
%RSD	.1619617	.2134894	.6382369	.2232596	.1675158
#1	6546.924	113686.0	11649.93	5092.543	8233.692
#2	6558.652	113802.8	11798.49	5082.182	8234.628
#3	6537.484	113336.7	11740.31	5069.881	8210.306

Sample Name: LR-1 Acquired: 9/5/2025 12:36:52 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.006179	.0093037	.0160242	-.018585	.0199021	.1489095	-.013544
Stddev	.002686	.0006306	.0017506	.002422	.0008463	.0248268	.001659
%RSD	43.47633	6.777699	10.92472	13.02949	4.252121	16.67238	12.24803
#1	-.003132	.0087151	.0176337	-.016782	.0190277	.1205101	-.012828
#2	-.008205	.0092269	.0162787	-.017636	.0199614	.1597222	-.012363
#3	-.007201	.0099692	.0141603	-.021338	.0207171	.1664963	-.015440
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002326	.0004663	2394.690	.0252617	.0001795	.0033468	.5044808
Stddev	.0000742	.0002243	15.127	.0001753	.0002767	.0003025	.0037887
%RSD	31.88074	48.11097	.6316781	.6939714	154.1091	9.037111	.7510112
#1	.0002485	.0002269	2379.605	.0254567	.0004276	.0030350	.5004777
#2	.0002976	.0005002	2394.605	.0251171	-.000119	.0033664	.5049539
#3	.0001518	.0006717	2409.858	.0252112	.000230	.0036390	.5080107
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0162084	2256.553	.0163896	-.002211	2310.282	.0056625	.0536943
Stddev	.0002823	30.254	.0007961	.000146	8.729	.0009784	.0003240
%RSD	1.741953	1.340738	4.857159	6.612317	.3778334	17.27885	.6033738
#1	.0164697	2239.904	.0171443	-.002135	2300.502	.0049689	.0533226
#2	.0159089	2238.279	.0164666	-.002119	2313.062	.0052371	.0539167
#3	.0162466	2291.475	.0155578	-.002380	2317.283	.0067817	.0538435
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.247164	.0140354	.0048054	-.014168	-.111661	-.021597	.0100648
Stddev	.591090	.0011667	.0004684	.001644	.000240	.020065	.0022759
%RSD	13.91728	8.312365	9.747026	11.60107	.2152685	92.90746	22.61217
#1	3.611948	.0145323	.0050969	-.015338	-.111393	.001271	.0091196
#2	4.348525	.0127025	.0042651	-.014877	-.111732	-.029808	.0126610
#3	4.781019	.0148713	.0050541	-.012289	-.111858	-.036255	.0084138

Sample Name: LR-1 Acquired: 9/5/2025 12:36:52 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.2112668	-.371482	.0633035
Stddev	.0051642	.001976	.0005845
%RSD	2.444407	.5319798	.9234147
#1	.2166330	-.370132	.0631292
#2	.2063315	-.370564	.0628259
#3	.2108360	-.373750	.0639553

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4130.665	74658.70	9874.724	3185.138	4451.962
Stddev	18.836	229.13	32.983	6.957	13.969
%RSD	.4560099	.3069040	.3340110	.2184185	.3137703
#1	4149.030	74707.53	9911.016	3187.907	4461.282
#2	4131.575	74409.09	9866.577	3177.223	4458.703
#3	4111.391	74859.48	9846.578	3190.285	4435.901

Sample Name: LR-2 Acquired: 9/5/2025 12:41:30 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.1032194	-.318499	.1066945	.0505050	-.139713	1816.442	.0196547
Stddev	.0083184	.004179	.0016861	.0028285	.002374	10.833	.0013301
%RSD	8.058913	1.312047	1.580348	5.600393	1.699557	.5964128	6.767293
#1	.1070325	-.321822	.1081194	.0505717	-.139276	1827.713	.0211422
#2	.1089476	-.319868	.1048330	.0476438	-.142275	1815.507	.0185797
#3	.0936780	-.313807	.1071311	.0532996	-.137587	1806.106	.0192423
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0361417	.0457396	9.942113	-.250477	.0720979	.1705047	2653.470
Stddev	.0000935	.0031292	.050288	.002857	.0007522	.0150200	26.588
%RSD	.2586562	6.841363	.5058072	1.140567	1.043302	8.809165	1.002021
#1	.0362063	.0491180	9.894414	-.247180	.0720624	.1823247	2623.165
#2	.0360345	.0429406	9.937285	-.252226	.0713641	.1536030	2672.881
#3	.0361843	.0451602	9.994641	-.252025	.0728672	.1755864	2664.366
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.194062	1.122004	.0545486	^ *****	4.576212	.0469302	.0711233
Stddev	.001456	.016423	.0017918	-----	.044560	.0011505	.0032108
%RSD	.7501061	1.463714	3.284835	-----	.9737205	2.451430	4.514365
#1	-.195657	1.140522	.0558769	^ -----	4.530443	.0478582	.0747972
#2	-.192805	1.116287	.0552582	^ -----	4.619454	.0456430	.0688551
#3	-.193724	1.109205	.0525106	^ -----	4.578740	.0472894	.0697176
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1791.393	^ *****	-.013565	.0135012	.0038740	.4993730	.0918979
Stddev	10.612	-----	.000609	.0024984	.0016667	.0081900	.0025943
%RSD	.5923639	-----	4.488336	18.50498	43.02430	1.640048	2.823065
#1	1798.617	^ -----	-.012901	.0139154	.0056725	.4904843	.0948934
#2	1796.352	^ -----	-.014098	.0108215	.0035681	.5010211	.0904296
#3	1779.210	^ -----	-.013696	.0157665	.0023813	.5066136	.0903708

Sample Name: LR-2 Acquired: 9/5/2025 12:41:30 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.444997	.2572738	-2.54393
Stddev	.016472	.0026379	.02559
%RSD	3.701553	1.025318	1.005967
#1	-.426004	.2543082	-2.51477
#2	-.455383	.2593585	-2.56263
#3	-.453602	.2581547	-2.55440

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5204.818	87462.65	11214.64	3989.127	4806.623
Stddev	9.396	136.17	8.71	5.073	3.112
%RSD	.1805300	.1556842	.0776688	.1271796	.0647418
#1	5215.315	87565.30	11224.03	3983.391	4804.615
#2	5201.946	87308.19	11213.06	3993.025	4810.208
#3	5197.193	87514.48	11206.82	3990.966	4805.046

Sample Name: LR-3 Acquired: 9/5/2025 12:45:59 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0954738	.0088039	226.1607	.0026884	.1289746	.1323800	-.002945
Stddev	.0003270	.0007548	1.0276	.0007705	.0046074	.0197779	.000735
%RSD	.3425018	8.573267	.4543574	28.66066	3.572363	14.94028	24.94679
#1	.0954047	.0096738	225.9770	.0034600	.1248745	.1502117	-.002147
#2	.0958299	.0083234	225.2374	.0019190	.1280885	.1358211	-.003594
#3	.0951870	.0084144	227.2678	.0026862	.1339607	.1111074	-.003093
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.004139	-.001429	.1392443	23.62384	.0058499	52.48839	.1604362
Stddev	.000060	.000098	.0052608	.19664	.0001588	.04292	.0269317
%RSD	1.457278	6.837158	3.778111	.8323827	2.715211	.0817655	16.78657
#1	-.004190	-.001406	.1331761	23.80440	.0058859	52.49781	.1826503
#2	-.004072	-.001344	.1420376	23.65279	.0056761	52.52580	.1681763
#3	-.004154	-.001536	.1425194	23.41432	.0059876	52.44154	.1304819
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.60796	-.209884	23.82865	.0038960	.0262149	-.040055	32.27022
Stddev	.53039	.039079	.02200	.0002175	.0013279	.001161	.56398
%RSD	1.091169	18.61919	.0923461	5.582124	5.065328	2.898119	1.747691
#1	48.45094	-.244819	23.82472	.0038422	.0247772	-.041343	32.45763
#2	48.17380	-.167682	23.80887	.0037106	.0273952	-.039731	32.71664
#3	49.19913	-.217150	23.85235	.0041354	.0264722	-.039091	31.63639
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1428656	.0037014	-.017188	-.009917	-.044056	-.124457	.1675225
Stddev	.0351880	.0005064	.000179	.000867	.000737	.001828	.0026946
%RSD	24.63011	13.68193	1.038842	8.743877	1.672601	1.468465	1.608496
#1	.1758599	.0033097	-.017066	-.009483	-.043768	-.124546	.1648963
#2	.1469044	.0042733	-.017104	-.010915	-.043507	-.122586	.1702806
#3	.1058325	.0035213	-.017393	-.009352	-.044894	-.126238	.1673906

Sample Name: LR-3 Acquired: 9/5/2025 12:45:59 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0548052	-.006690	.0003201
Stddev	.0066243	.000254	.0000586
%RSD	12.08705	3.803761	18.31087
#1	.0576738	-.006505	.0003875
#2	.0595118	-.006980	.0002921
#3	.0472301	-.006585	.0002807

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6003.427	111291.2	11493.39	4854.823	7634.260
Stddev	10.040	969.6	8.86	18.126	14.847
%RSD	.1672382	.8712587	.0770536	.3733615	.1944811
#1	5991.933	110472.0	11498.33	4839.575	7621.423
#2	6010.484	111039.9	11498.68	4850.031	7650.520
#3	6007.863	112361.7	11483.17	4874.864	7630.838

Sample Name: PB169555BL Acquired: 9/5/2025 12:50:53 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.001117	-.001011	.0009194	.0021878	-.001239	.0063903	-.003464
Stddev	.000692	.000841	.0010118	.0011151	.000905	.0099158	.000358
%RSD	61.91774	83.20413	110.0526	50.97025	73.02797	155.1708	10.32550
#1	-.001846	-.001954	.0020485	.0011284	-.001780	-.004218	-.003796
#2	-.000469	-.000337	.0006150	.0033513	-.000195	.007962	-.003085
#3	-.001038	-.000742	.0000947	.0020836	-.001744	.015426	-.003511
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000063	.0000389	-.049083	-.000000	-.000136	.0005170	.0028388
Stddev	.0000599	.0000140	.003070	.000298	.000152	.0002581	.0046070
%RSD	948.9566	36.12759	6.254560	4350088.	111.7393	49.92341	162.2871
#1	.0000747	.0000530	-.049420	.000049	-.000056	.0006306	.0075443
#2	-.000037	.0000249	-.045859	-.000319	-.000311	.0006989	.0026349
#3	-.000019	.0000388	-.051971	.000270	-.000040	.0002216	-.001663
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002609	-.000332	.0000373	.0005253	.0963738	-.000489	.0001909
Stddev	.0005688	.012369	.0002040	.0003418	.0181326	.003298	.0002740
%RSD	218.0147	3729.156	546.9415	65.05959	18.81489	674.4607	143.5402
#1	.0006294	.009926	-.000198	.0003213	.0790390	.001223	.0003927
#2	.0005475	-.014068	.000153	.0009199	.1152108	-.004291	-.000121
#3	-.000394	.003146	.000157	.0003348	.0948717	.001601	.000301
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1597586	-.000102	-.000023	-.000833	.0010091	.0090738	.0004520
Stddev	.0671104	.000214	.000123	.000368	.0012297	.0073156	.0010516
%RSD	42.00737	209.2154	534.3711	44.22067	121.8543	80.62289	232.6343
#1	.1000426	-.000318	-.000149	-.001167	.0007498	.0062929	-.000033
#2	.1468461	-.000097	.000096	-.000894	-.000070	.0035565	.001659
#3	.2323869	.000109	-.000016	-.000438	.002348	.0173720	-.000269

Sample Name: PB169555BL Acquired: 9/5/2025 12:50:53 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.001265	-.003209	-.000132
Stddev	.002098	.001431	.000012
%RSD	165.7839	44.60406	9.095909
#1	.001028	-.001898	-.000120
#2	-.003088	-.004737	-.000144
#3	-.001737	-.002993	-.000133

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6346.383	111410.9	11612.92	5043.269	7810.978
Stddev	6.303	135.9	72.46	12.586	11.680
%RSD	.0993220	.1219992	.6240002	.2495572	.1495318
#1	6348.422	111365.5	11584.27	5044.374	7821.565
#2	6351.415	111303.4	11695.32	5055.266	7812.921
#3	6339.313	111563.7	11559.15	5030.167	7798.449

Sample Name: PB169555BS Acquired: 9/5/2025 12:55:12 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.7609869	1.715924	.9265191	1.928089	.7924564	1.941848
Stddev	.0021367	.038477	.0022088	.005063	.0047271	.012420
%RSD	.2807780	2.242357	.2384011	.2625666	.5965060	.6395871
#1	.7608419	1.705461	.9289670	1.924853	.7892748	1.929441
#2	.7589265	1.683760	.9246747	1.925492	.7902063	1.941824
#3	.7631924	1.758550	.9259158	1.933923	.7978882	1.954280
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1883310	.1954985	.1868876	.9388912	.3876572	.1888921
Stddev	.0021403	.0012725	.0001549	.0032703	.0003860	.0003105
%RSD	1.136441	.6509043	.0828554	.3483105	.0995748	.1643665
#1	.1861540	.1940743	.1869333	.9364476	.3880573	.1892267
#2	.1884066	.1958972	.1867151	.9376198	.3876274	.1886134
#3	.1904325	.1965238	.1870145	.9426062	.3872870	.1888363
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2990386	2.895581	.1966634	1.944883	.4756721	.0735007
Stddev	.0005346	.011922	.0013844	.012524	.0008913	.0006005
%RSD	.1787614	.4117144	.7039644	.6439395	.1873694	.8169888
#1	.2985982	2.889059	.1950661	1.930540	.4766772	.0731410
#2	.2988843	2.888343	.1974045	1.950451	.4749782	.0731671
#3	.2996334	2.909341	.1975195	1.953656	.4753607	.0741939
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.800012	.2917996	.1955663	9.451609	.2899321	.3991623
Stddev	.042299	.0027428	.0004666	.080706	.0027788	.0012930
%RSD	1.510674	.9399649	.2385842	.8538835	.9584360	.3239369
#1	2.782347	.2924590	.1955631	9.389962	.2868878	.3996721
#2	2.769408	.2887872	.1951013	9.421909	.2905763	.3976921
#3	2.848280	.2941527	.1960344	9.542957	.2923323	.4001228

Sample Name: PB169555BS Acquired: 9/5/2025 12:55:12 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.6629362	.1936964	.8805903	5.377838	F -.006838	.1974563
Stddev	.0011192	.0008170	.0062845	.027216	.001564	.0014888
%RSD	.1688169	.4218064	.7136652	.5060854	22.87338	.7539786
#1	.6639401	.1930176	.8876057	5.402983	-.008470	.1961093
#2	.6617295	.1934684	.8754755	5.348940	-.006692	.1972047
#3	.6631388	.1946032	.8786896	5.381590	-.005352	.1990548
Elem	Sr4077					
Units	ppm					
Avg	.1914513					
Stddev	.0015081					
%RSD	.7877360					
#1	.1898076					
#2	.1917750					
#3	.1927713					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6347.691	112151.0	11526.77	5025.510	7698.364	
Stddev	3.826	203.5	71.11	17.560	10.196	
%RSD	.0602798	.1814199	.6169021	.3494123	.1324407	
#1	6351.515	112252.3	11608.86	5037.693	7687.569	
#2	6343.862	112283.9	11484.37	5005.382	7699.694	
#3	6347.696	111916.7	11487.07	5033.454	7707.830	

Sample Name: Q3017-02DLX5 Acquired: 9/5/2025 12:59:12 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0013347	-.001761	.0089789	.0009488	.0012010	9.560192
Stddev	.0006666	.000705	.0003662	.0025414	.0005290	.025065
%RSD	49.94173	40.01887	4.078518	267.8573	44.04966	.2621833
#1	.0020625	-.002071	.0085721	-.001673	.0012634	9.567638
#2	.0007540	-.000954	.0092822	.001118	.0016960	9.580690
#3	.0011875	-.002257	.0090824	.003402	.0006435	9.532247
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0177279	.0004858	.0000324	3.877602	.0108106	.0028275
Stddev	.0007027	.0000115	.0000358	.013218	.0002686	.0001461
%RSD	3.964055	2.371175	110.5440	.3408769	2.484232	5.167200
#1	.0170764	.0004903	.0000003	3.889984	.0107636	.0029945
#2	.0176346	.0004727	.0000710	3.879138	.0105687	.0027646
#3	.0184726	.0004943	.0000258	3.863683	.0110996	.0027234
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0097307	4.496177	.0670427	1.595285	.0075679	.0003667
Stddev	.0002447	.036844	.0001704	.023638	.0001102	.0006323
%RSD	2.514632	.8194415	.2541505	1.481744	1.456219	172.4368
#1	.0099486	4.453645	.0670131	1.581109	.0075405	-.000197
#2	.0094660	4.518284	.0668890	1.622573	.0074739	.001050
#3	.0097776	4.516602	.0672259	1.582174	.0076891	.000247
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	21.42535	.0096650	.0156209	24.65182	.0136910	.0075623
Stddev	.14833	.0017465	.0002731	.21559	.0002547	.0002163
%RSD	.6923103	18.07016	1.748282	.8745262	1.860167	2.859524
#1	21.27040	.0082890	.0153715	24.40960	.0136550	.0077527
#2	21.43963	.0116298	.0155784	24.72320	.0134562	.0076070
#3	21.56602	.0090764	.0159127	24.82267	.0139617	.0073272

Sample Name: Q3017-02DLX5 Acquired: 9/5/2025 12:59:12 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.003015	.0859805	F 17.79717	.2870595	3.978626	-.001988
Stddev	.000354	.0014218	.15767	.0017733	.011952	.001162
%RSD	11.75181	1.653577	.8859230	.6177362	.3004002	58.47586
#1	-.003274	.0872764	17.61590	.2866632	3.971712	-.003177
#2	-.003159	.0862054	17.90246	.2889974	3.992427	-.000854
#3	-.002611	.0844597	17.87315	.2855179	3.971740	-.001933

Elem	Sr4077
Units	ppm
Avg	.0553630
Stddev	.0002567
%RSD	.4636665
#1	.0556451
#2	.0551430
#3	.0553010

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6523.222	112771.7	11646.87	5075.622	7798.046
Stddev	3.576	936.2	43.96	21.268	7.766
%RSD	.0548242	.8302116	.3774800	.4190132	.0995920
#1	6521.052	113839.6	11596.84	5099.706	7798.765
#2	6521.265	112383.0	11679.37	5067.740	7805.427
#3	6527.350	112092.4	11664.39	5059.422	7789.945

Sample Name: Q3017-03DLX5 Acquired: 9/5/2025 13:03:26 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0032477	-.000002	.0130199	.0025609	-.001953	13.97789
Stddev	.0007824	.001516	.0005991	.0031354	.001144	.02864
%RSD	24.09120	93593.97	4.601316	122.4332	58.61254	.2048817
#1	.0032675	.001544	.0123652	.0014496	-.002137	13.96675
#2	.0040200	-.000063	.0135406	.0001326	-.000727	14.01042
#3	.0024556	-.001486	.0131538	.0061007	-.002994	13.95650
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0329812	.0008221	.0000243	5.046915	.0104698	.0033861
Stddev	.0000973	.0000323	.0000337	.009469	.0000784	.0001074
%RSD	.2950806	3.926052	138.3439	.1876217	.7487554	3.172064
#1	.0328880	.0008361	-.000010	5.038206	.0105602	.0034401
#2	.0330822	.0008450	.000025	5.045545	.0104223	.0032624
#3	.0329733	.0007852	.000057	5.056995	.0104267	.0034557
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0079821	8.423129	.1978540	2.561344	.0066366	.0005292
Stddev	.0003049	.056480	.0014846	.015450	.0001382	.0004201
%RSD	3.819733	.6705332	.7503435	.6032091	2.081966	79.37848
#1	.0083184	8.374715	.1967353	2.571670	.0067626	.0001786
#2	.0077236	8.409494	.1995383	2.543582	.0064888	.0004143
#3	.0079044	8.485179	.1972885	2.568782	.0066585	.0009948
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.56220	.0099566	.0242383	.8527927	.0211267	.0033515
Stddev	.14389	.0025238	.0003349	.0067841	.0007128	.0004188
%RSD	.9880877	25.34814	1.381662	.7955157	3.374129	12.49483
#1	14.46961	.0126868	.0244434	.8452777	.0208212	.0028823
#2	14.48903	.0094744	.0238519	.8546350	.0206176	.0034849
#3	14.72797	.0077087	.0244197	.8584654	.0219414	.0036874

Sample Name: Q3017-03DLX5 Acquired: 9/5/2025 13:03:26 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.002886	.0882358	F 29.86828	.0838984	2.393547	-.002682
Stddev	.000740	.0010384	.16718	.0004857	.002444	.000628
%RSD	25.62402	1.176816	.5597382	.5788731	.1021003	23.42847
#1	-.002640	.0877741	29.85623	.0833809	2.390892	-.003321
#2	-.003717	.0875083	29.70745	.0839699	2.395702	-.002660
#3	-.002301	.0894250	30.04117	.0843443	2.394048	-.002065

Elem	Sr4077
Units	ppm
Avg	.0574228
Stddev	.0002404
%RSD	.4187231
#1	.0572809
#2	.0577004
#3	.0572870

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6516.401	113023.4	12006.74	5111.964	7795.799
Stddev	6.443	446.0	47.69	18.908	4.991
%RSD	.0988798	.3946060	.3972294	.3698803	.0640195
#1	6513.504	113347.6	12045.68	5122.069	7794.880
#2	6523.784	113208.0	11953.55	5123.673	7801.186
#3	6511.914	112514.8	12021.00	5090.150	7791.332

Sample Name: Q3017-04DLX5 Acquired: 9/5/2025 13:07:39 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0003189	-.001142	.0126809	.0017584	-.001474	13.95413
Stddev	.0007952	.002128	.0005492	.0017991	.000983	.02386
%RSD	249.3562	186.2822	4.331217	102.3169	66.71554	.1709549
#1	.0012272	.000652	.0130984	.0000345	-.002416	13.95862
#2	-.000251	-.000586	.0128856	.0036243	-.001551	13.92834
#3	-.000019	-.003493	.0120587	.0016163	-.000454	13.97541
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0356972	.0007661	.0000714	5.643649	.0119220	.0041030
Stddev	.0002695	.0000201	.0000496	.006354	.0001341	.0002852
%RSD	.7550807	2.629187	69.57759	.1125946	1.125055	6.951557
#1	.0355881	.0007493	.0000536	5.639358	.0119263	.0038440
#2	.0354993	.0007607	.0000330	5.640640	.0117857	.0044087
#3	.0360042	.0007885	.0001274	5.650949	.0120539	.0040562
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0090498	6.182553	.1781883	2.269059	.0076621	.0001441
Stddev	.0001740	.047478	.0001916	.027616	.0003467	.0004289
%RSD	1.922756	.7679382	.1075049	1.217077	4.524904	297.7053
#1	.0089075	6.226384	.1780339	2.240057	.0073189	-.000213
#2	.0089981	6.189156	.1784027	2.272080	.0076554	.000620
#3	.0092438	6.132119	.1781284	2.295040	.0080122	.000025
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.22945	.0127981	.0242369	1.268062	.0188269	.0043672
Stddev	.08541	.0039485	.0001648	.045606	.0007357	.0003580
%RSD	.6984285	30.85212	.6799125	3.596535	3.907695	8.197608
#1	12.29903	.0083472	.0243980	1.216313	.0193610	.0047573
#2	12.25520	.0158794	.0242440	1.285481	.0179877	.0040537
#3	12.13412	.0141677	.0240687	1.302391	.0191320	.0042907

Sample Name: Q3017-04DLX5 Acquired: 9/5/2025 13:07:39 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.002635	.1237616	F 27.79865	.0944225	2.505177	-.001836
Stddev	.000466	.0024107	.17581	.0002169	.042503	.001771
%RSD	17.67219	1.947883	.6324455	.2297383	1.696608	96.46583
#1	-.003007	.1252216	27.94008	.0944584	2.456123	-.003430
#2	-.002784	.1250841	27.85405	.0946193	2.531037	.000070
#3	-.002113	.1209790	27.60181	.0941899	2.528371	-.002147
Elem	Sr4077					
Units	ppm					
Avg	.0666640					
Stddev	.0000281					
%RSD	.0420925					
#1	.0666410					
#2	.0666557					
#3	.0666953					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6443.429	112525.5	11626.48	5074.142	7698.369	
Stddev	9.091	351.1	73.90	18.220	10.019	
%RSD	.1410854	.3120447	.6356508	.3590736	.1301446	
#1	6433.102	112278.0	11697.57	5063.693	7686.851	
#2	6450.222	112371.1	11631.84	5063.554	7703.186	
#3	6446.963	112927.3	11550.05	5095.181	7705.069	

Sample Name: Q3017-05DLX5 Acquired: 9/5/2025 13:11:53 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.000103	-.002158	.0095316	.0008261	-.001187	8.694125
Stddev	.000852	.001335	.0013328	.0018425	.001093	.041854
%RSD	829.5333	61.84243	13.98296	223.0313	92.12923	.4814019
#1	-.000584	-.002942	.0080204	-.000360	-.001558	8.656536
#2	-.000606	-.002916	.0100349	-.000111	.000044	8.686614
#3	.000881	-.000617	.0105395	.002949	-.002046	8.739226
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0666656	.0005191	.0000458	3.788290	.0092981	.0051636
Stddev	.0016262	.0000050	.0000345	.009824	.0002841	.0000861
%RSD	2.439380	.9685295	75.24668	.2593128	3.055859	1.666570
#1	.0651342	.0005231	.0000713	3.781695	.0093287	.0051267
#2	.0683724	.0005135	.0000596	3.799580	.0095658	.0051022
#3	.0664902	.0005207	.0000066	3.783595	.0090000	.0052619
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0091504	3.906878	.1162234	1.644401	.0068162	.0002807
Stddev	.0002487	.014697	.0008293	.043189	.0004056	.0005755
%RSD	2.717635	.3761846	.7135622	2.626406	5.949803	204.9936
#1	.0094074	3.915966	.1158985	1.594637	.0064965	-.000379
#2	.0091328	3.914745	.1171660	1.672090	.0066799	.000545
#3	.0089110	3.889922	.1156057	1.666476	.0072724	.000677
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.524280	.0091705	.0184559	.8596081	.0128096	.0032344
Stddev	.033010	.0025680	.0003389	.0302487	.0006909	.0002112
%RSD	.3465860	28.00313	1.836380	3.518895	5.393639	6.529072
#1	9.557084	.0114195	.0180722	.8303613	.0134174	.0034780
#2	9.524687	.0097199	.0187145	.8907679	.0129531	.0031216
#3	9.491068	.0063723	.0185809	.8576950	.0120582	.0031036

Sample Name: Q3017-05DLX5 Acquired: 9/5/2025 13:11:53 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.003224	.0785296	F 18.30088	.0701257	2.041296	-.004890
Stddev	.000572	.0003861	.05813	.0006671	.001846	.000832
%RSD	17.74301	.4917017	.3176593	.9513323	.0904394	17.01090

#1	-.002693	.0784584	18.34503	.0707726	2.043339	-.005013
#2	-.003150	.0789464	18.23501	.0701646	2.039747	-.005654
#3	-.003830	.0781840	18.32259	.0694400	2.040803	-.004004

Elem	Sr4077
Units	ppm
Avg	.0468201
Stddev	.0002047
%RSD	.4371573

#1	.0469510
#2	.0469250
#3	.0465842

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6415.461	113953.3	12036.21	5075.200	7713.283
Stddev	9.059	87.8	89.39	10.860	8.541
%RSD	.1412082	.0770359	.7426603	.2139758	.1107277

#1	6414.151	114036.7	12118.36	5079.047	7714.457
#2	6425.103	113961.4	11941.02	5062.940	7721.176
#3	6407.128	113861.7	12049.25	5083.612	7704.216

Sample Name: Q3017-05DUPDLX5 Acquired: 9/5/2025 13:16:08 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.002481	-.002120	.0094148	.0013265	-.001249	8.727930
Stddev	.003039	.000893	.0003656	.0009622	.001150	.016794
%RSD	122.4851	42.11205	3.883104	72.53395	92.06405	.1924200

#1	.000696	-.003148	.0093996	.0013303	-.002473	8.745262
#2	-.002780	-.001541	.0090571	.0022868	-.001083	8.711730
#3	-.005359	-.001671	.0097877	.0003625	-.000191	8.726797

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0690445	.0004933	.0000585	3.896349	.0097662	.0053241
Stddev	.0008450	.0000465	.0000516	.009246	.0001265	.0001066
%RSD	1.223836	9.423491	88.09188	.2373038	1.295497	2.002627

#1	.0683078	.0005469	.0000044	3.899741	.0098496	.0054451
#2	.0688588	.0004693	.0000640	3.903420	.0098285	.0052441
#3	.0699669	.0004637	.0001071	3.885886	.0096207	.0052830

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0096389	3.958530	.1193271	1.711983	.0068072	.0005304
Stddev	.0004500	.032472	.0004703	.007160	.0000989	.0003220
%RSD	4.668069	.8203169	.3941197	.4182338	1.452344	60.71284

#1	.0101337	3.935203	.1191033	1.704735	.0067031	.0008980
#2	.0092542	3.995617	.1198675	1.712160	.0068998	.0003944
#3	.0095289	3.944771	.1190105	1.719052	.0068188	.0002986

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.746744	.0093385	.0187998	.8357183	.0128274	.0033959
Stddev	.080643	.0014128	.0001696	.0296700	.0002133	.0001651
%RSD	.8273809	15.12914	.9019334	3.550234	1.663065	4.861538

#1	9.816721	.0105458	.0189947	.8195315	.0128463	.0034888
#2	9.764960	.0096851	.0186859	.8699612	.0126052	.0032053
#3	9.658552	.0077846	.0187188	.8176623	.0130306	.0034936

Sample Name: Q3017-05DUPDLX5 Acquired: 9/5/2025 13:16:08 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.003292	.0773362	F 18.47578	.0716487	2.051586	-.003179
Stddev	.000588	.0016625	.06244	.0019750	.005936	.001800
%RSD	17.86065	2.149707	.3379569	2.756434	.2893250	56.62014
#1	-.003897	.0787749	18.41181	.0736159	2.058069	-.004978
#2	-.003257	.0777175	18.53657	.0716642	2.046418	-.003182
#3	-.002723	.0755161	18.47896	.0696661	2.050272	-.001378
Elem	Sr4077					
Units	ppm					
Avg	.0476603					
Stddev	.0004764					
%RSD	.9994797					
#1	.0478976					
#2	.0479713					
#3	.0471119					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6442.981	113629.8	12026.25	5069.227	7772.865	
Stddev	8.229	247.6	23.07	4.754	10.554	
%RSD	.1277247	.2178601	.1918165	.0937884	.1357779	
#1	6441.587	113866.8	12040.82	5063.753	7760.682	
#2	6451.818	113649.8	12038.28	5072.329	7778.688	
#3	6435.538	113372.9	11999.65	5071.599	7779.224	

Sample Name: CCV02 Acquired: 9/5/2025 13:20:23 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.065023	5.411113	4.904635	5.120856	5.089137	9.834369	9.799680
Stddev	.020138	.111752	.008135	.020207	.006464	.022501	.162263
%RSD	.3975833	2.065224	.1658623	.3946021	.1270111	.2287969	1.655795
#1	5.083218	5.417728	4.901153	5.129364	5.095752	9.818498	9.681507
#2	5.043387	5.296201	4.898820	5.097786	5.082836	9.860120	9.984685
#3	5.068465	5.519410	4.913931	5.135418	5.088822	9.824490	9.732847
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.407602	2.465793	24.50185	.9889648	2.466419	1.258722	5.032600
Stddev	.0014064	.005075	.05433	.0024088	.004460	.002902	.027577
%RSD	.5841540	.2058147	.2217198	.2435696	.1808394	.2305184	.5479764
#1	.2398512	2.464401	24.53025	.9867659	2.465064	1.258906	5.052446
#2	.2423801	2.461559	24.53609	.9885891	2.462792	1.255733	5.001111
#3	.2400492	2.471419	24.43921	.9915394	2.471399	1.261527	5.044243
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.440657	24.20116	2.472550	1.247357	24.67453	2.460471	2.506753
Stddev	.003438	.06765	.005250	.002145	.07570	.006865	.004019
%RSD	.1408709	.2795449	.2123300	.1719407	.3068083	.2790035	.1603398
#1	2.438995	24.18337	2.470086	1.246158	24.73542	2.463394	2.502895
#2	2.444611	24.27593	2.468986	1.249833	24.58976	2.465391	2.510916
#3	2.438366	24.14418	2.478579	1.246079	24.69840	2.452629	2.506448
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.04986	4.824012	5.049717	4.913102	4.920668	5.059519	4.977379
Stddev	.11594	.032730	.012158	.018213	.008899	.024265	.020629
%RSD	.4628219	.6784879	.2407644	.3707114	.1808570	.4795948	.4144558
#1	25.10215	4.805184	5.054507	4.912090	4.920508	5.038643	4.971977
#2	24.91699	4.861805	5.035894	4.895415	4.929646	5.053773	4.959988
#3	25.13044	4.805046	5.058751	4.931800	4.911850	5.086141	5.000171

Sample Name: CCV02 Acquired: 9/5/2025 13:20:23 Type: Unk
Method: 6010-200.7 NEW(v148) 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	4.981757	4.839306	4.935313
Stddev	.035820	.007030	.052096
%RSD	.7190261	.1452768	1.055570
#1	4.986782	4.847333	4.984315
#2	4.943689	4.834244	4.941029
#3	5.014799	4.836342	4.880596

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6140.321	109722.7	11729.30	4872.502	7156.059
Stddev	7.578	165.9	40.56	12.020	13.002
%RSD	.1234156	.1511574	.3457722	.2466894	.1816924
#1	6142.247	109792.1	11761.34	4876.336	7161.588
#2	6146.751	109842.5	11683.70	4882.136	7165.384
#3	6131.966	109533.4	11742.87	4859.032	7141.207

Sample Name: CCB02 Acquired: 9/5/2025 13:24:34 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.002750	-.001937	-.000803	.0031667	-.000945	.0020229	-.004084
Stddev	.002161	.001595	.001036	.0013630	.001852	.0089262	.000080
%RSD	78.58961	82.36820	128.9833	43.04132	195.8766	441.2599	1.961828
#1	-.000361	-.000436	-.000252	.0023528	.000877	.0054547	-.003992
#2	-.004570	-.003612	-.001998	.0024071	-.000888	.0087238	-.004136
#3	-.003318	-.001762	-.000159	.0047402	-.002826	-.008110	-.004124
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000580	.0001214	-.040445	-.000285	.0001891	.0001052	-.007272
Stddev	.0000561	.0000563	.007010	.000388	.0001825	.0002099	.005175
%RSD	96.77600	46.37215	17.33244	136.3447	96.51855	199.4122	71.17004
#1	-.000004	.0001385	-.048223	-.000676	.0000328	.0000193	-.005420
#2	.000106	.0001672	-.038496	.000101	.0003896	-.000048	-.013118
#3	.000072	.0000586	-.034616	-.000279	.0001447	.000344	-.003277
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000508	-.004898	.0000671	.0003436	-.079804	-.003589	-.000328
Stddev	.000167	.020169	.0002601	.0001917	.029347	.001071	.000064
%RSD	32.90976	411.7310	387.4002	55.78283	36.77327	29.83585	19.39502
#1	-.000345	.002921	.0001502	.0001230	-.113648	-.002969	-.000288
#2	-.000500	-.027806	.0002756	.0004698	-.064352	-.002972	-.000401
#3	-.000680	.010190	-.000224	.0004381	-.061412	-.004825	-.000295
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.085517	.0044464	.0002941	-.000392	.0000673	.0215120	-.000596
Stddev	.036215	.0001373	.0001572	.000299	.0020539	.0055566	.000668
%RSD	42.34802	3.088758	53.45915	76.30143	3051.121	25.83019	112.1076
#1	-.115818	.0042913	.0004658	-.000054	.0024388	.0204582	.000156
#2	-.095324	.0045527	.0001573	-.000621	-.001140	.0275200	-.001121
#3	-.045409	.0044951	.0002591	-.000500	-.001097	.0165577	-.000821

Sample Name: CCB02 Acquired: 9/5/2025 13:24:34 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.000368	-.005801	-.000029
Stddev	.001587	.000899	.000045
%RSD	431.0980	15.49940	155.6004
#1	.001156	-.006565	-.000080
#2	-.002011	-.006027	.000006
#3	-.000249	-.004810	-.000014

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6325.746	113882.7	11570.28	5060.139	7758.870
Stddev	2.015	196.3	72.08	8.381	6.294
%RSD	.0318473	.1723707	.6229529	.1656186	.0811265
#1	6323.532	113982.5	11646.53	5056.121	7753.287
#2	6327.472	113656.6	11561.05	5069.772	7757.633
#3	6326.234	114009.1	11503.27	5054.524	7765.692

