

Cover Page

Order ID : Q2791

Project ID : Monthly 2025

Client : Aramark Uniforms

Lab Sample Number

Q2791-01

Client Sample Number

SLUDGE

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

Signature : _____

Date: 8/14/2025

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012

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

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: Q2791

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: PRATIK PATEL

Date: 08/14/2025

LAB CHRONICLE

OrderID:	Q2791	OrderDate:	8/7/2025 10:33:00 AM
Client:	Aramark Uniforms	Project:	Monthly 2025
Contact:	Tom Dikos	Location:	J23

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
Q2791-01	SLUDGE	TCLP			08/07/25			08/07/25
			TCLP ICP Metals	6010D		08/08/25	08/11/25	
			TCLP Mercury	7470A		08/08/25	08/11/25	



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Fax : 908 789 8922

Hit Summary Sheet
SW-846

SDG No.: Q2791
Client: Aramark Uniforms

Order ID: Q2791
Project ID: Monthly 2025

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
Client ID : SLUDGE								
Q2791-01	SLUDGE	TCLP	Barium	801		72.8	500	ug/L
Q2791-01	SLUDGE	TCLP	Chromium	13.4	J	10.6	50.0	ug/L
Q2791-01	SLUDGE	TCLP	Lead	94.6		11.5	60.0	ug/L



SAMPLE DATA

Report of Analysis

Client:	Aramark Uniforms	Date Collected:	08/07/25
Project:	Monthly 2025	Date Received:	08/07/25
Client Sample ID:	SLUDGE	SDG No.:	Q2791
Lab Sample ID:	Q2791-01	Matrix:	TCLP
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7440-38-2	Arsenic	25.6	U	1	25.6	100	ug/L	08/08/25 12:30	08/11/25 12:56	6010D	SW3050
7440-39-3	Barium	801	N*	1	72.8	500	ug/L	08/08/25 12:30	08/11/25 12:56	6010D	SW3050
7440-43-9	Cadmium	2.50	U	1	2.50	30.0	ug/L	08/08/25 12:30	08/11/25 12:56	6010D	SW3050
7440-47-3	Chromium	13.4	J	1	10.6	50.0	ug/L	08/08/25 12:30	08/11/25 12:56	6010D	SW3050
7439-92-1	Lead	94.6		1	11.5	60.0	ug/L	08/08/25 12:30	08/11/25 12:56	6010D	SW3050
7439-97-6	Mercury	0.76	U	1	0.76	2.00	ug/L	08/08/25 12:30	08/11/25 17:57	7470A	
7782-49-2	Selenium	48.2	U	1	48.2	100	ug/L	08/08/25 12:30	08/11/25 12:56	6010D	SW3050
7440-22-4	Silver	8.10	UN*	1	8.10	50.0	ug/L	08/08/25 12:30	08/11/25 12:56	6010D	SW3050

Color Before:	Colorless	Clarity Before:	Clear	Texture:
Color After:	Colorless	Clarity After:	Clear	Artifacts:
Comments:	TCLP METALS			

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

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

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
ICV07	Mercury	3.76	4.0	94	90 - 110	CV	08/11/2025	17:07	LB136774

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

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
CCV19	Mercury	5.06	5.0	101	90 - 110	CV	08/11/2025	17:22	LB136774
CCV20	Mercury	4.80	5.0	96	90 - 110	CV	08/11/2025	18:01	LB136774
CCV21	Mercury	4.86	5.0	97	90 - 110	CV	08/11/2025	18:22	LB136774

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

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	Arsenic	3700	4000	93	90 - 110	P	08/11/2025	11:09	LB136778
	Barium	7500	8000	94	90 - 110	P	08/11/2025	11:09	LB136778
	Cadmium	1840	2000	92	90 - 110	P	08/11/2025	11:09	LB136778
	Chromium	755	800	94	90 - 110	P	08/11/2025	11:09	LB136778
	Lead	3840	4000	96	90 - 110	P	08/11/2025	11:09	LB136778
	Selenium	3720	4000	93	90 - 110	P	08/11/2025	11:09	LB136778
	Silver	940	1000	94	90 - 110	P	08/11/2025	11:09	LB136778

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

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	Arsenic	19.2	20.0	96	80 - 120	P	08/11/2025	11:33	LB136778
	Barium	97.3	100	97	80 - 120	P	08/11/2025	11:33	LB136778
	Cadmium	5.81	6.0	97	80 - 120	P	08/11/2025	11:33	LB136778
	Chromium	9.94	10.0	99	80 - 120	P	08/11/2025	11:33	LB136778
	Lead	12.4	12.0	103	80 - 120	P	08/11/2025	11:33	LB136778
	Selenium	21.6	20.0	108	80 - 120	P	08/11/2025	11:33	LB136778
	Silver	10.2	10.0	102	80 - 120	P	08/11/2025	11:33	LB136778

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

Lab Code: ACE

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Arsenic	4930	5000	99	90 - 110	P	08/11/2025	12:05	LB136778
	Barium	10000	10000	100	90 - 110	P	08/11/2025	12:05	LB136778
	Cadmium	2420	2500	97	90 - 110	P	08/11/2025	12:05	LB136778
	Chromium	985	1000	98	90 - 110	P	08/11/2025	12:05	LB136778
	Lead	4830	5000	97	90 - 110	P	08/11/2025	12:05	LB136778
	Selenium	4890	5000	98	90 - 110	P	08/11/2025	12:05	LB136778
	Silver	1240	1250	99	90 - 110	P	08/11/2025	12:05	LB136778
CCV02	Arsenic	4890	5000	98	90 - 110	P	08/11/2025	13:00	LB136778
	Barium	9690	10000	97	90 - 110	P	08/11/2025	13:00	LB136778
	Cadmium	2340	2500	94	90 - 110	P	08/11/2025	13:00	LB136778
	Chromium	961	1000	96	90 - 110	P	08/11/2025	13:00	LB136778
	Lead	4680	5000	94	90 - 110	P	08/11/2025	13:00	LB136778
	Selenium	4890	5000	98	90 - 110	P	08/11/2025	13:00	LB136778
	Silver	1220	1250	97	90 - 110	P	08/11/2025	13:00	LB136778
CCV03	Arsenic	4840	5000	97	90 - 110	P	08/11/2025	14:54	LB136778
	Barium	9090	10000	91	90 - 110	P	08/11/2025	14:54	LB136778
	Cadmium	2320	2500	93	90 - 110	P	08/11/2025	14:54	LB136778
	Chromium	913	1000	91	90 - 110	P	08/11/2025	14:54	LB136778
	Lead	4620	5000	92	90 - 110	P	08/11/2025	14:54	LB136778
	Selenium	4950	5000	99	90 - 110	P	08/11/2025	14:54	LB136778
	Silver	1170	1250	94	90 - 110	P	08/11/2025	14:54	LB136778
CCV04	Arsenic	4990	5000	100	90 - 110	P	08/11/2025	16:02	LB136778
	Barium	9100	10000	91	90 - 110	P	08/11/2025	16:02	LB136778
	Cadmium	2370	2500	95	90 - 110	P	08/11/2025	16:02	LB136778
	Chromium	921	1000	92	90 - 110	P	08/11/2025	16:02	LB136778
	Lead	4740	5000	95	90 - 110	P	08/11/2025	16:02	LB136778
	Selenium	5090	5000	102	90 - 110	P	08/11/2025	16:02	LB136778
	Silver	1180	1250	94	90 - 110	P	08/11/2025	16:02	LB136778



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Metals

- 2b -

CRDL STANDARD FOR AA & ICP

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

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	Arsenic	18.6	20.0	93	65 - 135	P	08/11/2025	11:41	LB136778
	Barium	92.3	100	92	65 - 135	P	08/11/2025	11:41	LB136778
	Cadmium	5.33	6.0	89	65 - 135	P	08/11/2025	11:41	LB136778
	Chromium	9.43	10.0	94	65 - 135	P	08/11/2025	11:41	LB136778
	Lead	12.1	12.0	101	65 - 135	P	08/11/2025	11:41	LB136778
	Selenium	19.0	20.0	95	65 - 135	P	08/11/2025	11:41	LB136778
	Silver	9.70	10.0	97	65 - 135	P	08/11/2025	11:41	LB136778
CRA	Mercury	0.20	0.2	101	70 - 130	CV	08/11/2025	17:26	LB136774



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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB07	Mercury	0.076	+/-0.2	U	0.20	CV	08/11/2025	17:09	LB136774

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB19	Mercury	0.076	+/-0.2	U	0.20	CV	08/11/2025	17:24	LB136774
CCB20	Mercury	0.076	+/-0.2	U	0.20	CV	08/11/2025	18:03	LB136774
CCB21	Mercury	0.076	+/-0.2	U	0.20	CV	08/11/2025	18:24	LB136774

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB01	Arsenic	5.12	+/-10	U	20.0	P	08/11/2025	11:37	LB136778
	Barium	14.6	+/-50	U	100	P	08/11/2025	11:37	LB136778
	Cadmium	0.50	+/-3	U	6.00	P	08/11/2025	11:37	LB136778
	Chromium	2.12	+/-5	U	10.0	P	08/11/2025	11:37	LB136778
	Lead	2.30	+/-6	U	12.0	P	08/11/2025	11:37	LB136778
	Selenium	9.64	+/-10	U	20.0	P	08/11/2025	11:37	LB136778
	Silver	1.62	+/-5	U	10.0	P	08/11/2025	11:37	LB136778

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

Lab Code: ACE

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB01	Arsenic	5.12	+/-10	U	20.0	P	08/11/2025	12:09	LB136778
	Barium	14.6	+/-50	U	100	P	08/11/2025	12:09	LB136778
	Cadmium	0.90	+/-3	J	6.00	P	08/11/2025	12:09	LB136778
	Chromium	2.12	+/-5	U	10.0	P	08/11/2025	12:09	LB136778
	Lead	2.66	+/-6	J	12.0	P	08/11/2025	12:09	LB136778
	Selenium	9.64	+/-10	U	20.0	P	08/11/2025	12:09	LB136778
	Silver	1.62	+/-5	U	10.0	P	08/11/2025	12:09	LB136778
CCB02	Arsenic	5.12	+/-10	U	20.0	P	08/11/2025	13:04	LB136778
	Barium	14.6	+/-50	U	100	P	08/11/2025	13:04	LB136778
	Cadmium	0.89	+/-3	J	6.00	P	08/11/2025	13:04	LB136778
	Chromium	2.12	+/-5	U	10.0	P	08/11/2025	13:04	LB136778
	Lead	2.35	+/-6	J	12.0	P	08/11/2025	13:04	LB136778
	Selenium	9.64	+/-10	U	20.0	P	08/11/2025	13:04	LB136778
	Silver	1.62	+/-5	U	10.0	P	08/11/2025	13:04	LB136778
CCB03	Arsenic	5.12	+/-10	U	20.0	P	08/11/2025	14:58	LB136778
	Barium	14.6	+/-50	U	100	P	08/11/2025	14:58	LB136778
	Cadmium	0.50	+/-3	U	6.00	P	08/11/2025	14:58	LB136778
	Chromium	2.12	+/-5	U	10.0	P	08/11/2025	14:58	LB136778
	Lead	2.30	+/-6	U	12.0	P	08/11/2025	14:58	LB136778
	Selenium	9.64	+/-10	U	20.0	P	08/11/2025	14:58	LB136778
	Silver	1.62	+/-5	U	10.0	P	08/11/2025	14:58	LB136778
CCB04	Arsenic	5.12	+/-10	U	20.0	P	08/11/2025	16:06	LB136778
	Barium	14.6	+/-50	U	100	P	08/11/2025	16:06	LB136778
	Cadmium	0.50	+/-3	U	6.00	P	08/11/2025	16:06	LB136778
	Chromium	2.12	+/-5	U	10.0	P	08/11/2025	16:06	LB136778
	Lead	2.30	+/-6	U	12.0	P	08/11/2025	16:06	LB136778
	Selenium	9.64	+/-10	U	20.0	P	08/11/2025	16:06	LB136778
	Silver	1.62	+/-5	U	10.0	P	08/11/2025	16:06	LB136778

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Aramark Uniforms

SDG No.: Q2791

Instrument: CV1

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB169166BL		WATER		Batch Number:	PB169166		Prep Date:	08/08/2025	
	Mercury	0.076	<0.2	U	0.20	CV	08/11/2025	17:45	LB136774
Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB169166TB		WATER		Batch Number:	PB169166		Prep Date:	08/08/2025	
	Mercury	0.76	<2	U	2.00	CV	08/11/2025	18:19	LB136774

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Aramark Uniforms

SDG No.: Q2791

Instrument: P4

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB169149TB		WATER		Batch Number:	PB169178		Prep Date:	08/08/2025	
	Arsenic	25.6	<50	U	100	P	08/11/2025	12:42	LB136778
	Barium	72.8	<250	U	500	P	08/11/2025	12:42	LB136778
	Cadmium	2.50	<15	U	30.0	P	08/11/2025	12:42	LB136778
	Chromium	10.6	<25	U	50.0	P	08/11/2025	12:42	LB136778
	Lead	11.5	<30	U	60.0	P	08/11/2025	12:42	LB136778
	Selenium	48.2	<50	U	100	P	08/11/2025	12:42	LB136778
	Silver	8.10	<25	U	50.0	P	08/11/2025	12:42	LB136778
Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB169178BL		WATER		Batch Number:	PB169178		Prep Date:	08/08/2025	
	Arsenic	25.6	<50	U	100	P	08/11/2025	12:22	LB136778
	Barium	72.8	<250	U	500	P	08/11/2025	12:22	LB136778
	Cadmium	2.50	<15	U	30.0	P	08/11/2025	12:22	LB136778
	Chromium	10.6	<25	U	50.0	P	08/11/2025	12:22	LB136778
	Lead	11.5	<30	U	60.0	P	08/11/2025	12:22	LB136778
	Selenium	48.2	<50	U	100	P	08/11/2025	12:22	LB136778
	Silver	8.10	<25	U	50.0	P	08/11/2025	12:22	LB136778

Metals
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INTERFERENCE CHECK SAMPLE

Client: <u>Aramark Uniforms</u>	SDG No.: <u>Q2791</u>
Contract: <u>ARAM01</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	Arsenic	8.68			-20	20	08/11/2025	11:48	LB136778
	Barium	0.44	6.0	7	-94	106	08/11/2025	11:48	LB136778
	Cadmium	0.96	1.0	96	-5	7	08/11/2025	11:48	LB136778
	Chromium	56.6	52.0	109	42	62	08/11/2025	11:48	LB136778
	Lead	-5.21			-12	12	08/11/2025	11:48	LB136778
	Selenium	2.51			-20	20	08/11/2025	11:48	LB136778
	Silver	1.58			-10	10	08/11/2025	11:48	LB136778
ICSAB01	Arsenic	104	104	100	88.4	120	08/11/2025	11:52	LB136778
	Barium	485	537	90	437	637	08/11/2025	11:52	LB136778
	Cadmium	933	972	96	826	1120	08/11/2025	11:52	LB136778
	Chromium	530	542	98	460	624	08/11/2025	11:52	LB136778
	Lead	39.0	49.0	80	37	61	08/11/2025	11:52	LB136778
	Selenium	47.3	46.0	103	26	66	08/11/2025	11:52	LB136778
	Silver	209	201	104	170	232	08/11/2025	11:52	LB136778



METAL QC DATA

metals
- 5a -
MATRIX SPIKE SUMMARY

client: <u>Aramark Uniforms</u>	level: <u>low</u>	sdg no.: <u>Q2791</u>
contract: <u>ARAM01</u>		lab code: <u>ACE</u>
matrix: <u>Water</u>	sample id: <u>Q2800-02</u>	client id: <u>VNJ-222MS</u>
Percent Solids for Sample: <u>NA</u>	Spiked ID: <u>Q2800-02MS</u>	Percent Solids for Spike Sample: <u>NA</u>

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Arsenic	ug/L	75 - 125	4040		100	U	4000	101		P
Barium	ug/L	75 - 125	3140		1490		1000	165	N	P
Cadmium	ug/L	75 - 125	966		30.0	U	1000	97		P
Chromium	ug/L	75 - 125	1890		50.0	U	2000	94		P
Lead	ug/L	75 - 125	4590		31.0	J	5000	91		P
Mercury	ug/L	75 - 125	34.6		2.00	U	40.0	86		CV
Selenium	ug/L	75 - 125	10300		100	U	10000	103		P
Silver	ug/L	75 - 125	358		50.0	U	380	94		P

metals
- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

client: <u>Aramark Uniforms</u>	level: <u>low</u>	sdg no.: <u>Q2791</u>
contract: <u>ARAM01</u>		lab code: <u>ACE</u>
matrix: <u>Water</u>	sample id: <u>Q2800-02</u>	client id: <u>VNJ-222MSD</u>
Percent Solids for Sample: <u>NA</u>	Spiked ID: <u>Q2800-02MSD</u>	Percent Solids for Spike Sample: <u>NA</u>

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Arsenic	ug/L	75 - 125	4140		100	U	4000	104		P
Barium	ug/L	75 - 125	3030		1490		1000	154	N	P
Cadmium	ug/L	75 - 125	986		30.0	U	1000	99		P
Chromium	ug/L	75 - 125	2000		50.0	U	2000	100		P
Lead	ug/L	75 - 125	4680		31.0	J	5000	93		P
Mercury	ug/L	75 - 125	34.1		2.00	U	40.0	85		CV
Selenium	ug/L	75 - 125	10600		100	U	10000	106		P
Silver	ug/L	75 - 125	252		50.0	U	380	66	N	P

Metals
- 5b -
POST DIGEST SPIKE SUMMARY

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

Lab Code: ACE

Matrix: Water

Level: LOW

Client ID: VNJ-222A

Sample ID: Q2800-02

Spiked ID: Q2800-02A

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Barium	ug/L	75 - 125	2950		1490		1000	146	N	P
Silver	ug/L	75 - 125	300		50.0	U	380	79		P

Metals

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DUPLICATE SAMPLE SUMMARY

Client:	<u>Aramark Uniforms</u>	Level:	<u>LOW</u>	SDG No.:	<u>Q2791</u>
Contract:	<u>ARAM01</u>			Lab Code:	<u>ACE</u>
Matrix:	<u>Water</u>	Sample ID:	<u>Q2800-02</u>	Client ID:	<u>VNJ-222DUP</u>
Percent Solids for Sample:	NA	Duplicate ID	Q2800-02DUP	Percent Solids for Spike Sample:	NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Arsenic	ug/L	20	100	U	100	U			P
Barium	ug/L	20	1490		2660		56	*	P
Cadmium	ug/L	20	30.0	U	4.42	J	200.0		P
Chromium	ug/L	20	50.0	U	50.0	U			P
Lead	ug/L	20	31.0	J	50.8	J	48		P
Mercury	ug/L	20	2.00	U	2.00	U			CV
Selenium	ug/L	20	100	U	100	U			P
Silver	ug/L	20	50.0	U	50.0	U			P

Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client:	<u>Aramark Uniforms</u>	Level:	<u>LOW</u>	SDG No.:	<u>Q2791</u>
Contract:	<u>ARAM01</u>			Lab Code:	<u>ACE</u>
Matrix:	<u>Water</u>	Sample ID:	<u>Q2800-02MS</u>	Client ID:	<u>VNJ-222MSD</u>
Percent Solids for Sample:	NA	Duplicate ID	Q2800-02MSD	Percent Solids for Spike Sample:	NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Arsenic	ug/L	20	4040		4140		2		P
Barium	ug/L	20	3140		3030		4		P
Cadmium	ug/L	20	966		986		2		P
Chromium	ug/L	20	1890		2000		6		P
Lead	ug/L	20	4590		4680		2		P
Mercury	ug/L	20	34.6		34.1		1		CV
Selenium	ug/L	20	10300		10600		3		P
Silver	ug/L	20	358		252		35	*	P

Metals

- 7 -

LABORATORY CONTROL SAMPLE SUMMARY

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

Lab Code: ACE

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB169166BS Mercury	ug/L	4.0	4.15		104	80 - 120	CV

Metals

- 7 -

LABORATORY CONTROL SAMPLE SUMMARY

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

Lab Code: ACE

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB169178BS							
Arsenic	ug/L	4000	3870		97	80 - 120	P
Barium	ug/L	1000	950		95	80 - 120	P
Cadmium	ug/L	1000	955		96	80 - 120	P
Chromium	ug/L	2000	1980		99	80 - 120	P
Lead	ug/L	5000	4760		95	80 - 120	P
Selenium	ug/L	10000	9700		97	80 - 120	P
Silver	ug/L	380	370		97	80 - 120	P

Metals
-9 -
ICP SERIAL DILUTIONS

SAMPLE NO.

VNJ-222L

Lab Name: Alliance **Contract:** ARAM01
Lab Code: ACE **Lb No.:** lb136778 **Lab Sample ID :** Q2800-02L **SDG No.:** Q2791
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
		C		C			
Arsenic	100	U	500	U			P
Barium	1490		1600	J	7		P
Cadmium	30.0	U	150	U			P
Chromium	50.0	U	250	U			P
Lead	31.0	J	61.8	J	99		P
Mercury	2.00	U	10.0	U			CV
Selenium	100	U	500	U			P
Silver	50.0	U	250	U			P



METAL PREPARATION & INSTRUMENT DATA

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

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
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
Cadmium	226.502	0.0000000	0.0000000	0.0000930	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0000920	0.0000000	0.0000380	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

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

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
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
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0002870
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0003170	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

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

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
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
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000070	0.0002200	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0001400	-0.0008600
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

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

Lab Code: ACE

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Na	Ni	Pb	Sb	Se
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
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0006580	0.0000000	0.0000000	0.0001290
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

Metals

- 11 -

ICP INTERELEMENT CORRECTION FACTORS

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

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
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
Cadmium	226.502	0.0000000	0.0000630	0.0001280	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0001110	0.0000000
Lead	220.353	0.0000000	-0.0003610	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



METAL PREPARATION & ANALYICAL SUMMARY

Metals

- 13 -

SAMPLE PREPARATION SUMMARY

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

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: PB169166							
PB169166BL	PB169166BL	MB	WATER	08/08/2025	30.0	30.0	
PB169166BS	PB169166BS	LCS	WATER	08/08/2025	30.0	30.0	
PB169166TB	PB169166TB	MB	WATER	08/08/2025	3.0	30.0	
Q2791-01	SLUDGE	SAM	WATER	08/08/2025	3.0	30.0	
Q2800-02DUP	VNJ-222DUP	DUP	WATER	08/08/2025	3.0	30.0	
Q2800-02MS	VNJ-222MS	MS	WATER	08/08/2025	3.0	30.0	
Q2800-02MSD	VNJ-222MSD	MSD	WATER	08/08/2025	3.0	30.0	

Metals

- 13 -

SAMPLE PREPARATION SUMMARY

Client: Aramark Uniforms

SDG No.: Q2791

Contract: ARAM01

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: PB169178							
PB169149TB	PB169149TB	MB	WATER	08/08/2025	5.0	25.0	
PB169178BL	PB169178BL	MB	WATER	08/08/2025	5.0	25.0	
PB169178BS	PB169178BS	LCS	WATER	08/08/2025	5.0	25.0	
Q2791-01	SLUDGE	SAM	WATER	08/08/2025	5.0	25.0	
Q2800-02DUP	VNJ-222DUP	DUP	WATER	08/08/2025	5.0	25.0	
Q2800-02MS	VNJ-222MS	MS	WATER	08/08/2025	5.0	25.0	
Q2800-02MSD	VNJ-222MSD	MSD	WATER	08/08/2025	5.0	25.0	

metals
- 14 -
ANALYSIS RUN LOG

Client: Aramark Uniforms

Contract: ARAM01

Lab code: ACE

Sdg no.: Q2791

Instrument id number: _____

Method: _____

Run number: LB136774

Start date: 08/11/2025

End date: 08/11/2025

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1617	HG
S0.2	S0.2	1	1622	HG
S2.5	S2.5	1	1624	HG
S5	S5	1	1632	HG
S7.5	S7.5	1	1650	HG
S10	S10	1	1701	HG
ICV07	ICV07	1	1707	HG
ICB07	ICB07	1	1709	HG
CCV19	CCV19	1	1722	HG
CCB19	CCB19	1	1724	HG
CRA	CRA	1	1726	HG
PB169166BL	PB169166BL	1	1745	HG
PB169166BS	PB169166BS	1	1747	HG
Q2791-01	SLUDGE	1	1757	HG
CCV20	CCV20	1	1801	HG
CCB20	CCB20	1	1803	HG
Q2800-02DUP	VNJ-222DUP	1	1808	HG
Q2800-02MS	VNJ-222MS	1	1810	HG
Q2800-02MSD	VNJ-222MSD	1	1812	HG
Q2800-02L	VNJ-222L	5	1815	HG
PB169166TB	PB169166TB	1	1819	HG
CCV21	CCV21	1	1822	HG
CCB21	CCB21	1	1824	HG

metals
- 14 -
ANALYSIS RUN LOG

Client: Aramark Uniforms

Contract: ARAM01

Lab code: ACE

Sdg no.: Q2791

Instrument id number: _____

Method: _____

Run number: LB136778

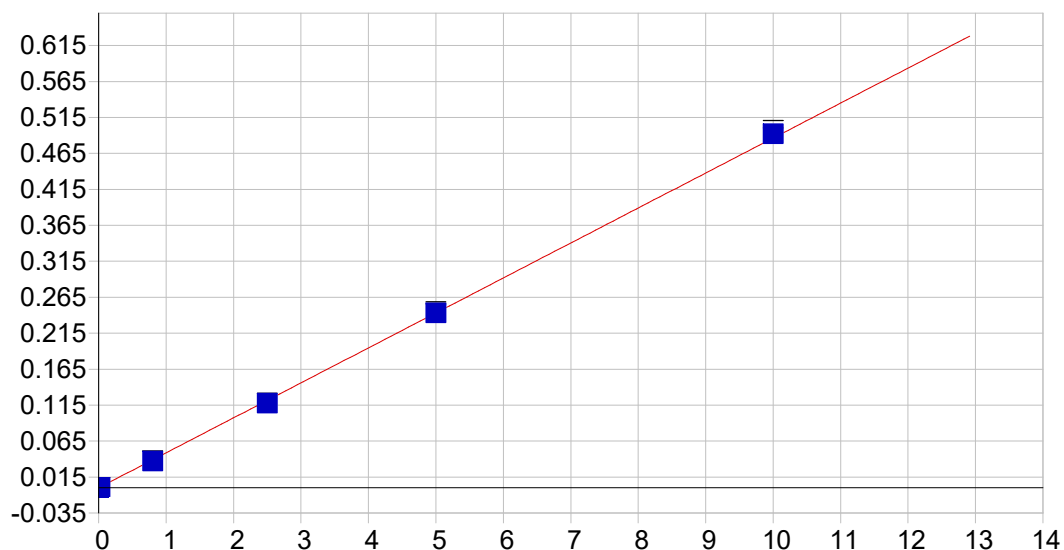
Start date: 08/11/2025

End date: 08/11/2025

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1043	Ag,As,Ba,Cd,Cr,Pb,Se
S1	S1	1	1048	Ag,As,Ba,Cd,Cr,Pb,Se
S2	S2	1	1052	Ag,As,Ba,Cd,Cr,Pb,Se
S3	S3	1	1056	Ag,As,Ba,Cd,Cr,Pb,Se
S4	S4	1	1100	Ag,As,Ba,Cd,Cr,Pb,Se
S5	S5	1	1104	Ag,As,Ba,Cd,Cr,Pb,Se
ICV01	ICV01	1	1109	Ag,As,Ba,Cd,Cr,Pb,Se
LLICV01	LLICV01	1	1133	Ag,As,Ba,Cd,Cr,Pb,Se
ICB01	ICB01	1	1137	Ag,As,Ba,Cd,Cr,Pb,Se
CRI01	CRI01	1	1141	Ag,As,Ba,Cd,Cr,Pb,Se
ICSA01	ICSA01	1	1148	Ag,As,Ba,Cd,Cr,Pb,Se
ICSAB01	ICSAB01	1	1152	Ag,As,Ba,Cd,Cr,Pb,Se
CCV01	CCV01	1	1205	Ag,As,Ba,Cd,Cr,Pb,Se
CCB01	CCB01	1	1209	Ag,As,Ba,Cd,Cr,Pb,Se
PB169178BL	PB169178BL	1	1222	Ag,As,Ba,Cd,Cr,Pb,Se
PB169178BS	PB169178BS	1	1226	Ag,As,Ba,Cd,Cr,Pb,Se
PB169149TB	PB169149TB	1	1242	Ag,As,Ba,Cd,Cr,Pb,Se
Q2791-01	SLUDGE	1	1256	Ag,As,Ba,Cd,Cr,Pb,Se
CCV02	CCV02	1	1300	Ag,As,Ba,Cd,Cr,Pb,Se
CCB02	CCB02	1	1304	Ag,As,Ba,Cd,Cr,Pb,Se
Q2800-02DUP	VNJ-222DUP	1	1317	Ag,As,Ba,Cd,Cr,Pb,Se
Q2800-02L	VNJ-222L	5	1322	Ag,As,Ba,Cd,Cr,Pb,Se
Q2800-02MS	VNJ-222MS	1	1326	Ag,As,Ba,Cd,Cr,Pb,Se
Q2800-02MSD	VNJ-222MSD	1	1330	Ag,As,Ba,Cd,Cr,Pb,Se
Q2800-02A	VNJ-222A	1	1334	Ag,Ba
CCV03	CCV03	1	1454	Ag,As,Ba,Cd,Cr,Pb,Se
CCB03	CCB03	1	1458	Ag,As,Ba,Cd,Cr,Pb,Se
CCV04	CCV04	1	1602	Ag,As,Ba,Cd,Cr,Pb,Se
CCB04	CCB04	1	1606	Ag,As,Ba,Cd,Cr,Pb,Se



METAL RAW DATA

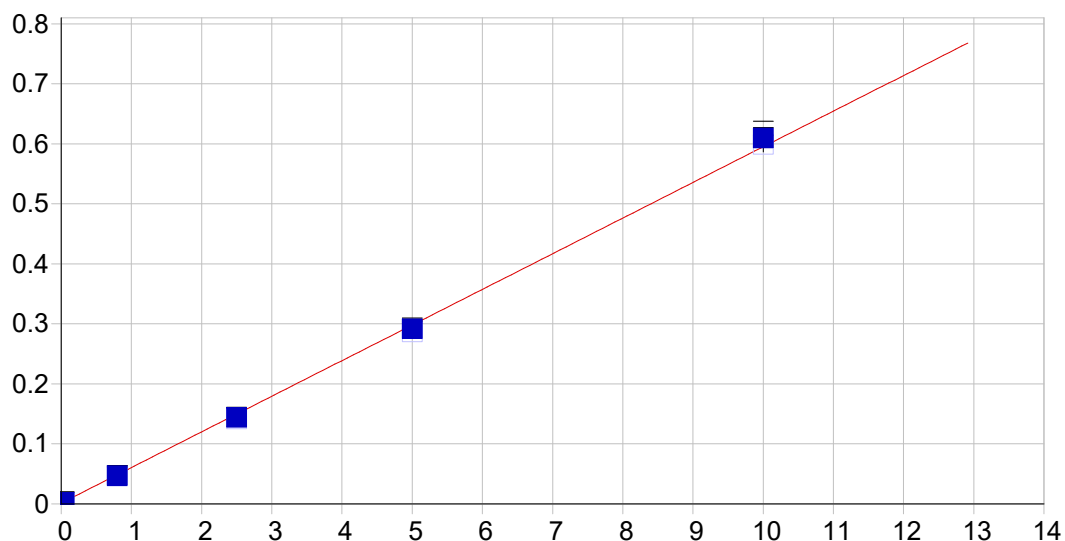


As 189.042 {479}

Date of Fit: 8/11/2025 15:00:04 Type of Fit: Linear Weighting: 1/Conc

A0 (Offset): -0.000007 Re-Slope: 1.000000
A1 (Gain): 0.048634 Y-int: 0.000000
A2 (Curvature): 0.000000
n (Exponent): 1.000000
Correlation: 0.999835 Status: OK.
Std Error of Est: 0.000021
Predicted MDL: 0.002347
Predicted MQL: 0.007822

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00001	.000	1
S1	.02000	.01856	-.001	-7.20	.00089	.000	1
S3	2.5000	2.4179	-.082	-3.28	.11745	.000	1
S4	5.0000	5.0024	.002	.048	.24302	.001	1
S5	10.000	10.119	.119	1.19	.49160	.005	1
S2	.80000	.76200	-.038	-4.75	.03701	.000	1

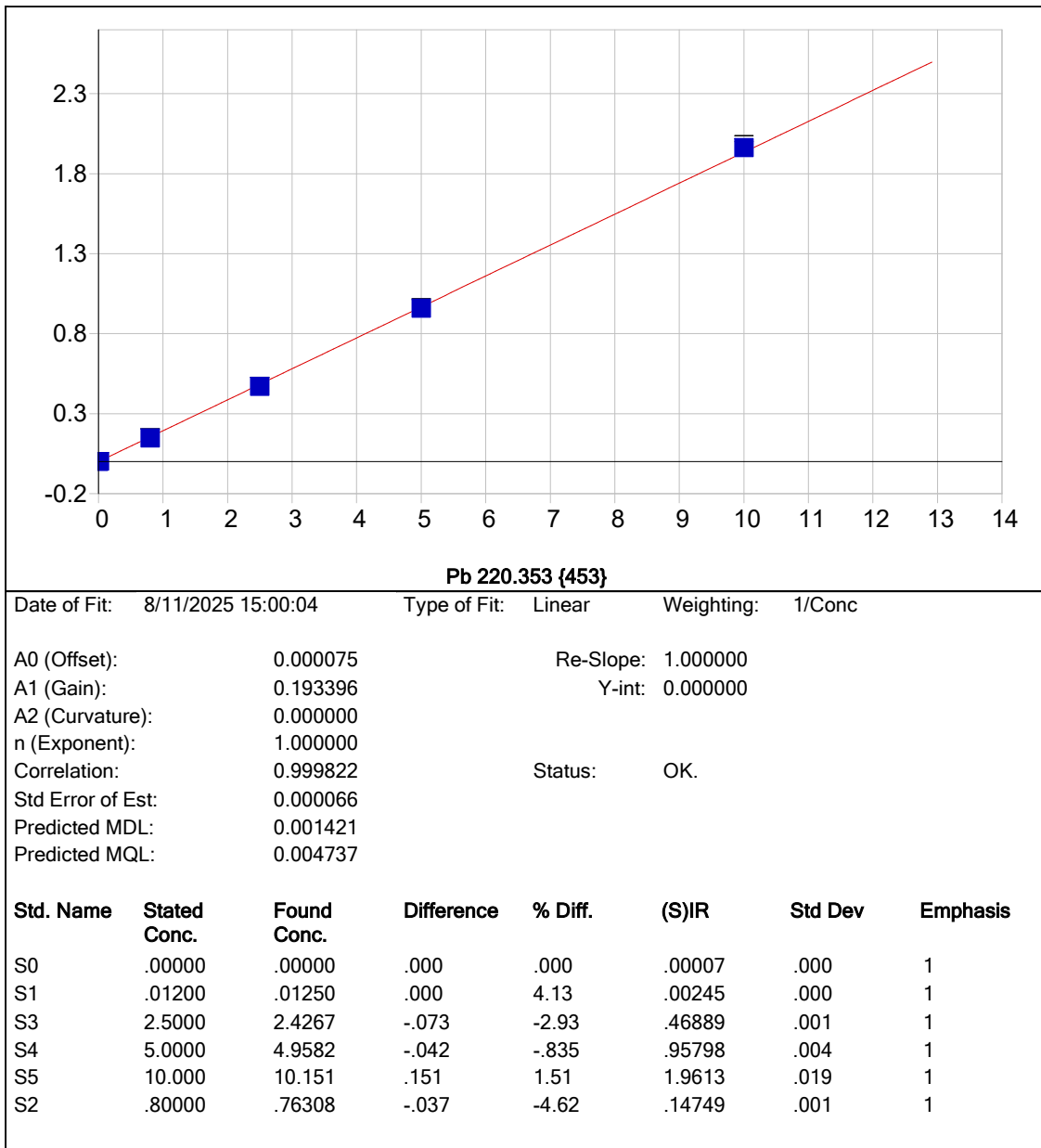


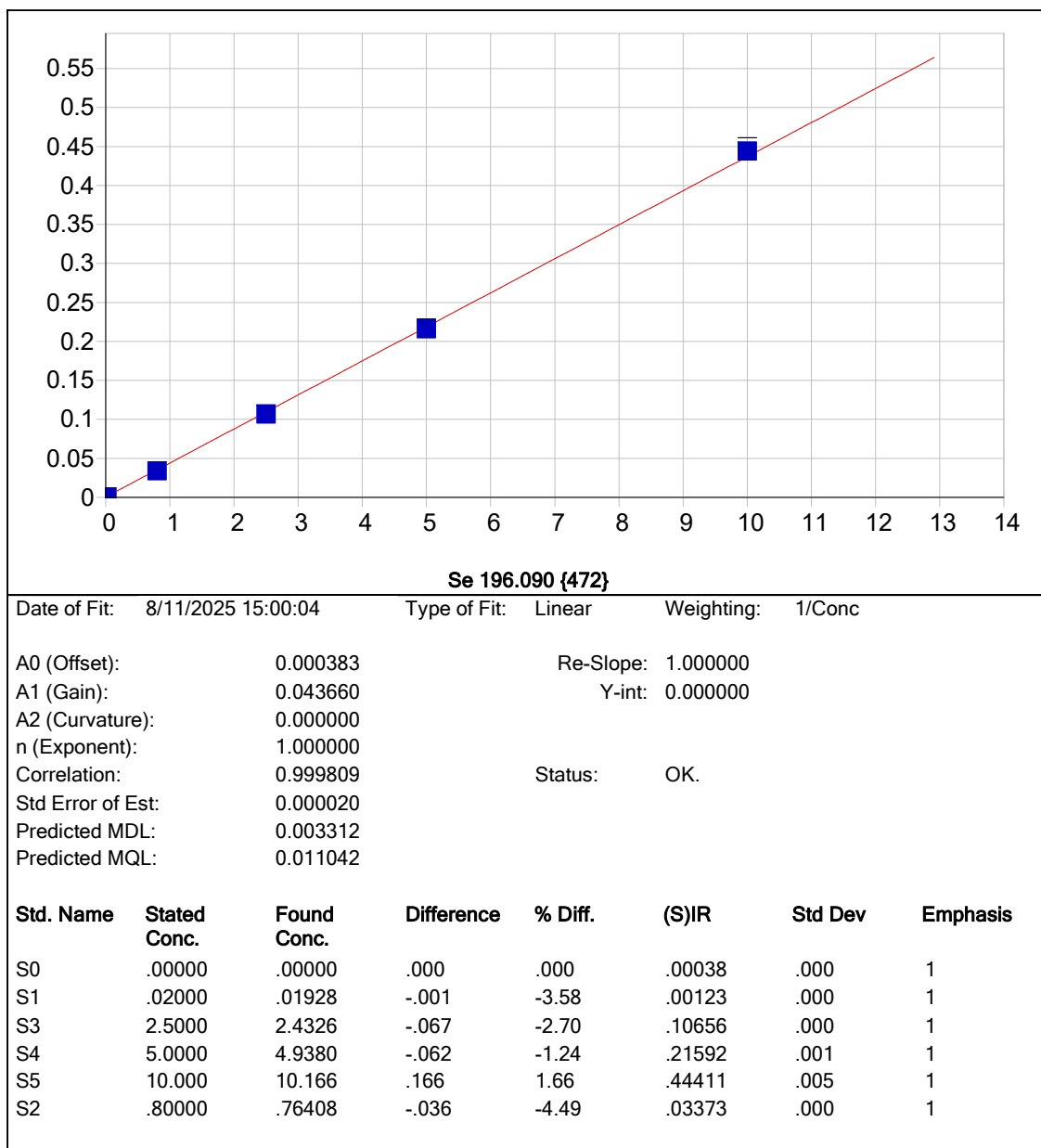
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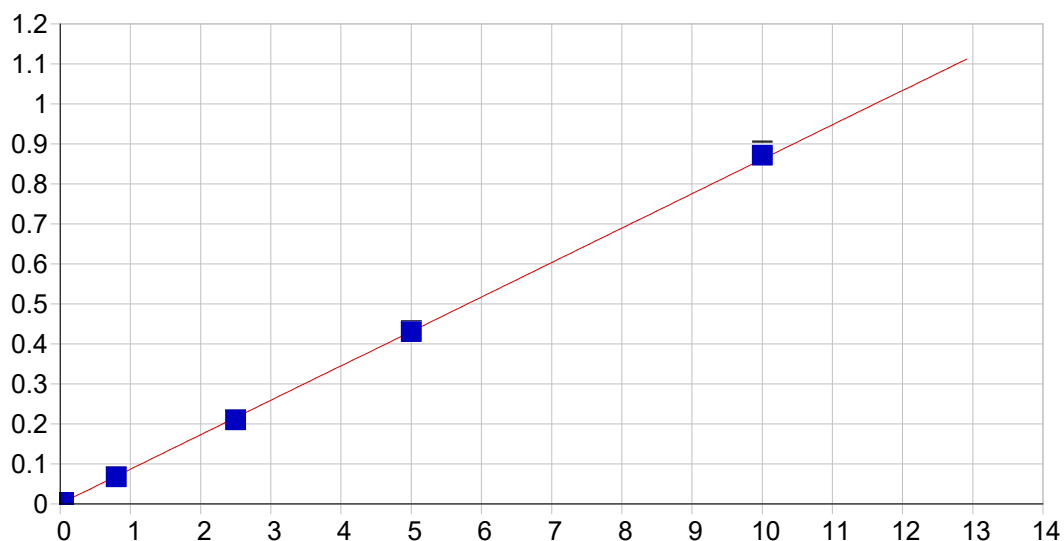
Date of Fit: 8/11/2025 15:00:04 Type of Fit: Linear Weighting: 1/Conc

A0 (Offset): 0.001237 Re-Slope: 1.000000
A1 (Gain): 0.059380 Y-int: 0.000000
A2 (Curvature): 0.000000
n (Exponent): 1.000000
Correlation: 0.999610 Status: OK.
Std Error of Est: 0.000054
Predicted MDL: 0.002047
Predicted MQL: 0.006823

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00124	.000	1
S1	.04000	.03646	-.004	-8.84	.00325	.000	1
S3	2.5000	2.4039	-.096	-3.84	.14127	.001	1
S4	5.0000	4.8907	-.109	-2.19	.28623	.001	1
S5	10.000	10.243	.243	2.43	.59866	.012	1
S2	.80000	.76552	-.034	-4.31	.04583	.001	1





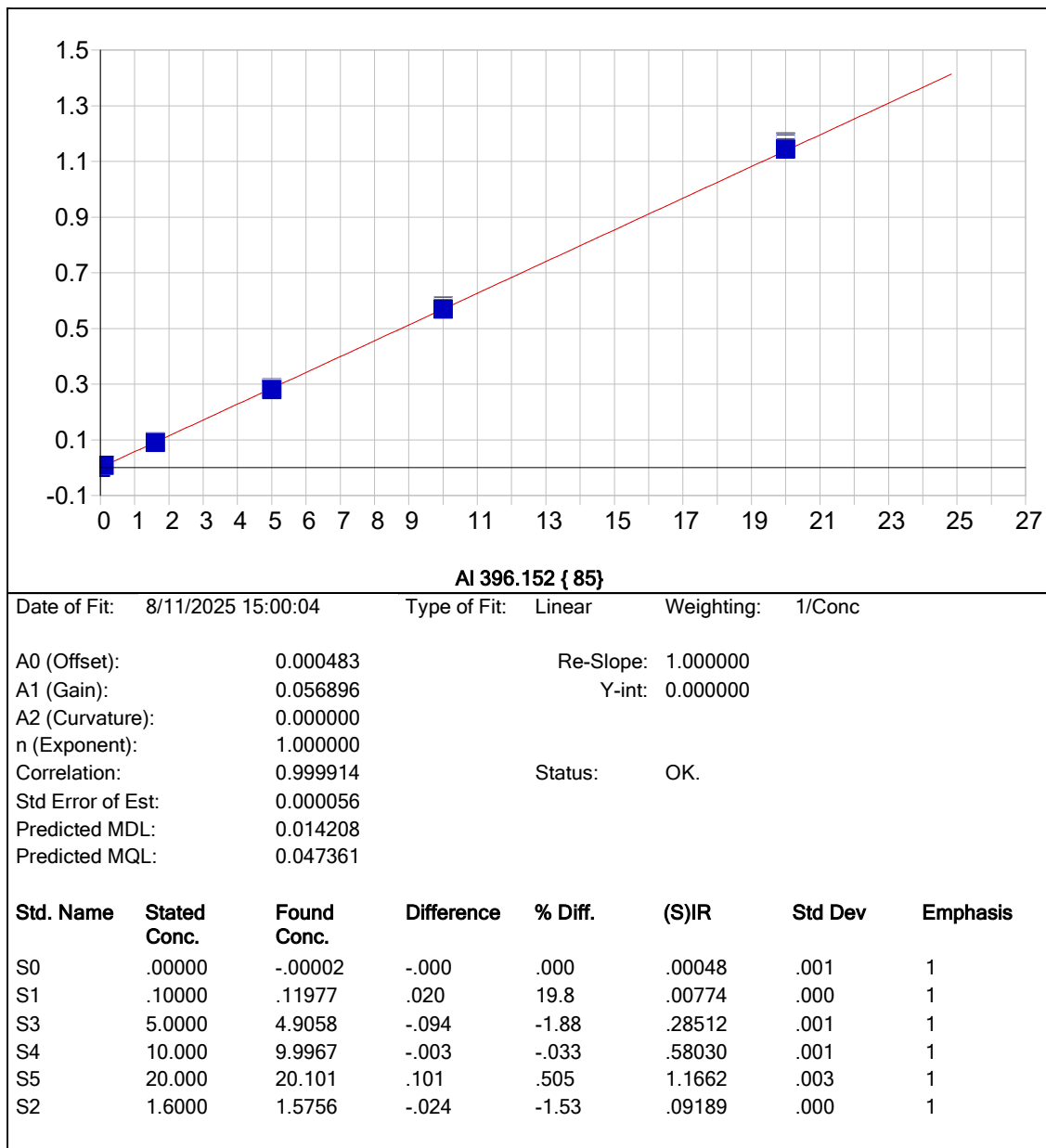


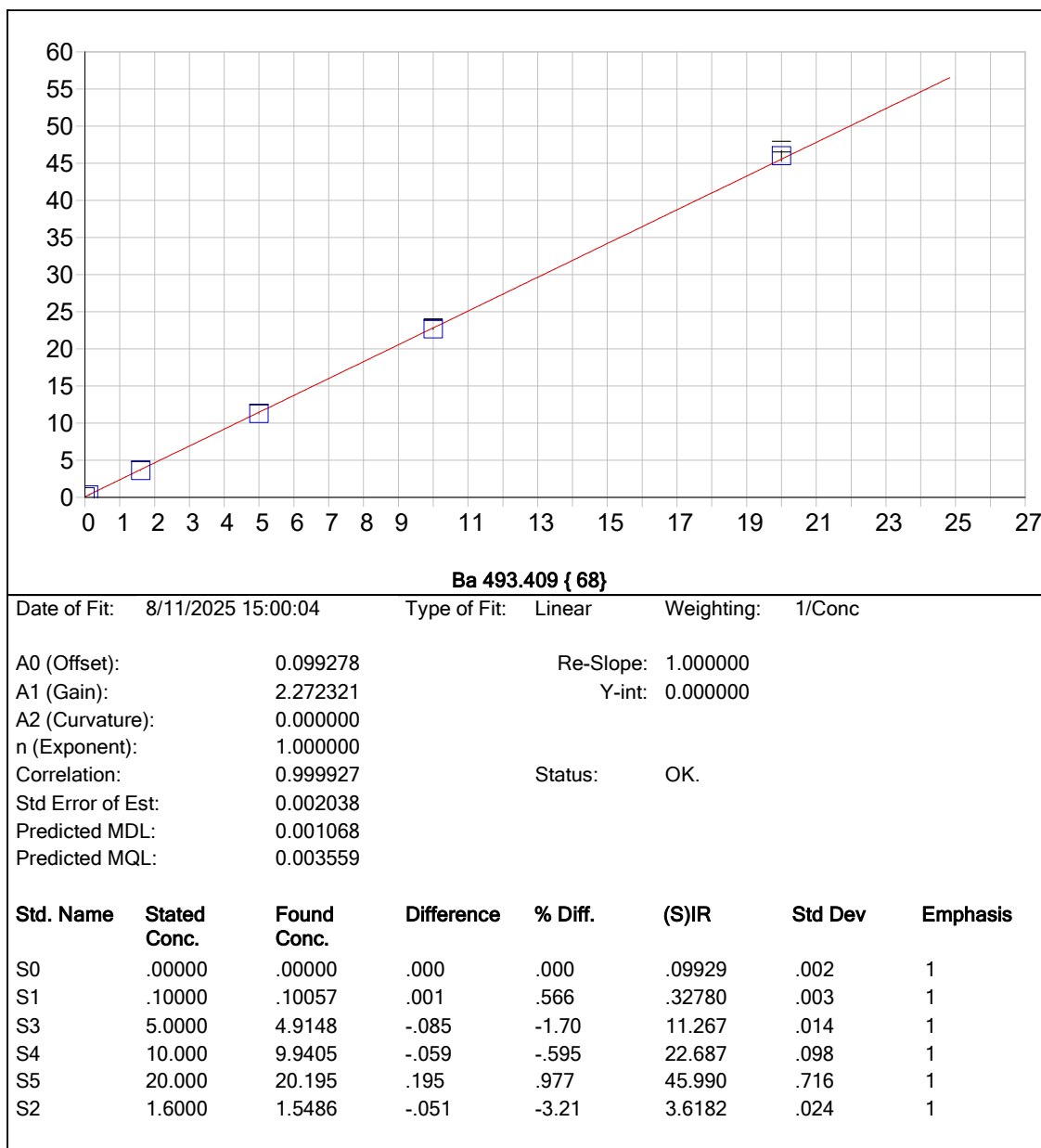
Sb 206.833 {463}

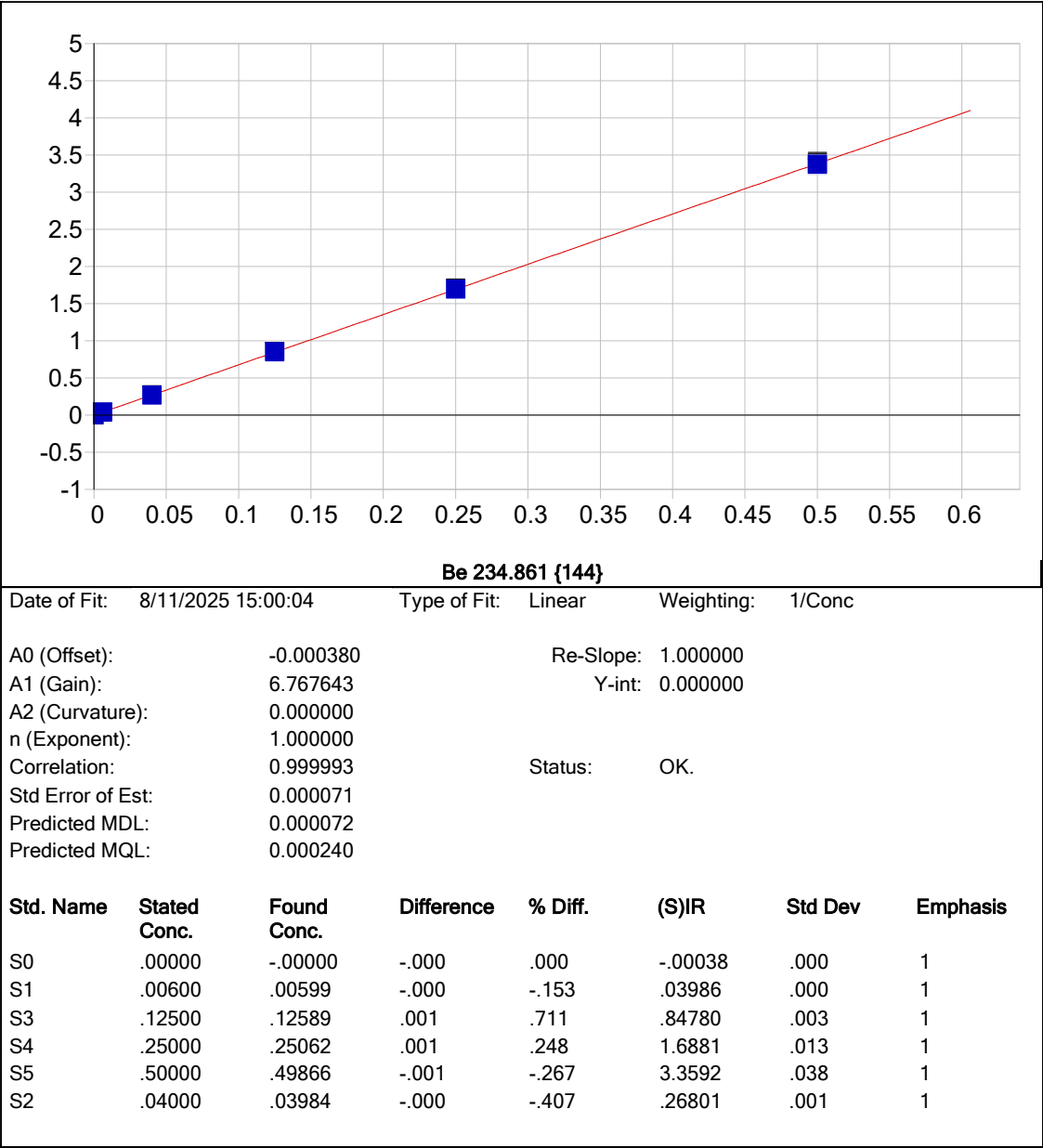
Date of Fit: 8/11/2025 15:00:04 Type of Fit: Linear Weighting: 1/Conc

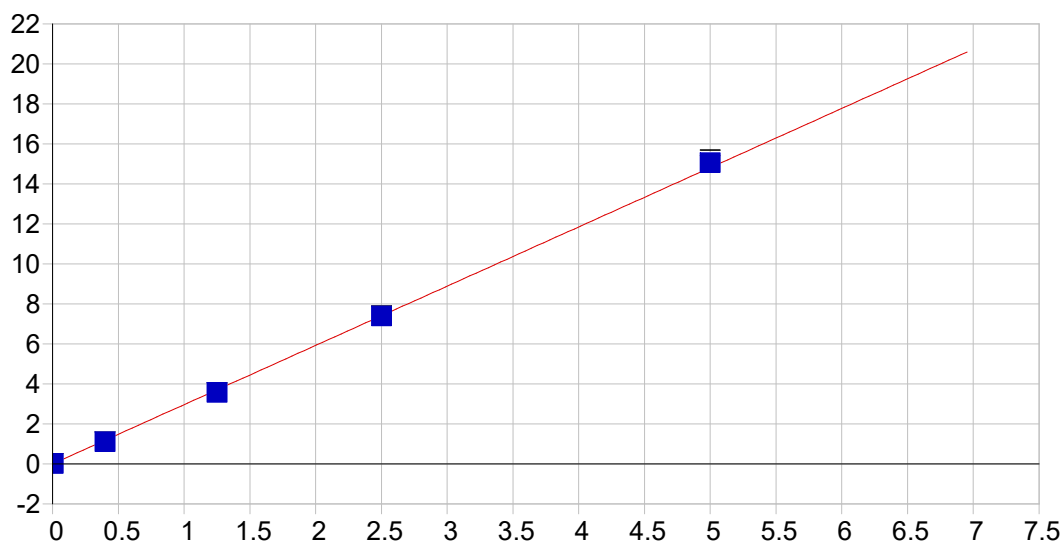
A0 (Offset):	0.000680	Re-Slope:	1.000000
A1 (Gain):	0.086087	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999881	Status:	OK.
Std Error of Est:	0.000049		
Predicted MDL:	0.002129		
Predicted MQL:	0.007097		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00068	.000	1
S1	.05000	.04921	-.001	-1.57	.00493	.000	1
S3	2.5000	2.4301	-.070	-2.79	.21047	.001	1
S4	5.0000	4.9931	-.007	-.138	.43169	.002	1
S5	10.000	10.109	.109	1.09	.87327	.009	1
S2	.80000	.76861	-.031	-3.92	.06703	.000	1







