

# PREP BATCH REPORT

Prep Code: **PRP-3010**  
 Prep Batch **163954** Prep Temp: **91 °C**

Technician: **Amanda E. McDaniels**  
 Batch Units: **ML**

Prep Start Date: **2/23/2022 9:09:27 AM**  
 Prep End Date: **2/24/2022 8:23:00 AM**

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
MB-163954			50	0	0	50	1		2/23/2022	2/24/2022
	Temp cell C2, supervised by JPV									
LCS4-163954			50	0	0	50	1		2/23/2022	2/24/2022
B22021435-001B	Ground Water		50	0	0	50	1		2/23/2022	2/24/2022
B22021435-001BMS4			50	0	0	50	1		2/23/2022	2/24/2022
B22021435-001BMSD4			50	0	0	50	1		2/23/2022	2/24/2022
B22021435-006B	Ground Water		50	0	0	50	1		2/23/2022	2/24/2022
B22021435-012B	Ground Water		50	0	0	50	1		2/23/2022	2/24/2022
B22021435-017B	Ground Water		50	0	0	50	1		2/23/2022	2/24/2022
B22021435-022B	Ground Water		50	0	0	50	1		2/23/2022	2/24/2022
B22021435-027B	Ground Water		50	0	0	50	1		2/23/2022	2/24/2022
B22021435-032B	Ground Water		50	0	0	50	1		2/23/2022	2/24/2022

Number	Reagent Name	Exp Date	
14614	50mL DigiTubes J526127-2104	12/10/2022	
14758	Hydrochloric Acid, 36.5-38.0% 0000275677	12/15/2025	1 mL
14778	Nitric Acid, 69.0-70.0% D0521	1/18/2027	6 mL

Spk ID	Spike Name	SampType	AmtAdd	Exp Date
ME220125 EL-M	EL-MSICV-2	LCS4/MS4	0.05 ml	1/25/2023
ME220215 AUDI	AUDIGSPK	LCS4/MS4	0.05 ml	10/25/2022
ME220216 EL200	EL-200.2MS	LCS4/MS4	0.05 mL	2/16/2023

# Energy Laboratories Inc

# ANALYTICAL RUN Summary

07-Mar-22

Run ID ICPMS207-B\_220224A

<b>Run Start Date:</b> 2/24/2022 1:23:51 P
<b>Analyst:</b> Cindy Rohrer
<b>Ical:</b> 0
<b>Column ID:</b>
<b>Comments:</b>

Instrument ID	Description
05K74291	Metals 0.5-5 mL Adjustable Pipette
06H37847	100-1000 uL volume displacement pipette
340760037	Metals 100-1000 uL Adjustable Pipette
340760040	Metals 100-1000 uL Adjustable Pipette
841980007	1000-5000uL Pipette
M38354H	eppendorf adjustable 10-100 ul pipet

Std ID	Std Name	Std Amount	Std Units	Samp Amount	Samp Units	SampType	Expiration Date
ME220112 SS1	SS1 ICPMS Spiking Solution					LFB/MS	12/8/2022
ME220112A 1000 PPB STAND	1000 PPB Standard					URL	11/18/2022
ME220114A Tune Solution	Tune Solution						12/7/2022
ME220118 0.025 PPB STAND	0.025 ppb Standard						11/18/2022
ME220118 0.05 PPB STANDA	0.5 ppb Standard						11/18/2022
ME220118 0.1 PPB STANDAR	0.1 ppb Standard						11/18/2022
ME220118 0.5 PPB STANDAR	0.5 ppb Standard						11/18/2022
ME220118 1 PPB STANDARD	1 ppb Standard						11/18/2022
ME220118 10 PPB STANDAR	10 ppb Standard					CCV	11/18/2022
ME220118 100 PPB STANDAR	100 ppb Standard					CAL8	11/18/2022
ME220118 50 PPB STANDAR	50 ppb Standard/CCV					CRI	11/18/2022
ME220125 ICV STANDARD	ICV for ICPMS Standards					ICV	4/30/2022
ME220216 ICSA	ICSA					ICSA	2/16/2023
ME220216 ICSAB	ICSAB					ICSAB	9/1/2022