Sample Name: Q3017-05LDLX25 Acquired: 9/5/2025 13:28:52 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.003321	-.001048	.0003905	.0016665	.0000646	1.779495	.0095438
Stddev	.001775	.001099	.0002393	.0025203	.0017139	.015719	.0007593
%RSD	53.42938	104.8638	61.27985	151.2321	2652.863	.8833625	7.956269
#1	-.004454	-.000728	.0005791	.0003668	.0019192	1.796761	.0095774
#2	-.001276	-.002271	.0001213	.0000614	-.001461	1.775712	.0087683
#3	-.004234	-.000144	.0004713	.0045713	-.000265	1.766013	.0102859
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001255	.0000628	.7365708	.0014130	.0010020	.0019694	.7398675
Stddev	.0000549	.0000221	.0140670	.0002114	.0000702	.0003827	.0077919
%RSD	43.74885	35.25667	1.909790	14.95808	7.001785	19.43350	1.053142
#1	.0001818	.0000517	.7524169	.0013612	.0009533	.0023977	.7332177
#2	.0001225	.0000484	.7317384	.0012325	.0010824	.0018495	.7484411
#3	.0000721	.0000882	.7255569	.0016455	.0009704	.0016609	.7379438
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0232774	.3318808	.0015175	-.000138	1.685529	-.000094	.0034247
Stddev	.0002460	.0185251	.0001603	.000081	.024341	.002998	.0000810
%RSD	1.056901	5.581856	10.56437	58.72951	1.444129	3198.321	2.366232
#1	.0233586	.3123109	.0015224	-.000174	1.671533	-.000189	.0034742
#2	.0230011	.3341862	.0013548	-.000045	1.713635	-.003042	.0033312
#3	.0234726	.3491454	.0016753	-.000195	1.671417	.002950	.0034688
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0591541	.0040691	.0007306	-.000716	.0167804	3.549700	.0146710
Stddev	.0066145	.0002721	.0000760	.000538	.0003421	.028407	.0002644
%RSD	11.18189	6.687294	10.40727	75.19843	2.038664	.8002583	1.802388
#1	.0622201	.0039202	.0007525	-.000890	.0171281	3.555155	.0147064
#2	.0515628	.0039039	.0007933	-.001146	.0167689	3.574984	.0149160
#3	.0636793	.0043832	.0006460	-.000112	.0164442	3.518962	.0143907

Sample Name: Q3017-05LDLX25 Acquired: 9/5/2025 13:28:52 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.4024024	-.004738	.0093758
Stddev	.0024098	.001129	.0000817
%RSD	.5988627	23.82654	.8711107
#1	.4050276	-.006040	.0094483
#2	.4018891	-.004033	.0092873
#3	.4002906	-.004141	.0093917

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6490.854	113160.8	11414.66	5051.240	7966.354
Stddev	11.871	176.2	60.55	8.194	6.978
%RSD	.1828910	.1557395	.5304460	.1622141	.0875979
#1	6483.994	113213.9	11390.26	5060.325	7960.643
#2	6504.561	113304.4	11483.60	5048.987	7974.132
#3	6484.005	112964.1	11370.11	5044.409	7964.287

Sample Name: Q3017-05MSDLX5 Acquired: 9/5/2025 13:33:09 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.1541659	.3839280	.1941584	.3853652	.1591132	5.852172
Stddev	.0004159	.0027998	.0001325	.0015734	.0019649	.004362
%RSD	.2697966	.7292620	.0682355	.4082963	1.234916	.0745327
#1	.1541746	.3808247	.1940463	.3835900	.1578100	5.851888
#2	.1537457	.3846946	.1941241	.3859181	.1613733	5.856669
#3	.1545775	.3862647	.1943046	.3865876	.1581564	5.847960
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0975068	.0377678	.0381104	3.666571	.0857282	.0435186
Stddev	.0011423	.0001452	.0002341	.016163	.0005339	.0002636
%RSD	1.171538	.3843682	.6141511	.4408117	.6227716	.6056503
#1	.0984438	.0379133	.0379030	3.684245	.0857443	.0432165
#2	.0978422	.0377673	.0383641	3.662925	.0862538	.0437016
#3	.0962343	.0376230	.0380640	3.652542	.0851864	.0436377
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0692104	3.726011	.1451624	1.756948	.1025386	.0144903
Stddev	.0006317	.018688	.0010584	.045445	.0003725	.0004675
%RSD	.9127423	.5015498	.7290776	2.586578	.3632700	3.226021
#1	.0685602	3.704525	.1461723	1.793385	.1022161	.0140014
#2	.0698218	3.735020	.1452535	1.706026	.1029463	.0145366
#3	.0692491	3.738487	.1440615	1.771432	.1024533	.0149328
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.214896	.0642033	.0552851	2.516648	.0671126	.0845631
Stddev	.052198	.0021792	.0002288	.039212	.0010392	.0003390
%RSD	.5664478	3.394237	.4139147	1.558123	1.548500	.4009232
#1	9.196069	.0617020	.0554688	2.475058	.0681720	.0841889
#2	9.273896	.0656918	.0553579	2.521942	.0670709	.0846507
#3	9.174724	.0652160	.0550288	2.552945	.0660948	.0848498

Sample Name: Q3017-05MSDLX5 Acquired: 9/5/2025 13:33:09 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.1340850	.0636701	F 12.24267	1.152881	1.912111	.0355960
Stddev	.0014768	.0014039	.07597	.007193	.011882	.0016657
%RSD	1.101403	2.204963	.6204987	.6239266	.6214187	4.679321
#1	.1336059	.0635367	12.15941	1.145136	1.899559	.0362314
#2	.1357419	.0623376	12.30819	1.159353	1.913587	.0368503
#3	.1329072	.0651359	12.26042	1.154154	1.923186	.0337061
Elem	Sr4077					
Units	ppm					
Avg	.0813343					
Stddev	.0002182					
%RSD	.2682468					
#1	.0815725					
#2	.0811442					
#3	.0812862					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6282.248	113788.8	12018.88	5099.937	7539.062	
Stddev	27.066	550.7	66.32	16.159	27.718	
%RSD	.4308390	.4839634	.5517844	.3168387	.3676592	
#1	6308.917	114187.0	11964.40	5116.638	7563.129	
#2	6254.801	113160.3	11999.50	5084.382	7508.756	
#3	6283.026	114019.1	12092.72	5098.791	7545.300	

Sample Name: Q3017-05MSDDLX5 Acquired: 9/5/2025 13:37:15 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.1547893	.3904157	.1936685	.3866084	.1581528	5.837422
Stddev	.0018181	.0008276	.0016473	.0013630	.0005906	.022830
%RSD	1.174597	.2119690	.8505768	.3525544	.3734686	.3910971
#1	.1546213	.3908188	.1923108	.3881717	.1578934	5.840565
#2	.1530610	.3909645	.1931937	.3856688	.1588287	5.858518
#3	.1566856	.3894638	.1955011	.3859847	.1577362	5.813183
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0913518	.0401757	.0379775	3.592104	.0861241	.0430630
Stddev	.0011168	.0001724	.0000486	.012149	.0003891	.0001920
%RSD	1.222555	.4290209	.1281142	.3382037	.4517301	.4459363
#1	.0924521	.0403023	.0379831	3.590492	.0857157	.0432727
#2	.0913841	.0402454	.0379263	3.604978	.0861663	.0430206
#3	.0902191	.0399794	.0380231	3.580841	.0864903	.0428957
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0694739	3.444875	.1425366	1.732207	.1024435	.0149234
Stddev	.0004957	.032605	.0001904	.016729	.0005034	.0004981
%RSD	.7134940	.9464886	.1336125	.9657464	.4913977	3.337947
#1	.0689422	3.412619	.1423171	1.751346	.1026809	.0144658
#2	.0695561	3.477819	.1426579	1.724900	.1018652	.0148503
#3	.0699233	3.444187	.1426349	1.720375	.1027842	.0154540
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.056678	.0645519	.0811501	2.322387	.0701005	.0833891
Stddev	.069187	.0008835	.0004487	.010514	.0004715	.0003662
%RSD	.8587548	1.368607	.5529363	.4527399	.6725539	.4391614
#1	7.994717	.0641033	.0810842	2.319213	.0705108	.0830433
#2	8.131333	.0639828	.0816282	2.313826	.0695855	.0837728
#3	8.043984	.0655697	.0807380	2.334123	.0702053	.0833513

Sample Name: Q3017-05MSDDLX5 Acquired: 9/5/2025 13:37:15 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.1312668	.0625803	F 11.36772	1.147616	1.895806	.0352237
Stddev	.0006032	.0013705	.02576	.001720	.001464	.0009905
%RSD	.4595187	2.189999	.2266361	.1498600	.0772104	2.812122
#1	.1317787	.0610511	11.33798	1.148066	1.895559	.0355675
#2	.1306018	.0629919	11.38318	1.145716	1.897377	.0359965
#3	.1314199	.0636978	11.38201	1.149066	1.894481	.0341070

Elem	Sr4077
Units	ppm
Avg	.0793422
Stddev	.0004413
%RSD	.5561543
#1	.0795930
#2	.0796009
#3	.0788327

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6340.913	113469.8	11364.43	5061.347	7611.104
Stddev	7.777	323.5	35.59	4.705	13.583
%RSD	.1226535	.2850620	.3132071	.0929643	.1784619
#1	6346.041	113841.4	11337.56	5065.829	7613.992
#2	6344.733	113251.1	11350.93	5056.446	7623.011
#3	6331.964	113317.1	11404.80	5061.765	7596.310

Sample Name: Q3017-05ADLX5 Acquired: 9/5/2025 13:41:20 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.1541465	.3838456	.1955211	.3875609	.1564037	6.156527
Stddev	.0009913	.0031511	.0007472	.0055326	.0006296	.006240
%RSD	.6431148	.8209314	.3821443	1.427553	.4025251	.1013606
#1	.1537159	.3834525	.1951119	.3939125	.1569898	6.158632
#2	.1534432	.3809095	.1963835	.3837914	.1564831	6.161443
#3	.1552803	.3871749	.1950678	.3849786	.1557382	6.149507
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0975057	.0388821	.0381998	3.697144	.0866878	.0434983
Stddev	.0006336	.0002197	.0000648	.018415	.0007899	.0001900
%RSD	.6498205	.5649499	.1694938	.4980894	.9111808	.4367730
#1	.0976159	.0386286	.0382394	3.675907	.0871184	.0437055
#2	.0980769	.0390144	.0381251	3.706828	.0857762	.0433323
#3	.0968242	.0390034	.0382348	3.708697	.0871688	.0434570
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0691973	3.737163	.1469640	1.793807	.1032108	.0151988
Stddev	.0000662	.007617	.0004034	.021323	.0002854	.0000996
%RSD	.0956582	.2038274	.2744858	1.188686	.2764875	.6550812
#1	.0692737	3.744172	.1466631	1.770219	.1034868	.0151688
#2	.0691600	3.729056	.1474224	1.811713	.1032285	.0153099
#3	.0691581	3.738261	.1468064	1.799490	.1029169	.0151177
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.106139	.0661189	.0562085	2.502839	.0676519	.0840084
Stddev	.053742	.0015068	.0001585	.002503	.0001868	.0003979
%RSD	.5901720	2.278922	.2819765	.1000075	.2761128	.4736614
#1	9.145727	.0661528	.0562344	2.505723	.0674443	.0836310
#2	9.127732	.0676085	.0560387	2.501565	.0678064	.0839702
#3	9.044959	.0645955	.0563525	2.501229	.0677050	.0844241

Sample Name: Q3017-05ADLX5 Acquired: 9/5/2025 13:41:20 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.1313315	.0683431	F 12.59527	1.148457	1.888398	.0359685
Stddev	.0009216	.0009086	.06844	.007099	.010796	.0006137
%RSD	.7017477	1.329453	.5433536	.6181057	.5717137	1.706197
#1	.1308003	.0676615	12.67054	1.146699	1.894529	.0352848
#2	.1307985	.0693746	12.57850	1.142403	1.875932	.0361490
#3	.1323957	.0679932	12.53678	1.156270	1.894732	.0364717

Elem	Sr4077
Units	ppm
Avg	.0819063
Stddev	.0001620
%RSD	.1977457
#1	.0818374
#2	.0820914
#3	.0817902

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6394.581	115066.4	11962.67	5103.251	7678.423
Stddev	11.924	441.4	26.01	25.966	10.760
%RSD	.1864767	.3835671	.2174069	.5088179	.1401322
#1	6392.811	114564.9	11986.23	5074.190	7668.795
#2	6407.291	115395.8	11967.03	5124.172	7690.038
#3	6383.641	115238.5	11934.76	5111.391	7676.435

Sample Name: CCV03 Acquired: 9/5/2025 14:29:48 Type: Unk
Method: 6010-200.7 NEW(v148) 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	5.091574	5.135378	4.898735	5.155672	5.092717	9.840500	9.957518
Stddev	.013345	.073531	.002481	.015114	.019075	.013815	.049019
%RSD	.2620936	1.431850	.0506428	.2931456	.3745604	.1403929	.4922802
#1	5.086992	5.082562	4.896078	5.139965	5.090470	9.838052	9.999212
#2	5.081124	5.104214	4.900991	5.156938	5.074864	9.828073	9.903519
#3	5.106606	5.219359	4.899134	5.170112	5.112816	9.855376	9.969824
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2401453	2.466833	24.52899	.9879408	2.465563	1.261741	5.101927
Stddev	.0006712	.002770	.04173	.0014724	.002998	.000996	.020695
%RSD	.2794807	.1122915	.1701263	.1490317	.1215856	.0789298	.4056322
#1	.2405721	2.464023	24.50358	.9892025	2.464316	1.260592	5.081733
#2	.2393717	2.466912	24.50623	.9863231	2.463389	1.262287	5.123089
#3	.2404921	2.469562	24.57715	.9882968	2.468983	1.262345	5.100960
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.453779	24.36582	2.476142	1.246663	25.52680	2.473885	2.519601
Stddev	.003530	.02898	.002864	.000249	.04235	.002370	.003759
%RSD	.1438544	.1189301	.1156543	.0199552	.1658860	.0957975	.1491897
#1	2.451686	24.34587	2.473079	1.246771	25.47819	2.471457	2.523767
#2	2.451796	24.35253	2.476596	1.246840	25.54656	2.474007	2.518570
#3	2.457854	24.39906	2.478752	1.246379	25.55566	2.476192	2.516464
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.25526	4.774487	5.063456	4.926714	4.960705	5.116595	5.004527
Stddev	.06411	.010902	.004076	.005551	.005004	.025573	.016449
%RSD	.2538364	.2283432	.0804949	.1126670	.1008654	.4998009	.3286906
#1	25.19317	4.784839	5.061555	4.920447	4.959890	5.087885	4.985720
#2	25.32121	4.763107	5.060677	4.928681	4.956159	5.124972	5.011628
#3	25.25141	4.775513	5.068135	4.931013	4.966067	5.136929	5.016233

Sample Name: CCV03 Acquired: 9/5/2025 14:29:48 Type: Unk
Method: 6010-200.7 NEW(v148) 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	5.028586	4.873894	5.066905
Stddev	.024333	.001984	.042772
%RSD	.4838870	.0407106	.8441434

#1	5.003734	4.876183	5.017667
#2	5.029662	4.872675	5.088180
#3	5.052364	4.872823	5.094867

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6074.405	108552.3	11759.33	4835.587	7078.256
Stddev	13.114	306.6	41.60	9.566	13.251
%RSD	.2158923	.2824006	.3537509	.1978232	.1872030

#1	6065.479	108657.2	11741.10	4824.684	7069.992
#2	6068.275	108792.6	11806.93	4842.570	7071.237
#3	6089.462	108207.0	11729.95	4839.509	7093.540

Sample Name: CCB03 Acquired: 9/5/2025 14:33:59 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001306	-.000997	-.000341	-.000223	-.001428	.0056724	-.002946
Stddev	.002074	.001005	.001177	.000275	.000959	.0080947	.000913
%RSD	158.7480	100.7912	345.1469	123.3604	67.14858	142.7050	30.98725
#1	.000736	-.001468	.000109	-.000539	-.000997	.0100460	-.002072
#2	-.003410	-.001680	-.001676	-.000087	-.000760	-.003668	-.002873
#3	-.001245	.000157	.000544	-.000042	-.002527	.010639	-.003894
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000489	.0000908	-.049644	-.000122	-.000011	-.000109	-.005899
Stddev	.0000256	.0000449	.005781	.000092	.000057	.000097	.006700
%RSD	52.44456	49.40375	11.64530	74.91457	537.0969	89.24638	113.5866
#1	.0000318	.0000919	-.051584	-.000173	-.000039	-.000007	.001482
#2	.0000784	.0001352	-.043142	-.000017	.000055	-.000120	-.007579
#3	.0000364	.0000455	-.054206	-.000177	-.000047	-.000200	-.011598
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002157	-.019299	.0000077	.0005326	-.087576	-.002690	-.000393
Stddev	.0003057	.013628	.0000653	.0004199	.017072	.001175	.000279
%RSD	141.7070	70.61422	847.6918	78.84246	19.49370	43.68001	71.12491
#1	.0000506	-.029220	-.000043	.0005144	-.103923	-.002138	-.000226
#2	.0005685	-.003760	.000081	.0009613	-.088942	-.004039	-.000237
#3	.0000281	-.024917	-.000016	.0001221	-.069861	-.001893	-.000715
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.145116	.0043502	.0005393	-.000477	.0003678	.0081005	-.000756
Stddev	.038182	.0003451	.0001070	.000798	.0010054	.0054233	.000538
%RSD	26.31163	7.932716	19.84034	167.2405	273.3328	66.95013	71.11742
#1	-.183415	.0044686	.0005021	-.001367	-.000095	.0097038	-.000523
#2	-.144881	.0039615	.0006600	-.000241	.001521	.0020563	-.001371
#3	-.107051	.0046206	.0004559	.000176	-.000323	.0125413	-.000374

Sample Name: CCB03 Acquired: 9/5/2025 14:33:59 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB03 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.001987	-.003414	-.000086
Stddev	.001957	.002115	.000019
%RSD	98.51640	61.96584	21.83928
#1	-.001687	-.002380	-.000066
#2	-.000197	-.002014	-.000088
#3	-.004077	-.005847	-.000103

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6355.314	113116.1	11802.36	5026.036	7864.131
Stddev	1.081	285.6	32.94	2.981	8.649
%RSD	.0170055	.2525189	.2790616	.0593081	.1099824
#1	6356.143	113165.1	11771.33	5023.266	7865.885
#2	6355.707	112809.1	11798.84	5025.650	7871.769
#3	6354.091	113374.1	11836.91	5029.191	7854.740

Sample Name: PB169576BL Acquired: 9/5/2025 14:52:56 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.000749	-.002334	-.001576	.0026508	-.000454	.0084269	-.006088
Stddev	.001268	.000406	.000427	.0023532	.000427	.0052747	.000596
%RSD	169.3340	17.38167	27.10107	88.77384	94.05733	62.59343	9.784813
#1	.000628	-.002244	-.001914	.0022982	-.000924	.0061456	-.006463
#2	-.001005	-.002778	-.001096	.0051604	-.000344	.0046768	-.006400
#3	-.001870	-.001982	-.001718	.0004938	-.000092	.0144583	-.005401
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000355	.0000714	-.048025	-.000150	-.000126	.0003204	-.000101
Stddev	.0000625	.0000577	.004237	.000326	.000046	.0000916	.004770
%RSD	176.3295	80.82581	8.822886	217.3541	36.47092	28.59646	4718.569
#1	-.000020	.0001246	-.049271	.000073	-.000075	.0002207	.005133
#2	.000103	.0000100	-.051500	-.000524	-.000137	.0004010	-.004204
#3	.000023	.0000796	-.043305	.000001	-.000165	.0003395	-.001231
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000365	-.011834	.0001144	.0011214	-.164079	-.003075	-.000383
Stddev	.000408	.009631	.0002287	.0000938	.015726	.002337	.000431
%RSD	111.6377	81.38009	199.9239	8.362370	9.584405	76.00011	112.6286
#1	-.000702	-.001533	-.000148	.0010472	-.176956	-.005771	-.000425
#2	-.000482	-.020613	.000223	.0012268	-.168728	-.001616	.000068
#3	.000088	-.013357	.000268	.0010902	-.146552	-.001839	-.000790
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.220730	-.000922	.0000208	-.000889	-.000151	.0036492	-.000418
Stddev	.034042	.000369	.0000484	.000257	.000496	.0018569	.000695
%RSD	15.42246	40.05741	232.2224	28.87210	329.5484	50.88523	166.2726
#1	-.246112	-.001193	.0000659	-.000612	.000107	.0023304	-.001121
#2	-.234033	-.000501	.0000269	-.001118	-.000722	.0057727	.000268
#3	-.182045	-.001072	-.000030	-.000937	.000164	.0028445	-.000401

Sample Name: PB169576BL Acquired: 9/5/2025 14:52:56 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.001537	-.003721	-.000063
Stddev	.000808	.000658	.000042
%RSD	52.55385	17.68840	65.63638

#1	-.002338	-.003982	-.000047
#2	-.001551	-.004210	-.000111
#3	-.000722	-.002973	-.000033

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6418.143	112530.9	11464.87	5010.551	7984.869
Stddev	18.866	379.9	55.10	21.690	16.131
%RSD	.2939439	.3376118	.4806197	.4328928	.2020195

#1	6437.980	112758.1	11522.22	5023.164	8002.606
#2	6416.019	112092.3	11460.05	4985.506	7980.927
#3	6400.429	112742.2	11412.33	5022.985	7971.075

Sample Name: PB169576BS Acquired: 9/5/2025 14:57:14 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.7669449	1.901056	.9250701	1.958771	.7938369	1.929816
Stddev	.0027103	.023221	.0025071	.002705	.0030917	.005141
%RSD	.3533876	1.221504	.2710210	.1380807	.3894567	.2663952
#1	.7663283	1.927119	.9227225	1.957925	.7973789	1.932673
#2	.7645961	1.893485	.9247767	1.956590	.7916799	1.932893
#3	.7699104	1.882565	.9277110	1.961797	.7924519	1.923881
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1892603	.1935469	.1871786	.9364907	.3847327	.1887750
Stddev	.0012813	.0007737	.0003264	.0132735	.0008808	.0000538
%RSD	.6769853	.3997468	.1743906	1.417365	.2289418	.0285209
#1	.1906377	.1928008	.1869160	.9518024	.3856417	.1887365
#2	.1890394	.1934942	.1870756	.9294256	.3838831	.1888365
#3	.1881039	.1943455	.1875440	.9282441	.3846733	.1887520
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3001799	2.939697	.1950706	1.927710	.4760755	.0745498
Stddev	.0006637	.011282	.0005032	.011542	.0007533	.0003759
%RSD	.2210860	.3837902	.2579451	.5987465	.1582220	.5042169
#1	.2995294	2.948005	.1952529	1.919447	.4753098	.0743161
#2	.3001543	2.944233	.1945017	1.940897	.4761012	.0743500
#3	.3008560	2.926852	.1954572	1.922784	.4768156	.0749834
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.719478	.2886375	.2004657	9.390100	.2862481	.4019887
Stddev	.012353	.0044548	.0002332	.028134	.0013368	.0002819
%RSD	.4542569	1.543406	.1163179	.2996187	.4670023	.0701198
#1	2.716446	.2891125	.2006016	9.405170	.2848528	.4016648
#2	2.733065	.2928358	.2001964	9.357640	.2863739	.4021783
#3	2.708922	.2839642	.2005990	9.407489	.2875175	.4021230

Sample Name: PB169576BS Acquired: 9/5/2025 14:57:14 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.6677265	.1941325	.8985060	5.400037	F -.004369	.1998100
Stddev	.0004059	.0013039	.0123022	.008964	.001650	.0010780
%RSD	.0607863	.6716282	1.369178	.1659898	37.76796	.5394857
#1	.6680189	.1936796	.9044410	5.407205	-.003460	.1986019
#2	.6678975	.1931154	.9067155	5.402919	-.003373	.2006734
#3	.6672631	.1956024	.8843616	5.389987	-.006273	.2001548
Elem	Sr4077					
Units	ppm					
Avg	.1930497					
Stddev	.0000620					
%RSD	.0321280					
#1	.1930234					
#2	.1930052					
#3	.1931206					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6282.175	111873.7	11728.52	4982.955	7628.349	
Stddev	4.465	180.3	33.39	11.190	7.004	
%RSD	.0710788	.1612056	.2847216	.2245746	.0918199	
#1	6279.149	111707.2	11737.02	4979.484	7633.797	
#2	6287.304	112065.3	11756.85	4995.469	7630.802	
#3	6280.073	111848.7	11691.70	4973.911	7620.448	

Sample Name: Q3026-01 Acquired: 9/5/2025 15:01:15 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0446259	-.032987	.2582171	.0045570	-.022358	145.7358
Stddev	.0032826	.002784	.0016679	.0026215	.001152	.1217
%RSD	7.355829	8.438682	.6459118	57.52653	5.153318	.0835338
#1	.0481945	-.029890	.2576280	.0039512	-.023232	145.6864
#2	.0439480	-.035280	.2569236	.0074284	-.021052	145.6465
#3	.0417351	-.033792	.2600995	.0022915	-.022791	145.8744
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5626969	.0098204	.0116952	49.34173	.2347111	.2174079
Stddev	.0039242	.0001245	.0000278	.02652	.0002061	.0003700
%RSD	.6973883	1.267346	.2372804	.0537392	.0878116	.1701762
#1	.5584283	.0099357	.0117178	49.32419	.2349472	.2173711
#2	.5635147	.0096885	.0117035	49.32876	.2345668	.2170577
#3	.5661478	.0098370	.0116642	49.37223	.2346193	.2177949
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3565768	354.7207	5.466599	53.57979	.2689109	.0128330
Stddev	.0006352	2.7118	.017323	.17174	.0004952	.0003278
%RSD	.1781385	.7644877	.3168907	.3205281	.1841669	2.554421
#1	.3571906	351.6821	5.455496	53.75333	.2692696	.0124667
#2	.3559221	356.8948	5.457741	53.40991	.2683459	.0130988
#3	.3566176	355.5854	5.486560	53.57612	.2691174	.0129336
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.48306	.7286702	.5368141	11.48560	.2816044	.0374911
Stddev	.13790	.0019297	.0020050	.09410	.0074954	.0001923
%RSD	.9521215	.2648236	.3735059	.8193036	2.661696	.5128580
#1	14.32695	.7264446	.5391279	11.37789	.2740859	.0376795
#2	14.58828	.7298768	.5355866	11.55190	.2890766	.0374987
#3	14.53394	.7296892	.5357278	11.52699	.2816506	.0372951

Sample Name: Q3026-01 Acquired: 9/5/2025 15:01:15 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0123641	8.357311	7.658406	F 10.16157	5.894997	.1272003
Stddev	.0014358	.035784	.116808	.01091	.008400	.0016075
%RSD	11.61221	.4281739	1.525226	.1073502	.1424919	1.263723
#1	.0132873	8.327155	7.777805	10.16923	5.895293	.1253518
#2	.0107100	8.347926	7.544374	10.16640	5.886453	.1282699
#3	.0130951	8.396852	7.653038	10.14908	5.903245	.1279792
Elem	Sr4077					
Units	ppm					
Avg	-.173331					
Stddev	.002054					
%RSD	1.185135					
#1	-.171213					
#2	-.175315					
#3	-.173465					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	7982.541	142973.5	16406.24	6252.959	6924.668	
Stddev	8.243	332.8	80.06	13.016	1.587	
%RSD	.1032632	.2327876	.4879794	.2081587	.0229129	
#1	7991.602	143274.2	16324.41	6238.123	6923.780	
#2	7975.487	142615.9	16484.40	6258.292	6923.725	
#3	7980.535	143030.4	16409.90	6262.462	6926.500	

Sample Name: Q2979-06 Acquired: 9/5/2025 15:06:37 Type: Unk
Method: 6010-200.7 NEW(v148) 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	-.004651	-.002831	.0327563	.0026907	.0016787	.0473696	.2275373
Stddev	.001448	.002661	.0003872	.0027468	.0010818	.0025991	.0005351
%RSD	31.12839	94.00171	1.181895	102.0856	64.44055	5.486879	.2351869
#1	-.006247	-.000299	.0330851	.0042800	.0004374	.0445504	.2273675
#2	-.004284	-.002588	.0328543	.0042733	.0021788	.0496705	.2281368
#3	-.003422	-.005605	.0323296	-.000481	.0024199	.0478880	.2271077
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000009	.0003316	41.22331	.0001504	-.000014	.0064773	.0033024
Stddev	.000013	.0000638	.08537	.0002435	.000070	.0004418	.0068543
%RSD	139.3692	19.25565	.2070969	161.9167	504.0736	6.821148	207.5548
#1	-.000007	.0003990	41.15471	-.000097	-.000018	.0069192	.0092863
#2	.000002	.0002720	41.31892	.000389	.000058	.0064772	.0047968
#3	-.000024	.0003236	41.19630	.000159	-.000082	.0060355	-.004176
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2508084	3.877188	.0029991	.0005004	257.3470	-.003504	.1020738
Stddev	.0009971	.011772	.0004690	.0003357	1.8300	.001150	.0002180
%RSD	.3975397	.3036248	15.63701	67.07017	.7110875	32.81403	.2135580
#1	.2503748	3.881162	.0026418	.0008588	258.9445	-.003870	.1023012
#2	.2519489	3.886459	.0028254	.0001934	257.7459	-.004426	.1018666
#3	.2501015	3.863943	.0035302	.0004491	255.3504	-.002216	.1020538
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.594694	.0264557	.0006605	-.013418	-.000500	1.474330	.0579535
Stddev	.020275	.0007633	.0001827	.000586	.000993	.019555	.0013621
%RSD	1.271432	2.885122	27.66167	4.369810	198.8583	1.326354	2.350242
#1	1.571283	.0258820	.0006743	-.012776	-.000693	1.488178	.0567341
#2	1.606187	.0273220	.0008359	-.013925	.000576	1.451960	.0594234
#3	1.606611	.0261632	.0004713	-.013554	-.001382	1.482850	.0577031

Sample Name: Q2979-06 Acquired: 9/5/2025 15:06:37 Type: Unk
Method: 6010-200.7 NEW(v148) 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	1.155568	-.015276	.1595175
Stddev	.001853	.000843	.0008479
%RSD	.1603193	5.517653	.5315582

#1	1.156946	-.014675	.1586187
#2	1.153462	-.016240	.1603031
#3	1.156297	-.014913	.1596308

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6011.524	107509.8	11871.70	4741.682	6995.197
Stddev	7.895	346.0	72.83	11.382	8.186
%RSD	.1313264	.3218570	.6135010	.2400316	.1170251

#1	6018.115	107110.2	11855.07	4746.991	7004.551
#2	6013.681	107712.2	11808.62	4749.440	6991.697
#3	6002.774	107706.8	11951.41	4728.616	6989.343

Sample Name: Q3021-02DLX5 Acquired: 9/5/2025 15:11:01 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0032275	-.002846	.0117176	-.000348	-.000466	.1597173
Stddev	.0019747	.000518	.0012446	.002676	.000384	.0087067
%RSD	61.18115	18.20254	10.62192	768.0875	82.36676	5.451345
#1	.0021032	-.003343	.0124438	.002616	-.000840	.1523458
#2	.0020718	-.002887	.0124286	-.002585	-.000485	.1693236
#3	.0055076	-.002309	.0102805	-.001076	-.000073	.1574824
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003649	.0000548	.0001685	-.007289	.0000806	.0002664
Stddev	.000409	.0000508	.0000506	.005751	.0002093	.0000683
%RSD	11.20274	92.61217	30.04257	78.89049	259.4524	25.63041
#1	-.004103	.0001023	.0001501	-.004105	.0003102	.0003364
#2	-.003310	.0000013	.0002257	-.013928	-.000099	.0002627
#3	-.003534	.0000608	.0001295	-.003835	.000031	.0002000
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0323498	1.037437	.0051187	.0324309	.0012688	.0007613
Stddev	.0002244	.006875	.0003093	.0051079	.0002061	.0002365
%RSD	.6935778	.6626666	6.043093	15.75003	16.24089	31.06242
#1	.0326083	1.040082	.0050972	.0268098	.0011078	.0005030
#2	.0322356	1.042596	.0048207	.0367884	.0011976	.0009671
#3	.0322054	1.029632	.0054383	.0336944	.0015011	.0008140
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0955917	.0051389	.0113561	-.162486	.0166698	.0049676
Stddev	.0105782	.0015673	.0000930	.023024	.0001586	.0001046
%RSD	11.06602	30.49778	.8189451	14.16983	.9511708	2.105371
#1	.0839975	.0064997	.0113575	-.189039	.0167655	.0050647
#2	.1047172	.0034253	.0112624	-.148059	.0164867	.0049811
#3	.0980605	.0054917	.0114484	-.150360	.0167571	.0048569

Sample Name: Q3021-02DLX5 Acquired: 9/5/2025 15:11:01 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0003429	.0048693	.0734767	.2551298	F 11.13548	-.006878
Stddev	.0006131	.0003997	.0125638	.0030324	.05616	.001604
%RSD	178.7988	8.207750	17.09897	1.188585	.5043754	23.31261
#1	.0007148	.0044225	.0879185	.2574312	11.15043	-.008716
#2	.0006786	.0049925	.0674494	.2562647	11.18265	-.006155
#3	-.000365	.0051929	.0650623	.2516937	11.07335	-.005764

Elem	Sr4077
Units	ppm
Avg	-.000877
Stddev	.000041
%RSD	4.650802
#1	-.000903
#2	-.000830
#3	-.000897

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6422.886	120191.9	12790.62	5130.051	7977.496
Stddev	22.770	226.2	68.87	18.546	31.753
%RSD	.3545207	.1881716	.5384373	.3615154	.3980344
#1	6399.483	119966.8	12738.83	5112.692	7942.514
#2	6424.210	120189.8	12868.78	5127.870	7985.475
#3	6444.966	120419.1	12764.25	5149.591	8004.499

Sample Name: Q3021-04DLX5 Acquired: 9/5/2025 15:15:20 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0019932	-.001983	.0085938	.0004529	-.002075	.0113968	-.006324
Stddev	.0006442	.001488	.0002326	.0007837	.002211	.0024953	.000053
%RSD	32.32233	75.02544	2.706315	173.0180	106.5143	21.89478	.8340278
#1	.0025633	-.003311	.0088526	-.000440	-.000438	.0129024	-.006287
#2	.0012943	-.000375	.0084025	.001026	-.004590	.0085165	-.006300
#3	.0021219	-.002264	.0085262	.000773	-.001198	.0127715	-.006385
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000563	.0000733	-.034505	-.000046	.0001290	.0215690	1.091373
Stddev	.0000211	.0000391	.005787	.000146	.0001969	.0007472	.004374
%RSD	37.45795	53.24567	16.77224	317.8928	152.6853	3.464422	.4007459
#1	.0000320	.0000290	-.032735	-.000190	-.000090	.0223697	1.095366
#2	.0000672	.0000886	-.040971	.000102	.000186	.0214470	1.092052
#3	.0000696	.0001024	-.029810	-.000051	.000291	.0208902	1.086699
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0024702	.0112712	.0007093	.0008258	.1027095	.0068400	.0077895
Stddev	.0002598	.0122449	.0000647	.0000670	.0279959	.0006856	.0000867
%RSD	10.51585	108.6385	9.124878	8.115227	27.25739	10.02392	1.112517
#1	.0025772	-.002036	.0007296	.0008827	.0988349	.0061504	.0077365
#2	.0026593	.013787	.0006369	.0008426	.0768527	.0075216	.0077425
#3	.0021740	.022063	.0007615	.0007520	.1324409	.0068481	.0078895
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.123167	.0190410	.0060080	.0002426	.0011061	.0491267	.2810528
Stddev	.028458	.0005217	.0001663	.0003178	.0004896	.0100069	.0021841
%RSD	23.10501	2.739891	2.767247	131.0326	44.26664	20.36961	.7771128
#1	-.155122	.0189586	.0061881	.0003771	.0016692	.0566591	.2828448
#2	-.100556	.0195990	.0059755	.0004710	.0007805	.0377720	.2816936
#3	-.113823	.0185654	.0058604	-.000120	.0008686	.0529491	.2786200

Sample Name: Q3021-04DLX5 Acquired: 9/5/2025 15:15:20 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	9.969539	-.005819	-.001016
Stddev	.111774	.001019	.000124
%RSD	1.121151	17.51503	12.18112

#1	10.07453	-.005581	-.001069
#2	9.98205	-.006936	-.000875
#3	9.85204	-.004940	-.001105

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6588.573	115777.1	13045.52	5096.544	8292.473
Stddev	12.202	323.8	7.59	6.779	20.169
%RSD	.1851928	.2797051	.0581610	.1330037	.2432210

#1	6581.192	115531.4	13053.22	5088.919	8283.353
#2	6581.871	116144.1	13038.05	5101.889	8278.475
#3	6602.657	115655.8	13045.30	5098.822	8315.592

Sample Name: Q3021-06DLX5 Acquired: 9/5/2025 15:19:38 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0023505	.0001465	.0090601	.0018237	-.000997	.6744401	-.004329
Stddev	.0019824	.0013628	.0003590	.0015371	.002764	.0052834	.000996
%RSD	84.33867	930.0869	3.962116	84.28840	277.3383	.7833803	23.01671
#1	.0018195	-.001030	.0087521	.0007517	.002083	.6785060	-.003190
#2	.0006877	.001640	.0094543	.0035848	-.001812	.6684681	-.005040
#3	.0045444	-.000171	.0089739	.0011345	-.003261	.6763462	-.004756
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0003214	.0003598	.1059769	.0012792	.0005083	.0193188	1.645965
Stddev	.0000342	.0000009	.0052971	.0001278	.0000812	.0001348	.004204
%RSD	10.63892	.2364609	4.998310	9.990606	15.97102	.6977926	.2554069
#1	.0003131	.0003594	.1036009	.0013612	.0004200	.0193629	1.650202
#2	.0003590	.0003607	.1022838	.0011320	.0005798	.0191675	1.645899
#3	.0002922	.0003591	.1120459	.0013445	.0005251	.0194261	1.641795
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0141711	.1158405	.0016852	.0005207	.0540637	.0055146	.0079113
Stddev	.0003175	.0129292	.0003664	.0002122	.0089190	.0015874	.0002300
%RSD	2.240830	11.16119	21.74137	40.75682	16.49725	28.78600	2.907390
#1	.0145372	.1279569	.0015943	.0002956	.0618264	.0040759	.0076678
#2	.0139691	.1173360	.0013728	.0007172	.0560437	.0072176	.0079415
#3	.0140071	.1022286	.0020884	.0005493	.0443211	.0052503	.0081248
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.132787	.0149411	.0054228	.0006947	.0239779	.2065943	.2504612
Stddev	.051168	.0005295	.0001128	.0004103	.0002547	.0126223	.0011669
%RSD	38.53420	3.543741	2.080866	59.06139	1.062365	6.109702	.4659155
#1	-.187450	.0151125	.0055468	.0004586	.0238674	.1971959	.2517625
#2	-.124876	.0153637	.0053954	.0011684	.0242693	.2016460	.2501134
#3	-.086035	.0143472	.0053262	.0004570	.0237972	.2209411	.2495076