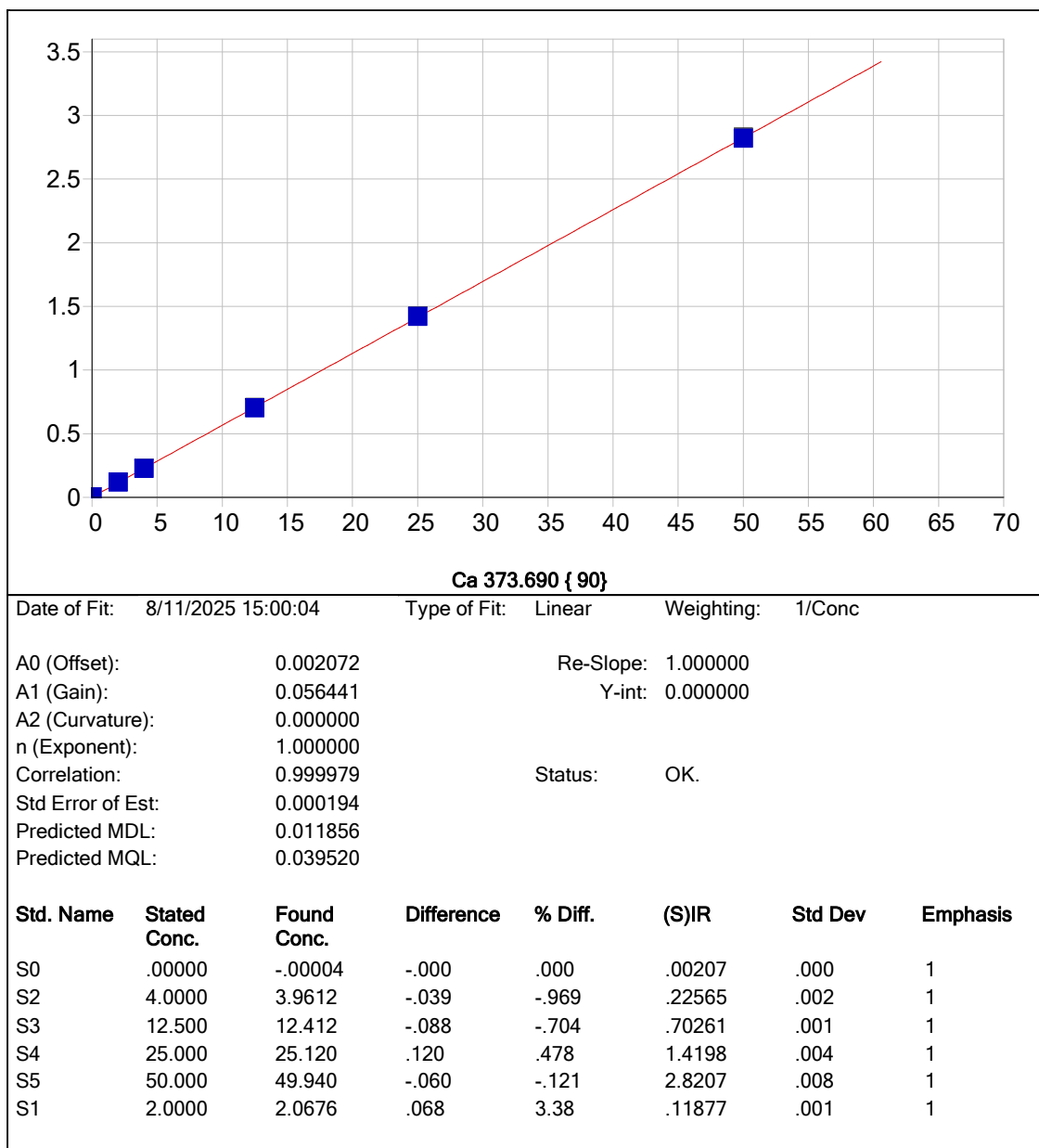


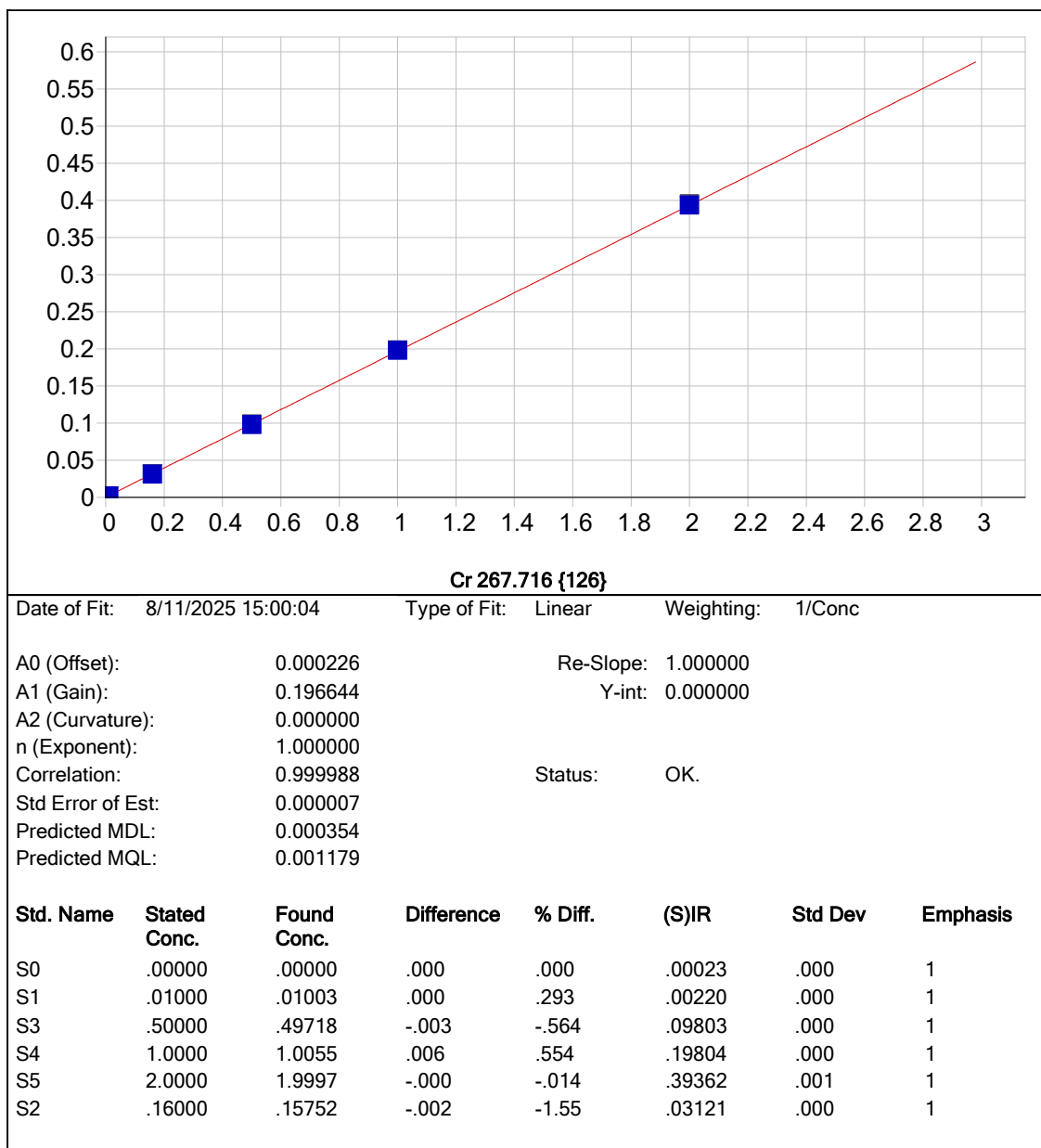
Cd 226.502 {449}

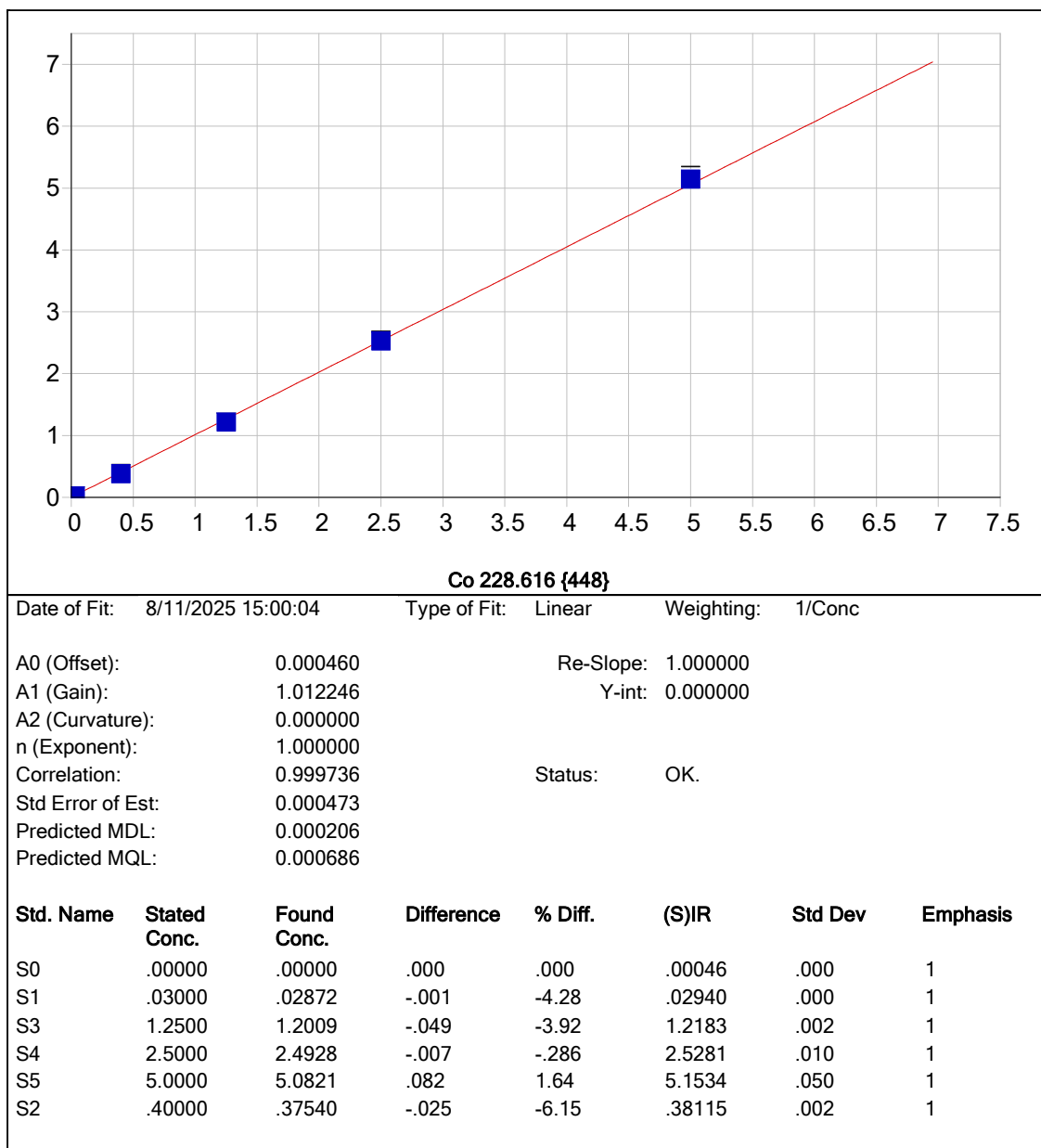
Date of Fit: 8/11/2025 15:00:04 Type of Fit: Linear Weighting: 1/Conc

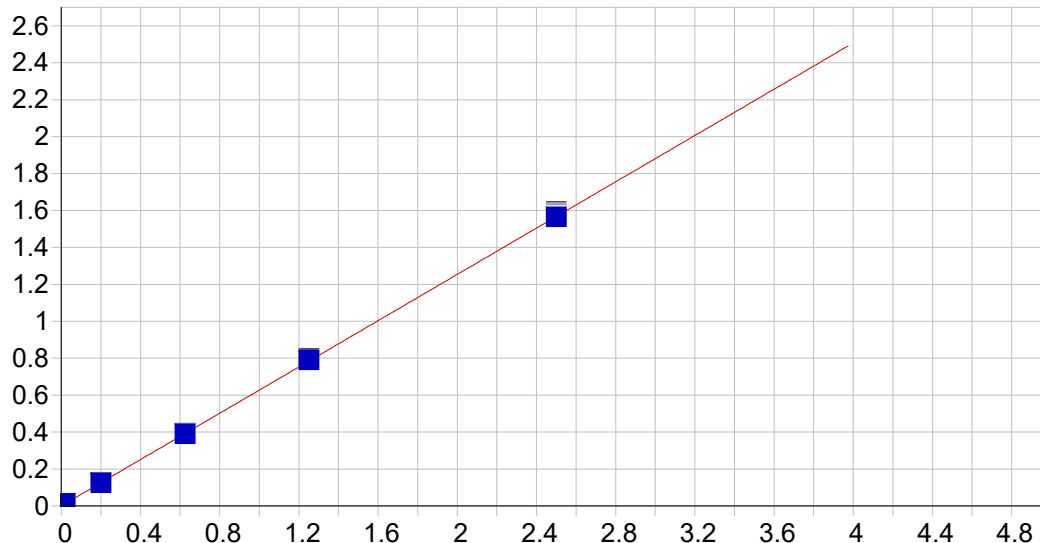
A0 (Offset): -0.000046 Re-Slope: 1.000000
A1 (Gain): 2.962441 Y-int: 0.000000
A2 (Curvature): 0.000000
n (Exponent): 1.000000
Correlation: 0.999724 Status: OK.
Std Error of Est: 0.000633
Predicted MDL: 0.000079
Predicted MQL: 0.000264

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00004	.000	1
S1	.00600	.00555	-.000	-7.47	.01646	.000	1
S3	1.2500	1.2028	-.047	-3.78	3.5656	.009	1
S4	2.5000	2.4934	-.007	-.265	7.3913	.030	1
S5	5.0000	5.0818	.082	1.64	15.064	.143	1
S2	.40000	.37244	-.028	-6.89	1.1041	.006	1







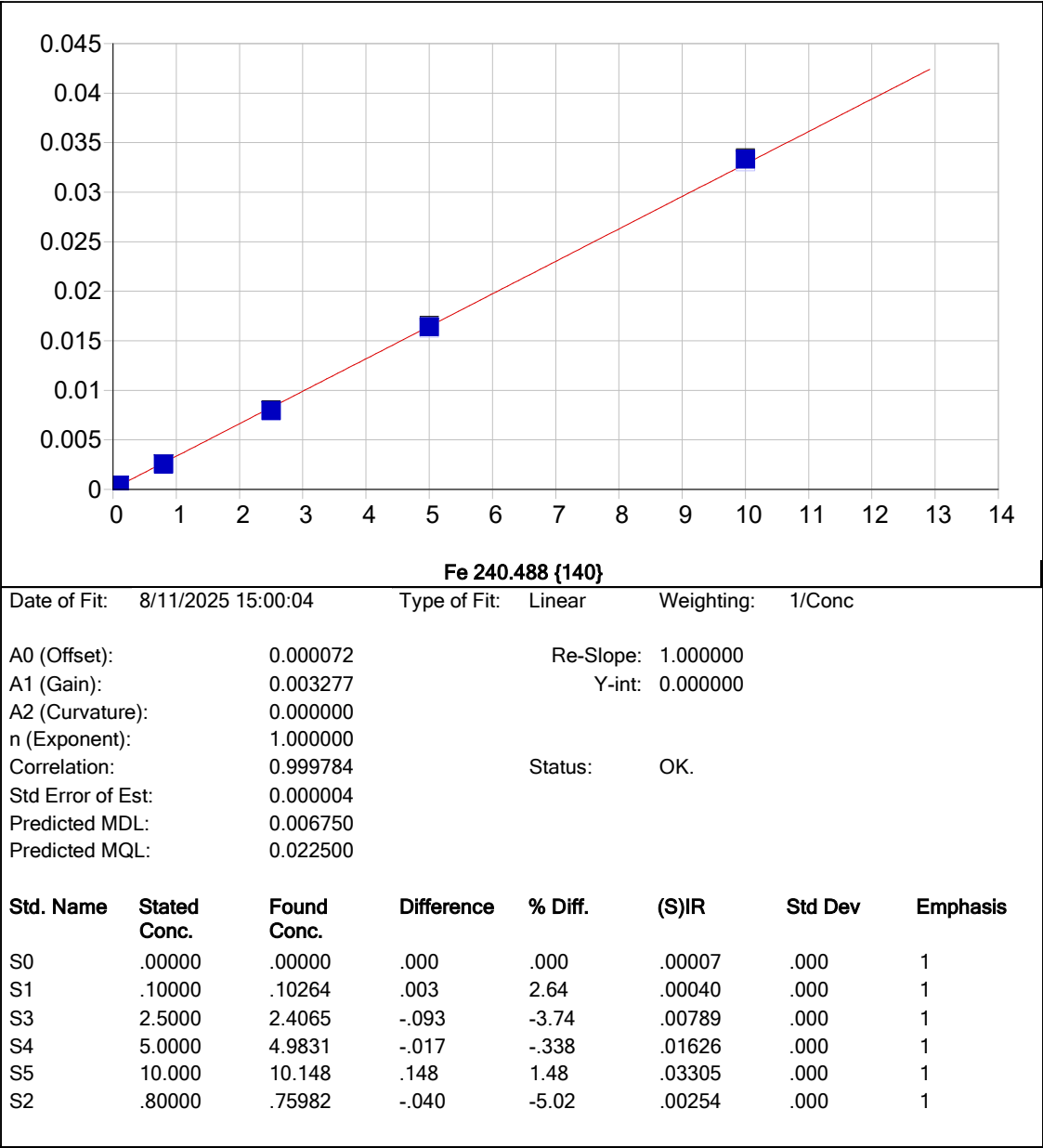


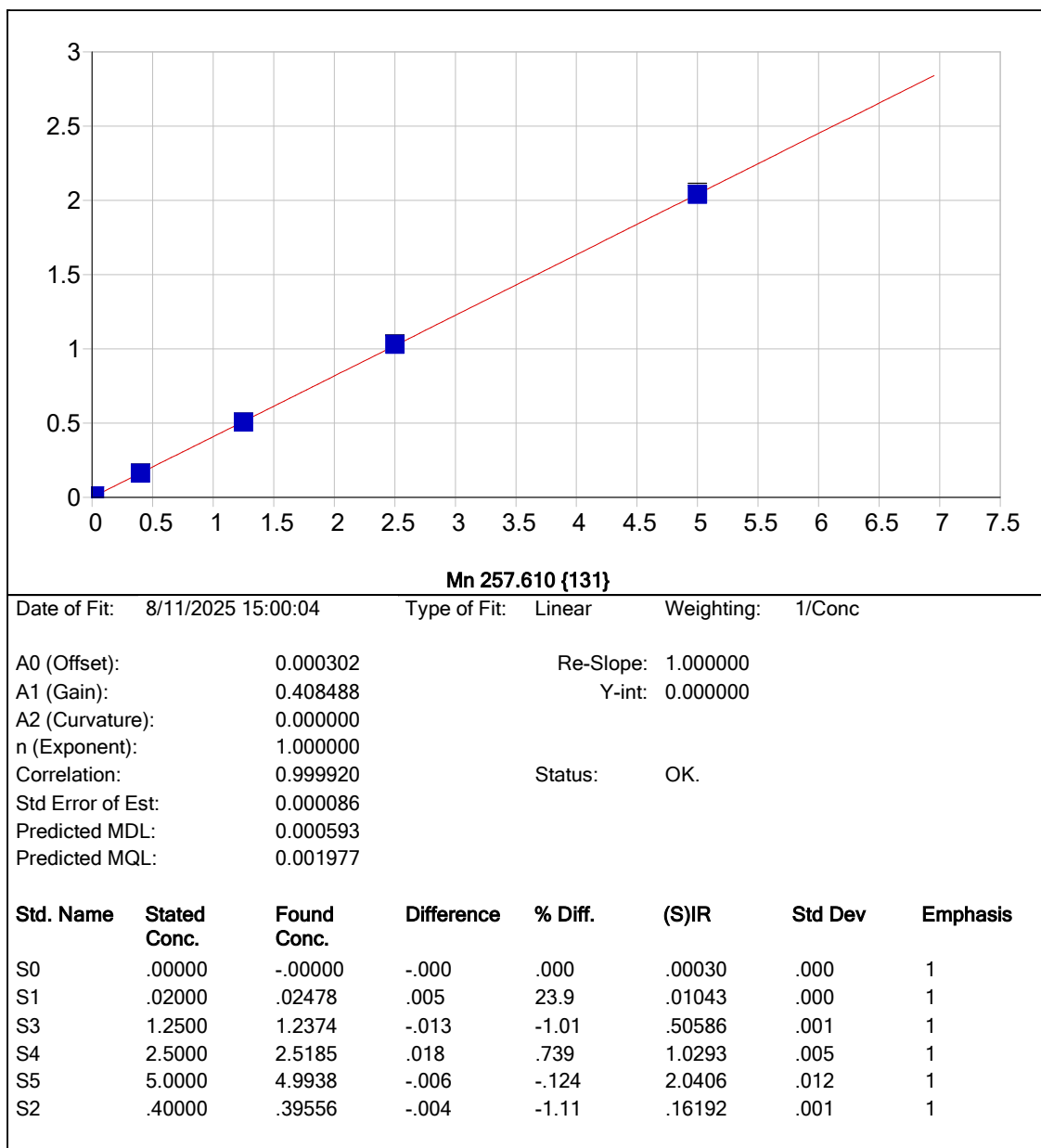
Cu 224.700 {450}

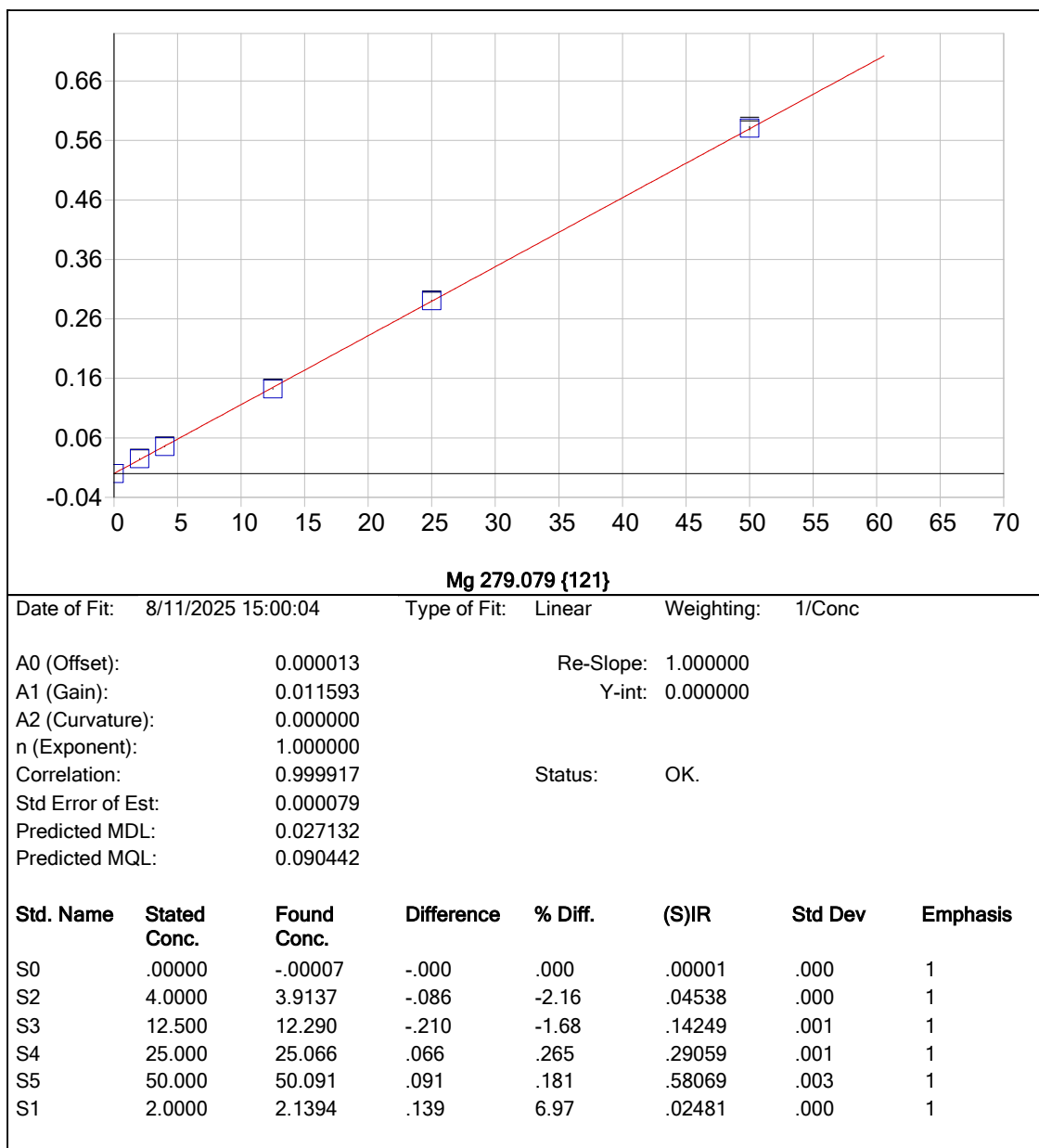
Date of Fit: 8/11/2025 15:00:04 Type of Fit: Linear Weighting: 1/Conc

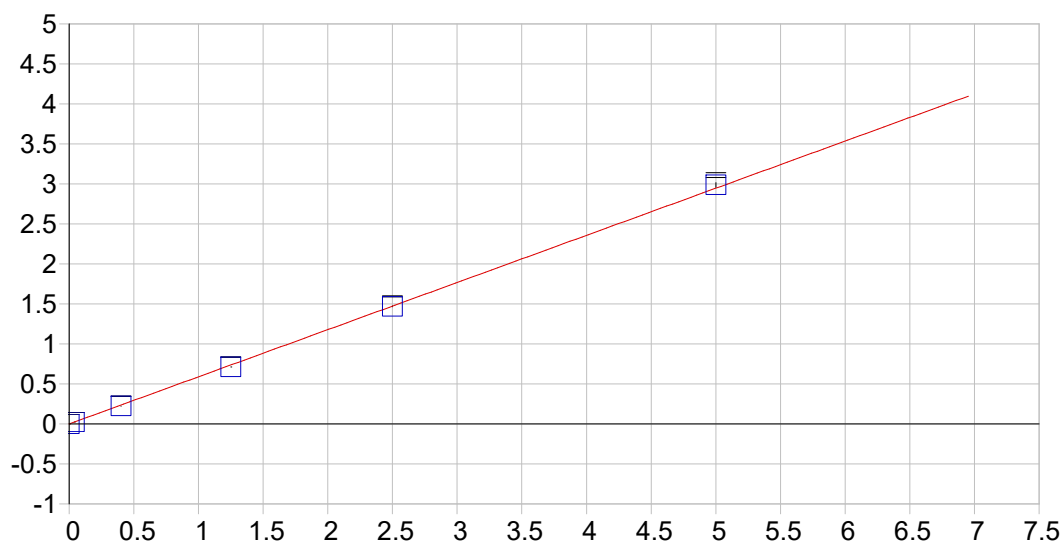
A0 (Offset):	0.000396	Re-Slope:	1.000000
A1 (Gain):	0.626751	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999978	Status:	OK.
Std Error of Est:	0.000050		
Predicted MDL:	0.000445		
Predicted MQL:	0.001482		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00039	.000	1
S1	.02000	.02142	.001	7.11	.01396	.000	1
S3	.62500	.62094	-.004	-.650	.39283	.000	1
S4	1.2500	1.2589	.009	.709	.79591	.004	1
S5	2.5000	2.4952	-.005	-.193	1.5773	.016	1
S2	.20000	.19859	-.001	-.705	.12591	.001	1







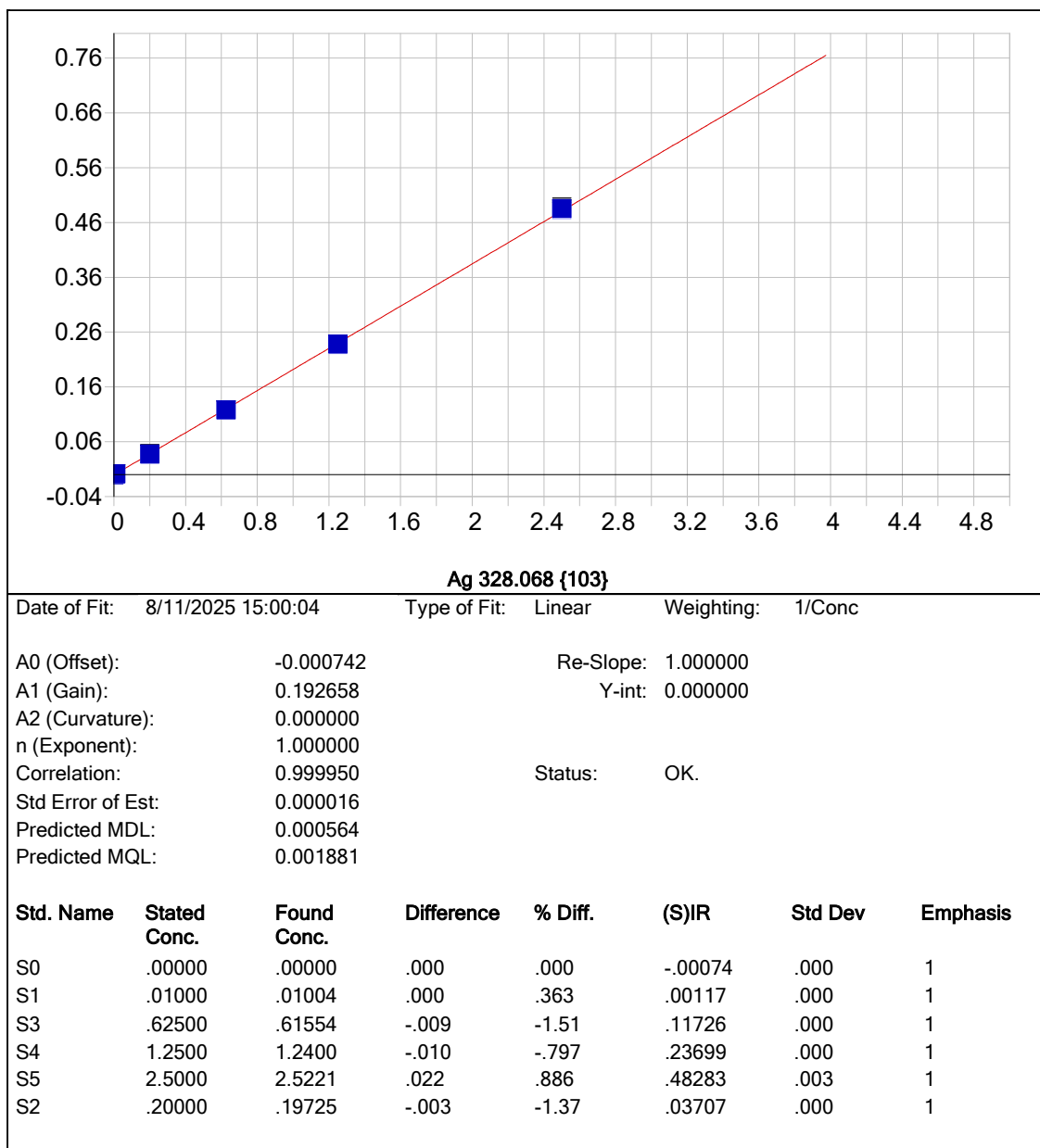


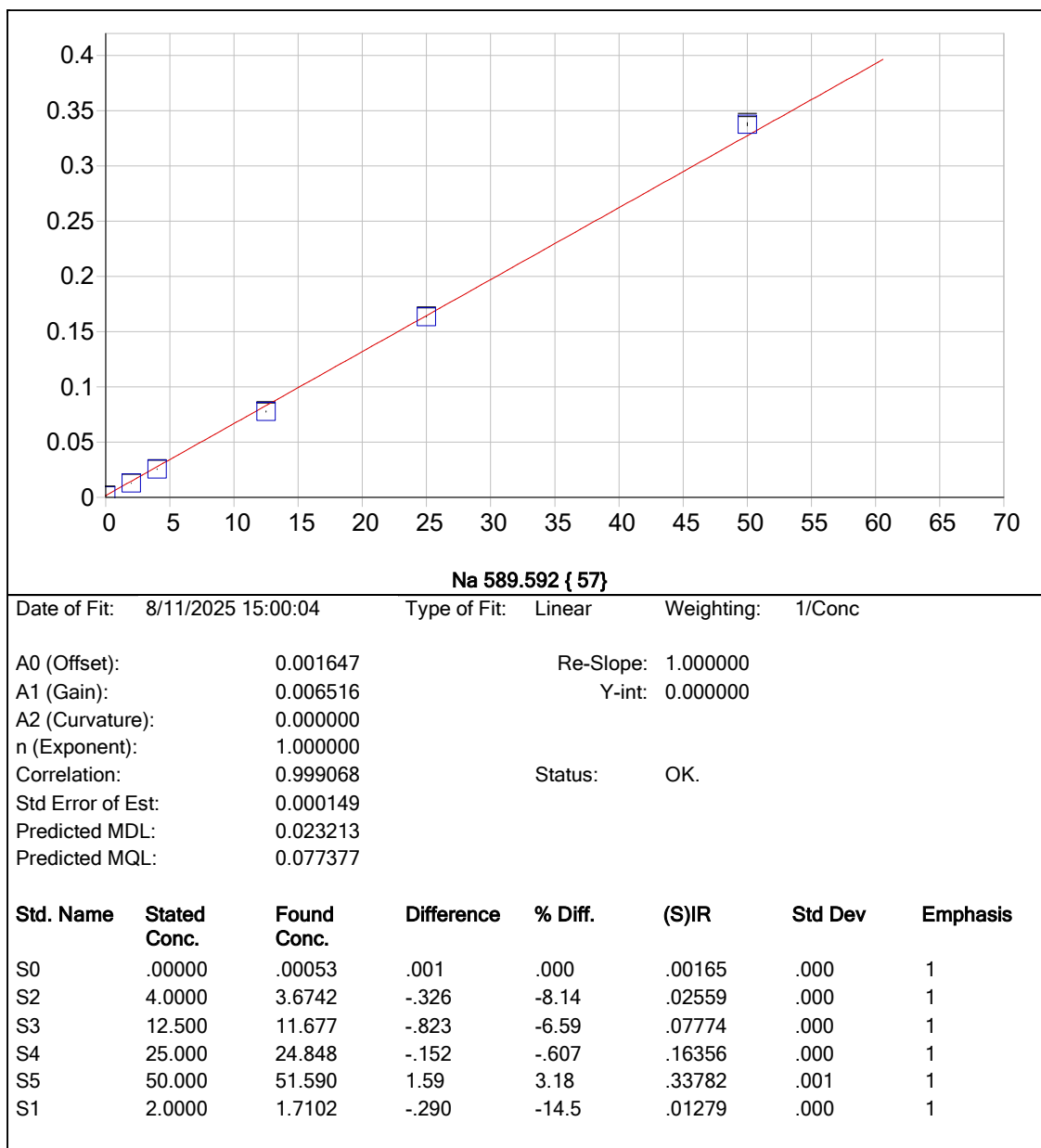
Ni 231.604 {446}

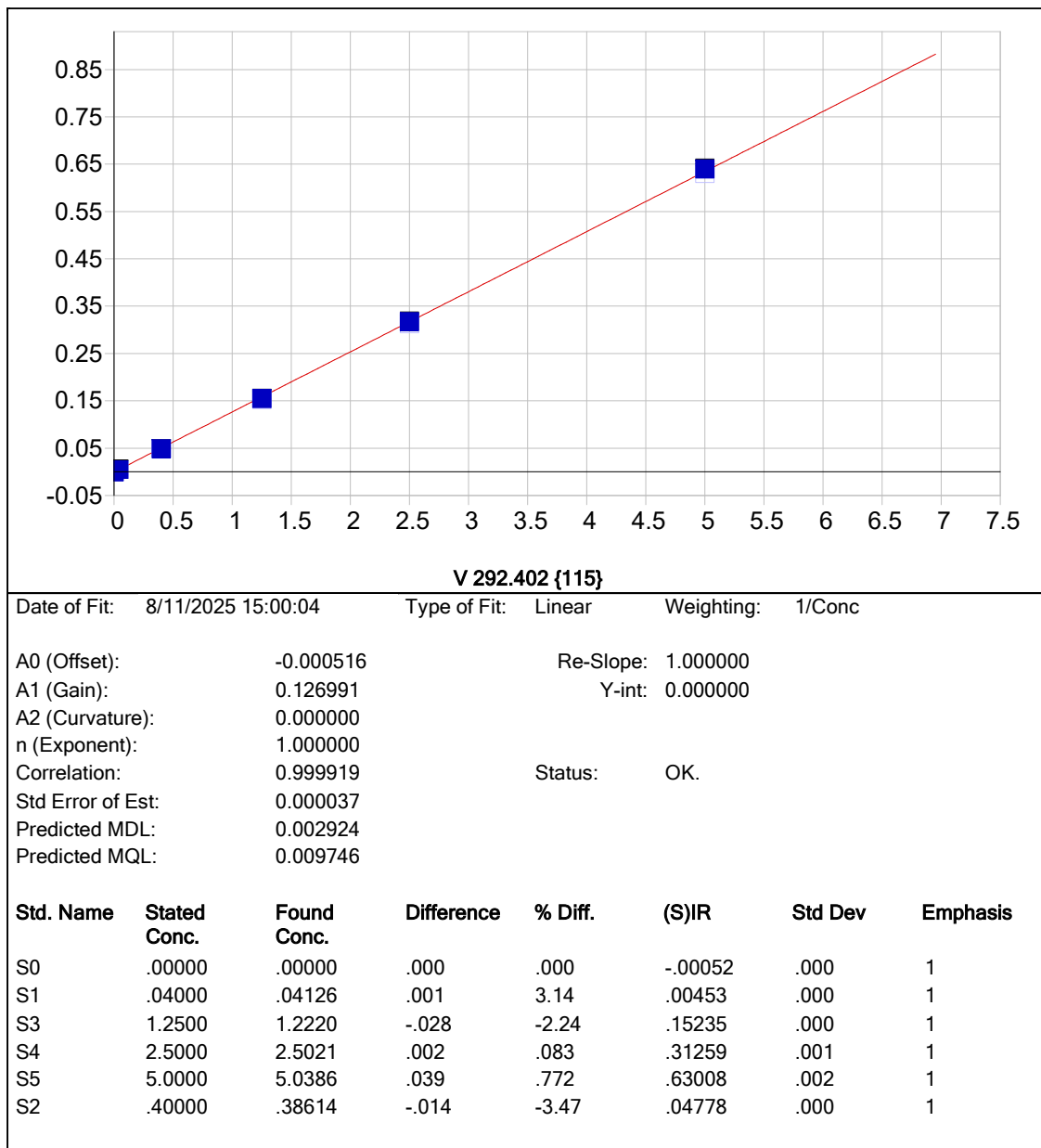
Date of Fit: 8/11/2025 15:00:04 Type of Fit: Linear Weighting: 1/Conc

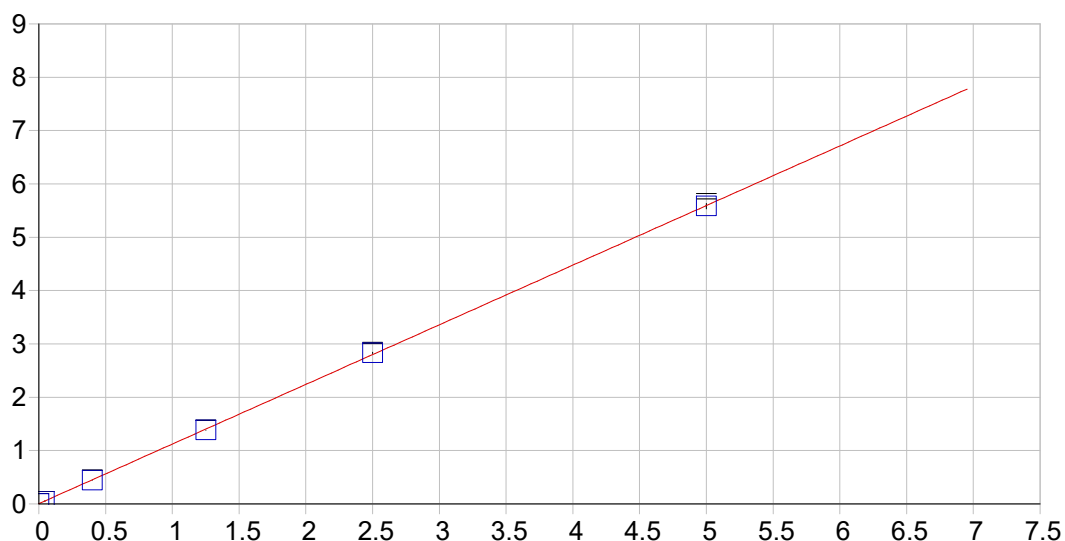
A0 (Offset): -0.000444 Re-Slope: 1.000000
A1 (Gain): 0.589313 Y-int: 0.000000
A2 (Curvature): 0.000000
n (Exponent): 1.000000
Correlation: 0.999814 Status: OK.
Std Error of Est: 0.000267
Predicted MDL: 0.000376
Predicted MQL: 0.001254

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00044	.000	1
S1	.04000	.04006	.000	.141	.02316	.000	1
S3	1.2500	1.2082	-.042	-3.34	.71159	.001	1
S4	2.5000	2.4942	-.006	-.232	1.4694	.007	1
S5	5.0000	5.0683	.068	1.37	2.9863	.028	1
S2	.40000	.37924	-.021	-5.19	.22305	.001	1







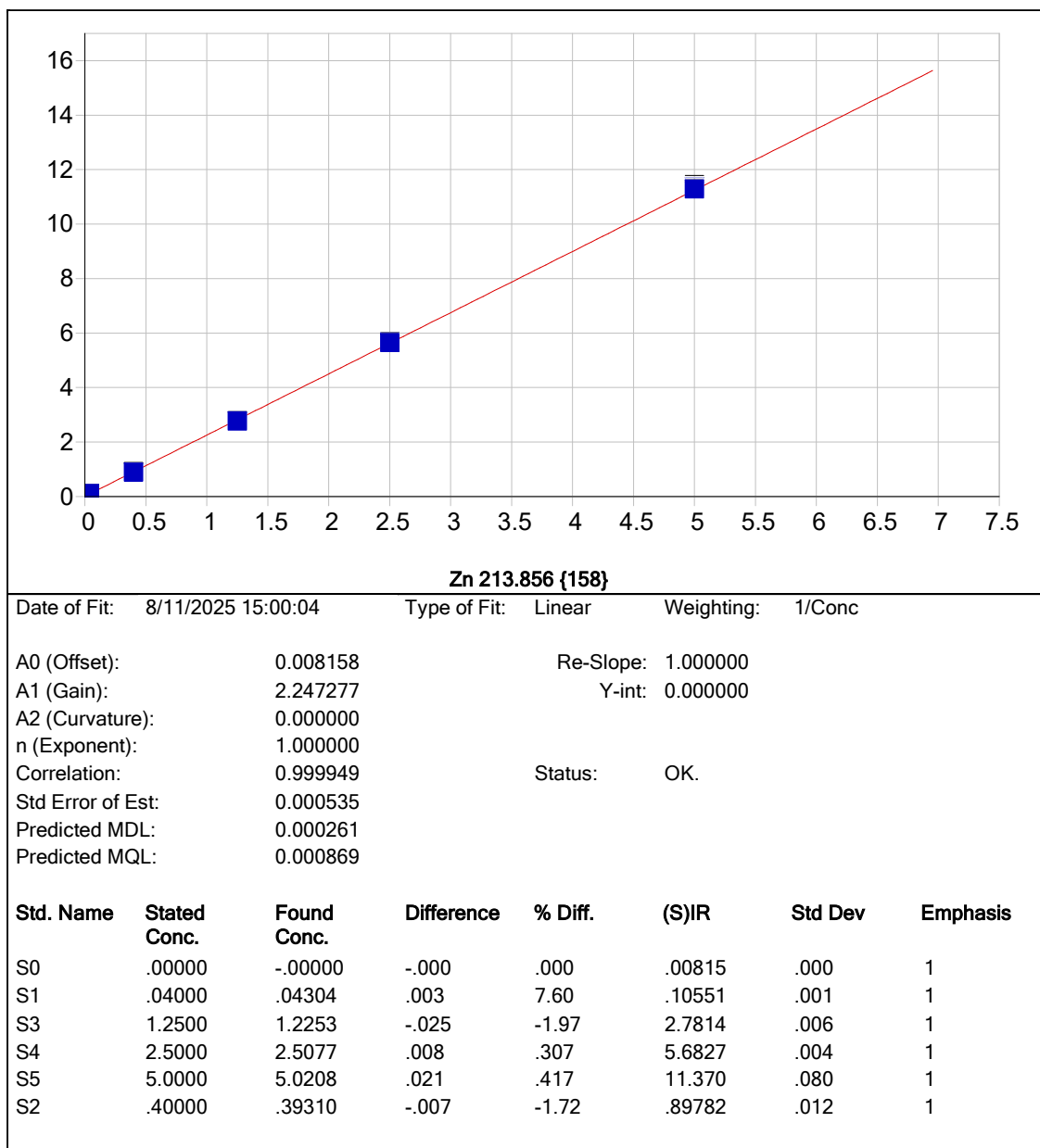


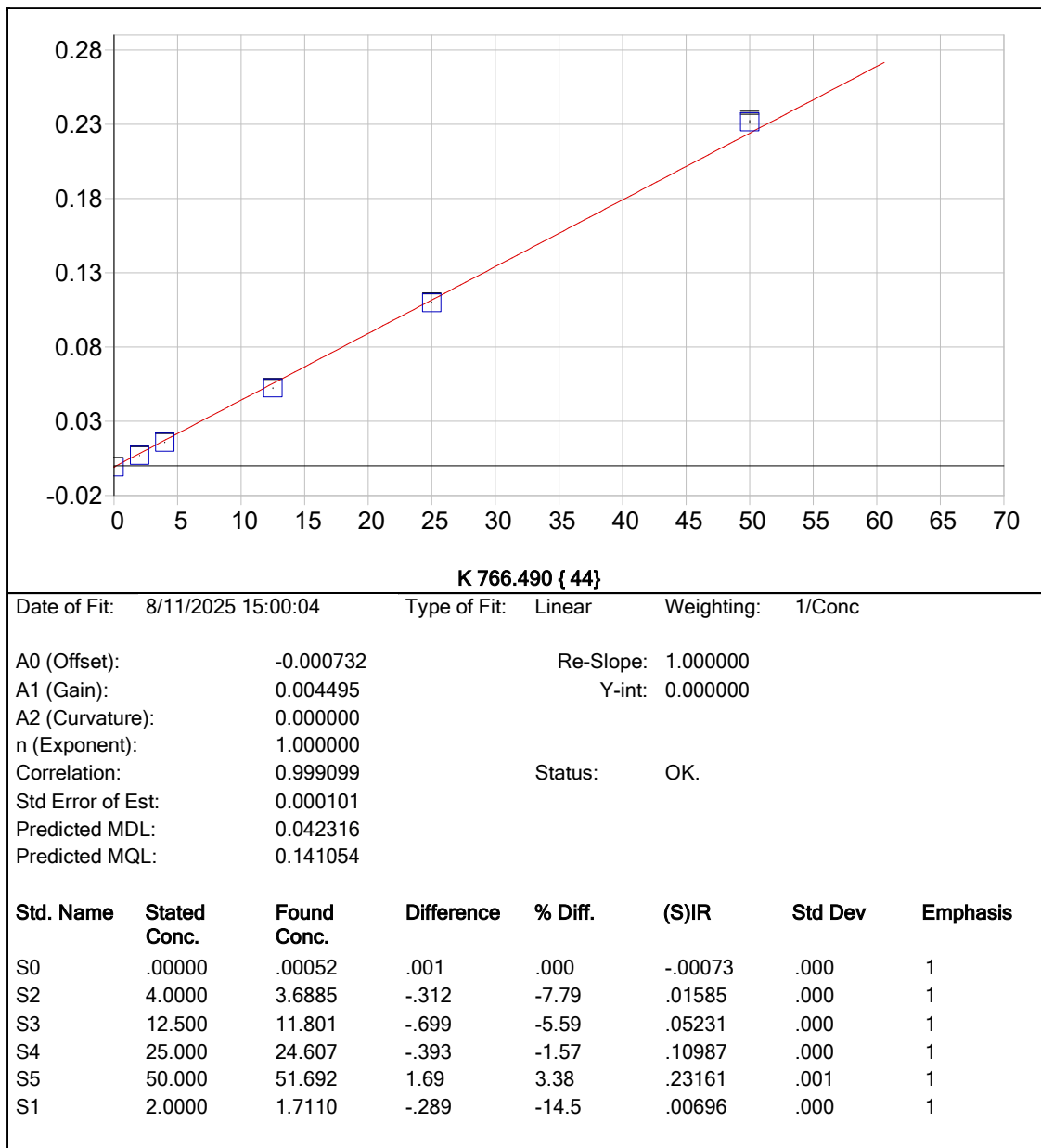
Zn 206.200 {464}

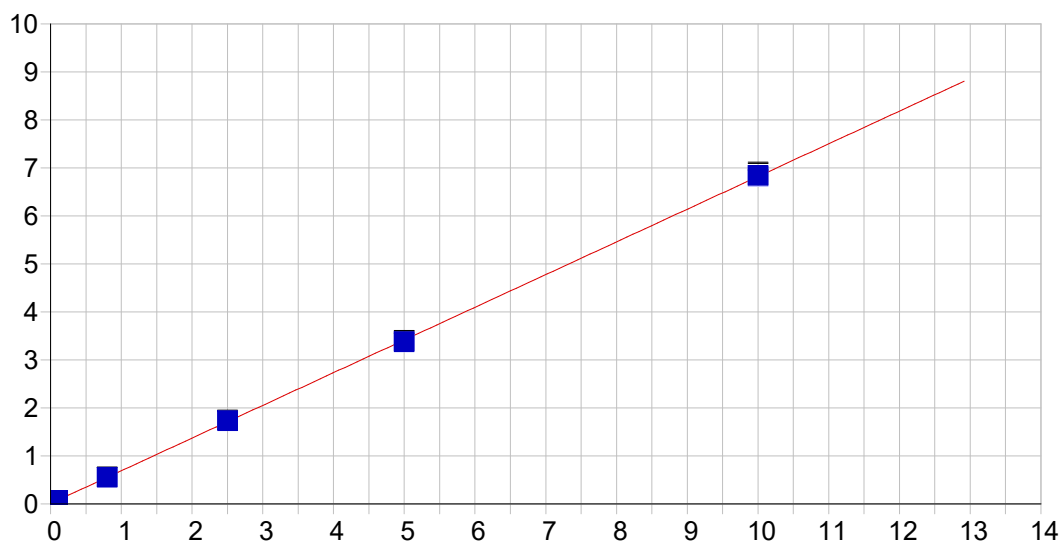
Date of Fit: 8/11/2025 15:00:04 Type of Fit: Linear Weighting: 1/Conc

A0 (Offset):	0.004303	Re-Slope:	1.000000
A1 (Gain):	1.118032	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999958	Status:	OK.
Std Error of Est:	0.000241		
Predicted MDL:	0.000150		
Predicted MQL:	0.000499		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00430	.000	1
S1	.04000	.04280	.003	7.01	.05216	.000	1
S3	1.2500	1.2350	-.015	-1.20	1.3850	.002	1
S4	2.5000	2.5274	.027	1.10	2.8300	.011	1
S5	5.0000	4.9903	-.010	-.194	5.5836	.052	1
S2	.40000	.39449	-.006	-1.38	.44536	.003	1





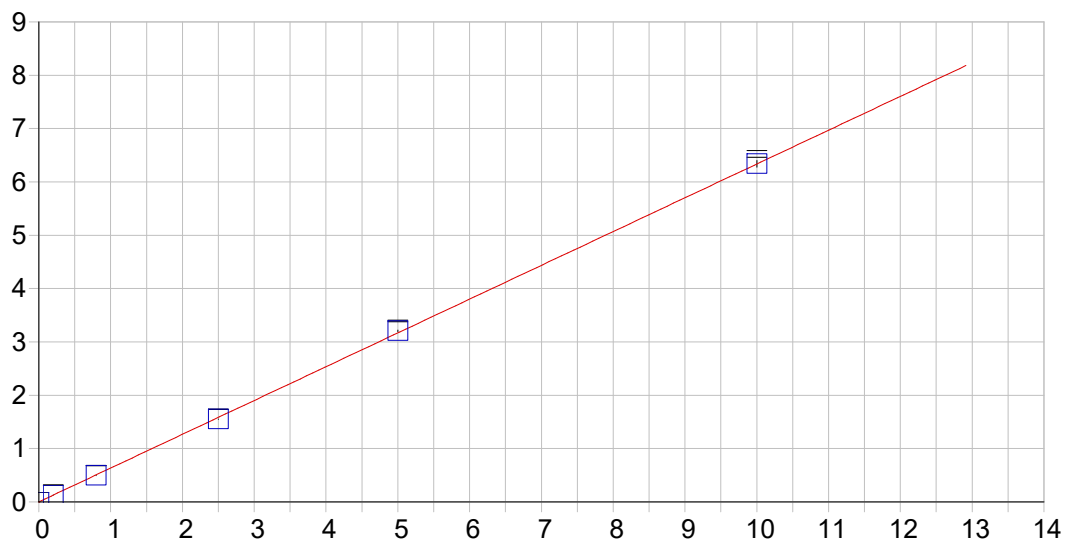


B 249.678 {135}

Date of Fit: 8/11/2025 15:00:04 Type of Fit: Linear Weighting: 1/Conc

A0 (Offset): 0.008995 Re-Slope: 1.000000
A1 (Gain): 0.681189 Y-int: 0.000000
A2 (Curvature): 0.000000
n (Exponent): 1.000000
Correlation: 0.999959 Status: OK.
Std Error of Est: 0.000323
Predicted MDL: 0.000784
Predicted MQL: 0.002613

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00900	.000	1
S1	.10000	.09265	-.007	-7.35	.07170	.001	1
S3	2.5000	2.5309	.031	1.24	1.7269	.012	1
S4	5.0000	4.9496	-.050	-1.01	3.3683	.024	1
S5	10.000	10.024	.024	.242	6.8128	.074	1
S2	.80000	.80262	.003	.328	.55377	.003	1