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053857	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 1:23:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053858	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 1:30:0	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053859	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 1:36:1	1	R375174			0	0					
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
15053860	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 1:42:3	1	R375174			0	0					
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
15053861	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 1:48:4	1	R375174			0	0					
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
15053862	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 1:54:5	1	R375174			0	0					
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
15053863	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 2:01:0	1	R375174			0	0					
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
15053864	Cal Blk	ICPMS-6020-W-	SAMP		2/24/2022 2:07:2	1	R375174			0	0					
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0	0		0	0	0	0.0017836	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	0	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0	0		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0	0		0	0	0	8.516E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	0	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0	0		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0	0		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0	0		0	0	0	0.0001748	0.001	1	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053864	Cal Blk	ICPMS-6020-W-	SAMP		2/24/2022 2:07:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Lanthanum	A	mg/L	0	0		0	0	0	6.805E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	0	0		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	0	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0	0		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0	0		0	0	0	0.0001769	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0	0		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	0	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	0	0		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0	0		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0	0		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0	0		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0	0		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0	0		0	0	0	0.0039526	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0	0		0	0	0	0.2027235	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	0	0		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	L
Potassium	B	mg/L	0	0		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0	0		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	0	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	0	0		0	0	0	0.0018612	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0	0		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053865	0.025 ppb STD	ICPMS-6020B-C	Cal1		2/24/2022 2:15:0	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0001616	0.0001616		0	0	0		0.01		0%			0%	
Antimony	A	mg/L	0.00003707	0.00003707		0	0	0		0.001		0%			0%	
Arsenic	A	mg/L	0.00003435	0.00003435		0.000025	0	0		0.001		137%	80	120	0%	S
Barium	A	mg/L	0.00003149	0.00003149		0.000025	0	0		0.0003		126%	80	120	0%	S
Beryllium	A	mg/L	0.00003369	0.00003369		0.000025	0	0		0.001		135%	80	120	0%	S
Boron	A	mg/L	0.0006461	0.0006461		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.00002936	0.00002936		0.000025	0	0		0.001		117%	80	120	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053865	0.025 ppb STD	ICPMS-6020B-C Cal1			2/24/2022 2:15:0	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Calcium	A	mg/L	0.004968	0.004968		0	0	0		1		0%			0%	