Sample Name: Q3021-06DLX5 Acquired: 9/5/2025 15:19:38 Type: Unk
Method: 6010-200.7 NEW(v148) 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	8.197512	-.006968	-.000699
Stddev	.057423	.001529	.000051
%RSD	.7004976	21.94648	7.343135
#1	8.256752	-.008663	-.000696
#2	8.193687	-.006553	-.000649
#3	8.142096	-.005690	-.000751

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6627.551	121469.1	13060.47	5195.102	8353.864
Stddev	6.308	171.2	68.18	23.242	10.022
%RSD	.0951825	.1409488	.5220520	.4473825	.1199659
#1	6630.757	121662.8	13009.88	5221.864	8353.131
#2	6631.612	121338.0	13138.01	5179.976	8364.232
#3	6620.283	121406.7	13033.53	5183.467	8344.229

Sample Name: Q3023-01 Acquired: 9/5/2025 15:23:56 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.1777839	-.020749	.5158972	-.002226	.0758796	121.9828
Stddev	.0019083	.002575	.0010240	.003038	.0032361	.1179
%RSD	1.073403	12.41177	.1984906	136.4949	4.264831	.0966295

#1	.1781378	-.023695	.5168668	-.005467	.0792700	121.8468
#2	.1757234	-.019624	.5148263	.000558	.0755451	122.0552
#3	.1794906	-.018927	.5159986	-.001769	.0728238	122.0464

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8276095	.0093423	.0090387	146.0234	17.05320	.2273990
Stddev	.0019838	.0000874	.0000432	.2853	.02599	.0003959
%RSD	.2397075	.9352483	.4779818	.1953898	.1523785	.1741071

#1	.8284886	.0093626	.0090154	145.7854	17.07295	.2277302
#2	.8253381	.0092466	.0090121	145.9450	17.02376	.2269605
#3	.8290020	.0094178	.0090886	146.3397	17.06288	.2275063

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5943635	308.6181	6.645368	56.71335	.6159617	.0108843
Stddev	.0023125	1.2227	.020844	.24326	.0005287	.0007422
%RSD	.3890734	.3961848	.3136609	.4289309	.0858356	6.818548

#1	.5924042	309.7320	6.637804	56.66424	.6153534	.0116388
#2	.5937721	308.8124	6.629362	56.49840	.6163100	.0108591
#3	.5969143	307.3099	6.668937	56.97742	.6162218	.0101551

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.037768	1.055827	1.160728	13.90123	.2871707	.0056799
Stddev	.014814	.005015	.002358	.06459	.0050156	.0002226
%RSD	.2940514	.4749696	.2031851	.4646530	1.746545	3.918744

#1	5.054173	1.052665	1.158064	13.97243	.2888200	.0054382
#2	5.025369	1.053206	1.161569	13.88485	.2911540	.0057248
#3	5.033764	1.061609	1.162551	13.84640	.2815382	.0058765

Sample Name: Q3023-01 Acquired: 9/5/2025 15:23:56 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0762683	4.205856	F 14.14823	5.759641	4.229660	.1779330
Stddev	.0009549	.008144	.13900	.017431	.018639	.0000985
%RSD	1.252034	.1936427	.9824665	.3026318	.4406702	.0553744
#1	.0762714	4.207704	14.02513	5.771655	4.250351	.1778879
#2	.0772217	4.196946	14.12059	5.739649	4.214186	.1780461
#3	.0753119	4.212917	14.29898	5.767618	4.224443	.1778652
Elem	Sr4077					
Units	ppm					
Avg	-.069474					
Stddev	.001773					
%RSD	2.552595					
#1	-.070429					
#2	-.070565					
#3	-.067428					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6727.759	124908.7	14141.65	5307.368	7051.890	
Stddev	6.962	159.0	88.48	12.608	5.208	
%RSD	.1034861	.1272840	.6256430	.2375570	.0738586	
#1	6735.236	124881.4	14203.77	5303.483	7057.074	
#2	6721.463	124765.2	14180.82	5297.159	7046.658	
#3	6726.577	125079.6	14040.35	5321.461	7051.939	

Sample Name: Q3023-04 Acquired: 9/5/2025 15:28:03 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0977126	-.013595	1.207791	.0050515	.0174718	299.9595
Stddev	.0029626	.001679	.000880	.0023843	.0030202	2.2582
%RSD	3.031949	12.35189	.0728504	47.20000	17.28633	.7528490
#1	.0959343	-.012789	1.207722	.0077366	.0206114	297.5904
#2	.0960708	-.012471	1.206947	.0042353	.0145871	302.0875
#3	.1011326	-.015526	1.208703	.0031824	.0172169	300.2006
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7382742	.0093710	.0244567	215.6651	5.616263	.4051973
Stddev	.0044469	.0001276	.0002557	.2579	.005072	.0006587
%RSD	.6023363	1.361084	1.045366	.1195982	.0903169	.1625583
#1	.7425368	.0092290	.0247352	215.9005	5.615963	.4058612
#2	.7386223	.0094758	.0244024	215.7055	5.621479	.4045440
#3	.7336635	.0094083	.0242325	215.3894	5.611347	.4051867
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.885367	540.0096	5.875712	174.4584	.8663856	.0217331
Stddev	.002439	1.7035	.015360	.2182	.0003133	.0008628
%RSD	.1293720	.3154653	.2614163	.1250528	.0361661	3.969936
#1	1.883861	539.4197	5.884056	174.4450	.8664317	.0214607
#2	1.884059	538.6794	5.885094	174.2473	.8666734	.0210394
#3	1.888181	541.9297	5.857986	174.6830	.8660518	.0226993
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	35.20962	1.467273	1.795592	9.622216	^ *****	.0048564
Stddev	.16872	.005699	.002110	.047066	-----	.0005021
%RSD	.4791966	.3884033	.1175209	.4891372	-----	10.33968
#1	35.36056	1.470066	1.795662	9.676229	^ -----	.0042858
#2	35.24083	1.460716	1.793447	9.590001	^ -----	.0050521
#3	35.02747	1.471037	1.797666	9.600418	^ -----	.0052312

Sample Name: Q3023-04 Acquired: 9/5/2025 15:28:03 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0703293	F 31.42741	F 22.76771	7.876218	5.191655	.2000359
Stddev	.0018706	.07887	.32307	.058205	.031659	.0010601
%RSD	2.659808	.2509520	1.419001	.7389909	.6098054	.5299540
#1	.0702207	31.49053	23.12739	7.941142	5.227999	.2005945
#2	.0685154	31.45269	22.50216	7.828710	5.170069	.2006999
#3	.0722519	31.33900	22.67357	7.858802	5.176899	.1988133
Elem	Sr4077					
Units	ppm					
Avg	.6953704					
Stddev	.0059826					
%RSD	.8603462					
#1	.6983696					
#2	.6992600					
#3	.6884814					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	6631.163	123158.0	14949.42	5225.321	6238.964	
Stddev	5.268	144.8	31.96	7.341	9.419	
%RSD	.0794485	.1175876	.2137725	.1404865	.1509691	
#1	6634.342	123323.6	14975.24	5222.825	6229.259	
#2	6634.066	123054.9	14913.67	5219.553	6239.566	
#3	6625.082	123095.5	14959.34	5233.584	6248.068	

Sample Name: Q3027-01 Acquired: 9/5/2025 15:32:19 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0378069	-.030763	.2083655	.0051067	-.016476	196.9924
Stddev	.0008804	.000957	.0027433	.0026401	.002861	1.0916
%RSD	2.328810	3.111509	1.316581	51.69936	17.36576	.5541558

#1	.0378799	-.031642	.2052216	.0024105	-.019409	195.9973
#2	.0368923	-.029743	.2096018	.0076870	-.013693	196.8199
#3	.0386487	-.030903	.2102730	.0052225	-.016327	198.1600

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7996142	.0163029	.0286280	29.34150	.1716321	.2111630
Stddev	.0043558	.0000406	.0001355	.04176	.0010380	.0008970
%RSD	.5447369	.2491268	.4732511	.1423095	.6047834	.4247846

#1	.7992148	.0162712	.0287844	29.34535	.1728295	.2111088
#2	.7954718	.0162889	.0285478	29.29795	.1709883	.2102943
#3	.8041559	.0163487	.0285517	29.38120	.1710785	.2120858

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1460385	276.6978	3.550286	27.10906	.1999438	.0088136
Stddev	.0004911	.4817	.013404	.03094	.0003136	.0001931
%RSD	.3362825	.1740746	.3775592	.1141414	.1568353	2.190457

#1	.1455538	277.2095	3.551475	27.11321	.1995844	.0086861
#2	.1460258	276.2533	3.536327	27.13773	.2000859	.0087191
#3	.1465358	276.6307	3.563056	27.07626	.2001613	.0090357

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.696910	.3311084	.4655971	9.431913	.2711788	.0066243
Stddev	.062454	.0008040	.0007409	.053688	.0029953	.0001854
%RSD	.6440590	.2428131	.1591176	.5692210	1.104542	2.798991

#1	9.764273	.3303240	.4664013	9.493906	.2734880	.0065053
#2	9.640931	.3310705	.4654476	9.400665	.2677943	.0068380
#3	9.685526	.3319306	.4649424	9.401167	.2722541	.0065297

Sample Name: Q3027-01 Acquired: 9/5/2025 15:32:19 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0120413	6.352023	5.387486	F 10.05049	3.807152	.0670550
Stddev	.0010440	.013120	.218032	.03517	.017333	.0000940
%RSD	8.670589	.2065456	4.047010	.3499346	.4552663	.1402477
#1	.0110074	6.352822	5.638616	10.05796	3.819309	.0669745
#2	.0130952	6.338521	5.246479	10.01219	3.787305	.0670322
#3	.0120214	6.364725	5.277364	10.08133	3.814843	.0671584
Elem	Sr4077					
Units	ppm					
Avg	-.168204					
Stddev	.000338					
%RSD	.2009405					
#1	-.168451					
#2	-.168343					
#3	-.167819					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	12449.78	220154.7	27126.38	9643.539	6844.176	
Stddev	17.71	700.9	74.91	19.861	10.097	
%RSD	.1422396	.3183636	.2761398	.2059527	.1475211	
#1	12445.87	219394.3	27199.87	9622.317	6850.983	
#2	12469.12	220294.6	27129.12	9661.680	6848.970	
#3	12434.36	220775.0	27050.14	9646.619	6832.576	

Sample Name: CCV04 Acquired: 9/5/2025 15:36:46 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.971862	4.956331	4.716031	5.053258	5.059276	9.609252	9.750891
Stddev	.013810	.048857	.004230	.008761	.005346	.027654	.093863
%RSD	.2777629	.9857412	.0896927	.1733820	.1056632	.2877831	.9626138
#1	4.960311	4.992817	4.712846	5.047984	5.056522	9.632821	9.770812
#2	4.968116	4.900825	4.714418	5.048419	5.055869	9.578810	9.648667
#3	4.987158	4.975352	4.720831	5.063372	5.065438	9.616125	9.833195
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2274578	2.359758	23.74492	.9651839	2.382578	1.223396	5.145717
Stddev	.0018017	.002296	.07807	.0038368	.001491	.002969	.016283
%RSD	.7921071	.0972792	.3287654	.3975190	.0625754	.2426923	.3164470
#1	.2295334	2.358510	23.82705	.9684907	2.380857	1.221487	5.127240
#2	.2265428	2.358356	23.67168	.9609771	2.383406	1.221885	5.151938
#3	.2262972	2.362407	23.73603	.9660838	2.383471	1.226817	5.157973
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.373840	23.41106	2.384895	1.230272	25.25072	2.416936	2.475167
Stddev	.006734	.05096	.002990	.000723	.15332	.004454	.006142
%RSD	.2836755	.2176651	.1253917	.0587428	.6072020	.1842730	.2481495
#1	2.380861	23.46973	2.382375	1.230678	25.11605	2.418874	2.481247
#2	2.367435	23.38568	2.384111	1.230700	25.21853	2.411841	2.475289
#3	2.373223	23.37778	2.388200	1.229437	25.41759	2.420092	2.468964
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.30489	4.556883	4.989966	4.726431	4.853873	5.149989	4.766191
Stddev	.14732	.029787	.007725	.006476	.009127	.038682	.016140
%RSD	.5821935	.6536759	.1548105	.1370167	.1880440	.7511085	.3386256
#1	25.14787	4.586181	4.989410	4.727384	4.861387	5.112222	4.761301
#2	25.32671	4.557838	4.982535	4.719532	4.843716	5.148220	4.753062
#3	25.44009	4.526630	4.997955	4.732379	4.856517	5.189525	4.784211

Sample Name: CCV04 Acquired: 9/5/2025 15:36:46 Type: Unk
Method: 6010-200.7 NEW(v148) 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	4.829390	4.752284	4.919303
Stddev	.008426	.012665	.017255
%RSD	.1744812	.2664993	.3507608
#1	4.836258	4.756643	4.911419
#2	4.819987	4.738015	4.907398
#3	4.831925	4.762193	4.939092

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6316.656	112007.1	12538.49	4904.540	7460.448
Stddev	13.568	339.6	105.85	17.608	12.657
%RSD	.2147933	.3032001	.8441737	.3590062	.1696534
#1	6315.670	111644.0	12416.28	4885.683	7459.813
#2	6330.690	112317.0	12599.03	4920.552	7473.411
#3	6303.609	112060.4	12600.18	4907.383	7448.121

Sample Name: CCB04 Acquired: 9/5/2025 15:40:57 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001443	-.001660	-.000466	-.000463	-.001735	.0164554	-.005151
Stddev	.000547	.000492	.001036	.001144	.001471	.0041242	.000539
%RSD	37.93008	29.64588	222.3057	247.2404	84.77199	25.06295	10.45852
#1	-.000815	-.002227	-.000962	.000059	-.002138	.0198743	-.004811
#2	-.001698	-.001392	-.001162	-.001775	-.002963	.0118750	-.004870
#3	-.001816	-.001359	.000725	.000328	-.000105	.0176168	-.005772
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000787	.0004079	-.047790	-.000344	.0002604	.0000066	.0039353
Stddev	.0000259	.0000579	.001647	.000165	.0001808	.0001843	.0034487
%RSD	32.94487	14.19298	3.447200	48.09413	69.42167	2812.027	87.63514
#1	.0001083	.0004720	-.046740	-.000253	.0003896	.0002189	.0036375
#2	.0000679	.0003593	-.049688	-.000244	.0003378	-.000088	.0006451
#3	.0000599	.0003925	-.046941	-.000534	.0000538	-.000111	.0075231
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002312	.0111292	.0004974	.0007907	-.133885	-.001783	.0001043
Stddev	.0003605	.0153995	.0001485	.0001867	.013239	.002933	.0001397
%RSD	155.9171	138.3710	29.85435	23.60836	9.888078	164.4341	133.9392
#1	.0002656	-.005607	.0003865	.0007323	-.146757	-.004941	.0002617
#2	.0005732	.014293	.0006661	.0009996	-.134591	.000854	-.000005
#3	-.000145	.024701	.0004395	.0006402	-.120308	-.001263	.000056
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.233334	.0029780	.0010199	-.000013	.0015484	.0109827	-.000494
Stddev	.009798	.0002265	.0002713	.000227	.0009439	.0187438	.000598
%RSD	4.198939	7.604538	26.59667	1738.690	60.96039	170.6666	121.1111
#1	-.239956	.0027679	.0013241	-.000024	.0026206	.0096226	-.000301
#2	-.237966	.0029480	.0009323	.000220	.0011814	-.007044	-.000016
#3	-.222079	.0032179	.0008032	-.000235	.0008431	.030369	-.001165

Sample Name: CCB04 Acquired: 9/5/2025 15:40:57 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0033514	-.005119	.0008263
Stddev	.0042245	.000844	.0001114
%RSD	126.0526	16.47977	13.47744
#1	-.001100	-.006048	.0009547
#2	.007304	-.004401	.0007562
#3	.003850	-.004908	.0007679

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6510.316	118931.4	12606.79	5122.801	8155.618
Stddev	10.163	178.3	73.45	8.682	3.903
%RSD	.1561104	.1498961	.5826279	.1694680	.0478546
#1	6520.741	118875.4	12678.04	5129.561	8158.908
#2	6509.772	118787.8	12531.32	5113.011	8151.306
#3	6500.436	119130.9	12610.99	5125.832	8156.641

Sample Name: Q3027-01LX5 Acquired: 9/5/2025 15:45:16 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0106649	-.007287	.0486796	.0024809	-.007359	69.47307	.2723166
Stddev	.0005485	.001140	.0006307	.0010844	.001148	.05724	.0008114
%RSD	5.142857	15.64766	1.295631	43.71115	15.60429	.0823856	.2979546
#1	.0108522	-.007749	.0492438	.0012549	-.008676	69.52026	.2713998
#2	.0110953	-.005988	.0479987	.0033144	-.006567	69.48953	.2726077
#3	.0100474	-.008124	.0487964	.0028735	-.006835	69.40940	.2729423
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0060919	.0021106	10.68265	.0611595	.0420802	.0606570	93.48403
Stddev	.0000754	.0000568	.01191	.0004282	.0002010	.0006398	.15668
%RSD	1.238192	2.690549	.1114585	.7000554	.4777565	1.054810	.1675985
#1	.0060048	.0021730	10.67698	.0616525	.0419446	.0602353	93.40085
#2	.0061375	.0020619	10.69633	.0609453	.0419849	.0603424	93.38648
#3	.0061334	.0020969	10.67464	.0608808	.0423112	.0613932	93.66475
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.293350	9.904621	.0418523	.0029805	2.864233	.1180277	.1624803
Stddev	.000925	.029534	.0005767	.0002812	.028725	.0008694	.0002582
%RSD	.0715084	.2981793	1.377998	9.436155	1.002890	.7365972	.1589356
#1	1.293262	9.883503	.0415679	.0028246	2.853038	.1183717	.1627718
#2	1.292471	9.891992	.0414730	.0033052	2.842791	.1186725	.1623891
#3	1.294315	9.938370	.0425160	.0028118	2.896870	.1170390	.1622800
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.820159	.0759539	.0023244	.0018476	2.275167	1.642603	2.099719
Stddev	.023867	.0005366	.0003771	.0003666	.026917	.016817	.005974
%RSD	.8462956	.7065222	16.22389	19.84416	1.183097	1.023799	.2845329
#1	2.796494	.0764918	.0025492	.0018411	2.260297	1.630119	2.094174
#2	2.844223	.0754186	.0025351	.0022175	2.306239	1.661726	2.098936
#3	2.819759	.0759514	.0018891	.0014843	2.258966	1.635964	2.106046

Sample Name: Q3027-01LX5 Acquired: 9/5/2025 15:45:16 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.7609130	.0173958	-.055252
Stddev	.0031753	.0007495	.000125
%RSD	.4172958	4.308489	.2266758

#1	.7573815	.0173111	-.055301
#2	.7618250	.0166922	-.055110
#3	.7635324	.0181840	-.055346

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7544.492	137419.1	15320.45	5998.912	7366.221
Stddev	10.291	25.9	16.18	9.909	12.205
%RSD	.1364010	.0188664	.1056410	.1651833	.1656877

#1	7549.991	137418.1	15332.91	6001.791	7371.538
#2	7550.865	137393.6	15302.16	5987.882	7374.865
#3	7532.620	137445.5	15326.29	6007.063	7352.259

Sample Name: Q3027-01MS Acquired: 9/5/2025 15:49:21 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.3780096	1.607428	1.087593	.8387898	.1147446	199.5947
Stddev	.0004594	.005622	.001264	.0027404	.0012826	2.4748
%RSD	.1215427	.3497416	.1161796	.3267040	1.117815	1.239900
#1	.3777153	1.602254	1.088407	.8382197	.1138600	197.6252
#2	.3777744	1.613410	1.088235	.8363793	.1141583	202.3726
#3	.3785390	1.606619	1.086138	.8417703	.1162156	198.7864
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9434903	.0923554	.2118515	40.03728	.3799610	.4863585
Stddev	.0052688	.0000649	.0002505	.16578	.0042940	.0007392
%RSD	.5584328	.0702457	.1182293	.4140753	1.130121	.1519754
#1	.9481046	.0923989	.2118110	40.04326	.3763197	.4855053
#2	.9377493	.0922809	.2121198	39.86859	.3846962	.4867661
#3	.9446170	.0923865	.2116238	40.19999	.3788671	.4868042
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2828821	293.1300	4.580843	35.36940	.6999785	.0440055
Stddev	.0008681	.9891	.021712	.11299	.0004234	.0005470
%RSD	.3068666	.3374109	.4739697	.3194603	.0604932	1.242904
#1	.2834722	291.9883	4.583723	35.32925	.6996629	.0434114
#2	.2832887	293.7229	4.557835	35.28197	.7004598	.0444881
#3	.2818853	293.6790	4.600971	35.49698	.6998129	.0441172
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.53522	.5082414	.6088703	13.68298	^ *****	.1780012
Stddev	.05466	.0003739	.0008233	.05868	-----	.0004740
%RSD	.4738299	.0735616	.1352145	.4288342	-----	.2662607
#1	11.54336	.5086125	.6097178	13.67597	^ -----	.1775108
#2	11.47695	.5078648	.6080736	13.62812	.3790023	.1780359
#3	11.58535	.5082470	.6088193	13.74484	.3766037	.1784568

Sample Name: Q3027-01MS Acquired: 9/5/2025 15:49:21 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.6083938	7.215196	6.913803	F 16.46755	4.427262	.1595037
Stddev	.0029056	.040236	.095869	.05507	.007676	.0013556
%RSD	.4775894	.5576601	1.386626	.3344121	.1733768	.8498974
#1	.6088013	7.261157	6.941867	16.46203	4.419092	.1604826
#2	.6110742	7.186330	6.992508	16.52516	4.434323	.1579564
#3	.6053059	7.198101	6.807035	16.41544	4.428371	.1600721
Elem	Sr4077					
Units	ppm					
Avg	-.075822					
Stddev	.002015					
%RSD	2.657528					
#1	-.073501					
#2	-.077132					
#3	-.076832					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	12674.90	228171.5	27878.63	9763.362	6595.240	
Stddev	18.36	1357.2	38.76	16.218	3.789	
%RSD	.1448845	.5948184	.1390187	.1661069	.0574508	
#1	12683.83	229575.9	27906.90	9758.266	6592.129	
#2	12687.09	228071.7	27894.53	9781.515	6599.460	
#3	12653.78	226867.0	27834.45	9750.304	6594.132	

Sample Name: Q3027-01MSD Acquired: 9/5/2025 15:53:41 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.3708219	1.636311	1.096724	.8147553	.1122569	198.2729
Stddev	.0028842	.035099	.001411	.0051643	.0018465	.8391
%RSD	.7777840	2.145015	.1286182	.6338510	1.644923	.4232005
#1	.3697645	1.637426	1.095128	.8150513	.1143636	199.1367
#2	.3686156	1.600668	1.097237	.8094493	.1109188	197.4609
#3	.3740855	1.670840	1.097806	.8197652	.1114884	198.2212
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8642641	.0995609	.2213603	34.99007	.4174041	.4504964
Stddev	.0033755	.0001535	.0001187	.02158	.0024329	.0003757
%RSD	.3905635	.1541487	.0536390	.0616652	.5828540	.0834042
#1	.8651082	.0994534	.2213923	34.97736	.4166013	.4503483
#2	.8605466	.0997366	.2214598	34.97787	.4201368	.4509236
#3	.8671374	.0994925	.2212289	35.01498	.4154740	.4502172
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3088334	282.3686	3.782867	31.10120	.7151049	.0305877
Stddev	.0005786	.6380	.014439	.06568	.0009516	.0008822
%RSD	.1873432	.2259537	.3816997	.2111854	.1330678	2.884035
#1	.3094833	281.6355	3.783391	31.06888	.7158090	.0306779
#2	.3083745	282.7986	3.768173	31.05794	.7154834	.0296638
#3	.3086425	282.6717	3.797037	31.17678	.7140223	.0314212
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.862191	.5204536	.5993342	12.01499	^ *****	.1740975
Stddev	.030449	.0016445	.0013716	.03498	-----	.0006098
%RSD	.3087475	.3159665	.2288543	.2911289	-----	.3502499
#1	9.827846	.5190537	.5999944	11.97488	^ -----	.1740685
#2	9.872845	.5222647	.6002508	12.03912	^ -----	.1735027
#3	9.885881	.5200425	.5977573	12.03099	^ -----	.1747213

Sample Name: Q3027-01MSD Acquired: 9/5/2025 15:53:41 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.6142960	7.691082	4.951731	F 17.26970	4.348723	.1530195
Stddev	.0024032	.021834	.040348	.06531	.024638	.0006052
%RSD	.3912151	.2838910	.8148263	.3782022	.5665471	.3954989
#1	.6167940	7.696089	4.905182	17.25750	4.360232	.1527945
#2	.6120004	7.667179	4.973304	17.21134	4.320437	.1525590
#3	.6140935	7.709978	4.976706	17.34025	4.365499	.1537050

Elem	Sr4077
Units	ppm
Avg	-.061364
Stddev	.001176
%RSD	1.915887
#1	-.060378
#2	-.062665
#3	-.061048

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	12971.48	232060.5	26480.55	10099.98	6520.161
Stddev	12.66	1029.0	43.02	40.43	5.735
%RSD	.0976169	.4434243	.1624408	.4002504	.0879615
#1	12983.36	232998.5	26514.89	10053.43	6526.768
#2	12972.93	230959.9	26494.47	10120.20	6516.467
#3	12958.16	232223.1	26432.30	10126.30	6517.248

Sample Name: Q3027-01A Acquired: 9/5/2025 15:58:03 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.4076600	1.736134	1.108831	.9236269	.3678827	200.6550
Stddev	.0010474	.041779	.000720	.0026669	.0006979	.8952
%RSD	.2569360	2.406456	.0649534	.2887442	.1897185	.4461535

#1	.4079780	1.760913	1.108967	.9245813	.3682085	199.9795
#2	.4064904	1.759592	1.108052	.9256854	.3683583	201.6704
#3	.4085115	1.687898	1.109474	.9206142	.3670815	200.3150

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8879637	.0965570	.2182198	32.25577	.3495664	.4157880
Stddev	.0024325	.0001436	.0003386	.04883	.0019743	.0005505
%RSD	.2739424	.1487049	.1551823	.1513921	.5647925	.1323998

#1	.8854215	.0964261	.2184583	32.27413	.3490634	.4151524
#2	.8882006	.0967106	.2183689	32.20042	.3517436	.4161135
#3	.8902691	.0965343	.2178322	32.29276	.3478923	.4160980

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2863928	280.3428	3.692411	29.85153	.6906855	.0445877
Stddev	.0019043	2.5229	.009420	.08997	.0010367	.0011036
%RSD	.6649413	.8999284	.2551147	.3013826	.1500931	2.475180

#1	.2884813	277.5906	3.686031	29.93964	.6895750	.0435404
#2	.2859446	280.8919	3.687972	29.75982	.6908535	.0444825
#3	.2847525	282.5459	3.703230	29.85513	.6916278	.0457401

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.09988	.4722529	.5523364	14.04920	.3597478	.1956834
Stddev	.04346	.0022100	.0012110	.04200	.0053971	.0004153
%RSD	.3915463	.4679810	.2192579	.2989296	1.500260	.2122307

#1	11.05084	.4699313	.5521810	14.02841	.3538937	.1952062
#2	11.13362	.4724962	.5536177	14.09754	.3608239	.1958812
#3	11.11519	.4743312	.5512106	14.02165	.3645258	.1959629

Sample Name: Q3027-01A Acquired: 9/5/2025 15:58:03 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.6715225	6.523593	4.252589	F 16.17802	4.183742	.1607244
Stddev	.0022943	.006476	.092696	.06321	.023192	.0002737
%RSD	.3416500	.0992680	2.179743	.3907279	.5543273	.1703127
#1	.6729563	6.523217	4.234067	16.18132	4.181642	.1606028
#2	.6688764	6.517313	4.353148	16.23952	4.207912	.1610379
#3	.6727347	6.530248	4.170553	16.11323	4.161672	.1605326
Elem	Sr4077					
Units	ppm					
Avg	-.079520					
Stddev	.002024					
%RSD	2.544729					
#1	-.077244					
#2	-.080196					
#3	-.081118					
Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306	
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	
Avg	12386.07	225737.5	27558.11	9676.168	6560.363	
Stddev	18.20	563.8	20.46	18.066	5.618	
%RSD	.1469604	.2497752	.0742461	.1867087	.0856423	
#1	12386.84	226229.9	27557.39	9655.423	6564.447	
#2	12403.87	225122.4	27578.93	9688.445	6562.687	
#3	12367.49	225860.1	27538.03	9684.637	6553.956	

Sample Name: Q3027-01DUP Acquired: 9/5/2025 16:02:24 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0383853	-.036692	.2180355	.0039224	-.016945	200.5715
Stddev	.0006848	.004350	.0014562	.0020125	.000376	1.8087
%RSD	1.784109	11.85521	.6678705	51.30725	2.220509	.9017538

#1	.0383911	-.037784	.2178924	.0061533	-.017374	201.7824
#2	.0390672	-.031899	.2166561	.0033700	-.016791	198.4924
#3	.0376976	-.040391	.2195580	.0022438	-.016669	201.4396

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8091392	.0169225	.0328497	31.77123	.1776628	.2238872
Stddev	.0023339	.0000814	.0002932	.08120	.0003383	.0004179
%RSD	.2884456	.4811422	.8925052	.2555829	.1904130	.1866709

#1	.8099032	.0170165	.0331474	31.86427	.1775161	.2239191
#2	.8065191	.0168741	.0328404	31.71466	.1780496	.2234542
#3	.8109954	.0168769	.0325613	31.73476	.1774226	.2242882

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1483771	281.6445	3.639287	28.98373	.2151604	.0090101
Stddev	.0015777	1.9823	.013435	.10158	.0002000	.0008312
%RSD	1.063300	.7038198	.3691576	.3504880	.0929596	9.225492

#1	.1499811	280.1503	3.646944	29.09930	.2149616	.0081953
#2	.1483231	280.8898	3.623774	28.94335	.2151581	.0089780
#3	.1468271	283.8932	3.647143	28.90855	.2153616	.0098569

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.720006	.3451195	.4682320	9.035620	.2743893	.0066840
Stddev	.072909	.0011200	.0007030	.054863	.0117515	.0001779
%RSD	.7500873	.3245377	.1501499	.6071846	4.282772	2.660980

#1	9.675910	.3463932	.4689623	8.998869	.2628181	.0065279
#2	9.679947	.3446768	.4675598	9.009309	.2740368	.0068776
#3	9.804162	.3442885	.4681738	9.098683	.2863131	.0066465

Sample Name: Q3027-01DUP Acquired: 9/5/2025 16:02:24 Type: Unk
Method: 6010-200.7 NEW(v148) 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	.0108611	6.488092	3.740785	F 10.59289	4.068318	.0667065
Stddev	.0011956	.016082	.079149	.01900	.011898	.0001624
%RSD	11.00784	.2478668	2.115829	.1793436	.2924560	.2435363

#1	.0095005	6.500822	3.720904	10.58498	4.066435	.0665547
#2	.0117437	6.470019	3.673472	10.57911	4.057474	.0666869
#3	.0113390	6.493435	3.827978	10.61456	4.081045	.0668779

Elem	Sr4077
Units	ppm
Avg	-.169085
Stddev	.001971
%RSD	1.165430

#1	-.167425
#2	-.168567
#3	-.171263

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	12899.04	227273.5	27872.92	9727.361	6805.688
Stddev	11.71	205.8	129.47	25.922	2.764
%RSD	.0907537	.0905503	.4644894	.2664858	.0406202

#1	12886.83	227474.7	27758.77	9707.742	6802.649
#2	12910.17	227063.4	27846.40	9756.748	6808.054
#3	12900.11	227282.5	28013.59	9717.595	6806.361

Sample Name: CCV05 Acquired: 9/5/2025 16:06:50 Type: Unk
Method: 6010-200.7 NEW(v148) 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	4.985899	4.910142	4.707859	5.063685	5.071997	9.647273	9.646134
Stddev	.014755	.056199	.000672	.007345	.011774	.019206	.014067
%RSD	.2959370	1.144542	.0142739	.1450448	.2321376	.1990818	.1458315
#1	4.968870	4.886240	4.708628	5.058170	5.058408	9.653441	9.661960
#2	4.993936	4.974341	4.707556	5.060864	5.078415	9.662637	9.641393
#3	4.994890	4.869846	4.707390	5.072022	5.079166	9.625741	9.635051
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2297251	2.360164	23.64797	.9644644	2.382919	1.226703	5.121600
Stddev	.0010650	.000727	.05111	.0013441	.000539	.002700	.013053
%RSD	.4635828	.0308057	.2161330	.1393586	.0226104	.2200708	.2548691
#1	.2285250	2.359352	23.59673	.9655193	2.382547	1.224898	5.115885
#2	.2300930	2.360384	23.69896	.9629511	2.382672	1.225404	5.136537
#3	.2305573	2.360755	23.64822	.9649229	2.383537	1.229806	5.112379
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.355058	23.38391	2.387093	1.229817	24.27459	2.407683	2.474395
Stddev	.010337	.14501	.001011	.002123	.09570	.006068	.007004
%RSD	.4389166	.6201139	.0423519	.1726113	.3942259	.2520175	.2830630
#1	2.343127	23.23563	2.386088	1.228671	24.19178	2.401617	2.468983
#2	2.361309	23.52541	2.387080	1.228513	24.37936	2.413752	2.482306
#3	2.360739	23.39069	2.388110	1.232266	24.25263	2.407679	2.471896
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.71774	4.620585	4.999315	4.713804	4.805889	5.078374	4.772997
Stddev	.07175	.016993	.009352	.003093	.012430	.008472	.014513
%RSD	.2902904	.3677656	.1870726	.0656059	.2586491	.1668238	.3040607
#1	24.63603	4.604278	4.989562	4.714576	4.791536	5.069967	4.768361
#2	24.77050	4.619288	5.000177	4.716437	4.813141	5.086909	4.789262
#3	24.74668	4.638189	5.008207	4.710398	4.812989	5.078246	4.761369

Sample Name: CCV05 Acquired: 9/5/2025 16:06:50 Type: Unk
Method: 6010-200.7 NEW(v148) 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	4.831656	4.660055	4.872646
Stddev	.012189	.017537	.059713
%RSD	.2522833	.3763177	1.225478
#1	4.820283	4.639892	4.808244
#2	4.844524	4.671759	4.926177
#3	4.830159	4.668514	4.883516

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6298.239	112173.8	12407.60	4884.767	7450.216
Stddev	1.179	219.5	32.13	5.843	7.574
%RSD	.0187205	.1956746	.2589625	.1196195	.1016662
#1	6299.258	111997.8	12415.26	4886.533	7446.637
#2	6296.948	112419.7	12435.20	4878.244	7445.095
#3	6298.512	112103.7	12372.33	4889.523	7458.917

Sample Name: CCB05 Acquired: 9/5/2025 16:15:21 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB05 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001228	-.001811	-.000844	.0003747	-.001452	.0021197	-.007261
Stddev	.001850	.000436	.001191	.0025866	.001005	.0142963	.001099
%RSD	150.6155	24.07588	141.1925	690.3257	69.20395	674.4491	15.13561
#1	-.001023	-.002088	-.001402	-.002301	-.000342	.0074368	-.008421
#2	.000511	-.002038	.000524	.000564	-.002299	.0129956	-.007127
#3	-.003173	-.001309	-.001653	.002861	-.001716	-.014073	-.006235
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000385	.0000865	-.044717	-.000528	.0000334	-.000057	.0016969
Stddev	.0000374	.0000615	.004679	.000079	.0001756	.000084	.0040278
%RSD	97.11210	71.11180	10.46419	14.93424	525.2699	146.1332	237.3649
#1	.0000662	.0001224	-.049726	-.000561	.0000859	.000038	.0015390
#2	-.000004	.0001217	-.040457	-.000438	-.000162	-.000118	-.002250
#3	.000053	.0000155	-.043969	-.000585	.000177	-.000092	.005801
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001534	-.015031	.0002882	.0007326	-.133059	-.001192	-.000362
Stddev	.0004623	.008921	.0002422	.0003016	.010212	.001482	.000331
%RSD	301.2437	59.35133	84.04334	41.17561	7.675018	124.2759	91.39471
#1	.0001678	-.008079	.0003356	.0008364	-.144727	-.002902	-.000721
#2	.0006084	-.011924	.0005033	.0003927	-.128706	-.000272	-.000070
#3	-.000316	-.025090	.0000258	.0009686	-.125744	-.000403	-.000295
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.233170	-.000566	.0002856	-.000814	.0002489	.0185110	.0010071
Stddev	.029199	.000348	.0002823	.000514	.0005349	.0073664	.0008705
%RSD	12.52279	61.49460	98.86298	63.20526	214.9291	39.79485	86.44203
#1	-.266721	-.000546	.0001739	-.000739	.0008661	.0225076	.0013988
#2	-.213499	-.000228	.0000762	-.000341	-.000081	.0100100	.0000095
#3	-.219291	-.000924	.0006066	-.001361	-.000039	.0230154	.0016129

Sample Name: CCB05 Acquired: 9/5/2025 16:15:21 Type: Unk
Method: 6010-200.7 NEW(v148) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB05 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0028310	-.009330	.0000386
Stddev	.0024935	.001225	.0000359
%RSD	88.08015	13.12507	92.88358
#1	.0002703	-.008031	.0000015
#2	.0052515	-.010463	.0000731
#3	.0029712	-.009496	.0000414

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6530.176	117245.0	12750.98	5086.963	8207.602
Stddev	3.755	227.4	29.40	6.399	2.504
%RSD	.0575044	.1939676	.2305557	.1257853	.0305023
#1	6533.545	117231.0	12725.82	5084.822	8208.897
#2	6526.128	117479.0	12743.82	5081.910	8209.193
#3	6530.855	117024.8	12783.29	5094.158	8204.717