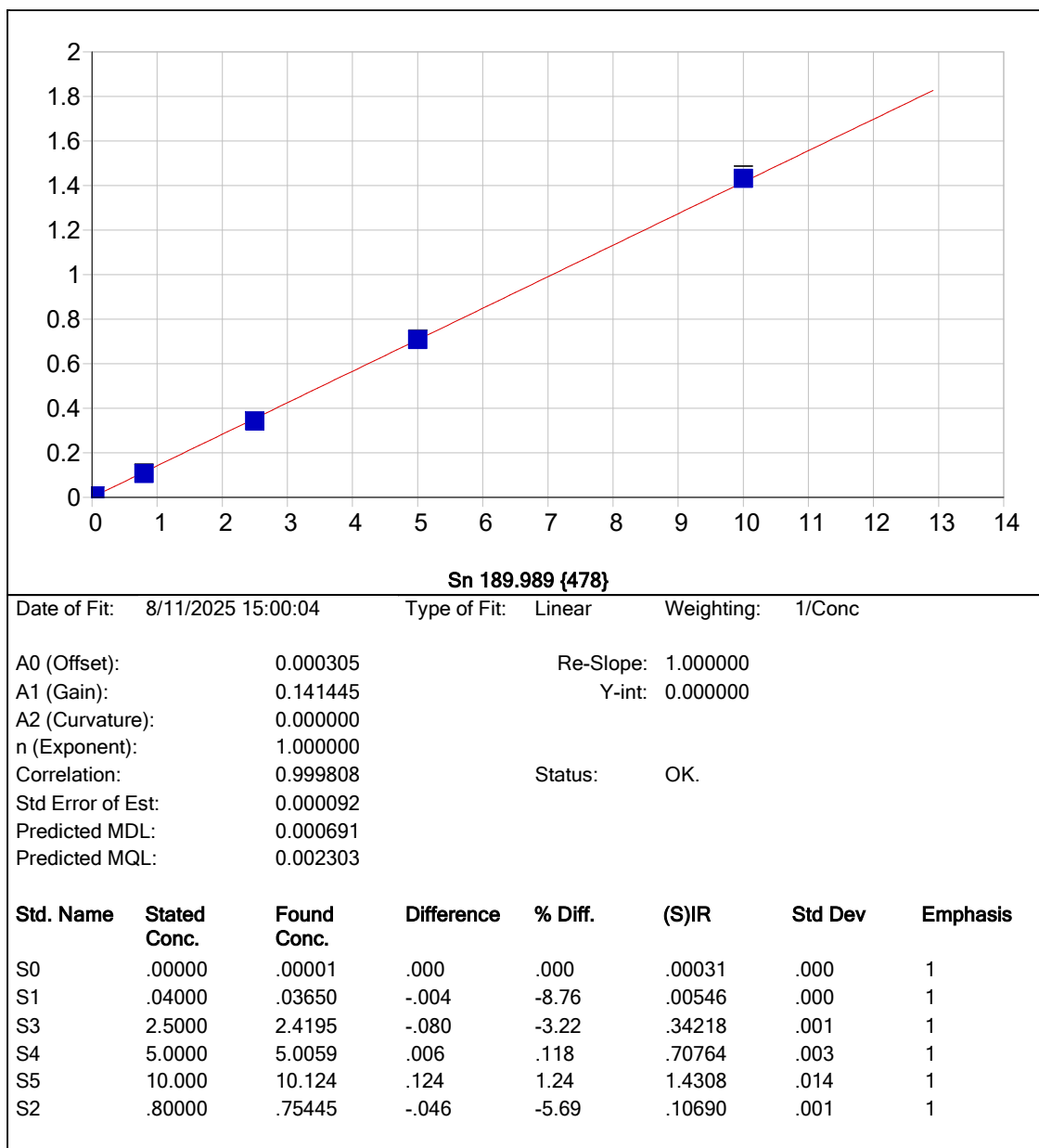


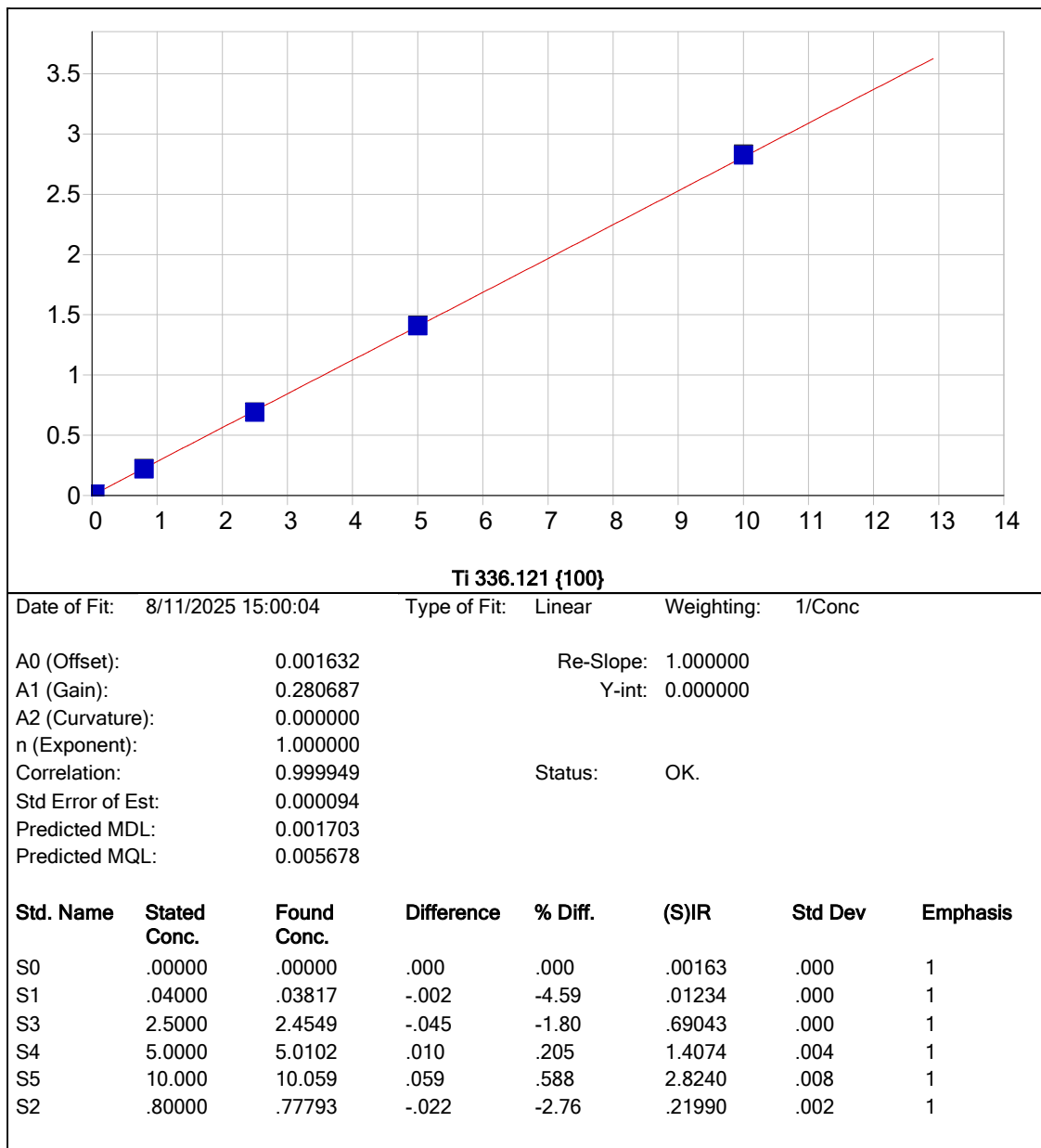
Mo 202.030 {467}

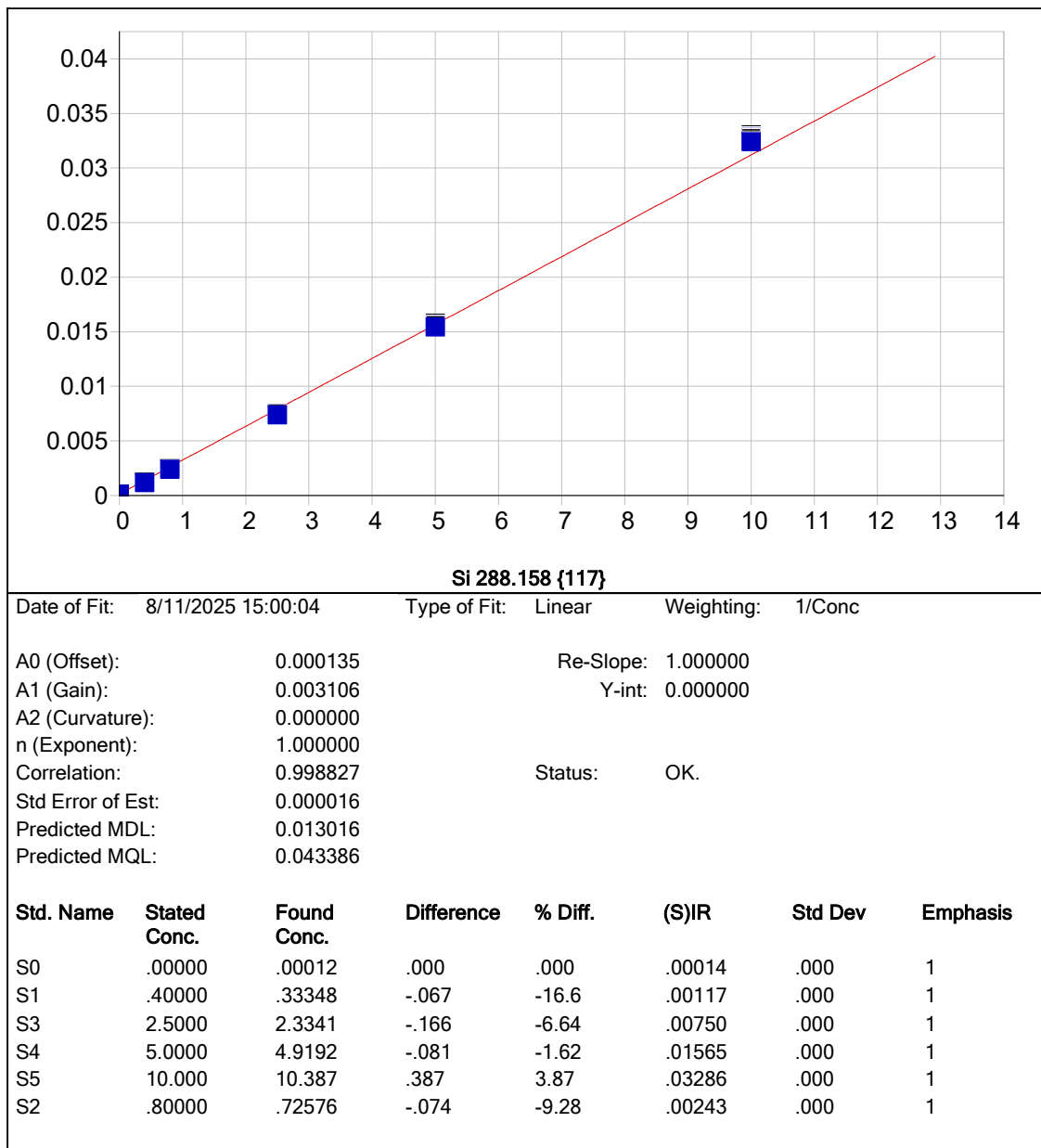
Date of Fit: 8/11/2025 15:00:04 Type of Fit: Linear Weighting: 1/Conc

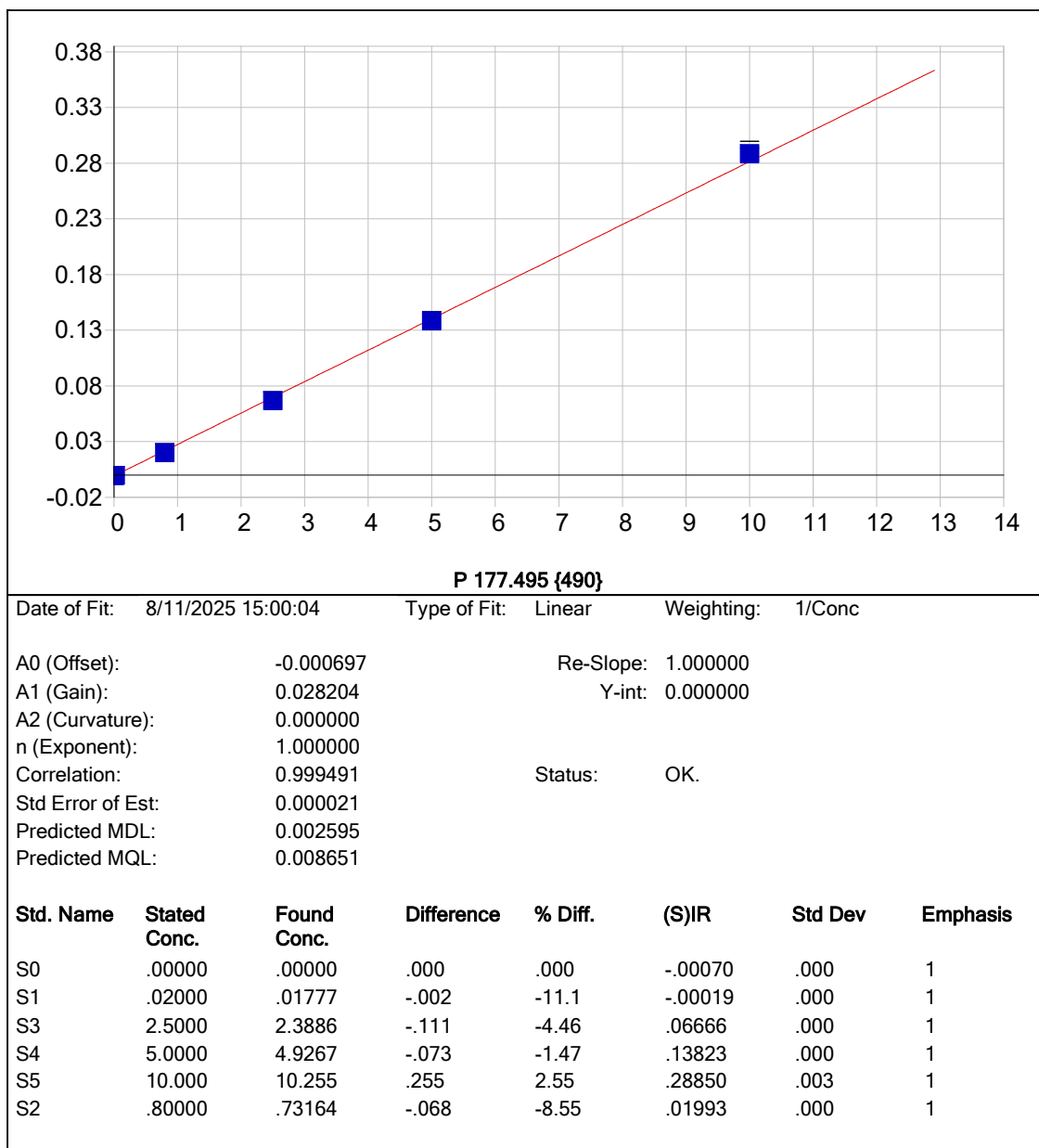
A0 (Offset): 0.000994 Re-Slope: 1.000000
A1 (Gain): 0.633506 Y-int: 0.000000
A2 (Curvature): 0.000000
n (Exponent): 1.000000
Correlation: 0.999938 Status: OK.
Std Error of Est: 0.000525
Predicted MDL: 0.000277
Predicted MQL: 0.000923

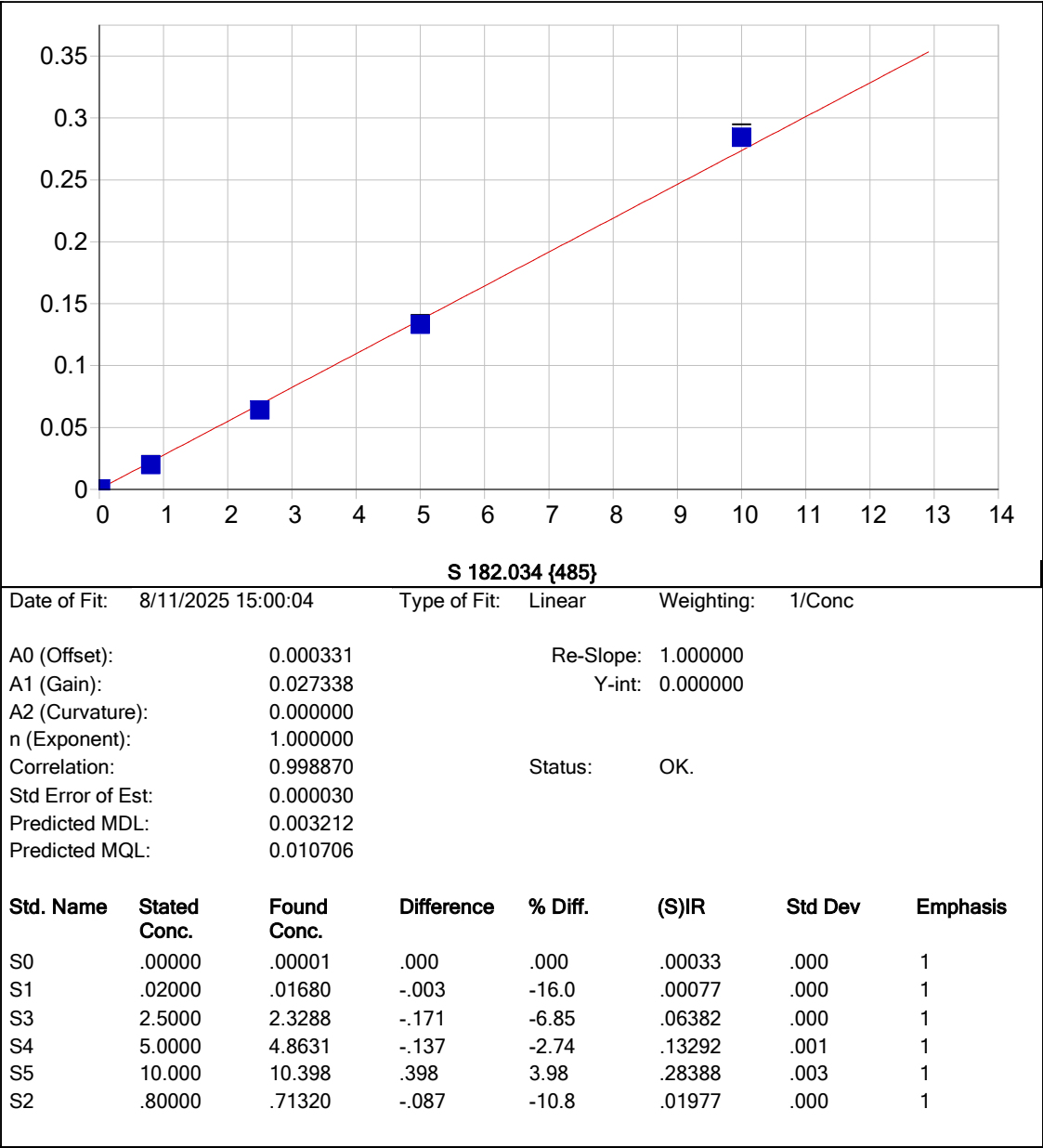
Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00100	.000	1
S1	.20000	.20175	.002	.874	.12880	.000	1
S3	2.5000	2.4496	-.050	-2.01	1.5528	.002	1
S4	5.0000	5.0619	.062	1.24	3.2078	.014	1
S5	10.000	10.006	.006	.065	6.3402	.064	1
S2	.80000	.78020	-.020	-2.48	.49525	.002	1

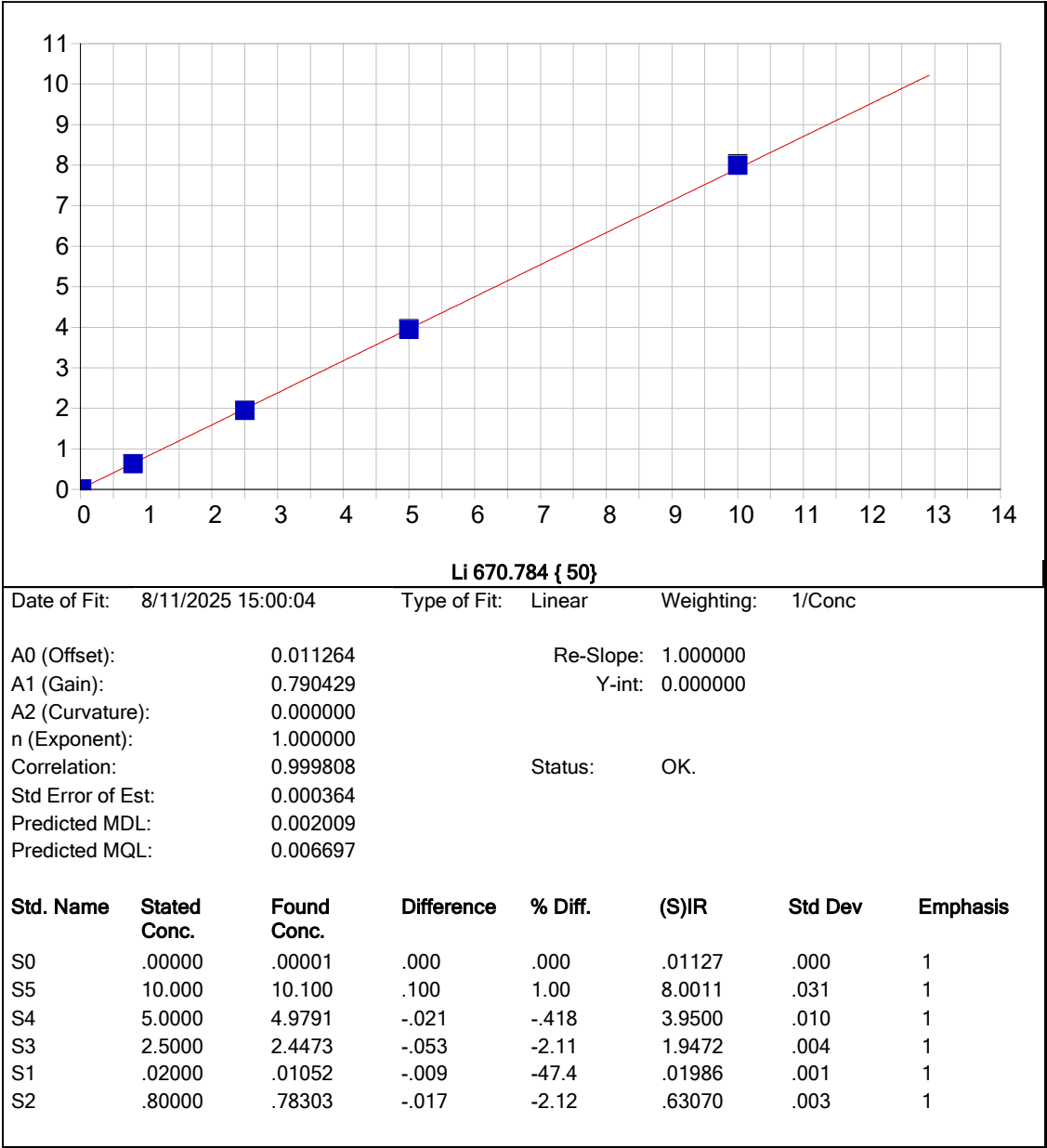


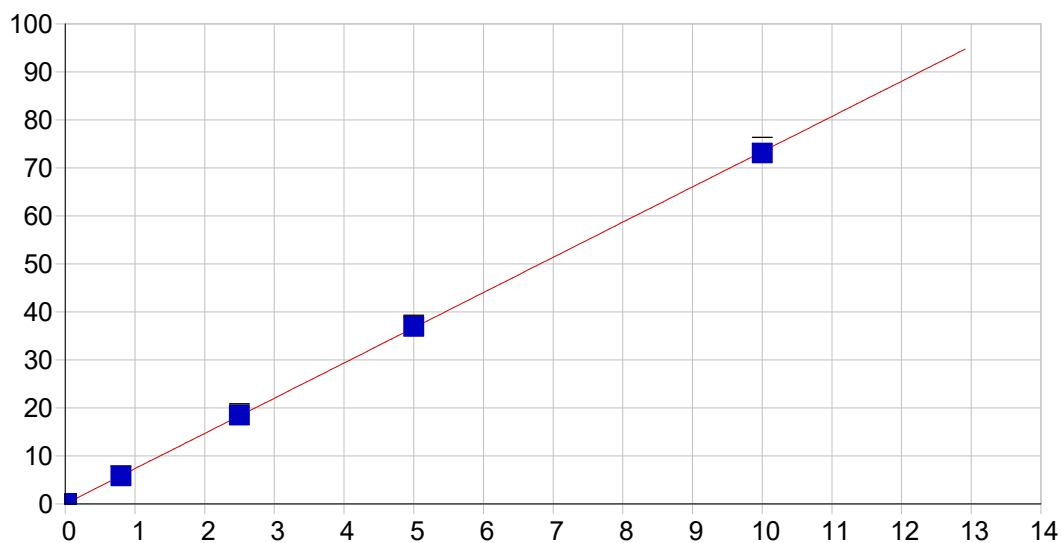










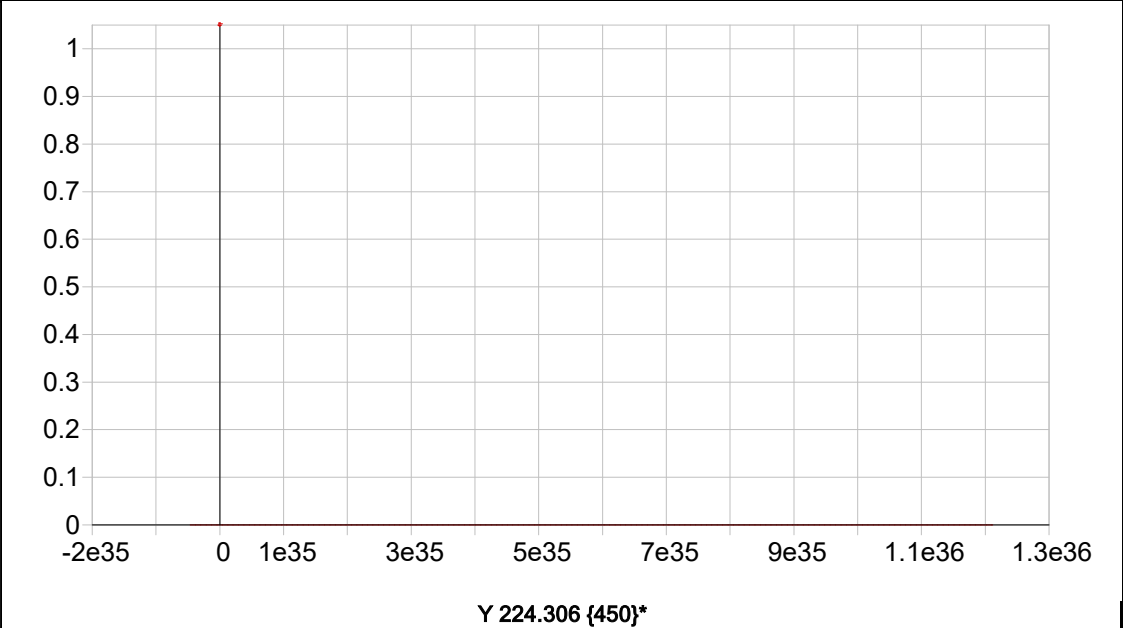


Sr 407.771 { 83}

Date of Fit: 8/11/2025 15:00:04 Type of Fit: Linear Weighting: 1/Conc

A0 (Offset): 0.003076 Re-Slope: 1.000000
A1 (Gain): 7.337270 Y-int: 0.000000
A2 (Curvature): 0.000000
n (Exponent): 1.000000
Correlation: 0.999982 Status: OK.
Std Error of Est: 0.001045
Predicted MDL: 0.000112
Predicted MQL: 0.000373

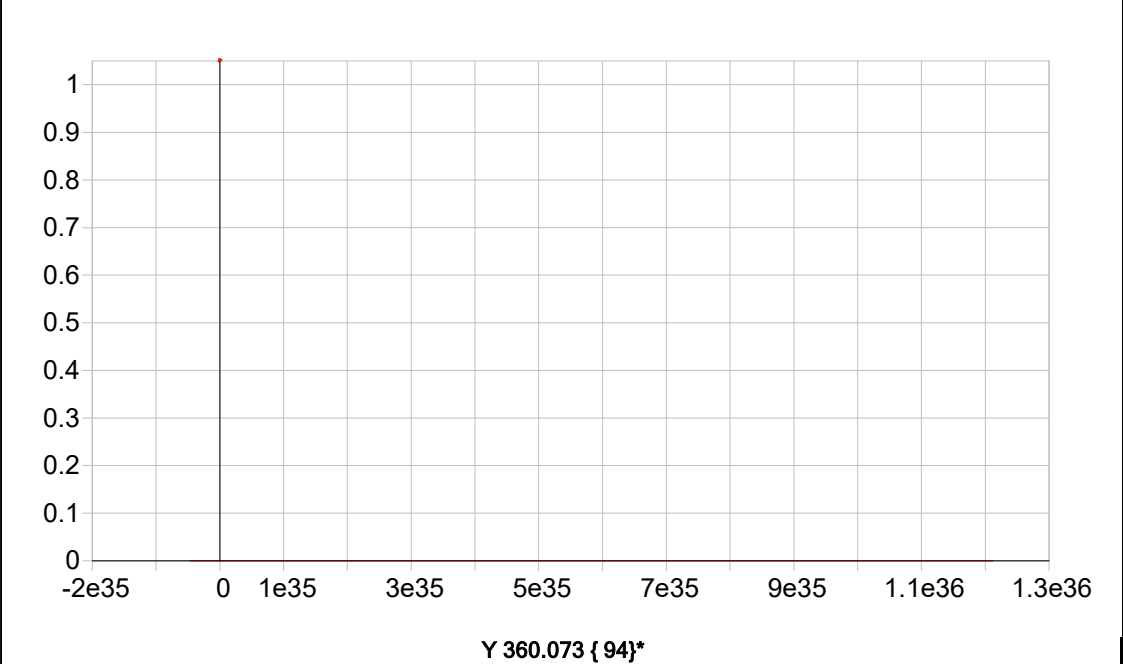
Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00307	.000	1
S1	.02000	.02113	.001	5.63	.15878	.001	1
S3	2.5000	2.5139	.014	.555	18.466	.308	1
S4	5.0000	5.0360	.036	.721	36.989	.271	1
S5	10.000	9.9579	-.042	-.421	73.137	1.20	1
S2	.80000	.79106	-.009	-1.12	5.8129	.043	1



Date of Fit: 8/11/2025 15:00:04 Type of Fit: Linear Weighting: 1/Conc

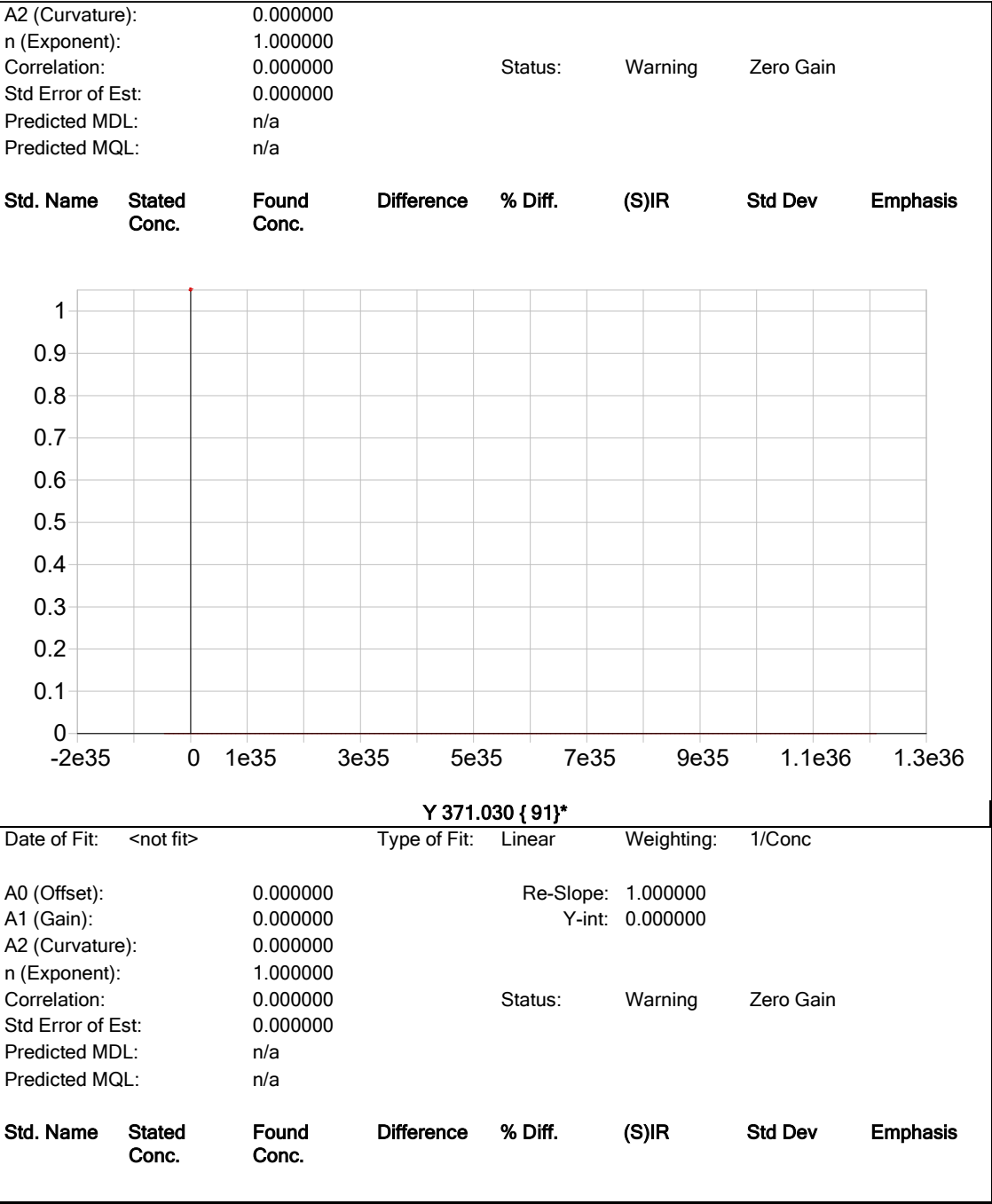
A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.000000	Status:	Warning Zero Gain
Std Error of Est:	0.000000		
Predicted MDL:	n/a		
Predicted MQL:	n/a		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
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Date of Fit: <not fit> Type of Fit: Linear Weighting: 1/Conc

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



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

Sample Name: S0 Acquired: 8/11/2025 10:43:54 Type: Cal
Method: 6010-200.7 NEW(v90) 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	.00124	.00007	.00038	.00068	.00048	.09929	-.00038
Stddev	.00005	.00010	.00016	.00002	.00007	.00062	.00236	.00038
%RSD	666.07	7.8133	210.69	6.1972	10.456	127.77	2.3734	99.855
#1	.00004	.00123	-.00011	.00040	.00060	.00069	.09671	-.00080
#2	-.00006	.00134	.00017	.00039	.00073	-.00021	.10133	-.00006
#3	-.00000	.00115	.00016	.00036	.00071	.00097	.09983	-.00029
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	-.00004	.00207	.00023	.00046	.00039	.00007	.00030	.00001
Stddev	.00031	.00018	.00003	.00014	.00016	.00001	.00020	.00003
%RSD	717.39	8.5418	12.647	29.497	41.389	18.682	65.812	264.55
#1	-.00040	.00226	.00026	.00059	.00021	.00009	.00049	.00003
#2	.00015	.00192	.00022	.00048	.00050	.00006	.00010	-.00002
#3	.00012	.00203	.00020	.00032	.00048	.00007	.00031	.00003
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	-.00044	-.00074	.00165	-.00052	.00815	-.00073	.00900	.00100
Stddev	.00014	.00013	.00020	.00016	.00041	.00011	.00022	.00018
%RSD	31.364	17.234	11.981	31.829	4.9895	15.111	2.4382	18.528
#1	-.00060	-.00068	.00179	-.00039	.00862	-.00071	.00916	.00119
#2	-.00033	-.00089	.00174	-.00046	.00796	-.00063	.00875	.00082
#3	-.00040	-.00066	.00142	-.00070	.00788	-.00085	.00909	.00098
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	.00031	.00163	.00014	-.00070	.00033	.01127	.00307	
Stddev	.00004	.00033	.00001	.00005	.00002	.00046	.00038	
%RSD	13.621	20.178	8.7332	7.3256	5.4079	4.0867	12.500	
#1	.00035	.00145	.00015	-.00074	.00033	.01157	.00309	
#2	.00028	.00144	.00013	-.00064	.00035	.01151	.00344	
#3	.00029	.00201	.00013	-.00071	.00031	.01074	.00268	

Sample Name: S0 Acquired: 8/11/2025 10:43:54 Type: Cal
Method: 6010-200.7 NEW(v90) 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	5993.7	102510.	10318.	4690.7	7321.7
Stddev	8.0	357.	65.	44.9	22.8
%RSD	.13405	.34857	.63230	.95707	.31192
#1	5995.2	102140.	10344.	4649.9	7336.9
#2	5985.0	102550.	10244.	4683.6	7295.5
#3	6000.8	102850.	10367.	4738.8	7332.8

Sample Name: S1 Acquired: 8/11/2025 10:48:18 Type: Cal
Method: 6010-200.7 NEW(v90) 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	.00089	.00325	.00245	.00123	.00493	.00774	.32780	.03986
Stddev	.00011	.00008	.00024	.00002	.00022	.00035	.00333	.00018
%RSD	12.211	2.4424	9.6459	1.5459	4.3771	4.5266	1.0172	.44789
#1	.00077	.00334	.00271	.00124	.00475	.00737	.32981	.03967
#2	.00093	.00319	.00237	.00120	.00486	.00779	.32964	.03990
#3	.00098	.00322	.00226	.00123	.00517	.00806	.32395	.04001
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	.01646	.11877	.00220	.02940	.01396	.00040	.01043	.02481
Stddev	.00013	.00066	.00012	.00018	.00014	.00001	.00014	.00042
%RSD	.81682	.55768	5.4939	.62842	1.0121	2.4987	1.3055	1.6919
#1	.01660	.11907	.00211	.02942	.01380	.00040	.01042	.02475
#2	.01646	.11922	.00215	.02920	.01405	.00040	.01057	.02443
#3	.01633	.11801	.00234	.02957	.01404	.00042	.01030	.02526
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	.02316	.00117	.01279	.00453	.10551	.00696	.07170	.12880
Stddev	.00015	.00005	.00020	.00044	.00088	.00014	.00054	.00033
%RSD	.65315	4.3613	1.5971	9.6347	.83521	1.9488	.75427	.25378
#1	.02325	.00123	.01282	.00476	.10649	.00711	.07231	.12906
#2	.02325	.00113	.01298	.00403	.10478	.00693	.07152	.12844
#3	.02299	.00117	.01258	.00481	.10525	.00684	.07128	.12891
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	.00546	.01234	.00117	-.00019	.00077	.01986	.15878	
Stddev	.00001	.00037	.00003	.00006	.00004	.00096	.00078	
%RSD	.16644	2.9675	2.6289	31.566	4.9388	4.8112	.49306	
#1	.00546	.01228	.00117	-.00027	.00080	.02084	.15895	
#2	.00547	.01273	.00114	-.00015	.00078	.01893	.15947	
#3	.00545	.01200	.00121	-.00017	.00072	.01980	.15793	

Sample Name: S1 Acquired: 8/11/2025 10:48:18 Type: Cal
Method: 6010-200.7 NEW(v90) 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	6419.6	107770.	10588.	4849.5	8123.4
Stddev	6.9	535.	35.	42.8	7.0
%RSD	.10782	.49643	.33381	.88331	.08593
#1	6411.8	108260.	10576.	4890.4	8121.3
#2	6425.1	107860.	10560.	4853.1	8131.2
#3	6421.8	107200.	10627.	4804.9	8117.7

Sample Name: S2 Acquired: 8/11/2025 10:52:36 Type: Cal
Method: 6010-200.7 NEW(v90) 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	.03701	.04583	.14749	.03373	.06703	.09189	3.6182	.26801
Stddev	.00030	.00094	.00071	.00022	.00031	.00017	.0244	.00093
%RSD	.81354	2.0462	.47969	.65889	.46815	.18755	.67339	.34754

#1	.03685	.04656	.14723	.03395	.06701	.09184	3.6084	.26765
#2	.03736	.04477	.14829	.03374	.06736	.09176	3.6003	.26731
#3	.03682	.04615	.14696	.03351	.06673	.09209	3.6460	.26907

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	1.1041	.22565	.03121	.38115	.12591	.00254	.16192	.04538
Stddev	.0065	.00159	.00041	.00210	.00074	.00002	.00132	.00031
%RSD	.58425	.70533	1.3237	.55205	.58791	.80204	.81269	.68017

#1	1.1052	.22535	.03169	.38110	.12572	.00256	.16114	.04533
#2	1.1099	.22422	.03099	.38327	.12672	.00252	.16118	.04510
#3	1.0971	.22737	.03096	.37907	.12528	.00254	.16344	.04571

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	.22305	.03707	.02559	.04778	.89782	.01585	.55377	.49525
Stddev	.00137	.00044	.00027	.00008	.01197	.00022	.00268	.00178
%RSD	.61592	1.1809	1.0573	.16955	1.3333	1.3589	.48419	.35865

#1	.22271	.03758	.02590	.04786	.91124	.01609	.55181	.49505
#2	.22456	.03680	.02542	.04770	.89401	.01570	.55267	.49712
#3	.22187	.03684	.02544	.04779	.88823	.01574	.55682	.49359

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	.10690	.21990	.00243	.01993	.01977	.63070	5.8129	
Stddev	.00082	.00177	.00002	.00008	.00008	.00303	.0430	
%RSD	.76555	.80461	.76246	.41448	.38952	.48008	.74031	

#1	.10701	.21940	.00243	.01995	.01986	.62830	5.7946	
#2	.10766	.21844	.00241	.02000	.01974	.62969	5.7820	
#3	.10603	.22187	.00244	.01984	.01972	.63410	5.8621	

Sample Name: S2 Acquired: 8/11/2025 10:52:36 Type: Cal
Method: 6010-200.7 NEW(v90) 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	6139.6	102520.	10359.	4673.3	7472.0
Stddev	34.7	1107.	21.	52.8	42.8
%RSD	.56542	1.0800	.20745	1.1304	.57253
#1	6146.8	101250.	10381.	4615.1	7473.3
#2	6101.8	103110.	10358.	4686.5	7428.6
#3	6170.1	103210.	10338.	4718.3	7514.2

Sample Name: S3 Acquired: 8/11/2025 10:56:40 Type: Cal
Method: 6010-200.7 NEW(v90) 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	.11745	.14127	.46889	.10656	.21047	.28512	11.267	.84780
Stddev	.00007	.00079	.00123	.00002	.00074	.00056	.014	.00293
%RSD	.05573	.56159	.26162	.01639	.34966	.19655	.12197	.34511

#1	.11742	.14044	.46814	.10656	.20963	.28521	11.274	.84586
#2	.11753	.14136	.47031	.10654	.21075	.28452	11.252	.85116
#3	.11741	.14202	.46823	.10657	.21102	.28563	11.277	.84637

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	3.5656	.70261	.09803	1.2183	.39283	.00789	.50586	.14249
Stddev	.0087	.00088	.00025	.0019	.00042	.00004	.00084	.00055
%RSD	.24459	.12526	.25183	.15803	.10671	.46266	.16539	.38438

#1	3.5643	.70255	.09803	1.2180	.39238	.00787	.50627	.14212
#2	3.5750	.70177	.09779	1.2203	.39320	.00787	.50490	.14223
#3	3.5577	.70352	.09828	1.2164	.39292	.00793	.50641	.14312

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	.71159	.11726	.07774	.15235	2.7814	.05231	1.7269	1.5528
Stddev	.00081	.00011	.00047	.00034	.0061	.00032	.0121	.0024
%RSD	.11369	.09595	.60111	.22181	.21813	.62085	.70280	.15254

#1	.71194	.11721	.07804	.15207	2.7861	.05221	1.7172	1.5502
#2	.71216	.11739	.07720	.15226	2.7745	.05205	1.7405	1.5547
#3	.71067	.11719	.07797	.15272	2.7834	.05268	1.7230	1.5536

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	.34218	.69043	.00750	.06666	.06382	1.9472	18.466
Stddev	.00077	.00048	.00002	.00010	.00020	.0041	.308
%RSD	.22479	.06947	.28770	.14874	.30570	.20962	1.6694

#1	.34255	.69084	.00748	.06670	.06363	1.9425	18.820
#2	.34269	.68990	.00753	.06673	.06381	1.9497	18.256
#3	.34129	.69056	.00750	.06655	.06402	1.9495	18.322

Sample Name: S3 Acquired: 8/11/2025 10:56:40 Type: Cal
Method: 6010-200.7 NEW(v90) 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	5980.5	99324.	10142.	4561.7	7105.3
Stddev	13.2	294.	15.	22.9	15.1
%RSD	.22105	.29633	.15234	.50142	.21253
#1	5993.1	99292.	10160.	4545.4	7114.8
#2	5966.7	99633.	10132.	4587.8	7087.8
#3	5981.7	99047.	10135.	4551.9	7113.1

Sample Name: S4 Acquired: 8/11/2025 11:00:44 Type: Cal
Method: 6010-200.7 NEW(v90) 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	.24302	.28623	.95798	.21592	.43169	.58030	22.687	1.6881
Stddev	.00138	.00146	.00376	.00091	.00175	.00054	.098	.0128
%RSD	.56583	.51005	.39200	.42340	.40424	.09247	.43205	.75606

#1	.24384	.28477	.96095	.21607	.43194	.58088	22.689	1.6860
#2	.24143	.28623	.95376	.21493	.42983	.58020	22.785	1.7018
#3	.24378	.28769	.95925	.21674	.43330	.57982	22.589	1.6766

Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7.3913	1.4198	.19804	2.5281	.79591	.01626	1.0293	.29059
Stddev	.0299	.0037	.00016	.0101	.00379	.00011	.0054	.00086
%RSD	.40506	.26114	.08169	.40064	.47676	.69866	.52185	.29441

#1	7.4164	1.4158	.19788	2.5365	.79757	.01616	1.0264	.29019
#2	7.3582	1.4231	.19820	2.5169	.79157	.01625	1.0355	.29158
#3	7.3992	1.4206	.19804	2.5310	.79860	.01638	1.0259	.29001

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	1.4694	.23699	.16356	.31259	5.6827	.10987	3.3683	3.2078
Stddev	.0065	.00007	.00038	.00084	.0035	.00034	.0242	.0140
%RSD	.44512	.02967	.22930	.26784	.06199	.30856	.71720	.43552

#1	1.4748	.23692	.16338	.31179	5.6855	.10972	3.3611	3.2151
#2	1.4621	.23699	.16331	.31253	5.6787	.10964	3.3953	3.1917
#3	1.4714	.23707	.16399	.31346	5.6838	.11026	3.3486	3.2166

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	.70764	1.4074	.01565	.13823	.13292	3.9500	36.989	
Stddev	.00281	.0041	.00014	.00046	.00053	.0099	.271	
%RSD	.39680	.28887	.89941	.33117	.39974	.25076	.73227	

#1	.70990	1.4071	.01559	.13875	.13332	3.9511	36.743	
#2	.70450	1.4117	.01554	.13789	.13232	3.9594	37.279	
#3	.70853	1.4035	.01581	.13805	.13313	3.9396	36.945	

Sample Name: S4 Acquired: 8/11/2025 11:00:44 Type: Cal
Method: 6010-200.7 NEW(v90) 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	6044.3	101400.	10400.	4629.3	7060.9
Stddev	23.0	77.	70.	19.8	26.4
%RSD	.38040	.07594	.67290	.42848	.37410
#1	6034.2	101310.	10381.	4615.0	7042.4
#2	6070.6	101420.	10342.	4651.9	7091.1
#3	6028.2	101460.	10478.	4620.9	7049.1

Sample Name: S5 Acquired: 8/11/2025 11:04:56 Type: Cal
Method: 6010-200.7 NEW(v90) 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	.49160	.59866	1.9613	.44411	.87327	1.1662	45.990	3.3592
Stddev	.00518	.01193	.0191	.00522	.00927	.0028	.716	.0378
%RSD	1.0546	1.9920	.97312	1.1746	1.0615	.24123	1.5576	1.1241

#1	.48658	.58506	1.9426	.43855	.86342	1.1668	46.814	3.3613
#2	.49128	.60732	1.9606	.44488	.87456	1.1687	45.641	3.3959
#3	.49694	.60359	1.9808	.44890	.88182	1.1632	45.515	3.3205

Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	15.064	2.8207	.39362	5.1534	1.5773	.03305	2.0406	.58069
Stddev	.143	.0080	.00134	.0503	.0157	.00012	.0124	.00308
%RSD	.94696	.28198	.34050	.97681	.99791	.37591	.61025	.53056

#1	14.923	2.8217	.39506	5.1022	1.5621	.03306	2.0304	.58233
#2	15.062	2.8281	.39337	5.1550	1.5763	.03292	2.0545	.58260
#3	15.208	2.8123	.39242	5.2028	1.5935	.03317	2.0369	.57714

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	2.9863	.48283	.33782	.63008	11.370	.23161	6.8128	6.3402
Stddev	.0285	.00269	.00146	.00197	.080	.00102	.0742	.0636
%RSD	.95268	.55734	.43167	.31294	.70168	.44212	1.0886	1.0029

#1	2.9576	.48448	.33654	.62994	11.441	.23175	6.8137	6.2743
#2	2.9870	.48429	.33751	.63212	11.383	.23053	6.8865	6.3449
#3	3.0145	.47973	.33941	.62818	11.284	.23256	6.7382	6.4012

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	1.4308	2.8240	.03286	.28850	.28388	8.0011	73.137	
Stddev	.0144	.0080	.00018	.00292	.00322	.0314	1.198	
%RSD	1.0067	.28360	.53476	1.0135	1.1358	.39289	1.6376	

#1	1.4165	2.8187	.03302	.28529	.28047	7.9653	73.263	
#2	1.4305	2.8332	.03267	.28917	.28430	8.0239	74.267	
#3	1.4453	2.8201	.03289	.29102	.28688	8.0143	71.882	

Sample Name: S5 Acquired: 8/11/2025 11:04:56 Type: Cal
Method: 6010-200.7 NEW(v90) 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	5942.3	98965.	10459.	4492.4	6748.8
Stddev	37.7	495.	98.	35.3	42.8
%RSD	.63407	.50023	.94026	.78564	.63353
#1	5979.3	98418.	10432.	4454.2	6790.7
#2	5943.6	99096.	10377.	4499.2	6750.5
#3	5904.0	99382.	10568.	4523.7	6705.3

Sample Name: ICV01 Acquired: 8/11/2025 11:09:07 Type: Unk
Method: 6010-200.7 NEW(v90) 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	3.703710	3.826857	3.838271	3.724680	3.856451	7.496178
Stddev	.033228	.072244	.033572	.032106	.035205	.126583
%RSD	.8971663	1.887819	.8746530	.8619729	.9128754	1.688632

#1	3.665471	3.899716	3.799832	3.688408	3.815973	7.620620
#2	3.720093	3.825613	3.853147	3.749451	3.873450	7.367558
#3	3.725565	3.755243	3.861834	3.736181	3.879930	7.500357

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.502316	.1902715	1.843463	18.78171	.7554262	1.876364
Stddev	.113046	.0029095	.017349	.31393	.0044887	.017658
%RSD	1.506818	1.529123	.9410834	1.671483	.5941963	.9410671

#1	7.621565	.1933512	1.823476	19.11702	.7590517	1.856026
#2	7.396711	.1875690	1.852286	18.49476	.7504056	1.885282
#3	7.488671	.1898943	1.854627	18.73336	.7568214	1.887784

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9618908	3.714232	1.881977	18.80690	1.869059	.9396982
Stddev	.0100282	.031786	.037279	.35143	.016181	.0046108
%RSD	1.042551	.8557764	1.980825	1.868611	.8657379	.4906655

#1	.9503148	3.750924	1.924597	19.16877	1.850410	.9450044
#2	.9674312	3.696651	1.855438	18.46694	1.877379	.9374224
#3	.9679264	3.695120	1.865896	18.78499	1.879387	.9366677

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.27446	1.913388	1.855189	18.40783	F .0078851	F .0003375
Stddev	.18264	.030921	.007285	.10197	.0005692	.0005468
%RSD	.9994252	1.616046	.3926986	.5539496	7.219287	161.9913

#1	18.47732	1.945642	1.863355	18.52527	.0083843	.0008085
#2	18.22295	1.883999	1.849355	18.35636	.0080059	.0004662
#3	18.12311	1.910523	1.852858	18.34184	.0072652	-.000262

Sample Name: ICV01 Acquired: 8/11/2025 11:09:07 Type: Unk
Method: 6010-200.7 NEW(v90) 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	F .0006739	F -.004777	F -.031488	F .0042360	F .0112268	F .0003679
Stddev	.0005775	.000451	.010599	.0020723	.0011598	.0013688
%RSD	85.69908	9.436131	33.66057	48.92144	10.33026	372.0543

#1	.0012443	-.004944	-.021971	.0019554	.0113119	-.000002
#2	.0006878	-.004267	-.042911	.0060037	.0123417	-.000778
#3	.0000895	-.005120	-.029583	.0047489	.0100268	.001884

Elem	Sr4077
Units	ppm
Avg	F -.003415
Stddev	.000050
%RSD	1.475819

#1	-.003371
#2	-.003405
#3	-.003470

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6190.545	103850.7	10762.23	4730.266	7323.531
Stddev	52.350	346.5	144.36	13.608	55.351
%RSD	.8456506	.3336144	1.341374	.2876892	.7558022

#1	6248.839	103539.4	10607.62	4714.679	7385.386
#2	6147.544	104224.0	10893.51	4739.788	7278.668
#3	6175.251	103788.6	10785.56	4736.330	7306.539

Sample Name: LLICV01 Acquired: 8/11/2025 11:33:24 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0191624	.0372607	.0123583	.0215621	.0484242	.1188708
Stddev	.0014319	.0016585	.0008124	.0006657	.0009499	.0093450
%RSD	7.472499	4.451164	6.573372	3.087206	1.961704	7.861511

#1	.0175335	.0375853	.0127180	.0213417	.0495046	.1208168
#2	.0197311	.0354638	.0129288	.0223100	.0480481	.1270897
#3	.0202227	.0387329	.0114282	.0210346	.0477198	.1087060

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0972932	.0058008	.0058116	2.022339	.0099433	.0280867
Stddev	.0013181	.0000583	.0000588	.012762	.0005077	.0001125
%RSD	1.354799	1.004538	1.011360	.6310267	5.105921	.4003936

#1	.0982648	.0058658	.0058532	2.036793	.0098162	.0281719
#2	.0978220	.0057833	.0057443	2.017591	.0105024	.0281289
#3	.0957928	.0057533	.0058373	2.012631	.0095112	.0279592

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0206863	.0984201	.0238412	2.058116	.0384917	.0101529
Stddev	.0002031	.0042130	.0005843	.023080	.0001448	.0003006
%RSD	.9819888	4.280665	2.450592	1.121402	.3761201	2.960269

#1	.0208642	.0977746	.0242258	2.081045	.0383703	.0101099
#2	.0204650	.1029186	.0241290	2.034888	.0384529	.0104725
#3	.0207297	.0945671	.0231689	2.058415	.0386519	.0098761

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.658880	.0419713	.0414765	1.671131	.0883155	.1983565
Stddev	.021588	.0011839	.0008182	.052785	.0004857	.0004294
%RSD	1.301389	2.820674	1.972783	3.158628	.5500079	.2164941

#1	1.650507	.0432778	.0412226	1.663176	.0884823	.1988396
#2	1.683401	.0409697	.0423916	1.727441	.0877683	.1982119
#3	1.642733	.0416665	.0408154	1.622775	.0886958	.1980181

Sample Name: LLICV01 Acquired: 8/11/2025 11:33:24 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0364512	.0383076	F .3194050	.0196501	.0191691	F .0111126
Stddev	.0001780	.0011806	.0156636	.0024318	.0021873	.0010542
%RSD	.4883942	3.081974	4.903991	12.37534	11.41027	9.486753

#1	.0366109	.0376032	.3257847	.0197601	.0216794	.0111632
#2	.0364835	.0376490	.3308719	.0220250	.0176732	.0100340
#3	.0362593	.0396706	.3015583	.0171652	.0181548	.0121406

Elem	Sr4077
Units	ppm
Avg	.0213067
Stddev	.0001777
%RSD	.8338507

#1	.0215112
#2	.0211899
#3	.0212191

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6574.384	110554.0	10976.49	4931.702	8316.233
Stddev	21.200	1894.5	42.78	73.739	26.258
%RSD	.3224643	1.713599	.3897851	1.495202	.3157496

#1	6567.112	110718.4	10945.39	4959.886	8304.808
#2	6598.263	108582.7	11025.28	4848.028	8346.268
#3	6557.777	112360.9	10958.79	4987.191	8297.622

Sample Name: ICB01 Acquired: 8/11/2025 11:37:41 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.000859	-.001015	.0007450	-.002143	-.000577	.0098056	-.002928
Stddev	.000261	.002300	.0004953	.000643	.001562	.0049697	.001207
%RSD	30.37608	226.6849	66.48760	30.02368	270.5752	50.68272	41.23373

#1	-.000739	-.000169	.0003302	-.001418	.001119	.0075260	-.002436
#2	-.001158	-.003618	.0006114	-.002647	-.000896	.0063845	-.002045
#3	-.000680	.000743	.0012934	-.002364	-.001956	.0155061	-.004304

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000218	.0000838	.0073645	.0003693	-.000153	-.000009	-.010506
Stddev	.0000100	.0000193	.0094506	.0001586	.000134	.000322	.009377
%RSD	45.91539	23.04531	128.3268	42.96219	87.63238	3743.484	89.25710

#1	.0000111	.0000861	.0064006	.0004660	-.000308	.000031	-.019481
#2	.0000234	.0001019	-.001567	.0004556	-.000076	.000292	-.011264
#3	.0000309	.0000635	.017260	.0001862	-.000075	-.000348	-.000773

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007200	-.009378	.0001445	.0002595	-.005269	.0046458	-.000555
Stddev	.0002704	.015647	.0002798	.0005851	.003435	.0030621	.000255
%RSD	37.55437	166.8418	193.5963	225.4488	65.18663	65.91128	45.89312

#1	.0006123	-.022459	-.000178	-.000401	-.001325	.0065591	-.000791
#2	.0010276	-.013631	.000320	.000465	-.007603	.0011141	-.000588
#3	.0005200	.007955	.000292	.000714	-.006879	.0062642	-.000285

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0347219	-.005942	-.000331	.0004493	-.000841	.0095883	.0023386
Stddev	.0177728	.000252	.000262	.0002169	.001071	.0029030	.0009306
%RSD	51.18619	4.241205	78.98514	48.28795	127.4059	30.27627	39.79394

#1	.0175928	-.006232	-.000547	.0006256	-.000999	.0071037	.0031528
#2	.0334978	-.005817	-.000407	.0005152	.000301	.0088820	.0025389
#3	.0530752	-.005777	-.000040	.0002070	-.001824	.0127793	.0013242

Sample Name: ICB01 Acquired: 8/11/2025 11:37:41 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0003207	-.003125	.0000540
Stddev	.0013444	.001067	.0000340
%RSD	419.2489	34.14245	63.02483

#1	.0018604	-.003283	.0000602
#2	-.000620	-.004105	.0000173
#3	-.000278	-.001988	.0000845

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6305.986	108241.0	11127.55	4880.328	7840.798
Stddev	28.034	1500.7	247.30	43.208	26.759
%RSD	.4445553	1.386479	2.222400	.8853494	.3412823

#1	6338.342	106663.2	10978.75	4835.269	7871.552
#2	6290.648	109650.5	10990.88	4921.410	7822.826
#3	6288.968	108409.3	11413.02	4884.304	7828.018

Sample Name: CRI01 Acquired: 8/11/2025 11:41:59 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0186210	.0391713	.0120737	.0190165	.0466080	.0890548	.0923093
Stddev	.0010238	.0009304	.0002002	.0015288	.0012126	.0064499	.0006215
%RSD	5.498116	2.375179	1.657741	8.039545	2.601704	7.242573	.6732968

#1	.0174516	.0389128	.0122191	.0172626	.0453266	.0861181	.0921428
#2	.0193554	.0383975	.0121566	.0197197	.0477376	.0964504	.0929971
#3	.0190562	.0402036	.0118454	.0200673	.0467596	.0845958	.0917880

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0058623	.0053304	1.947123	.0094305	.0275844	.0201411	.0855028
Stddev	.0000893	.0000852	.004079	.0001418	.0001180	.0004381	.0044490
%RSD	1.522780	1.599398	.2094986	1.503637	.4277843	2.175127	5.203338

#1	.0057851	.0052336	1.944272	.0092717	.0274507	.0197094	.0806926
#2	.0059600	.0053631	1.951796	.0094753	.0276743	.0201286	.0894700
#3	.0058417	.0053945	1.945302	.0095444	.0276280	.0205853	.0863458

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0200881	2.053550	.0374041	.0096998	1.771066	.0414284	.0374307
Stddev	.0002377	.014366	.0004624	.0000911	.018985	.0007628	.0005106
%RSD	1.183279	.6995626	1.236263	.9386435	1.071929	1.841355	1.364155

#1	.0199237	2.054807	.0369190	.0097278	1.781149	.0414859	.0379787
#2	.0203607	2.038596	.0374532	.0097734	1.782881	.0421608	.0373450
#3	.0199799	2.067245	.0378399	.0095980	1.749167	.0406384	.0369683

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.770271	.0902278	.1926604	.0370013	.0374651	.3298719	.0191628
Stddev	.045823	.0005806	.0020644	.0005561	.0007856	.0053344	.0006297
%RSD	2.588487	.6434975	1.071513	1.502959	2.096931	1.617107	3.285907

#1	1.823178	.0906877	.1902858	.0364946	.0365831	.3355224	.0184393
#2	1.744425	.0904203	.1936675	.0369129	.0380898	.3291703	.0195872
#3	1.743209	.0895754	.1940280	.0375963	.0377225	.3249230	.0194620

Sample Name: CRI01 Acquired: 8/11/2025 11:41:59 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0141480	.0163512	.0188177
Stddev	.0018432	.0018940	.0001259
%RSD	13.02807	11.58322	.6691043

#1	.0145139	.0179627	.0189038
#2	.0121492	.0168259	.0188762
#3	.0157808	.0142650	.0186732

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6336.023	107682.0	10840.01	4864.936	7828.331
Stddev	45.003	682.6	73.66	27.782	52.290
%RSD	.7102643	.6339435	.6795282	.5710614	.6679582

#1	6387.911	106942.9	10875.64	4835.287	7888.287
#2	6307.630	107814.3	10755.31	4890.369	7792.175
#3	6312.529	108288.8	10889.08	4869.150	7804.530

Sample Name: ICSA01 Acquired: 8/11/2025 11:48:28 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0086833	.0039518	-.005208	.0025134	-.006340	235.4451
Stddev	.0018511	.0031259	.002365	.0042920	.000699	4.4182
%RSD	21.31786	79.10107	45.40823	170.7631	11.02102	1.876520

#1	.0065824	.0056092	-.002587	-.002338	-.006643	238.2343
#2	.0100749	.0003462	-.005855	.005816	-.006837	237.7498
#3	.0093925	.0059000	-.007181	.004063	-.005541	230.3511

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0004404	.0014538	.0009567	225.4617	.0566117	.0015741
Stddev	.0012653	.0000675	.0001943	4.3513	.0003892	.0001770
%RSD	287.3364	4.641238	20.31292	1.929970	.6874518	11.24360

#1	.0014516	.0015153	.0010225	228.1608	.0569248	.0017692
#2	.0008479	.0014646	.0007380	227.7824	.0561760	.0015294
#3	-.000978	.0013816	.0011095	220.4420	.0567343	.0014238

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0055895	97.52555	.0082858	236.0467	.0052092	.0015790
Stddev	.0006911	.28504	.0003319	4.6787	.0001020	.0005969
%RSD	12.36425	.2922705	4.005941	1.982091	1.958573	37.79975

#1	.0060911	97.79999	.0086182	239.0431	.0051870	.0021826
#2	.0048012	97.23098	.0082849	238.4415	.0051201	.0015653
#3	.0058762	97.54568	.0079544	230.6554	.0053205	.0009891

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1117752	.0055118	.0027655	.1668830	.0382523	.0000836
Stddev	.0191224	.0010524	.0002348	.0307327	.0062676	.0001079
%RSD	17.10792	19.09364	8.488871	18.41571	16.38484	129.0644

#1	.1338552	.0064238	.0026504	.1892697	.0355721	-.000037
#2	.1005911	.0043603	.0026106	.1318438	.0337705	.000172
#3	.1008793	.0057513	.0030357	.1795356	.0454144	.000116

Sample Name: ICSA01 Acquired: 8/11/2025 11:48:28 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.003163	-.006540	.0169863	.0067388	-.008961	F -.027519
Stddev	.000552	.001389	.0104501	.0025689	.003132	.001872
%RSD	17.44455	21.23939	61.52054	38.12083	34.94600	6.803191

#1	-.003363	-.008141	.0055023	.0062423	-.012001	-.029019
#2	-.002539	-.005826	.0195201	.0095197	-.005746	-.025421
#3	-.003587	-.005654	.0259365	.0044544	-.009136	-.028116

Elem	Sr4077
Units	ppm
Avg	.0004146
Stddev	.0016863
%RSD	406.7195

#1	.0009866
#2	.0017405
#3	-.001483

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5775.361	94130.40	10753.03	4332.812	6525.065
Stddev	47.740	238.77	232.89	18.977	52.860
%RSD	.8266171	.2536640	2.165773	.4379722	.8101067

#1	5750.114	93875.49	10615.75	4310.917	6499.559
#2	5830.423	94348.85	10621.41	4344.503	6585.842
#3	5745.545	94166.84	11021.92	4343.017	6489.795

Sample Name: ICSAB01 Acquired: 8/11/2025 11:52:38 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.1038234	.1037578	.0389540	.0473289	.5822557	242.0071
Stddev	.0015770	.0044308	.0021700	.0071657	.0027255	.1713
%RSD	1.518924	4.270363	5.570606	15.14017	.4680972	.0707789

#1	.1054830	.0988493	.0409618	.0541302	.5852450	241.8728
#2	.1036425	.1049624	.0366519	.0398474	.5816133	242.2000
#3	.1023446	.1074619	.0392483	.0480090	.5799087	241.9486

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4853022	.4887344	.9330525	231.5244	.5298708	.4720535
Stddev	.0030181	.0019407	.0025949	.4892	.0111536	.0014201
%RSD	.6219085	.3970935	.2781038	.2112841	2.104962	.3008334

#1	.4829748	.4874180	.9342873	230.9949	.5376310	.4731950
#2	.4842196	.4878221	.9347994	231.6188	.5170892	.4725024
#3	.4887124	.4909632	.9300708	231.9595	.5348923	.4704633

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4663878	96.09541	.4812301	243.0652	.9385123	.2086518
Stddev	.0030495	1.72402	.0030722	.6394	.0027463	.0036196
%RSD	.6538590	1.794071	.6384051	.2630404	.2926187	1.734754

#1	.4675611	96.86211	.4779233	242.4422	.9413175	.2105092
#2	.4686765	94.12103	.4817714	243.7198	.9383903	.2044806
#3	.4629259	97.30309	.4839957	243.0336	.9358290	.2109656

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0748585	.4799159	.9896781	.0940495	F .0235864	F -.000018
Stddev	.0102969	.0034490	.0180461	.0151730	.0057827	.000218
%RSD	13.75519	.7186581	1.823426	16.13297	24.51711	1187.507

#1	.0727541	.4759858	.9984668	.0784956	.0261178	-.000256
#2	.0860450	.4813235	.9689213	.0948424	.0169696	.000028
#3	.0657763	.4824386	1.001646	.1088104	.0276717	.000173

Sample Name: ICSAB01 Acquired: 8/11/2025 11:52:38 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: ICSAB01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -.002549	F -.007765	F .0098869	F .0102850	F -.004405	F -.032918
Stddev	.000289	.000974	.0131904	.0023084	.006771	.001109
%RSD	11.33338	12.54585	133.4131	22.44423	153.7067	3.368363

#1	-.002532	-.007363	-.005037	.0089561	-.002993	-.032050
#2	-.002269	-.008875	.019983	.0129505	-.011771	-.032538
#3	-.002846	-.007055	.014715	.0089484	.001548	-.034167

Elem	Sr4077
Units	ppm
Avg	F .0041780
Stddev	.0018166
%RSD	43.47983

#1	.0028930
#2	.0062564
#3	.0033848

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5754.285	94739.82	10388.23	4376.071	6502.565
Stddev	27.904	1611.13	36.07	78.733	22.717
%RSD	.4849341	1.700584	.3472013	1.799162	.3493579

#1	5735.723	93489.87	10419.74	4328.975	6491.788
#2	5740.756	96558.09	10348.89	4466.963	6487.242
#3	5786.375	94171.50	10396.05	4332.274	6528.665

Sample Name: ICSADLX20 Acquired: 8/11/2025 11:56:43 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.000267	-.000142	-.000396	.0031638	-.000469	11.85947	-.002371
Stddev	.002567	.000532	.000201	.0024068	.000568	.04902	.000624
%RSD	960.6153	374.5362	50.70933	76.07159	121.0794	.4133465	26.29409

#1	-.002955	-.000633	-.000164	.0050206	-.000936	11.89552	-.001679
#2	-.000004	-.000218	-.000518	.0004447	.000163	11.87925	-.002889
#3	.002158	.000424	-.000506	.0040263	-.000634	11.80365	-.002546

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000719	-.000050	11.80475	.0028202	-.000091	.0011194	4.571838
Stddev	.0000184	.000027	.07035	.0002414	.000138	.0002821	.023523
%RSD	25.54021	53.10838	.5959351	8.559295	152.8196	25.20332	.5145090

#1	.0000894	-.000028	11.83910	.0025556	-.000251	.0013436	4.581309
#2	.0000528	-.000080	11.85133	.0028766	-.000011	.0012121	4.589149
#3	.0000736	-.000043	11.72383	.0030283	-.000011	.0008026	4.545056

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0008997	12.22573	.0005812	.0001625	-.036271	.0033756	-.000430
Stddev	.0005135	.07732	.0003911	.0005310	.008846	.0023599	.000143
%RSD	57.07867	.6324216	67.28621	326.8214	24.38897	69.91072	33.22635

#1	.0011754	12.24989	.0002271	.0004796	-.029896	.0029389	-.000313
#2	.0012166	12.28807	.0010010	.0004583	-.032546	.0012645	-.000388
#3	.0003072	12.13921	.0005156	-.000451	-.046370	.0059233	-.000589

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.076806	-.008185	-.001032	-.000997	-.000490	.0025846	.0018597
Stddev	.038995	.000665	.000196	.000283	.000303	.0022796	.0005271
%RSD	50.77162	8.126180	18.95811	28.41451	61.83070	88.19818	28.34086

#1	-.098431	-.007437	-.000825	-.001303	-.000817	.0017215	.0018853
#2	-.100197	-.008712	-.001057	-.000743	-.000218	.0051697	.0013204
#3	-.031789	-.008405	-.001213	-.000947	-.000435	.0008626	.0023736

Sample Name: ICSADLX20 Acquired: 8/11/2025 11:56:43 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0000875	-.006513	.0001117
Stddev	.0012852	.000832	.0000169
%RSD	1469.290	12.77765	15.11593

#1	.0014668	-.005739	.0001060
#2	-.000128	-.007393	.0001307
#3	-.001076	-.006406	.0000984

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6223.271	105185.9	10697.39	4801.683	7548.187
Stddev	31.246	556.2	114.44	39.704	40.233
%RSD	.5020777	.5287972	1.069816	.8268797	.5330167

#1	6187.391	104840.8	10686.56	4782.086	7503.383
#2	6244.489	104889.3	10588.75	4775.587	7581.226
#3	6237.934	105827.5	10816.86	4847.375	7559.953

Sample Name: ICSABDLX20 Acquired: 8/11/2025 12:00:58 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0038740	.0046707	.0030692	.0029672	.0263850	11.52422	.0187199
Stddev	.0007316	.0007117	.0010235	.0031615	.0024974	.16710	.0007423
%RSD	18.88491	15.23769	33.34844	106.5488	9.465319	1.449998	3.965442

#1	.0045937	.0054924	.0042343	.0065384	.0256130	11.33132	.0191980
#2	.0038971	.0042741	.0026586	.0018369	.0243647	11.61679	.0190968
#3	.0031311	.0042457	.0023148	.0005262	.0291772	11.62455	.0178647

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0239303	.0450059	11.51062	.0261690	.0225814	.0244127	4.581722
Stddev	.0003315	.0000466	.12271	.0004078	.0000306	.0001816	.042494
%RSD	1.385439	.1034388	1.066055	1.558275	.1353935	.7437872	.9274730

#1	.0235575	.0449963	11.37086	.0257552	.0225893	.0243011	4.629758
#2	.0241920	.0449649	11.60068	.0265705	.0226072	.0243148	4.566375
#3	.0240414	.0450565	11.56032	.0261814	.0225476	.0246222	4.549034

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0245884	11.90939	.0458980	.0100632	-.025908	.0250883	.0483618
Stddev	.0008134	.17070	.0003008	.0004111	.008390	.0021815	.0002475
%RSD	3.308087	1.433353	.6552648	4.085124	32.38311	8.695113	.5117161

#1	.0237002	11.71738	.0461828	.0095964	-.016409	.0229144	.0485892
#2	.0247680	12.04398	.0455835	.0102221	-.032304	.0272772	.0480982
#3	.0252970	11.96681	.0459277	.0103712	-.029013	.0250733	.0483979

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.087214	-.008231	-.000717	-.000671	-.000555	.0060276	.0018369
Stddev	.028538	.000537	.000276	.000351	.001445	.0044225	.0017957
%RSD	32.72163	6.528525	38.55348	52.31170	260.2243	73.37090	97.75693

#1	-.080579	-.007793	-.000474	-.000441	.000242	.0076859	.0011631
#2	-.062578	-.008070	-.000659	-.001075	-.002224	.0010156	.0004755
#3	-.118485	-.008831	-.001017	-.000497	.000316	.0093813	.0038719

Sample Name: ICSABDLX20 Acquired: 8/11/2025 12:00:58 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.000771	-.005854	.0000024
Stddev	.002753	.001358	.0000264
%RSD	357.3569	23.19819	1095.858

#1	-.003655	-.006944	-.000027
#2	.001830	-.004333	.000012
#3	-.000487	-.006287	.000023

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6259.504	105805.7	10957.28	4852.402	7626.359
Stddev	17.962	289.1	139.77	23.687	24.652
%RSD	.2869602	.2732809	1.275557	.4881419	.3232450

#1	6252.350	105632.3	11110.55	4835.219	7602.673
#2	6279.941	105645.3	10836.88	4842.566	7651.874
#3	6246.221	106139.5	10924.41	4879.422	7624.529

Sample Name: CCV01 Acquired: 8/11/2025 12:05:10 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.928158	4.757056	4.834878	4.892434	4.993287	9.901355	10.01640
Stddev	.046281	.182801	.049922	.042534	.059618	.019798	.16490
%RSD	.9391158	3.842744	1.032531	.8693753	1.193960	.1999543	1.646347
#1	4.891944	4.585105	4.797271	4.852457	4.942692	9.921316	10.08485
#2	4.912231	4.949055	4.815847	4.887715	4.978157	9.901023	9.82829
#3	4.980300	4.737007	4.891516	4.937131	5.059012	9.881724	10.13606
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2476869	2.418513	24.85438	.9849599	2.437336	1.234742	4.977107
Stddev	.0016489	.022739	.06084	.0036859	.023173	.010694	.011787
%RSD	.6657274	.9402104	.2447669	.3742207	.9507312	.8660716	.2368337
#1	.2494900	2.400873	24.90943	.9884079	2.420395	1.228005	4.963916
#2	.2462557	2.410490	24.86464	.9810750	2.427870	1.229150	4.980798
#3	.2473151	2.444176	24.78907	.9853969	2.463743	1.247073	4.986607
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.500016	24.74657	2.434531	1.241729	24.91216	2.480315	2.488981
Stddev	.002983	.06847	.025106	.004938	.05601	.004752	.007775
%RSD	.1193377	.2766925	1.031263	.3977058	.2248490	.1915953	.3123951
#1	2.503271	24.81495	2.416542	1.247334	24.85671	2.483439	2.497913
#2	2.497411	24.67801	2.423837	1.238016	24.96872	2.482660	2.483724
#3	2.499366	24.74673	2.463214	1.239837	24.91104	2.474846	2.485305
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.48090	4.942209	5.029275	4.886589	4.987667	4.859764	4.828301
Stddev	.06923	.038612	.046828	.042041	.006226	.007906	.039494
%RSD	.2828100	.7812721	.9311137	.8603385	.1248373	.1626792	.8179646
#1	24.40183	4.984251	4.992744	4.852432	4.994004	4.851408	4.798949
#2	24.53065	4.908332	5.013015	4.873794	4.987441	4.860761	4.812751
#3	24.51021	4.934045	5.082066	4.933541	4.981557	4.867125	4.873203

Sample Name: CCV01 Acquired: 8/11/2025 12:05:10 Type: Unk
Method: 6010-200.7 NEW(v90) 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	4.744619	4.962636	4.980104
Stddev	.038973	.002410	.084177
%RSD	.8214078	.0485625	1.690266

#1	4.700963	4.965187	4.966254
#2	4.756990	4.960397	4.903710
#3	4.775905	4.962324	5.070347

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6170.588	103180.8	10672.75	4699.998	7268.504
Stddev	50.576	515.0	93.53	19.844	63.551
%RSD	.8196357	.4990842	.8763636	.4222052	.8743334

#1	6191.231	102894.3	10611.85	4698.673	7303.258
#2	6207.577	103775.3	10780.44	4720.471	7307.099
#3	6112.955	102872.8	10625.96	4680.850	7195.155

Sample Name: CCB01 Acquired: 8/11/2025 12:09:19 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0018401	.0002625	.0026605	.0010134	.0005709	.0232367	.0023921
Stddev	.0003712	.0017876	.0003735	.0032908	.0007503	.0065899	.0007302
%RSD	20.17348	681.1087	14.04010	324.7395	131.4087	28.35976	30.52736

#1	.0022633	.0008329	.0028291	.0030790	-.000188	.0260606	.0030325
#2	.0016874	-.001741	.0029200	-.002782	.001313	.0157055	.0025469
#3	.0015695	.001695	.0022324	.002743	.000588	.0279441	.0015968

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001023	.0009023	.0098801	.0003408	.0008506	.0003692	-.004574
Stddev	.0000299	.0000681	.0062194	.0001332	.0001192	.0000289	.007063
%RSD	29.25649	7.552420	62.94916	39.08727	14.01194	7.819610	154.4290

#1	.0000702	.0008493	.0161423	.0004937	.0007448	.0003569	-.012558
#2	.0001071	.0008783	.0097938	.0002505	.0009797	.0003484	.000858
#3	.0001295	.0009792	.0037043	.0002780	.0008272	.0004021	-.002021

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0011876	.0279049	.0011353	.0007425	-.049521	.0031372	.0005832
Stddev	.0004570	.0063551	.0001719	.0001541	.014447	.0012544	.0002275
%RSD	38.47914	22.77401	15.14530	20.74580	29.17259	39.98484	39.01199

#1	.0016630	.0224834	.0013095	.0007170	-.044812	.0042624	.0003231
#2	.0007516	.0263328	.0011307	.0006029	-.065735	.0033646	.0007452
#3	.0011482	.0348984	.0009657	.0009078	-.038017	.0017847	.0006812

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.062188	-.002400	.0022617	.0022623	.0019088	-.007105	.0063986
Stddev	.036005	.001112	.0002106	.0001126	.0011535	.005108	.0005071
%RSD	57.89778	46.34994	9.310505	4.976769	60.42887	71.88944	7.925363

#1	-.023200	-.001126	.0024670	.0022822	.0018118	-.002462	.0065291
#2	-.094186	-.003178	.0020462	.0021410	.0031077	-.006277	.0058390
#3	-.069178	-.002895	.0022719	.0023635	.0008069	-.012576	.0068277

Sample Name: CCB01 Acquired: 8/11/2025 12:09:19 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0022960	-.003839	.0019340
Stddev	.0010234	.002108	.0001108
%RSD	44.57397	54.91356	5.728034

#1	.0014452	-.002877	.0019802
#2	.0034317	-.002383	.0020143
#3	.0020111	-.006257	.0018076

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6404.927	107739.3	10923.20	4898.650	8113.453
Stddev	59.151	424.5	47.87	20.049	78.925
%RSD	.9235303	.3940508	.4382041	.4092761	.9727664

#1	6434.585	107364.7	10873.61	4876.097	8151.572
#2	6443.382	107652.7	10969.13	4905.400	8166.082
#3	6336.814	108200.4	10926.88	4914.453	8022.704

Sample Name: Q2788-01 Acquired: 8/11/2025 12:13:38 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0772125	-.011944	.5255704	-.000817	-.009715	114.9447	.5393058
Stddev	.0008135	.001828	.0040135	.000929	.000514	.1482	.0009362
%RSD	1.053641	15.30600	.7636424	113.7155	5.289093	.1288985	.1735864

#1	.0780588	-.010351	.5290776	-.001589	-.009815	114.8814	.5396028
#2	.0771425	-.013940	.5211933	.000214	-.009159	115.1140	.5400574
#3	.0764362	-.011541	.5264403	-.001074	-.010172	114.8387	.5382571

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0080867	.0086850	164.3552	.1921783	.1187264	.2827773	229.1339
Stddev	.0000299	.0000253	.1362	.0007139	.0009686	.0018867	.6247
%RSD	.3696853	.2909623	.0828670	.3714959	.8158362	.6672139	.2726362

#1	.0080547	.0086563	164.2516	.1928444	.1197518	.2841116	229.8531
#2	.0080915	.0087040	164.5094	.1922659	.1178268	.2806187	228.7258
#3	.0081139	.0086947	164.3044	.1914246	.1186007	.2836016	228.8229

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.520169	76.06095	.2177717	.0042232	10.02290	.3071293	.9117741
Stddev	.007542	.12672	.0013079	.0001142	.03471	.0030557	.0023417
%RSD	.2142649	.1666006	.6005731	2.704277	.3462591	.9949351	.2568304

#1	3.513463	75.98592	.2192252	.0043121	10.06167	.3090131	.9127871
#2	3.528335	76.20726	.2166900	.0042632	9.99474	.3036036	.9090964
#3	3.518710	75.98968	.2173999	.0040944	10.01228	.3087711	.9134387

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.66962	.1000885	.0044181	.0258841	6.300166	8.461004	8.476946
Stddev	.06392	.0072115	.0002580	.0003726	.018289	.029556	.070237
%RSD	.2591005	7.205099	5.840507	1.439458	.2902980	.3493259	.8285705

#1	24.74326	.1070508	.0047143	.0260220	6.299212	8.480803	8.527849
#2	24.62847	.0926513	.0042423	.0254622	6.318913	8.427030	8.396814
#3	24.63713	.1005634	.0042976	.0261681	6.282372	8.475180	8.506176

Sample Name: Q2788-01 Acquired: 8/11/2025 12:13:38 Type: Unk
Method: 6010-200.7 NEW(v90) 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	9.242133	.2287965	.1049517
Stddev	.055147	.0003875	.0008370
%RSD	.5966882	.1693661	.7975126

#1	9.301368	.2292438	.1042846
#2	9.192277	.2285650	.1058909
#3	9.232755	.2285805	.1046797

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7094.957	118583.4	13058.64	5433.019	6545.233
Stddev	27.318	129.9	57.10	25.156	31.008
%RSD	.3850345	.1095651	.4372396	.4630152	.4737537

#1	7077.753	118492.7	13100.97	5405.747	6515.629
#2	7126.457	118525.1	12993.70	5455.315	6577.477
#3	7080.662	118732.2	13081.25	5437.994	6542.592

Sample Name: Q2783-03 Acquired: 8/11/2025 12:17:41 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.002341	-.000166	.0898738	.0025649	-.001104	.2657106	.1260808
Stddev	.001756	.000786	.0014724	.0010262	.000325	.0091696	.0003453
%RSD	74.99558	473.6163	1.638268	40.00770	29.46330	3.450984	.2738557

#1	-.002378	.000669	.0896029	.0020122	-.001403	.2750241	.1264780
#2	-.004079	-.000275	.0885556	.0037490	-.000757	.2566920	.1258517
#3	-.000567	-.000891	.0914628	.0019337	-.001151	.2654156	.1259129

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000071	.0005955	72.49549	.0018505	.0531745	.0233210	.5147615
Stddev	.000022	.0001094	.32100	.0001758	.0006725	.0004420	.0074259
%RSD	30.76866	18.37215	.4427848	9.498141	1.264806	1.895390	1.442589

#1	-.000094	.0006892	72.85303	.0018601	.0533706	.0228832	.5068882
#2	-.000068	.0004753	72.40137	.0020213	.0524258	.0233127	.5157567
#3	-.000051	.0006221	72.23207	.0016701	.0537273	.0237672	.5216397

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.061736	2.083118	.0733434	.0001184	584.0420	.0021941	.1441291
Stddev	.004277	.017701	.0012672	.0001533	8.4688	.0016032	.0019429
%RSD	.4028513	.8497320	1.727693	129.4782	1.450039	73.06724	1.348027

#1	1.065936	2.079240	.0730232	.0002543	576.3936	.0006862	.1421413
#2	1.061886	2.102436	.0722671	.0001488	582.5889	.0020181	.1442222
#3	1.057386	2.067677	.0747399	-.000048	593.1433	.0038781	.1460237

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.627042	.0140011	.0000310	-.001895	-.002719	1.396022	.0180536
Stddev	.141414	.0009698	.0003242	.000423	.001314	.027708	.0025996
%RSD	1.854107	6.926673	1045.895	22.34474	48.34376	1.984807	14.39947

#1	7.481573	.0128819	-.000135	-.001692	-.001820	1.381446	.0204711
#2	7.635535	.0145296	-.000177	-.002382	-.002109	1.378644	.0153038
#3	7.764017	.0145920	.000405	-.001611	-.004227	1.427976	.0183861

Sample Name: Q2783-03 Acquired: 8/11/2025 12:17:41 Type: Unk
Method: 6010-200.7 NEW(v90) 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	14.81049	-.021581	.0854636
Stddev	.16661	.001412	.0003665
%RSD	1.124936	6.541076	.4287964

#1	14.78125	-.023102	.0858250
#2	14.66043	-.020313	.0854737
#3	14.98978	-.021329	.0850922

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5852.317	97224.54	10979.45	4478.241	6630.555
Stddev	69.160	1032.53	97.45	40.215	75.716
%RSD	1.181747	1.062003	.8875249	.8980162	1.141930

#1	5863.646	98262.04	10903.42	4516.502	6641.267
#2	5915.113	97214.51	10945.61	4481.900	6700.345
#3	5778.193	96197.06	11089.30	4436.321	6550.053

Sample Name: PB169178BL Acquired: 8/11/2025 12:22:00 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.001723	-.001796	-.000403	-.000755	-.001852	.0094256
Stddev	.002435	.001240	.001100	.001638	.001577	.0081787
%RSD	141.2972	69.06514	273.0408	216.8129	85.14380	86.77133

#1	-.003663	-.003190	.000177	.000939	-.002744	.0188268
#2	-.002516	-.001385	-.001671	-.000874	-.000031	.0055016
#3	.001009	-.000813	.000286	-.002330	-.002782	.0039483

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002410	-.000047	-.000105	-.010326	.0002755	-.000269
Stddev	.001014	.000028	.000031	.007448	.0001628	.000047
%RSD	42.08003	59.73821	29.20005	72.13247	59.08528	17.37275

#1	-.002602	-.000067	-.000072	-.018923	.0004572	-.000269
#2	-.003314	-.000015	-.000109	-.005816	.0001429	-.000222
#3	-.001314	-.000058	-.000133	-.006238	.0002264	-.000316

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000888	-.013340	.0000746	.0049245	.0000415	.0004670
Stddev	.0000478	.001562	.0002110	.0077242	.0001701	.0003391
%RSD	53.90941	11.70863	282.8507	156.8532	409.9179	72.61021

#1	.0000859	-.011972	-.000133	.0000717	.0000628	.0007041
#2	.0001379	-.013006	.000068	.0008700	-.000138	.0006182
#3	.0000424	-.015041	.000289	.0138317	.000200	.0000786

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4561682	.0019344	-.001442	.4184479	-.007784	-.000723
Stddev	.0435193	.0008656	.000050	.0181734	.000206	.000031
%RSD	9.540190	44.74759	3.433922	4.343040	2.649234	4.275452

#1	.4778466	.0016111	-.001474	.4242639	-.007571	-.000718
#2	.4845905	.0029150	-.001466	.4330014	-.007983	-.000695
#3	.4060675	.0012769	-.001385	.3980785	-.007798	-.000756

Sample Name: PB169178BL Acquired: 8/11/2025 12:22:00 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0003474	-.000373	-.001988	.0004155	-.000218	F .0207894
Stddev	.0007986	.000484	.001079	.0008356	.003270	.0012068
%RSD	229.8995	129.7552	54.29649	201.1115	1500.635	5.805000

#1	.0012095	-.000927	-.003190	.0013181	-.000005	.0214029
#2	-.000367	-.000158	-.001670	-.000331	-.003590	.0215662
#3	.000200	-.000034	-.001103	.000260	.002941	.0193991

Elem	Sr4077
Units	ppm
Avg	-.000198
Stddev	.000019
%RSD	9.574176

#1	-.000203
#2	-.000214
#3	-.000177

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6348.711	107806.7	10819.76	4809.672	8062.639
Stddev	101.520	346.0	248.80	18.249	126.808
%RSD	1.599064	.3209588	2.299470	.3794163	1.572780

#1	6231.577	107420.6	11002.65	4794.882	7916.214
#2	6411.275	107910.6	10920.18	4804.068	8136.044
#3	6403.281	108088.8	10536.45	4830.065	8135.659

Sample Name: PB168178BS Acquired: 8/11/2025 12:26:19 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.7736904	1.816035	.9520514	1.940830	.7880700	1.937404
Stddev	.0072053	.087945	.0087229	.021064	.0060070	.016816
%RSD	.9312922	4.842684	.9162186	1.085284	.7622383	.8679574

#1	.7707614	1.861775	.9485693	1.941748	.7821619	1.948671
#2	.7684109	1.714647	.9456074	1.919323	.7878770	1.945467
#3	.7818990	1.871684	.9619775	1.961420	.7941712	1.918076

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1899481	.1998241	.1910762	1.008730	.3954323	.1951180
Stddev	.0017243	.0013733	.0016950	.009799	.0051264	.0017377
%RSD	.9077602	.6872407	.8870870	.9713857	1.296400	.8906124

#1	.1906480	.1989960	.1903976	1.019799	.3926898	.1941995
#2	.1912124	.2014093	.1898256	1.001165	.3922606	.1940323
#3	.1879840	.1990671	.1930053	1.005226	.4013466	.1971223

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3059362	2.899528	.1999450	1.978005	.4917400	.0740424
Stddev	.0028423	.031753	.0024138	.016023	.0039201	.0016606
%RSD	.9290379	1.095093	1.207235	.8100426	.7971860	2.242736

#1	.3043816	2.887879	.2003689	1.961148	.4897188	.0735782
#2	.3042104	2.875246	.2021188	1.993038	.4892431	.0726634
#3	.3092167	2.935460	.1973473	1.979830	.4962582	.0758858

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.892541	.2943599	.1992904	9.374801	.2887187	.3963205
Stddev	.026018	.0014063	.0031141	.158270	.0016987	.0034013
%RSD	.8994947	.4777482	1.562575	1.688247	.5883609	.8582169

#1	2.878367	.2927389	.1989004	9.391935	.2879723	.3961346
#2	2.876688	.2952538	.1963898	9.208661	.2906628	.3930160
#3	2.922569	.2950870	.2025811	9.523807	.2875210	.3998110

Sample Name: PB168178BS Acquired: 8/11/2025 12:26:19 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.6723338	.1916843	.8245238	5.731233	F -.000334	.2070092
Stddev	.0083961	.0007384	.0138882	.049568	.001127	.0012536
%RSD	1.248796	.3852212	1.684386	.8648817	337.5351	.6055862

#1	.6707716	.1925323	.8132254	5.705737	.000833	.2060676
#2	.6648286	.1911832	.8203168	5.699602	-.001417	.2084321
#3	.6814013	.1913374	.8400290	5.788359	-.000417	.2065278

Elem	Sr4077
Units	ppm
Avg	.1919356
Stddev	.0011221
%RSD	.5846125

#1	.1924616
#2	.1926980
#3	.1906471

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6200.830	106175.5	10865.51	4856.195	7501.764
Stddev	29.372	1176.9	63.97	65.168	34.550
%RSD	.4736829	1.108479	.5887660	1.341951	.4605642

#1	6206.681	106430.8	10854.19	4863.691	7518.240
#2	6226.836	107203.8	10807.96	4917.291	7524.993
#3	6168.972	104891.8	10934.39	4787.604	7462.060

Sample Name: PB169181BS Acquired: 8/11/2025 12:34:38 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.7453643	1.834684	.9243988	1.878900	.7757527	1.917954
Stddev	.0092875	.042892	.0094689	.023985	.0124597	.044720
%RSD	1.246034	2.337854	1.024332	1.276555	1.606149	2.331668

#1	.7434320	1.872647	.9211319	1.872064	.7697612	1.897473
#2	.7371950	1.788155	.9169959	1.859075	.7674204	1.969247
#3	.7554660	1.843251	.9350686	1.905561	.7900763	1.887142

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1872358	.1967741	.1842730	.9782091	.3839863	.1891077
Stddev	.0046985	.0061470	.0021757	.0280683	.0060573	.0020166
%RSD	2.509382	3.123903	1.180674	2.869359	1.577465	1.066396

#1	.1850959	.1928031	.1835043	.9663609	.3852251	.1881836
#2	.1926233	.2038546	.1825861	1.010259	.3893285	.1877186
#3	.1839882	.1936645	.1867287	.958008	.3774055	.1914208

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2968744	2.819891	.1977369	1.942900	.4752181	.0720850
Stddev	.0039766	.035985	.0050955	.049749	.0063421	.0007143
%RSD	1.339481	1.276108	2.576909	2.560555	1.334556	.9908434

#1	.2947548	2.841279	.1949115	1.926055	.4723713	.0717764
#2	.2944067	2.840049	.2036191	1.998884	.4707982	.0729017
#3	.3014618	2.778346	.1946800	1.903760	.4824847	.0715770

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.712035	.2922918	.1943137	9.036736	.2858239	.3927167
Stddev	.021864	.0060039	.0016585	.053877	.0091979	.0053535
%RSD	.8061710	2.054077	.8535313	.5961973	3.218032	1.363196

#1	2.717578	.2877356	.1942705	9.078777	.2796741	.3905410
#2	2.730593	.2990951	.1959934	9.055428	.2963979	.3887936
#3	2.687933	.2900448	.1926772	8.976002	.2813997	.3988155

Sample Name: PB169181BS Acquired: 8/11/2025 12:34:38 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.6584724	.1901097	.8076616	5.520806	F -.002028	.1962689
Stddev	.0091956	.0046894	.0111606	.067101	.001819	.0040475
%RSD	1.396510	2.466668	1.381836	1.215413	89.68468	2.062235

#1	.6553945	.1865586	.8204970	5.504258	-.002783	.1961342
#2	.6512105	.1954254	.8022425	5.463527	-.003347	.2003820
#3	.6688121	.1883451	.8002453	5.594632	.000047	.1922904

Elem	Sr4077
Units	ppm
Avg	.1890389
Stddev	.0039629
%RSD	2.096345

#1	.1870063
#2	.1936057
#3	.1865048

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6374.200	107905.8	10864.40	4896.577	7796.947
Stddev	51.916	1260.7	279.57	58.518	61.539
%RSD	.8144643	1.168348	2.573302	1.195070	.7892726

#1	6404.328	107361.9	11036.25	4858.786	7826.644
#2	6404.020	107008.3	10541.81	4866.962	7838.006
#3	6314.254	109347.1	11015.14	4963.982	7726.191

Sample Name: PB169181BL Acquired: 8/11/2025 12:38:38 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0004217	.0001556	.0014358	.0006255	.0009593	.0154192	-.000354
Stddev	.0019863	.0013788	.0012052	.0004857	.0003977	.0064049	.001187
%RSD	471.0387	886.0580	83.94589	77.64409	41.45287	41.53873	335.5390

#1	-.001831	.0017470	.0018637	.0007351	.0013749	.0108965	-.001652
#2	.001172	-.000598	.0023687	.0000944	.0005823	.0227483	-.000085
#3	.001923	-.000682	.0000749	.0010470	.0009208	.0126127	.000676

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000287	.0003148	.0092447	.0002551	.0001714	.0002130	-.006093
Stddev	.0000669	.0000344	.0035419	.0001813	.0000659	.0002512	.001072
%RSD	233.3399	10.93758	38.31338	71.05613	38.44939	117.9232	17.59162

#1	-.000002	.0003538	.0129372	.0000881	.0001999	.0003376	-.006424
#2	.000105	.0002884	.0089215	.0004479	.0002183	.0003776	-.004895
#3	-.000017	.0003023	.0058754	.0002294	.0000961	-.000076	-.006961

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007659	.0251313	.0007316	.0010516	-.010897	.0033587	-.000312
Stddev	.0004654	.0122094	.0002801	.0002846	.015515	.0017442	.000058
%RSD	60.77304	48.58236	38.29023	27.06843	142.3750	51.93271	18.55341

#1	.0003551	.0368486	.0007766	.0007230	-.000616	.0036204	-.000300
#2	.0006710	.0124831	.0009864	.0012225	-.003332	.0014984	-.000261
#3	.0012714	.0260622	.0004317	.0012093	-.028743	.0049573	-.000375

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.058417	-.007521	.0001517	.0011340	.0006571	-.005299	.0009042
Stddev	.026463	.000262	.0001065	.0002084	.0014772	.004087	.0012508
%RSD	45.30028	3.486884	70.22489	18.37369	224.8114	77.13583	138.3305

#1	-.027861	-.007307	.0000287	.0009508	.0000150	-.009675	-.000440
#2	-.073525	-.007814	.0002104	.0013607	.0023466	-.001581	.001119
#3	-.073865	-.007442	.0002160	.0010906	-.000390	-.004640	.002033

Sample Name: PB169181BL Acquired: 8/11/2025 12:38:38 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0002132	-.002989	.0007381
Stddev	.0017640	.001223	.0000981
%RSD	827.5571	40.93616	13.28888

#1	-.000667	-.004360	.0007900
#2	.002244	-.002008	.0007994
#3	-.000937	-.002598	.0006250

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6197.790	107476.9	10698.07	4881.771	7592.283
Stddev	7.566	367.6	73.44	12.559	1.653
%RSD	.1220807	.3420195	.6865118	.2572589	.0217770

#1	6189.053	107499.1	10768.33	4868.657	7593.323
#2	6202.183	107832.8	10621.81	4893.689	7593.149
#3	6202.133	107098.7	10704.08	4882.968	7590.377

Sample Name: PB169149TB Acquired: 8/11/2025 12:42:57 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.002354	-.001486	.0002314	.0017527	.0003171	.0061815	-.002520
Stddev	.002327	.000898	.0008958	.0011397	.0005506	.0081494	.000744
%RSD	98.84919	60.38937	387.1773	65.02603	173.6589	131.8360	29.51217

#1	-.004098	-.002117	.0000679	.0030502	.0008843	.0012294	-.002960
#2	.000288	-.001883	-.000571	.0009131	.0002822	.0017278	-.001661
#3	-.003254	-.000459	.001198	.0012950	-.000215	.0155872	-.002937

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000168	-.000151	.1391298	.0011271	-.000289	.0004816	.0166606
Stddev	.000030	.000068	.0043964	.0003411	.000063	.0003002	.0001558
%RSD	17.79672	44.97249	3.159914	30.26066	21.72358	62.33123	.9349487

#1	-.000137	-.000193	.1340610	.0013013	-.000288	.0008251	.0166419
#2	-.000197	-.000188	.1419055	.0007341	-.000227	.0002694	.0165150
#3	-.000169	-.000073	.1414230	.0013459	-.000352	.0003504	.0168248

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0140592	-.010848	.0016376	.0000657	595.5273	.0013461	.0022175
Stddev	.0007885	.007804	.0000589	.0005716	5.8014	.0004450	.0002526
%RSD	5.608219	71.93598	3.596125	870.1420	.9741599	33.05800	11.39118

#1	.0131566	-.002907	.0016536	-.000493	601.6355	.0018535	.0022891
#2	.0144072	-.018507	.0016868	.000040	594.8552	.0011625	.0024265
#3	.0146138	-.011129	.0015724	.000650	590.0913	.0010222	.0019368

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0818154	-.009958	-.000508	.0012657	-.000020	.0202663	.0061735
Stddev	.0067491	.000585	.000013	.0007422	.001187	.0118975	.0028484
%RSD	8.249199	5.873650	2.584798	58.63573	6018.330	58.70607	46.13914

#1	.0823293	-.009347	-.000521	.0005119	.001298	.0065286	.0085298
#2	.0748240	-.010513	-.000495	.0012895	-.000353	.0272289	.0030081
#3	.0882929	-.010014	-.000508	.0019957	-.001004	.0270414	.0069825

Sample Name: PB169149TB Acquired: 8/11/2025 12:42:57 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.2186094	-.010381	.0002376
Stddev	.0047572	.001081	.0000678
%RSD	2.176135	10.41751	28.53974

#1	.2180868	-.011134	.0002085
#2	.2141350	-.010867	.0003151
#3	.2236064	-.009141	.0001892

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5975.268	96003.50	10621.56	4443.013	6848.527
Stddev	101.741	1155.01	207.83	40.768	112.243
%RSD	1.702700	1.203092	1.956723	.9175813	1.638930

#1	5945.876	94680.54	10753.33	4400.143	6816.947
#2	6088.470	96518.78	10381.98	4447.606	6973.176
#3	5891.459	96811.18	10729.39	4481.290	6755.457

Sample Name: Q2779-04 Acquired: 8/11/2025 12:47:24 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.000049	-.002438	.9119426	-.000003	-.000141	.0742892	.5891501
Stddev	.002565	.001832	.0171145	.000585	.000816	.0061785	.0057744
%RSD	5194.857	75.15898	1.876711	22359.80	577.1900	8.316786	.9801176

#1	-.002440	-.000344	.8945181	-.000349	-.000695	.0686032	.5957073
#2	.002660	-.003223	.9125805	-.000332	-.000525	.0734004	.5869179
#3	-.000368	-.003747	.9287293	.000673	.000796	.0808639	.5848250

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001023	.0006475	206.6709	.0013882	.0107447	.0034894	17.58624
Stddev	.0000430	.0000497	2.4874	.0003796	.0003435	.0005656	.17351
%RSD	42.03068	7.670974	1.203553	27.34913	3.196454	16.20924	.9866364

#1	.0001519	.0006157	209.5068	.0009554	.0103634	.0030029	17.48055
#2	.0000750	.0006221	205.6468	.0016653	.0108406	.0033554	17.78649
#3	.0000800	.0007047	204.8590	.0015437	.0110299	.0041100	17.49168

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.470326	6.873485	.0875201	.0010111	626.1919	.0034992	.7412857
Stddev	.015973	.090092	.0021123	.0000851	10.1717	.0003683	.0092557
%RSD	1.086380	1.310718	2.413531	8.420881	1.624369	10.52572	1.248595

#1	1.488572	6.968632	.0854033	.0010549	618.3404	.0032739	.7387632
#2	1.463540	6.862336	.0875292	.0009130	637.6826	.0032995	.7515411
#3	1.458866	6.789486	.0896279	.0010654	622.5529	.0039243	.7335528

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.530921	.0473013	.0002742	-.002514	-.006638	1.038796	.0152851
Stddev	.001810	.0008645	.0000819	.000348	.001765	.014024	.0015032
%RSD	.0714987	1.827584	29.87270	13.85522	26.58738	1.350068	9.834226

#1	2.530368	.0476220	.0003440	-.002261	-.006305	1.030249	.0139306
#2	2.532942	.0479596	.0002945	-.002369	-.008545	1.054982	.0169024
#3	2.529452	.0463223	.0001840	-.002911	-.005063	1.031158	.0150224

Sample Name: Q2779-04 Acquired: 8/11/2025 12:47:24 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	2.733106	-.039157	.6935800
Stddev	.064766	.001096	.0058563
%RSD	2.369668	2.799132	.8443595

#1	2.675949	-.040302	.7003356
#2	2.719921	-.039050	.6899421
#3	2.803450	-.038118	.6904623

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5747.914	96706.76	11100.84	4362.402	6479.977
Stddev	90.480	948.57	191.77	43.727	101.082
%RSD	1.574141	.9808702	1.727536	1.002368	1.559909

#1	5824.834	96737.56	10889.22	4354.329	6568.873
#2	5770.684	95743.17	11150.15	4323.275	6501.032
#3	5648.224	97639.56	11263.13	4409.604	6370.026

Sample Name: Q2779-08 Acquired: 8/11/2025 12:51:43 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.001599	.0004230	.2015059	.0002889	.0061048	.1157089	.5178514
Stddev	.001328	.0007232	.0011444	.0006672	.0021421	.0052221	.0024840
%RSD	83.06343	170.9533	.5679325	230.9496	35.08853	4.513156	.4796765

#1	-.000326	.0000244	.2028112	.0008636	.0040217	.1175304	.5191587
#2	-.002976	-.000013	.2010320	.0004458	.0083014	.1197763	.5149867
#3	-.001495	.001258	.2006746	-.000443	.0059913	.1098200	.5194088

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000207	.0013065	204.5790	.0002161	.0063107	.0067317	.1067627
Stddev	.000019	.0000834	1.2575	.0000776	.0001320	.0004662	.0087677
%RSD	9.379213	6.384159	.6146809	35.92116	2.090858	6.925248	8.212368

#1	-.000186	.0013174	204.8163	.0002393	.0062615	.0072697	.1047081
#2	-.000211	.0012182	203.2197	.0001295	.0062103	.0064801	.0992047
#3	-.000224	.0013839	205.7009	.0002795	.0064601	.0064454	.1163753

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.508590	5.963094	.0137279	-.000310	570.4494	.0017896	.5641805
Stddev	.006062	.033559	.0003627	.000308	14.5792	.0020507	.0134804
%RSD	.4018549	.5627746	2.642013	99.50571	2.555748	114.5942	2.389370

#1	1.514554	5.967131	.0136086	-.000378	554.8213	-.000412	.5504997
#2	1.502434	5.927699	.0134400	-.000578	583.6834	.003645	.5774510
#3	1.508783	5.994451	.0141353	.000027	572.8436	.002136	.5645909

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.131885	.0356145	.0005563	-.001228	-.007472	1.494573	.0152095
Stddev	.074728	.0002697	.0002152	.000295	.000713	.017929	.0025482
%RSD	1.218675	.7574005	38.68886	24.06198	9.536530	1.199635	16.75385

#1	6.063145	.0358411	.0005546	-.001437	-.007809	1.477326	.0163092
#2	6.211425	.0353161	.0007724	-.001356	-.007954	1.513114	.0170232
#3	6.121085	.0356862	.0003419	-.000890	-.006653	1.493278	.0122962

Sample Name: Q2779-08 Acquired: 8/11/2025 12:51:43 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	2.305636	-.035890	.7500630
Stddev	.015326	.000298	.0030847
%RSD	.6647225	.8304517	.4112619

#1	2.319275	-.036196	.7529313
#2	2.289050	-.035876	.7467999
#3	2.308582	-.035600	.7504577

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5820.081	98921.38	11283.92	4458.253	6590.178
Stddev	55.575	2137.35	42.52	91.931	55.151
%RSD	.9548901	2.160659	.3768384	2.062035	.8368662

#1	5757.039	101071.5	11329.69	4548.944	6527.079
#2	5841.211	96797.0	11276.41	4365.130	6614.276
#3	5861.992	98895.7	11245.65	4460.684	6629.179

Sample Name: Q2791-01 Acquired: 8/11/2025 12:56:05 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.002889	-.003672	.0189297	.0051595	.0029292	.5437805	.1601140
Stddev	.002063	.000442	.0011653	.0010603	.0010054	.0127351	.0032221
%RSD	71.43050	12.03972	6.156043	20.55113	34.32365	2.341951	2.012399

#1	-.005267	-.004160	.0178617	.0063817	.0017687	.5290802	.1581339
#2	-.001574	-.003298	.0201726	.0046112	.0035358	.5508009	.1583761
#3	-.001826	-.003559	.0187549	.0044856	.0034831	.5514604	.1638320

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000009	.0002633	10.61960	.0026701	.0026631	.0135234	9.887130
Stddev	.000028	.0000127	.05283	.0001013	.0000955	.0001269	.197792
%RSD	319.9258	4.810920	.4974526	3.793190	3.584024	.9382344	2.000497

#1	.000012	.0002524	10.56871	.0026547	.0025793	.0135341	10.03011
#2	-.000040	.0002772	10.61593	.0025773	.0026429	.0136447	9.66140
#3	.000002	.0002603	10.67417	.0027781	.0027670	.0133916	9.96987

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1483444	.5921573	.0183312	.0010137	311.5387	.0029416	.9578801
Stddev	.0016708	.0134218	.0001919	.0004202	7.7779	.0019530	.0237320
%RSD	1.126293	2.266591	1.046897	41.45058	2.496598	66.39182	2.477553

#1	.1474196	.5975314	.0181097	.0013043	316.0206	.0016528	.9747542
#2	.1473405	.5768812	.0184380	.0005319	302.5576	.0051885	.9307440
#3	.1502731	.6020593	.0184459	.0012050	316.0380	.0019834	.9681421

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6161770	.0333720	.0004541	.0003484	.0014395	1.003314	1.895716
Stddev	.0235938	.0012498	.0007141	.0004989	.0003849	.006594	.004027
%RSD	3.829054	3.745060	157.2568	143.1991	26.74027	.6572524	.2124153

#1	.6298136	.0331339	.0001624	.0006382	.0013351	1.010385	1.892783
#2	.5889332	.0322583	.0012679	-.000228	.0011175	.997333	1.900307
#3	.6297841	.0347237	-.000068	.000635	.0018658	1.002223	1.894057

Sample Name: Q2791-01 Acquired: 8/11/2025 12:56:05 Type: Unk
Method: 6010-200.7 NEW(v90) 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	1.574947	-.010794	.0447702
Stddev	.007480	.000660	.0004537
%RSD	.4749499	6.112669	1.013430

#1	1.566959	-.010836	.0443172
#2	1.581786	-.011432	.0447688
#3	1.576097	-.010115	.0452246

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6209.574	106061.4	11883.02	4752.723	7281.214
Stddev	38.040	1898.9	30.22	90.789	38.089
%RSD	.6125988	1.790413	.2543307	1.910248	.5231178

#1	6248.740	104315.9	11881.01	4665.670	7320.111
#2	6172.771	108083.5	11914.19	4846.835	7243.987
#3	6207.211	105784.7	11853.85	4745.663	7279.544

Sample Name: CCV02 Acquired: 8/11/2025 13:00:27 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.888747	4.640480	4.679610	4.890903	4.962140	9.660675	9.688420
Stddev	.011412	.106996	.022264	.013882	.028082	.052722	.022845
%RSD	.2334264	2.305700	.4757717	.2838316	.5659319	.5457362	.2357982

#1	4.894237	4.719193	4.680190	4.902988	4.967673	9.619325	9.713249
#2	4.875628	4.683594	4.657062	4.875741	4.931703	9.720044	9.683723
#3	4.896376	4.518654	4.701579	4.893981	4.987043	9.642657	9.668289

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2309878	2.342731	24.10387	.9608509	2.367190	1.208119	5.028487
Stddev	.0021756	.010392	.16077	.0110232	.010928	.006418	.043639
%RSD	.9418679	.4435706	.6669741	1.147228	.4616494	.5312578	.8678435

#1	.2310531	2.339489	23.94370	.9702912	2.363818	1.208075	5.069237
#2	.2331301	2.334347	24.26523	.9635247	2.358345	1.201723	5.033784
#3	.2287804	2.354357	24.10266	.9487368	2.379407	1.214560	4.982442

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.416985	23.72897	2.364871	1.216422	25.16943	2.429214	2.462285
Stddev	.015022	.21041	.010951	.012144	.18173	.006208	.029026
%RSD	.6215013	.8867291	.4630509	.9983447	.7220451	.2555446	1.178823

#1	2.405641	23.53634	2.362693	1.228773	25.36946	2.424860	2.490387
#2	2.434021	23.95351	2.355173	1.215996	25.12433	2.436322	2.464051
#3	2.411294	23.69707	2.376746	1.204496	25.01448	2.426459	2.432416

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.38435	4.594485	4.953706	4.751109	4.873164	4.969848	4.609438
Stddev	.14161	.039914	.024109	.016023	.026167	.017298	.031101
%RSD	.5578721	.8687314	.4866867	.3372545	.5369659	.3480595	.6747149

#1	25.53128	4.586785	4.965946	4.757436	4.849219	4.985241	4.612037
#2	25.37302	4.637688	4.925932	4.732888	4.901096	4.951128	4.577119
#3	25.24874	4.558982	4.969240	4.763002	4.869176	4.973175	4.639157

Sample Name: CCV02 Acquired: 8/11/2025 13:00:27 Type: Unk
Method: 6010-200.7 NEW(v90) 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	4.663063	4.862207	4.948578
Stddev	.008529	.026247	.033809
%RSD	.1829042	.5398118	.6832060

#1	4.660792	4.839754	4.924682
#2	4.655899	4.891063	4.987261
#3	4.672498	4.855804	4.933790

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6274.866	106409.3	11544.83	4759.580	7426.997
Stddev	30.711	850.4	111.03	50.254	25.154
%RSD	.4894221	.7991891	.9617087	1.055849	.3386838

#1	6249.904	105752.4	11598.72	4714.604	7411.974
#2	6309.160	106105.6	11417.14	4750.313	7456.037
#3	6265.534	107369.9	11618.63	4813.822	7412.982

Sample Name: CCB02 Acquired: 8/11/2025 13:04:37 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0019436	-.000821	.0023513	.0043587	.0008108	.0117663
Stddev	.0015011	.001032	.0017064	.0016775	.0004995	.0095739
%RSD	77.23435	125.6712	72.57526	38.48684	61.61202	81.36703

#1	.0007302	-.000071	.0004105	.0026975	.0011070	.0007467
#2	.0014783	-.001998	.0036166	.0043265	.0010914	.0165111
#3	.0036223	-.000394	.0030266	.0060520	.0002340	.0180411

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000865	.0000924	.0008928	.0135940	.0002545	.0007164
Stddev	.001006	.0000491	.0000543	.0155889	.0002160	.0001654
%RSD	116.3433	53.14297	6.080284	114.6749	84.90012	23.08811

#1	-.002019	.0000409	.0008336	.0196448	.0002000	.0005804
#2	-.000407	.0000975	.0009402	-.004113	.0000709	.0009005
#3	-.000169	.0001387	.0009047	.025250	.0004925	.0006683

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005595	.0277326	.0032394	.0254840	.0011425	.0010710
Stddev	.0001513	.0098088	.0003842	.0072308	.0000347	.0001440
%RSD	27.04721	35.36914	11.86111	28.37398	3.034816	13.44535

#1	.0005583	.0168721	.0036801	.0243462	.0011430	.0009086
#2	.0007115	.0303793	.0029749	.0332163	.0011769	.0011833
#3	.0004088	.0359466	.0030631	.0188895	.0011075	.0011209

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9006996	.0030420	.0003084	.8820683	-.003547	.0025031
Stddev	.0235759	.0009922	.0002268	.0345675	.000507	.0003316
%RSD	2.617511	32.61683	73.54599	3.918919	14.29276	13.24548

#1	.9040993	.0040600	.0005702	.8910594	-.003647	.0027993
#2	.9223912	.0020777	.0001728	.9112518	-.002997	.0025651
#3	.8756085	.0029884	.0001821	.8438935	-.003996	.0021450

Sample Name: CCB02 Acquired: 8/11/2025 13:04:37 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0019428	.0020489	.0048524	.0050577	.0019471	F .0250682
Stddev	.0000810	.0015961	.0056378	.0013935	.0037474	.0015764
%RSD	4.166884	77.89758	116.1845	27.55118	192.4598	6.288453

#1	.0020231	.0038299	.0113485	.0035075	.0018970	.0268761
#2	.0019440	.0007478	.0012370	.0054595	.0057192	.0243480
#3	.0018612	.0015691	.0019717	.0062062	-.001775	.0239805

Elem	Sr4077
Units	ppm
Avg	.0020466
Stddev	.0000639
%RSD	3.120683

#1	.0021170
#2	.0019923
#3	.0020305

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6468.798	110403.5	11438.12	4894.879	8158.104
Stddev	41.545	747.3	53.11	37.499	58.159
%RSD	.6422434	.6768743	.4643046	.7660828	.7129018

#1	6468.332	109584.4	11428.12	4855.770	8159.766
#2	6510.574	110577.8	11390.73	4898.341	8215.415
#3	6427.487	111048.2	11495.52	4930.527	8099.132

Sample Name: Q2798-04 Acquired: 8/11/2025 13:08:55 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0000168	-.002086	.0117949	.0011973	-.003686	.1601498	.5384073
Stddev	.0012583	.000903	.0012082	.0016024	.001087	.0046875	.0046767
%RSD	7474.496	43.28358	10.24365	133.8334	29.47878	2.926958	.8686199
#1	-.001064	-.001414	.0113807	.0021814	-.002705	.1571406	.5402347
#2	.001398	-.001732	.0108483	.0020622	-.003499	.1577580	.5418944
#3	-.000283	-.003112	.0131558	-.000652	-.004854	.1655507	.5330928
Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000149	.0003006	88.61029	.0022022	.0157644	.0070658	19.12517
Stddev	.000043	.0000287	.51611	.0003378	.0001786	.0002272	.26005
%RSD	28.70463	9.540472	.5824537	15.34081	1.133151	3.215984	1.359720
#1	-.000177	.0003332	88.99651	.0018363	.0157497	.0071107	18.86146
#2	-.000100	.0002894	88.81024	.0022682	.0155936	.0068195	19.13264
#3	-.000169	.0002793	88.02411	.0025022	.0159500	.0072672	19.38140
Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.591489	6.653927	.0146220	.0014704	529.1911	.0004455	.1320596
Stddev	.045599	.057177	.0005767	.0004884	4.8057	.0033927	.0015747
%RSD	.5307416	.8592932	3.944338	33.21617	.9081185	761.5399	1.192424
#1	8.617566	6.714662	.0142686	.0020165	526.7390	-.002129	.1302754
#2	8.618064	6.645980	.0143099	.0013190	526.1061	.004290	.1332552
#3	8.538837	6.601140	.0152875	.0010756	534.7282	-.000825	.1326484
Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.913253	.0468417	-.000559	-.001879	-.002505	1.589171	.0147869
Stddev	.043975	.0008608	.000036	.000500	.000934	.026036	.0024009
%RSD	2.298434	1.837612	6.483508	26.62142	37.28044	1.638335	16.23670
#1	1.864241	.0460923	-.000522	-.001636	-.001459	1.571071	.0171891
#2	1.926264	.0466509	-.000561	-.001547	-.002800	1.577433	.0147841
#3	1.949255	.0477819	-.000594	-.002455	-.003255	1.619009	.0123873