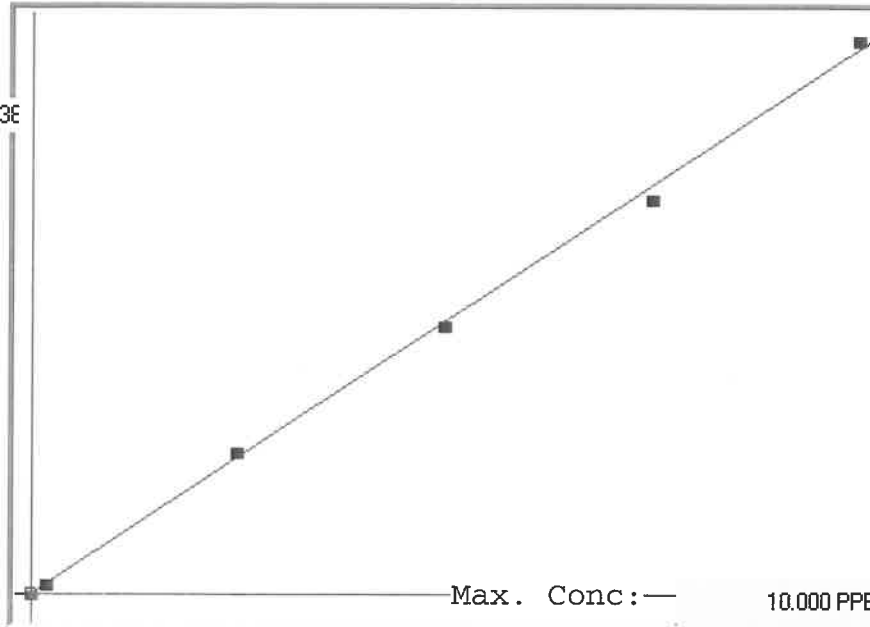
LB137094

7470A

INSTRUMENT ID: CV1

μ Abs.:

46438



Linear

A= 0.0000e+000

B= 2.1888e-004

C= 1.9437e-003

Rho= 0.9994094

Accept=Accepted

Std ID	Conc.	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	%D
0.0	0.000	0.018	0.018	72	0.000	72	0				-
0.2	0.200	0.199	-0.001	899	0.0 %	899	0				-1
2.5	2.500	2.605	0.105	11894	0.0 %	11894	0				4
5.0	5.000	4.945	-0.055	22583	0.0 %	22583					-1
7.5	7.500	7.267	-0.233	33191	0.0 %	33191					-3
10.0	10.000	10.166	0.166	46438	0.0 %	46438					2

LB137094 INSTRUMENT ID CV:1

Method: 7470A Operator: Admin Date of Analysis: 05 Sep 2025 14:04:28

Type	Sample ID	Extended ID	Conc.	μ Abs.	Units	Type	Std Conc	Method	Date
S	0.0 - 1	50	-	72	PPB	Std	0.0000	7470A	05 Sep 2025 14:42:29
S	0.2 - 1	50.2	-	899	PPB	Std	0.2000	7470A	05 Sep 2025 14:49:46
S	2.5 - 1	52.5	-	11894	PPB	Std	2.5000	7470A	05 Sep 2025 14:52:03
S	5.0 - 1	55	-	22583	PPB	Std	5.0000	7470A	05 Sep 2025 14:54:20
S	7.5 - 1	57.5	-	33191	PPB	Std	7.5000	7470A	05 Sep 2025 14:56:37
S	10.0 - 1	59	-	46438	PPB	Std	10.0000	7470A	05 Sep 2025 15:01:32
U	ICV21 - 1	ICV21	3.8173	16817	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:20:48
U	ICB21 - 1	ICB21	0.0454	75	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:23:10
U	CCV60 - 1	CCV60	4.9699	21933	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:25:27
U	CCB60 - 1	CCB60	0.0026	-115	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:27:42
U	CRA - 1	CRA	0.2288	889	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:29:59
U	HighStd - 1	HighStd	10.4556	46282	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:32:14
U	ChkStd - 1	ChkStd	6.9946	30920	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:37:04
U	PB169582BL - 1	PBW	-0.0065	-155	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:39:19
U	PB169582BS - 1	LCSW	3.8013	16746	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:41:38
U	Q3017-02 - 1	TT-076-IDWGW-20250903	0.0463	79	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:43:54
U	Q3017-03 - 1	TT-077-IDWGW-20250903	0.1093	359	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:46:13
U	Q3017-04 - 1	TT-078-IDWGW-20250903	0.0402	52	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:48:30
U	Q3017-05 - 1	TT-079-IDWGW-20250903	0.0235	-22	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:50:47
U	Q3017-05DUP - 1	TT-079-IDWGW-20250903DUP	0.0535	111	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:53:02
U	CCV61 - 1	CCV61	5.0386	22238	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:55:17
U	CCB61 - 1	CCB61	0.0008	-123	PPB	SMPL	-7470A	-7470A	05 Sep 2025 15:57:32
U	Q3017-05MS - 1	TT-079-IDWGW-20250903MS	3.7287	16424	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:02:42
U	Q3017-05MSD - 1	TT-079-IDWGW-20250903MSD	3.7204	16387	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:04:57
U	Q3022-01 - 1	1413	-0.0006	-129	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:07:17
U	PB169585BL - 1	PBW	0.0120	-73	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:09:33
U	PB169585BS - 1	LCSW	3.7963	16724	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:11:49
U	Q3023-02 - 1	TP-1	-0.0227	-227	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:14:05
U	Q3023-05 - 1	TP-2	0.0325	18	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:16:21
U	Q3023-05DUP - 1	TP-2DUP	0.0346	27	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:18:39
U	Q3023-05MS - 1	TP-2MS	3.7411	16479	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:20:55
U	Q3023-05MSD - 1	TP-2MSD	3.7296	16428	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:23:11
U	CCV62 - 1	CCV62	4.9724	21944	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:25:26
U	CCB62 - 1	CCB62	0.0073	-94	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:27:47
U	Q3017-05LX5 - 1		0.0442	70	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:30:06
U	Q3017-05A - 1		4.0338	17778	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:32:22
U	PB169556TB - 1	PB169556TB	-0.0362	-287	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:34:37
U	Q3023-05LX5 - 1		0.0226	-26	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:36:55
U	Q3023-05A - 1		4.0444	17825	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:39:11
U	CCV63 - 1	CCV63	5.0742	22396	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:41:27
U	CCB63 - 1	CCB63	-0.0024	-137	PPB	SMPL	-7470A	-7470A	05 Sep 2025 16:43:46

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: 09/04/2025 Time : 12:05 Temp : 97 °C

End Digest Date: 09/04/2025 Time : 15:10 Temp : 98 °C

Digestion tube ID: M5595

Block thermometer ID: MET-DIG. #1

Dig Technician Signature: *SKS*

Supervisor Signature: *SO*

Temp : 1. 96°C 2. N/A

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

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

Extraction Conformance/Non-Conformance Comments:

HOT BLOCK#1 CELL#50 97C

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
09/04/25 16:10	SKS met dig	SM (METALS LAB)
	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
PB169555BL	PBW555	<2	50	25	Colorless	Colorless	Clear	Clear	N/A	1
PB169555BS	LCS555	<2	50	25	Colorless	Colorless	Clear	Clear	M6180,M6181	2
Q3017-02	TT-076-IDWGW-20250903	<2	50	25	Brown	Light brown	Cloudy	Clear	N/A	3
Q3017-03	TT-077-IDWGW-20250903	<2	50	25	Brown	Light brown	Cloudy	Clear	N/A	4
Q3017-04	TT-078-IDWGW-20250903	<2	50	25	Brown	Light brown	Cloudy	Clear	N/A	5
Q3017-05	TT-079-IDWGW-20250903	<2	50	25	Brown	Light brown	Cloudy	Clear	N/A	6
Q3017-05MS	TT-079-IDWGW-20250903M	<2	50	25	Brown	Light brown	Cloudy	Clear	M6180,M6181	8
Q3017-05MSD	TT-079-IDWGW-20250903M	<2	50	25	Brown	Light brown	Cloudy	Clear	M6180,M6181	9
Q3017-05DUP	TT-079-IDWGW-20250903D	<2	50	25	Brown	Light brown	Cloudy	Clear	N/A	7

WORKLIST(Hardcopy Internal Chain)

Worklist Name : PB169555

Worklist ID : 191664

Department : Digestion

Date : 09-04-2025 11:26:33

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q3017-02	TT-076-IDWGW-20250903	Water	Metals ICP-TAL	1:1 HNO3 to pH < 2	TETRO6	J12	09/04/2025	6010D
Q3017-03	TT-077-IDWGW-20250903	Water	Metals ICP-TAL	1:1 HNO3 to pH < 2	TETRO6	J12	09/04/2025	6010D
Q3017-04	TT-078-IDWGW-20250903	Water	Metals ICP-TAL	1:1 HNO3 to pH < 2	TETRO6	J12	09/04/2025	6010D
Q3017-05	TT-079-IDWGW-20250903	Water	Metals ICP-TAL	1:1 HNO3 to pH < 2	TETRO6	J12	09/04/2025	6010D

Date/Time 09/04/25 11:40
Raw Sample Received by: SLS met dig
Raw Sample Relinquished by: SLS

Date/Time 09/04/25 12:40
Raw Sample Received by: SLS
Raw Sample Relinquished by: SLS met dig

SOP ID : M7470A-Mercury-20

SDG No : N/A

Matrix : WATER

Pippete ID: HG A

Balance ID : N/A

Filter paper ID : N/A

pH Strip ID : M6069

Hood ID : #1

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

Start Digest Date: 09/05/2025 Time : 09:20 Temp : 95 °C

End Digest Date: 09/05/2025 Time : 11:25 Temp : 94 °C

Digestion tube ID: M5595

Block thermometer ID: HG-DIG#3

Dig Technician Signature: *MB*

Supervisor Signature: *MB*

Temp : 1. 95°C 2. N/A

Standard Name	MLS USED	STD REF. # FROM LOG
ICV	30mL	MP87107
CCV	30mL	MP87109
CRA	30mL	MP87111
Blank Spike	0.48mL	MP87098
Matrix Spike	0.48mL	MP87098

Chemical Used	ML/SAMPLE USED	Lot Number
HNO3/H2SO4(1:2)	2.25mL	MP85892
KMnO4 (5%)	4.5mL	MP85893
K2S2O8 (5%)	2.4mL	MP85894
Hydroxylamine HCL (12%)	1.8mL	MP85895
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

LAB SAMPLE ID	CLIENT SAMPLE ID	Wt(g)/Vol(ml)	Comment
0.0 ppb	S0	30mL	MP87099
0.05 ppb	S0.05	N/A	N/A
0.2 ppb	S0.2	30mL	MP87100
2.5 ppb	S2.5	30mL	MP87102
5.0 ppb	S5.0	30mL	MP87103
7.5 ppb	S7.5	30mL	MP87104
10.0 ppb	S10.0	30mL	MP87106
ICV	ICV	30mL	MP87107
ICB	ICB	30mL	MP87108
CCV	CCV	30mL	MP87109
CCB	CCB	30mL	MP87110
CRI	CRI	30mL	MP87111
CHK STD	CHK STD	30mL	MP87112

Extraction Conformance/Non-Conformance Comments:

N/A		
Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
9/5/25 @ 12:05	<i>MB - MB</i>	<i>MB - MB</i>
	Preparation Group	Analysis Group

Lab Sample ID	Client Sample ID	Initial Vol (ml)	Final Vol (ml)	pH	Comment	Prep Pos
PB169582BL	PBW582	30	30	<2	N/A	3-1
PB169582BS	LCS582	30	30	<2	MP87098	2
Q3017-02	TT-076-IDWGW-20250903	30	30	<2	N/A	3
Q3017-03	TT-077-IDWGW-20250903	30	30	<2	N/A	4
Q3017-04	TT-078-IDWGW-20250903	30	30	<2	N/A	5
Q3017-05	TT-079-IDWGW-20250903	30	30	<2	N/A	6
Q3017-05MS	TT-079-IDWGW-20250903MS	30	30	<2	MP87098	8
Q3017-05MSD	TT-079-IDWGW-20250903MSD	30	30	<2	MP87098	9
Q3017-05DUP	TT-079-IDWGW-20250903DUP	30	30	<2	N/A	7
Q3022-01	1413	30	30	<2	N/A	10

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

WORKLIST(Hardcopy Internal Chain)

WorkList Name : PB169582 WorkList ID : 191709 Department : Digestion Date : 09-05-2025 12:08:59

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q3017-02	TT-076-IDWGW-20250903	Water	Mercury	1:1 HNO3 to pH < 2	TETR06	J12	09/03/2025	7470A
Q3017-03	TT-077-IDWGW-20250903	Water	Mercury	1:1 HNO3 to pH < 2	TETR06	J12	09/03/2025	7470A
Q3017-04	TT-078-IDWGW-20250903	Water	Mercury	1:1 HNO3 to pH < 2	TETR06	J12	09/03/2025	7470A
Q3017-05	TT-079-IDWGW-20250903	Water	Mercury	1:1 HNO3 to pH < 2	TETR06	J12	09/03/2025	7470A
Q3022-01	1413	Water	Mercury	1:1 HNO3 to pH < 2	PSEG03	D31	09/04/2025	7470A

Date/Time 09/05/25 9:00
Raw Sample Received by: DR-DAQ-LUG
Raw Sample Relinquished by: DR-DAQ-LUG

Date/Time 09/05/25 10:35
Raw Sample Received by: DR-DAQ-LUG
Raw Sample Relinquished by: DR-DAQ-LUG

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QC Batch ID # LB137094

Review By	mohan	Review On	9/8/2025 4:24:53 PM
Supervise By	jaswal	Supervise On	9/8/2025 11:00:49 PM

STD. NAME	STD REF.#
ICAL Standard	MP87099,MP87101,MP87102,MP87103,MP87104,MP87106
ICV Standard	MP87107
CCV Standard	MP87109
ICSA Standard	
CRI Standard	MP87111
LCS Standard	
Chk Standard	MP87108,MP87110,MP87112,MP87114

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	09/05/25 14:42		mohan	OK
2	S0.2	S0.2	CAL2	09/05/25 14:49		mohan	OK
3	S2.5	S2.5	CAL3	09/05/25 14:52		mohan	OK
4	S5	S5	CAL4	09/05/25 14:54		mohan	OK
5	S7.5	S7.5	CAL5	09/05/25 14:56		mohan	OK
6	S10	S10	CAL6	09/05/25 15:01		mohan	OK
7	ICV21	ICV21	ICV	09/05/25 15:20		mohan	OK
8	ICB21	ICB21	ICB	09/05/25 15:23		mohan	OK
9	CCV60	CCV60	CCV	09/05/25 15:25		mohan	OK
10	CCB60	CCB60	CCB	09/05/25 15:27		mohan	OK
11	CRA	CRA	CRDL	09/05/25 15:29		mohan	OK
12	HighStd	HighStd	HIGH STD	09/05/25 15:32		mohan	OK
13	ChkStd	ChkStd	SAM	09/05/25 15:37		mohan	OK
14	PB169582BL	PB169582BL	MB	09/05/25 15:39		mohan	OK
15	PB169582BS	PB169582BS	LCS	09/05/25 15:41		mohan	OK
16	Q3017-02	TT-076-IDWGW-2025	SAM	09/05/25 15:43		mohan	OK
17	Q3017-03	TT-077-IDWGW-2025	SAM	09/05/25 15:46		mohan	OK
18	Q3017-04	TT-078-IDWGW-2025	SAM	09/05/25 15:48		mohan	OK

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QC Batch ID # LB137094

Review By	mohan	Review On	9/8/2025 4:24:53 PM
Supervise By	jaswal	Supervise On	9/8/2025 11:00:49 PM

STD. NAME	STD REF.#
ICAL Standard	MP87099,MP87101,MP87102,MP87103,MP87104,MP87106
ICV Standard	MP87107
CCV Standard	MP87109
ICSA Standard	
CRI Standard	MP87111
LCS Standard	
Chk Standard	MP87108,MP87110,MP87112,MP87114

19	Q3017-05	TT-079-IDWGW-2025	SAM	09/05/25 15:50		mohan	OK
20	Q3017-05DUP	TT-079-IDWGW-2025	DUP	09/05/25 15:53		mohan	OK
21	CCV61	CCV61	CCV	09/05/25 15:55		mohan	OK
22	CCB61	CCB61	CCB	09/05/25 15:57		mohan	OK
23	Q3017-05MS	TT-079-IDWGW-2025	MS	09/05/25 16:02		mohan	OK
24	Q3017-05MSD	TT-079-IDWGW-2025	MSD	09/05/25 16:04		mohan	OK
25	Q3022-01	1413	SAM	09/05/25 16:07		mohan	OK
26	PB169585BL	PB169585BL	MB	09/05/25 16:09		mohan	OK
27	PB169585BS	PB169585BS	LCS	09/05/25 16:11		mohan	OK
28	Q3023-02	TP-1	SAM	09/05/25 16:14		mohan	OK
29	Q3023-05	TP-2	SAM	09/05/25 16:16		mohan	OK
30	Q3023-05DUP	TP-2DUP	DUP	09/05/25 16:18		mohan	OK
31	Q3023-05MS	TP-2MS	MS	09/05/25 16:20		mohan	OK
32	Q3023-05MSD	TP-2MSD	MSD	09/05/25 16:23		mohan	OK
33	CCV62	CCV62	CCV	09/05/25 16:25		mohan	OK
34	CCB62	CCB62	CCB	09/05/25 16:27		mohan	OK
35	Q3017-05L	TT-079-IDWGW-2025	SD	09/05/25 16:30		mohan	OK
36	Q3017-05A	TT-079-IDWGW-2025	PS	09/05/25 16:32		mohan	OK
37	PB169556TB	PB169556TB	MB	09/05/25 16:34		mohan	OK
38	Q3023-05L	TP-2L	SD	09/05/25 16:36		mohan	OK

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QC Batch ID # LB137094

Review By	mohan	Review On	9/8/2025 4:24:53 PM
Supervise By	jaswal	Supervise On	9/8/2025 11:00:49 PM

STD. NAME	STD REF.#
ICAL Standard	MP87099,MP87101,MP87102,MP87103,MP87104,MP87106
ICV Standard	MP87107
CCV Standard	MP87109
ICSA Standard	
CRI Standard	MP87111
LCS Standard	
Chk Standard	MP87108,MP87110,MP87112,MP87114

39	Q3023-05A	TP-2A	PS	09/05/25 16:39		mohan	OK
40	CCV63	CCV63	CCV	09/05/25 16:41		mohan	OK
41	CCB63	CCB63	CCB	09/05/25 16:43		mohan	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB137103

Review By	Janvi	Review On	9/8/2025 9:59:46 AM
Supervise By	jaswal	Supervise On	9/9/2025 1:23:17 AM
STD. NAME	STD REF.#		
ICAL Standard	MP87031,MP87038,MP87035,MP87034,MP87033,MP87032		
ICV Standard	MP87047,MP87038		
CCV Standard	MP87042		
ICSA Standard	MP87040,MP87048		
CRI Standard	MP87038		
LCS Standard			
Chk Standard	MP87043,MP87044,MP87045,MP87046,MP87049		

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	09/05/25 11:19		Jaswal	OK
2	S1	S1	CAL2	09/05/25 11:24		Jaswal	OK
3	S2	S2	CAL3	09/05/25 11:28		Jaswal	OK
4	S3	S3	CAL4	09/05/25 11:32		Jaswal	OK
5	S4	S4	CAL5	09/05/25 11:36		Jaswal	OK
6	S5	S5	CAL6	09/05/25 11:40		Jaswal	OK
7	ICV01	ICV01	ICV	09/05/25 11:44		Jaswal	OK
8	LLICV01	LLICV01	LLICV	09/05/25 11:48		Jaswal	OK
9	ICB01	ICB01	ICB	09/05/25 11:54		Jaswal	OK
10	CRI01	CRI01	CRDL	09/05/25 11:59		Jaswal	OK
11	ICSA01	ICSA01	ICSA	09/05/25 12:05		Jaswal	OK
12	ICSAB01	ICSAB01	ICSAB	09/05/25 12:09		Jaswal	OK
13	ICSADL	ICSADL	ICSA	09/05/25 12:13		Jaswal	OK
14	ICSABDL	ICSABDL	ICSAB	09/05/25 12:18		Jaswal	OK
15	CCV01	CCV01	CCV	09/05/25 12:28		Jaswal	OK
16	CCB01	CCB01	CCB	09/05/25 12:32		Jaswal	OK
17	LR-1	LR-1	HIGH STD	09/05/25 12:36		Jaswal	OK
18	LR-2	LR-2	HIGH STD	09/05/25 12:41		Jaswal	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB137103

Review By	Janvi	Review On	9/8/2025 9:59:46 AM
Supervise By	jaswal	Supervise On	9/9/2025 1:23:17 AM

STD. NAME	STD REF.#
ICAL Standard	MP87031,MP87038,MP87035,MP87034,MP87033,MP87032
ICV Standard	MP87047,MP87038
CCV Standard	MP87042
ICSA Standard	MP87040,MP87048
CRI Standard	MP87038
LCS Standard	
Chk Standard	MP87043,MP87044,MP87045,MP87046,MP87049

19	LR-3	LR-3	HIGH STD	09/05/25 12:45		Jaswal	OK
20	PB169555BL	PB169555BL	MB	09/05/25 12:50		Jaswal	OK
21	PB169555BS	PB169555BS	LCS	09/05/25 12:55		Jaswal	OK
22	Q3017-02DL	TT-076-IDWGW-2025	SAM	09/05/25 12:59	5X Report as a Straight Dilution	Jaswal	OK
23	Q3017-03DL	TT-077-IDWGW-2025	SAM	09/05/25 13:03	5X Report as a Straight Dilution	Jaswal	OK
24	Q3017-04DL	TT-078-IDWGW-2025	SAM	09/05/25 13:07	5X Report as a Straight Dilution	Jaswal	OK
25	Q3017-05DL	TT-079-IDWGW-2025	SAM	09/05/25 13:11	5X Report as a Straight Dilution	Jaswal	OK
26	Q3017-05DUPDL	TT-079-IDWGW-2025	DUP	09/05/25 13:16	5X Report as a Straight Dilution	Jaswal	OK
27	CCV02	CCV02	CCV	09/05/25 13:20		Jaswal	OK
28	CCB02	CCB02	CCB	09/05/25 13:24		Jaswal	OK
29	Q3017-05LDL	TT-079-IDWGW-2025	SD	09/05/25 13:28	25X Report as a Straight Dilution	Jaswal	OK
30	Q3017-05MSDL	TT-079-IDWGW-2025	MS	09/05/25 13:33	5X Report as a Straight Dilution	Jaswal	OK
31	Q3017-05MSDDL	TT-079-IDWGW-2025	MSD	09/05/25 13:37	5X Report as a Straight Dilution	Jaswal	OK
32	Q3017-05ADL	TT-079-IDWGW-2025	PS	09/05/25 13:41	5X Report as a Straight Dilution	Jaswal	OK
33	CCV03	CCV03	CCV	09/05/25 14:29		Jaswal	OK
34	CCB03	CCB03	CCB	09/05/25 14:33		Jaswal	OK
35	PB169576BL	PB169576BL	MB	09/05/25 14:52		Jaswal	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB137103

Review By	Janvi	Review On	9/8/2025 9:59:46 AM
Supervise By	jaswal	Supervise On	9/9/2025 1:23:17 AM
STD. NAME	STD REF.#		
ICAL Standard	MP87031,MP87038,MP87035,MP87034,MP87033,MP87032		
ICV Standard	MP87047,MP87038		
CCV Standard	MP87042		
ICSA Standard	MP87040,MP87048		
CRI Standard	MP87038		
LCS Standard			
Chk Standard	MP87043,MP87044,MP87045,MP87046,MP87049		

36	PB169576BS	PB169576BS	LCS	09/05/25 14:57		Jaswal	OK
37	Q3026-01	EO-02-09042025	SAM	09/05/25 15:01		Jaswal	OK
38	Q2979-06	SP-B	SAM	09/05/25 15:06		Jaswal	OK
39	Q3021-02DL	821-ABCDL	SAM	09/05/25 15:11	Different Method (6020B)	Jaswal	Not Ok
40	Q3021-04DL	821-DEFDL	SAM	09/05/25 15:15	Different Method (6020B)	Jaswal	Not Ok
41	Q3021-06DL	821-GHIDL	SAM	09/05/25 15:19	Different Method (6020B)	Jaswal	Not Ok
42	Q3023-01	TP-1	SAM	09/05/25 15:23		Jaswal	OK
43	Q3023-04	TP-2	SAM	09/05/25 15:28		Jaswal	OK
44	Q3027-01	HD-01-09042025	SAM	09/05/25 15:32		Jaswal	OK
45	CCV04	CCV04	CCV	09/05/25 15:36		Jaswal	OK
46	CCB04	CCB04	CCB	09/05/25 15:40		Jaswal	OK
47	Q3027-01L	HD-01-09042025L	SD	09/05/25 15:45		Jaswal	OK
48	Q3027-01MS	HD-01-09042025MS	MS	09/05/25 15:49	MS MSD Fail for more then 50 % Parameters	Jaswal	Not Ok
49	Q3027-01MSD	HD-01-09042025MSD	MSD	09/05/25 15:53	MS MSD Fail for more then 50 % Parameters	Jaswal	Not Ok
50	Q3027-01A	HD-01-09042025A	PS	09/05/25 15:58		Jaswal	OK
51	Q3027-01DUP	HD-01-09042025DUP	DUP	09/05/25 16:02		Jaswal	OK
52	CCV05	CCV05	CCV	09/05/25 16:06		Jaswal	OK
53	CCB05	CCB05	CCB	09/05/25 16:15		Jaswal	OK

Prep Standard - Chemical Standard Summary

Order ID : Q3017
Test : Mercury, Metals ICP-TAL
Prepbatch ID : PB169555, PB169582,
Sequence ID/Qc Batch ID: LB137094, LB137103,

Standard ID :
MP85156, MP85892, MP85893, MP85894, MP85895, MP87031, MP87032, MP87033, MP87034, MP87035, MP87036, MP87038, MP87040, MP87042, MP87043, MP87044, MP87045, MP87046, MP87047, MP87048, MP87049, MP87098, MP87099, MP87101, MP87102, MP87103, MP87104, MP87106, MP87107, MP87108, MP87109, MP87110, MP87111, MP87112, MP87114,

Chemical ID :
M4371, M4465, M4916, M5062, M5467, M5658, M5748, M5751, M5798, M5799, M5800, M5801, M5814, M5820, M5882, M5884, M5962, M5969, M5971, M5979, M5985, M5998, M6021, M6023, M6026, M6027, M6028, M6030, M6032, M6041, M6058, M6076, M6077, M6128, M6137, M6138, M6140, M6142, M6144, M6145, M6151, M6158, M6159, M6160, M6161, M6162, M6163, M6164, M6165, M6171, M6174, M6176, M6177, M6178, M6179, M6180, M6181, M6182, M6184, M6187, W 3112,

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
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>
3965	2:1 H2SO4 : HNO3	MP85892	06/05/2025	11/27/2025	Mohan Bera	None	None	Sarabjit Jaswal
								06/14/2025

FROM 1600.00000ml of M6041 + 800.00000ml of M6162 = Final Quantity: 3200.000 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>
65	POTASSIUM PERMANGANATE SOLUTION 5 %	MP85893	06/05/2025	12/05/2025	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal
06/14/2025								

FROM 100.00000gram of M4916 + 2000.00000ml of W3112 = 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>
66	POTASSIUM PERSULFATE SOLUTION 5 %	MP85894	06/05/2025	09/06/2025	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal
06/14/2025								

FROM 100.00000ml of M4465 + 2000.00000ml of W3112 = Final Quantity: 2000.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
67	SODIUM CHLORIDE - HYDROXYL- CHLORIDE SOLUTION	MP85895	06/05/2025	09/30/2025	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal
FROM 2000.00000ml of W3112 + 240.00000gram of M4371 + 240.00000gram of M5884 = 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>
902	ICP AES CAL BLK (SO/ICB/CCB)	MP87031	09/02/2025	10/03/2025	Sarabjit Jaswal	None	None	Janvi Patel
FROM 125.00000ml of M6151 + 2350.00000ml of W3112 + 25.00000ml of M6187 = Final Quantity: 2500.000 ml								

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
907	ICP AES STD S (S5)	MP87032	09/02/2025	10/03/2025	Sarabjit Jaswal	None	None	Janvi Patel
								09/04/2025

FROM 5.00000ml of M5467 + 5.00000ml of M5820 + 5.00000ml of M5969 + 5.00000ml of M5971 + 5.00000ml of M5998 + 5.00000ml of M6077 + 5.00000ml of M6160 + 5.00000ml of M6174 + 5.00000ml of M6176 + 455.00000ml of MP87031 = 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	MP87033	09/02/2025	10/03/2025	Sarabjit Jaswal	None	None	Janvi Patel
								09/04/2025

FROM 50.00000ml of MP87031 + 50.00000ml of MP87032 = 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	MP87034	09/02/2025	10/03/2025	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Janvi Patel 09/04/2025

FROM 25.00000ml of MP87032 + 75.00000ml of MP87031 = Final Quantity: 100.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3913	ICP AES STD S2	MP87035	09/02/2025	10/03/2025	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Janvi Patel 09/04/2025

FROM 16.00000ml of MP87032 + 184.00000ml of MP87031 = Final Quantity: 200.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
2950	ICP AES S1/CRI STOCK STD	MP87036	09/02/2025	10/03/2025	Sarabjit Jaswal	None	None	Janvi Patel
								09/04/2025

FROM 0.03000ml of M5798 + 0.03000ml of M6028 + 0.04000ml of M6137 + 0.05000ml of M5658 + 0.05000ml of M6030 + 0.05000ml of M6140 + 0.05000ml of M6159 + 0.06000ml of M6177 + 0.10000ml of M5751 + 0.10000ml of M5801 + 0.10000ml of M5820 + 0.10000ml of M5962 + 0.10000ml of M5971 + 0.10000ml of M6128 + 0.10000ml of M6176 + 0.15000ml of M5800 + 0.20000ml of M5799 + 0.20000ml of M6021 + 0.20000ml of M6023 + 0.20000ml of M6027 + 0.20000ml of M6145 + 0.25000ml of M5467 + 0.25000ml of M6160 + 0.50000ml of M5814 + 0.50000ml of M6032 + 1.00000ml of M5979 + 1.00000ml of M6138 + 1.00000ml of M6142 + 1.00000ml of M6144 + 1.00000ml of M6171 + 1.00000ml of M6178 + 2.00000ml of M5969 + 88.29000ml of MP87031 = 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	MP87038	09/02/2025	10/03/2025	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Janvi Patel
								09/04/2025

FROM 2.00000ml of MP87036 + 98.00000ml of MP87031 = 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>
904	ICP AES ICSA SOLN	MP87040	09/02/2025	10/03/2025	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Janvi Patel 09/04/2025

FROM 25.00000ml of M6182 + 225.00000ml of MP87031 = Final Quantity: 250.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
911	ICP AES CCV SOLN	MP87042	09/02/2025	10/03/2025	Sarabjit Jaswal	None	None	Janvi Patel 09/04/2025

FROM 50.00000ml of MP87031 + 50.00000ml of MP87032 = 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	MP87043	09/02/2025	10/03/2025	Sarabjit Jaswal	None	None	Janvi Patel
								09/04/2025

FROM 1.00000ml of M6179 + 10.00000ml of M5985 + 1969.00000ml of W3112 + 20.00000ml of M6187 = 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	MP87044	09/02/2025	10/03/2025	Sarabjit Jaswal	None	None	Janvi Patel
								09/04/2025

FROM 200.00000ml of M6187 + 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>
4225	LR-1	MP87045	09/02/2025	10/03/2025	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Janvi Patel 09/04/2025

FROM 11.50000ml of M6138 + 11.50000ml of M6144 + 11.50000ml of M6171 + 15.50000ml of MP87031 = 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>
4226	LR-2	MP87046	09/02/2025	10/03/2025	Sarabjit Jaswal	None	METALS_PIPETTE_3 (A)	Janvi Patel 09/04/2025

FROM 13.50000ml of M6140 + 9.00000ml of M6142 + 9.50000ml of M6159 + 18.00000ml of MP87031 = 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	MP87047	09/02/2025	10/03/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 09/04/2025

FROM 0.20000ml of M6058 + 0.40000ml of M6163 + 0.40000ml of M6164 + 0.40000ml of M6165 + 48.60000ml of MP87031 = 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	MP87048	09/02/2025	10/03/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 09/04/2025

FROM 0.05000ml of M6076 + 5.00000ml of M6182 + 5.00000ml of M6184 + 39.95000ml of MP87031 = 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>
4227	LR-3	MP87049	09/02/2025	10/03/2025	Sarabjit Jaswal	None	None	Janvi Patel
								09/04/2025

FROM 1.15000ml of M6026 + 1.25000ml of M5658 + 1.25000ml of M5748 + 1.50000ml of M6145 + 2.50000ml of M5751 + 2.50000ml of M6128 + 39.85000ml of MP87031 = 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>
871	MERCURY INTERMEDIATE B 250PPB WORKING STD.	MP87098	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal
								09/09/2025

FROM 1.00000ml of M6187 + 2.50000ml of M5062 + 96.50000ml of W3112 = Final Quantity: 100.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1340	Hg 0.00 PPB STD	MP87099	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 09/09/2025

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

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
2750	Hg 0.05ppb	MP87101	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 09/09/2025

FROM 2.50000ml of M6187 + 247.45000ml of W3112 + 0.05000ml of MP87098 = Final Quantity: 250.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1342	Hg 2.5 PPB STD	MP87102	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 09/09/2025
FROM 2.50000ml of M6187 + 245.00000ml of W3112 + 2.50000ml of MP87098 = Final Quantity: 250.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1343	Hg 5.0 PPB STD	MP87103	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 09/09/2025
FROM 2.50000ml of M6187 + 242.50000ml of W3112 + 5.00000ml of MP87098 = Final Quantity: 250.000 ml								

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1344	Hg 7.5 PPB STD	MP87104	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 09/09/2025

FROM 2.50000ml of M6187 + 240.00000ml of W3112 + 7.50000ml of MP87098 = Final Quantity: 250.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1345	Hg 10.0 PPB STD	MP87106	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 09/09/2025

FROM 2.50000ml of M6187 + 237.50000ml of W3112 + 10.00000ml of MP87098 = Final Quantity: 250.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1346	Hg ICV SOLUTION	MP87107	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 09/09/2025

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

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1351	ICB (Hg 0.00 PPB SOLUTION)	MP87108	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 09/09/2025

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

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1358	CCV (Hg 5.0 PPB SOLUTION)	MP87109	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 09/09/2025

FROM 485.00000ml of W3112 + 5.00000ml of M6187 + 10.00000ml of MP87098 = Final Quantity: 500.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1352	CCB (Hg 0.00 PPB SOLUTION)	MP87110	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 09/09/2025

FROM 495.00000ml of W3112 + 5.00000ml of M6187 = Final Quantity: 500.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1349	CRA/CRI (Hg 0.2 PPB SOLUTION)	MP87111	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 09/09/2025

FROM 2.50000ml of M6187 + 247.30000ml of W3112 + 0.20000ml of MP87098 = Final Quantity: 250.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1350	CHK STD (Hg 7.0 PPB SOLUTION)	MP87112	09/05/2025	09/06/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 09/09/2025

FROM 2.50000ml of M6187 + 240.50000ml of W3112 + 7.00000ml of MP87098 = Final Quantity: 250.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
68	STANNOUS CHLORIDE SOLUTION	MP87114	09/05/2025	09/06/2025	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal
FROM 450.00000ml of W3112 + 50.00000gram of M5882 + 50.00000ml of M6151 = Final Quantity: 500.000 ml								

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

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-2196-01 / Hydroxylamine Hydrochloride, Crystal (cs/4x500g)	0000215387	06/25/2025	07/01/2019 / RICHARD	06/07/2019 / RICHARD	M4371

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-3238-05 / Potassium Persulfate (2.5kg)	0000234156	08/06/2025	07/23/2019 / jaswal	07/25/2019 / manojkumar	M4465

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-3227-05 / Potassium Permanganate (2.5kg)	210800	03/31/2026	11/30/2022 / mohan	07/28/2021 / mohan	M4916

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	MSHG-10PPM / MERCURY HCl 125mL 10ug/mL	S2-HG709270	09/22/2026	05/28/2022 / mohan	01/27/2022 / mohan	M5062

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58024 / Chromium, Cr, 500 ml, 1000 PPM	060523	06/05/2026	08/28/2023 / jaswal	08/25/2023 / jaswal	M5658

CHEMICAL RECEIPT LOG BOOK

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.	58029 / Cu, 1000 PPM, 500 ml	071723	07/17/2026	10/01/2024 / Jaswal	08/25/2023 / jaswal	M5751

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57050 / Sn, 1000 PPM, 125 ml	071123	07/11/2026	02/09/2024 / bin	02/09/2024 / bin	M5799

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

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

CHEMICAL RECEIPT LOG BOOK

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-3980-01 / Stannous Chloride (cs/4x500g)	232820	08/31/2028	04/30/2024 / mohan	04/25/2024 / mohan	M5882

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-3624-05 / Sodium Chloride, Crystal (cs/4x2.5kg)	0000281938	07/06/2026	04/30/2024 / mohan	04/25/2024 / mohan	M5884

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

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

CHEMICAL RECEIPT LOG BOOK

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

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

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

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

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

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

CHEMICAL RECEIPT LOG BOOK

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

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

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

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9673-33 / Sulfuric Acid, Instra-Analyzed (cs/6c2.5L)	23D2462010	03/20/2028	08/16/2024 / mohan	08/16/2024 / mohan	M6041

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.	58025 / Mn, 1000 PPM, 500 ml	101124	10/11/2027	01/13/2025 / kareem	01/13/2025 / kareem	M6128

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGSI1-1 / SILICON 125mL 1000ug/mL	V2-SI744713	07/10/2029	01/14/2025 / Jaswal	10/03/2024 / Jaswal	M6137

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58120 / Ca, 10000 PPM, 500 ml	121824	12/18/2027	04/17/2025 / Janvi	01/13/2025 / Jaswal	M6138

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 #
Seidler Chemical	BA-9530-33 / Hydrochloric Acid, Instra-Analyzed (cs/6x2.5L)	22G2862015	02/17/2026	02/18/2025 / Sagar	01/15/2025 / Sagar	M6151

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24D1062002	09/09/2025	03/10/2025 / Eman	02/02/2025 / Sagar	M6158

CHEMICAL RECEIPT LOG BOOK

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

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

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

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

CHEMICAL RECEIPT LOG BOOK

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

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

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

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

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

CHEMICAL RECEIPT LOG BOOK

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

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

CHEMICAL RECEIPT LOG BOOK

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

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

M5882
 M3

Certificate of Analysis

1 Reagent Lane
 Fair Lawn, NJ 07410
 201.796.7100 tel
 201.796.1329 fax

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System
 Standard ISO9001:2015 by SAI Global Certificate Number CERT – 0120633

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Thermo Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Products are for research use or further manufacturing. Not for direct administration to humans or animals. It is the responsibility of the final formulator and end user to determine suitability based upon the intended use of the end product. Products are tested to meet the analytical requirements of the noted grade. The following information is the actual analytical results obtained.