Sample Name: Q2798-04 Acquired: 8/11/2025 13:08:55 Type: Unk
Method: 6010-200.7 NEW(v90) 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	1.158858	-.022284	.2186251
Stddev	.023246	.000434	.0015278
%RSD	2.005964	1.949767	.6988226

#1	1.156506	-.021826	.2196950
#2	1.136877	-.022691	.2193049
#3	1.183191	-.022335	.2168753

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5979.603	101064.0	11559.26	4580.825	6697.634
Stddev	88.402	999.5	109.98	45.182	114.896
%RSD	1.478392	.9889652	.9514635	.9863204	1.715465

#1	5959.761	102127.3	11475.17	4630.511	6669.399
#2	6076.240	100921.1	11518.88	4569.762	6824.015
#3	5902.809	100143.7	11683.72	4542.203	6599.488

Sample Name: Q2800-02 Acquired: 8/11/2025 13:13:17 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.001952	-.001267	.0062025	.0020668	-.000010	.0959443	.2974954
Stddev	.000904	.001062	.0011272	.0007260	.000762	.0075232	.0059631
%RSD	46.31929	83.84403	18.17317	35.12620	7414.802	7.841173	2.004441

#1	-.002908	-.000421	.0065124	.0027167	.000583	.0902771	.2953188
#2	-.001835	-.000921	.0071423	.0012833	-.000869	.1044796	.3042411
#3	-.001112	-.002459	.0049528	.0022004	.000255	.0930761	.2929264

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000308	.0004679	21.62371	.0003474	-.000228	.0116038	.0460078
Stddev	.0000312	.0000536	.36171	.0000953	.000289	.0003441	.0043768
%RSD	101.2642	11.46281	1.672757	27.42594	126.6594	2.965771	9.513169

#1	.0000454	.0004234	21.51301	.0004574	-.000284	.0118523	.0411513
#2	.0000522	.0004528	22.02784	.0002926	-.000484	.0112110	.0496472
#3	-.000005	.0005274	21.33029	.0002921	.000085	.0117480	.0472249

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1238501	1.617521	.0025088	.0003467	279.2261	.0032254	.1669780
Stddev	.0023534	.021962	.0001570	.0004809	3.3332	.0011047	.0006603
%RSD	1.900202	1.357785	6.256340	138.6897	1.193733	34.24854	.3954267

#1	.1241180	1.600479	.0023861	-.000178	276.8259	.0041530	.1662963
#2	.1260580	1.642307	.0024545	.000450	283.0318	.0020034	.1670232
#3	.1213741	1.609779	.0026856	.000767	277.8205	.0035199	.1676145

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6810304	.0257499	-.000500	-.001646	-.000959	1.227358	.0219704
Stddev	.0144882	.0005538	.000088	.000267	.000345	.009610	.0021071
%RSD	2.127388	2.150681	17.59493	16.20583	36.02224	.7830219	9.590452

#1	.6942413	.0257836	-.000442	-.001338	-.000871	1.216648	.0234372
#2	.6655361	.0262861	-.000457	-.001790	-.000666	1.230196	.0195559
#3	.6833139	.0251800	-.000601	-.001810	-.001339	1.235230	.0229180

Sample Name: Q2800-02 Acquired: 8/11/2025 13:13:17 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.6292260	-.014823	.1106858
Stddev	.0127425	.000576	.0021850
%RSD	2.025103	3.885642	1.974045

#1	.6176070	-.014435	.1099194
#2	.6272177	-.015485	.1131507
#3	.6428534	-.014550	.1089872

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6229.941	105209.4	11776.48	4761.817	7259.379
Stddev	70.971	356.2	208.97	22.006	79.103
%RSD	1.139196	.3385730	1.774434	.4621350	1.089668

#1	6307.113	105620.7	11789.03	4787.222	7344.367
#2	6215.237	104999.7	11561.52	4748.654	7245.867
#3	6167.475	105007.9	11978.88	4749.575	7187.901

Sample Name: Q2800-02DUP Acquired: 8/11/2025 13:17:41 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.001330	.0000763	.0101689	.0032677	-.000203	.1681817	.5317026
Stddev	.002611	.0006739	.0014992	.0007708	.000754	.0049572	.0153312
%RSD	196.2175	883.5972	14.74271	23.58743	372.2655	2.947526	2.883407

#1	-.003517	-.000232	.0106809	.0028207	-.001065	.1644443	.5298732
#2	-.002035	-.000388	.0084808	.0028246	.000126	.1662957	.5173682
#3	.001560	.000849	.0113450	.0041576	.000331	.1738051	.5478663

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001656	.0008842	37.65914	.0009845	-.000138	.0203113	.0561447
Stddev	.0000058	.0000668	.85199	.0001971	.000141	.0005064	.0032307
%RSD	3.468661	7.552826	2.262368	20.02501	102.7042	2.493156	5.754211

#1	.0001664	.0009578	37.46931	.0010136	-.000178	.0207728	.0527156
#2	.0001710	.0008274	36.91808	.0007744	.000020	.0197696	.0591314
#3	.0001596	.0008673	38.59004	.0011654	-.000254	.0203916	.0565871

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1950321	2.753561	.0040327	.0004287	497.4153	.0029515	.2886651
Stddev	.0053002	.055204	.0001072	.0004999	4.0466	.0024375	.0026997
%RSD	2.717617	2.004820	2.657777	116.6110	.8135300	82.58233	.9352454

#1	.1934024	2.736473	.0041242	.0004346	501.8819	.0036251	.2907127
#2	.1907380	2.708922	.0040592	.0009257	496.3704	.0049814	.2856056
#3	.2009558	2.815289	.0039148	-.000074	493.9936	.0002481	.2896770

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.460129	.0501669	-.000465	-.001862	-.001055	2.176104	.0354015
Stddev	.007518	.0016875	.000071	.000565	.000848	.029924	.0029229
%RSD	.5148779	3.363813	15.17783	30.33282	80.41095	1.375113	8.256369

#1	1.453043	.0510593	-.000528	-.001929	-.000350	2.145164	.0348793
#2	1.459328	.0482206	-.000389	-.002389	-.000819	2.178251	.0327749
#3	1.468015	.0512208	-.000480	-.001266	-.001997	2.204896	.0385503

Sample Name: Q2800-02DUP Acquired: 8/11/2025 13:17:41 Type: Unk
Method: 6010-200.7 NEW(v90) 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	1.130497	-.017769	.1944880
Stddev	.003874	.001551	.0053093
%RSD	.3427126	8.730380	2.729906

#1	1.134533	-.018507	.1936031
#2	1.130149	-.015986	.1896767
#3	1.126808	-.018813	.2001842

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5972.344	101742.5	11609.70	4620.736	6811.009
Stddev	21.733	542.4	242.89	23.970	14.990
%RSD	.3638883	.5331174	2.092142	.5187404	.2200918

#1	5985.133	101712.5	11538.96	4599.445	6821.965
#2	5984.648	102299.3	11880.11	4646.697	6817.136
#3	5947.251	101215.7	11410.03	4616.065	6793.926

Sample Name: Q2800-02LX5 Acquired: 8/11/2025 13:22:05 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.002003	-.000988	.0024733	-.000058	-.002145	.0137340	.0638242
Stddev	.002557	.001160	.0014991	.002450	.001598	.0046994	.0029870
%RSD	127.6820	117.4171	60.61330	4213.153	74.49718	34.21731	4.680081

#1	-.004854	-.001560	.0026695	.002191	-.003860	.0083730	.0625419
#2	.000086	-.001750	.0038647	.000304	-.001880	.0156868	.0616924
#3	-.001240	.000347	.0008857	-.002670	-.000696	.0171421	.0672383

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000016	-.000019	4.973460	.0001236	-.000296	.0027914	-.002481
Stddev	.000036	.000017	.133211	.0002465	.000024	.0001039	.003951
%RSD	224.4167	93.58355	2.678437	199.4602	8.055574	3.723756	159.2609

#1	.000003	-.000037	4.923204	-.000160	-.000314	.0026935	-.003064
#2	.000007	-.000017	4.872688	.000243	-.000307	.0029005	.001729
#3	-.000058	-.000002	5.124488	.000287	-.000269	.0027801	-.006107

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0301754	.3550039	.0005876	.0002432	55.88281	.0016194	.0341444
Stddev	.0004114	.0143618	.0001311	.0004352	.29457	.0015726	.0003270
%RSD	1.363431	4.045535	22.30757	178.9490	.5271182	97.11066	.9577672

#1	.0304114	.3402647	.0007343	-.000239	55.67323	.0004721	.0337815
#2	.0297003	.3689559	.0005466	.000607	55.75559	.0034119	.0344162
#3	.0304145	.3557911	.0004820	.000362	56.21961	.0009741	.0342356

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.806103	-.001037	-.000845	-.000044	-.001248	.2623435	.0065641
Stddev	.038644	.000771	.000108	.000656	.001705	.0039939	.0019380
%RSD	2.139657	74.35389	12.72311	1502.320	136.6682	1.522407	29.52381

#1	1.805200	-.000149	-.000873	-.000663	-.001605	.2669331	.0044933
#2	1.845191	-.001537	-.000726	-.000112	.000608	.2596578	.0068652
#3	1.767918	-.001424	-.000936	.000643	-.002746	.2604395	.0083340

Sample Name: Q2800-02LX5 Acquired: 8/11/2025 13:22:05 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.1304780	.0493337	.0252231
Stddev	.0057467	.0025170	.0005909
%RSD	4.404355	5.102034	2.342685

#1	.1312817	.0520214	.0248444
#2	.1243718	.0489479	.0249209
#3	.1357806	.0470319	.0259040

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6382.025	108558.9	11573.11	4876.205	7685.393
Stddev	46.656	314.2	246.46	27.324	62.329
%RSD	.7310459	.2894244	2.129610	.5603461	.8110068

#1	6369.438	108921.6	11685.30	4902.403	7662.119
#2	6433.683	108386.6	11743.51	4878.331	7756.009
#3	6342.955	108368.6	11290.51	4847.880	7638.049

Sample Name: Q2800-02MS Acquired: 8/11/2025 13:26:23 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.8088641	1.651889	.9186770	2.061940	.7943225	1.995752	.6277285
Stddev	.0104297	.056856	.0083176	.030839	.0098268	.051435	.0185821
%RSD	1.289420	3.441877	.9053907	1.495619	1.237125	2.577199	2.960220

#1	.8011759	1.628568	.9151337	2.032609	.7840481	2.031062	.6407115
#2	.8046803	1.610402	.9127177	2.059120	.7952892	1.936740	.6064425
#3	.8207360	1.716698	.9281795	2.094092	.8036301	2.019455	.6360316

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1790426	.1932927	32.40260	.3776186	.1939876	.3042932	3.053704
Stddev	.0040441	.0021832	.87755	.0049074	.0022389	.0037079	.051872
%RSD	2.258714	1.129455	2.708274	1.299569	1.154163	1.218533	1.698655

#1	.1823079	.1917889	32.97780	.3820257	.1924522	.3013339	3.076669
#2	.1745190	.1922925	31.39254	.3723302	.1929539	.3030930	2.994313
#3	.1803011	.1957968	32.83747	.3784998	.1965566	.3084525	3.090128

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3504963	4.109445	.4888125	.0715961	419.0941	.2875626	.4375905
Stddev	.0094295	.088872	.0053474	.0009283	10.3126	.0062005	.0080414
%RSD	2.690323	2.162630	1.093949	1.296587	2.460684	2.156215	1.837645

#1	.3568093	4.167516	.4856180	.0721341	430.6568	.2902976	.4436167
#2	.3396570	4.007135	.4858337	.0705242	410.8476	.2804649	.4284596
#3	.3550226	4.153684	.4949859	.0721301	415.7780	.2919254	.4406952

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.64650	.2866032	.4050826	.6765456	.1856222	2.652701	5.916502
Stddev	.21365	.0073823	.0057188	.0094334	.0053722	.047870	.076334
%RSD	1.834493	2.575790	1.411754	1.394350	2.894160	1.804574	1.290194

#1	11.78695	.2924722	.4008241	.6701599	.1899193	2.673389	5.857345
#2	11.40063	.2783148	.4028412	.6720961	.1795991	2.597966	5.889493
#3	11.75193	.2890226	.4115826	.6873809	.1873481	2.686748	6.002669

Sample Name: Q2800-02MS Acquired: 8/11/2025 13:26:23 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.9879912	.1810465	.3445216
Stddev	.0126540	.0055014	.0097940
%RSD	1.280778	3.038698	2.842775

#1	.9796546	.1856296	.3516659
#2	.9817672	.1749454	.3333573
#3	1.002552	.1825644	.3485417

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6017.981	105115.9	11780.96	4798.715	6872.125
Stddev	59.121	1230.4	249.25	77.078	62.551
%RSD	.9824138	1.170540	2.115678	1.606221	.9102082

#1	6069.727	104138.2	11564.56	4731.379	6914.869
#2	6030.671	106497.5	12053.49	4882.786	6901.174
#3	5953.545	104711.9	11724.84	4781.979	6800.332

Sample Name: Q2800-02MSD Acquired: 8/11/2025 13:30:31 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.8286022	1.856808	.9361290	2.120810	.8131546	2.005993	.6064380
Stddev	.0110544	.064138	.0085670	.023141	.0116187	.015741	.0028646
%RSD	1.334108	3.454228	.9151530	1.091151	1.428845	.7847127	.4723595

#1	.8215284	1.885306	.9319230	2.106639	.8060983	1.998982	.6033020
#2	.8229374	1.901760	.9304780	2.108276	.8068009	1.994976	.6070950
#3	.8413408	1.783360	.9459861	2.147514	.8265646	2.024022	.6089170

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1805383	.1972093	30.87013	.3998810	.1975769	.3089374	3.242003
Stddev	.0017859	.0015009	.20873	.0050541	.0018274	.0030855	.016411
%RSD	.9892072	.7610783	.6761679	1.263902	.9249187	.9987446	.5062116

#1	.1813098	.1961278	30.76331	.4055571	.1964431	.3080233	3.247303
#2	.1784963	.1965772	30.73643	.3958680	.1966026	.3064122	3.255110
#3	.1818087	.1989229	31.11066	.3982178	.1996850	.3123766	3.223597

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3462993	4.021648	.4981819	.0504542	410.4374	.2919113	.4431365
Stddev	.0024884	.033962	.0039781	.0004492	5.4503	.0043690	.0063985
%RSD	.7185703	.8444775	.7985264	.8902703	1.327917	1.496675	1.443918

#1	.3440134	4.018079	.4961447	.0508596	411.6487	.2869704	.4505166
#2	.3459345	3.989611	.4956350	.0499713	415.1801	.2934992	.4397503
#3	.3489500	4.057253	.5027660	.0505318	404.4834	.2952642	.4391427

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.13088	.2841652	.4178970	.6961274	.1896549	2.692331	6.024574
Stddev	.04945	.0025058	.0040738	.0051276	.0019510	.020885	.026731
%RSD	.4076063	.8818053	.9748304	.7365945	1.028688	.7757402	.4436980

#1	12.18147	.2853256	.4159956	.6943225	.1874741	2.712762	6.012777
#2	12.12852	.2812895	.4151216	.6921462	.1912344	2.693212	6.005770
#3	12.08266	.2858804	.4225739	.7019134	.1902563	2.671018	6.055173

Sample Name: Q2800-02MSD Acquired: 8/11/2025 13:30:31 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.9597894	.1808920	.3383113
Stddev	.0051461	.0008897	.0021046
%RSD	.5361644	.4918589	.6220755

#1	.9549312	.1798978	.3359773
#2	.9592553	.1811648	.3388921
#3	.9651816	.1816134	.3400645

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6047.645	101842.0	11921.37	4659.217	6915.506
Stddev	49.218	1028.1	86.24	59.261	43.276
%RSD	.8138313	1.009463	.7233723	1.271900	.6257879

#1	6060.094	100657.6	11912.64	4593.623	6929.789
#2	6089.442	102503.5	12011.64	4675.136	6949.836
#3	5993.398	102365.0	11839.83	4708.893	6866.894

Sample Name: Q2800-02A Acquired: 8/11/2025 13:34:39 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.7432353	1.641814	.8449026	1.907880	.7377444	1.864197	.5902740
Stddev	.0106235	.042352	.0139878	.031698	.0108820	.031460	.0134885
%RSD	1.429360	2.579559	1.655547	1.661427	1.475037	1.687612	2.285118

#1	.7500828	1.674232	.8558584	1.931724	.7451945	1.889366	.6044478
#2	.7309972	1.593896	.8291468	1.871909	.7252564	1.828927	.5775955
#3	.7486259	1.657313	.8497027	1.920006	.7427824	1.874298	.5887786

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1665487	.1776367	30.73081	.3510408	.1777359	.2787910	2.837938
Stddev	.0035192	.0028930	.68875	.0046402	.0030437	.0041710	.035292
%RSD	2.112998	1.628614	2.241251	1.321852	1.712496	1.496119	1.243576

#1	.1704287	.1797303	31.43939	.3490083	.1799058	.2819347	2.822551
#2	.1635628	.1743355	30.06376	.3477636	.1742566	.2740592	2.812953
#3	.1656546	.1788442	30.68927	.3563505	.1790452	.2803790	2.878311

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3322927	3.871765	.4502626	.0599156	388.2818	.2692156	.4123862
Stddev	.0085253	.116510	.0071859	.0005996	7.1473	.0039267	.0049845
%RSD	2.565602	3.009222	1.595941	1.000822	1.840742	1.458578	1.208706

#1	.3410549	3.990403	.4560596	.0594364	385.0615	.2735697	.4102319
#2	.3240259	3.757507	.4422227	.0597223	383.3112	.2659430	.4088412
#3	.3317972	3.867383	.4525053	.0605880	396.4726	.2681339	.4180856

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.82708	.2669319	.3789000	.6258599	.1713684	2.524247	5.386671
Stddev	.20872	.0077928	.0064937	.0092590	.0042595	.044205	.098009
%RSD	1.927753	2.919404	1.713829	1.479404	2.485604	1.751209	1.819473

#1	10.77574	.2754398	.3837196	.6314351	.1762717	2.493650	5.468145
#2	10.64883	.2601403	.3715156	.6151719	.1685828	2.504163	5.277910
#3	11.05668	.2652156	.3814649	.6309728	.1692506	2.574928	5.413960

Sample Name: Q2800-02A Acquired: 8/11/2025 13:34:39 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.8892776	.1674941	.3236301
Stddev	.0153863	.0041762	.0073854
%RSD	1.730202	2.493341	2.282039

#1	.9022021	.1721776	.3311849
#2	.8722581	.1641577	.3164267
#3	.8933726	.1661471	.3232788

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6217.625	106155.0	11875.82	4801.734	7141.680
Stddev	83.887	1364.5	277.87	41.841	95.057
%RSD	1.349177	1.285387	2.339834	.8713715	1.331013

#1	6156.261	106567.8	11576.44	4812.037	7074.515
#2	6313.214	107265.4	12125.48	4837.461	7250.445
#3	6183.401	104631.7	11925.55	4755.704	7100.080

Sample Name: Q2779-01 Acquired: 8/11/2025 13:38:47 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.1691007	-.109161	8.296094	-.000254	-.034596	70.17167
Stddev	.0046445	.003998	.081899	.005053	.001704	1.01781
%RSD	2.746609	3.662223	.9872020	1987.252	4.925341	1.450460

#1	.1734073	-.113656	8.307926	-.005488	-.036536	69.07242
#2	.1641795	-.106002	8.208922	.000129	-.033340	70.36116
#3	.1697155	-.107825	8.371433	.004596	-.033913	71.08141

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.879839	.0119765	.0361881	164.7261	.3891366	.1597179
Stddev	.074477	.0000251	.0017579	2.2028	.0084212	.0018419
%RSD	1.526225	.2093074	4.857622	1.337263	2.164068	1.153248

#1	4.806799	.0119475	.0360336	162.3405	.3963081	.1597467
#2	4.877044	.0119898	.0345126	165.1548	.3912380	.1578618
#3	4.955675	.0119920	.0380182	166.6831	.3798637	.1615453

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.003121	665.6407	4.610860	55.68234	.8629241	.0218314
Stddev	.042547	12.1929	.063516	.77385	.0080206	.0007318
%RSD	1.416773	1.831754	1.377538	1.389766	.9294625	3.351939

#1	3.000013	676.2430	4.544560	54.80556	.8644411	.0210378
#2	2.962212	668.3621	4.616853	55.97145	.8542534	.0224794
#3	3.047136	652.3171	4.671168	56.27002	.8700779	.0219771

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.403711	.2917040	6.174186	15.19723	^ *****	.0478196
Stddev	.219193	.0044918	.132415	.25511	-----	.0024861
%RSD	2.608292	1.539851	2.144649	1.678650	-----	5.198811

#1	8.615549	.2873224	6.290191	15.39292	^ -----	.0462935
#2	8.417747	.2914911	6.202442	15.29005	^ -----	.0464770
#3	8.177837	.2962984	6.029923	14.90870	^ -----	.0506883

Sample Name: Q2779-01 Acquired: 8/11/2025 13:38:47 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.512035	4.659575	12.25690	5.991845	F 43.92026	.1843920
Stddev	.012814	.066305	.23277	.054985	.57172	.0022289
%RSD	.8474445	1.422980	1.899117	.9176612	1.301733	1.208801

#1	1.518967	4.591718	12.41611	6.010162	44.45459	.1857406
#2	1.497249	4.662796	12.36484	5.930039	43.31733	.1856161
#3	1.519890	4.724211	11.98975	6.035333	43.98886	.1818192

Elem	Sr4077
Units	ppm
Avg	.0255034
Stddev	.0217510
%RSD	85.28660

#1	.0050435
#2	.0231179
#3	.0483488

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6319.219	110571.1	12707.97	4868.135	6996.583
Stddev	55.862	2063.1	165.06	107.624	55.631
%RSD	.8839976	1.865816	1.298831	2.210779	.7951162

#1	6296.242	108988.0	12874.95	4785.340	6967.821
#2	6382.905	109820.9	12704.06	4829.273	7060.707
#3	6278.510	112904.2	12544.91	4989.792	6961.220

Sample Name: Q2779-05 Acquired: 8/11/2025 13:42:56 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.1263480	-.025778	6.124429	.0048744	.0156044	125.9083
Stddev	.0025937	.000810	.065156	.0011553	.0021265	1.8297
%RSD	2.052811	3.141323	1.063869	23.70062	13.62764	1.453233

#1	.1254277	-.026657	6.079116	.0061585	.0151537	128.0069
#2	.1243399	-.025062	6.095074	.0045455	.0179202	124.6475
#3	.1292763	-.025614	6.199099	.0039193	.0137394	125.0703

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.571266	.0123845	.0142265	204.8720	.3235630	.1772270
Stddev	.035807	.0000920	.0007728	2.9376	.0022428	.0026506
%RSD	1.392571	.7427181	5.432162	1.433882	.6931728	1.495604

#1	2.612522	.0123950	.0133839	208.2577	.3222919	.1751410
#2	2.548280	.0124707	.0143932	202.9997	.3222444	.1763304
#3	2.552996	.0122876	.0149023	203.3585	.3261526	.1802097

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.563573	345.8216	6.591661	70.32814	.4836075	.0163402
Stddev	.018020	3.4412	.086039	.97497	.0056074	.0016241
%RSD	1.152514	.9950875	1.305272	1.386321	1.159499	9.939337

#1	1.549988	348.9520	6.690959	71.44325	.4794179	.0182100
#2	1.556715	342.1369	6.539236	69.63653	.4814269	.0152803
#3	1.584015	346.3758	6.544788	69.90464	.4899777	.0155302

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.76608	.4131468	4.952660	48.33318	.2005886	.0086765
Stddev	.11548	.0060794	.031528	.52387	.0083706	.0003850
%RSD	.9814280	1.471484	.6365836	1.083871	4.172998	4.437516

#1	11.84740	.4200482	4.918441	48.70418	.2102538	.0088995
#2	11.63391	.4085838	4.959010	47.73391	.1956900	.0082320
#3	11.81695	.4108084	4.980530	48.56146	.1958220	.0088982

Sample Name: Q2779-05 Acquired: 8/11/2025 13:42:56 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.3685297	7.522339	F 16.43963	8.750802	10.26111	.3180240
Stddev	.0047538	.104099	.12989	.109268	.19746	.0030440
%RSD	1.289922	1.383869	.7901321	1.248663	1.924370	.9571436

#1	.3657020	7.642481	16.36563	8.662787	10.05980	.3215383
#2	.3658692	7.458929	16.36364	8.716518	10.26904	.3163219
#3	.3740180	7.465608	16.58961	8.873101	10.45448	.3162119

Elem	Sr4077
Units	ppm
Avg	.5014390
Stddev	.0087036
%RSD	1.735730

#1	.5114524
#2	.4971749
#3	.4956896

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6851.303	117086.1	13183.57	5225.724	6965.638
Stddev	49.936	787.0	15.62	27.926	52.743
%RSD	.7288584	.6721397	.1184695	.5343955	.7571937

#1	6881.540	117609.7	13177.41	5257.906	6997.922
#2	6878.704	117467.6	13171.96	5211.398	6994.219
#3	6793.664	116181.1	13201.32	5207.868	6904.773

Sample Name: Q2793-01 Acquired: 8/11/2025 13:46:56 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0752104	-.021340	.8883702	.0045777	-.012061	116.4711	1.158253
Stddev	.0027774	.003133	.0088914	.0026287	.001420	2.0452	.025926
%RSD	3.692803	14.68349	1.000868	57.42346	11.77280	1.755956	2.238366

#1	.0735767	-.017985	.8843399	.0075030	-.013013	116.7391	1.158892
#2	.0736372	-.024191	.8822076	.0038165	-.012741	118.3692	1.183854
#3	.0784172	-.021843	.8985630	.0024137	-.010429	114.3052	1.132014

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0099840	.0066325	30.30498	.2119863	.1016894	.3503074	225.2231
Stddev	.0001840	.0007478	.52612	.0032809	.0008933	.0057055	5.4059
%RSD	1.843253	11.27506	1.736101	1.547706	.8784394	1.628714	2.400253

#1	.0099950	.0064086	30.31161	.2129583	.1017057	.3474715	227.8715
#2	.0101623	.0060221	30.82776	.2146715	.1007881	.3465755	228.7941
#3	.0097947	.0074666	29.77557	.2083292	.1025745	.3568752	219.0036

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.359465	31.04139	.1999836	.0077919	4.951699	.3115037	1.026490
Stddev	.122105	.46069	.0019837	.0007878	.132658	.0054044	.019915
%RSD	1.920047	1.484130	.9919302	10.11013	2.679049	1.734940	1.940069

#1	6.370064	31.09381	.1991235	.0078026	4.993599	.3106739	1.031649
#2	6.475925	31.47363	.1985751	.0085742	5.058348	.3172750	1.043316
#3	6.232407	30.55672	.2022522	.0069988	4.803149	.3065622	1.004503

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.79635	.1036776	.0040414	.0379560	2.103549	9.476525	7.307975
Stddev	.24305	.0133397	.0002011	.0002885	.038144	.193516	.057532
%RSD	2.060350	12.86654	4.975362	.7600646	1.813296	2.042057	.7872532

#1	11.88754	.1141749	.0042265	.0379187	2.104704	9.566902	7.301637
#2	11.98060	.1081914	.0038274	.0376879	2.141101	9.608318	7.253875
#3	11.52089	.0886666	.0040703	.0382613	2.064840	9.254355	7.368415

Sample Name: Q2793-01 Acquired: 8/11/2025 13:46:56 Type: Unk
Method: 6010-200.7 NEW(v90) 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	1.481135	.1665387	-.048182
Stddev	.016585	.0045109	.002207
%RSD	1.119771	2.708589	4.580615

#1	1.484772	.1673540	-.050256
#2	1.463033	.1705862	-.048428
#3	1.495600	.1616758	-.045862

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7642.395	129277.9	14380.79	5771.019	7577.133
Stddev	31.951	1924.5	156.38	87.485	45.292
%RSD	.4180773	1.488642	1.087442	1.515940	.5977512

#1	7659.034	128280.9	14421.07	5727.715	7592.218
#2	7662.593	128056.6	14208.21	5713.633	7612.958
#3	7605.558	131496.4	14513.09	5871.711	7526.223

Sample Name: CCV03 Acquired: 8/11/2025 14:54:32 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.844542	5.166842	4.621066	4.953323	4.875111	9.140817
Stddev	.179588	.224668	.170856	.192249	.200583	.147786
%RSD	3.707009	4.348262	3.697329	3.881207	4.114427	1.616774
#1	4.672635	4.930479	4.465005	4.767128	4.691143	9.048047
#2	4.830058	5.192422	4.594572	4.941738	4.845234	9.063162
#3	5.030933	5.377624	4.803622	5.151102	5.088957	9.311243
Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.088503	.2693997	2.319390	22.80615	.9129488	2.321735
Stddev	.036673	.0041502	.083853	.32207	.0196479	.085534
%RSD	.4035103	1.540546	3.615323	1.412217	2.152136	3.684073
#1	9.097255	.2654904	2.242562	22.60765	.8927686	2.242428
#2	9.120008	.2689539	2.306770	22.63304	.9140608	2.310409
#3	9.048245	.2737548	2.408838	23.17776	.9320171	2.412368
Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.182778	4.743445	2.271272	22.54066	2.327412	1.172397
Stddev	.044148	.101108	.034895	.40015	.085125	.026112
%RSD	3.732604	2.131540	1.536383	1.775229	3.657483	2.227259
#1	1.141628	4.658214	2.251900	22.23298	2.249928	1.145774
#2	1.177292	4.716963	2.250360	22.39599	2.313777	1.173451
#3	1.229412	4.855159	2.311556	22.99303	2.418531	1.197967
Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	23.19056	2.302572	2.349323	23.81014	4.523790	4.823556
Stddev	.40214	.036635	.044911	.45688	.073267	.182107
%RSD	1.734052	1.591038	1.911642	1.918844	1.619591	3.775366
#1	22.83164	2.279456	2.305941	23.39441	4.453775	4.652600
#2	23.11487	2.283449	2.346408	23.73672	4.517670	4.802998
#3	23.62516	2.344812	2.395621	24.29928	4.599925	5.015069

Sample Name: CCV03 Acquired: 8/11/2025 14:54:32 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV03 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.671113	4.611556	4.791376	F 4.435202	4.735240	F 4.489847
Stddev	.166878	.069421	.123438	.153604	.178631	.060035
%RSD	3.572548	1.505365	2.576245	3.463282	3.772370	1.337125
#1	4.515947	4.574563	4.679010	4.291801	4.569306	4.450507
#2	4.649749	4.568466	4.771616	4.416507	4.712100	4.460085
#3	4.847645	4.691639	4.923502	4.597297	4.924313	4.558948

Elem	Sr4077
Units	ppm
Avg	4.616514
Stddev	.103297
%RSD	2.237564
#1	4.506414
#2	4.711300
#3	4.631827

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6656.227	115131.0	12609.01	5087.336	7815.243
Stddev	197.057	2238.8	155.46	81.085	225.972
%RSD	2.960492	1.944573	1.232902	1.593853	2.891432
#1	6845.859	117471.5	12758.65	5157.867	8029.697
#2	6670.321	114911.4	12620.04	5105.399	7836.743
#3	6452.501	113010.1	12448.33	4998.744	7579.289

Sample Name: CCB03 Acquired: 8/11/2025 14:58:42 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0003854	-.003730	-.000195	-.002488	-.002264	-.010127	-.009049
Stddev	.0014079	.001194	.000369	.001681	.001708	.005980	.000987
%RSD	365.2776	32.01243	188.6607	67.54784	75.42972	59.04522	10.90507

#1	-.000633	-.005029	-.000567	-.000600	-.001606	-.016856	-.009527
#2	.001992	-.003483	.000170	-.003820	-.000984	-.005422	-.009706
#3	-.000202	-.002679	-.000189	-.003045	-.004204	-.008103	-.007914

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000029	-.000065	-.008115	.0000050	-.000289	.0000838	-.014783
Stddev	.000063	.000066	.006964	.0001122	.000125	.0002236	.005313
%RSD	216.2497	100.3122	85.80867	2240.677	43.39974	266.7769	35.94240

#1	-.000094	-.000056	-.009266	-.000004	-.000401	.0000199	-.008770
#2	-.000027	-.000005	-.000648	-.000103	-.000153	.0003325	-.018844
#3	.000033	-.000135	-.014432	.000121	-.000313	-.000101	-.016734

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001491	.0057804	.0000027	.0005115	.1238433	.0009583	-.001546
Stddev	.0003688	.0165489	.0002013	.0003141	.0188207	.0019710	.000169
%RSD	247.3254	286.2913	7600.919	61.40008	15.19714	205.6877	10.92646

#1	-.000144	.0072509	.0001328	.0007664	.1176771	-.000102	-.001352
#2	.000563	-.011455	.0001043	.0006074	.1088793	-.000256	-.001664
#3	.000028	.021545	-.000229	.0001607	.1449736	.003233	-.001622

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2424281	.0019813	.0004105	.0009783	-.000301	.0085429	.0017656
Stddev	.0177049	.0003414	.0000874	.0002342	.000462	.0066198	.0004451
%RSD	7.303147	17.22904	21.29406	23.93883	153.3071	77.48956	25.21055

#1	.2346438	.0020395	.0005077	.0007908	.000218	.0030354	.0022741
#2	.2299490	.0022898	.0003383	.0009033	-.000454	.0067060	.0014465
#3	.2626914	.0016146	.0003855	.0012408	-.000668	.0158871	.0015763

Sample Name: CCB03 Acquired: 8/11/2025 14:58:42 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.005698	-.002405	-.000192
Stddev	.000958	.001259	.000077
%RSD	16.81000	52.33045	39.82568

#1	-.005298	-.002189	-.000227
#2	-.006791	-.003758	-.000245
#3	-.005006	-.001269	-.000104

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	6935.019	119498.0	12491.68	5194.147	8848.481
Stddev	113.433	1106.1	147.82	34.194	145.307
%RSD	1.635656	.9255823	1.183381	.6583108	1.642170

#1	7021.489	118439.7	12645.83	5162.354	8953.442
#2	6976.984	119408.1	12478.07	5189.768	8909.365
#3	6806.583	120646.3	12351.13	5230.319	8682.636

Sample Name: Q2793-01DUP Acquired: 8/11/2025 15:03:08 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0676579	-.018498	.9674787	.0030994	-.009376	113.0169	1.195511
Stddev	.0010424	.002813	.0247374	.0019096	.001425	1.1609	.014281
%RSD	1.540679	15.20639	2.556892	61.61270	15.19352	1.027199	1.194553

#1	.0665850	-.017968	.9499923	.0009623	-.008809	114.2592	1.207195
#2	.0686668	-.021539	.9566615	.0036974	-.008322	112.8320	1.199748
#3	.0677218	-.015988	.9957822	.0046385	-.010997	111.9595	1.179591

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0096933	.0069552	29.45127	.1820555	.0987917	.3929381	201.6518
Stddev	.0001193	.0009938	.31092	.0022723	.0029397	.0124607	2.8615
%RSD	1.231187	14.28851	1.055706	1.248140	2.975665	3.171169	1.419015

#1	.0096758	.0064741	29.78271	.1822317	.0970097	.3849817	201.2368
#2	.0098205	.0062935	29.40506	.1842345	.0971806	.3865340	204.6982
#3	.0095838	.0080980	29.16605	.1797002	.1021847	.4072986	199.0206

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.435914	30.33700	.1956643	.0065740	4.720638	.2869894	1.010466
Stddev	.067648	.30510	.0052571	.0004541	.067183	.0023664	.012189
%RSD	1.051099	1.005689	2.686781	6.907102	1.423182	.8245489	1.206247

#1	6.502790	30.66821	.1917671	.0062585	4.707181	.2896746	1.013214
#2	6.437433	30.27535	.1935824	.0070944	4.793531	.2860849	1.021047
#3	6.367520	30.06743	.2016435	.0063691	4.661202	.2852087	.997138

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.70946	.0924562	.0036270	.0281403	2.101317	11.63217	6.993772
Stddev	.13049	.0060849	.0001082	.0007072	.020320	.14218	.206715
%RSD	1.114391	6.581427	2.982510	2.513211	.9670025	1.222288	2.955707

#1	11.69490	.0904327	.0037510	.0276269	2.120860	11.63058	6.865716
#2	11.84662	.0992951	.0035521	.0278470	2.102790	11.77514	6.883350
#3	11.58686	.0876408	.0035780	.0289470	2.080301	11.49080	7.232249

Sample Name: Q2793-01DUP Acquired: 8/11/2025 15:03:08 Type: Unk
Method: 6010-200.7 NEW(v90) 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	1.318164	.1482274	-.018405
Stddev	.041638	.0009861	.002677
%RSD	3.158758	.6652557	14.54717

#1	1.286139	.1488234	-.015931
#2	1.303121	.1487696	-.021248
#3	1.365233	.1470892	-.018038

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7937.147	135911.1	15106.98	6008.004	7838.868
Stddev	134.761	1377.5	152.71	87.637	165.561
%RSD	1.697849	1.013537	1.010851	1.458666	2.112046

#1	8034.593	135962.5	14935.34	5991.177	7952.868
#2	7993.488	134508.6	15157.79	5930.001	7914.772
#3	7783.359	137262.1	15227.81	6102.834	7648.965

Sample Name: Q2793-01LX5 Acquired: 8/11/2025 15:07:12 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0145592	-.008611	.1779234	-.004390	-.005415	25.61676	.2410218
Stddev	.0028072	.000771	.0055629	.002618	.002063	.79385	.0070874
%RSD	19.28156	8.948253	3.126578	59.63305	38.10039	3.098946	2.940565

#1	.0117244	-.008975	.1734671	-.001482	-.006790	25.91692	.2453977
#2	.0146152	-.007726	.1761450	-.005132	-.003042	24.71660	.2328447
#3	.0173380	-.009133	.1841580	-.006558	-.006411	26.21676	.2448230

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0022796	.0006550	6.760703	.0464623	.0193879	.0831667	48.48221
Stddev	.0000249	.0003418	.207689	.0031817	.0005851	.0053336	3.15643
%RSD	1.093179	52.19204	3.072002	6.847902	3.017722	6.413177	6.510489

#1	.0023034	.0002999	6.873097	.0500330	.0190152	.0781430	52.02687
#2	.0022537	.0006832	6.521038	.0454259	.0190862	.0825932	47.44445
#3	.0022819	.0009818	6.887974	.0439280	.0200622	.0887639	45.97532

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.407651	6.913790	.0397544	.0015248	.9940535	.0686259	.2234351
Stddev	.037309	.229339	.0011077	.0002431	.0734404	.0023032	.0153277
%RSD	2.650414	3.317120	2.786373	15.94544	7.387976	3.356165	6.860008

#1	1.427583	7.026640	.0390190	.0016493	1.073836	.0710492	.2402855
#2	1.364609	6.649892	.0392157	.0012447	.979053	.0664654	.2196990
#3	1.430759	7.064837	.0410284	.0016805	.929271	.0683632	.2103210

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.542156	.0149946	.0002921	.0064406	.4611691	1.963734	1.382023
Stddev	.182715	.0091622	.0003284	.0003051	.0129621	.137314	.044902
%RSD	7.187388	61.10335	112.4059	4.737258	2.810713	6.992475	3.248984

#1	2.743910	.0238760	.0005973	.0067601	.4689015	2.121245	1.346934
#2	2.494719	.0155326	-.000055	.0061523	.4462045	1.900721	1.366511
#3	2.387837	.0055753	.000335	.0064093	.4684014	1.869237	1.432624

Sample Name: Q2793-01LX5 Acquired: 8/11/2025 15:07:12 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.2856499	.0278860	-.009866
Stddev	.0109369	.0014185	.002880
%RSD	3.828787	5.086759	29.18645

#1	.2771161	.0294580	-.012700
#2	.2818547	.0267014	-.009955
#3	.2979789	.0274988	-.006943

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7044.904	123286.9	13265.55	5529.049	8219.726
Stddev	177.114	6993.2	353.08	315.344	199.636
%RSD	2.514069	5.672314	2.661619	5.703399	2.428747

#1	7181.738	115485.5	13181.84	5186.817	8364.358
#2	7108.116	125382.5	13652.96	5592.462	8302.865
#3	6844.856	128992.8	12961.85	5807.867	7991.956

Sample Name: Q2793-01MS Acquired: 8/11/2025 15:11:20 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.6717841	1.750533	1.766702	1.370430	.4564301	123.6083
Stddev	.0159704	.028672	.051880	.034209	.0131535	.6743
%RSD	2.377312	1.637926	2.936526	2.496212	2.881821	.5455008

#1	.6589159	1.722972	1.722970	1.342915	.4431812	122.9022
#2	.6667787	1.748426	1.753112	1.359643	.4566228	123.6773
#3	.6896576	1.780201	1.824024	1.408732	.4694861	124.2455

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.358621	.1407789	.1712834	29.73438	.4524002	.2642459
Stddev	.008435	.0012395	.0058736	.16368	.0119549	.0084011
%RSD	.6208478	.8804765	3.429179	.5504753	2.642544	3.179270

#1	1.349225	.1393859	.1666380	29.55992	.4505108	.2571215
#2	1.365540	.1411907	.1693266	29.75863	.4651872	.2621063
#3	1.361099	.1417601	.1778856	29.88458	.4415024	.2735099

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5703525	205.0377	5.989526	32.43661	.6139857	.0622109
Stddev	.0201795	5.7336	.023629	.16196	.0177763	.0017832
%RSD	3.538073	2.796360	.3945060	.4992989	2.895234	2.866308

#1	.5554050	204.8930	5.962327	32.28454	.5987199	.0623584
#2	.5623458	210.8423	6.004993	32.41839	.6097352	.0639158
#3	.5933066	199.3779	6.001258	32.60691	.6335020	.0603586

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.782281	.5185810	1.174964	20.18274	.2822158	.2941519
Stddev	.202293	.0027277	.035912	.59224	.0167026	.0079656
%RSD	2.982675	.5259875	3.056417	2.934367	5.918377	2.708005

#1	6.745083	.5154913	1.167954	20.16152	.2885780	.2875107
#2	7.000591	.5195959	1.213864	20.78530	.2948024	.2919614
#3	6.601168	.5206557	1.143074	19.60140	.2632671	.3029836

Sample Name: Q2793-01MS Acquired: 8/11/2025 15:11:20 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.5938581	2.170598	F 15.93102	12.47499	1.352957	.2934807
Stddev	.0189954	.010620	.41902	.34658	.044143	.0027474
%RSD	3.198643	.4892554	2.630230	2.778214	3.262712	.9361543

#1	.5770615	2.158632	15.94552	12.19619	1.318116	.2904960
#2	.5900404	2.174262	16.34261	12.36574	1.338157	.2959042
#3	.6144724	2.178901	15.50494	12.86303	1.402598	.2940419

Elem	Sr4077
Units	ppm
Avg	.1074039
Stddev	.0054087
%RSD	5.035859

#1	.1057524
#2	.1030135
#3	.1134459

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7791.326	136117.4	15384.70	6069.644	7595.802
Stddev	149.127	3089.7	116.39	150.546	182.510
%RSD	1.914017	2.269871	.7565014	2.480315	2.402771

#1	7918.838	136291.6	15472.65	6056.681	7752.613
#2	7827.792	132944.3	15428.72	5925.997	7639.328
#3	7627.348	139116.4	15252.73	6226.252	7395.464

Sample Name: Q2793-01MSD Acquired: 8/11/2025 15:15:17 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.6325972	1.734592	1.665668	1.348453	.4505017	115.0021
Stddev	.0162991	.098242	.052332	.045820	.0148462	5.1071
%RSD	2.576537	5.663687	3.141811	3.397976	3.295487	4.440837

#1	.6149067	1.622498	1.609989	1.298524	.4350152	109.1083
#2	.6358798	1.775551	1.673172	1.358258	.4518781	118.1206
#3	.6470052	1.805728	1.713843	1.388577	.4646118	117.7774

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.317345	.1384496	.1690554	29.29378	.4398703	.2607958
Stddev	.057696	.0030084	.0061365	1.23118	.0080770	.0083412
%RSD	4.379713	2.172939	3.629900	4.202882	1.836222	3.198361

#1	1.250942	.1350178	.1625358	27.87630	.4462278	.2520394
#2	1.355210	.1406320	.1699113	30.09671	.4426013	.2616999
#3	1.345883	.1396991	.1747190	29.90834	.4307818	.2686481

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5698643	177.6267	6.331219	30.31229	.5957136	.0616215
Stddev	.0178422	2.7380	.254506	1.28251	.0194637	.0007039
%RSD	3.130947	1.541414	4.019856	4.230979	3.267294	1.142274

#1	.5518211	175.8429	6.037774	28.83479	.5751328	.0609927
#2	.5702734	180.7792	6.491747	31.13803	.5981834	.0623819
#3	.5874984	176.2582	6.464136	30.96406	.6138245	.0614900

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.511044	.4635958	1.207013	18.31572	.2621616	.2964878
Stddev	.122144	.0195658	.021141	.32618	.0074738	.0087677
%RSD	1.875949	4.220445	1.751510	1.780864	2.850851	2.957205

#1	6.445685	.4410296	1.221135	18.10782	.2646770	.2872368
#2	6.651961	.4758257	1.217196	18.69166	.2680532	.2975512
#3	6.435486	.4739321	1.182708	18.14769	.2537545	.3046753

Sample Name: Q2793-01MSD Acquired: 8/11/2025 15:15:17 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.5703937	1.927259	F 16.31667	11.52282	1.386166	.2850646
Stddev	.0201727	.084489	.27071	.37535	.059612	.0132286
%RSD	3.536634	4.383914	1.659103	3.257459	4.300473	4.640552

#1	.5486581	1.830017	16.13980	11.11853	1.321883	.2699956
#2	.5740082	1.982702	16.62831	11.58969	1.396993	.2947649
#3	.5885149	1.969057	16.18190	11.86024	1.439622	.2904331

Elem	Sr4077
Units	ppm
Avg	.1395897
Stddev	.0116434
%RSD	8.341148

#1	.1262225
#2	.1450257
#3	.1475209

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7982.444	135726.9	15449.62	5977.241	7942.876
Stddev	163.445	2019.4	410.09	88.154	207.404
%RSD	2.047556	1.487841	2.654373	1.474823	2.611189

#1	8160.042	134748.6	15920.72	5926.946	8167.362
#2	7948.947	134383.1	15172.59	5925.747	7902.886
#3	7838.342	138049.2	15255.54	6079.029	7758.379

Sample Name: Q2793-01A Acquired: 8/11/2025 15:19:14 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.6266094	1.608457	1.585504	1.407614	.5555000	111.7383	1.223569
Stddev	.0135308	.016573	.030709	.033618	.0105312	.9953	.008875
%RSD	2.159369	1.030374	1.936855	2.388329	1.895805	.8907024	.7252982

#1	.6196361	1.595383	1.568163	1.387441	.5503693	112.5804	1.230399
#2	.6179877	1.602890	1.567387	1.388978	.5485175	111.9946	1.226770
#3	.6422044	1.627096	1.620960	1.446423	.5676133	110.6400	1.213538

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1396823	.1642690	29.18438	.4611804	.2563512	.5346194	209.4971
Stddev	.0030080	.0045529	.26253	.0097628	.0060933	.0142679	4.5757
%RSD	2.153424	2.771609	.8995725	2.116911	2.376922	2.668804	2.184125

#1	.1426355	.1622068	29.39823	.4602025	.2529074	.5292070	206.1494
#2	.1397890	.1611121	29.26354	.4713953	.2527596	.5238496	214.7110
#3	.1366224	.1694881	28.89138	.4519434	.2633866	.5508017	207.6310

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.084777	30.64443	.5892613	.0602274	6.270219	.5025378	1.066988
Stddev	.049185	.26896	.0142980	.0008355	.119665	.0042135	.026101
%RSD	.8083345	.8776667	2.426420	1.387208	1.908468	.8384365	2.446226

#1	6.120416	30.89912	.5819071	.0596109	6.176547	.5059280	1.068296
#2	6.105255	30.67098	.5801374	.0611783	6.405026	.5038649	1.092410
#3	6.028662	30.36318	.6057396	.0598931	6.229083	.4978206	1.040257

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	17.86470	.2719181	.2938615	.5867253	2.124676	9.432272	11.00352
Stddev	.31662	.0157303	.0060146	.0137463	.019631	.201721	.25325
%RSD	1.772327	5.784922	2.046748	2.342892	.9239675	2.138623	2.301535

#1	17.63579	.2548113	.2905041	.5786412	2.138661	9.301198	10.87096
#2	18.22603	.2857591	.2902750	.5789375	2.133134	9.664560	10.84407
#3	17.73228	.2751838	.3008053	.6025973	2.102234	9.331058	11.29554

Sample Name: Q2793-01A Acquired: 8/11/2025 15:19:14 Type: Unk
Method: 6010-200.7 NEW(v90) 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	1.396825	.2855727	.0950345
Stddev	.036911	.0014478	.0048519
%RSD	2.642487	.5069691	5.105461

#1	1.377403	.2863904	.1000219
#2	1.373679	.2864266	.0903304
#3	1.439391	.2839011	.0947512

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7927.141	138283.5	15111.29	6138.969	7941.001
Stddev	120.954	2302.6	172.73	96.179	139.986
%RSD	1.525821	1.665124	1.143078	1.566701	1.762821

#1	7983.437	139447.2	14920.36	6156.207	8004.420
#2	8009.687	135631.3	15156.76	6035.336	8038.053
#3	7788.300	139772.0	15256.73	6225.364	7780.530

Sample Name: Q2795-01 Acquired: 8/11/2025 15:23:10 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0786976	-.013179	2.647142	-.003797	-.004460	105.3870
Stddev	.0037915	.001895	.072813	.003368	.001264	1.1095
%RSD	4.817835	14.37845	2.750644	88.71274	28.32968	1.052817

#1	.0746992	-.011574	2.599966	-.004890	-.004561	104.4753
#2	.0791525	-.012694	2.610459	-.006483	-.005670	106.6224
#3	.0822412	-.015270	2.731001	-.000018	-.003149	105.0633

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.493443	.0118629	.0089338	92.64999	.1905124	.1090893
Stddev	.009985	.0000970	.0008820	.84607	.0014267	.0033533
%RSD	.6685969	.8173053	9.873120	.9131917	.7488507	3.073909

#1	1.489030	.0117609	.0084299	91.90686	.1892238	.1066413
#2	1.504875	.0119539	.0084191	93.57079	.1920455	.1077153
#3	1.486426	.0118739	.0099522	92.47232	.1902678	.1129114

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3291384	184.8823	5.959594	31.43679	.1469053	.0084680
Stddev	.0091222	1.1130	.034819	.37267	.0043455	.0002727
%RSD	2.771532	.6020307	.5842439	1.185445	2.958035	3.220707

#1	.3232796	183.8090	5.929559	31.08152	.1440450	.0082360
#2	.3244870	186.0312	5.997758	31.82471	.1447651	.0083998
#3	.3396487	184.8067	5.951465	31.40413	.1519058	.0087684

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.496191	.2748342	.7871952	9.130716	.0735659	.0096904
Stddev	.010314	.0021446	.0066602	.072674	.0030159	.0002462
%RSD	.6893553	.7803255	.8460644	.7959318	4.099544	2.540514

#1	1.499627	.2725394	.7830784	9.093536	.0705579	.0096227
#2	1.504349	.2767876	.7948792	9.214458	.0735502	.0094851
#3	1.484598	.2751756	.7836281	9.084155	.0765895	.0099633

Sample Name: Q2795-01 Acquired: 8/11/2025 15:23:10 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.1446338	2.093642	F 14.23378	F 20.67037	2.374515	.0838195
Stddev	.0042572	.016246	.10233	.58331	.085505	.0004335
%RSD	2.943440	.7759568	.7189061	2.821942	3.600933	.5172456

#1	.1413104	2.084151	14.13606	20.28957	2.316748	.0840467
#2	.1431587	2.112401	14.34016	20.37963	2.334057	.0840922
#3	.1494324	2.084375	14.22510	21.34190	2.472740	.0833195

Elem	Sr4077
Units	ppm
Avg	.2578358
Stddev	.0020585
%RSD	.7983624

#1	.2574243
#2	.2600689
#3	.2560142

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	9013.541	156124.0	17491.90	6878.709	7614.369
Stddev	129.879	1109.9	136.66	61.339	165.556
%RSD	1.440929	.7108999	.7812526	.8917176	2.174256

#1	9096.469	157345.5	17638.77	6946.301	7723.298
#2	9080.292	155177.4	17368.49	6826.586	7695.954
#3	8863.861	155849.2	17468.46	6863.238	7423.855

Sample Name: Q2795-02 Acquired: 8/11/2025 15:27:12 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.1099390	-.030438	1.673154	-.002463	-.013745	121.0165	1.287705
Stddev	.0023284	.001949	.046695	.000343	.001328	1.0766	.014303
%RSD	2.117878	6.404439	2.790860	13.92600	9.658748	.8895943	1.110720

#1	.1088607	-.030949	1.647141	-.002747	-.015278	122.2549	1.304186
#2	.1083452	-.032082	1.645258	-.002082	-.012955	120.4903	1.278544
#3	.1126110	-.028285	1.727062	-.002560	-.013003	120.3042	1.280385

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0113351	.0108048	152.2037	.2371642	.1350148	.4175000	287.3335
Stddev	.0001259	.0012210	1.4245	.0018302	.0048002	.0158688	3.7282
%RSD	1.110330	11.30036	.9358847	.7716995	3.555301	3.800899	1.297508

#1	.0113730	.0098058	153.8478	.2389181	.1319281	.4049839	290.9421
#2	.0114378	.0104428	151.4241	.2352662	.1325712	.4121680	283.4963
#3	.0111947	.0121659	151.3393	.2373084	.1405451	.4353480	287.5622

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.108716	93.12931	.1647500	.0108890	3.366249	.4018432	1.182678
Stddev	.059625	.68468	.0046321	.0005896	.051777	.0032127	.011749
%RSD	1.167117	.7351947	2.811563	5.415027	1.538113	.7994919	.9934219

#1	5.177300	93.91229	.1620020	.0110171	3.411245	.4055193	1.195081
#2	5.069198	92.83265	.1621501	.0102458	3.309658	.4004367	1.171716
#3	5.079651	92.64298	.1700980	.0114040	3.377845	.3995736	1.181237

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	22.63902	.1239588	.0076154	.2490722	5.044296	7.409349	14.01148
Stddev	.24202	.0072757	.0003828	.0067186	.053263	.080110	.44316
%RSD	1.069054	5.869473	5.026239	2.697463	1.055908	1.081206	3.162838

#1	22.84915	.1283720	.0072627	.2441545	5.105789	7.493909	13.72826
#2	22.37440	.1155611	.0075611	.2463346	5.012572	7.334590	13.78399
#3	22.69351	.1279431	.0080224	.2567274	5.014528	7.399547	14.52218

Sample Name: Q2795-02 Acquired: 8/11/2025 15:27:12 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.9570778	.1058576	.0450571
Stddev	.0402104	.0017775	.0019731
%RSD	4.201370	1.679112	4.379051

#1	.9338684	.1078497	.0458452
#2	.9338563	.1052894	.0465144
#3	1.003509	.1044336	.0428118

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7955.246	137987.6	15788.55	6061.789	7339.571
Stddev	162.590	846.3	87.38	53.803	186.525
%RSD	2.043811	.6133138	.5534109	.8875741	2.541354

#1	8040.731	137270.0	15700.69	6007.932	7438.329
#2	8057.260	138920.8	15789.53	6115.538	7455.952
#3	7767.745	137772.0	15875.43	6061.898	7124.431

Sample Name: Q2795-03 Acquired: 8/11/2025 15:31:15 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.1278805	-.036900	2.420994	.0026542	.0061631	146.0596
Stddev	.0039351	.000855	.078640	.0019742	.0007014	3.5149
%RSD	3.077190	2.317210	3.248269	74.37969	11.38039	2.406488

#1	.1266702	-.037804	2.348058	.0023237	.0069245	148.6723
#2	.1246926	-.036104	2.410615	.0008661	.0060214	142.0635
#3	.1322786	-.036791	2.504308	.0047728	.0055434	147.4429

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.532521	.0131622	.0110367	90.16352	.2819434	.1400837
Stddev	.043043	.0002047	.0017220	2.14169	.0043406	.0047457
%RSD	2.808614	1.555233	15.60245	2.375338	1.539527	3.387787

#1	1.563198	.0133311	.0090928	91.78928	.2850144	.1354263
#2	1.483317	.0129346	.0116465	87.73679	.2769775	.1399116
#3	1.551048	.0132211	.0123708	90.96448	.2838383	.1449131

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.434995	337.9357	5.004763	38.86943	.1942838	.0150340
Stddev	.043079	7.4538	.135416	.88616	.0065831	.0001890
%RSD	3.002043	2.205688	2.705733	2.279845	3.388409	1.256888

#1	1.393508	343.2082	5.104135	39.53019	.1880133	.0149616
#2	1.431971	329.4080	4.850524	37.86242	.1936976	.0148919
#3	1.479507	341.1910	5.059630	39.21567	.2011404	.0152484

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.320468	.4414451	1.620929	20.13365	.1688592	.0160399
Stddev	.040010	.0118111	.029379	.41526	.0114799	.0001334
%RSD	3.029981	2.675554	1.812477	2.062524	6.798497	.8319485

#1	1.336634	.4523734	1.648027	20.40005	.1765504	.0160687
#2	1.274904	.4289147	1.589705	19.65518	.1556636	.0158944
#3	1.349865	.4430471	1.625056	20.34573	.1743635	.0161565

Sample Name: Q2795-03 Acquired: 8/11/2025 15:31:15 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.5042337	5.014928	6.008919	F 19.83699	1.301440	.1246846
Stddev	.0158618	.124652	.117253	.66405	.048793	.0020973
%RSD	3.145720	2.485623	1.951311	3.347519	3.749157	1.682120

#1	.4900490	5.110198	6.097821	19.23051	1.251537	.1255828
#2	.5012914	4.873854	5.876034	19.73392	1.303741	.1222877
#3	.5213606	5.060733	6.052901	20.54655	1.349042	.1261832

Elem	Sr4077
Units	ppm
Avg	.0330502
Stddev	.0021175
%RSD	6.406835

#1	.0346281
#2	.0306437
#3	.0338786

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	8223.648	140941.5	16303.32	6237.238	7611.952
Stddev	153.437	2091.0	290.33	95.465	188.131
%RSD	1.865801	1.483614	1.780781	1.530571	2.471523

#1	8360.706	139962.6	16149.85	6181.352	7788.503
#2	8252.350	143342.4	16638.17	6347.469	7633.292
#3	8057.886	139519.4	16121.93	6182.895	7414.061

Sample Name: Q2759-04 Acquired: 8/11/2025 15:35:17 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0064227	-.003463	2.204813	.0029500	.0057375	2.274996
Stddev	.0015504	.000615	.042359	.0029158	.0009178	.014982
%RSD	24.13926	17.76079	1.921206	98.84187	15.99724	.6585434

#1	.0079881	-.004103	2.200345	.0063147	.0067155	2.291392
#2	.0063922	-.003411	2.164866	.0013736	.0048948	2.262019
#3	.0048878	-.002876	2.249229	.0011617	.0056021	2.271578

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.433517	.0002158	.0059104	46.30912	.0386676	.0144046
Stddev	.017019	.0000594	.0001723	.31776	.0009329	.0003133
%RSD	.4956619	27.52289	2.915565	.6861775	2.412605	2.174870

#1	3.443708	.0001472	.0059362	46.65233	.0387659	.0144094
#2	3.442972	.0002485	.0057266	46.24989	.0376894	.0140889
#3	3.413870	.0002516	.0060683	46.02514	.0395474	.0147155

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2590990	13.84950	.2797904	7.932951	.0120667	.0018173
Stddev	.0052268	.10153	.0020911	.065530	.0001588	.0000864
%RSD	2.017316	.7331197	.7473748	.8260471	1.315685	4.752802

#1	.2588490	13.84791	.2815210	8.003002	.0119617	.0017189
#2	.2540016	13.74876	.2803833	7.922702	.0119891	.0018807
#3	.2644463	13.95181	.2774668	7.873151	.0122493	.0018522

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	105.1602	.0235278	4.527772	10.79281	.0818924	.0064194
Stddev	.8161	.0002933	.095813	.09433	.0008565	.0002660
%RSD	.7760452	1.246601	2.116123	.8740186	1.045913	4.144486

#1	105.1345	.0235203	4.583607	10.77478	.0828571	.0064578
#2	104.3573	.0232383	4.417138	10.70879	.0812211	.0061363
#3	105.9889	.0238247	4.582571	10.89485	.0815991	.0066642

Sample Name: Q2759-04 Acquired: 8/11/2025 15:35:17 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0048617	.0992375	F 23.60212	1.180010	F 39.75101	.0138798
Stddev	.0003651	.0014316	.29215	.020223	.90624	.0010870
%RSD	7.509754	1.442596	1.237796	1.713765	2.279781	7.831806

#1	.0044637	.0993285	23.73322	1.180257	39.37658	.0129269
#2	.0051811	.1006214	23.26739	1.159665	39.09198	.0150638
#3	.0049403	.0977626	23.80576	1.200108	40.78446	.0136486

Elem	Sr4077
Units	ppm
Avg	.2791192
Stddev	.0018074
%RSD	.6475554

#1	.2807409
#2	.2794461
#3	.2771706

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7017.583	120809.8	13629.49	5314.071	8337.517
Stddev	110.129	1860.9	115.01	69.288	126.044
%RSD	1.569326	1.540374	.8438657	1.303852	1.511771

#1	7015.346	120103.3	13500.24	5297.350	8339.383
#2	7128.814	122920.5	13720.56	5390.189	8462.619
#3	6908.590	119405.5	13667.68	5254.674	8210.551

Sample Name: Q2800-01 Acquired: 8/11/2025 15:39:24 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.0408871	-.018581	.3886899	-.004599	-.008846	66.61767	.7717758
Stddev	.0017698	.000523	.0261827	.000510	.001000	1.28151	.0156899
%RSD	4.328484	2.813686	6.736133	11.09017	11.30727	1.923685	2.032954

#1	.0396568	-.018048	.3657240	-.004036	-.008438	67.50829	.7835587
#2	.0400892	-.018601	.3831448	-.005030	-.009986	67.19578	.7778026
#3	.0429154	-.019093	.4172010	-.004730	-.008114	65.14895	.7539662

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0065911	.0044645	19.99125	.1428969	.0649781	.3743522	137.8243
Stddev	.0000859	.0011402	.37242	.0024107	.0049365	.0286801	1.9681
%RSD	1.303067	25.54020	1.862927	1.687021	7.597121	7.661264	1.427975

#1	.0066129	.0035736	20.27277	.1406658	.0607567	.3494603	136.1214
#2	.0066639	.0040704	20.13201	.1425709	.0637716	.3678814	137.3725
#3	.0064964	.0057495	19.56896	.1454541	.0704059	.4057149	139.9790

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.595455	21.44192	.1363933	.0010983	2.615372	.1966691	.7927913
Stddev	.052178	.45031	.0094836	.0001136	.057304	.0040585	.0122839
%RSD	2.010358	2.100121	6.953141	10.34529	2.191047	2.063622	1.549453

#1	2.630475	21.73648	.1280833	.0012139	2.578963	.1997838	.7832870
#2	2.620404	21.66572	.1343720	.0009867	2.585727	.1981441	.7884250
#3	2.535486	20.92356	.1467246	.0010942	2.681426	.1920794	.8066619

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.998234	.0256965	.0013244	.0090431	1.528826	3.550838	3.571124
Stddev	.105471	.0144459	.0001204	.0004428	.029254	.044847	.266729
%RSD	1.758368	56.21723	9.089348	4.897009	1.913474	1.263009	7.469044

#1	5.914270	.0150138	.0013001	.0087584	1.551611	3.518430	3.350207
#2	5.963817	.0199431	.0012180	.0088175	1.539029	3.532063	3.495730
#3	6.116614	.0421325	.0014551	.0095533	1.495837	3.602022	3.867435

Sample Name: Q2800-01 Acquired: 8/11/2025 15:39:24 Type: Unk
Method: 6010-200.7 NEW(v90) 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	.8120183	.1020508	-.011909
Stddev	.0618995	.0003262	.004034
%RSD	7.622914	.3196218	33.87812

#1	.7608734	.1024185	-.008488
#2	.7943508	.1019375	-.010880
#3	.8808307	.1017963	-.016358

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	8782.218	149223.1	15839.99	6652.052	9341.147
Stddev	387.240	1568.4	416.67	84.717	469.520
%RSD	4.409361	1.051071	2.630472	1.273547	5.026369

#1	9139.664	150943.5	15611.74	6734.242	9771.621
#2	8836.152	148853.3	15587.32	6656.899	9411.337
#3	8370.839	147872.7	16320.91	6565.016	8840.483

Sample Name: CCV04 Acquired: 8/11/2025 16:02:38 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.985460	5.405016	4.735508	5.090470	5.025835	9.266936
Stddev	.293768	.385938	.233354	.308527	.301544	.097360
%RSD	5.892503	7.140377	4.927746	6.060872	5.999887	1.050620

#1	4.810715	5.064652	4.589739	4.891846	4.837871	9.345175
#2	4.821044	5.326072	4.612134	4.933657	4.865983	9.157902
#3	5.324622	5.824322	5.004652	5.445907	5.373649	9.297732

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.103344	.2265268	2.371201	23.01169	.9214009	2.377228
Stddev	.202207	.0049128	.115240	.25867	.0092001	.123056
%RSD	2.221236	2.168758	4.859987	1.124069	.9984872	5.176429

#1	9.303247	.2316786	2.298656	23.18646	.9273100	2.300883
#2	9.107876	.2218942	2.310866	22.71454	.9108008	2.311616
#3	8.898910	.2260076	2.504082	23.13406	.9260918	2.519185

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.207509	4.767328	2.298471	22.94663	2.385251	1.179186
Stddev	.064225	.073500	.029768	.27013	.120619	.014027
%RSD	5.318799	1.541738	1.295107	1.177228	5.056871	1.189578

#1	1.168160	4.704083	2.315792	23.12433	2.311485	1.185473
#2	1.172745	4.749938	2.264098	22.63577	2.319822	1.163115
#3	1.281622	4.847963	2.315521	23.07980	2.524447	1.188970

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	22.98329	2.345226	2.366505	23.68847	4.615125	4.972971
Stddev	.32148	.026553	.028313	.28267	.096325	.275271
%RSD	1.398765	1.132213	1.196390	1.193265	2.087160	5.535339

#1	22.87374	2.361005	2.382168	23.54194	4.713979	4.802063
#2	22.73091	2.314570	2.333822	23.50915	4.521545	4.826332
#3	23.34523	2.360104	2.383525	24.01431	4.609852	5.290517

Sample Name: CCV04 Acquired: 8/11/2025 16:02:38 Type: Unk
Method: 6010-200.7 NEW(v90) Mode: CONC Corr. Factor: 1.000000
User: Jaswal Custom ID1: CCV04 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.791623	4.669322	4.892110	4.594951	4.864787	F 4.455573
Stddev	.239792	.057207	.090378	.235708	.282980	.058889
%RSD	5.004404	1.225175	1.847420	5.129712	5.816910	1.321704

#1	4.637335	4.700027	4.838114	4.445748	4.681657	4.498655
#2	4.669651	4.603318	4.841767	4.472417	4.721991	4.388470
#3	5.067881	4.704622	4.996448	4.866687	5.190714	4.479595

Elem	Sr4077
Units	ppm
Avg	4.615634
Stddev	.137564
%RSD	2.980391

#1	4.735795
#2	4.645525
#3	4.465582

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7464.589	129771.7	14043.80	5727.287	8762.230
Stddev	302.483	544.7	184.09	45.788	336.593
%RSD	4.052244	.4197746	1.310805	.7994784	3.841409

#1	7641.179	129847.8	13833.39	5730.094	8962.639
#2	7637.271	130274.5	14175.18	5771.608	8950.423
#3	7115.319	129193.0	14122.82	5680.160	8373.630

Sample Name: CCB04 Acquired: 8/11/2025 16:06:50 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.000724	-.005080	-.000338	-.000813	-.001807	-.006470	-.013565
Stddev	.000581	.000518	.001794	.002468	.000825	.003400	.001130
%RSD	80.29462	10.19485	531.2954	303.7609	45.64588	52.55778	8.329278

#1	-.000479	-.004806	.000541	.001889	-.002355	-.004404	-.012460
#2	-.001388	-.005677	-.002401	-.002949	-.000858	-.010394	-.013518
#3	-.000305	-.004757	.000847	-.001377	-.002207	-.004611	-.014718

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000011	.0000031	-.007964	-.000224	-.000228	-.000112	-.012399
Stddev	.000058	.0000387	.003634	.000162	.000203	.000221	.004362
%RSD	545.6267	1245.831	45.62669	72.59013	88.86390	197.0647	35.18362

#1	-.000052	.0000102	-.006433	-.000141	-.000128	-.000310	-.015167
#2	-.000035	.0000377	-.005346	-.000411	-.000095	.000127	-.014659
#3	.000055	-.000039	-.012113	-.000119	-.000461	-.000155	-.007370

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000124	.0024178	.0001863	.0007187	.0237618	.0025707	.0010926
Stddev	.0006709	.0078259	.0001638	.0004510	.0189428	.0009209	.0003028
%RSD	5429.522	323.6836	87.94700	62.75712	79.71979	35.82170	27.71811

#1	.0007380	.0039616	.0001494	.0011506	.0069390	.0027887	.0013358
#2	-.000585	-.006065	.0003654	.0007546	.0200663	.0015604	.0007534
#3	-.000116	.009357	.0000441	.0002507	.0442800	.0033630	.0011886

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1920001	-.000761	.0006597	.0005489	-.000598	.0011098	.0010843
Stddev	.0220973	.000271	.0001574	.0003899	.000426	.0067074	.0010270
%RSD	11.50901	35.66082	23.86128	71.03035	71.25556	604.3698	94.71274

#1	.1683961	-.000451	.0008372	.0009935	-.000157	.0065215	.0022698
#2	.2121944	-.000873	.0006050	.0003877	-.001008	.0032024	.0004635
#3	.1954097	-.000958	.0005370	.0002654	-.000629	-.006394	.0005198

Sample Name: CCB04 Acquired: 8/11/2025 16:06:50 Type: Unk
Method: 6010-200.7 NEW(v90) 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	-.002921	-.005138	-.000065
Stddev	.000534	.000932	.000091
%RSD	18.28474	18.13606	140.4500

#1	-.002432	-.006120	.000040
#2	-.002840	-.005028	-.000109
#3	-.003491	-.004266	-.000125

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7553.660	136218.3	14316.05	5930.128	9415.795
Stddev	269.902	3481.3	283.10	139.353	314.018
%RSD	3.573132	2.555650	1.977512	2.349918	3.335013

#1	7645.695	132774.8	14047.08	5797.589	9519.534
#2	7765.507	139736.1	14289.63	6075.419	9664.816
#3	7249.777	136144.1	14611.43	5917.377	9063.033

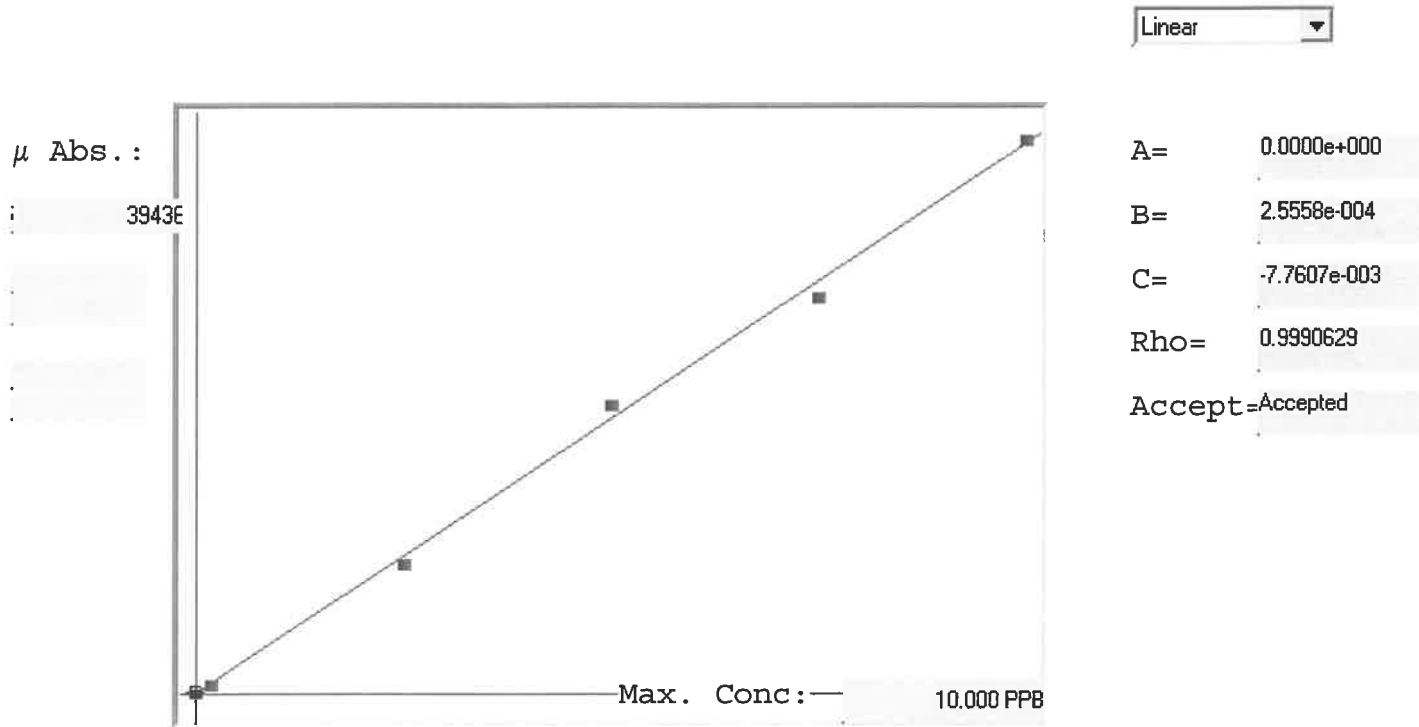
LB136774 INSTRUMENT ID:CV1

Method: 7470A Operator: Admin Date of Analysis: 11 Aug 2025 14:44:41

Type	Sample ID	Extended ID	Conc.	μ Abs.	Units	Type	Std CondMethod	Date
S	0.0 - 1	50.0	-	189	PPB	Std	0.00007470A	11 Aug 2025 16:17:40
S	0.2 - 1	50.2	-	749	PPB	Std	0.20007470A	11 Aug 2025 16:22:09
S	2.5 - 1	52.5	-	9410	PPB	Std	2.50007470A	11 Aug 2025 16:24:26
S	5.0 - 1	55.0	-	20627	PPB	Std	5.00007470A	11 Aug 2025 16:32:36
S	7.5 - 1	57.5	-	28372	PPB	Std	7.50007470A	11 Aug 2025 16:50:05
S	10.0 - 1	510.0	-	39436	PPB	Std	10.00007470A	11 Aug 2025 17:01:57
U	ICV07 - 1	ICV07	3.7640	14758	PPB	SMPL	-7470A	11 Aug 2025 17:07:40
U	ICB07 - 1	ICB07	0.0607	268	PPB	SMPL	-7470A	11 Aug 2025 17:09:55
U	CCV19 - 1	CCV19	5.0621	19837	PPB	SMPL	-7470A	11 Aug 2025 17:22:05
U	CCB19 - 1	CCB19	0.0615	271	PPB	SMPL	-7470A	11 Aug 2025 17:24:22
U	CRA - 1	CRA	0.2023	822	PPB	SMPL	-7470A	11 Aug 2025 17:26:39
U	HighStd - 1	HighStd	9.8117	38421	PPB	SMPL	-7470A	11 Aug 2025 17:37:57
U	ChkStd - 1	ChkStd	6.7147	26303	PPB	SMPL	-7470A	11 Aug 2025 17:42:57
U	PB169166BL - 1	PBW	-0.1683	-628	PPB	SMPL	-7470A	11 Aug 2025 17:45:13
U	PB169166BS - 1	LCSW	4.1484	16262	PPB	SMPL	-7470A	11 Aug 2025 17:47:54
U	Q2779-04 - 1	TP-4	-0.0954	-343	PPB	SMPL	-7470A	11 Aug 2025 17:50:10
U	Q2779-08 - 1	TP-5	-0.0185	-42	PPB	SMPL	-7470A	11 Aug 2025 17:52:28
U	Q2783-03 - 1	RT5414	-0.0108	-12	PPB	SMPL	-7470A	11 Aug 2025 17:54:46
U	Q2791-01 - 1	SLUDGE	0.0025	40	PPB	SMPL	-7470A	11 Aug 2025 17:57:04
U	Q2798-04 - 1	TP-6	0.0526	236	PPB	SMPL	-7470A	11 Aug 2025 17:59:19
U	CCV20 - 1	CCV20	4.7996	18810	PPB	SMPL	-7470A	11 Aug 2025 18:01:35
U	CCB20 - 1	CCB20	0.0030	42	PPB	SMPL	-7470A	11 Aug 2025 18:03:50
U	Q2800-02 - 1	VNJ-222	0.0152	90	PPB	SMPL	-7470A	11 Aug 2025 18:06:08
U	Q2800-02DUP - 1	VNJ-222DUP	0.0152	90	PPB	SMPL	-7470A	11 Aug 2025 18:08:24
U	Q2800-02MS - 1	VNJ-222MS	3.4589	13564	PPB	SMPL	-7470A	11 Aug 2025 18:10:39
U	Q2800-02MSD - 1	VNJ-222MSD	3.4057	13356	PPB	SMPL	-7470A	11 Aug 2025 18:12:55
U	Q2800-02LX5 - 1		-0.0456	-148	PPB	SMPL	-7470A	11 Aug 2025 18:15:12
U	Q2800-02A - 1		3.3998	13333	PPB	SMPL	-7470A	11 Aug 2025 18:17:30
U	PB169149TB - 1	PB169149TB	-0.0387	-121	PPB	SMPL	-7470A	11 Aug 2025 18:19:47
U	CCV21 - 1	CCV21	4.8607	19049	PPB	SMPL	-7470A	11 Aug 2025 18:22:05
U	CCB21 - 1	CCB21	-0.0446	-144	PPB	SMPL	-7470A	11 Aug 2025 18:24:22

LB 136774
INSTRUMENT ID: CV1

7470A



Std ID	Conc.	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	%D
0.0	0.000	0.041	0.041	189	0.000	189	0				-8
0.2	0.200	0.184	-0.016	749	0.0 %	749					-4
2.5	2.500	2.397	-0.103	9410	0.0 %	9410	0				5
5.0	5.000	5.264	0.264	20627	0.0 %	20627					-3
7.5	7.500	7.243	-0.257	28372	0.0 %	28372					1
10.0	10.000	10.071	0.071	39436	0.0 %	39436					

SOP ID : M3010A-Digestion-17

SDG No : N/A

Matrix : WATER

Pipette ID: ICP A

Balance ID : N/A

Filter paper ID : N/A

pH Strip ID : M6069

Hood ID : #3

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

Start Digest Date: 08/08/2025 **Time :** 12:30 **Temp :** 96 °C

End Digest Date: 08/08/2025 **Time :** 15:32 **Temp :** 96 °C

Digestion tube ID: M5595

Block thermometer ID: MET-DIG. #1

Dig Technician Signature: *S/28*

Supervisor Signature: *[Signature]*

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 96C

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
08/08/25 16:32	<i>S/28 met dig</i>	<i>[Signature] (Metals Lab)</i>
	Preparation Group	Analysis Group

Lab Sample ID	Client Sample ID	pH	Initial Vol (ml)	Final Vol (ml)	Color Before	Color After	Clarity Before	Clarity After	Comment	Prep Pos
PB169149TB	PB169149TB	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	1
PB169178BL	PBW178	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	2
PB169178BS	LCS178	<2	5	25	Colorless	Colorless	Clear	Clear	M6180,M6181	3
Q2779-04	TP-4	<2	5	25	Colorless	ColorlessC olorless	Clear	Clear	N/A	4
Q2779-08	TP-5	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	5
Q2783-03	RT5414	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	6
Q2791-01	SLUDGE	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	7
Q2798-04	TP-6	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	8
Q2800-02	VNJ-222	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	9
Q2800-02DUP	VNJ-222DUP	<2	5	25	Colorless	Colorless	Clear	Clear	N/A	10
Q2800-02MS	VNJ-222MS	<2	5	25	Colorless	Colorless	Clear	Clear	M6180,M6181	11
Q2800-02MSD	VNJ-222MSD	<2	5	25	Colorless	Colorless	Clear	Clear	M6007,M6180,M6181	12

Sample ID	ClientID	TCLP Vessel ID	Sample Wt (g)	Volume Extraction Fluid #1 (mL)	Multi phasic	Phase Miscible	Phases Combined	Final Leachate PH	Metals Leachate Adj. PH	Prep Pos
PB169149TB	LEB149	07	N/A	2000	N/A	N/A	N/A	4.94	1.0	T-1
Q2779-04	TP-4	01	100.02	2000	N/A	N/A	N/A	6.4	1.5	T-1
Q2779-08	TP-5	02	100.03	2000	N/A	N/A	N/A	6.4	1.0	T-1
Q2783-03	RT5414	03	100.04	2000	N/A	N/A	N/A	5.8	1.5	T-1
Q2791-01	SLUDGE	04	100.02	2000	N/A	N/A	N/A	4.0	1.0	T-1
Q2798-04	TP-6	05	100.02	2000	N/A	N/A	N/A	7.0	1.0	T-1
Q2800-02	VNJ-222	06	100.03	2000	N/A	N/A	N/A	6.0	1.5	T-1

SOP ID : M7470A-Mercury-20

SDG No : N/A

Matrix : WATER

Pipette 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#1 2. N/A

Start Digest Date: 08/08/2025 Time : 12:30 Temp : 95 °C

End Digest Date: 08/08/2025 Time : 14:32 Temp : 95 °C

Digestion tube ID: M5595

Block thermometer ID: HG-DIG#1

Dig Technician Signature: *SKB*

Supervisor Signature: *SKB*

Temp : 1. 95°C 2. N/A

Standard Name	MLS USED	STD REF. # FROM LOG
ICV	30mL	MP86697
CCV	30mL	MP86699
CRA	30mL	MP86701
Blank Spike	0.48mL	MP86690
Matrix Spike	0.48mL	MP86690

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	MP86691
0.05 ppb	S0.05	N/A	N/A
0.2 ppb	S0.2	30mL	MP86692
2.5 ppb	S2.5	30mL	MP86693
5.0 ppb	S5.0	30mL	MP86694
7.5 ppb	S7.5	30mL	MP86695
10.0 ppb	S10.0	30mL	MP86696
ICV	ICV	30mL	MP86697
ICB	ICB	30mL	MP86698
CCV	CCV	30mL	MP86699
CCB	CCB	30mL	MP86700
CRI	CRI	30mL	MP86701
CHK STD	CHK STD	30mL	MP86702

Extraction Conformance/Non-Conformance Comments:

N/A		
Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
08/08/25 15:32	<i>SKB met dig</i>	<i>SKB (met lab)</i>
	Preparation Group	Analysis Group

Lab Sample ID	Client Sample ID	Initial Vol (ml)	Final Vol (ml)	pH	Comment	Prep Pos
PB169166BL	PBW166	30	30	<2	N/A	1-1
PB169166BS	LCS166	30	30	<2	MP86690	2
PB169166TB	LEB166	3	30	<2	N/A	3
Q2779-04	TP-4	3	30	<2	N/A	4
Q2779-08	TP-5	3	30	<2	N/A	5
Q2783-03	RT5414	3	30	<2	N/A	6
Q2791-01	SLUDGE	3	30	<2	N/A	7
Q2798-04	TP-6	3	30	<2	N/A	8
Q2800-02	VNJ-222	3	30	<2	N/A	9
Q2800-02MS	VNJ-222MS	3	30	<2	MP86690	11
Q2800-02MSD	VNJ-222MSD	3	30	<2	MP86690	12
Q2800-02DUP	VNJ-222DUP	3	30	<2	N/A	10

Sample ID	ClientID	TCLP Vessel ID	Sample Wt (g)	Volume Extraction Fluid #1 (mL)	Multi phasic	Phase Miscible	Phases Combined	Final Leachate PH	Metals Leachate Adj. PH	Prep Pos
PB169149TB	LEB149	07	N/A	2000	N/A	N/A	N/A	4.94	1.0	T-1
Q2779-04	TP-4	01	100.02	2000	N/A	N/A	N/A	6.4	1.5	T-1
Q2779-08	TP-5	02	100.03	2000	N/A	N/A	N/A	6.4	1.0	T-1
Q2783-03	RT5414	03	100.04	2000	N/A	N/A	N/A	5.8	1.5	T-1
Q2791-01	SLUDGE	04	100.02	2000	N/A	N/A	N/A	4.0	1.0	T-1
Q2798-04	TP-6	05	100.02	2000	N/A	N/A	N/A	7.0	1.0	T-1
Q2800-02	VNJ-222	06	100.03	2000	N/A	N/A	N/A	6.0	1.5	T-1

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QC Batch ID # LB136774

Review By	sagar	Review On	8/11/2025 7:02:10 PM
Supervise By	jaswal	Supervise On	8/11/2025 11:15:28 PM

STD. NAME	STD REF.#
ICAL Standard	MP86690,MP86691,MP86692,MP86692,MP86693,MP86694,MP86695,MP86696
ICV Standard	MP86697
CCV Standard	MP86699
ICSA Standard	
CRI Standard	MP86701
LCS Standard	
Chk Standard	MP86698,MP86700,MP86702,MP86705

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	08/11/25 16:17		sagar	OK
2	S0.2	S0.2	CAL2	08/11/25 16:22		sagar	OK
3	S2.5	S2.5	CAL3	08/11/25 16:24		sagar	OK
4	S5	S5	CAL4	08/11/25 16:32		sagar	OK
5	S7.5	S7.5	CAL5	08/11/25 16:50		sagar	OK
6	S10	S10	CAL6	08/11/25 17:01		sagar	OK
7	ICV07	ICV07	ICV	08/11/25 17:07		sagar	OK
8	ICB07	ICB07	ICB	08/11/25 17:09		sagar	OK
9	CCV19	CCV19	CCV	08/11/25 17:22		sagar	OK
10	CCB19	CCB19	CCB	08/11/25 17:24		sagar	OK
11	CRA	CRA	CRDL	08/11/25 17:26		sagar	OK
12	HighStd	HighStd	HIGH STD	08/11/25 17:37		sagar	OK
13	ChkStd	ChkStd	SAM	08/11/25 17:42		sagar	OK
14	PB169166BL	PB169166BL	MB	08/11/25 17:45		sagar	OK
15	PB169166BS	PB169166BS	LCS	08/11/25 17:47		sagar	OK
16	Q2779-04	TP-4	SAM	08/11/25 17:50		sagar	OK
17	Q2779-08	TP-5	SAM	08/11/25 17:52		sagar	OK
18	Q2783-03	RT5414	SAM	08/11/25 17:54		sagar	OK

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QC Batch ID # LB136774

Review By	sagar	Review On	8/11/2025 7:02:10 PM
Supervise By	jaswal	Supervise On	8/11/2025 11:15:28 PM
STD. NAME	STD REF.#		
ICAL Standard	MP86690,MP86691,MP86692,MP86692,MP86693,MP86694,MP86695,MP86696		
ICV Standard	MP86697		
CCV Standard	MP86699		
ICSA Standard			
CRI Standard	MP86701		
LCS Standard			
Chk Standard	MP86698,MP86700,MP86702,MP86705		

19	Q2791-01	SLUDGE	SAM	08/11/25 17:57		sagar	OK
20	Q2798-04	TP-6	SAM	08/11/25 17:59		sagar	OK
21	CCV20	CCV20	CCV	08/11/25 18:01		sagar	OK
22	CCB20	CCB20	CCB	08/11/25 18:03		sagar	OK
23	Q2800-02	VNJ-222	SAM	08/11/25 18:06		sagar	OK
24	Q2800-02DUP	VNJ-222DUP	DUP	08/11/25 18:08		sagar	OK
25	Q2800-02MS	VNJ-222MS	MS	08/11/25 18:10		sagar	OK
26	Q2800-02MSD	VNJ-222MSD	MSD	08/11/25 18:12		sagar	OK
27	Q2800-02L	VNJ-222L	SD	08/11/25 18:15		sagar	OK
28	Q2800-02A	VNJ-222A	PS	08/11/25 18:17		sagar	OK
29	PB169166TB	PB169166TB	MB	08/11/25 18:19	PB169149TB	sagar	OK
30	CCV21	CCV21	CCV	08/11/25 18:22		sagar	OK
31	CCB21	CCB21	CCB	08/11/25 18:24		sagar	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB136778

Review By	Janvi	Review On	8/12/2025 7:03:55 PM
Supervise By		Supervise On	
STD. NAME	STD REF.#		
ICAL Standard	MP86640,MP86656,MP86653,MP86643,MP86642,MP86641		
ICV Standard	MP86645,MP86656		
CCV Standard	MP86646		
ICSA Standard	MP86651,MP86652		
CRI Standard	MP86656		
LCS Standard			
Chk Standard	MP86647,MP86648		

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	08/11/25 10:43		Jaswal	OK
2	S1	S1	CAL2	08/11/25 10:48		Jaswal	OK
3	S2	S2	CAL3	08/11/25 10:52		Jaswal	OK
4	S3	S3	CAL4	08/11/25 10:56		Jaswal	OK
5	S4	S4	CAL5	08/11/25 11:00		Jaswal	OK
6	S5	S5	CAL6	08/11/25 11:04		Jaswal	OK
7	ICV01	ICV01	ICV	08/11/25 11:09	ICV fail for B,Mo	Jaswal	OK
8	LLICV01	LLICV01	LLICV	08/11/25 11:33		Jaswal	OK
9	ICB01	ICB01	ICB	08/11/25 11:37		Jaswal	OK
10	CRI01	CRI01	CRDL	08/11/25 11:41		Jaswal	OK
11	ICSA01	ICSA01	ICSA	08/11/25 11:48		Jaswal	OK
12	ICSAB01	ICSAB01	ICSAB	08/11/25 11:52	ICSAB fail for B,Mo	Jaswal	OK
13	ICSADL	ICSADL	ICSA	08/11/25 11:56		Jaswal	OK
14	ICSABDL	ICSABDL	ICSAB	08/11/25 12:00		Jaswal	OK
15	CCV01	CCV01	CCV	08/11/25 12:05		Jaswal	OK
16	CCB01	CCB01	CCB	08/11/25 12:09		Jaswal	OK
17	Q2788-01	OK-01-08062025	SAM	08/11/25 12:13		Jaswal	OK
18	Q2783-03	RT5414	SAM	08/11/25 12:17		Jaswal	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB136778

Review By	Janvi	Review On	8/12/2025 7:03:55 PM
Supervise By		Supervise On	
STD. NAME	STD REF.#		
ICAL Standard	MP86640,MP86656,MP86653,MP86643,MP86642,MP86641		
ICV Standard	MP86645,MP86656		
CCV Standard	MP86646		
ICSA Standard	MP86651,MP86652		
CRI Standard	MP86656		
LCS Standard			
Chk Standard	MP86647,MP86648		

19	PB169178BL	PB169178BL	MB	08/11/25 12:22		Jaswal	OK
20	PB169178BS	PB169178BS	LCS	08/11/25 12:26		Jaswal	OK
21	PB169149TB	PB169149TB	MB	08/11/25 12:42		Jaswal	OK
22	Q2779-04	TP-4	SAM	08/11/25 12:47		Jaswal	OK
23	Q2779-08	TP-5	SAM	08/11/25 12:51		Jaswal	OK
24	Q2791-01	SLUDGE	SAM	08/11/25 12:56		Jaswal	OK
25	CCV02	CCV02	CCV	08/11/25 13:00		Jaswal	OK
26	CCB02	CCB02	CCB	08/11/25 13:04		Jaswal	OK
27	Q2798-04	TP-6	SAM	08/11/25 13:08		Jaswal	OK
28	Q2800-02	VNJ-222	SAM	08/11/25 13:13		Jaswal	OK
29	Q2800-02DUP	VNJ-222DUP	DUP	08/11/25 13:17		Jaswal	OK
30	Q2800-02L	VNJ-222L	SD	08/11/25 13:22		Jaswal	OK
31	Q2800-02MS	VNJ-222MS	MS	08/11/25 13:26		Jaswal	OK
32	Q2800-02MSD	VNJ-222MSD	MSD	08/11/25 13:30		Jaswal	OK
33	Q2800-02A	VNJ-222A	PS	08/11/25 13:34	0.1 ml of each M6004,M6017	Jaswal	OK
34	Q2779-01	TP-4	SAM	08/11/25 13:38		Jaswal	OK
35	Q2779-05	TP-5	SAM	08/11/25 13:42		Jaswal	OK
36	Q2793-01	VNJ-231	SAM	08/11/25 13:46		Jaswal	OK
37	CCV03	CCV03	CCV	08/11/25 14:54		Jaswal	OK

Instrument ID: P4

Daily Analysis Runlog For Sequence/QC Batch ID # LB136778

Review By	Janvi	Review On	8/12/2025 7:03:55 PM
Supervise By		Supervise On	

STD. NAME	STD REF.#
ICAL Standard	MP86640,MP86656,MP86653,MP86643,MP86642,MP86641
ICV Standard	MP86645,MP86656
CCV Standard	MP86646
ICSA Standard	MP86651,MP86652
CRI Standard	MP86656
LCS Standard	
Chk Standard	MP86647,MP86648

38	CCB03	CCB03	CCB	08/11/25 14:58		Jaswal	OK
39	Q2793-01DUP	VNJ-231DUP	DUP	08/11/25 15:03		Jaswal	OK
40	Q2793-01L	VNJ-231L	SD	08/11/25 15:07		Jaswal	OK
41	Q2793-01MS	VNJ-231MS	MS	08/11/25 15:11		Jaswal	OK
42	Q2793-01MSD	VNJ-231MSD	MSD	08/11/25 15:15		Jaswal	OK
43	Q2793-01A	VNJ-231A	PS	08/11/25 15:19	0.1 ml of each M6004,M6017	Jaswal	OK
44	Q2795-01	COMP-1	SAM	08/11/25 15:23		Jaswal	OK
45	Q2795-02	COMP-2	SAM	08/11/25 15:27		Jaswal	OK
46	Q2795-03	COMP-3	SAM	08/11/25 15:31		Jaswal	OK
47	Q2759-04	LIQUID-DRUM	SAM	08/11/25 15:35		Jaswal	OK
48	Q2800-01	VNJ-222	SAM	08/11/25 15:39		Jaswal	OK
49	CCV04	CCV04	CCV	08/11/25 16:02		Jaswal	OK
50	CCB04	CCB04	CCB	08/11/25 16:06		Jaswal	OK

SOP ID : M1311-TCLP-16
SDG No : N/A
Weigh By : JP
Balance ID : WC SC-7
pH Meter ID : WC PH METER-1
Extraction By : JP
Filter By : JP
Pipette ID : WC
Tumbler ID : T-1
TCLP Filter ID : 115525

Start Prep Date : 08/07/2025 **Time :** 15:40
End Prep Date : 08/08/2025 **Time :** 09:35
Combination Ratio : 20
ZHE Cleaning Batch : N/A 70
Initial Room Temperature: 23 °C
Final Room Temperature: 22 °C
TCLP Technician Signature : [Signature]
Supervisor By : [Signature]

Standard Name	MLS USED	STD REF. # FROM LOG
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

Chemical Used	ML/SAMPLE U	Lot Number
TCLP-FLUID-1	N/A	WP112804
HCL-TCLP,1N	N/A	WP112797
HNO3-TCLP,1N	N/A	WP112799
pH Strips	N/A	W1931,W1934,W3171,W3172
pH Strips	W1940,W1941,W1942	W3166,W1938,W1939,
1 Liter Amber	N/A	90924-08
120ml Plastic bottle	N/A	2738
1:1 HNO3	N/A	MP84041

Extraction Conformance/Non-Conformance Comments:

Matrix spikes are added after filtration and before preservation. TUMBLER T-1 checked,30 rpm. Particle size reduction is not required. q2800-02 is used for MS-MSD.

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
08/08/25 11:00	JP / TCLP Room	S/AS. RJ / Ext
	Preparation Group	Analysis Group [Signature]

Sample ID	ClientID	TCLP Vessel ID	Sample Wt (g)	Volume Extraction Fluid #1 (mL)	Multi phasic	Phase Miscible	Phases Combined	Final Leachate PH	Metals Leachate Adj. PH	Prep Pos
PB169149TB	LEB149	07	N/A	2000	N/A	N/A	N/A	4.94	1.0	T-1
Q2779-04	TP-4	01	100.02	2000	N/A	N/A	N/A	6.4	1.5	T-1
Q2779-08	TP-5	02	100.03	2000	N/A	N/A	N/A	6.4	1.0	T-1
Q2783-03	RT5414	03	100.04	2000	N/A	N/A	N/A	5.8	1.5	T-1
Q2791-01	SLUDGE	04	100.02	2000	N/A	N/A	N/A	4.0	1.0	T-1
Q2798-04	TP-6	05	100.02	2000	N/A	N/A	N/A	7.0	1.0	T-1
Q2800-02	VNJ-222	06	100.03	2000	N/A	N/A	N/A	6.0	1.5	T-1

SampleID	ClientID	Sample Weight (g)	Filter Weight (g)	Filtrate (mL)	Filter + Solid (After 100°C)	% solids	% Dry Solids
PB169149TB	LEB149	N/A	N/A	N/A	N/A	N/A	N/A
Q2779-04	TP-4	N/A	N/A	N/A	N/A	100	N/A
Q2779-08	TP-5	N/A	N/A	N/A	N/A	100	N/A
Q2783-03	RT5414	N/A	N/A	N/A	N/A	100	N/A
Q2791-01	SLUDGE	N/A	N/A	N/A	N/A	100	N/A
Q2798-04	TP-6	N/A	N/A	N/A	N/A	100	N/A
Q2800-02	VNJ-222	N/A	N/A	N/A	N/A	100	N/A

Hot Block ID : WC S-1 / WC S-2

Thermometer ID : FLASHPOINT

SampleID	ClientID	Sample Weight (g)	Volume DI Water (mL)	PH after 5 min stir	PH after 10 min stir	Extraction Fluid 1 or 2	pH Extraction Fluid
PB169149TB	LEB149	N/A	N/A	N/A	N/A	#1	4.94
Q2779-04	TP-4	5.02	96.5	8.6	3.5	#1	4.94
Q2779-08	TP-5	5.01	96.5	8.6	3.5	#1	4.94
Q2783-03	RT5414	5.02	96.5	8.0	3.0	#1	4.94
Q2791-01	SLUDGE	5.03	96.5	5.8	2.0	#1	4.94
Q2798-04	TP-6	5.02	96.5	9.0	4.0	#1	4.94
Q2800-02	VNJ-222	5.03	96.5	7.6	2.5	#1	4.94

Prep Standard - Chemical Standard Summary

Order ID : Q2791

Test : TCLP ICP Metals,TCLP Mercury

Prepbatch ID : PB169166,PB169178,

Sequence ID/Qc Batch ID: LB136774,LB136778,LB136778,

Standard ID :

MP85156,MP85892,MP85893,MP85894,MP85895,MP86640,MP86641,MP86642,MP86643,MP86645,MP86646,MP86647,MP86648,MP86651,MP86652,MP86653,MP86655,MP86656,MP86690,MP86691,MP86692,MP86693,MP86694,MP86695,MP86696,MP86697,MP86698,MP86699,MP86700,MP86701,MP86702,MP86705,

Chemical ID :

M4371,M4465,M4916,M5062,M5467,M5658,M5697,M5748,M5798,M5799,M5800,M5801,M5805,M5814,M5816,M5820,M5884,M5962,M5969,M5970,M5979,M5985,M5998,M6021,M6023,M6027,M6028,M6030,M6032,M6041,M6077,M6086,M6128,M6137,M6140,M6142,M6144,M6145,M6146,M6151,M6158,M6159,M6162,M6163,M6164,M6165,M6171,M6174,M6176,M6177,M6178,M6179,M6180,M6181,M6182,M6184,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	08/31/2025	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	08/15/2025	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)	MP86640	08/06/2025	08/18/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP	Sarabjit Jaswal
FROM 125.00000ml of M6151 + 2350.00000ml of W3112 + 25.00000ml of M6162 = 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>
907	ICP AES STD S (S5)	MP86641	08/06/2025	08/18/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP)	Sarabjit Jaswal
FROM 5.00000ml of M5467 + 5.00000ml of M5820 + 5.00000ml of M5969 + 5.00000ml of M5970 + 5.00000ml of M5998 + 5.00000ml of M6077 + 5.00000ml of M6146 + 5.00000ml of M6174 + 5.00000ml of M6176 + 455.00000ml of MP86640 = Final Quantity: 500.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
910	ICP AES STD S4	MP86642	08/06/2025	08/18/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP)	Sarabjit Jaswal
FROM 50.00000ml of MP86640 + 50.00000ml of MP86641 = 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>
909	ICP AES STD S3	MP86643	08/06/2025	08/18/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP	Sarabjit Jaswal 08/07/2025

<u>FROM</u>	A) 25.00000ml of MP86641 + 75.00000ml of MP86640 = Final Quantity: 100.000 ml
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<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	MP86645	08/06/2025	08/18/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP	Sarabjit Jaswal 08/07/2025

FROM	A)
0.40000ml of M6163 + 0.40000ml of M6164 + 0.40000ml of M6165 + 48.80000ml of MP86640 = Final Quantity: 50.000 ml	



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
911	ICP AES CCV SOLN	MP86646	08/06/2025	08/18/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP	Sarabjit Jaswal
FROM 50.00000ml of MP86640 + 50.00000ml of MP86641 = 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>
919	ICP AES INTERNAL STD	MP86647	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/07/2025
<u>FROM</u>	1.00000ml of M6179 + 10.00000ml of M5985 + 1969.00000ml of W3112 + 20.00000ml of M6162 = Final Quantity: 2000.000 ml							



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
903	ICP AES RINSE SOLN	MP86648	08/06/2025	08/27/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP)	Sarabjit Jaswal
FROM 200.00000ml of M6162 + 9800.00000ml of W3112 = Final Quantity: 10000.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
904	ICP AES ICSA SOLN	MP86651	08/06/2025	08/18/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP A)	Sarabjit Jaswal 08/07/2025
<u>FROM</u> 5.00000ml of M6182 + 45.00000ml of MP86640 = Final Quantity: 50.000 ml								



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3494	ICP AES ICSAB SOLN-1	MP86652	08/06/2025	08/18/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP)	Sarabjit Jaswal
FROM 5.00000ml of M6182 + 5.00000ml of M6184 + 40.00000ml of MP86640 = Final Quantity: 50.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3913	ICP AES STD S2	MP86653	08/06/2025	08/18/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP)	Sarabjit Jaswal
FROM 4.00000ml of MP86641 + 46.00000ml of MP86640 = Final Quantity: 50.000 ml								

Metals STANDARD PREPARATION LOG

[illegible]

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
2951	ICP AES S1/CRI WORK STD	MP86656	08/06/2025	08/18/2025	Janvi Patel	None	METALS_PIPETTE_1 (ICP)	Sarabjit Jaswal
FROM 1.00000ml of MP86655 + 49.00000ml of MP86640 = Final Quantity: 50.000 ml								



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
871	MERCURY INTERMEDIATE B 250PPB WORKING STD.	MP86690	08/08/2025	08/09/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG)	Sarabjit Jaswal 08/11/2025
A)								
<u>FROM</u>	1.00000ml of M6162 + 2.50000ml of M5062 + 96.50000ml of W3112 = 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>
1340	Hg 0.00 PPB STD	MP86691	08/08/2025	08/09/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 08/11/2025
<u>FROM</u>	2.50000ml of M6162 + 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>
1341	Hg 0.2 PPB STD	MP86692	08/08/2025	08/09/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG)	Sarabjit Jaswal
FROM 2.50000ml of M6162 + 247.30000ml of W3112 + 0.20000ml of MP86690 = 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>
1342	Hg 2.5 PPB STD	MP86693	08/08/2025	08/09/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 08/11/2025
<u>FROM</u>	2.50000ml of M6162 + 245.00000ml of W3112 + 2.50000ml of MP86690 = 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	MP86694	08/08/2025	08/09/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG)	Sarabjit Jaswal
A) FROM 2.50000ml of M6162 + 242.50000ml of W3112 + 5.00000ml of MP86690 = 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>
1344	Hg 7.5 PPB STD	MP86695	08/08/2025	08/09/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG)	Sarabjit Jaswal
FROM 2.50000ml of M6162 + 240.00000ml of W3112 + 7.50000ml of MP86690 = 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	MP86696	08/08/2025	08/09/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG)	Sarabjit Jaswal
A) FROM 2.50000ml of M6162 + 237.50000ml of W3112 + 10.00000ml of MP86690 = 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>
1346	Hg ICV SOLUTION	MP86697	08/08/2025	08/09/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG	Sarabjit Jaswal
FROM 2.50000ml of M6162 + 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)	MP86698	08/08/2025	08/09/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG)	Sarabjit Jaswal
FROM 2.50000ml of M6162 + 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>
1358	CCV (Hg 5.0 PPB SOLUTION)	MP86699	08/08/2025	08/09/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 08/11/2025
<u>FROM</u>	485.00000ml of W3112 + 5.00000ml of M6162 + 10.00000ml of MP86690 = 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)	MP86700	08/08/2025	08/09/2025	Mohan Bera	None	METALS_PIPETTE_5 (HG)	Sarabjit Jaswal
FROM 495.00000ml of W3112 + 5.00000ml of M6162 = 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>
1349	CRA/CRI (Hg 0.2 PPB SOLUTION)	MP86701	08/08/2025	08/09/2025	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 08/11/2025
<u>FROM</u>	2.50000ml of M6162 + 247.30000ml of W3112 + 0.20000ml of MP86690 = Final Quantity: 250.000 ml							

[illegible]

<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>
104	5% RINSING HCL	MP86705	08/08/2025	08/17/2025	Mohan Bera	None	None	Sarabjit Jaswal 08/11/2025
<u>FROM</u> 100.00000ml of M6151 + 1900.00000ml of W3112 = Final Quantity: 2000.000 ml								

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
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 /	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.	58029 / Cu, 1000 PPM, 500 ml	102523	10/25/2026	04/03/2024 / jaswal	10/27/2023 / jaswal	M5697

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

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

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

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.	58120 / Ca, 10000 PPM, 500 ml	122223	12/22/2026	04/17/2025 / Janvi	01/03/2024 / jaswal	M5805

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

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

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

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

CHEMICAL RECEIPT LOG BOOK

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

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

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

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

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

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

CHEMICAL RECEIPT LOG BOOK

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

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

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

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

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

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	Z9651Q / CHEM-CLP-4/.25L	V2-MEB746762	09/06/2029	01/23/2025 / kareem	09/19/2024 / kareem	M6077

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58120 / Calcium, 500 ml, 10000 PPM	082324	08/23/2027	03/06/2025 / JANVI	10/14/2024 / jaswal	M6086

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58025 / Mn, 1000 PPM, 500 ml	101124	10/11/2027	01/13/2025 / kareem	01/13/2025 / kareem	M6128

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

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

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

CHEMICAL RECEIPT LOG BOOK

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

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9530-33 / Hydrochloric Acid, Instra-Analyzed (cs/6x2.5L)	22G2862015	08/17/2025	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

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

CHEMICAL RECEIPT LOG BOOK

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

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

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

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

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 /	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

CHEMICAL RECEIPT LOG BOOK

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57042 / Mo, 1000 PPM, 125 ml	080528	08/05/2028	08/06/2025 / Janvi	08/06/2025 / Janvi	M6178

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

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

CHEMICAL RECEIPT LOG BOOK

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

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

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



CERTIFIED WEIGHT REPORT:

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

Formulated By: Giovanni Esposito

Reviewed By: Pedro L. Renteria

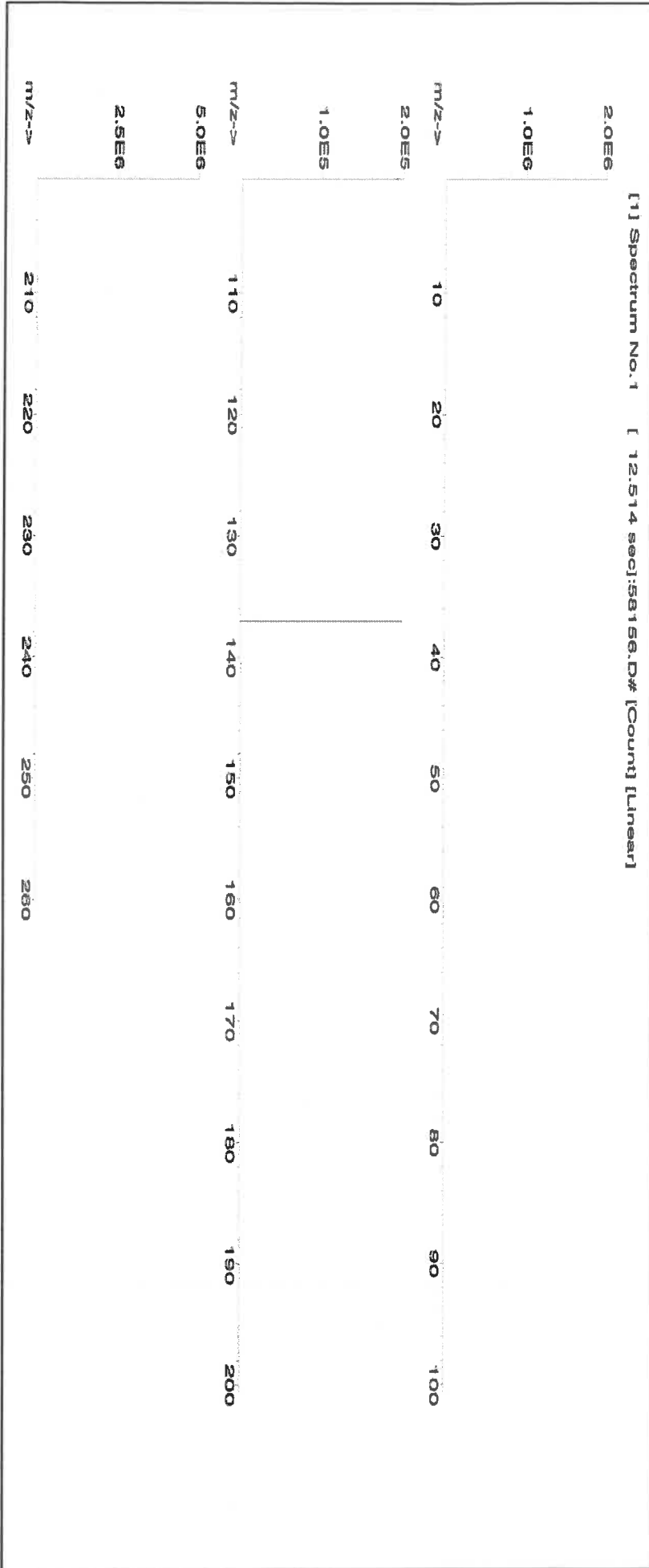
010924

010924

SDS Information

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

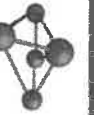
(T) = Target analyte

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).