Catalog Number	T142	Quality Test / Release Date	08/17/2023
Lot Number	232820		
Description	STANNOUS CHLORIDE, DIHYDRATE CERTIFIED ACS (Suitable for Mercury Determination)		
Country of Origin	United States	Suggested Retest Date	Aug/2028
Chemical Origin	Inorganic-non animal		
BSE/TSE Comment	No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product.		

N/A			
Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	Clear crystals
ASSAY	%	Inclusive Between 98 - 103	100.65
CALCIUM	%	<= 0.005	0.0017
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
IRON (Fe)	%	<= 0.003	0.0011
LEAD (Pb)	%	<= 0.01	0.0006
MERCURY (Hg)	ppm	<= 0.05	<0.05
POTASSIUM (K)	%	<= 0.005	0.0001
SODIUM (Na)	%	<= 0.01	<0.01
SOLUBILITY IN HCL	PASS/FAIL	= PASS TEST	PASS TEST
SULFATE (SO4)	PASS/FAIL	= P.T. (ABOUT 0.003%)	P.T. (ABOUT 0.003%)



Harout Sahagian - Quality Control Supervisor - Fair Lawn

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of this catalog number listed above.

If there are any questions with this certificate, please call at (800) 227-6701.

*Based on suggested storage condition.



M6032



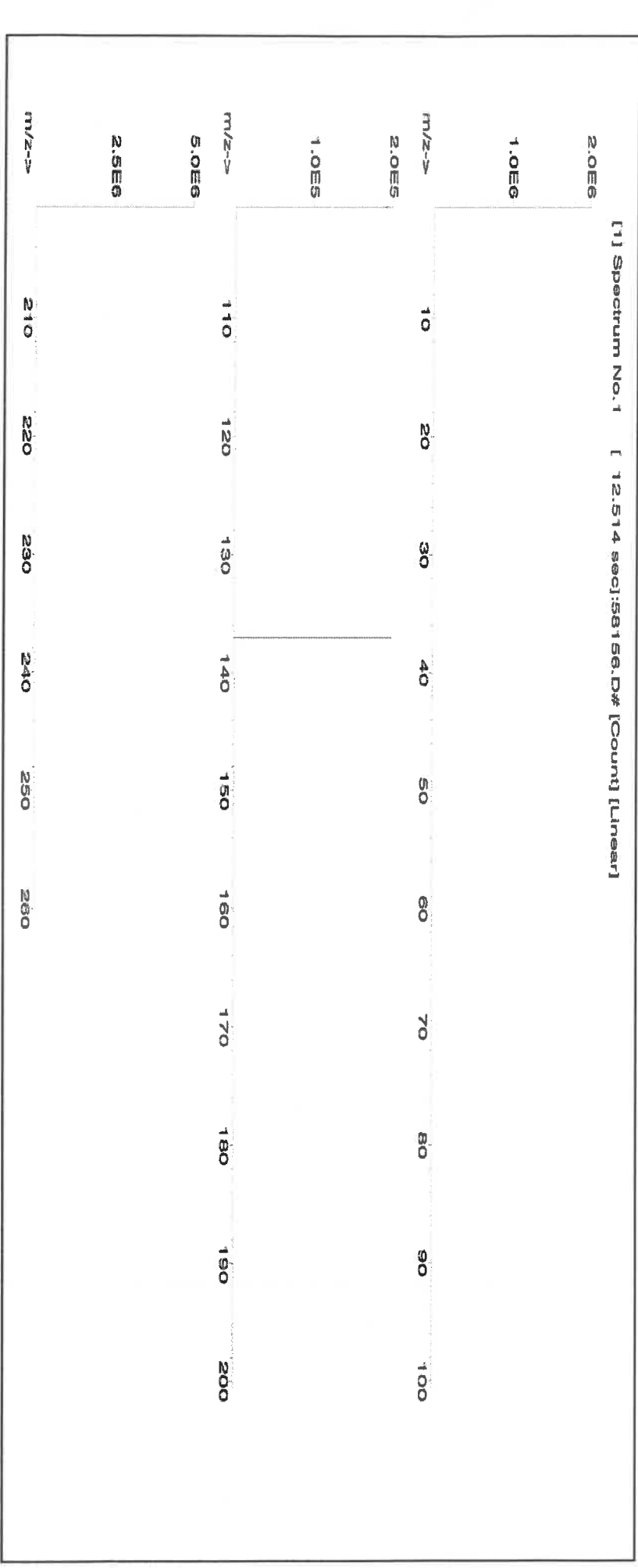
CERTIFIED WEIGHT REPORT:

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

Giovanni Caporale	
Formulated By:	Giovanni Esposito
Reviewed By:	Pedro L. Renteria

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

1. Barium nitrate (Ba) IN023 BA0022019A1 1000 99.999 0.10 52.3 3.82417 3.82441 1000.1 2.0 10022-31-8 0.5 mg/m3 or-hat 355 mg/kg 3104a





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).



M6028



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57048
070124
Cadmium (Cd)

Lot #
Solvent: 24002546 Nitric Acid

2% 40.0 Nitric Acid (mL)

Expiration Date:

070127

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL):

2000.07

SE-05 Balance Uncertainty
0.100 Flask Uncertainty

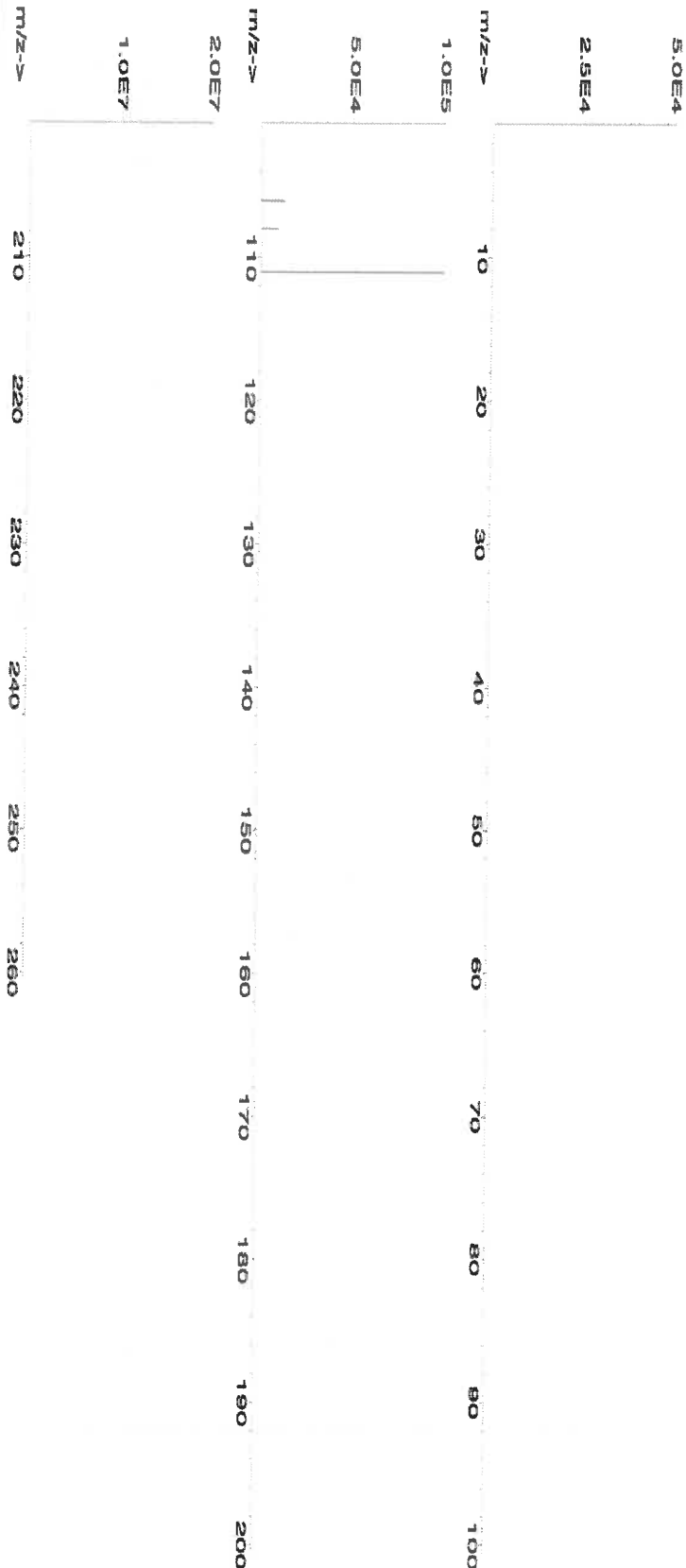
<i>Aleah O'Brady</i>	
Formulated By:	Aleah O'Brady
	070124
<i>Pedro L. Rentas</i>	
Reviewed By:	Pedro L. Rentas
	070124

Compound

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

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



MC026



CERTIFIED WEIGHT REPORT:

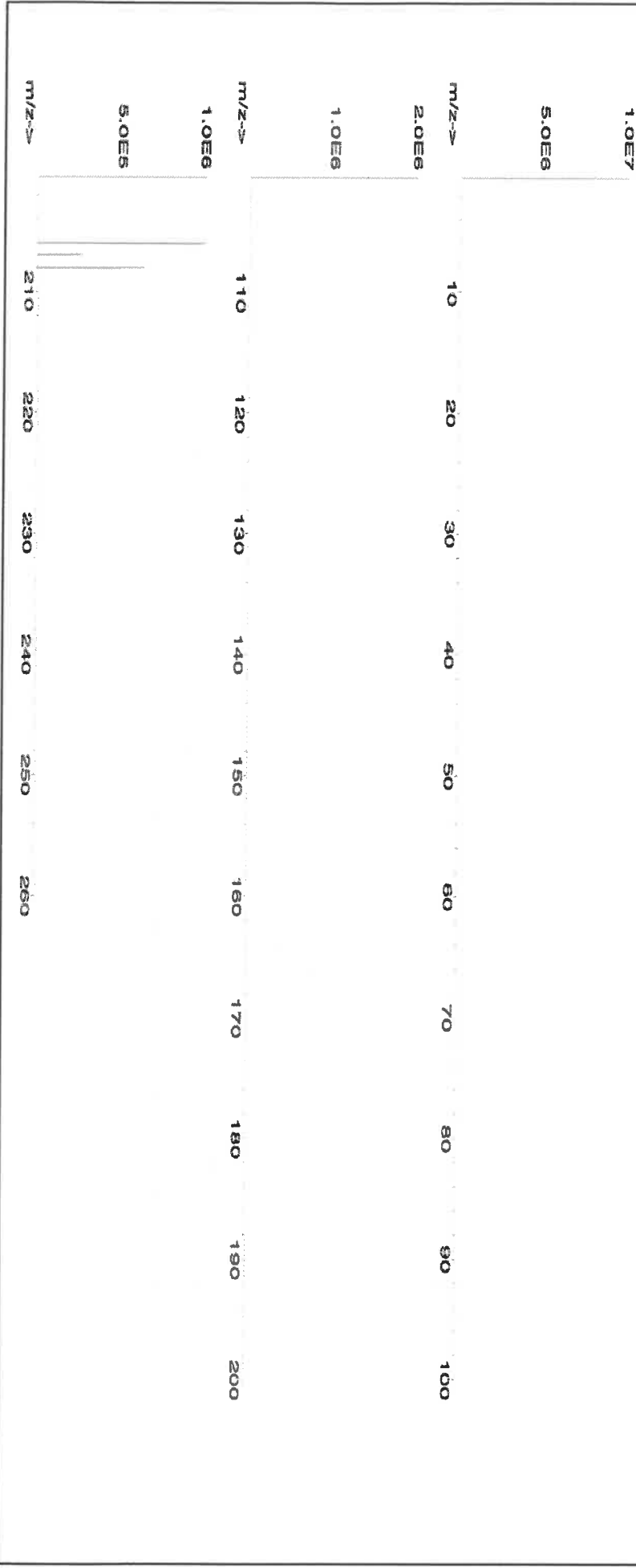
Part Number: 57182
Lot Number: 110923
Description: Lead (Pb)
Solvent: 24002546 Nitric Acid
Lot #

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

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

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

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





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

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

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

Physical Characterization:

(T)= Target analyte

Certified by:

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

- * 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).

M4371

Hydroxylamine Hydrochloride, Crystal
BAKER ANALYZED® A.C.S. Reagent
Suitable for Mercury Determination
(hydroxylammonium chloride)

Rec - 06.07.19



avantortm

Material No.: 2196-01
Batch No.: 0000215387
Manufactured Date: 2018/06/27
Retest Date: 2025/06/25
Revision No: 1

Certificate of Analysis

Meets ACS Reagent Chemical Requirements,

Test	Specification	Result
Assay (NH ₂ OH · HCl) (by KMnO ₄ titrn)	>= 96.0 %	99.1
Clarity of Alcohol Solution	Passes Test	PT
Residue after Ignition	<= 0.050 %	0.017
Titrate Free Acid (meq/g)	<= 0.25	0.19
Ammonium (NH ₄)	Passes Test	PT
Sulfur Compounds (as SO ₄)	<= 0.005 %	< 0.003
Trace Impurities - ACS - Heavy Metals (as Pb)	<= 5 ppm	4
Trace Impurities - Iron (Fe)	<= 5 ppm	< 3
Trace Impurities - Mercury (Hg)	<= 0.050 ppm	< 0.005

For Laboratory, Research or Manufacturing Use

Country of Origin: CN
Packaging Site: Paris Mfg Ctr & DC

ISO

Phillipsburg, NJ 9001:2015, FSSC22000
Paris, KY 9001:2008
Mexico City, Mexico 9001:2008
Gliwice, Poland 9001:2015, 13485:2012
Selangor, Malaysia 9001:2008
Dehradun, India, 9001:2008, 14001:2004, 13485:2003
Mumbai, India, 9001:2015, 17025:2005
Panoli, India 9001:2015

James Ethier

Jamie Ethier
Vice President Global Quality

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

Avantor Performance Materials, LLC

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

M4913-16

MS

Certificate of Analysis

1 Reagent Lane
 Fair Lawn, NJ 07410
 201.796.7100 tel
 201.796.1329 fax

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System
 Standard ISO9001:2015 by SAI Global Certificate Number CERT – 0120632

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Thermo Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Products are for research use or further manufacturing. Not for direct administration to humans or animals. It is the responsibility of the final formulator and end user to determine suitability based upon the intended use of the end product. Products are tested to meet the analytical requirements of the noted grade. The following information is the actual analytical results obtained.

Catalog Number	P279	Quality Test / Release Date	01/12/2021
Lot Number	210306		
Description	POTASSIUM PERMANGANATE, A.C.S.		
Country of Origin	United States	Suggested Retest Date	Jan/2026

N/A			
Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	Dark purple to purple green crystals
ASSAY	%	>= 99	99.3
CHLORIDE & CHLORATE	%	<= 0.005	<0.005
IDENTIFICATION	PASS/FAIL	= PASS TEST	pass test
INSOLUBLE MATTER	%	<= 0.2	<0.2
MERCURY (Hg)	ppm	<= 0.05	<0.004
SULFATE (SO4)	%	<= 0.02	<0.02

Julian Burton

Julian Burton - Quality Control Manager – Fair Lawn

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of this catalog number listed above.
 If there are any questions with this certificate, please call at (800) 227-6701.

*Based on suggested storage condition.

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

MS062
MS063
MB

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

X_i = mean of Assay Method i with standard uncertainty $u_{char i}$
 w_i = the weighting factors for each method calculated using the inverse square of the variance.
 $w_i = (1/u_{char i}^2) / (\sum (1/u_{char i}^2))$

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

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

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

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 22, 2021

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

11.2 Lot Expiration Date

- **September 22, 2026**

- The date after which this CRM/RM should not be used.
- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Supervisor, Product Documentation



Certificate Approved By:

Michael Booth
Director, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





Certified Reference Material CRM



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

5E-05 Balance Uncertainty

0.058 Flask Uncertainty

Lot #

Solvent: 21110221 Nitric Acid

2% 20.0 Nitric Acid (mL)

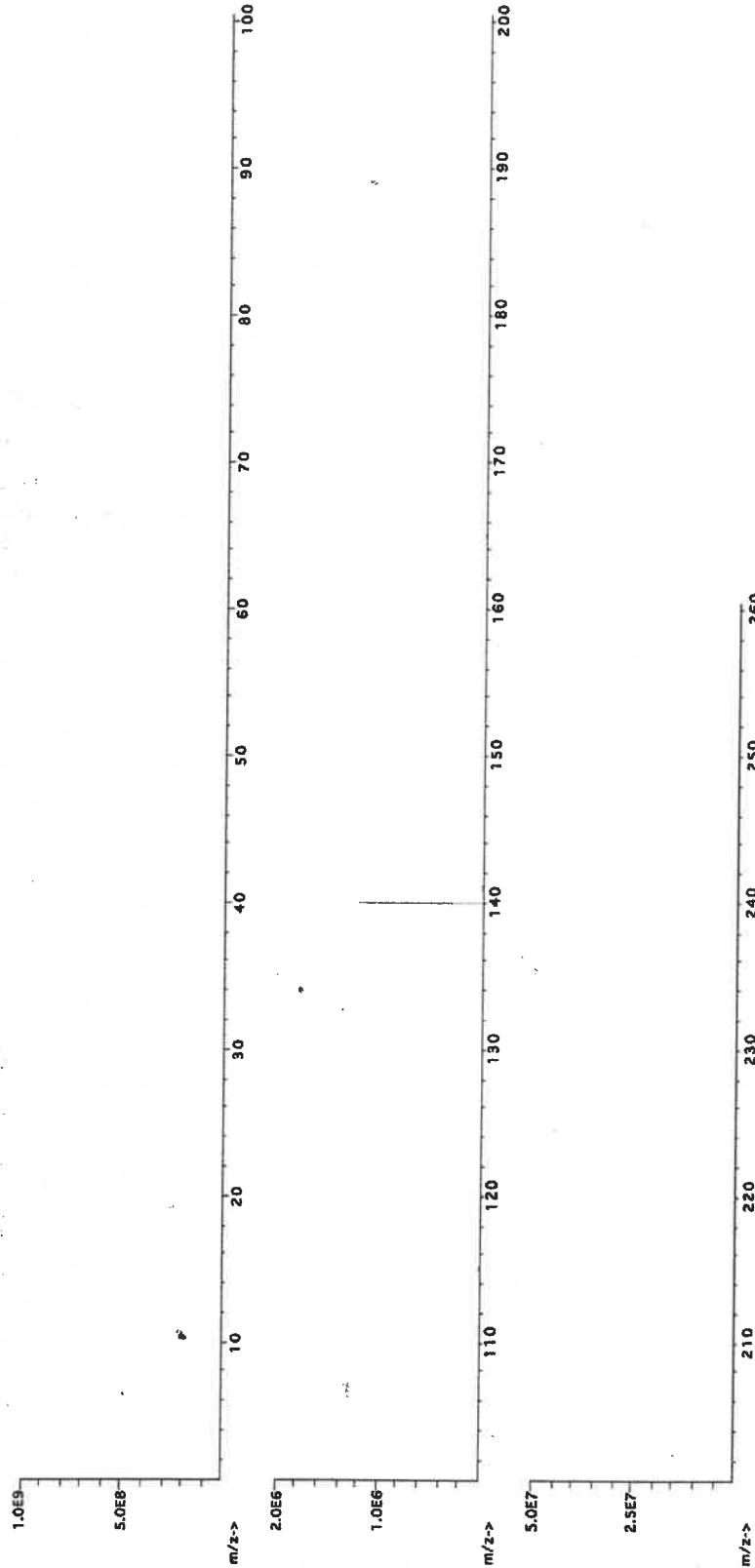
Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas

SDS Information

Expanded Uncertainty +/- (µg/mL) CAS# OSHA PEL (TWA) LD50 SRM

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	SRM
1. Cerium nitrate hexahydrate (Ce)	IN146	Z512CEB1	1000	99.999	0.10	32.8	3.04919	3.04921	1000.0	2.0	10294-41-4	NA	NA

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





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

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

(T)= Target analyte

Physical Characterization:

Certified by:

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

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



CERTIFIED WEIGHT REPORT:

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

Lot # 21110221
Solvent: Nitric Acid

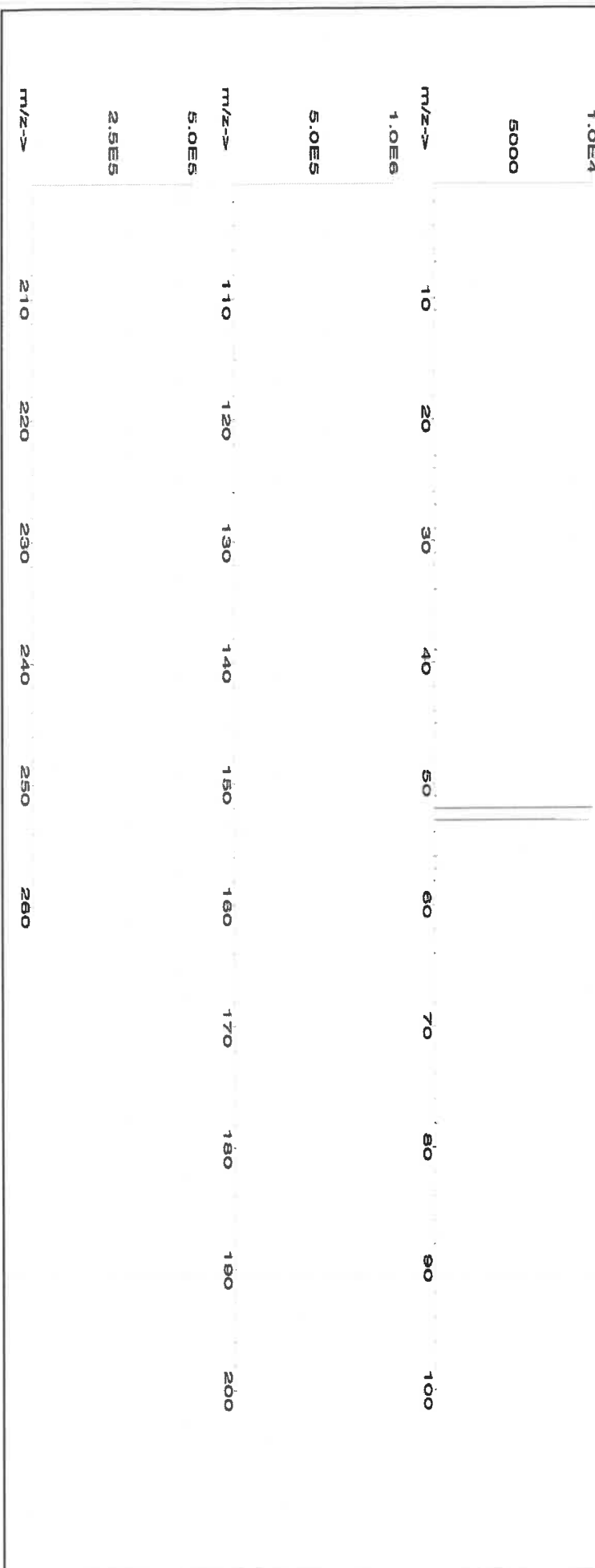
Formulated By:	Lawrence Barry
	060523
Reviewed By:	Pedro L. Ruelas
	060523

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

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

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

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





Certified Reference Material CRM



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

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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

Part Number: **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** **Nitric Acid**
(mL)

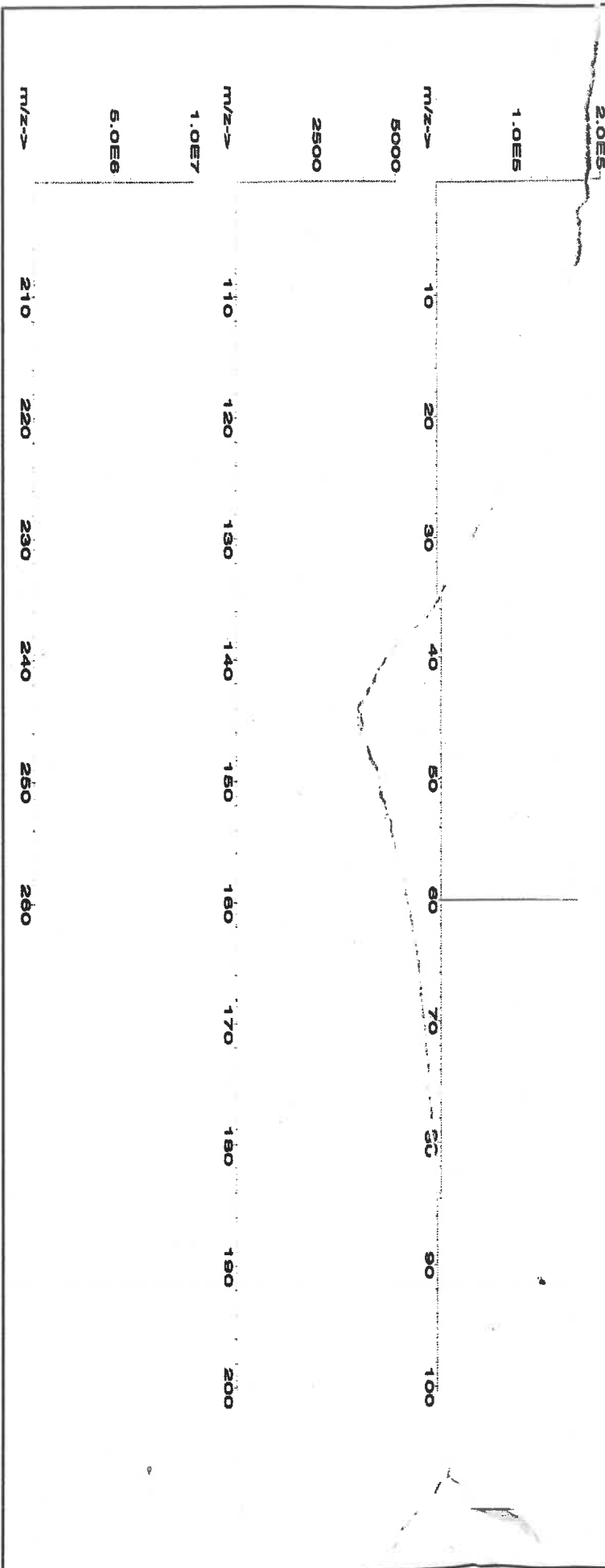
Volume shown below was diluted to (mL): **2000.02** **5E-05** **Balance Uncertainty**
0.056 **Flask Uncertainty**

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

Compound	Part Number	Lot Number	Dilution Factor	Initial Vd. (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 Reference Material CRM

R: 8/25/23 M5751



CERTIFIED WEIGHT REPORT:

Part Number: **58029**
Lot Number: **071723**
Description: **Copper (Cu)**

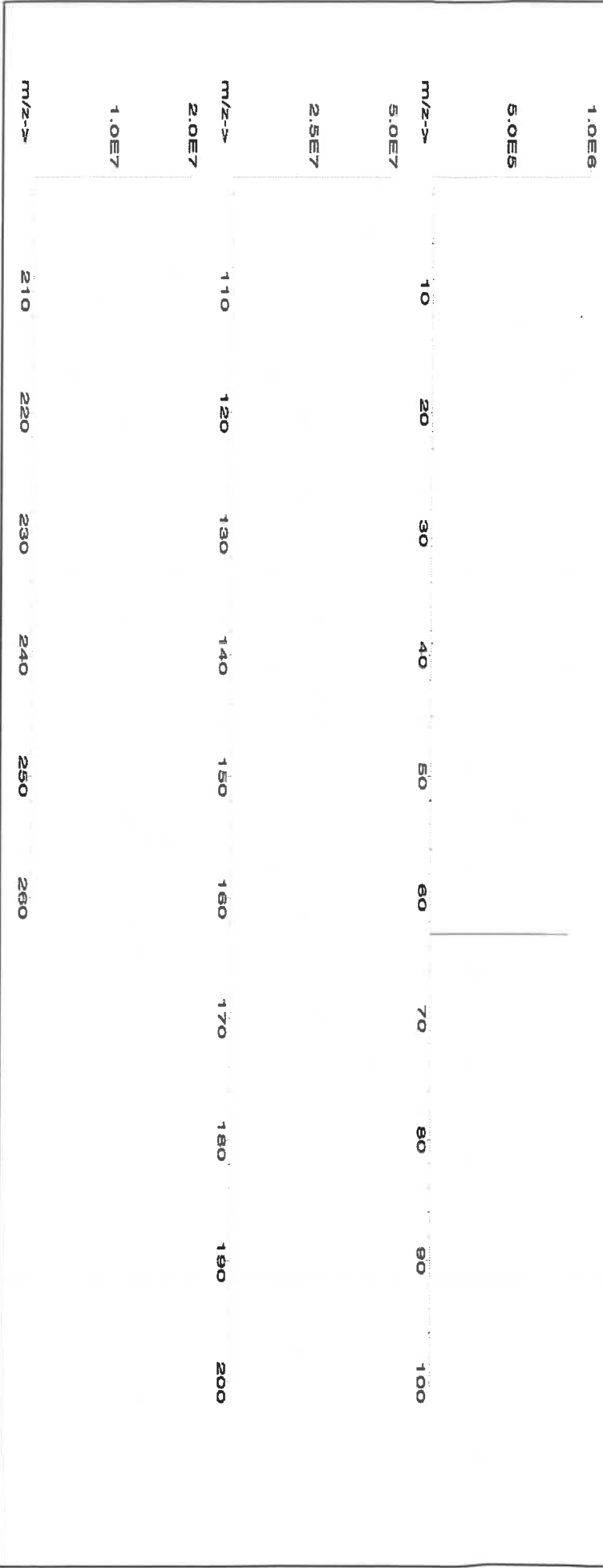
Lot #: **2110221**
Solvent: **Nitric Acid**

Formulated By:	Benson Chan	071723
Reviewed By:	Pedro L. Ruelas	071723

Expiration Date: 071726
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6LUTB
Volume shown below was diluted to (mL): 2000.02
Balance Uncertainty: 5E-05
Flask Uncertainty: 0.058

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

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



Absolute Standards, Inc.

800-368-1131
www.absolutestandards.com



Certified Reference Material CRM



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

Instrumental Analysis by Inductively Coupled Plasma Mass 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	Co	<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	Cu	<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	T		Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

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

Lot # 24002546
Solvent: Nitric Acid

Expiration Date:

102526

2.0%

40.0 (mL)

Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

2000.02

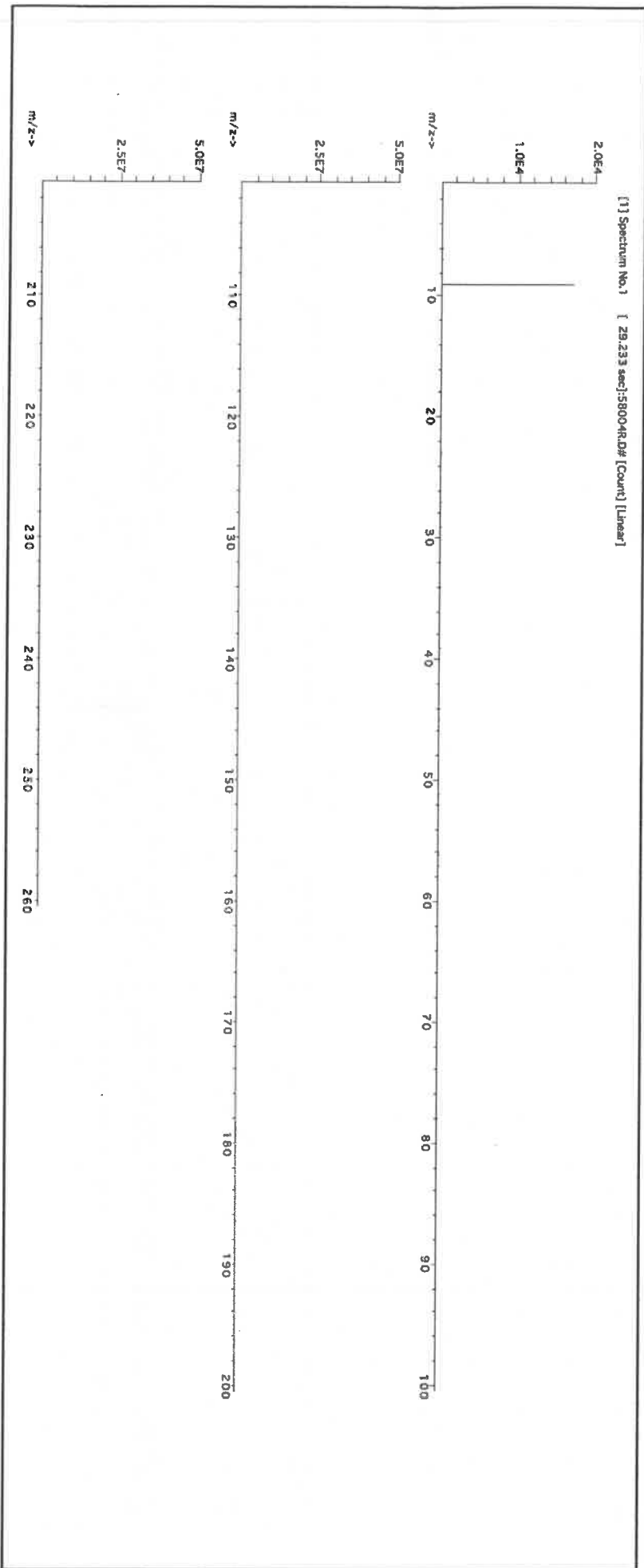
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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

SDS Information

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

1. Beryllium nitrate (Be)	58104	091423	0.1000	200.0	0.084	1000	10001.5	1000.0	2.2	13597-99-4	0.2µg/m3	intrinsc-rat 3.16mg/kg	NA
---------------------------	-------	--------	--------	-------	-------	------	---------	--------	-----	------------	----------	------------------------	----





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM

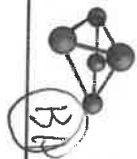
CERTIFIED WEIGHT REPORT:

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

Solvents: 21110221 Nitric Acid
22D0562008 Hydrochloric acid

Lot #

21.02509124
M599



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

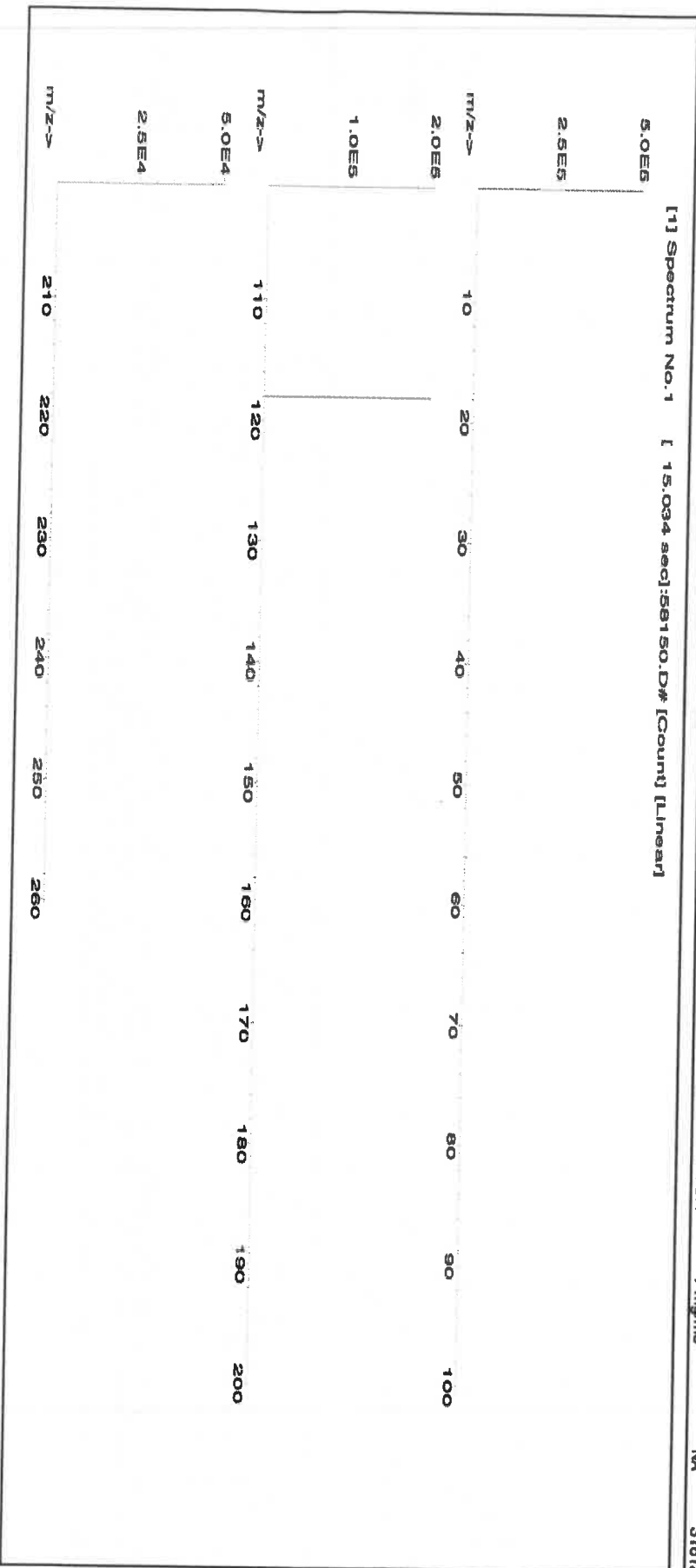
Weight shown below was diluted to (mL): 499.93
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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

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

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

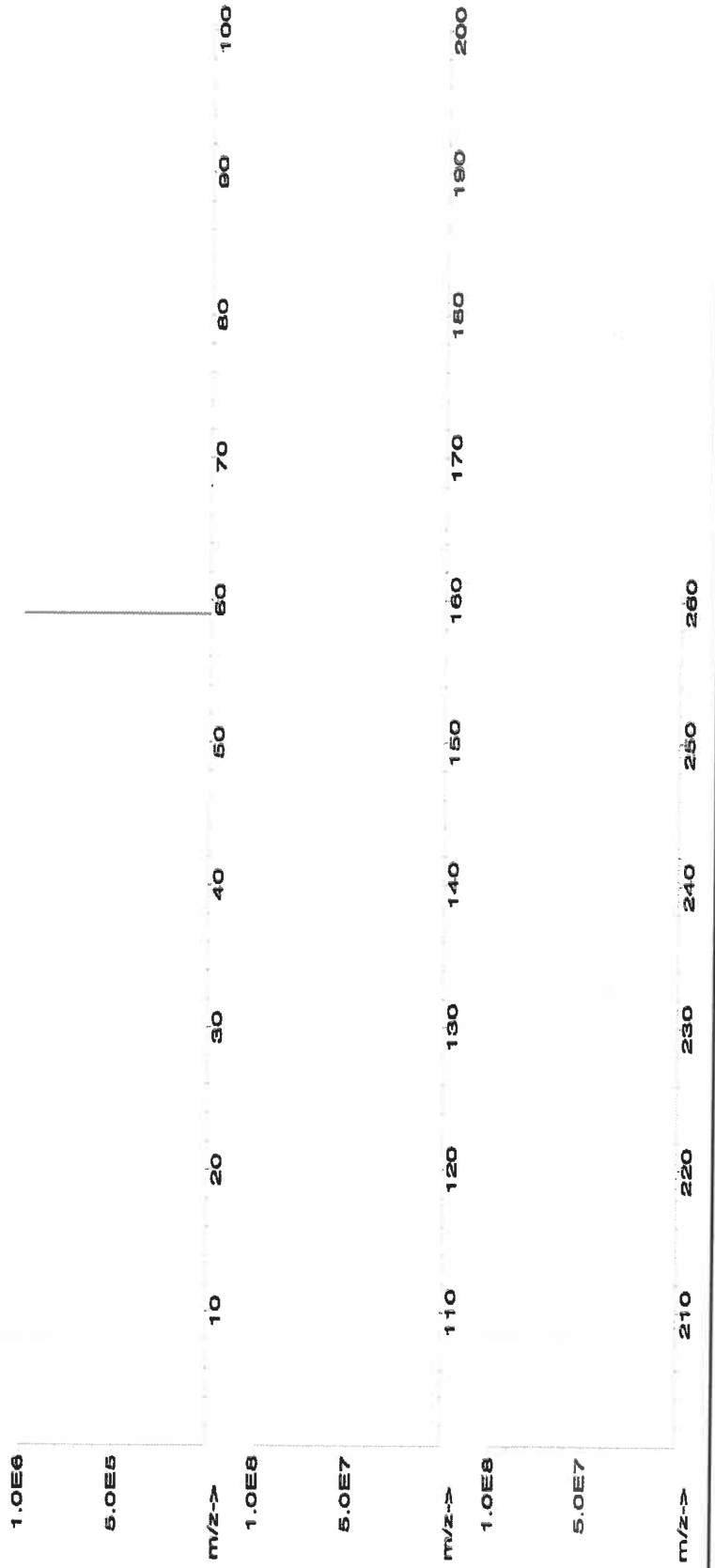
Formulated By: Lawrence Barry 091923
Reviewed By: Pedro L. Rentas 091923

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 ($\mu\text{g/mL}$)

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

Ben. F.

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



Certified Reference Material CRM

AR: 02/09/24

M5801

BA



CERTIFIED WEIGHT REPORT:

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

Lot # 24002546
Solvent: Nitric Acid

Expiration Date: 111326

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test Number: 6LUTB

Volume shown below was diluted to (mL): 4000.0

Balance Uncertainty: 5E-05
Flask Uncertainty: 0.06

2.0%

80.0 (mL)

Nitric Acid

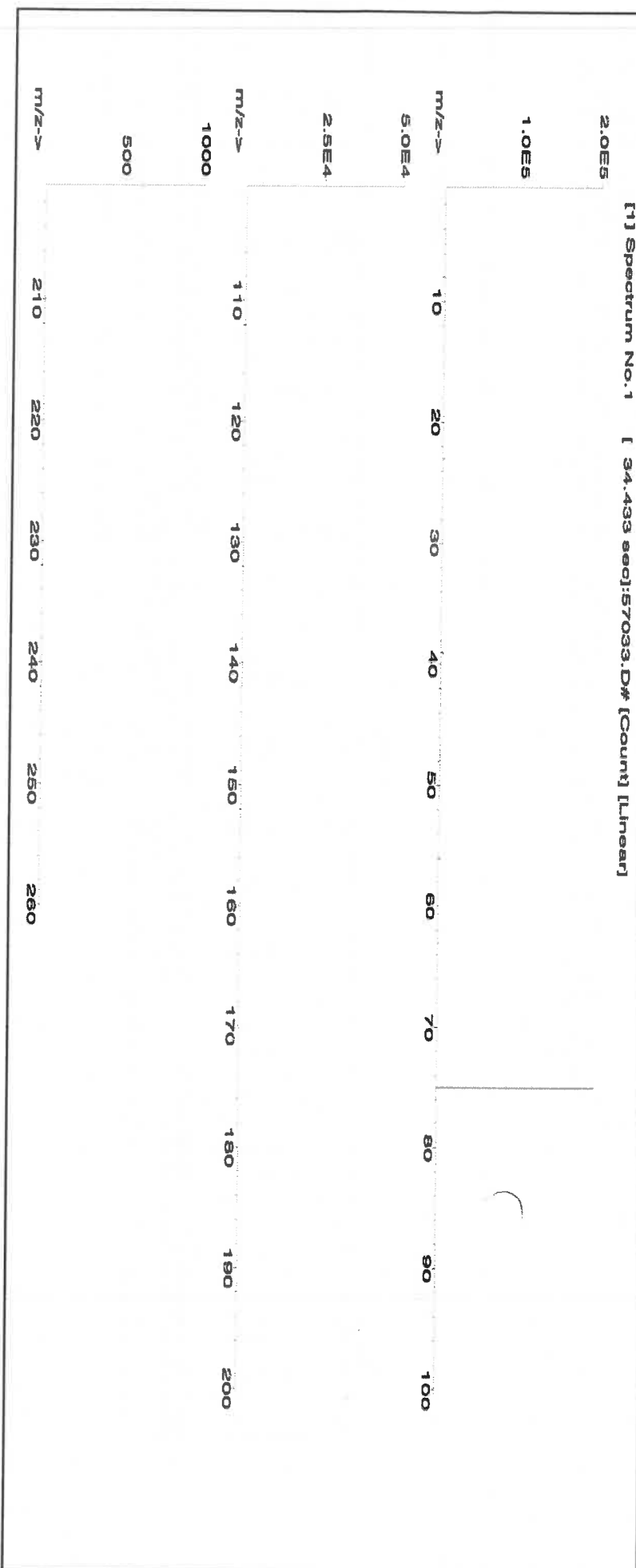
Formulated By:	Lawrence Barry	111323
Reviewed By:	Pedro L. Rendas	111323

SDS Information

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

1. Arsenic (As) 58133 020522 0.1000 400.0 0.084 1000 10001.0 1000.0 2.0 7440-38-2 0.5 mg/m3 or-lat 500 mg/kg 3103a

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





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

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

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

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



CERTIFIED WEIGHT REPORT:

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

Solvent: MKB0857V Ammonium hydroxide

Lot #

AI 021009124 M5814

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

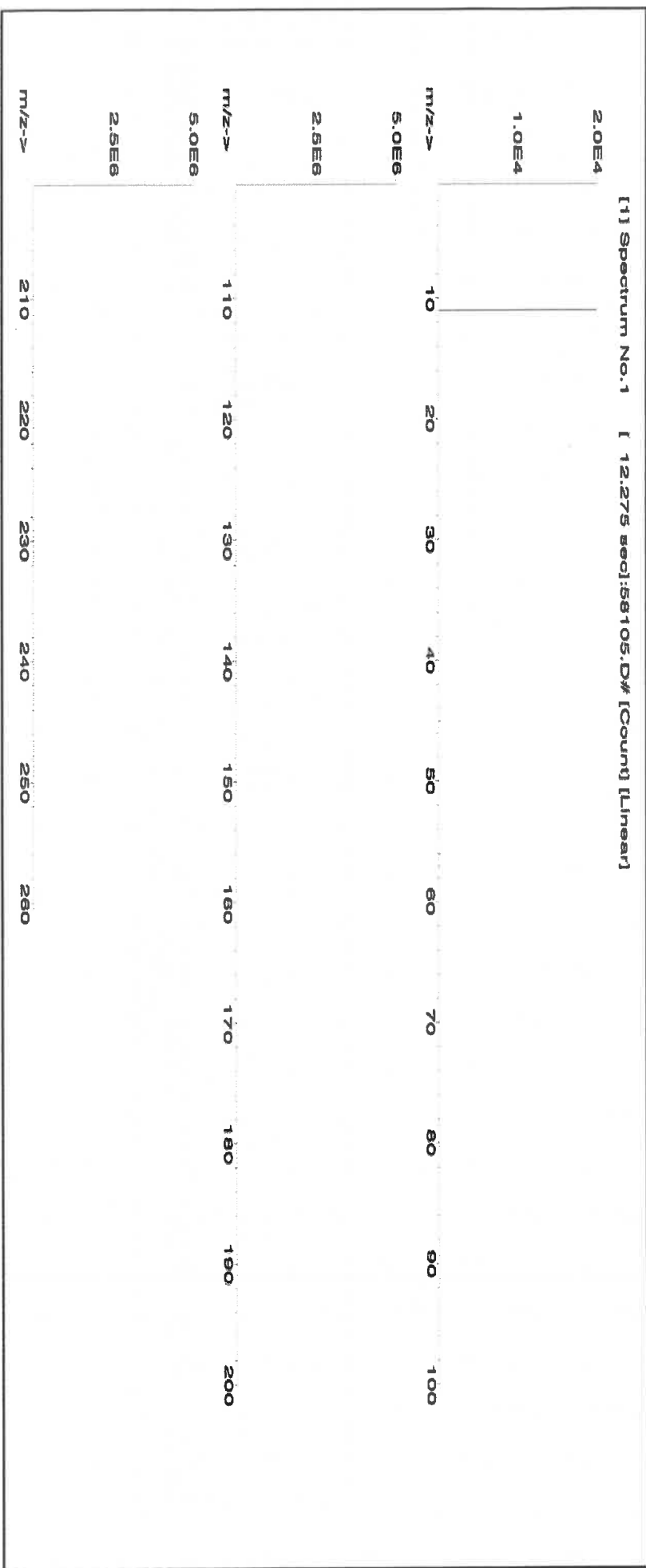
2.0% 40.0 (mL) Ammonium hydroxide

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

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

SDS Information									
Compound	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.)
									OSHA PEL (TWA)
									LD50
									NIST SRM

1. Boric acid (B)	IN018	BV082018A1	1000	99.9999	0.10	17.3	11.55772	11.56201	1000.4	2.0	10043-35-3	2 mg/m3	or-nat 2660 mg/kg	3107
-------------------	-------	------------	------	---------	------	------	----------	----------	--------	-----	------------	---------	-------------------	------





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

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

Solvent: 24002546 Nitric Acid

Lot #

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

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

2% 40.0 (mL) Nitric Acid

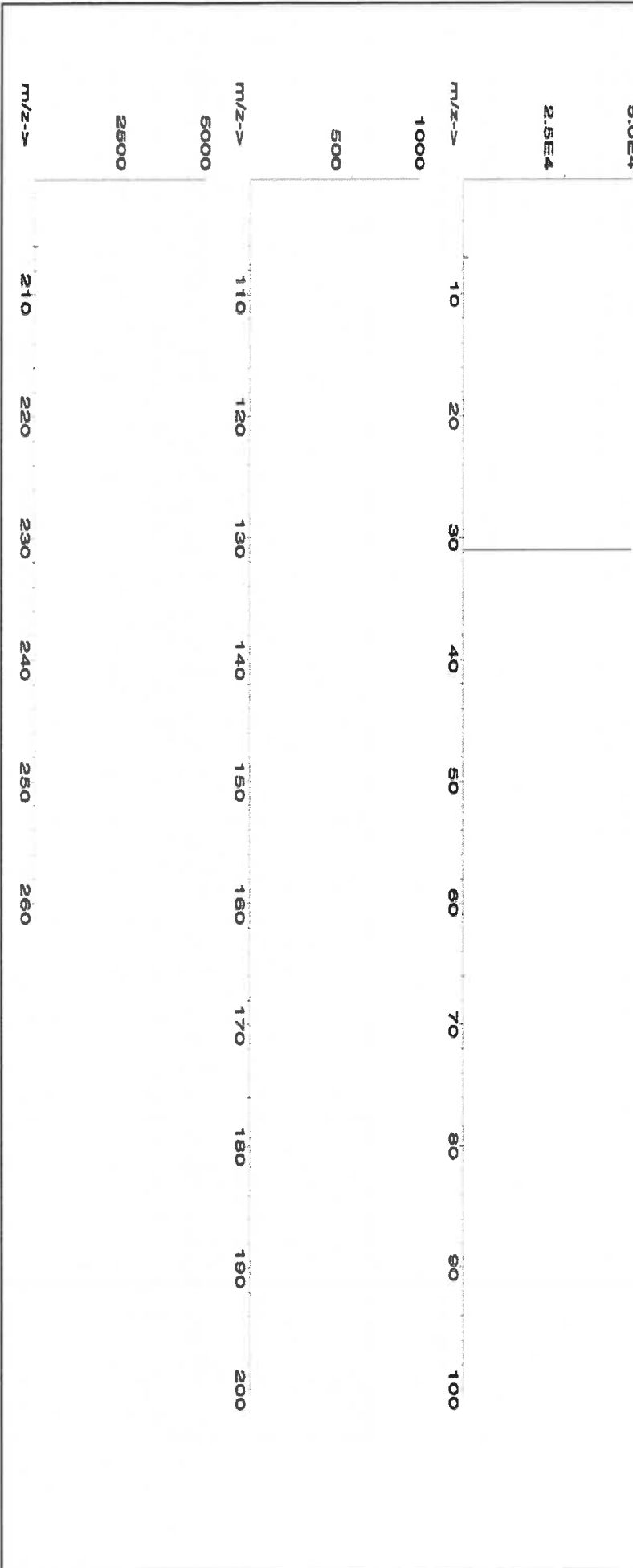
Weight shown below was diluted to (mL): 2000.02
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

SDS Information

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

1. Ammonium dihydrogen phosphate (P) IN008 PY062019A1 1000 99.999 0.10 27.5 7.2729 7.2730 1000.0 2.0 7722-76-1 5 mg/m3 xH-rat >2000mg/kg 3186

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

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



M5824
M3

Material No.: 3624-01

Batch No.: 0000281938

Manufactured Date: 2021-06-07

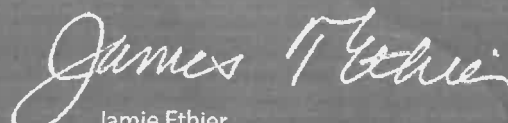
Retest Date: 2026-06-07

Revision No.: 1

Certificate of Analysis

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

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


Jamie Ethier
Vice President Global Quality

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

Avantor Performance Materials, LLC

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

Absolute Standards, Inc.

800-368-1131
www.absolute-standards.com



Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

Part Number:

57034

Lot Number:

060624

Description:

Selenium (Se)

Lot #

24002546

Solvent:

Nitric Acid

2.0%

40.0

(mL)

Nitric Acid

(mL)

Formulated By:

Benson Chan

060624

Expiration Date:

060627

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

2000.07

SE-05 Balance Uncertainty

0.100 Flask Uncertainty

Reviewed By:

Pedro L. Rantas

060624

SDS Information

Compound

Part Number

Lot Number

Dilution Factor

Initial Vol. (mL)

Pipette (mL)

Nominal Conc. (µg/mL)

Initial Conc. (µg/mL)

Final Conc. (µg/mL)

Expanded Uncertainty

(Solvent Safety Info. On Attached pg.)

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

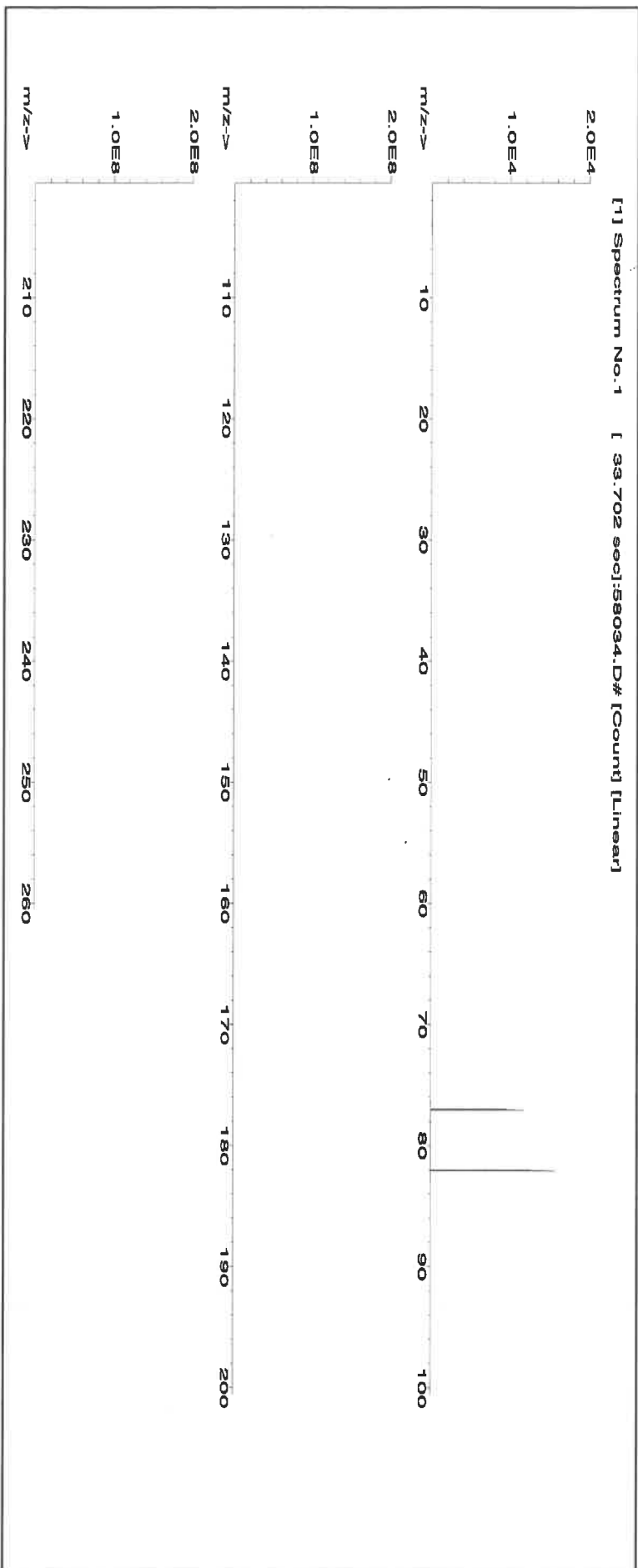
7782-49-2

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 Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

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

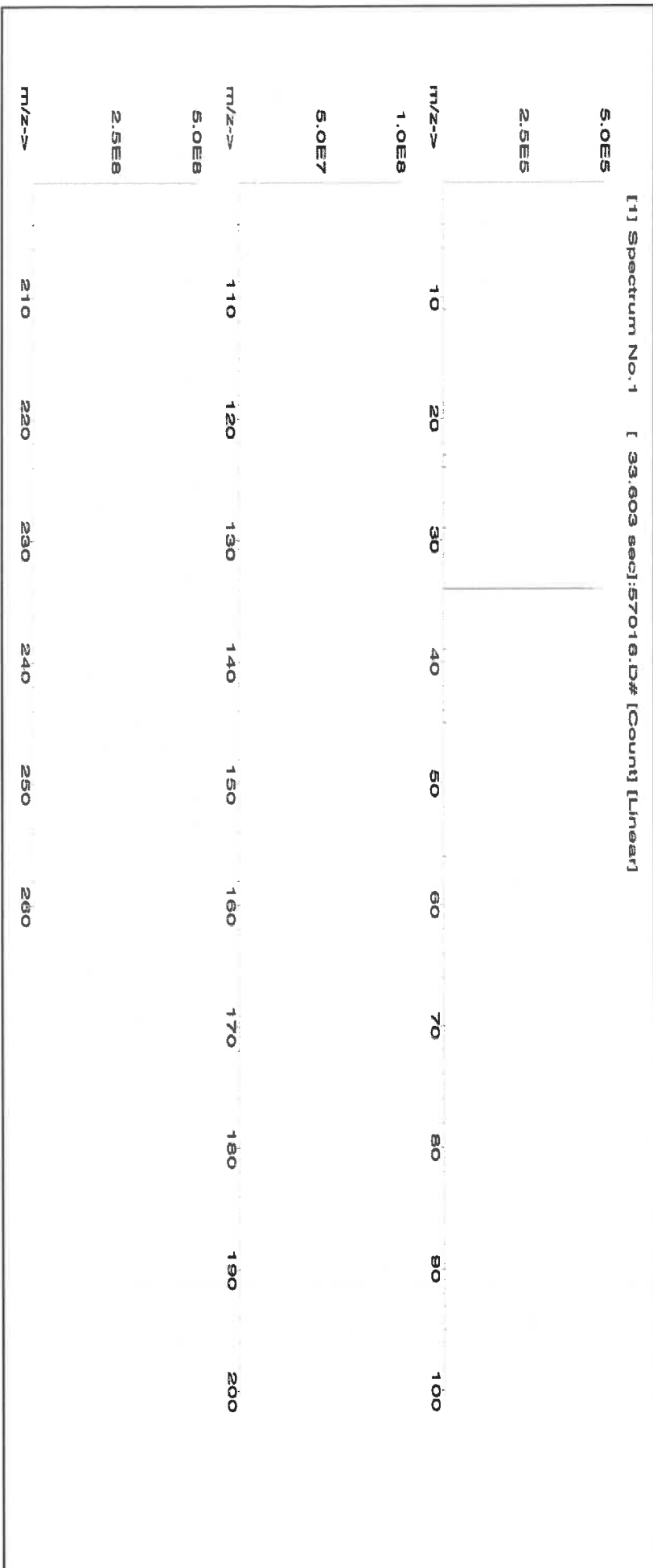
Lot #
Solvent: **122923** ASTM Type 1 Water

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

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

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



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



Certified Reference Material CRM
M5970 M5971 R1 710124



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

CERTIFIED WEIGHT REPORT:

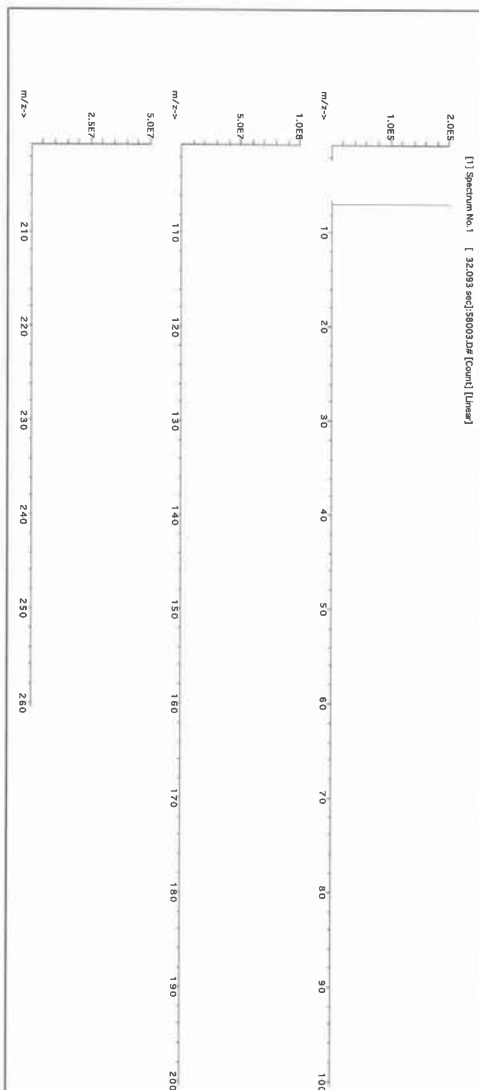
Part Number: 57003
Lot Number: 062124
Description: Lithium (Li)
Expiration Date: 06/21/27
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 250.11

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

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

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

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



Part # 57003 Lot # 062124

1 of 2

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

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



Certified Reference Material CRM



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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

[Signature]

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

R: 2/22/24

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: Single Analyte Custom Grade Solution
Catalog Number: CGT11
Lot Number: T2-TI719972
Matrix: 2% (v/v) HNO3
tr. HF
Value / Analyte(s): 1 000 µg/mL ea:
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:

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

X_i = mean of Assay Method i with standard uncertainty $u_{char,i}$
 w_i = the weighing factors for each method calculated using the inverse square of the variance:
 $w_i = (1/u_{char,i}^2) / (\sum(1/u_{char,i}^2))$

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

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_{ls} = 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:

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

X_i = mean of Assay Method A with
 $u_{char,a}$ = the standard uncertainty of characterization Method A

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

k = coverage factor = 2
 $u_{char,a}$ = the errors from characterization
 u_{bb} = bottle to bottle homogeneity standard uncertainty
 u_{ls} = 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 < 0.000536	M Eu < 0.000268	O Na < 0.032670	M Se 0.001204	O Zn < 0.003267
O Al 0.000872	O Fe 0.003225	O Nb < 0.043560	O Si 0.004735	O Zr < 0.043560
M As < 0.008586	M Ga < 0.000268	M Nd < 0.000268	M Sm < 0.000268	
M Au < 0.004577	M Gd < 0.000268	O Ni < 0.010890	M Sn 0.000096	
O B < 0.008929	M Ge < 0.002146	M Os < 0.000269	O Sr 0.000096	
M Ba < 0.002683	M Hf 0.002161	O P < 0.054450	M Ta 0.010560	
M Be < 0.005366	M Hg < 0.003231	M Pb < 0.001073	M Tb < 0.000268	
M Bi < 0.001609	M Ho < 0.000268	M Pd < 0.000268	M Te < 0.001341	
O Ca 0.000676	M In < 0.002683	M Pr < 0.000268	M Th < 0.053663	
M Cd < 0.000268	M Ir < 0.000269	M Pt < 0.000536	s Ti < 0.000268	
M Ce < 0.000268	M K 0.001172	M Rb < 0.000268	M Tl < 0.000268	
M Co < 0.004293	M La < 0.000268	M Re < 0.000268	M Tm < 0.000268	
M Cr 0.000762	O Li < 0.027225	M Rh < 0.000268	M U < 0.000268	
M Cs < 0.000268	M Lu < 0.000268	M Ru < 0.000269	M V < 0.019855	
O Cu < 0.010890	O Mg < 0.005445	i S < 0.006976	M W 0.000473	
M Dy < 0.000268	O Mn < 0.003267	M Sb < 0.006976	M Y < 0.002146	
M Er < 0.000268	M Mo 0.000774	O Sc < 0.004900	M Yb < 0.000536	

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

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 47.87 +4 6 Ti(F)6-2
Chemical Compatibility - Soluble in concentrated HCl, HF, H3PO4 H2SO4 and HNO3. Avoid neutral to basic media. Unstable at ppm levels with metals that would pull F- away (i.e. Do not mix with Alkaline or Rare Earths or high levels of transition elements unless they are fluorinated). Stable with most inorganic anions with a tendency to hydrolyze forming the hydrated oxide in all dilute acids except HF.

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

Ti Containing Samples (Preparation and Solution) - Metal (Soluble in H2O / HF caution - powder reacts violently); Oxide - low temperature history anatase or rutile (Dissolved by heating in 1:1:1 H2O / HF / H2SO4); Oxide - high temperature history (~800EC) brookite (fuse in Pt0 with K2S2O7); Ores (fuse in Pt0 with KF + K2S2O7 - no KF if silica not present); Organic Matrices (Dry ash at 450EC in Pt0 and dissolve by heating with 1:1:1 H2O / HF / H2SO4 or fuse ash with pyrosulfate if oxide is as plastic pigment and likely in brookite crystalline form).

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

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 48 amu	14 ppt	N/A	32S16O, 32S14N, 14N16O18O, 14N17N2, 36Ar12C, 48Ca, [96X=2 (where X = Zr, Mo, Ru)]
ICP-OES 323.452 nm	0.0054 / 0.00092 µg/mL	1	Ce, Ar, Ni
ICP-OES 334.941 nm	0.0038 / 0.000028 µg/mL	1	Nb, Ta, Cr, U
ICP-OES 336.121 nm	0.0053 / 0.000034 µg/mL	1	W, Mo, Co

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 / AZLA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.869.6799; 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 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

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

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

M5985
R: 6/14/24

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

Assay Information:

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

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

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

M - Checked by ICP-MS

O - Checked by ICP-OES

i - Spectral Interference

n - Not Checked For

s - Solution Standard Element

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 21, 2023

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

11.2 Lot Expiration Date

- February 21, 2028

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

R: 2/22/24
MS997

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

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

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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



Sulfuric Acid
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis
Low Selenium

avantor™



M 6041-4b
MS

Material No.: 9673-33
Batch No.: 23D2462010
Manufactured Date: 2023-03-22
Retest Date: 2028-03-20
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
ACS – Assay (H ₂ SO ₄)	95.0 – 98.0 %	96.1 %
Appearance	Passes Test	Passes Test
ACS – Color (APHA)	≤ 10	5
ACS – Residue after Ignition	≤ 3 ppm	< 1 ppm
ACS – Substances Reducing Permanganate (as SO ₂)	≤ 2 ppm	< 2 ppm
Ammonium (NH ₄)	≤ 1 ppm	1 ppm
Chloride (Cl)	≤ 0.1 ppm	< 0.1 ppm
Nitrate (NO ₃)	≤ 0.2 ppm	< 0.1 ppm
Phosphate (PO ₄)	≤ 0.5 ppm	< 0.1 ppm
Trace Impurities – Aluminum (Al)	≤ 30.0 ppb	< 5.0 ppb
Arsenic and Antimony (as As)	≤ 4.0 ppb	< 2.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	8.5 ppb
Trace Impurities – Cadmium (Cd)	≤ 2.0 ppb	< 0.3 ppb
Trace Impurities – Chromium (Cr)	≤ 6.0 ppb	< 0.4 ppb
Trace Impurities – Cobalt (Co)	≤ 0.5 ppb	< 0.3 ppb
Trace Impurities – Copper (Cu)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Gold (Au)	≤ 10.0 ppb	0.5 ppb
Heavy Metals (as Pb)	≤ 500.0 ppb	< 100.0 ppb
Trace Impurities – Iron (Fe)	≤ 50.0 ppb	1.3 ppb
Trace Impurities – Lead (Pb)	≤ 0.5 ppb	< 0.5 ppb
Trace Impurities – Magnesium (Mg)	≤ 7.0 ppb	0.8 ppb
Trace Impurities – Manganese (Mn)	≤ 1.0 ppb	< 0.4 ppb
Trace Impurities – Mercury (Hg)	≤ 0.5 ppb	< 0.1 ppb
Trace Impurities – Nickel (Ni)	≤ 2.0 ppb	0.3 ppb
Trace Impurities – Potassium (K)	≤ 500.0 ppb	< 2.0 ppb
Trace Impurities – Selenium (Se)	≤ 50.0 ppb	< 0.1 ppb
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	31.5 ppb
Trace Impurities – Silver (Ag)	≤ 1.0 ppb	< 0.3 ppb

>>> Continued on page 2 >>>

Sulfuric Acid
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis
Low Selenium

 **avantorsm**

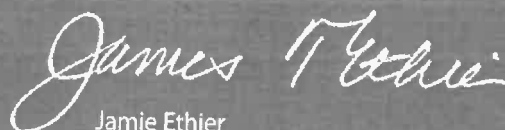


Material No.: 9673-33
Batch No.: 23D2462010

Test	Specification	Result
Trace Impurities – Sodium (Na)	≤ 500.0 ppb	5.4 ppb
Trace Impurities – Strontium (Sr)	≤ 5.0 ppb	< 0.2 ppb
Trace Impurities – Tin (Sn)	≤ 5.0 ppb	< 0.8 ppb
Trace Impurities – Zinc (Zn)	≤ 5.0 ppb	0.4 ppb

For Laboratory, Research, or Manufacturing Use

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



Jamie Ethier
Vice President Global Quality

Certificate of Analysis

R: 08/22/24 M6058, M6059

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

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

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

August 12, 2024

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

11.2 Lot Expiration Date

- **August 12, 2029**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

Certificate of Analysis

M6074
M6075
M6076
M6077

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

F: 540-585-3012

info@inorganicventures.com

EXP: 9/6/2029

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

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

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 06, 2024

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

11.2 Lot Expiration Date

- September 06, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

Certificate of Analysis

M6074
M6075
M6076
M6077

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

F: 540-585-3012

info@inorganicventures.com

EXP: 9/6/2029

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

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

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 06, 2024

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

11.2 Lot Expiration Date

- September 06, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





CERTIFIED WEIGHT REPORT:

Part Number: **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>
	Pedro L. Renteria
	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
Christiansburg, VA 24073 USA
inorganicventures.com

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

M6137
R-71013124

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

Assay Information:

Assay Method #1 **999 ± 5 µg/mL**
ICP Assay NIST SRM Traceable to 3150 Lot Number: S2-SI702546

Assay Method #2 **1000 ± 7 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

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

M - Checked by ICP-MS

O - Checked by ICP-OES

i - Spectral Interference

n - Not Checked For

s - Solution Standard Element

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 10, 2024

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

11.2 Lot Expiration Date

- July 10, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Muzzammil Khan
Stock Laboratory Supervisor



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





Certified Reference Material CRM

M6138

R → 11/13/25

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58120
121824
Calcium (Ca)

Solvent: Nitric Acid

Lot #

24012496

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

121827
Ambient (20 °C)
10000
6UTB

2% Nitric Acid
80.0 (mL)
5E-05 Balance Uncertainty
0.15 Flask Uncertainty

Weight shown below was diluted to (mL):

4000.1

10000

RM#
Lot
Number

Purity (%)
Assay (%)

Target
Weight (g)

Actual
Weight (g)

Expanded
Uncertainty
+/- (µg/mL)

Actual
Conc. (µg/mL)

CAS#
OSHA PEL (TWA)

LD50

NIST
SRM

1. Calcium carbonate (Ca)

IN014

CAD003020B3

10000

99.999

0.10

39.9

100.2537

100.2677

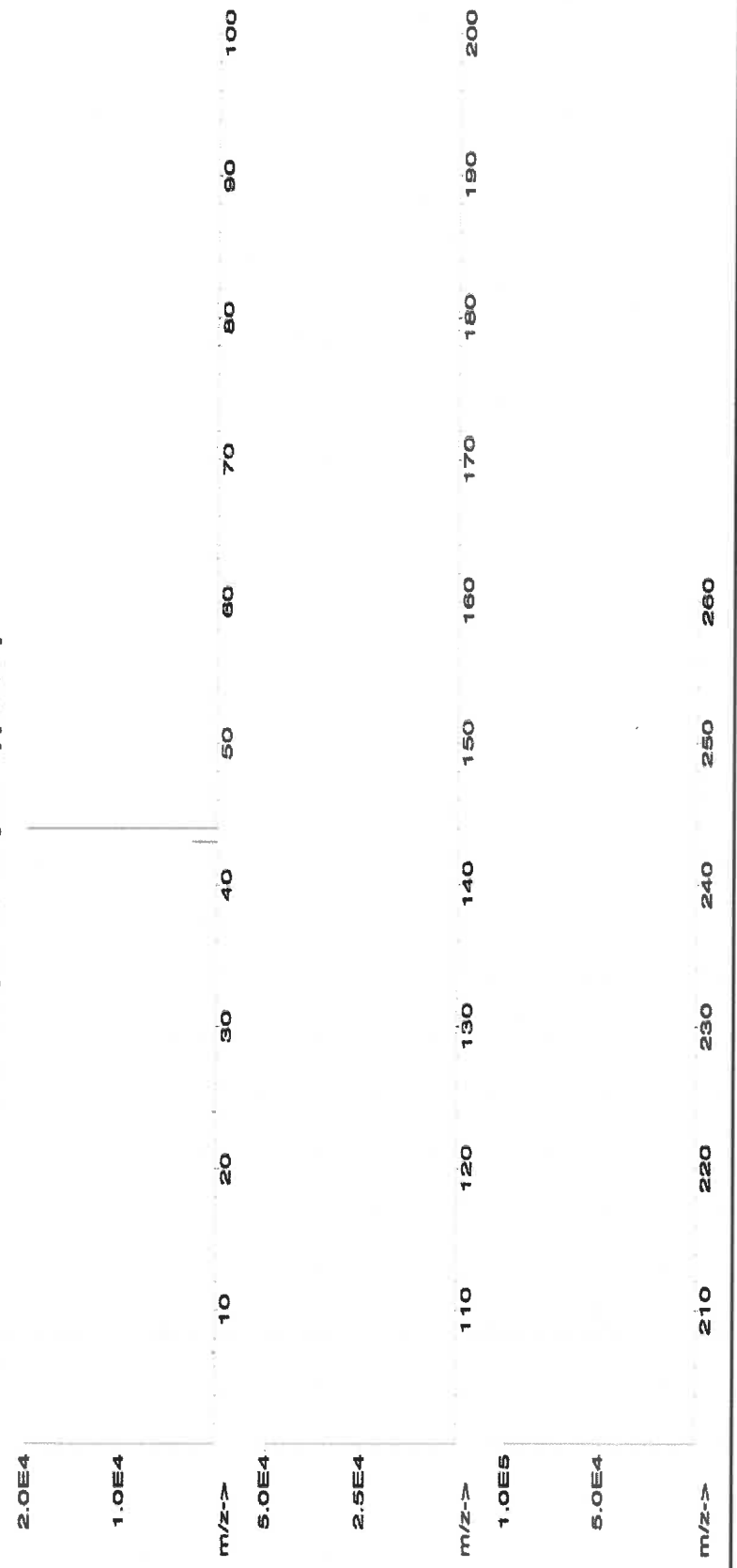
10001.4

20.0

471-34-1

5 mg/m3
orl-rat >2000mg/kg

[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 ($\mu\text{g/mL}$)

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

Ben. J. ...