CERTIFIED WEIGHT REPORT:

Lot # **MS804, MS805**

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

Solvent: 24002546 Nitric Acid

2% 80.0 Nitric Acid (mL)

Expiration Date: 122226

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 10000

NIST Test Number: 6UTB

Weight shown below was diluted to (mL): 4000.0 5E-05 Balance Uncertainty 0.06 Flask Uncertainty

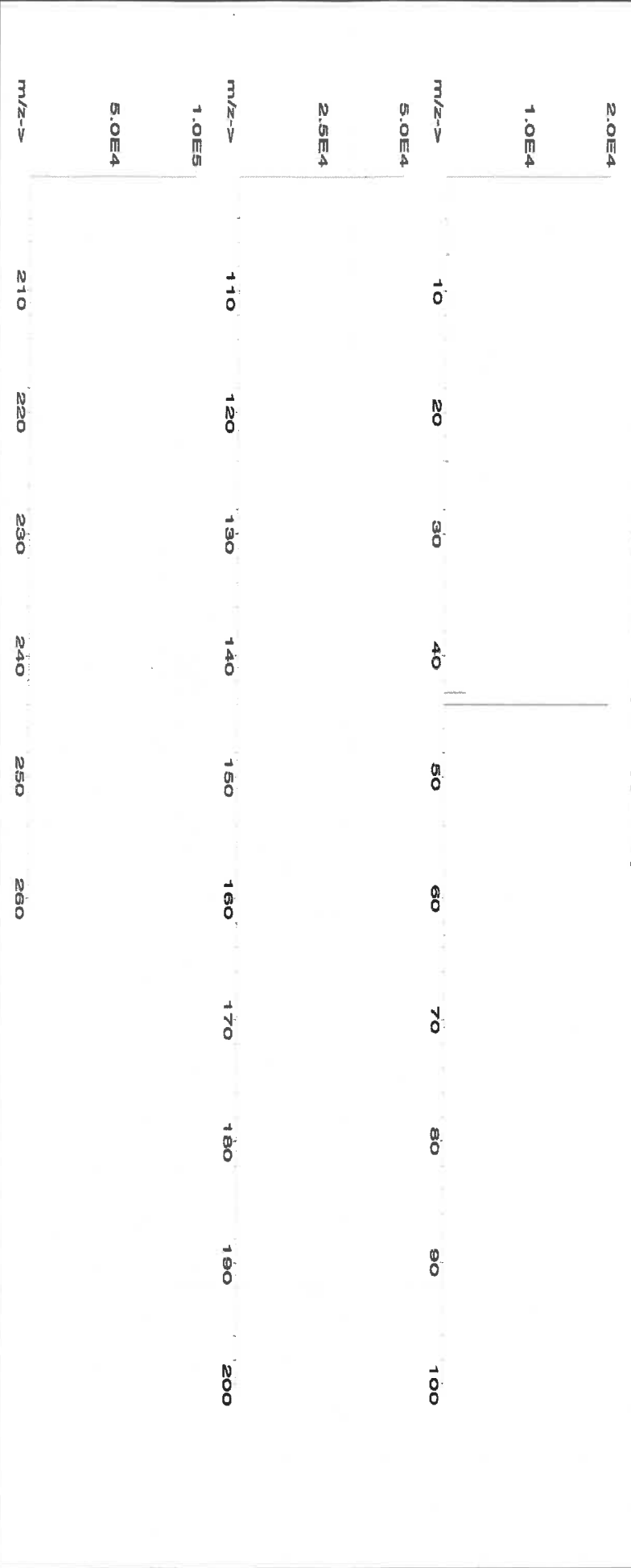
<i>Giovanni Esposito</i>	
Formulated By:	Giovanni Esposito
	122223
<i>Pedro L. Renteria</i>	
Reviewed By:	Pedro L. Renteria
	122223

Compound

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

1. Calcium carbonate (Ca) IN014 CAD0302383 10000 99.999 0.10 39.9 100.2525 100.2670 10001.4 20.0 471.34-1 5 mg/m3 off-ral >2000mg/kg 3109a

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





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	T	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Bu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	30	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	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: **58120**
Lot Number: **082324**
Description: **Calcium (Ca)**

Solvent: **24002546 Nitric Acid**

Lot # **MC055 / MB086 / MB087**

Expiration Date: **082327**

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

Nominal Concentration (µg/mL): **10000**

NIST Test Number: **6UTB**

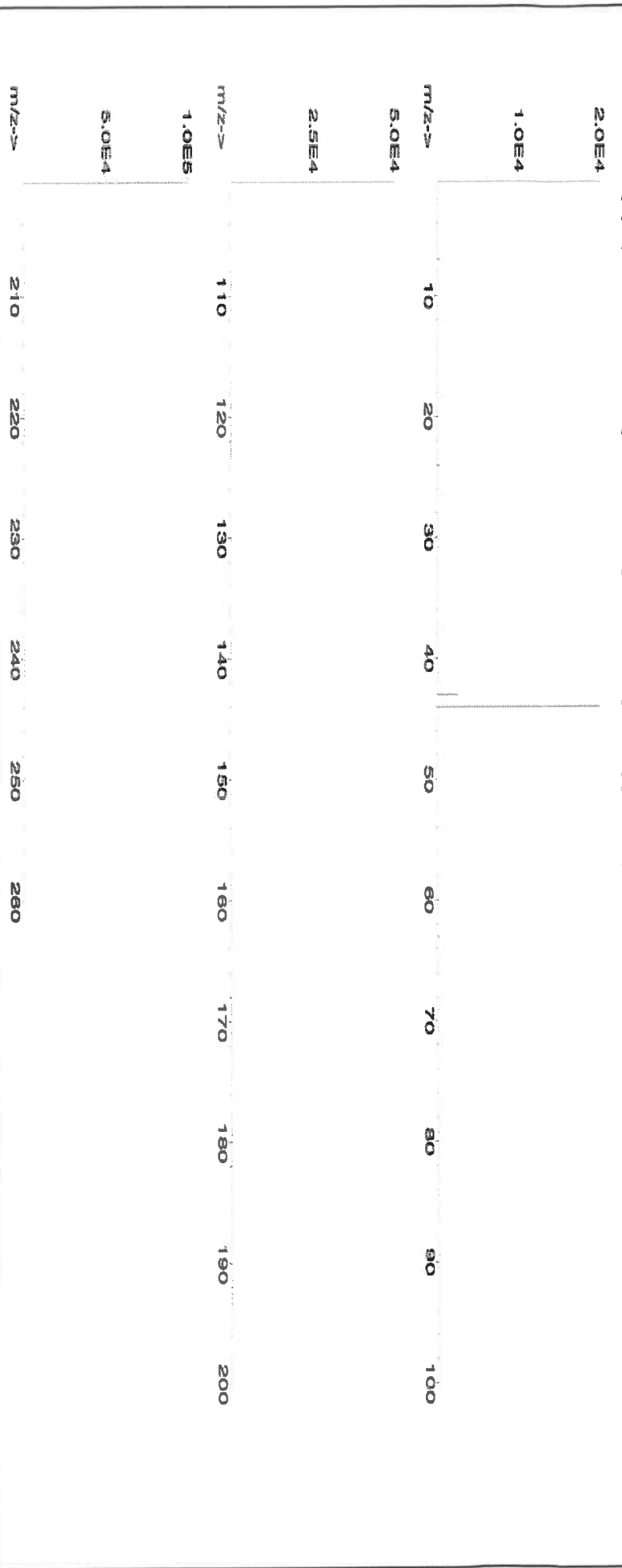
5E-05 Balance Uncertainty

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

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

SDS Information									
Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)
1. Calcium carbonate (Ca)	IN014	CAD03202383	10000	99.999	0.10	39.9	100.2537	100.2656	10001.2
							20.0	471.34-1	5 mg/mL3
								ort-rat >2000mg/kg	3109a

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

57048
070124
Cadmium (Cd)

Solvent: 24002546 Nitric Acid

Lot #

2% 40.0 Nitric Acid
(mL)

Expiration Date: 070127

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test Number: 6UTB

SE-05 Balance Uncertainty

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

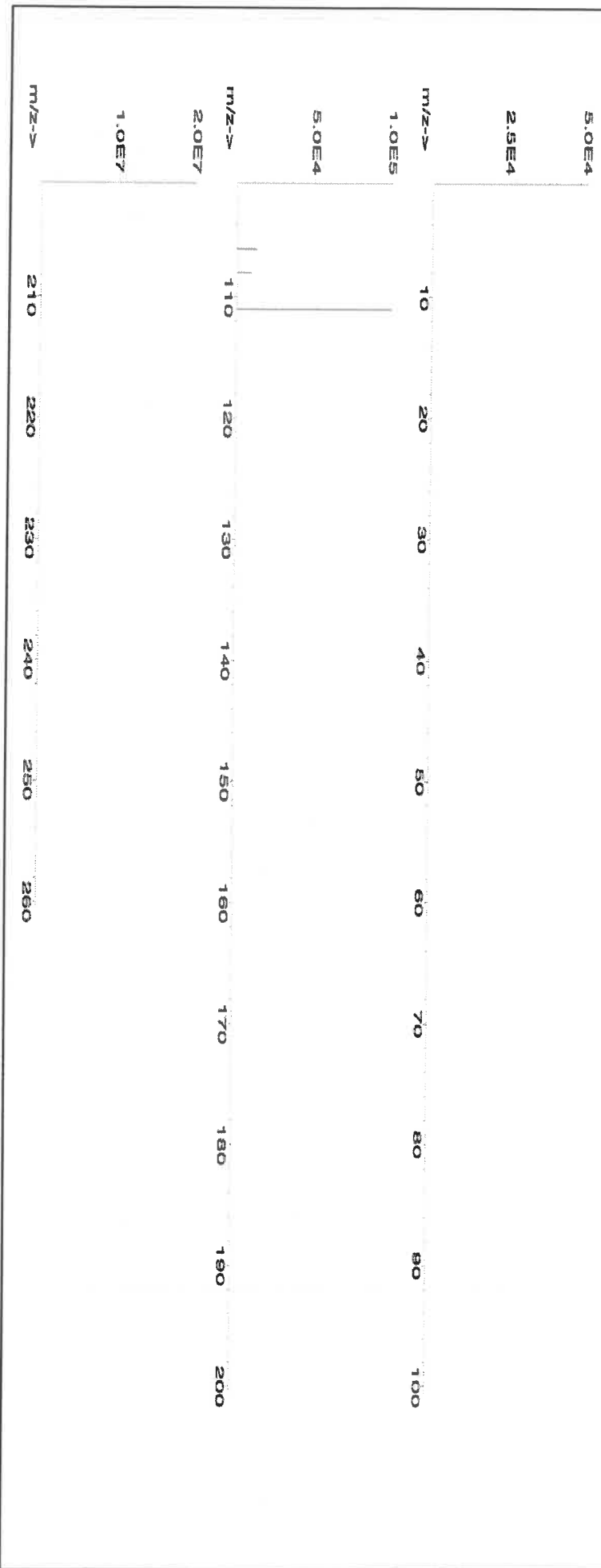
<i>Aleah O'Brady</i>	
Formulated By:	Aleah O'Brady
	070124
<i>Pedro L. Rentas</i>	
Reviewed By:	Pedro L. Rentas
	070124

SDS Information

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

MS062
 MS063
 MS

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 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 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):

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Lot #
Solvent: Nitric Acid

2% 20.0 (mL)
Nitric Acid

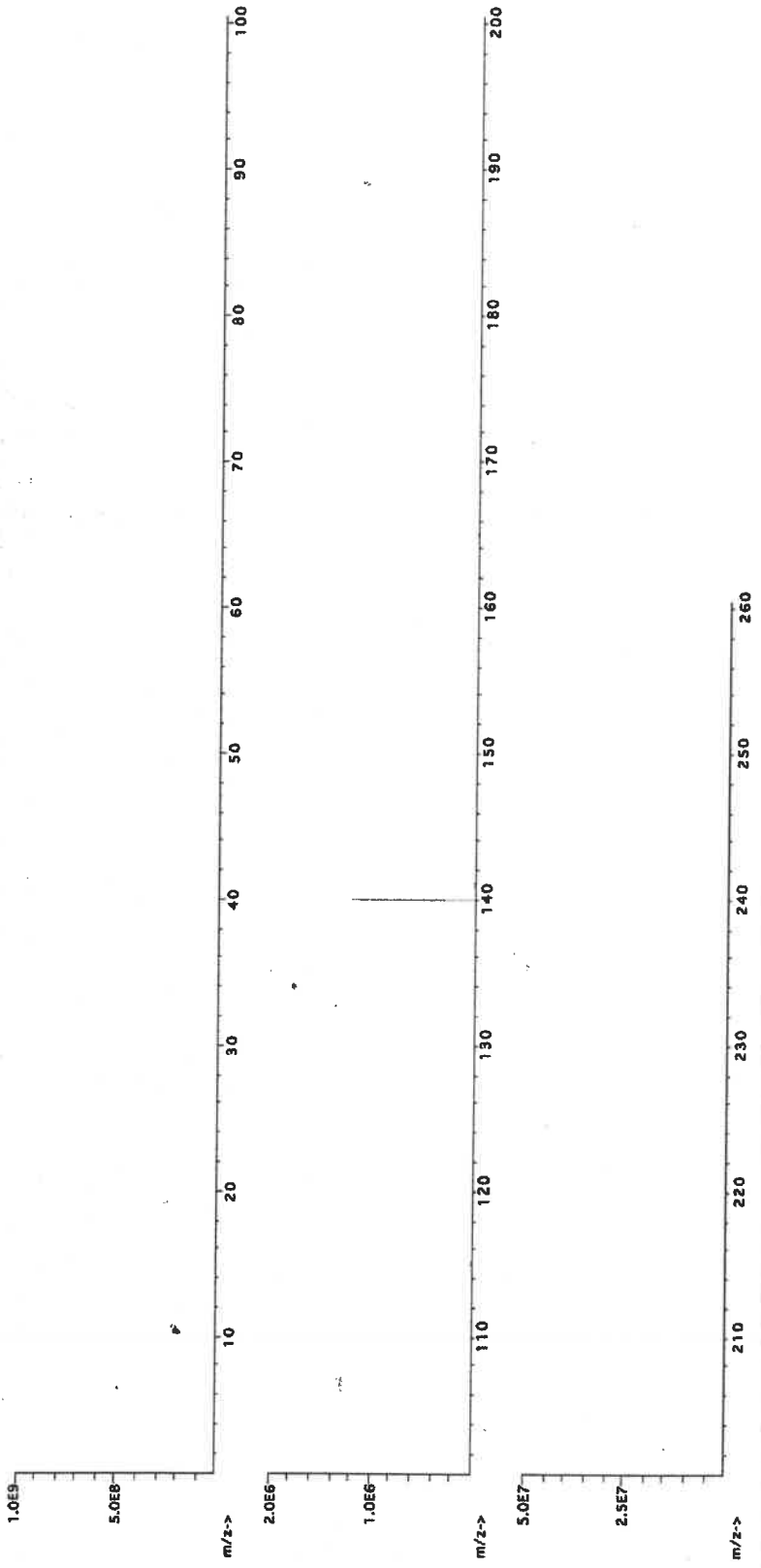
Formulated By: Lawrence Barry 020623
Reviewed By: Pedro L. Rentas 020623

SDS Information

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

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

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





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.02	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Tc	<0.02	U	<0.02
As	<0.2	Ce	T	Eu	<0.02	In	<0.02	Mg	<0.01	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	<0.02	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Lot #
21110221
Solvent: Nitric Acid

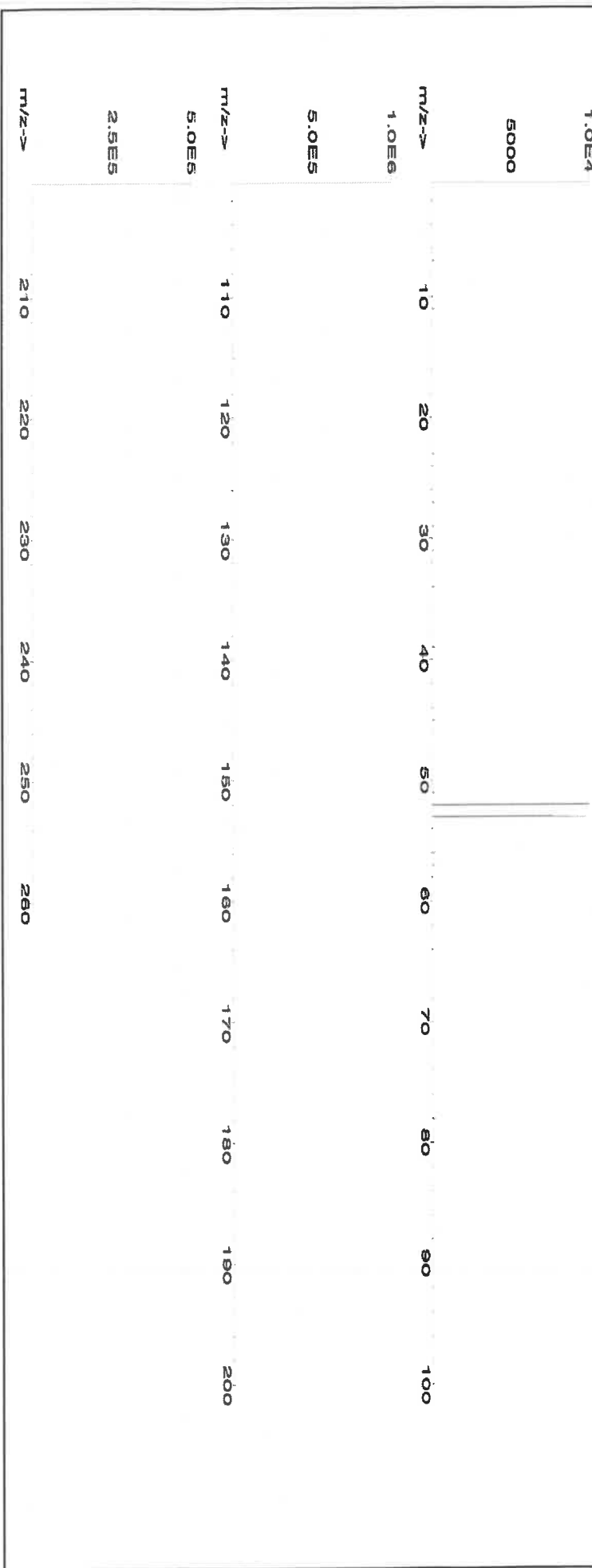
Formulated By:	Lawrence Barry
	060523
Reviewed By:	Pedro L. Ruelas
	060523

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]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM



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

M5697 R: 10/27/23

CERTIFIED WEIGHT REPORT:

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

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

2.0% 40.0
(mL) Nitric Acid

Expiration Date: 102526

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test Number: 6UTB

5E-05 Balance Uncertainty

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

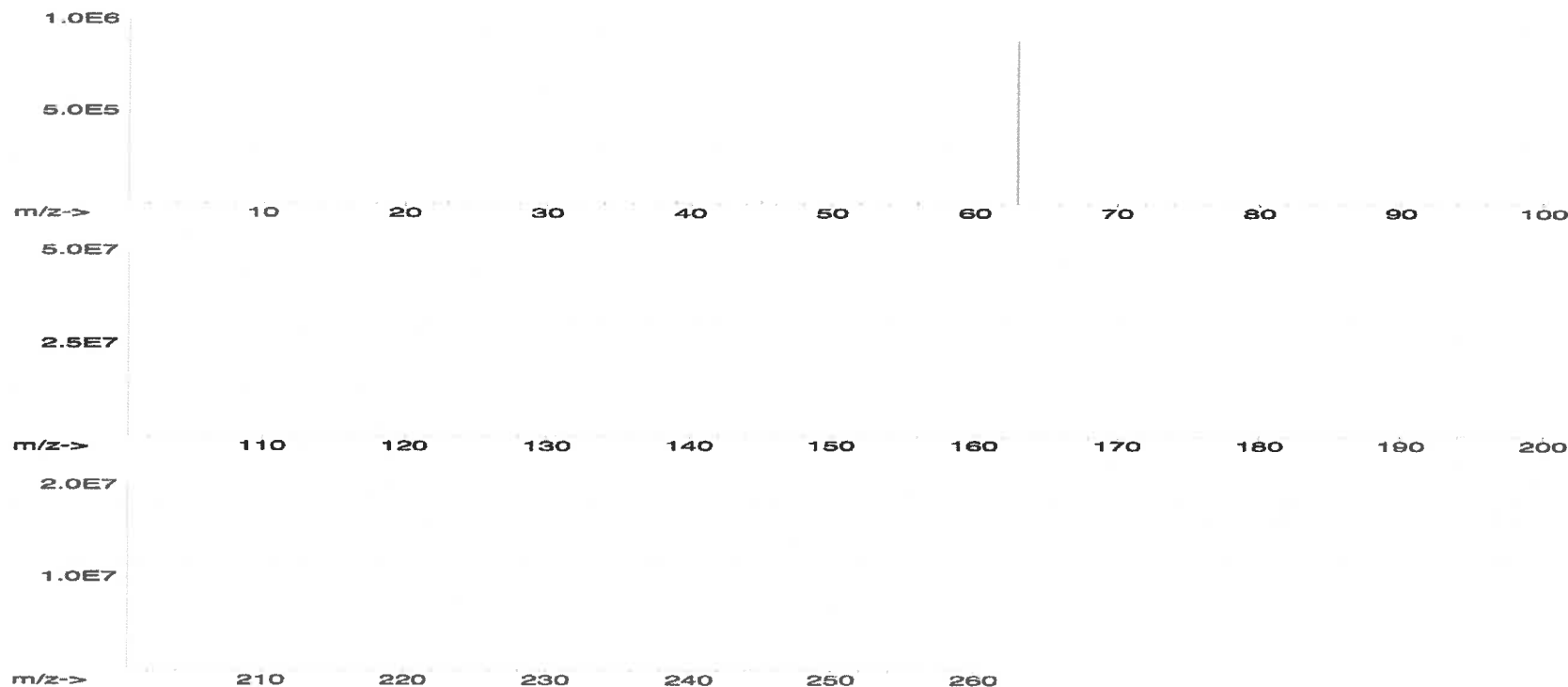
Formulated By:	Benson Chan	102523
Reviewed By:	Pedro L. Rentas	102523

Expanded

SDS Information

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	(Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Copper(II) nitrate trihydrate (Cu)	58129	100223	0.1000	200.0	0.084	1000	10000.1	1000.0	2.2	10031-43-3	1 mg/m3	ori-rat 794 mg/kg	3114

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





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

Trace Metals Verification by ICP-MS (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	<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	T	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

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

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

Expiration Date: **091226**

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

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

NIST Test Number: **6U7B**

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

Balance Uncertainty: **5E-05**

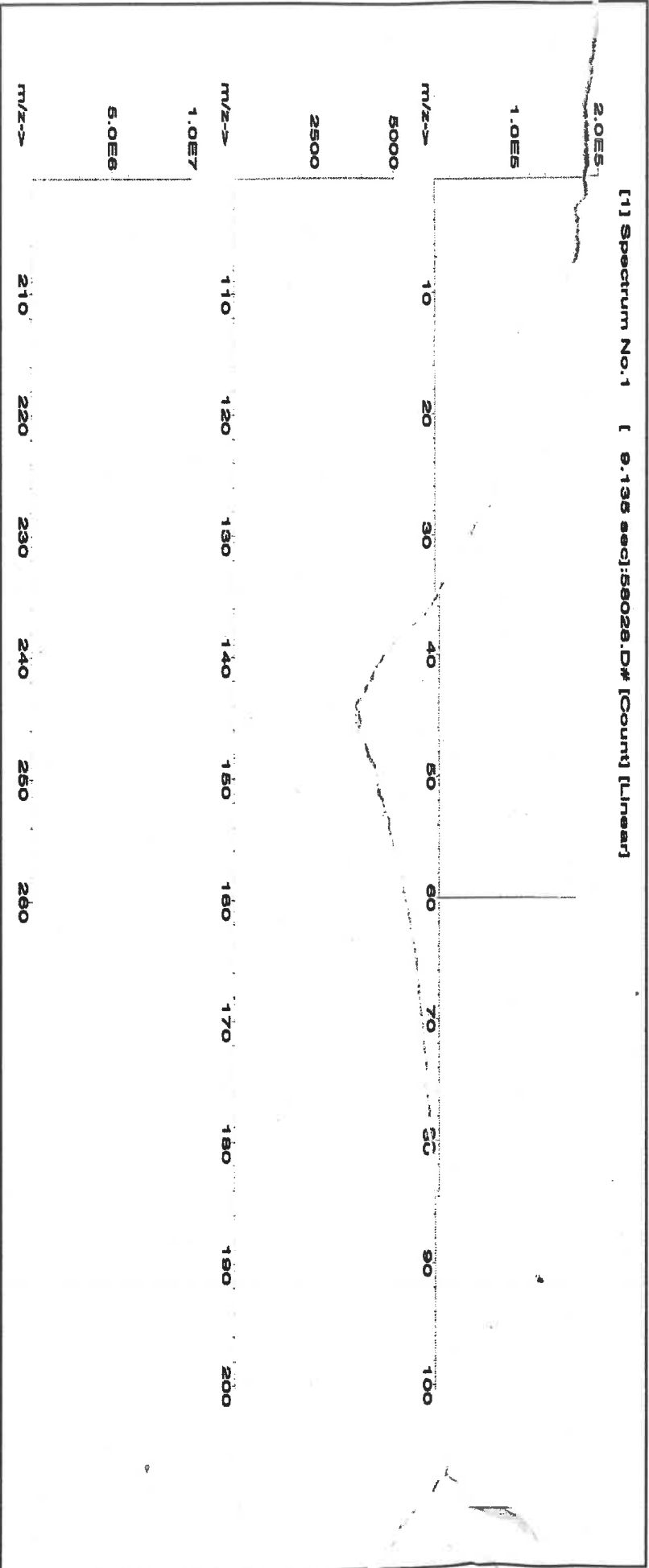
Flask Uncertainty: **0.056**

2.0% 40.0 (mL) Nitric Acid

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

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Nickel(II) nitrate hexahydrate (NI) 58128 062023 0.1000 200.0 0.084 1000 10000.4 1000.0 2.2 13478-00-7 1 mg/m3 or-rel 1620 mg/kg 3136





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



CERTIFIED WEIGHT REPORT:

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

Lot # 24002546
Solvent: Nitric Acid

Expiration Date:

102526

2.0%

40.0 (mL)

Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

2000.02

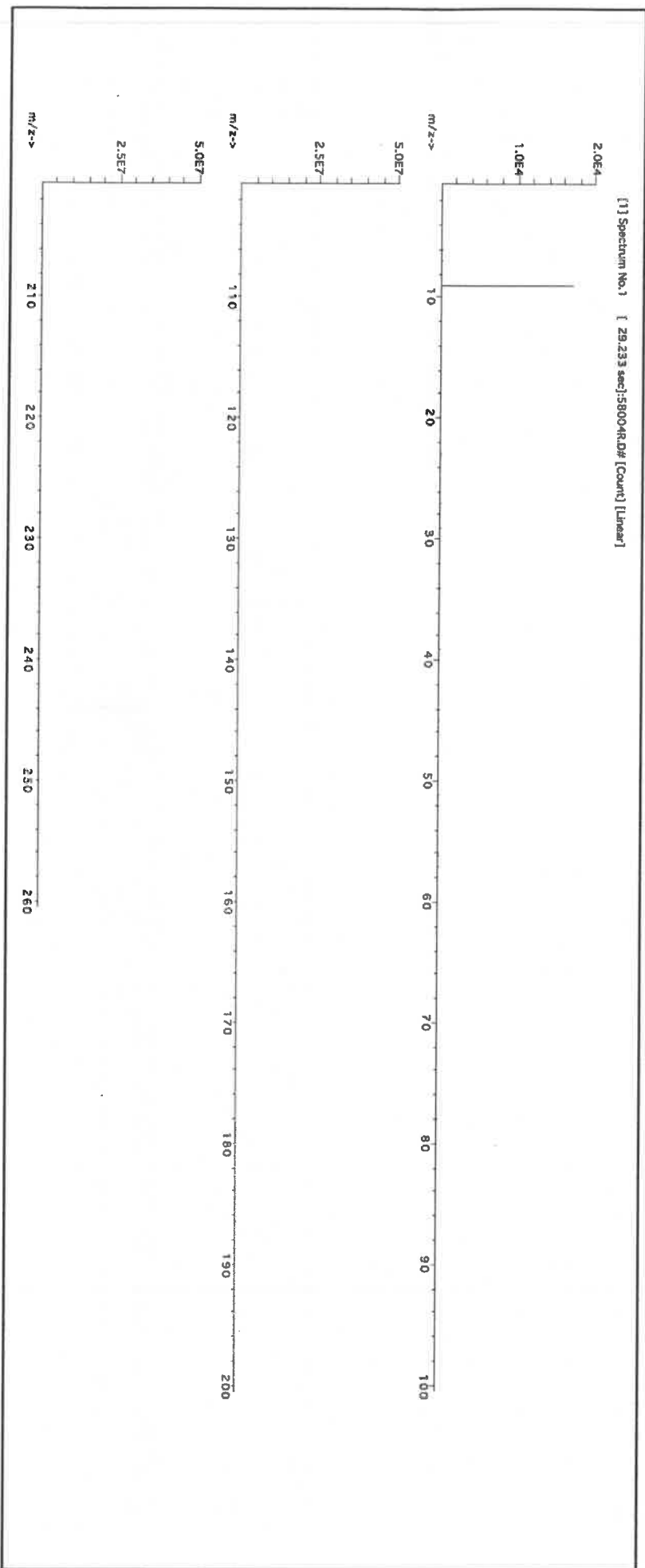
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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

SDS Information

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

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

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



Certified Reference Material CRM

CERTIFIED WEIGHT REPORT:

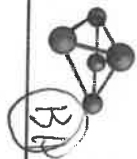
Part Number: 57050
Lot Number: 071123
Description: Tin (Sn)

Solvents: 21110221 Nitric Acid
22D0562008 Hydrochloric acid

Lot #

R-02509124

M599



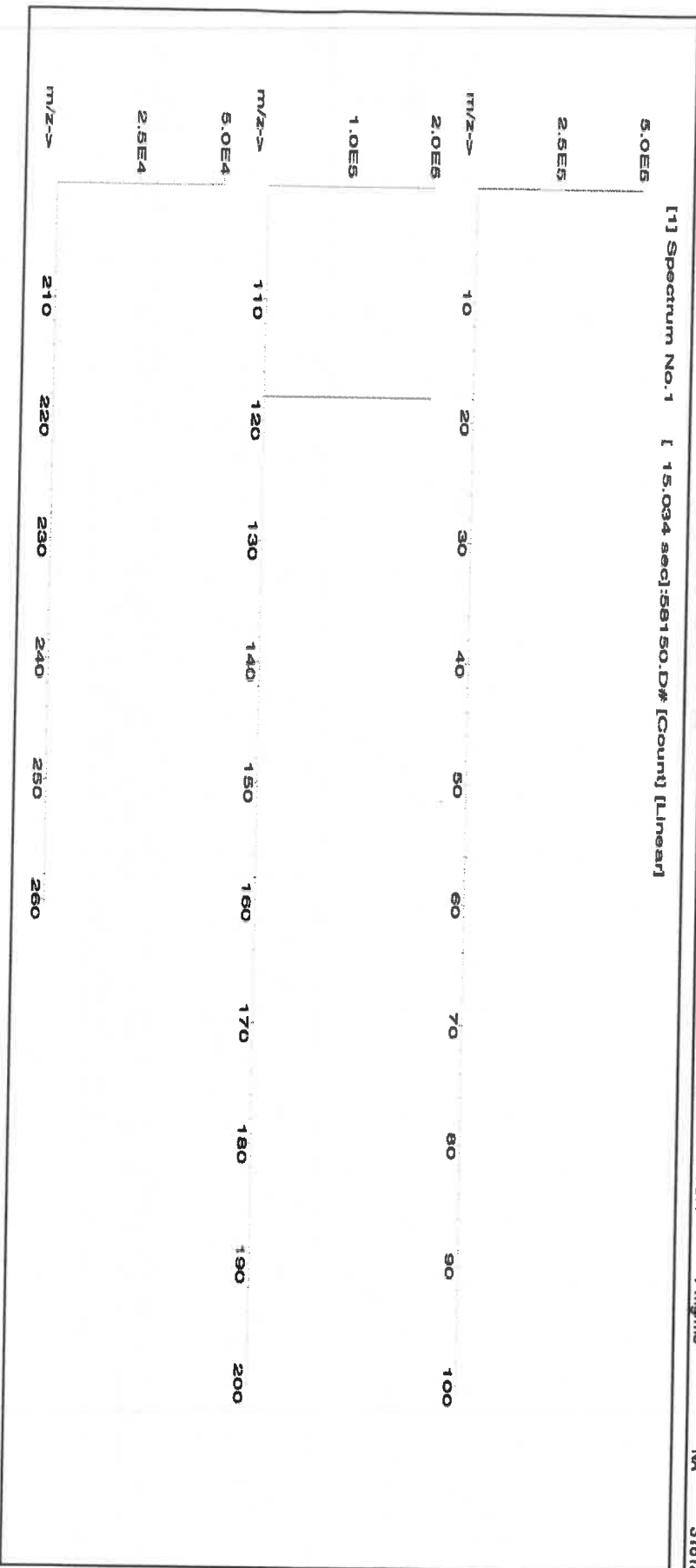
Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 499.93
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

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

SDS Information												
Compound	Lot	Nominal	Purity	Uncertainty	Assay	Target	Actual	Actual	Expanded	Solvent Safety Info. On Attached pg.)		
										RM#	Number	Conc. (µg/mL)
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	Ti	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<500	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Ta	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



R: 02/09/24 115800 (54)

CERTIFIED WEIGHT REPORT:

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

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

Volume shown below was diluted to (mL): 2000.02

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Lot # 24002546
Solvent: Nitric Acid

2.0% Nitric Acid
40.0 (mL)

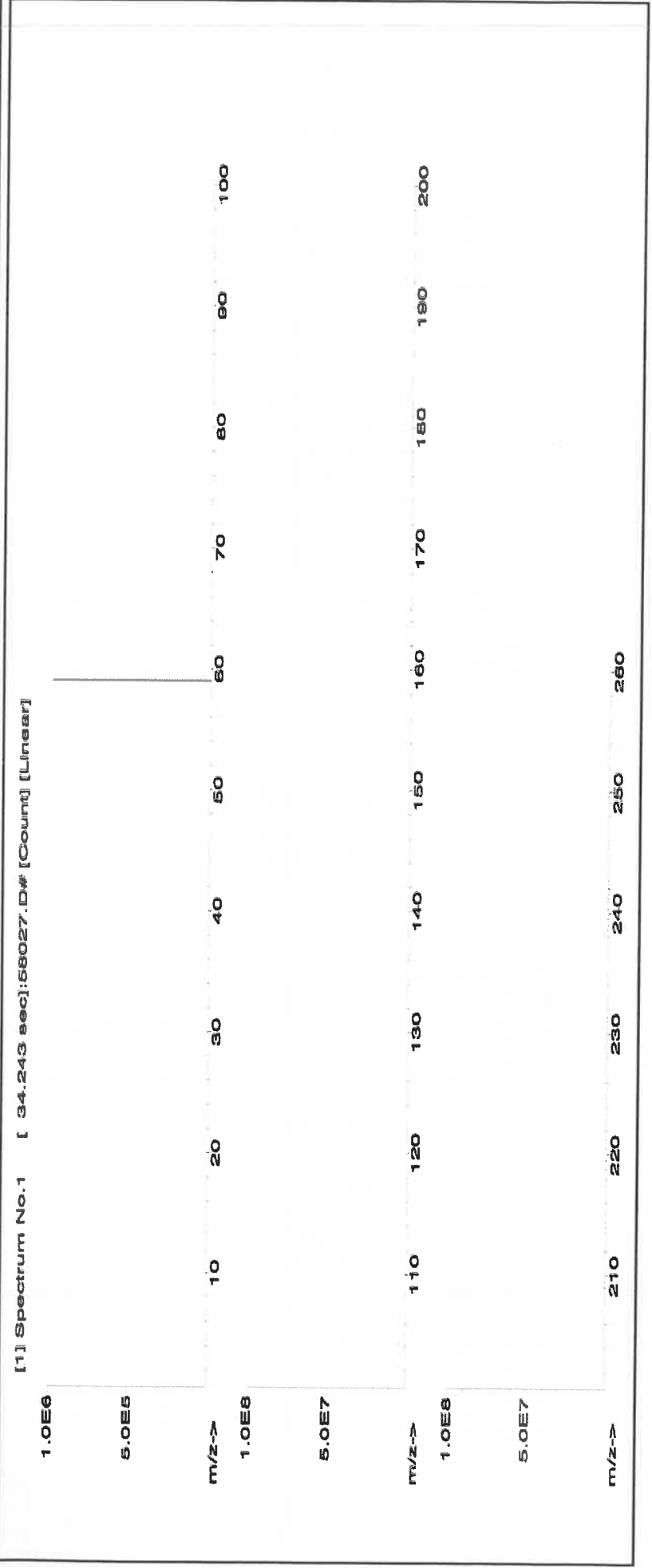
Formulated By:	Lawrence Barry
Reviewed By:	Pedro L. Rentas

SDS Information

Expanded Uncertainty +/- (µg/mL)
Final Conc. (µg/mL)
Initial Conc. (µg/mL)
Nominal Conc. (µg/mL)
Pipette (mL)
Initial Vol. (mL)
Dilution Factor
Part Number
Lot Number

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

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





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

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

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

(T)= Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57033
111323
Arsenic (As)

Lot #
Solvent:

24002546
Nitric Acid

2.0%

80.0

Nitric Acid

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

111326
Ambient (20 °C)
1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

4000.0

5E-05

Balance Uncertainty
Flask Uncertainty

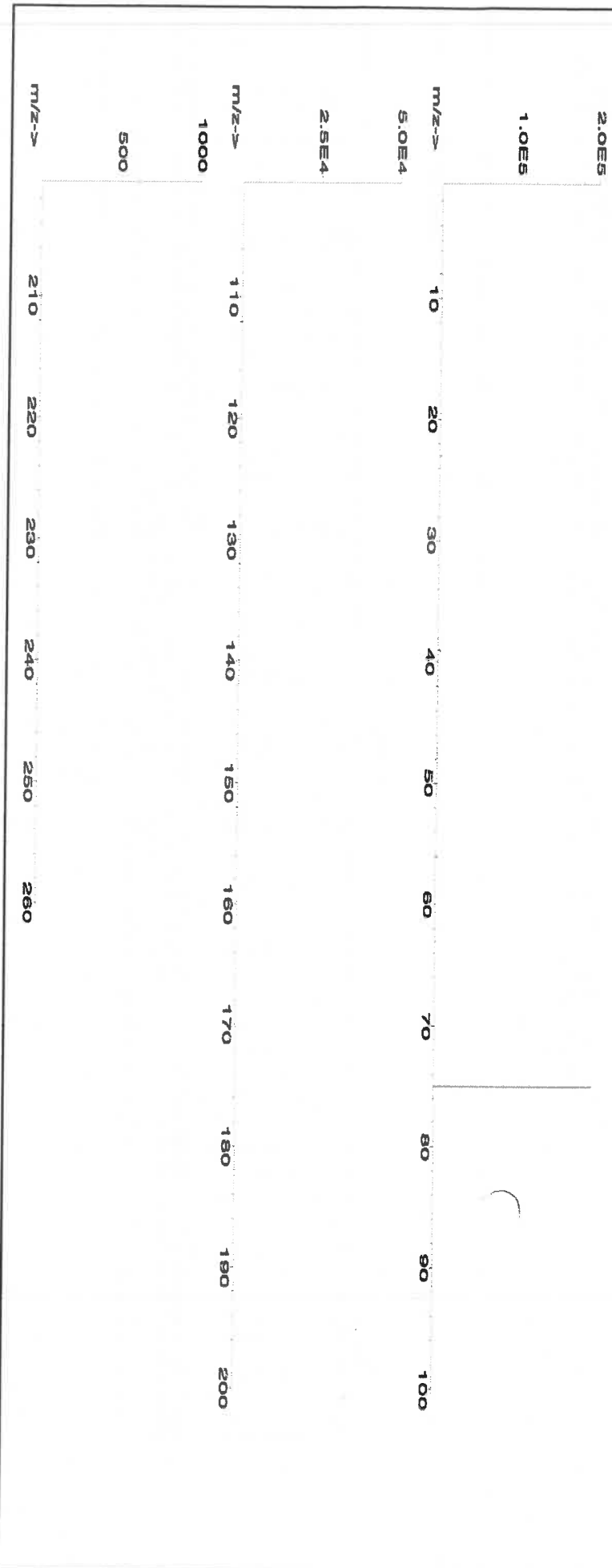
Formulated By:	Lawrence Barry
Reviewed By:	
	Pedro L. Rendas
	111323

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-rat 500 mg/kg	3103a
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[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 ($\mu\text{g/mL}$)

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	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	<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	Pr	<0.02	Sm	<0.02	S	<0.02	Su	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

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

Solvent: MKB0857V Ammonium hydroxide

Lot #

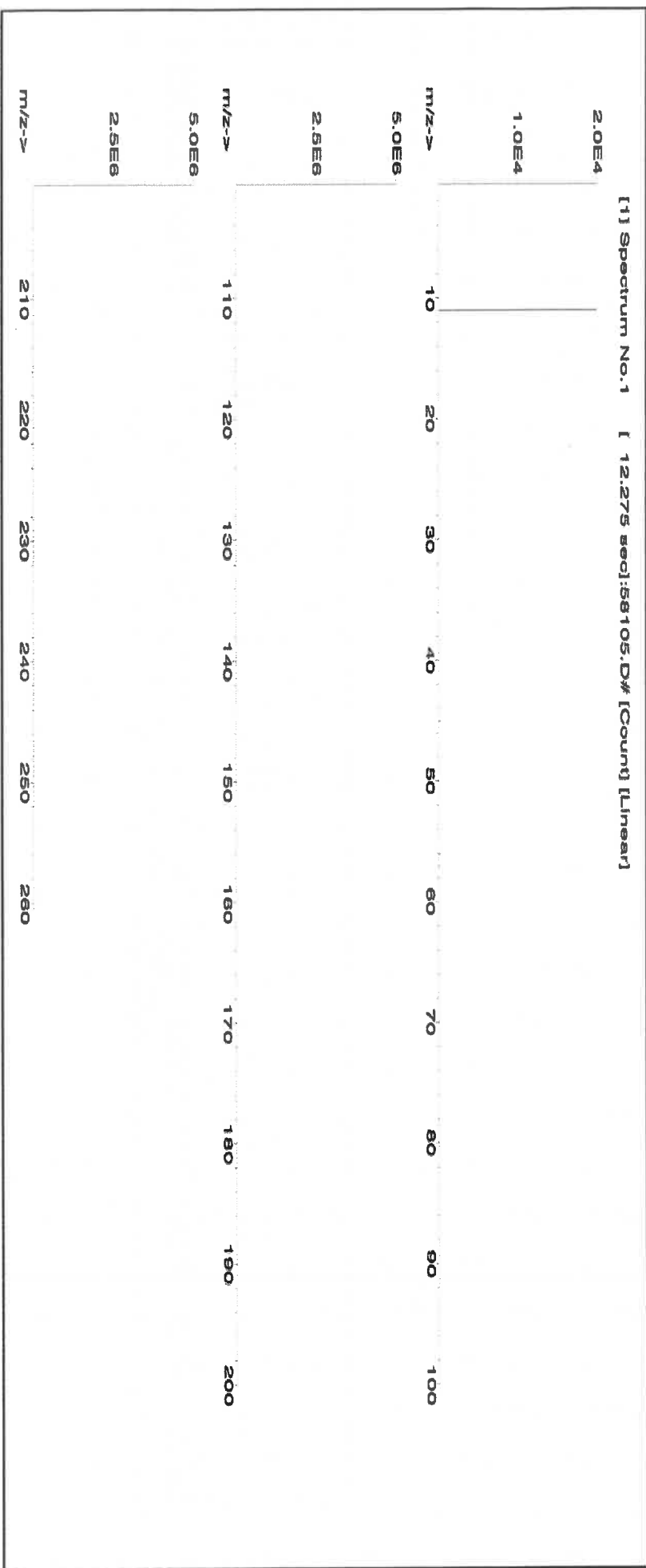
AI: 021009124 M5814

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

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



CERTIFIED WEIGHT REPORT:

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

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

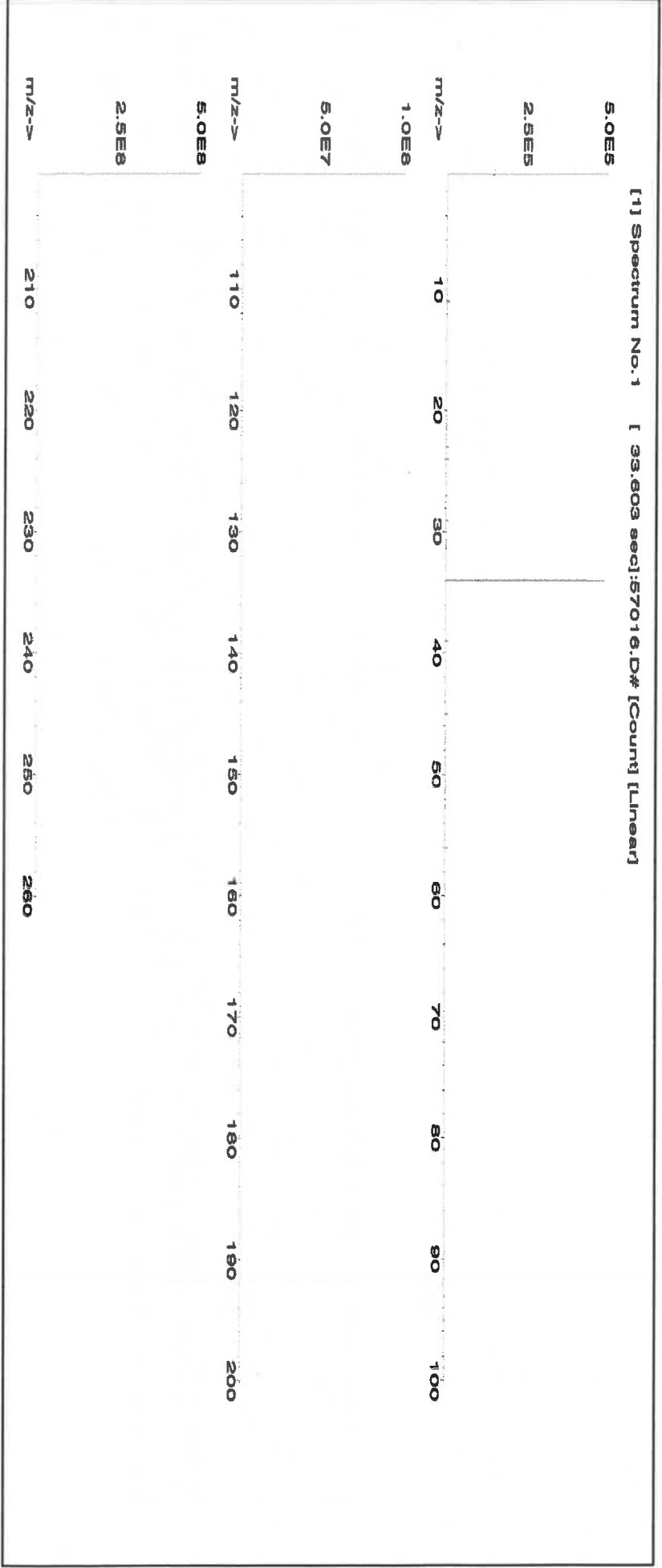
Formulated By:	Benson Chan
Reviewed By:	Pedro L. Rentas

Expiration Date: **122926**
Recommended Storage: **Ambient (20 °C)**
Nominal Concentration (µg/mL): **1000**
NIST Test Number: **6L7B**
Weight shown below was diluted to (mL): **4000.0**
5E-05 Balance Uncertainty
0.06 Flask Uncertainty

Compound		Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Ammonium sulfate (S) IN117 SLBR725v 1000 99.9 0.10 24.3 16.4979 16.4980 1000.0 2.0 7783-20-2 NA ort-rel 4250mg/kg 3181

[1] Spectrum No. 1 [33.603 sec]:57016.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	La	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Ba	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Ru	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	S	<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	Ta	<0.02	Ti	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
- * 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: **57015**
Lot Number: **091123**
Description: **Phosphorous (P)**

Solvent: **24002546 Nitric Acid**

Lot #

R: 02109124 M5820

Formulated By:	Lawrence Barry
	091123
Reviewed By:	Pedro L. Rentas
	091123

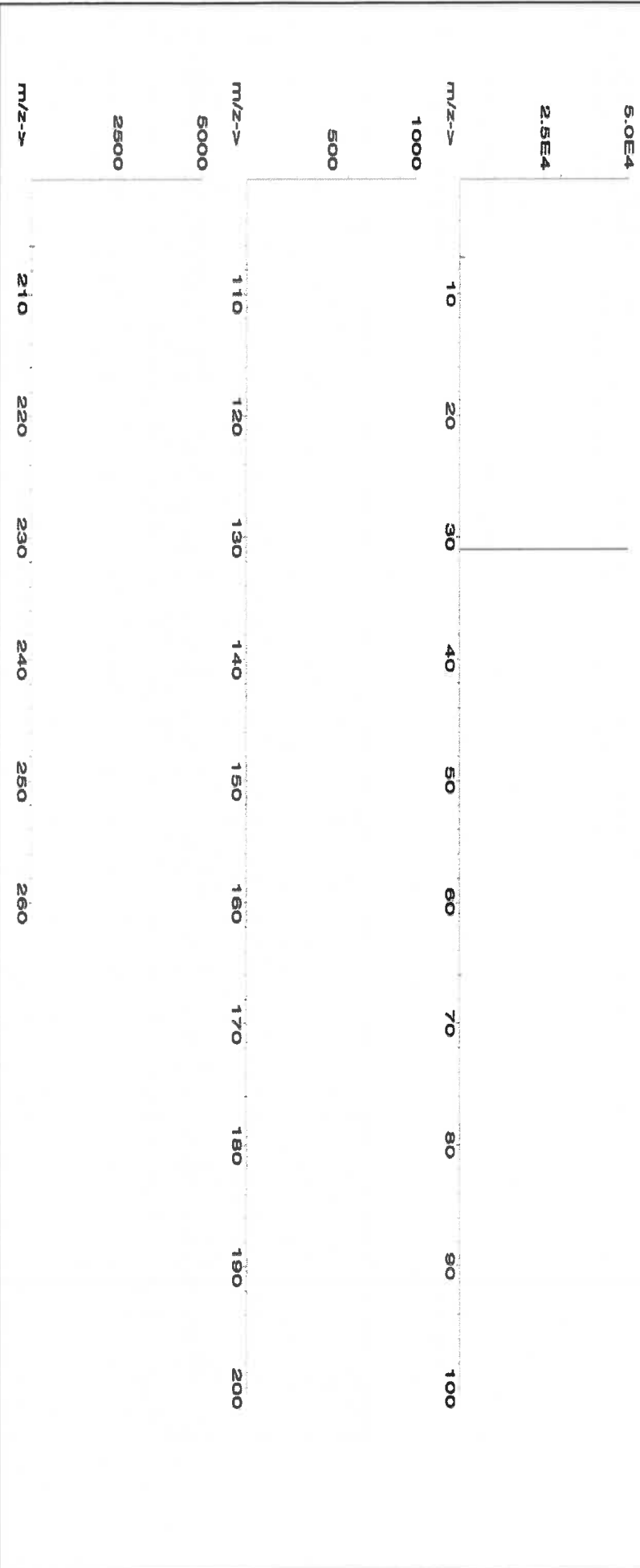
Expiration Date: 091126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6LJB
Weight shown below was diluted to (mL): 2000.02
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Compound

RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Ammonium dihydrogen phosphate (P) IN008 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



MSB24
MB

Material No.: 3624-01

Batch No.: 0000281938

Manufactured Date: 2021-06-07

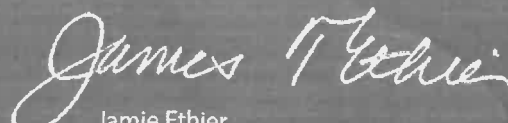
Retest Date: 2026-06-07

Revision No.: 1

Certificate of Analysis

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



CERTIFIED WEIGHT REPORT:

MS962 **R10614124**

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

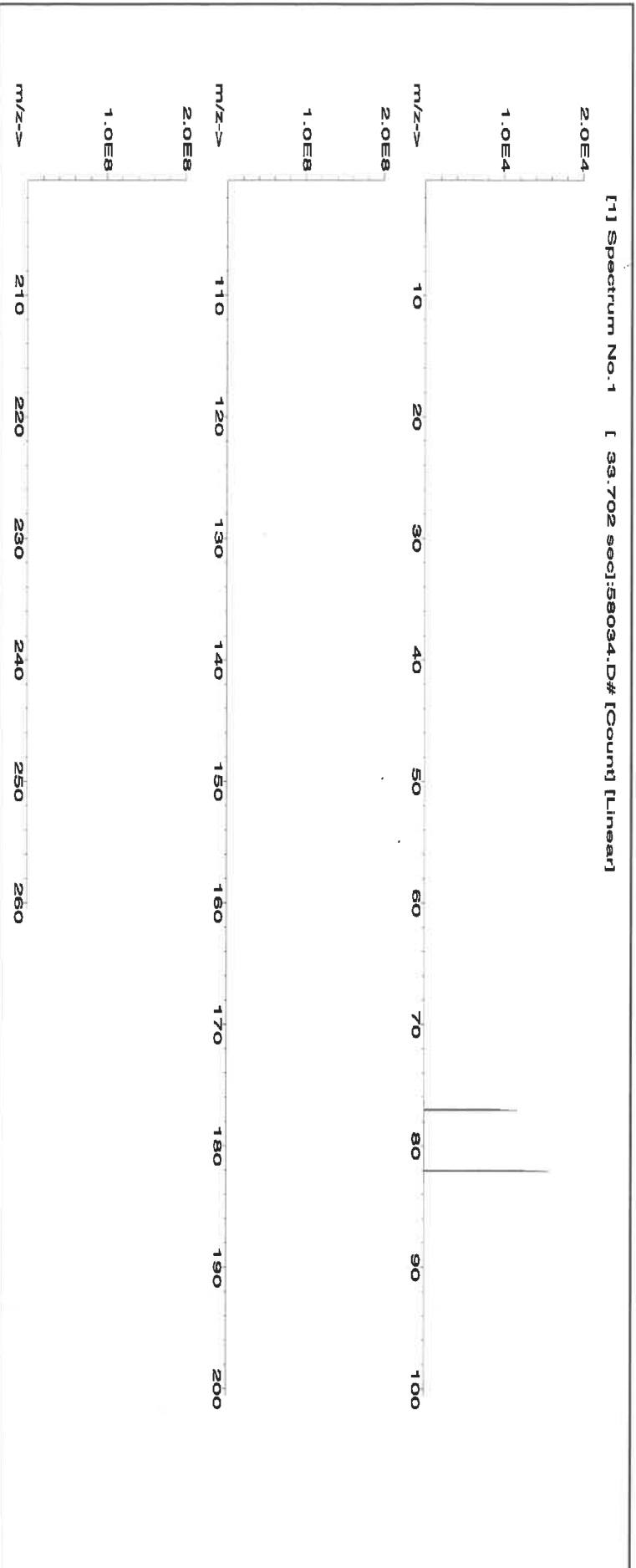
Part Number: **57034**
Lot Number: **060624**
Description: **Selenium (Se)**

2.0% 40.0 (mL) Nitric Acid

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

Formulated By:	Benson Chan	060624
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 +/- (µg/mL)
1. Selenium (Se)	58134	071223	0.1000	200.0	0.084	1000	10002.5	1000.0	2.2
						7782-49-2	0.2 mg/m3	or-tral 6700 mg/kg	31.49





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

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

Lot #
Solvent: 122923 ASTM Type 1 Water

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

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

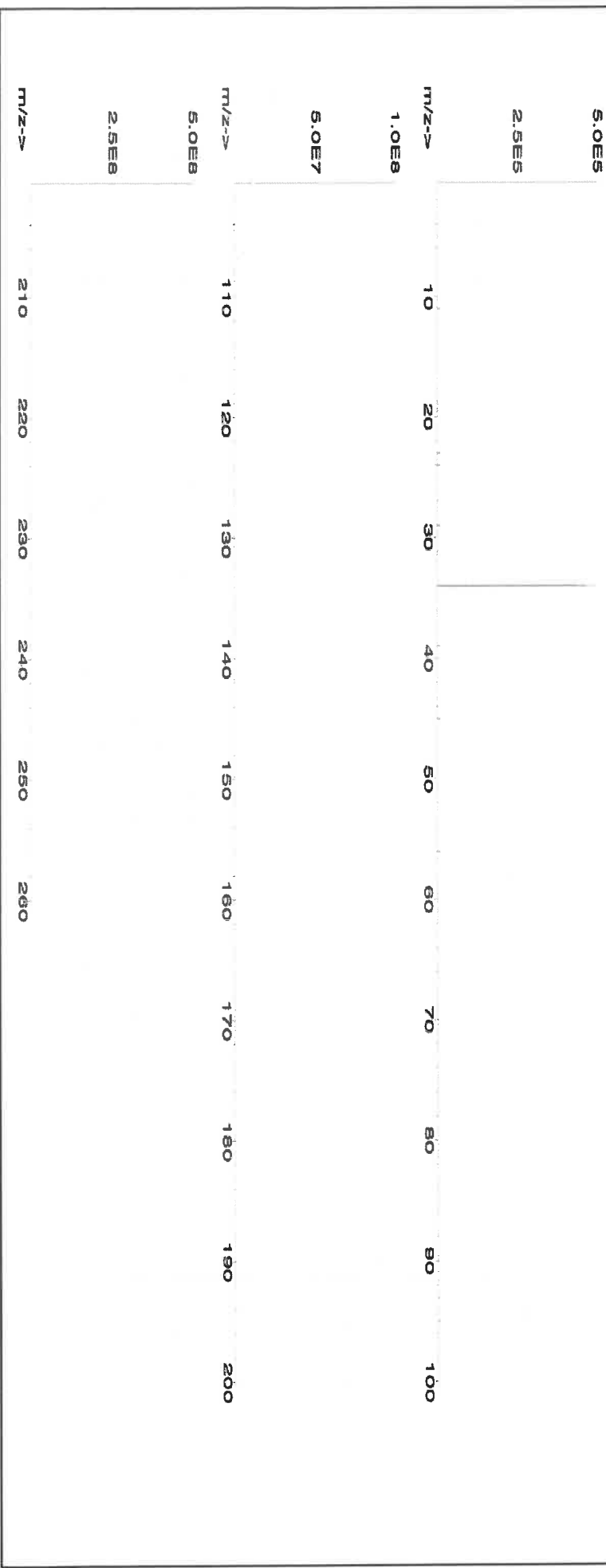
Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty		NIST SRM
									±	(µg/mL)	

SDS Information

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

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

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



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



Certified Reference Material CRM

M5970 M5971



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: 06/12/27
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 250.11
SE-05 Balance Uncertainty
0.016 Flask Uncertainty

Lot # 24002546
Solvent: Nitric Acid

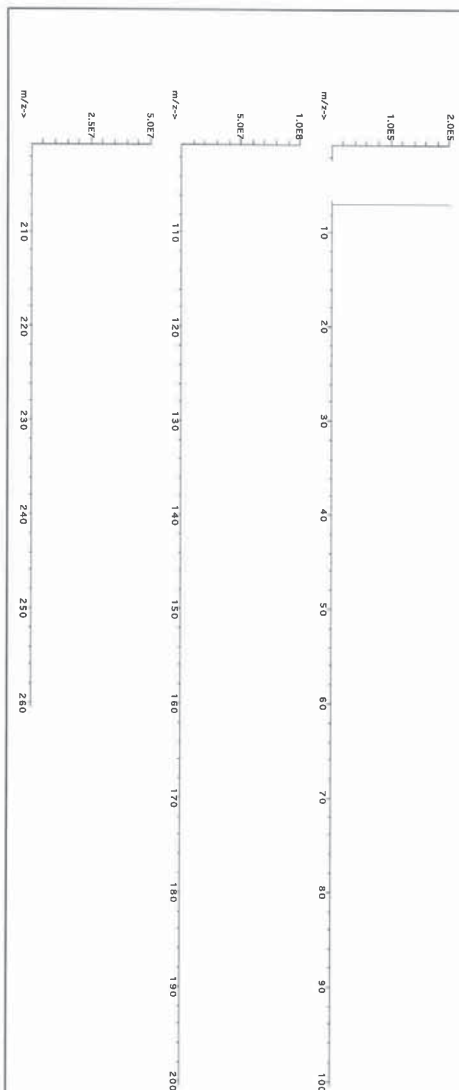
2.0% 5.0 (mL) Nitric Acid

Microvial Capable	
Formulated By:	Giovanni Esposito
	062124
Reviewed By:	Pedro L. Parias
	062124

Compound		Part		Lot		Dilution		Initial		Uncertainty		Nominal		Initial		Final		Expanded		SDS Information		NIST	
Number	Factor	Number	Factor	Number	Factor	Vol. (mL)	Pipette (mL)	Conc. (µg/mL)	Conc. (µg/mL)	Vol. (mL)	Pipette (mL)	Conc. (µg/mL)	Conc. (µg/mL)	Vol. (mL)	Pipette (mL)	Conc. (µg/mL)	Conc. (µg/mL)	Uncertainty	± (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	SM

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	Oral: 1428 mg/kg	NA
-------------------------	-------	--------	--------	------	-------	------	---------	--------	-----	-----------	---------	------------------	----

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





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	Tb	<0.02	W	<0.02
Sb	<0.02	Ce	<0.02	Er	<0.02	In	<0.02	Mg	<0.02	Nb	<0.02	Rb	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Os	<0.02	Rh	<0.02	Ag	<0.02	Ti	<0.02	V	<0.02
Ba	<0.02	Cr	<0.02	Ga	<0.02	La	<0.2	Hg	<0.2	Pd	<0.02	Ru	<0.02	Nd	<0.2	Tm	<0.02	Yb	<0.02
Be	<0.01	Co	<0.02	Ge	<0.02	Mo	<0.02	Na	<0.02	P	<0.02	Sr	<0.02	S	<0.02	Sn	<0.02	Y	<0.02
Bi	<0.02	Cu	<0.02	Ag	<0.02	Th	<0.02	Ne	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Tl	<0.02	Zn	<0.02
B	<0.02	Ca	<0.02	Au	<0.02	U	<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).