- * 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:

58126
011025
Iron (Fe)
M6140

Lot #
Solvent: 24012496 Nitric Acid

Expiration Date:

011028

2%

40.0 (mL)
Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

10000

NIST Test Number:

6U7B

Weight shown below was diluted to (mL):

2000.07

5E-05 Balance Uncertainty
0.100 Flask Uncertainty

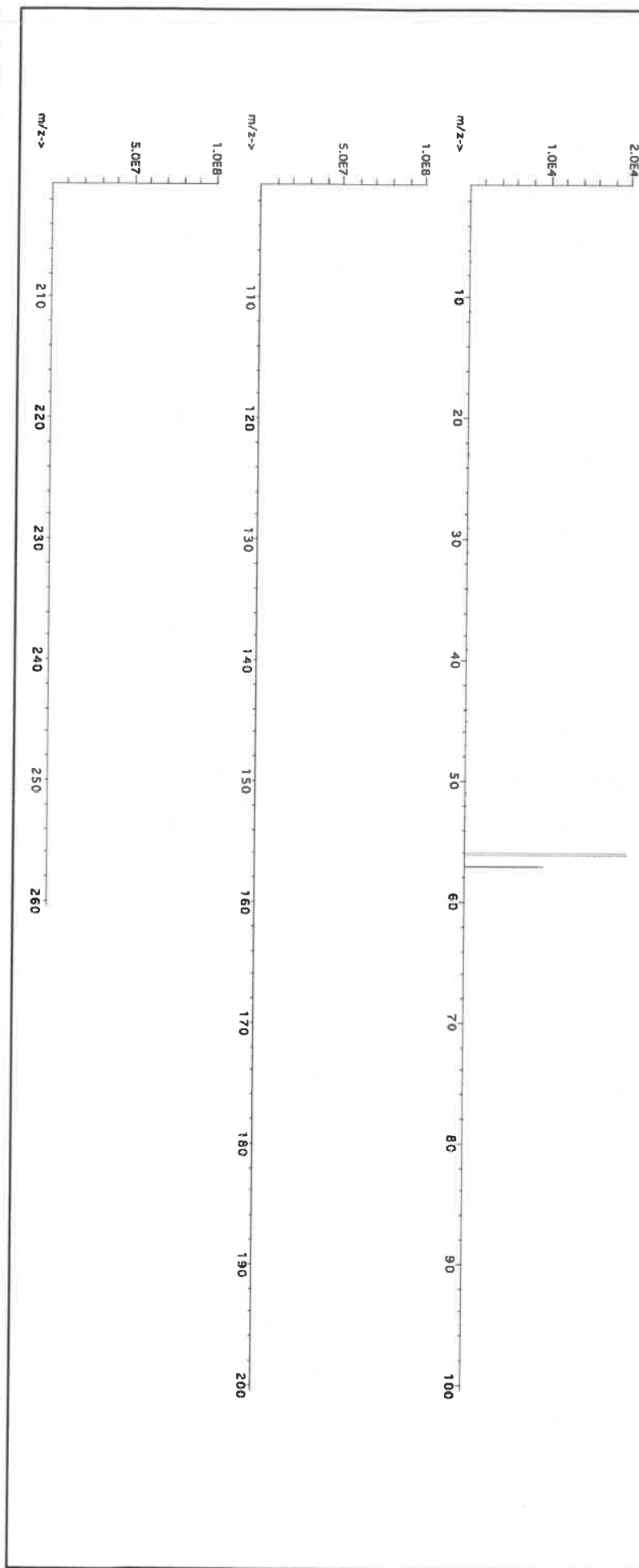
Formulated By:	Benson Chan	011025
Reviewed By:	Pedro L. Renteria	011025

Compound

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

1. Iron(III) nitrate nonahydrate (Fe) IN028 FED082023A1 10000 99.999 0.10 13.0 153.8534 ##### 10000.2 20.0 7782-61-8 1 mg/m³ or-rel 3250mg/kg 3126A

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

Har P. D.

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



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57119
103024
Potassium (K)

R-21113125

Lot #
24002546
Nitric Acid

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

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

103027
Ambient (20 °C)
10000

M6141
M6142
M6143

2%
80.0 (mL)
Nitric Acid

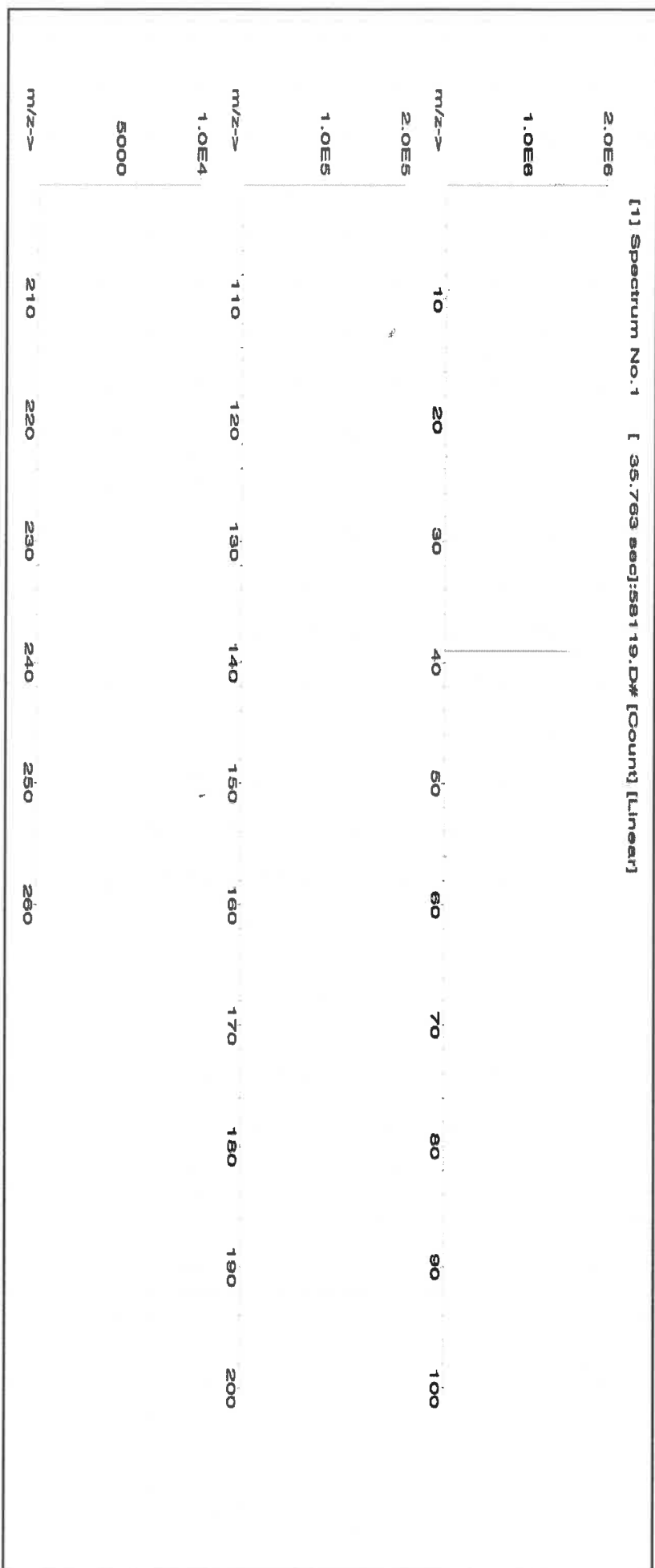
Weight shown below was diluted to (mL):

4000.1 0.15 Flask Uncertainty

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

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

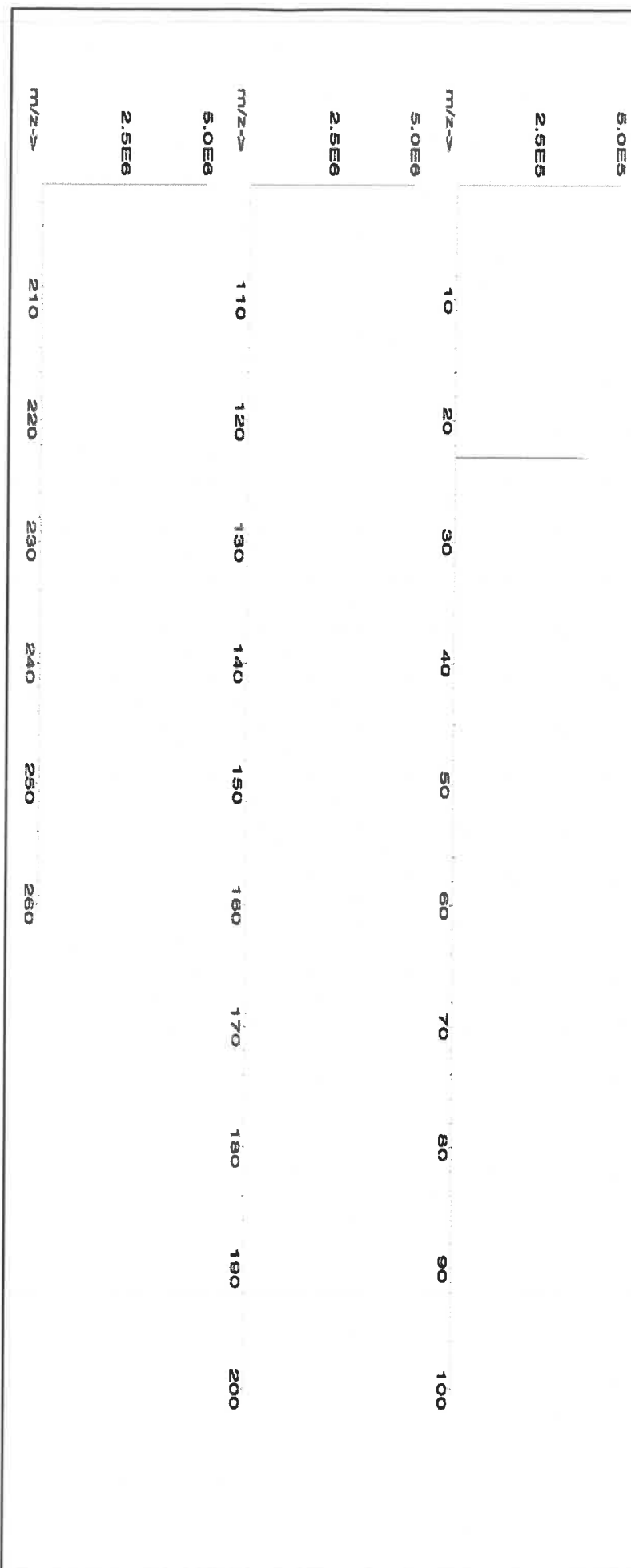
Formulated By:	Benson Chan	072424
Reviewed By:	Pedro L. Renteria	072424

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	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	<0.2	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 Number: 121724
Description: Zinc (Zn)

Lot #

Nitric Acid

Expiration Date: 121727
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

Weight shown below was diluted to (mL): 2000.1
Balance Uncertainty: 5E-05
Flask Uncertainty: 0.10

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

Compound

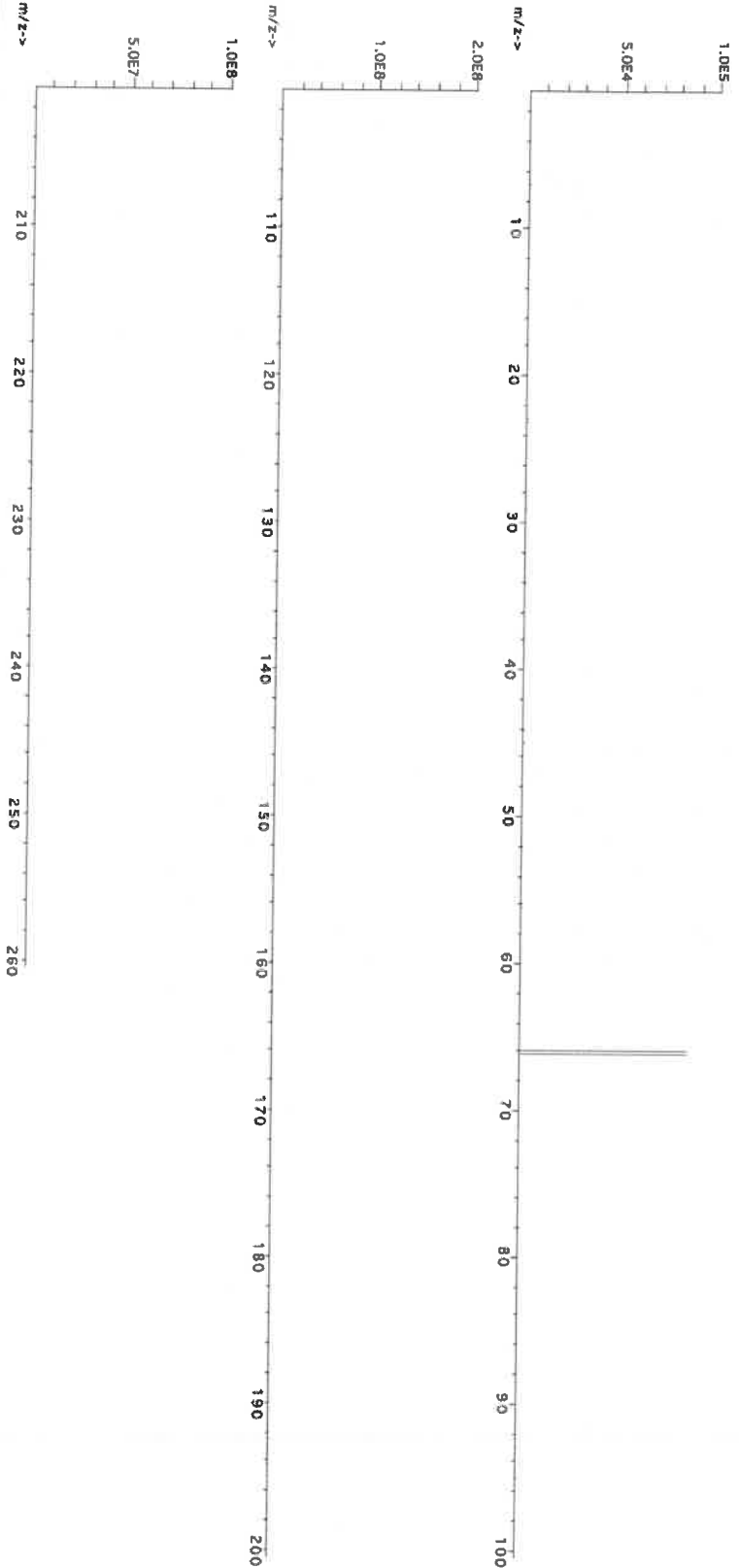
RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
-----	------------	-----------------------	------------	------------------------	-----------	-------------------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

SDS Information

(Solvent Safety Info. On Attached pg.)

1. Zinc nitrate hexahydrate (Zn) IN016 ZNE0302021A1 1000 99.999 0.10 24.3 8.2308 8.2311 1000.0 2.0 10196-18-6 1 mg/m3 or-rat 1190mg/kg 3168

[1] Spectrum No.1 [31.103 sec; 58130.D# [Count] [Lines]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

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

avantor™



M6151

R → 11/15/25

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

Certificate of Analysis

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

>>> Continued on page 2 >>>

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

 **avantorsm**



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

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

>>> Continued on page 3 >>>

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

 **avantor**™

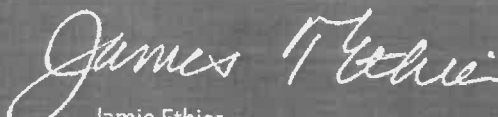


Material No.: 9530-33
Batch No.: 22G2862015

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

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

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


Jamie Ethier
Vice President Global Quality

Nitric Acid 69%
CMOS



R- 0210212025

m - 6158

Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO ₃)	69.0 - 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	1 ppm
Chloride (Cl)	≤ 0.08 ppm	< 0.03 ppm
Phosphate (PO ₄)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO ₄)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities - Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities - Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Bismuth (Bi)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Boron (B)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities - Calcium (Ca)	≤ 50.0 ppb	2.3 ppb
Trace Impurities - Chromium (Cr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities - Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Germanium (Ge)	≤ 20 ppb	< 10 ppb
Trace Impurities - Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 100 ppb	100 ppb
Trace Impurities - Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities - Lead (Pb)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities - Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

avantor™



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

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	16 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	10 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	3 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

 **avantorsTM**



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

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

For Microelectronic Use

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



Jamie Croak
Director Quality Operations, Bioscience Division

Nitric Acid 69%
CMOS



m-6162

Material No.: 9606-03
Batch No.: 24H0162012
Manufactured Date: 2024-06-28
Retest Date: 2029-06-27
Revision No.: 0

R. Date :- 04/27/2025

Certificate of Analysis

Test	Specification	Result
Assay (HNO ₃)	69.0 – 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	< 1 ppm
Chloride (Cl)	≤ 0.08 ppm	0.03 ppm
Phosphate (PO ₄)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO ₄)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities – Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Bismuth (Bi)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	0.1 ppb
Trace Impurities – Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	0.3 ppb
Trace Impurities – Chromium (Cr)	≤ 30.0 ppb	0.1 ppb
Trace Impurities – Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Germanium (Ge)	≤ 20 ppb	< 1 ppb
Trace Impurities – Gold (Au)	≤ 20 ppb	< 1 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities – Lead (Pb)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities – Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Nickel (Ni)	≤ 20.0 ppb	< 1.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

avantor™



Material No.: 9606-03
Batch No.: 24H0162012

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	< 1 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	1 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 1.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	13 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	5 par/ml

>>> Continued on page 3 >>>



300 Technology Drive
 Christiansburg, VA 24073 USA
 inorganicventures.com

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

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

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

May 22, 2024

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

11.2 Lot Expiration Date

- **May 22, 2029**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

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

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

June 01, 2023

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

11.2 Lot Expiration Date

- June 01, 2028

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



300 Technology Drive
 Christiansburg, VA 24073 USA
 inorganicventures.com

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
 Catalog Number: QCP-CICV-3
 Lot Number: V2-MEB749572
 Matrix: 7% (v/v) HNO₃
 Value / Analyte(s):
 500 µg/mL ea:
 Arsenic, Lead,
 Selenium, Thallium,
 250 µg/mL ea:
 Cadmium

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Arsenic, As	500.0 ± 3.1 µg/mL	Cadmium, Cd	250.1 ± 1.1 µg/mL
Lead, Pb	500.0 ± 2.3 µg/mL	Selenium, Se	500.0 ± 3.2 µg/mL
Thallium, Tl	500.0 ± 3.0 µg/mL		

Density: 1.040 g/mL (measured at 20 ± 4 °C)

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 02, 2025

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

11.2 Lot Expiration Date

- **January 02, 2030**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





Certified Reference Material CRM



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

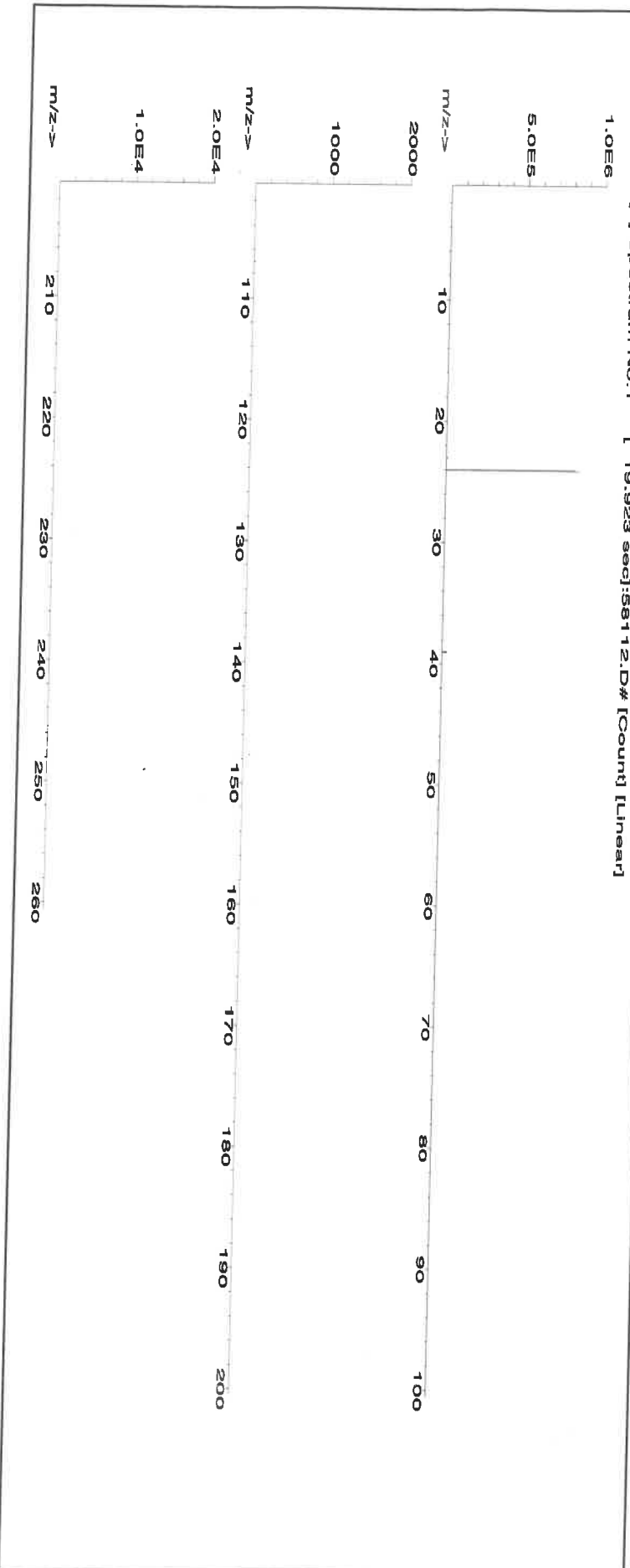
CERTIFIED WEIGHT REPORT:

Part Number: 58112 **Lot #** M 6171
Lot Number: 011525 **Solvent:** 24012496 Nitric Acid
Description: Magnesium (Mg)
Expiration Date: 011528 2% 40.0 Nitric Acid
Recommended Storage: Ambient (20 °C) (mL)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB 5E-05 Balance Uncertainty
Weight shown below was diluted to (mL): 2000.07 0.100 Flask Uncertainty

Formulated By:	Benson Chan	011525
Reviewed By:	Pedro L. Rentas	011525

Compound

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

F: 540-585-3012

info@inorganicventures.com

M6174
R → S1/S124

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution	
Catalog Number:	CLPP-CAL-1	
Lot Number:	V2-MEB742428	
Matrix:	5% (v/v) HNO ₃	
Value / Analyte(s):	5 000 µg/mL ea:	
	Calcium,	Potassium,
	Magnesium,	Sodium,
	2 000 µg/mL ea:	
	Aluminum,	Barium,
	1 000 µg/mL ea:	
	Iron,	
	500 µg/mL ea:	
	Nickel,	Vanadium,
	Zinc,	Cobalt,
	Manganese,	
	250 µg/mL ea:	
	Silver,	Copper,
	200 µg/mL ea:	
	Chromium,	
	50 µg/mL ea:	
	Beryllium	

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	2 000 ± 7 µg/mL	Barium, Ba	2 000 ± 9 µg/mL
Beryllium, Be	50.03 ± 0.30 µg/mL	Calcium, Ca	5 000 ± 16 µg/mL
Chromium, Cr	200.0 ± 1.1 µg/mL	Cobalt, Co	500.0 ± 2.3 µg/mL
Copper, Cu	250.0 ± 1.1 µg/mL	Iron, Fe	1 000 ± 4 µg/mL
Magnesium, Mg	5 000 ± 22 µg/mL	Manganese, Mn	499.9 ± 2.2 µg/mL
Nickel, Ni	500.1 ± 2.3 µg/mL	Potassium, K	5 000 ± 22 µg/mL
Silver, Ag	250.0 ± 1.1 µg/mL	Sodium, Na	5 000 ± 22 µg/mL
Vanadium, V	500.0 ± 2.2 µg/mL	Zinc, Zn	500.0 ± 2.2 µg/mL

Density: 1.117 g/mL (measured at 20 ± 4 °C)

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 22, 2024

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

11.2 Lot Expiration Date

- **March 22, 2029**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





CERTIFIED WEIGHT REPORT:

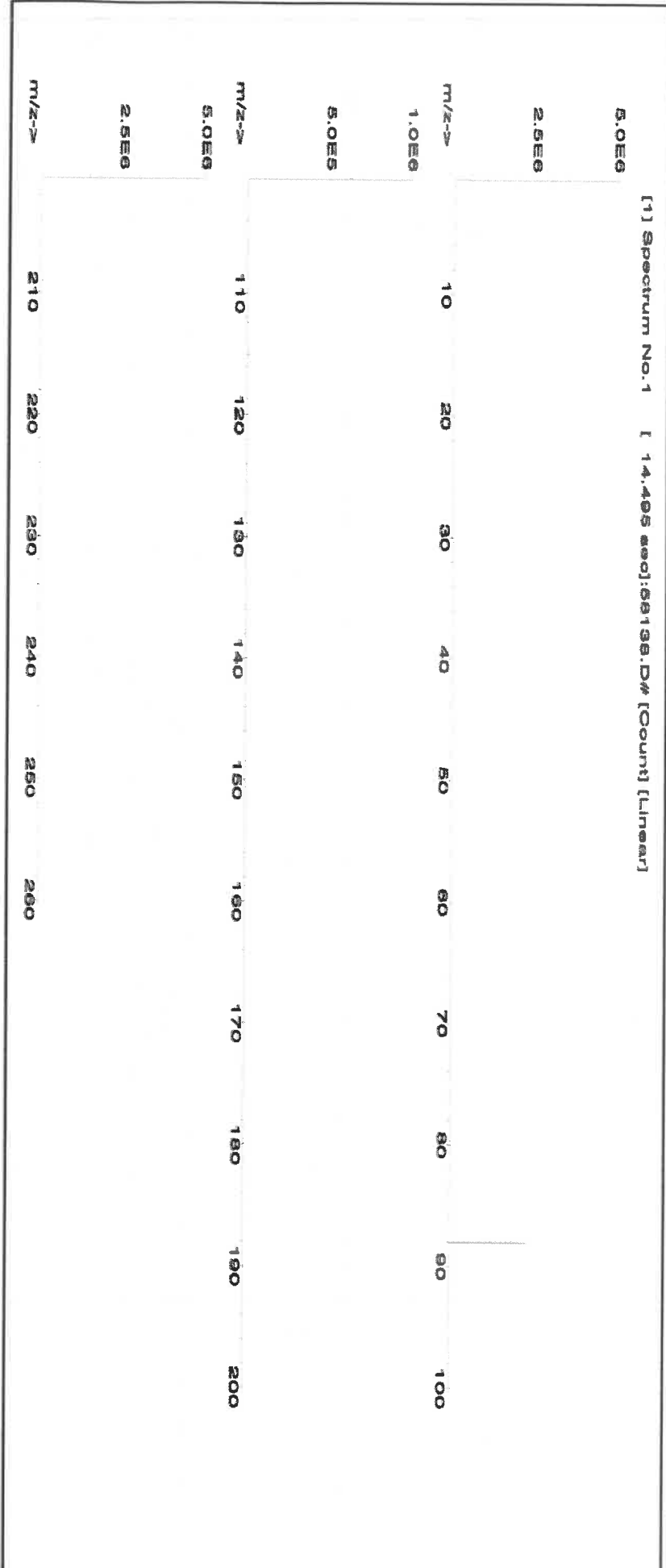
Part Number: 57038 **Lot #** 24002546 **Nitric Acid**
Lot Number: 092724
Description: Strontium (Sr)
Expiration Date: 092727 **2%** **40.0 (mL)** **Nitric Acid**
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 8UTB
Weight shown below was diluted to (mL): 2000.07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

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

SDS Information

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



ANAB ISO 17034 Accredited
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)

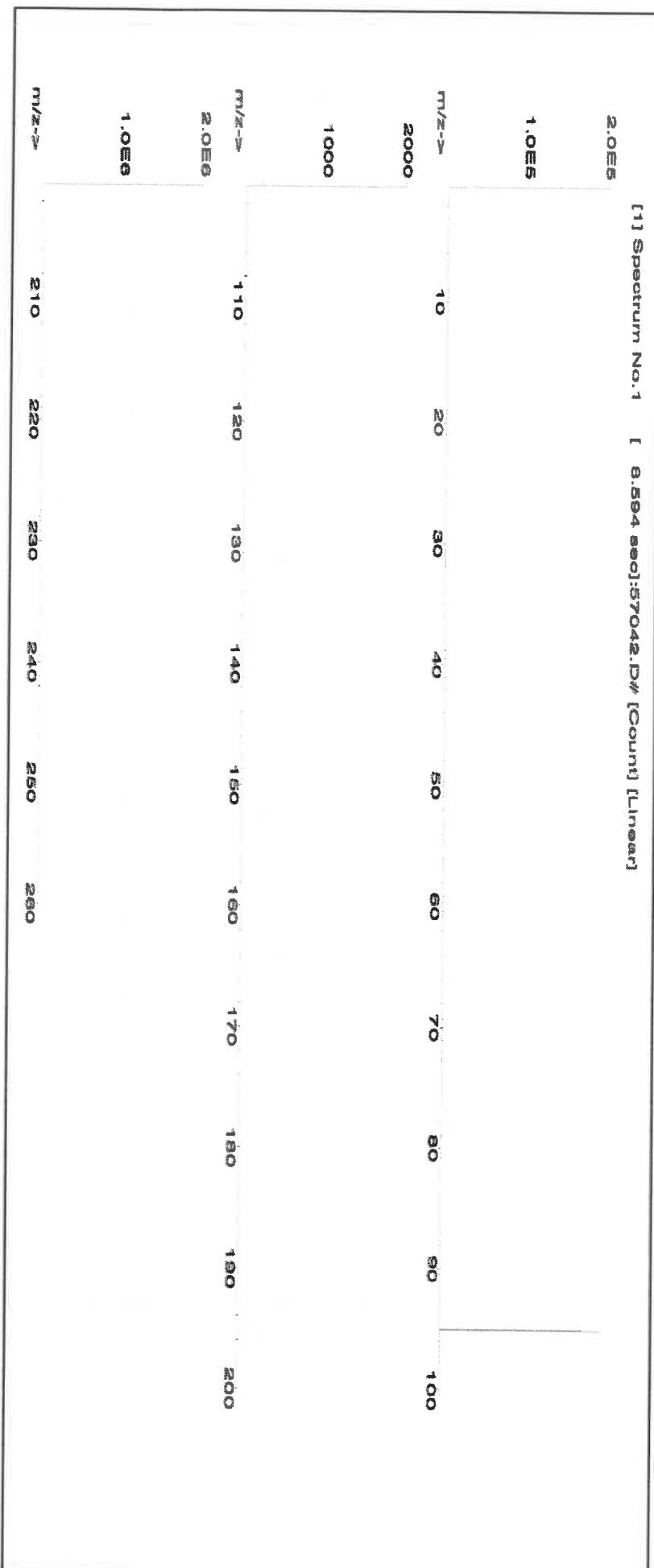
Ammonium hydroxide

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

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

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

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





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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware, and the highest purity raw materials are used in the preparation of all standards.
- * All standard containers are meticulously cleaned prior to use.
- * Standards are prepared gravimetrically using balances that are calibrated by an ISO17025 certified organization with weights traceable through NIST to the SI kilogram (see above).
- * Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- * All standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).
- Rev 1.0, 2/25/2025



Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57082
031525
Lead (Pb)

Lot #

Nitric Acid

Expiration Date:

031528

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL):

2000.07

0.10 Flask Uncertainty

2%

40.0 (mL)

Nitric Acid

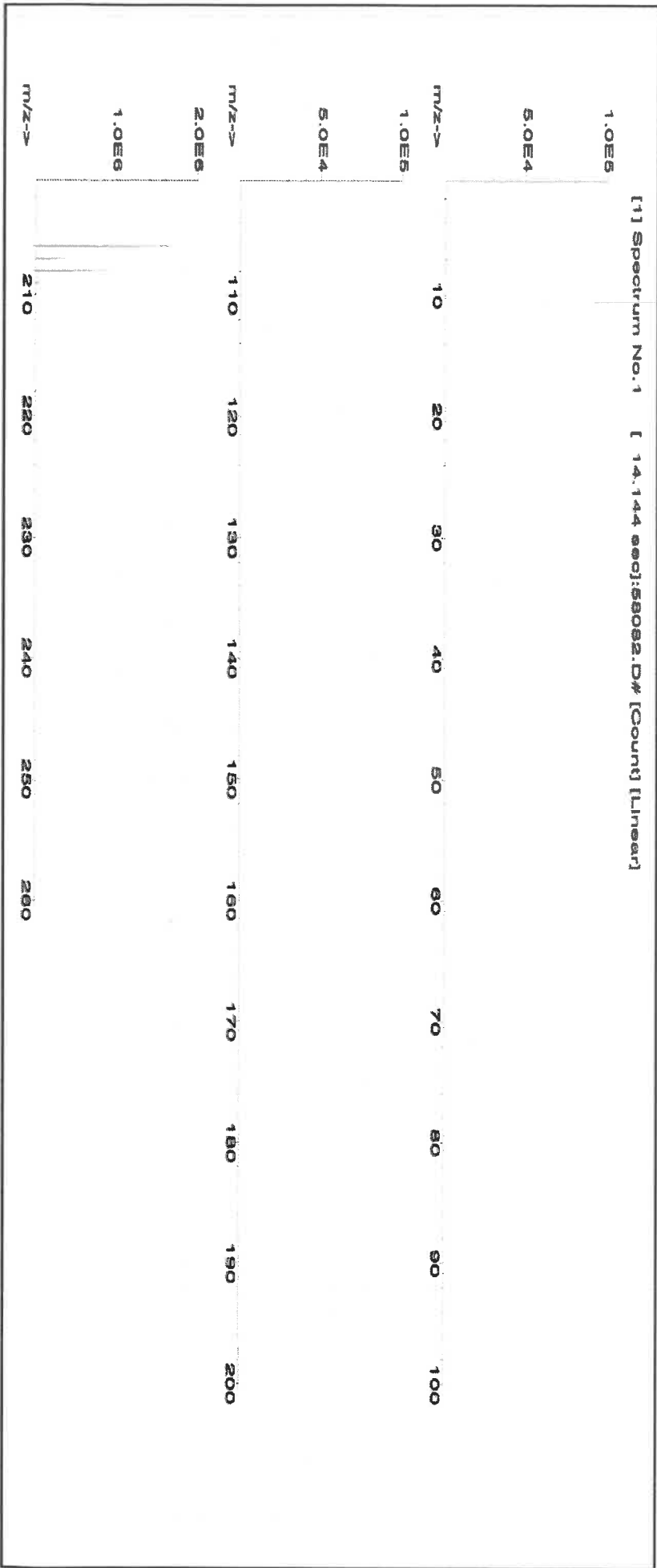
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
	031525
Reviewed By:	<i>Pedro L. Renteria</i>
	Pedro L. Renteria
	031525

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)	IN028 PBD122016A1	1000	99.999	0.10	62.5	3.20015	3.20067	1000.2	2.0	10089-74-8	0.05 mg/m3	Intrins-ral 83 mg/kg	3128
--------------------------	-------------------	------	--------	------	------	---------	---------	--------	-----	------------	------------	----------------------	------

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

M6179
R → 612/24

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution
Catalog Number: CGY10
Lot Number: V2-Y740548
Matrix: 2% (v/v) HNO₃
Value / Analyte(s): 10 000 µg/mL ea:
Yttrium
Starting Material: Yttrium Oxide
Starting Material Lot#: 2661 and 06230520YL
Starting Material Purity: 99.9984%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10000 ± 30 µg/mL
Density: 1.032 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	10011 ± 25 µg/mL EDTA NIST SRM 928 Lot Number: 928
Assay Method #2	9997 ± 50 µg/mL ICP Assay NIST SRM 3167a Lot Number: 190730
Assay Method #3	9984 ± 31 µg/mL Calculated NIST SRM Lot Number: See Sec. 4.2

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

M Ag <	0.004600	M Eu	0.009037	M Na	0.086360	M Se <	0.005200	M Zn	0.030125
M Al	0.014862	O Fe	0.002410	M Nb <	0.000570	O Si	0.024100	O Zr <	0.002600
M As <	0.003500	M Ga <	0.000570	M Nd	0.000923	M Sm	0.000461		
M Au <	0.001700	M Gd <	0.003500	M Ni <	0.005700	M Sn <	0.002300		
O B	0.002209	M Ge <	0.005200	M Os <	0.001200	M Sr <	0.004600		
O Ba <	0.002500	M Hf <	0.000570	n P <		M Ta <	0.000570		
O Be <	0.001400	M Hg <	0.000570	M Pb	0.005020	M Tb	0.001044		
M Bi <	0.003500	M Ho	0.009037	M Pd <	0.005100	M Te <	0.002300		
O Ca	0.009841	M In <	0.002300	M Pr <	0.002300	M Th <	0.000570		
M Cd <	0.000570	M Ir <	0.000570	M Pt <	0.000570	M Ti <	0.003500		
M Ce <	0.002300	O K	0.018677	M Rb <	0.000570	M Tl <	0.000570		
M Co <	0.000570	M La	0.000461	M Re <	0.000570	M Tm <	0.003500		
M Cr <	0.004000	O Li <	0.009300	M Rh <	0.008000	M U <	0.000570		
M Cs <	0.000570	M Lu	0.000582	M Ru <	0.000570	M V	0.001265		
M Cu	0.002610	O Mg	0.001486	n S <		M W <	0.002300		
M Dy	0.003815	M Mn	0.000582	M Sb	0.005422	s Y <			
M Er	0.003615	M Mo <	0.005700	M Sc <	0.001200	M Yb	0.001827		

M - Checked by ICP-MS

O - Checked by ICP-OES

i - Spectral Interference

n - Not Checked For

s - Solution Standard Element

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form In Solution - 88.91 +3 6 Y(OH)(H₂O)_{x+2}

Chemical Compatibility -Soluble in HCl, H₂SO₄ and HNO₃. Avoid HF, H₃PO₄ and neutral to basic media. Stable with most metals and inorganic anions forming an insoluble carbonate, oxide, oxalate, and fluoride. Avoid mixing with elements / solutions containing moderate amounts of fluoride.