Certificate of Analysis

MS978, MS979



Refine your results. Redefine your industry.

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Christiansburg, VA 24073 USA
inorganicventures.com

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



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

1.0 ACCREDITATION / REGISTRATION

2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Custom Grade Solution

Catalog Number: CGT1

Lot Number: T2-T1719972

Matrix: 2% (v/v) HNO₃

Value / Analyte(s): tr. HF

Starting Material: 1 000 µg/mL ea.

Starting Material: Titanium

Starting Material Lot#: T1 Metal

Starting Material Purity: 2094

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 5 µg/mL

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

Assay Method #1

1002 ± 4 µg/mL

ICP Assay NIST SRM 3162a Lot Number: 130925

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

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

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

$X_{CRM/RM} = (X_p / U_{CRM})$

X_p = mean of Assay Method A with

U_{CRM} = the standard uncertainty of characterization Method A

k = coverage factor = 2

$U_{CRM} = k \sqrt{U_{CRM}^2 + U_{lab}^2 + U_{hom}^2 + U_{stb}^2}$

U_{CRM} = long term stability standard uncertainty (storage)

U_{CRM} = bottle to bottle homogeneity standard uncertainty

U_{CRM} = transport stability standard uncertainty

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4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

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

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 media. Unstable at ppm levels with metals that would pull F- away (i.e. Do not mix with Alkaline or Rare Earths or high levels of transition elements unless they are fluorinated). Stable with most inorganic anions with a tendency to hydrolyze forming the hydrated oxide in all dilute acids except HF.

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

TI Containing Samples (Preparation and Solution) - Metal (Soluble in H₂O / HF caution - powder reacts violently). Oxide - low temperature history anatase or rutile (Dissolved by heating in 1:1:1 H₂O / HF / H₂SO₄); K₂SiO₃ - no KF if silica not present); Organic Matrices (Dry ash at 450°C in P10 and dissolve by heating with 1:1:1 H₂O / HF / H₂SO₄ or fuse ash with pyrosulfate if oxide is as plastic pigment and likely in brookite crystaline form).

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

Technique/Line	Estimated D.L.	14 ppt
ICP-MS 48 amu		

HAZARDOUS INFORMATION

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

ICP-OES 323.452 nm	ICP-OES 334.941 nm	ICP-OES 336.121 nm
0.0054 / 0.00092 µg/mL	0.0038 / 0.00028 µg/mL	0.0053 / 0.00034 µg/mL

1 W, Mo, Co
1 Nb, Ta, Cr, U
1 Ce, Ar, Ni
Ru
(where X = Zr, Mo,
14N17N2, 36Ar12C,
48Ca, 196X=2
14N16O18O,
32S16O, 32S14N,
N/A

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

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

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / AZLA 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: 800.868.6786; 540.565.3030; Fax: 540.565.3030; Email: 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 Kozlikowski
Manager, Quality Control

TD9784

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Paul Gaines

Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

M5985
R: 6/14/24

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

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

Assay Information:

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

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

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

M - Checked by ICP-MS

O - Checked by ICP-OES

i - Spectral Interference

n - Not Checked For

s - Solution Standard Element

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 21, 2023

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

11.2 Lot Expiration Date

- February 21, 2028

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

R: 2/22/24
MS-997

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:

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

December 21, 2022

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

11.2 Lot Expiration Date

- **December 21, 2027**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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

 **avantor™**

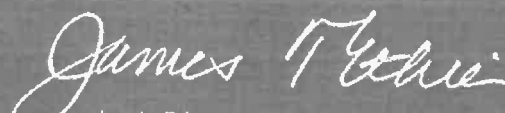


Material No.: 9673-33
Batch No.: 23D2462010

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



Refine your results. Redefine your industry.

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 (PCRTM) see the Limited License to Use PCRTM 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 PCRTM certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 06, 2024

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

11.2 Lot Expiration Date

- **September 06, 2029**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58025
101124
Manganese (Mn)

R-71113128

Lot #
Solvent: 24002546 Nitric Acid

Expiration Date:

101127

2% 80.0 (mL) Nitric Acid

Recommended Storage:
Nominal Concentration (µg/mL):

Ambient (20 °C)
1000

NIST Test Number:

6UTB

SE-05 Balance Uncertainty

Weight shown below was diluted to (mL):

4000.2 0.10 Flask Uncertainty

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

Compound

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

1. Manganese(II) nitrate hydrate (Mn) IN031 MMN032020A1 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	m/z->	110	120	130	140	150	160	170	180	190	200
2.5E6	m/z->	10	20	30	40	50	60	70	80	90	100
1.0E6	m/z->	10	20	30	40	50	60	70	80	90	100
5.0E7	m/z->	110	120	130	140	150	160	170	180	190	200
1.0E6	m/z->	110	120	130	140	150	160	170	180	190	200
5.0E7	m/z->	110	120	130	140	150	160	170	180	190	200
210	m/z->	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:

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

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

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

M - Checked by ICP-MS

O - Checked by ICP-OES

i - Spectral Interference

n - Not Checked For

s - Solution Standard Element

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 10, 2024

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

11.2 Lot Expiration Date

- July 10, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Muzzammil Khan
Stock Laboratory Supervisor



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58126
011025
Iron (Fe)

R-113125
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

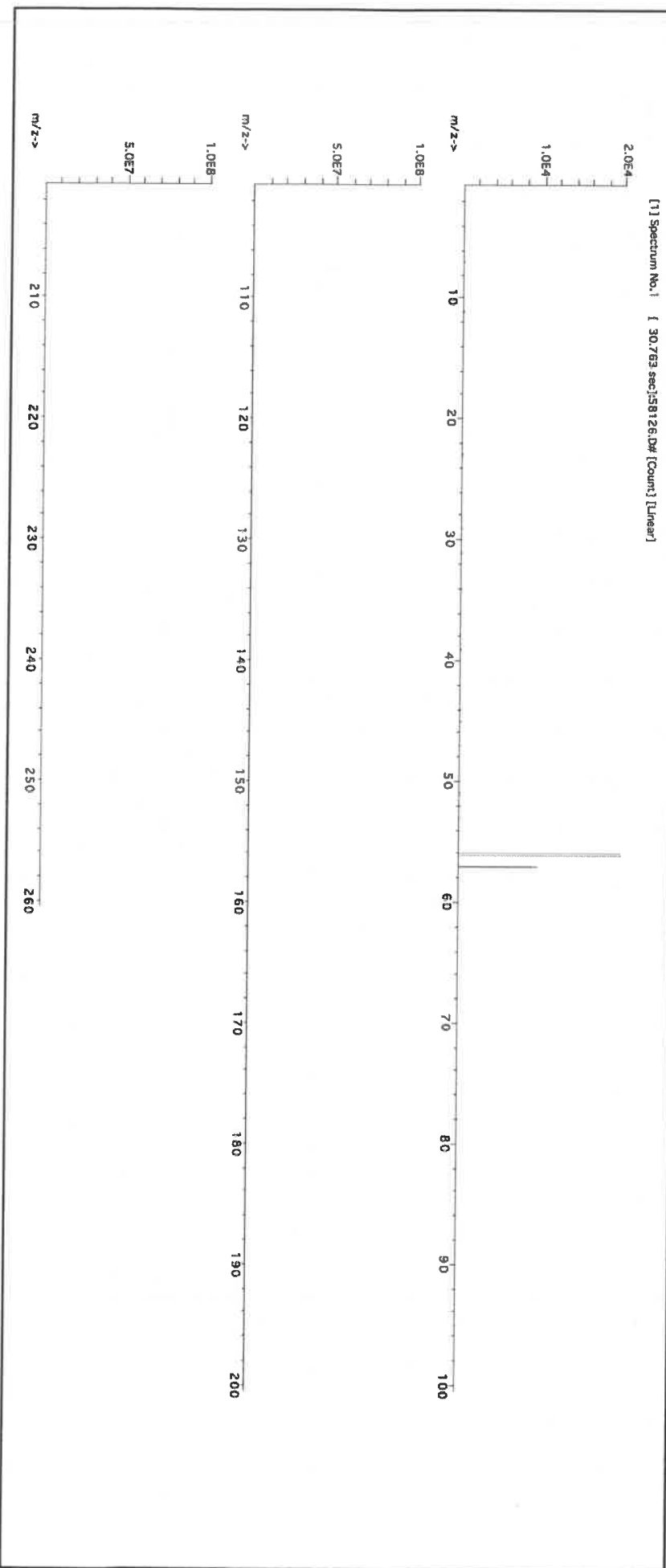
Compound

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)	LDSO	NIST SRM
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SDS Information

(Solvent Safety Info. On Attached pg.)

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





CERTIFIED WEIGHT REPORT:

Part Number: 57119
Lot Number: 103024
Description: Potassium (K)

R-21113125

Solvent: 24002546 Nitric Acid
Lot #

Expiration Date: 103027
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB

M6141
M6142
M6143

2% 80.0 (mL) Nitric Acid

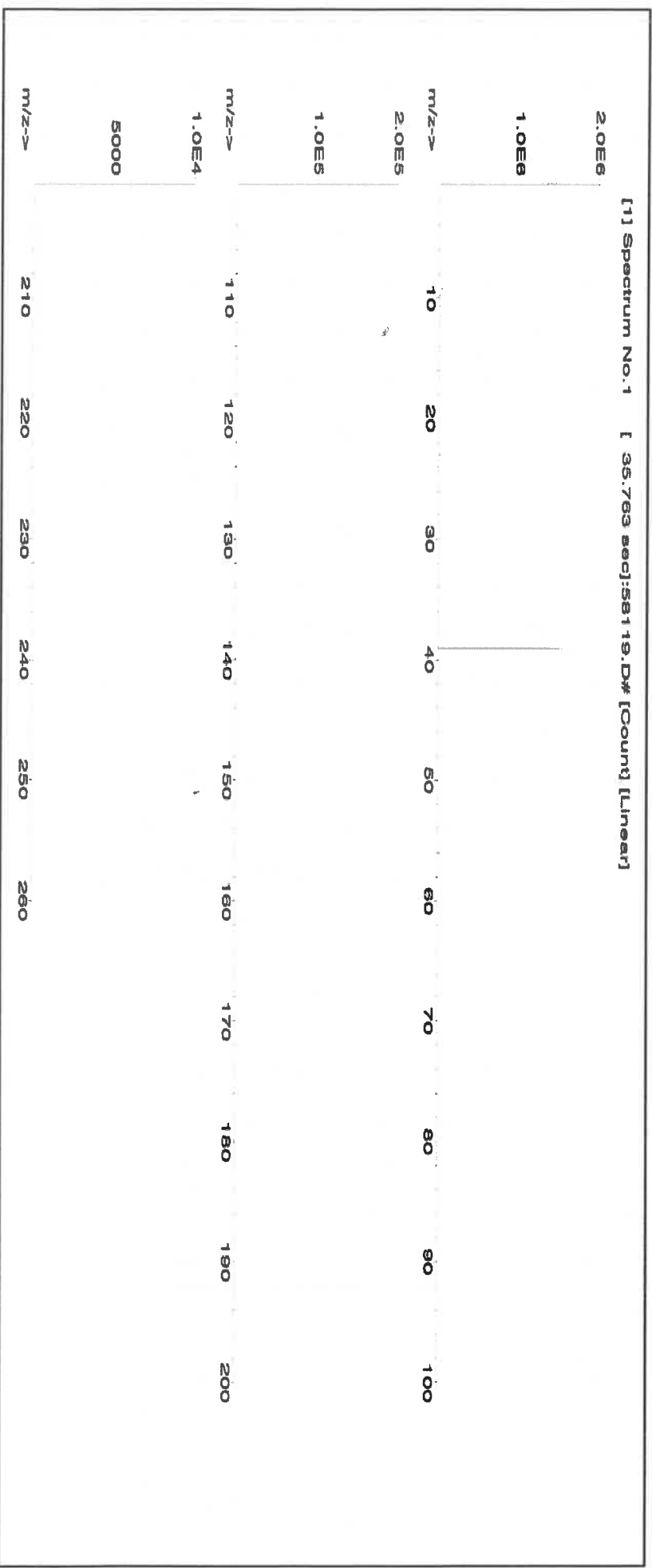
Weight shown below was diluted to (mL): 4000.1 0.15 Flask Uncertainty

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

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

1. Potassium nitrate (K) IN034 KD062022A1 10000 99.999 0.10 37.7 106.1040 ##### 10001.1 20.0 7757-79-1 5 mg/m3 orl-rat 3750 mg/kg 3141a

[1] Spectrum No. 1 [35.763 sec]:58119.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

Part Number: **58111** Lot # **R-1113125**
Lot Number: **072424** Solvent: **24002546 Nitric Acid**
Description: **Sodium (Na)**

Expiration Date: **072427** 2% 80.0 Nitric Acid (mL)

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

Nominal Concentration (µg/mL): **10000**

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

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

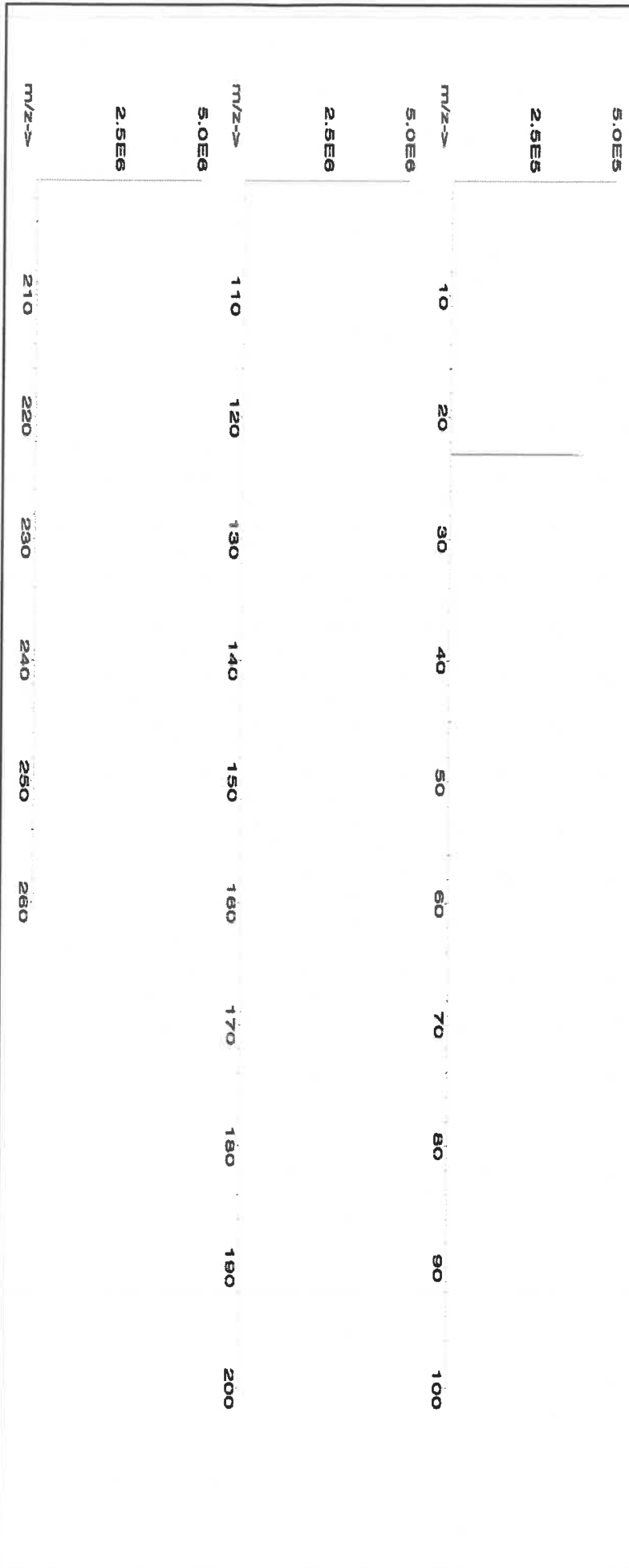
Formulated By:	Benson Chan	072424
Reviewed By:	Pedro L. Renteria	072424

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

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





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

58030
121724
Zinc (Zn)

R → 11/13/25 Solvent: 24012496 Nitric Acid

Lot #

Nitric Acid

Expiration Date:

121727

M6145

2%

40.0 (mL)

Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

5E-05 Balance Uncertainty

Weight shown below was diluted to (mL):

2000.1

0.10 Flask Uncertainty

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

Compound

RM#

Lot Number

Nominal Conc. (µg/mL)

Purity (%)

Uncertainty Purity (%)

Assay (%)

Target Weight (g)

Actual Weight (g)

Actual Conc. (µg/mL)

Expanded Uncertainty +/- (µg/mL)

CAS#

OSHA PEL (TWA)

LD50

NIST SRM

SDS Information

(Solvent Safety Info. On Attached pg.)

1. Zinc nitrate hexahydrate (Zn)

IN016 ZNE032021A1

1000

99.999

0.10

24.3

8.2308

8.2311

1000.0

2.0

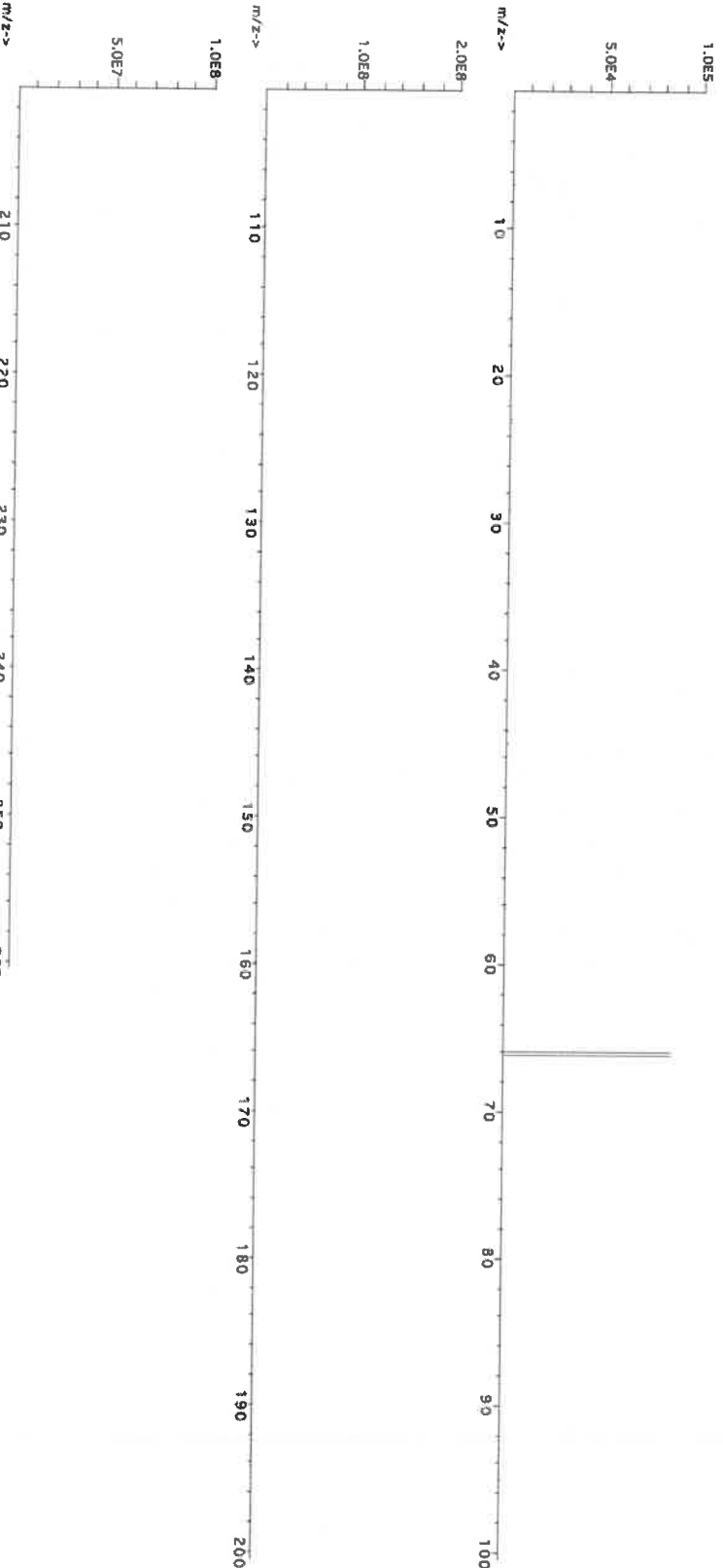
10196-18-6

1 mg/m3

or-rat 1190mg/kg

3168

[1] Spectrum No.1 [31.103 sec;58130.D# [Count] [Lines]





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

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

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



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

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

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

A handwritten signature in cursive script that reads 'Jamie Ethier'.
Jamie Ethier
Vice President Global Quality

Nitric Acid 69%
CMOS

avantor™



R- 0210212025

m - 6158

Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO ₃)	69.0 – 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	1 ppm
Chloride (Cl)	≤ 0.08 ppm	< 0.03 ppm
Phosphate (PO ₄)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO ₄)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities – Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Bismuth (Bi)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	2.3 ppb
Trace Impurities – Chromium (Cr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Germanium (Ge)	≤ 20 ppb	< 10 ppb
Trace Impurities – Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 100 ppb	100 ppb
Trace Impurities – Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities – Lead (Pb)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities – Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

 **avantorsTM**



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

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	16 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	10 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	3 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

 **avantorsTM**



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

Test	Specification	Result
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For Microelectronic Use

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



Jamie Croak
Director Quality Operations, Bioscience Production

Nitric Acid 69%
CMOS

 **avantorsTM**



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

 **avantorsTM**



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

 **avantor™**



Material No.: 9606-03
Batch No.: 24H0162012

Test	Specification	Result
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For Microelectronic Use

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



Jamie Croak
Director Quality Operations, Bioscience Production

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

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

June 01, 2023

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

11.2 Lot Expiration Date

- **June 01, 2028**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: QCP-CICV-3
Lot Number: V2-MEB749572
Matrix: 7% (v/v) HNO₃
Value / Analyte(s):
500 µg/mL ea:
Arsenic, Lead,
Selenium, Thallium,
250 µg/mL ea:
Cadmium

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Arsenic, As	500.0 ± 3.1 µg/mL	Cadmium, Cd	250.1 ± 1.1 µg/mL
Lead, Pb	500.0 ± 2.3 µg/mL	Selenium, Se	500.0 ± 3.2 µg/mL
Thallium, Tl	500.0 ± 3.0 µg/mL		

Density: 1.040 g/mL (measured at 20 ± 4 °C)

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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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

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- 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.

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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.

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8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 02, 2025

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

11.2 Lot Expiration Date

- **January 02, 2030**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Justin Dirico
Stock Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





Certified Reference Material CRM



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

CERTIFIED WEIGHT REPORT:

Part Number: 58112
Lot Number: 011525
Description: Magnesium (Mg)

M 6171

Solvent: 24012496 Nitric Acid
Lot #

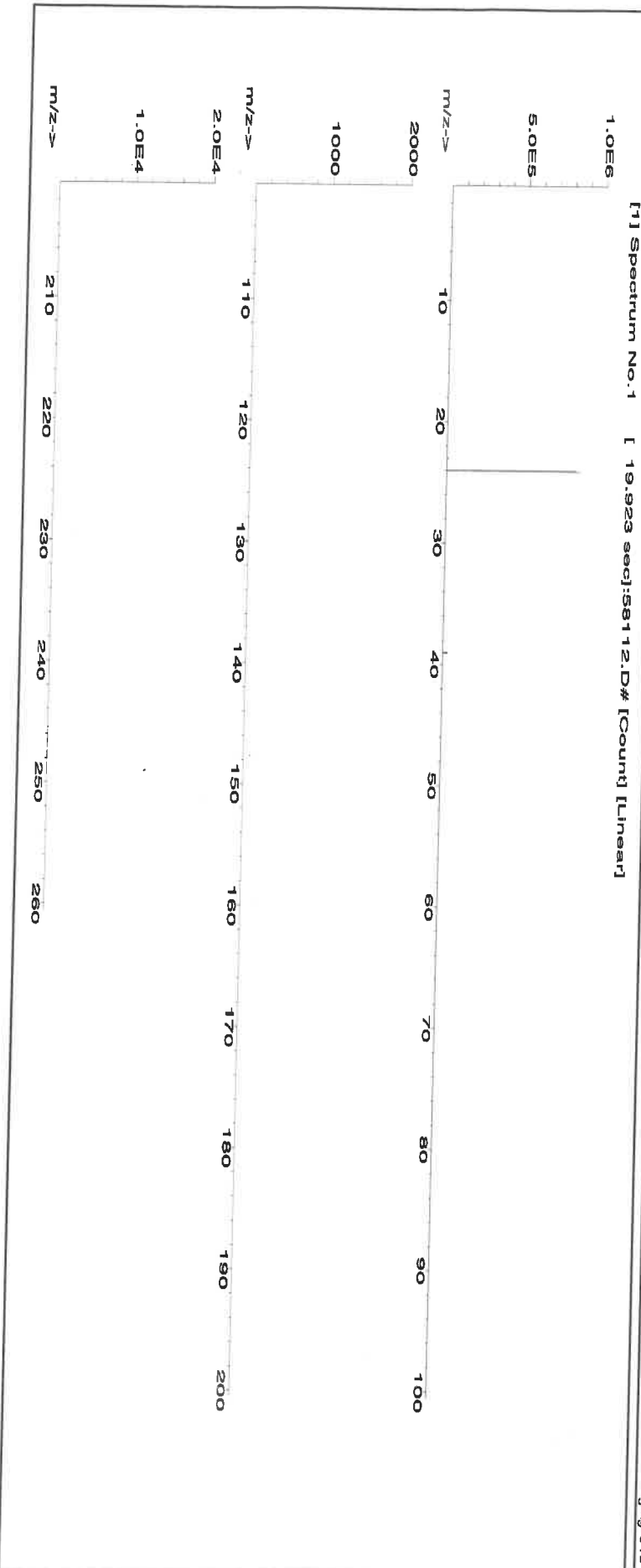
Expiration Date: 011528
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 2000.07
5E-05 Balance Uncertainty
0.100 Flask Uncertainty

Formulated By:	Benson Chan	011525
Reviewed By:	Pedro L. Rentas	011525

Compound

Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. 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

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info@inorganicventures.com

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1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution	
Catalog Number:	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:

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

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

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

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X_a = mean of Assay Method A with

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u_{bb} = bottle to bottle homogeneity standard uncertainty

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4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

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- 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.

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

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

N/A

6.0 INTENDED USE

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

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7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- 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.

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 22, 2024

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

11.2 Lot Expiration Date

- **March 22, 2029**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Jodie Wall
Stock VSM Coordinator



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





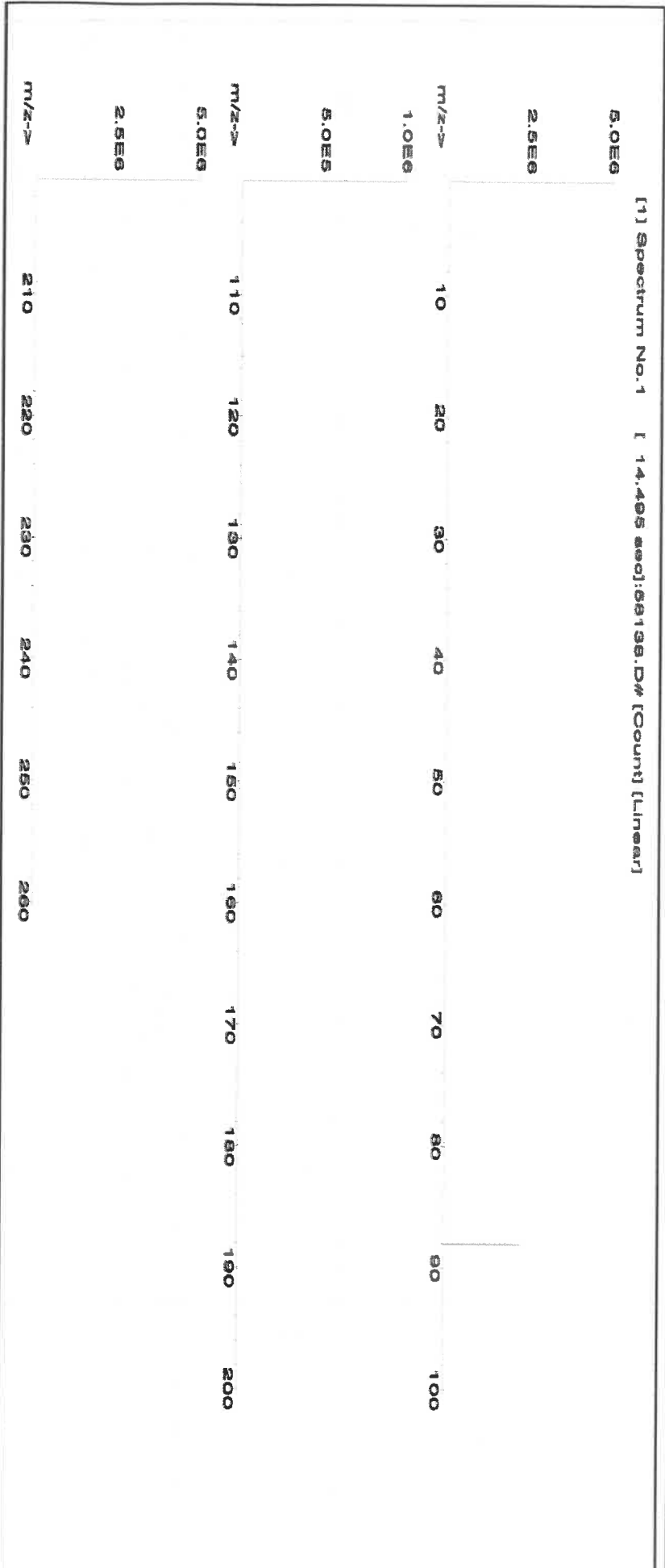
CERTIFIED WEIGHT REPORT:

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

<i>[Signature]</i>	
Formulated By:	Benson Chan
	092724
<i>[Signature]</i>	
Reviewed By:	Pedro L. Rentas
	092724

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

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

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

Part Number:
Lot Number:
Description:

57042
080525
Molybdenum (Mo)

57042
080525
Molybdenum (Mo)

57042
080525
Molybdenum (Mo)

Solvent:
Ammonium hydroxide
ASTM Type 1 Water

Expiration Date:

080528

Recommended Storage:

Ambient (15 - 30 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Volume shown below was diluted to (mL):

1999.41

5E-05

Balance Uncertainty

0.058

Fork → 8/6/25
M6177

10.0

Ammonium hydroxide

10.0

Ammonium hydroxide

10.0

Ammonium hydroxide

10.0

Ammonium hydroxide

Compound

Part Number

Lot Number

Dilution Factor

Initial Volume (mL)

Pipette (mL)

Uncertainty

Nominal Conc. (µg/mL)

Initial Conc. (µg/mL)

Final Conc. (µg/mL)

Expanded Uncertainty

SDS Information

(Solvent Safety Info. On Attached pg.)

CAS#

OSHA PEL (TWA)

Number

Factor

Vol. (mL)

Pipette (mL)

Conc. (µg/mL)

Conc. (µg/mL)

Conc. (µg/mL)

Uncertainty

CAS#

OSHA PEL (TWA)

LD50

SRM

SRM

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

or 161 383 mg/kg

3134

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

2.0E5

1.0E5

m/z ->

10

20

30

40

50

60

70

80

90

100

2000

1000

m/z ->

110

120

130

140

150

160

170

180

190

200

2.0E6

1.0E6

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

- * The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- * Purified acids, 18.2 megohm deionized water, calibrated Class A glassware, and the highest purity raw materials are used in the preparation of all standards.
- * All standard containers are meticulously cleaned prior to use.
- * Standards are prepared gravimetrically using balances that are calibrated by an ISO17025 certified organization with weights traceable through NIST to the SI kilogram (see above).
- * Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- * All standards should be stored with caps tight and under appropriate laboratory conditions.
- * Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).
- Rev 1.0, 2/25/2025



CERTIFIED WEIGHT REPORT:

Part Number:
Lot Number:
Description:

57082
031525
Lead (Pb)

Lot #

Nitric Acid

Expiration Date:

031528

2%

40.0

Nitric Acid

Recommended Storage:

Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL):

2000.07

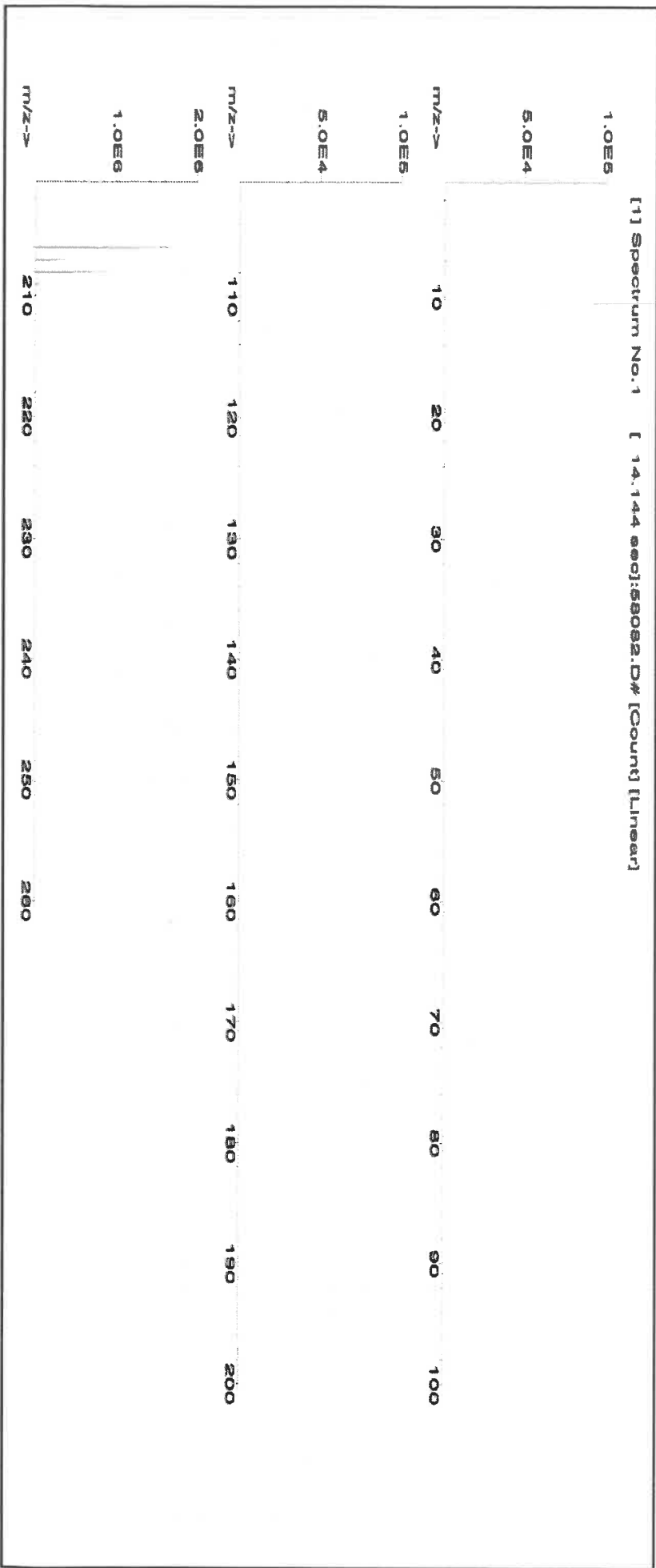
0.10 Flask Uncertainty

Compound

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

1. **Lead(II) nitrate (Pb)** IN029 PBD122016A1 1000 99.999 0.10 62.5 3.20015 3.20067 1000.2 2.0 10099-74-8 0.05 mg/m3 Intrins-ral 93 mg/kg 3128

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





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

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

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pt	<0.02	Sc	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	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:

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).

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

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



Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

1.0 ACCREDITATION / REGISTRATION

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



2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	WW-LFS-1
Lot Number:	W2-MEB752149
Matrix:	5% (v/v) 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>. 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

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M6181
R → 7/22/28

1.0 ACCREDITATION / REGISTRATION

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2.0 PRODUCT DESCRIPTION

Product Code: Multi Analyte Custom Grade Solution
Catalog Number: WW-LFS-2
Lot Number: V2-MEB743480
Matrix: 5% (v/v) HNO₃
tr. HF
Value / Analyte(s):
200 µg/mL ea:
Silica,
80 µg/mL ea:
Antimony,
70 µg/mL ea:
Tin,
40 µg/mL ea:
Molybdenum,
20 µg/mL ea:
Titanium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	80.1 ± 0.5 µg/mL	Molybdenum, Mo	40.05 ± 0.22 µg/mL
Silica, SiO ₂	200.3 ± 1.4 µg/mL	Tin, Sn	70.1 ± 0.4 µg/mL
Titanium, Ti	20.03 ± 0.12 µg/mL		

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

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Sb	ICP Assay	3102a	140911
SiO ₂	Calculated		See Sec. 4.2
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	traceable to 3162a	T2-TI725816

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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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,





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

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.



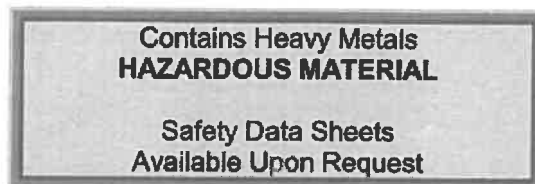
Instructions for QATS Reference Material: ICP-AES ICS

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,





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

Instructions for QATS Reference Material: ICP-AES ICS

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO₃. Analyze this ICSAB solution by ICP-AES.

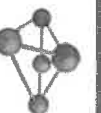
(D) "CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.



CERTIFIED WEIGHT REPORT:

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

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

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

Benson Chan

062024

Expiration Date: **062027**

2.0%

40.0 (mL)

Nitric Acid

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

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

NIST Test Number: **6UTB**

Balance Uncertainty

Volume shown below was diluted to (mL): **2000.07**

Flask Uncertainty

Expanded

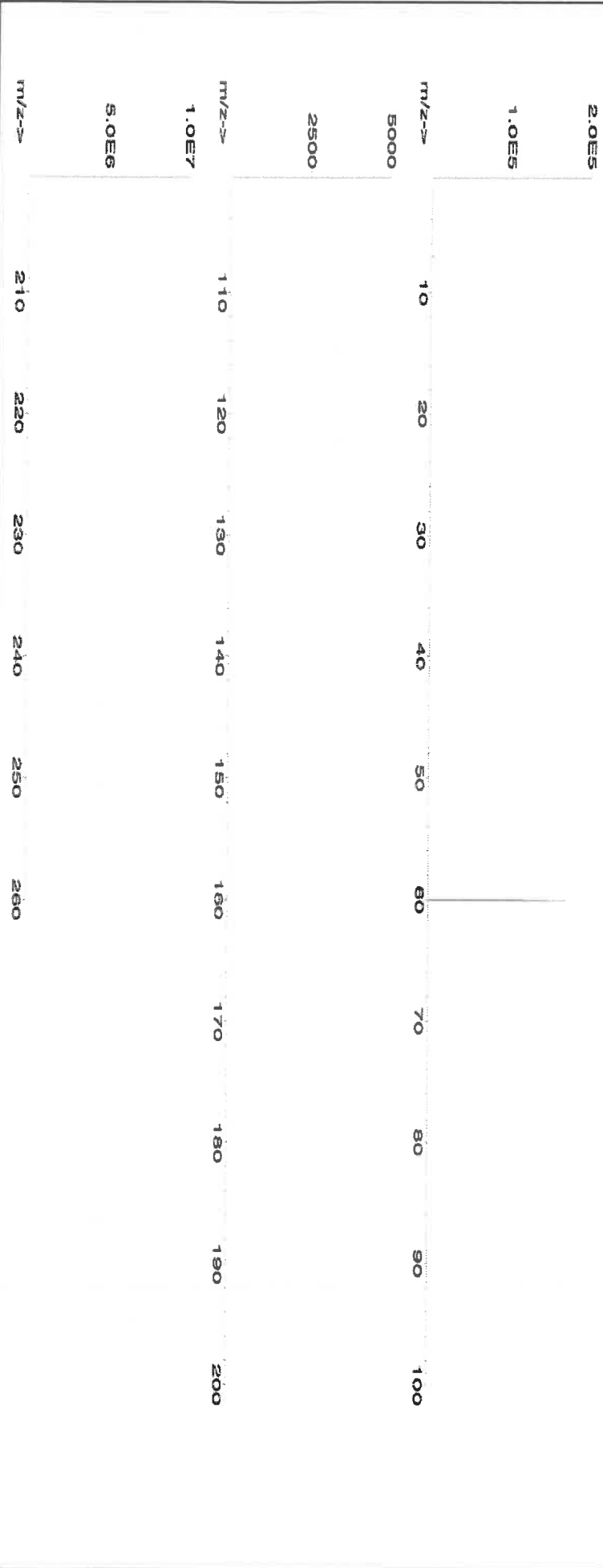
SDS Information

Compound

Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty (mL)	Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	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
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[1] Spectrum No.1 [9.136 sec]:58028.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



Certified Reference Material CRM

M6030



CERTIFIED WEIGHT REPORT:

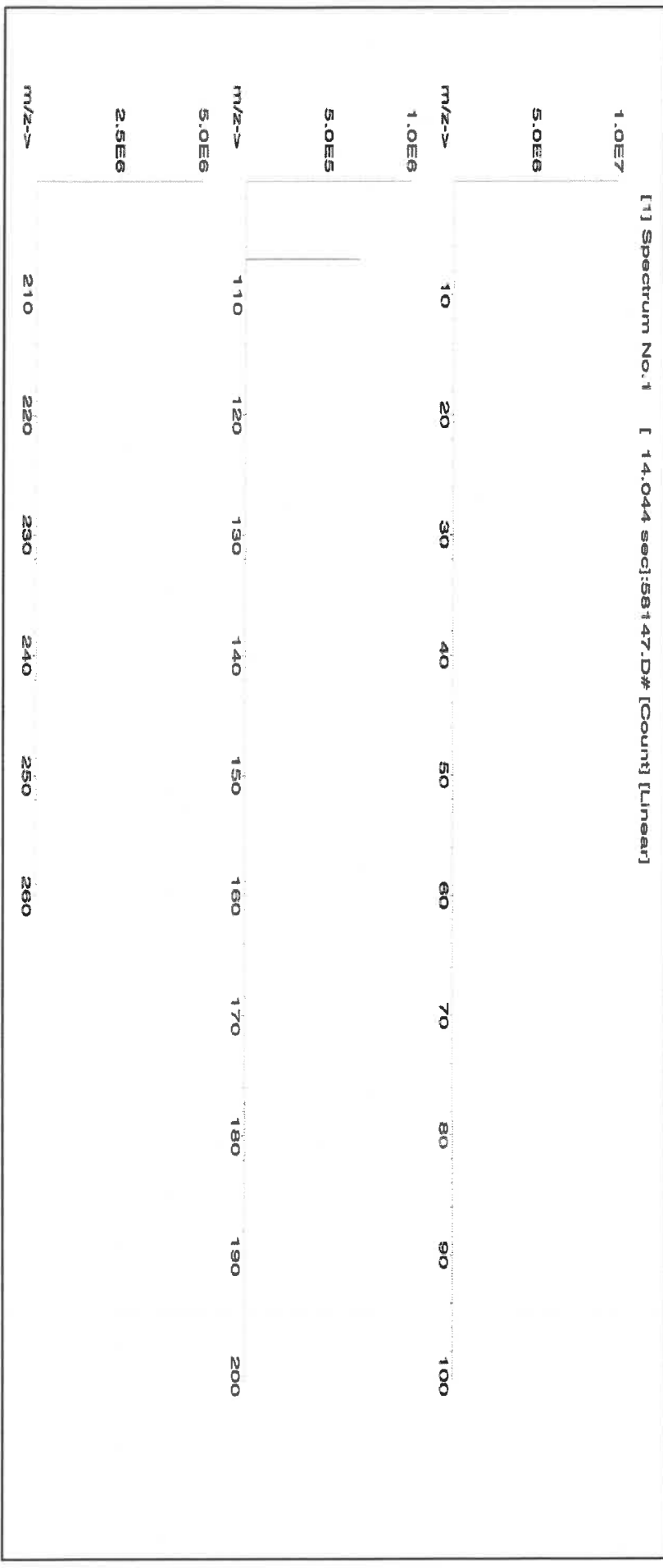
Part Number: **57047**
Lot Number: **122823**
Description: **Silver (Ag)**

Solvent: 24002546 Nitric Acid
Lot #

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

Expiration Date: 122826
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 4000.30
5E-05 Balance Uncertainty
0.058 Flask Uncertainty

SDS Information									
Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)
1. Silver nitrate (Ag)	IN035	J0612AGA1	1000.0	99.9996	0.10	63.7	6.27992	6.27998	1000.0
							2.0	7761-88-8	10 µg/mL
									NA
									3151





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

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

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

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



Certified Reference Material CRM
R: 10/18/24



CERTIFIED WEIGHT REPORT:

Part Number:

57051

Lot # 24002546

Solvent: Nitric Acid

Lot Number:

071724

Description: Antimony (Sb)

Expiration Date:

071727

2.0%

40.0 (mL)

Nitric Acid

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6LJB

5E-05 Balance Uncertainty

Volume shown below was diluted to (mL): 2000.26

0.058 Flask Uncertainty

Giovanni Esposito	
Formulated By:	Giovanni Esposito
	071724
Reviewed By: Pedro L. Rentas	
	071724

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

SDS Information

1. Antimony (Sb)

58151

060324

0.1000

200.0

0.084

1000

10001.4

1000.0

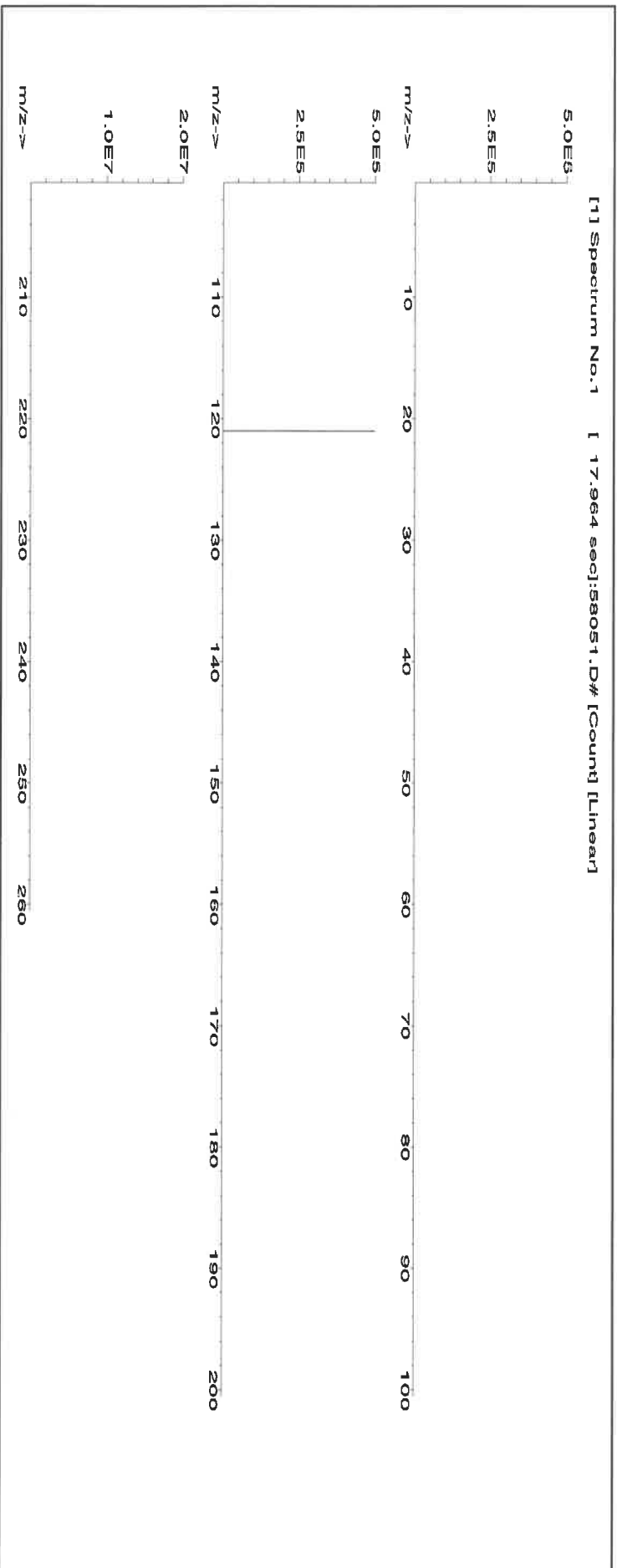
2.2

7440-36-0

0.5 mg/m3

orl-rat 7000 mg/kg

3102a



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	T	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

Certified by:

Har P. R.

- Printed: 9/27/2024, 11:20:14 PM



CERTIFIED WEIGHT REPORT:

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

Lot #

Solvent: 24002546 Nitric Acid

2% 40.0 Nitric Acid (mL)

Expiration Date:

062727

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL):

1000

NIST Test Number:

6UTB

Weight shown below was diluted to (mL): 2000.1

5E-05 Balance Uncertainty
0.10 Flask Uncertainty

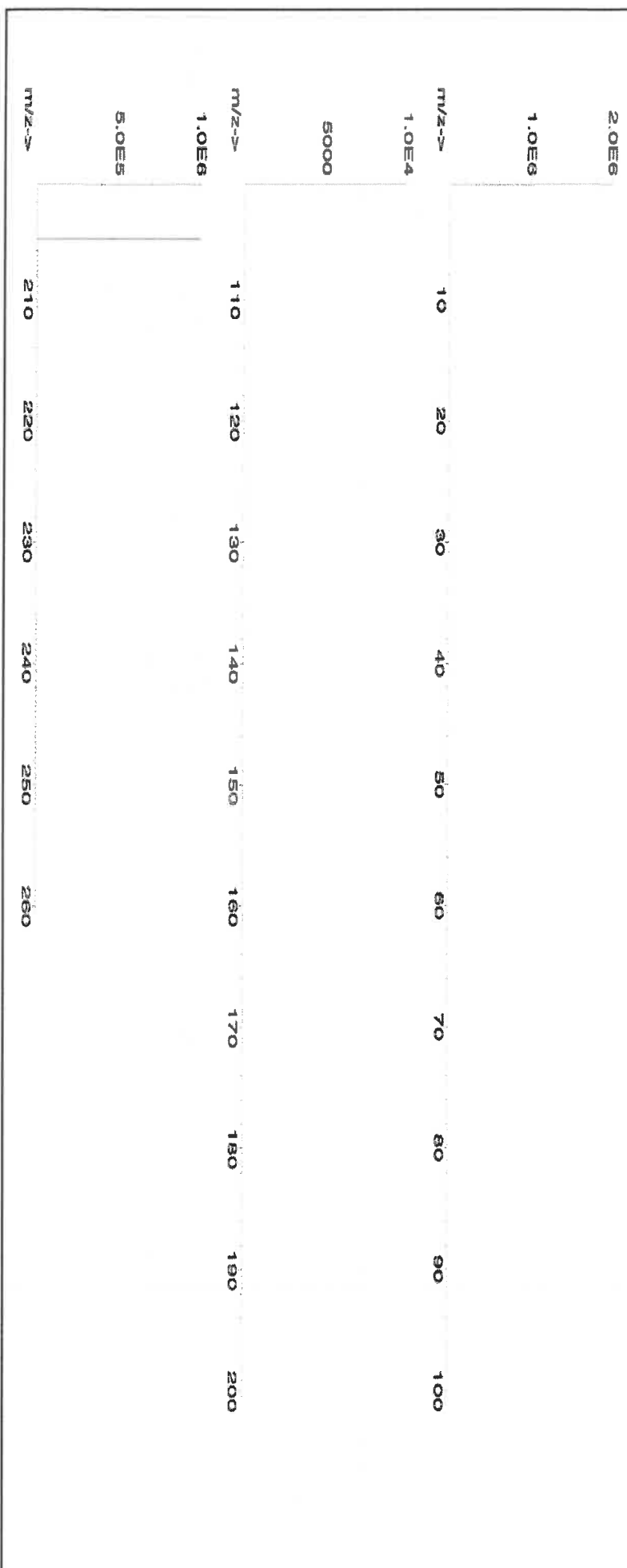
<i>Aleah O'Brady</i>	
Formulated By:	Aleah O'Brady
	062724
Reviewed By:	<i>Pedro L. Rendas</i>
	Pedro L. Rendas
	062724

SDS Information

Compound	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	CAS#	OSHA PEL (TWA)	LD50	NIST SRM
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1. Thallium nitrate (TI) IN037 BCCF4399 1000 99.999 0.10 77.0 2.5975 2.5977 1000.1 2.0 10102-45-1 0.1 mg/m3 orl-mus 15mg/kg 3158

[1] Spectrum No.1 [14.044 sec]:57081.D# [Count] [Linear]





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

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

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

(T) = Target analyte

Physical Characterization:

Certified by:

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

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



Certified Reference Material CRM

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

2.0%

40.0 (mL)

Nitric Acid

Formulated By: *Aleah O'Brady*
Aleah O'Brady
062424

Reviewed By: *Pedro L. Rantas*
Pedro L. Rantas
062424

Expiration Date: 062427
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000

NIST Test Number: 6UTB

Volume shown below was diluted to (mL): 2000.3

5E-05 Balance Uncertainty
0.06 Flask Uncertainty

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 metavanadate (V) 58123 021224 0.1000 200.0 0.084 1000 10000.3 1000.0 2.2 7803-55-6 0.05 mg/m3 or-at 58.1mg/kg 3165

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

m/z-->	10	20	30	40	50	60	70	80	90	100
2.0E6										
1.0E6										
m/z-->	10	20	30	40	50	60	70	80	90	100
2.0E7										
1.0E7										
m/z-->	110	120	130	140	150	160	170	180	190	200
5.0E6										
2.5E6										
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
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	Ru	<0.02	Na	<0.2
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Sr	<0.02	S	<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
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ti	<0.02
														Tb	<0.02
														Te	<0.02
														Tl	<0.02
														Th	<0.02
														Tm	<0.02
														Sn	<0.02
														Ti	<0.02
														W	<0.02
														U	<0.02
														V	T
														Yb	<0.02
														Y	<0.02
														Zn	<0.02
														Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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



SHIPPING DOCUMENTS

CLIENT INFORMATION

REPORT TO BE SENT TO:

COMPANY: Aramark uniforms
ADDRESS: 740 Frelinghuysen Ave.
CITY Newark STATE: NJ ZIP: 07114
ATTENTION: Tom Dikos
PHONE: 973-824-1101 FAX:

CLIENT PROJECT INFORMATION

PROJECT NAME: Monthly
PROJECT NO.: LOCATION:
PROJECT MANAGER:
e-mail:
PHONE: FAX:

CLIENT BILLING INFORMATION

BILL TO: PO#:
ADDRESS:
CITY STATE: ZIP:
ATTENTION: PHONE:
ANALYSIS

DATA TURNAROUND INFORMATION

FAX (RUSH) DAYS*
HARDCOPY (DATA PACKAGE): DAYS*
EDD: DAYS*
*TO BE APPROVED BY CHEMTECH
STANDARD HARDCOPY TURNAROUND TIME IS 10 BUSINESS

DATA DELIVERABLE INFORMATION

☐ Level 1 (Results Only) ☐ Level 4 (QC + Full Raw Data)
☐ Level 2 (Results + QC) ☐ NJ Reduced ☐ US EPA CLP
☐ Level 3 (Results + QC) ☐ NYS ASP A ☐ NYS ASP B
+ Raw Data ☐ Other
☐ EDD FORMAT

TCLP BNA
TCLP VOA
TCLP TCLP meth

PRESERVATIVES

COMMENTS

ALLIANCE SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE		SAMPLE COLLECTION		# OF BOTTLES	PRESERVATIVES									COMMENTS ← Specify Preservatives A-HCl D-NaOH B-HNO3 E-ICE C-H2SO4 F-OTHER
			COMP	GRAB	DATE	TIME		1	2	3	4	5	6	7	8	9	
1.	Sludge	S	✓		8-7-25	1013	4	✓	✓	✓							
2.																	
3.																	
4.																	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER: <u>[Signature]</u>	DATE/TIME: <u>8-7-25</u>	RECEIVED BY: <u>[Signature]</u>	Conditions of bottles or coolers at receipt: ☐ COMPLIANT ☐ NON COMPLIANT ☐ COOLER TEMP <u>3-3</u> °C
RELINQUISHED BY SAMPLER: <u>[Signature]</u>	DATE/TIME:	RECEIVED BY: <u>[Signature]</u>	Comments:
RELINQUISHED BY SAMPLER: <u>[Signature]</u>	DATE/TIME: <u>8-7-25</u>	RECEIVED BY: <u>[Signature]</u>	

Page ____ of CLIENT: ☐ Hand Delivered ☐ Other Shipment Complete ☐ YES ☐ NO

Laboratory Certification

Certified By	License No.
CAS EPA CLP Contract	68HERH20D0011
Connecticut	PH-0830
DOD ELAP (ANAB)	L2219
Maine	2024021
Maryland	296
New Hampshire	255424 Rev 1
New Jersey	20012
New York	11376
Pennsylvania	68-00548
Soil Permit	525-24-234-08441
Texas	T104704488