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

Y Containing Samples (Preparation and Solution) - Metal (Soluble in acids); Oxide (Dissolve by heating in H₂O / HNO₃); Ores (Carbonate fusion in PtO followed by HCl dissolution); Organic Matrices (Dry ash and dissolve in 1:1 H₂O / HCl or HNO₃).

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

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 89 amu	0.8 ppt	N/A	<u>73Ge16O</u> , <u>178Hf+2</u>
ICP-OES 360.073 nm	0.005 / 0.000036 µg/mL	1	Ce, Th
ICP-OES 371.030 nm	0.004 / 0.00007 µg/mL	1	Ce
ICP-OES 377.433 nm	0.005 / 0.0009 µg/mL	1	Ta, Th

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 20, 2024

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

11.2 Lot Expiration Date

- February 20, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Muzzammil Khan
Stock Laboratory Supervisor



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	WW-LFS-1
Lot Number:	W2-MEB752149
Matrix:	5% (v/v) HNO ₃

M6180
R-37/22/23

Value / Analyte(s):	1 000 µg/mL ea:	
	Potassium,	
	600 µg/mL ea:	
	Phosphorus,	
	300 µg/mL ea:	
	Sodium,	Iron,
	200 µg/mL ea:	
	Magnesium,	Aluminum,
	Cerium,	Selenium,
	Thallium,	
	100 µg/mL ea:	
	Lead,	Calcium,
	80 µg/mL ea:	
	Arsenic,	
	70 µg/mL ea:	
	Mercury,	
	50 µg/mL ea:	
	Nickel,	
	40 µg/mL ea:	
	Chromium,	
	30 µg/mL ea:	
	Copper,	Boron,
	Vanadium,	
	20 µg/mL ea:	
	Zinc,	Strontium,
	Barium,	Beryllium,
	Cadmium,	Cobalt,
	Manganese,	Lithium,
	7.5 µg/mL ea:	
	Silver	

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	200.2 ± 0.7 µg/mL	Arsenic, As	80.1 ± 0.5 µg/mL
Barium, Ba	20.02 ± 0.12 µg/mL	Beryllium, Be	20.02 ± 0.11 µg/mL
Boron, B	30.02 ± 0.15 µg/mL	Cadmium, Cd	20.04 ± 0.09 µg/mL
Calcium, Ca	100.1 ± 0.3 µg/mL	Cerium, Ce	200.2 ± 1.0 µg/mL
Chromium, Cr	40.02 ± 0.26 µg/mL	Cobalt, Co	20.03 ± 0.09 µg/mL
Copper, Cu	30.03 ± 0.13 µg/mL	Iron, Fe	300.3 ± 1.3 µg/mL
Lead, Pb	100.1 ± 0.5 µg/mL	Lithium, Li	20.03 ± 0.09 µg/mL
Magnesium, Mg	200.2 ± 0.9 µg/mL	Manganese, Mn	19.99 ± 0.09 µg/mL
Mercury, Hg	70.0 ± 0.3 µg/mL	Nickel, Ni	50.05 ± 0.22 µg/mL
Phosphorus, P	600.5 ± 2.9 µg/mL	Potassium, K	1 001 ± 4 µg/mL
Selenium, Se	200.2 ± 1.1 µg/mL	Silver, Ag	7.52 ± 0.03 µg/mL
Sodium, Na	300.3 ± 1.3 µg/mL	Strontium, Sr	20.02 ± 0.10 µg/mL
Thallium, Tl	200.2 ± 1.0 µg/mL	Vanadium, V	30.02 ± 0.13 µg/mL
Zinc, Zn	20.05 ± 0.09 µg/mL		

Density: 1.037 g/mL (measured at 20 ± 5 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
As	ICP Assay	3103a	100818
B	ICP Assay	3107	190605
B	Calculated		See Sec. 4.2
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Ce	ICP Assay	3110	160830
Ce	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	120618
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
Hg	ICP Assay	3133	160921
Hg	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Li	ICP Assay	3129a	100714
Li	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	200413
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Sr	EDTA	928	928
Sr	ICP Assay	Traceable to 3153a	K2-SR650985
Tl	ICP Assay	3158	151215
V	ICP Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{TS} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{TS} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 25° C to minimize the effects of transpiration. Use at 20° ± 5° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

April 08, 2025

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

11.2 Lot Expiration Date

- April 08, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

Certificate of Analysis

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

M6181
R → 7/22/28

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: WW-LFS-2
Lot Number: V2-MEB743480
Matrix: 5% (v/v) HNO₃
tr. HF
Value / Analyte(s):
200 µg/mL ea:
Silica,
80 µg/mL ea:
Antimony,
70 µg/mL ea:
Tin,
40 µg/mL ea:
Molybdenum,
20 µg/mL ea:
Titanium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	80.1 ± 0.5 µg/mL	Molybdenum, Mo	40.05 ± 0.22 µg/mL
Silica, SiO ₂	200.3 ± 1.4 µg/mL	Tin, Sn	70.1 ± 0.4 µg/mL
Titanium, Ti	20.03 ± 0.12 µg/mL		

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

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Sb	ICP Assay	3102a	140911
SiO ₂	Calculated		See Sec. 4.2
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	traceable to 3162a	T2-TI725816

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

Characterization of CRM/RM by Two or More Methods

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

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

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

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$$w_i = (1/u_{\text{char } i})^2 / (\sum (1/u_{\text{char } i})^2)$$

$$\text{CRM/RM Expanded Uncertainty (z)} = U_{\text{CRM/RM}} = k (u_{\text{char}}^2 + u_{\text{bb}}^2 + u_{\text{Its}}^2 + u_{\text{ts}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char}} = [\sum ((w_i)^2 (u_{\text{char } i})^2)]^{1/2}$ where $u_{\text{char } i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{Its} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{\text{CRM/RM}}$, where one method of characterization is used is the mean of individual results:

$$X_{\text{CRM/RM}} = (X_a) (u_{\text{char } a})$$

X_a = mean of Assay Method A with

$u_{\text{char } a}$ = the standard uncertainty of characterization Method A

$$\text{CRM/RM Expanded Uncertainty (z)} = U_{\text{CRM/RM}} = k (u_{\text{char } a}^2 + u_{\text{bb}}^2 + u_{\text{Its}}^2 + u_{\text{ts}}^2)^{1/2}$$

k = coverage factor = 2

$u_{\text{char } a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{Its} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale. <https://www.inorganicventures.com/terms-and-conditions-sale>. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit www.inorganicventures.com/TCT

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

May 07, 2024

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- May 07, 2029

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Thomas Kozikowski
Stock VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





Instructions for QATS Reference Material: ICP-AES ICS

QATS LABORATORY INORGANIC REFERENCE MATERIAL
INTERFERENCE CHECK SAMPLE SET FOR ICP-AES (ICSA WITH ICSB)

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.



M6182

(A) **SAMPLE DESCRIPTION**

Enclosed is a set of one (1) or more bottles of Aqueous Reference Material, each composed of metals at various concentrations and prepared with nitrate salts and oxy-acids of the respective elements in a 5% nitric acid matrix. **For the reference material source in reporting ICSA and ICSAB mixture use "USEPA". For the reference material lot number for the ICSA use "ICSA-1211" and for the ICSAB mixture use "ICSA-1211+ICSB-0710".**

CAUTION: The bottle(s) should be protected from light during storage to ensure the stability of silver which is contained in the ICSB solution. The bottle(s) should be stored at room temperature. **Do not allow the solution(s) to freeze.**

(B) **BREAKAGE OR MISSING ITEMS**

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) **ANALYSIS OF SAMPLES**

The interference check sample set is to be used to verify inter-element and background correction factors of inductively-coupled plasma (ICP) spectrometers. This reference material set consists of two (2) concentrated solutions. The ICSA solution contains the four (4) interferent elements: Al, Ca, Fe, and Mg. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be,





Instructions for QATS Reference Material: ICP-AES ICS

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSAB solution by ICP-AES.

(D) "CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.



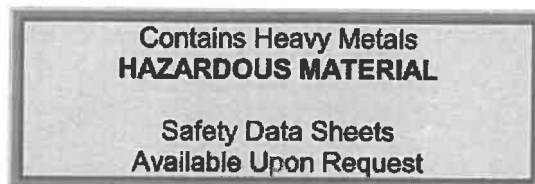
Instructions for QATS Reference Material: ICP-AES ICS

QATS LABORATORY INORGANIC REFERENCE MATERIAL
INTERFERENCE CHECK SAMPLE SET FOR ICP-AES (ICSA WITH ICSB)

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.



M6184

(A) **SAMPLE DESCRIPTION**

Enclosed is a set of one (1) or more bottles of Aqueous Reference Material, each composed of metals at various concentrations and prepared with nitrate salts and oxy-acids of the respective elements in a 5% nitric acid matrix. **For the reference material source in reporting ICSA and ICSAB mixture use "USEPA". For the reference material lot number for the ICSA use "ICSA-1211" and for the ICSAB mixture use "ICSA-1211+ICSB-0710".**

CAUTION: The bottle(s) should be protected from light during storage to ensure the stability of silver which is contained in the ICSB solution. The bottle(s) should be stored at room temperature. **Do not allow the solution(s) to freeze.**

(B) **BREAKAGE OR MISSING ITEMS**

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) **ANALYSIS OF SAMPLES**

The interference check sample set is to be used to verify inter-element and background correction factors of inductively-coupled plasma (ICP) spectrometers. This reference material set consists of two (2) concentrated solutions. The ICSA solution contains the four (4) interferent elements: Al, Ca, Fe, and Mg. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be,





Instructions for QATS Reference Material: ICP-AES ICS

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSAB solution by ICP-AES.

(D) "CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.

Nitric Acid 69%
CMOS

avantor™



M6187

R.D :- 08/08/25

Material No.: 9606-03
Batch No.: 24H0162012
Manufactured Date: 2024-06-28
Retest Date: 2029-06-27
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO ₃)	69.0 – 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	< 1 ppm
Chloride (Cl)	≤ 0.08 ppm	0.03 ppm
Phosphate (PO ₄)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO ₄)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities – Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Bismuth (Bi)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	0.1 ppb
Trace Impurities – Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	0.3 ppb
Trace Impurities – Chromium (Cr)	≤ 30.0 ppb	0.1 ppb
Trace Impurities – Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Germanium (Ge)	≤ 20 ppb	< 1 ppb
Trace Impurities – Gold (Au)	≤ 20 ppb	< 1 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities – Lead (Pb)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities – Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Nickel (Ni)	≤ 20.0 ppb	< 1.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS



Material No.: 9606-03
Batch No.: 24H0162012

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	< 1 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	1 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 1.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	13 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	5 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%

CMOS



Material No.: 9606-03

Batch No.: 24H0162012

Test	Specification	Result

For Microelectronic Use

Country of Origin: USA

Packaging Site: Phillipsburg Mfg Ctr & DC

groak

Jamie Croak
Director Quality Operations, Bioscience Production



Certified Reference Material CRM

M6027



CERTIFIED WEIGHT REPORT:

Part Number: **57028**
Lot Number: **062024**
Description: **Nickel (NI)**

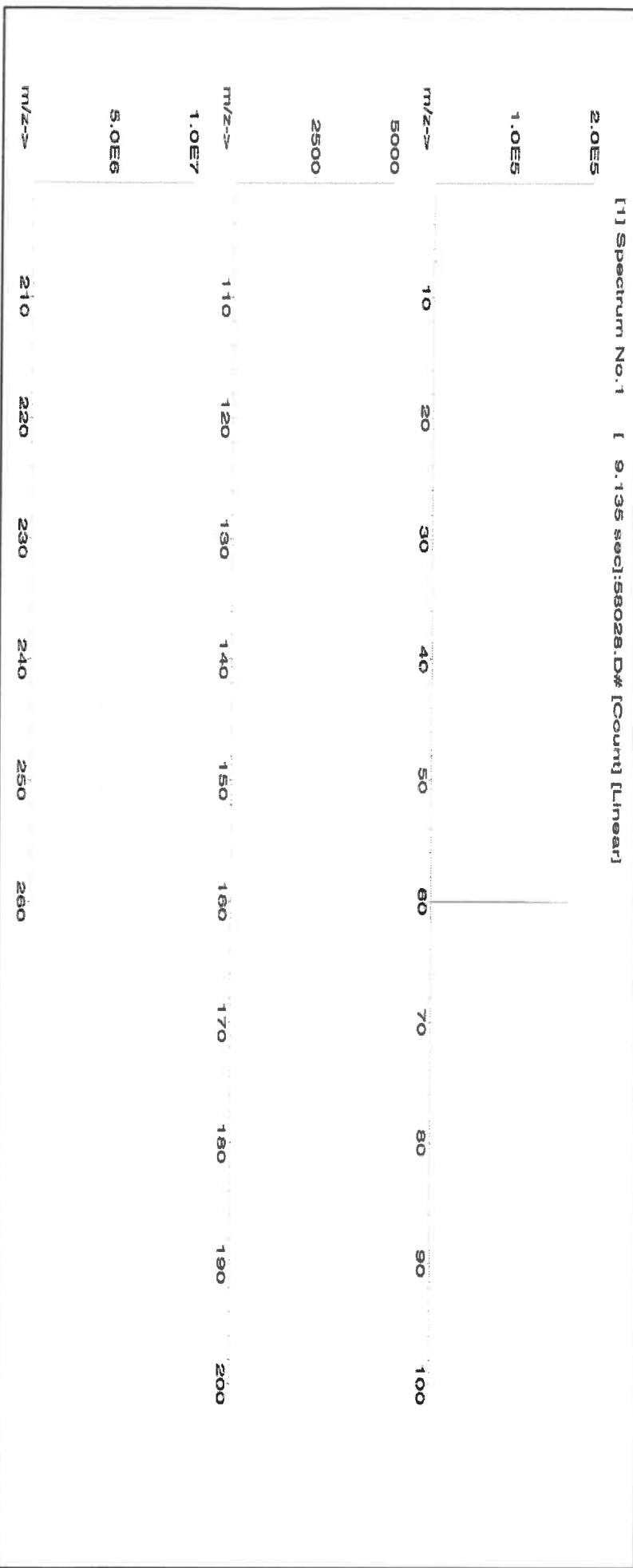
Lot # **24002546**
Solvent: **Nitric Acid**

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** **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





Certified Reference Material CRM



ANAB ISO 17034 Accredited
AF-1539 Certificate Number
<https://Absolutestandards.com>

Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	T	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
- * All standard containers are meticulously cleaned prior to use.
- * Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- * Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- * All Standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).



Certified Reference Material CRM

M6030



CERTIFIED WEIGHT REPORT:

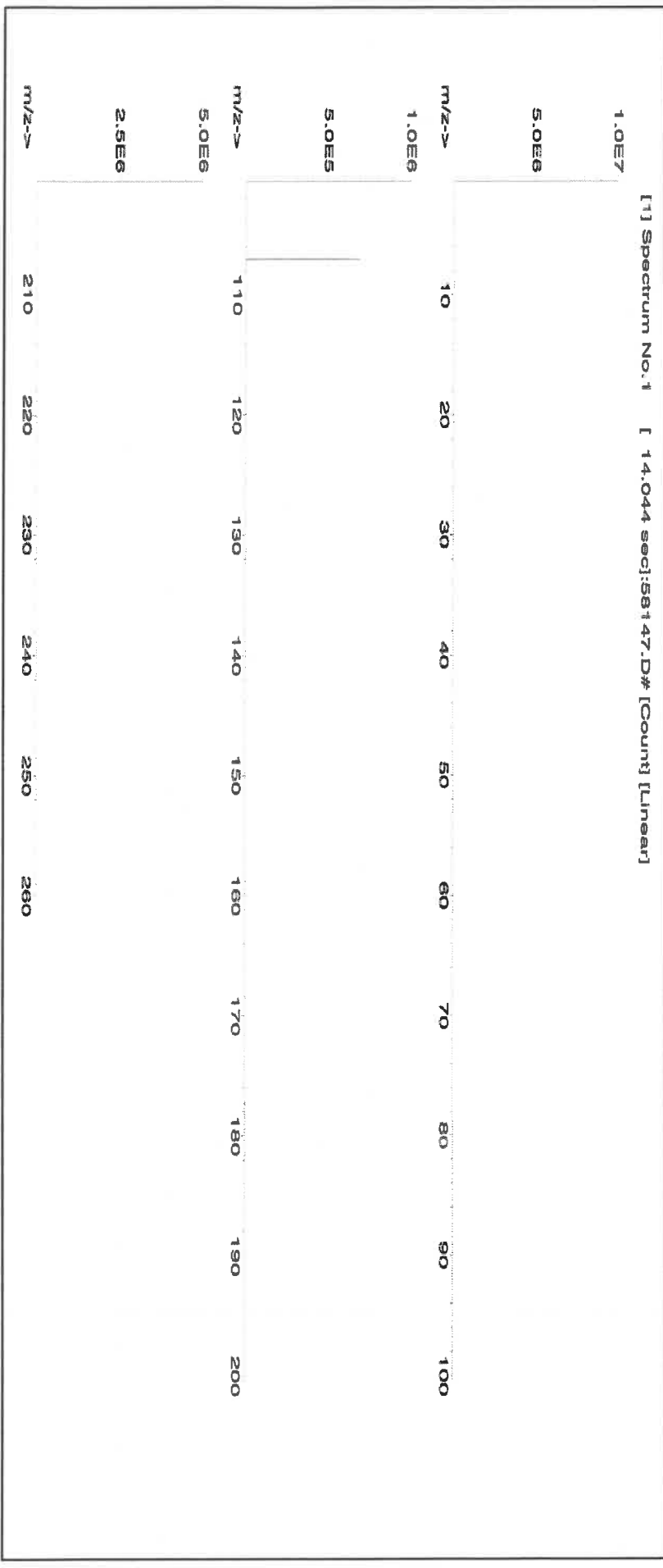
Part Number: **57047**
Lot Number: **122823**
Description: **Silver (Ag)**

Solvent: **24002546 Nitric Acid**

Formulated By:	Benson Chan
Reviewed By:	Pedro L. Rentas
	122823

Expiration Date: **122826**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6UTB**
Weight shown below was diluted to (mL): **4000.30**
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

SDS Information									
Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)
1. Silver nitrate (Ag)	IN035 J0612AGA1	1000.0	99.999	0.10	63.7	6.27992	6.27998	1000.0	2.0
								10 µg/mL	NA





Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	T	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

Physical Characterization:

(T)= Target analyte

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
- * All standard containers are meticulously cleaned prior to use.
- * Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- * Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- * All Standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT:

Part Number: 57051
Lot Number: 071724
Description: Antimony (Sb)

NG160

Lot # 24002546
Solvent: Nitric Acid

Expiration Date: 071727

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test Number: 6UTB

Volume shown below was diluted to (mL): 2000.26

5E-05 Balance Uncertainty

0.058 Flask Uncertainty

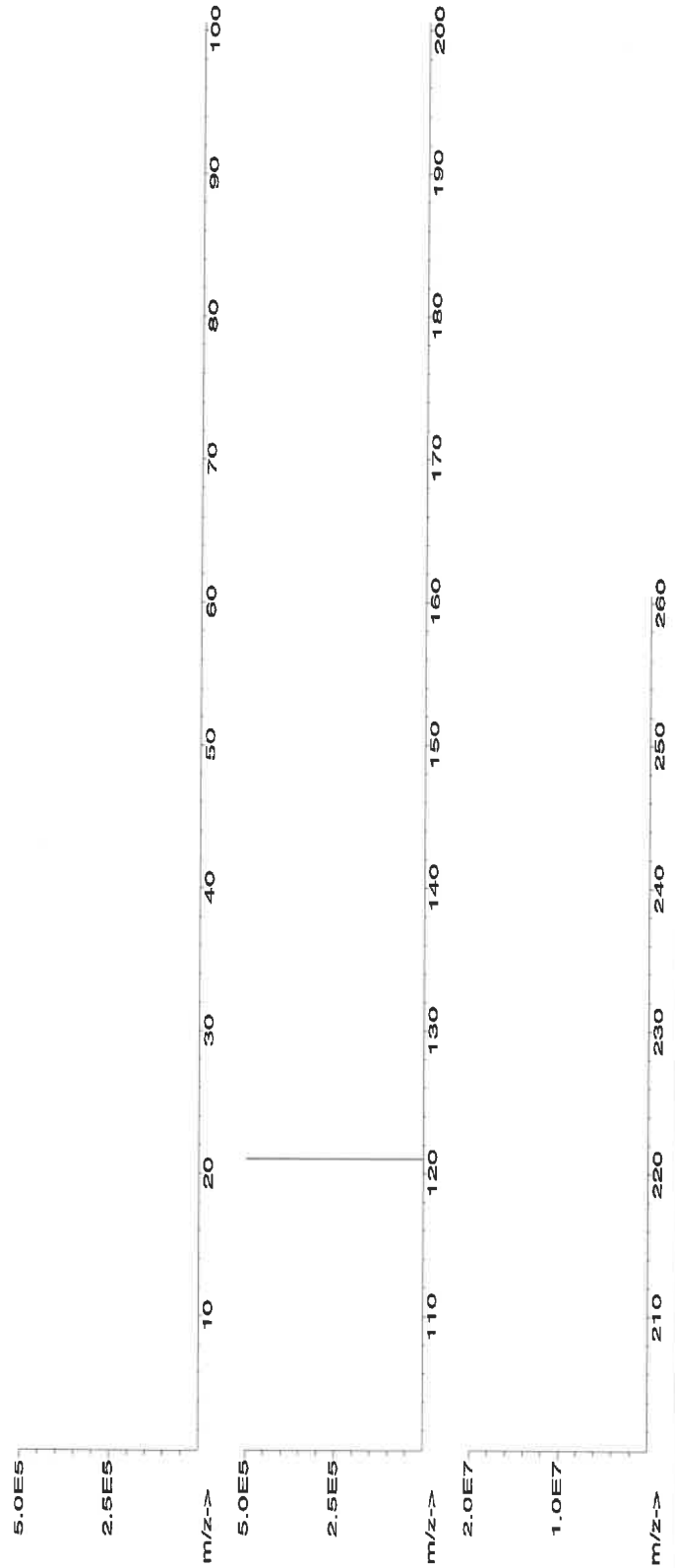
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
<i>Pedro L. Rentas</i>	
Reviewed By:	Pedro L. Rentas
071724	

SDS Information

Expanded	Uncertainty	(Solvent Safety Info, On Attached pg.)	NIST
Conc. (µg/mL)	+/- (µg/mL)	CAS#	OSHA PEL (TWA)
Final	Initial	Conc. (µg/mL)	Conc. (µg/mL)
1000.0	10001.4	1000.0	7440-36-0
2.2	0.084	1000	0.5 mg/m3
or-rat	7000 mg/kg	3102a	

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)	OSHA PEL (TWA)	NIST	SRM
1. Antimony (Sb)	58151	060324	0.1000	200.0	0.084	1000	10001.4	1000.0	2.2	7440-36-0	0.5 mg/m3	or-rat 7000 mg/kg 3102a

[1] Spectrum No.1 [17.964 sec]:58051.D# [Count] [Linear]





CERTIFIED WEIGHT REPORT:

Part Number: 57081
Lot Number: 062724
Description: Thallium (TI)

Lot #

Solvent: 24002546 Nitric Acid

Aleah O'Brady
Formulated By: Aleah O'Brady 062724

Expiration Date:

062727

2% 40.0 Nitric Acid (mL)

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test Number: 6UJB

5E-05 Balance Uncertainty

Weight shown below was diluted to (mL): 2000.1 0.10 Flask Uncertainty

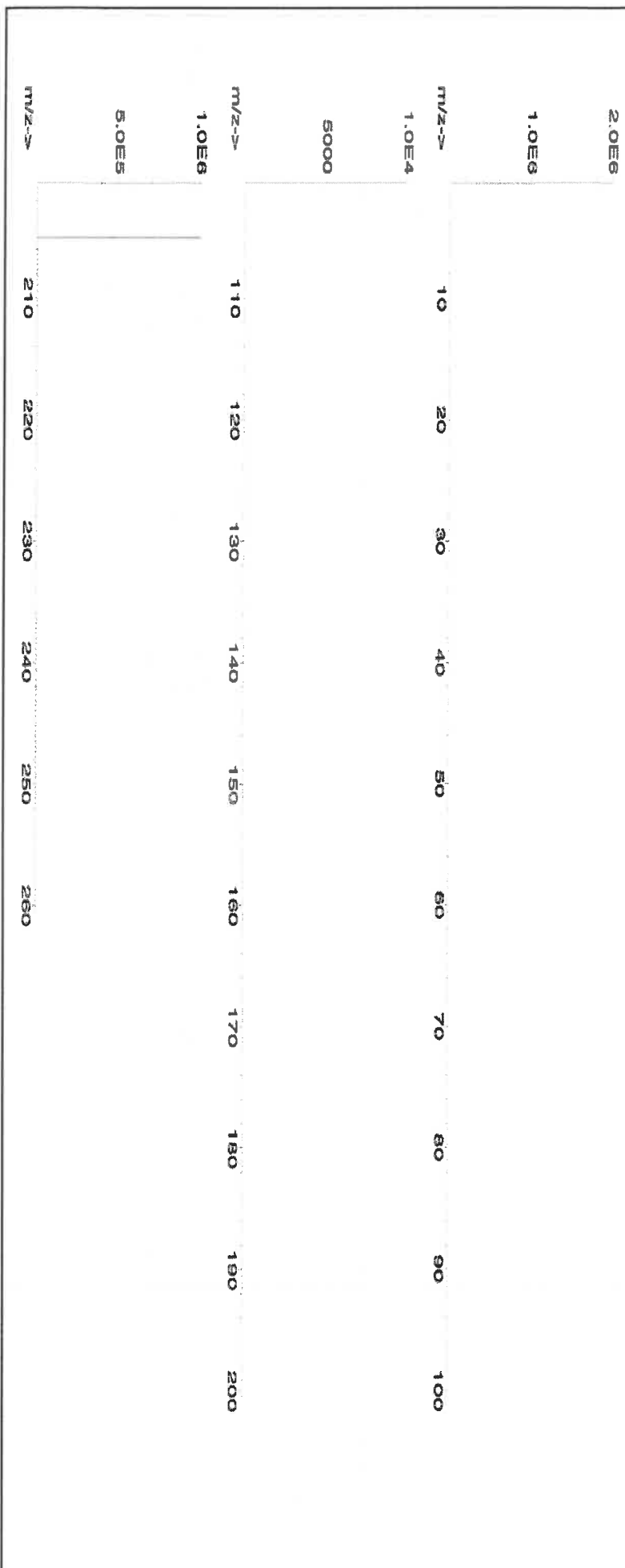
Pedro L. Renteria
Reviewed By: Pedro L. Renterias 062724

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**

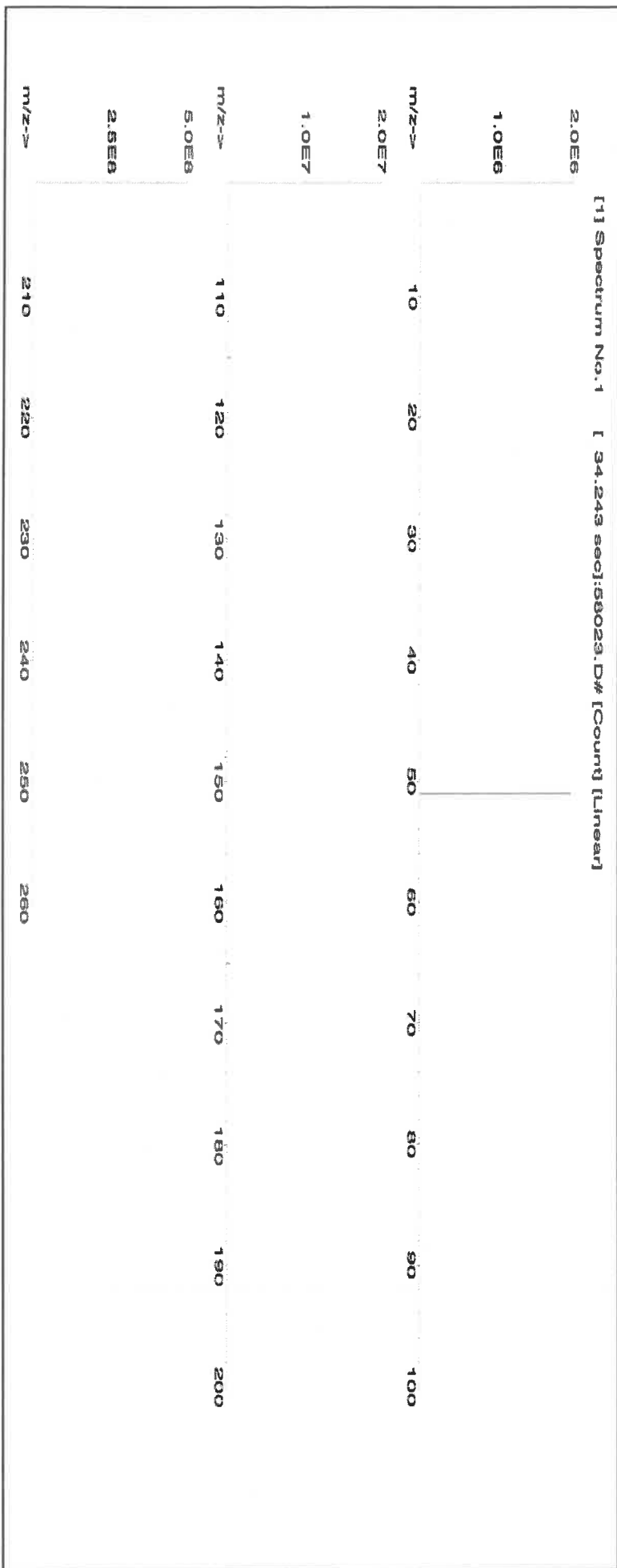
2.0%
40.0 (mL)
Nitric Acid

Volume shown below was diluted to (mL): **2000.3**
5E-05 Balance Uncertainty
0.06 Flask Uncertainty

SDS Information									
Formulated By: Aleah O'Brady									
Reviewed By: Pedro L. Rantas									
062424									
Expanded Uncertainty (µg/mL) +/- (µg/mL)									
(Solvent Safety Info. On Attached pg.)									
CAS# OSHA PEL (TWA) LD50									
NIST SRM									

1. Ammonium metavanadate (V) 58123 021224 0.1000 200.0 0.084 1000 10000.3 1000.0 2.2 7803-55-6 0.05 mg/m3 0.1-0.15 mg/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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17

CHEMTECH CHAIN OF CUSTODY RECORD		284 Sheffield Street, Mountainside, NJ 07092 (908) 789-8900 Fax: (908) 78-8922 www.chemtech.net		Chemtech Project Number: 2 3016 3017																							
				COC Number:																							
CLIENT INFORMATION		PROJECT INFORMATION		BILLING INFORMATION																							
COMPANY: Tetra Tech		PROJECT NAME: NWIRP Bethpage		BILL TO: SEE CONTRACT		PO#																					
ADDRESS: 4433 Corporation Ln, Suite 300		PROJECT #: 112G08005-WE13 LOCATION: GW IDW		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		ANALYSIS																							
DATA TURNAROUND INFORMATION		DATA DELIVERABLE INFORMATION		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">VOCs (EPA 624)</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">pH</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Total Metals</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">PCBs (EPA 8082)</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>				VOCs (EPA 624)	pH	Total Metals	PCBs (EPA 8082)							1	2	3	4	5	6	7	8	9	
VOCs (EPA 624)	pH	Total Metals	PCBs (EPA 8082)																								
1	2	3	4	5	6	7	8	9																			
FAX: _____ 48hr _____ DAYS* HARD COPY: _____ 48hr _____ DAYS* EDD _____ 48hr _____ DAYS* * TO BE APPROVED BY CHEMTECH STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS		☐ RESULTS ONLY ☐ USEPA CLP ☐ RESULTS + QC ☐ New York State ASP "B" ☐ New Jersey REDUCED ☐ New York State ASP "A" ☐ New Jersey CLP ☐ Other _____ ☐ EDD Format _____		PRESERVATIVES				COMMENTS																			
CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE	SAMPLE COLLECTION		# of Bottles	A		B									<-- Specify Preservatives A-HCl B-HNO3 C-H2SO4 D-NaOH E-ICE F-Other									
			COMP	GRAB	DATE	TIME		1	2	3	4	5	6	7	8	9											
1.	BP-TB-20250903	QA		X	9/3/25	9:00	2	2										Trip Blank									
2.	TT-076-IDWGW-20250903	AQ		X	9/3/25	11:30	5	2	1	1	1							pH 1.0									
3.	TT-077-IDWGW-20250903	AQ		X	9/3/25	11:40	5	2	1	1	1																
4.	TT-078-IDWGW-20250903	AQ		X	9/3/25	11:50	5	2	1	1	1																
5.	TT-079-IDWGW-20250903	AQ		X	9/3/25	12:00	5	2	1	1	1																
6.																											
7.																											
8.																											
9.																											
10.																											

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY	Conditions of bottles or coolers at receipt: Compliant Non Compliant Cooler Temp <u>23. C</u> MeOH extraction requires an additional 4oz. Jar for percent solid Comments:
1.	9/3/25 1430	1.	48hr TAT - CTO-WE13 Drilling GW IDW Sampling - Frac Tank #1 (TT076), #2 (TT077), #3 (TT078), #5 (079) TPGunk
2. RELINQUISHED BY	DATE/TIME	RECEIVED BY	
2.	9/4/25 9:30	2.	
3. RELINQUISHED BY	DATE/TIME	RECEIVED FOR LAB BY	SHIPPED VIA: CLIENT: ☐ Hand Delivered ☐ Overnight CHEMTECH: ☐ Picked Up ☐ Overnight
3.		3.	Shipment Complete ☐ YES ☐ NO

WHITE - CHEMTECH COPY FOR RETURN TO CLIENT
YELLOW - CHEMTECH COPY
PINK - SAMPLER COPY

Laboratory Certification

Certified By	License No.
Connecticut	PH-0830
DOD ELAP (ANAB)	L2219
Maine	2024021
Maryland	296
New Hampshire	255425
New Jersey	20012
New York	11376
Pennsylvania	68-00548
Soil Permit	525-24-234-08441
Texas	TX-C25-00189
Virginia	460312

LOGIN REPORT/SAMPLE TRANSFER

Order ID : Q3017	TETR06	Order Date : 9/4/2025 10:17:00 AM	Project Mgr :
Client Name : Tetra Tech NUS, Inc.		Project Name : NWIRP Bethpage 112G080	Report Type : Level 4
Client Contact : Ernie Wu		Receive DateTime : 9/4/2025 9:30:00 AM	EDD Type : ADAPT
Invoice Name : Tetra Tech NUS, Inc.		Purchase Order :	Hard Copy Date :
Invoice Contact : Ernie Wu			Date Signoff :

LAB ID	CLIENT ID	MATRIX	SAMPLE DATE	SAMPLE TIME	TEST	TEST GROUP	METHOD	FAX DATE	DUE DATES
Q3017-01	BP-TB-20250903	Water	09/04/2025 09/03/2025	09:00	VOC-TCLVOA-10		624.1		2 Bus. Days
Q3017-02	TT-076-IDWGW-20250903	Water	09/04/2025 09/03/2025	11:30	VOC-TCLVOA-10		624.1		2 Bus. Days
Q3017-03	TT-077-IDWGW-20250903	Water	09/04/2025 09/03/2025	11:40	VOC-TCLVOA-10		624.1		2 Bus. Days
Q3017-04	TT-078-IDWGW-20250903	Water	09/04/2025 09/03/2025	11:50	VOC-TCLVOA-10		624.1		2 Bus. Days
Q3017-05	TT-079-IDWGW-20250903	Water	09/04/2025 09/03/2025	12:00	VOC-TCLVOA-10		624.1		2 Bus. Days

Relinquished By : OR

Date / Time : 9/4/25 11:05

Received By : [Signature]

Date / Time : 9/4/25 11:05

Storage Area : VOA Refridgerator Room