Cerium	A	mg/L	0.00002764	0.00002764		0.000025	0	0		0.001		111%	80	120	0%	
Chromium	A	mg/L	0.00003972	0.00003972		0.000025	0	0		0.001		159%	80	120	0%	S
Cobalt	A	mg/L	0.00002998	0.00002998		0.000025	0	0		0.001		120%	80	120	0%	
Copper	A	mg/L	0.00003404	0.00003404		0	0	0		0.005		0%			0%	
Iron	A	mg/L	0.0007782	0.0007782		0	0	0		0.01		0%			0%	
Lanthanum	A	mg/L	0.00002839	0.00002839		0.000025	0	0		0.001		114%	80	120	0%	
Lead	A	mg/L	0.00003018	0.00003018		0.000025	0	0		0.001		121%	80	120	0%	S
Lithium	A	mg/L	0.0003962	0.0003962		0.0003125	0	0		1		127%	80	120	0%	S
Magnesium	A	mg/L	0.006934	0.006934		0	0	0		1		0%			0%	
Manganese	A	mg/L	0.00002776	0.00002776		0	0	0		0.001		0%			0%	
Mercury	A	mg/L	7.193E-07	7.193E-07		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.00002873	0.00002873		0	0	0		0.001		0%			0%	
Nickel	A	mg/L	0.00003329	0.00003329		0	0	0		0.005		0%			0%	
Potassium	A	mg/L	0.008684	0.008684		0.00625	0	0		1		139%	80	120	0%	S
Selenium	A	mg/L	0.00003037	0.00003037		0.000025	0	0		0.005		121%	80	120	0%	S
Silicon	A	mg/L	0.001068	0.001068		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.00001179	0.00001179		0	0	0		0.001		0%			0%	
Sodium	A	mg/L	0.005053	0.005053		0.00625	0	0		1		81%	80	120	0%	
Strontium	A	mg/L	0.00002524	0.00002524		0	0	0		0.001		0%	80	120	0%	
Thallium	A	mg/L	0.00002548	0.00002548		0	0	0		0.001		0%			0%	
Thorium	A	mg/L	0.00001052	0.00001052		0	0	0		0.05		0%			0%	
Tin	A	mg/L	-0.001061	-0.001061		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.0001112	0.0001112		0	0	0		0.001		0%			0%	
Uranium	A	mg/L	0.00002679	0.00002679		0.000025	0	0		0.001		107%	80	120	0%	
Vanadium	A	mg/L	0.0002228	0.0002228		0	0	0		0.005		0%			0%	
Zinc	A	mg/L	0.0001145	0.0001145		0	0	0		0.01		0%			0%	
Iron, Ferrous	C	mg/L	0.0007782	0.0007782		0.000025	0	0		0.01	5	3113%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.00228552	0.00228552		0.0000535	0	0		0.214	0.9	4272%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053866	0.05 ppb STD	ICPMS-6020B-C Cal2			2/24/2022 2:21:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053866	0.05 ppb STD	ICPMS-6020B-C	Cal2		2/24/2022 2:21:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0002046	0.0002046		0	0	0		0.01		0%			0%	
Antimony	A	mg/L	0.00006303	0.00006303		0.00005	0	0		0.001		126%	80	120	0%	S
Arsenic	A	mg/L	0.00006931	0.00006931		0.00005	0	0		0.001		139%	80	120	0%	S
Barium	A	mg/L	0.00006166	0.00006166		0.00005	0	0		0.0003		123%	80	120	0%	S
Beryllium	A	mg/L	0.00006424	0.00006424		0.00005	0	0		0.001		128%	80	120	0%	S
Boron	A	mg/L	0.0006238	0.0006238		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.00006472	0.00006472		0.00005	0	0		0.001		129%	80	120	0%	S
Calcium	A	mg/L	0.01342	0.01342		0.0125	0	0		1		107%	80	120	0%	
Cerium	A	mg/L	0.00006289	0.00006289		0.00005	0	0		0.001		126%	80	120	0%	S
Chromium	A	mg/L	0.00006696	0.00006696		0.00005	0	0		0.001		134%	80	120	0%	S
Cobalt	A	mg/L	0.00006314	0.00006314		0	0	0		0.001		0%			0%	
Copper	A	mg/L	0.0000754	0.0000754		0.00005	0	0		0.005		151%	80	120	0%	S
Iron	A	mg/L	0.001655	0.001655		0.00125	0	0		0.01		132%	80	120	0%	S
Lanthanum	A	mg/L	0.00005985	0.00005985		0.00005	0	0		0.001		120%	80	120	0%	
Lead	A	mg/L	0.00006162	0.00006162		0.00005	0	0		0.001		123%	80	120	0%	S
Lithium	A	mg/L	0.0008215	0.0008215		0.000625	0	0		1		131%	80	120	0%	S
Magnesium	A	mg/L	0.01646	0.01646		0.0125	0	0		1		132%	80	120	0%	S
Manganese	A	mg/L	0.00005972	0.00005972		0.00005	0	0		0.001		119%	80	120	0%	
Mercury	A	mg/L	0.00000211	0.00000211		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.00006544	0.00006544		0.00005	0	0		0.001		131%	80	120	0%	S
Nickel	A	mg/L	0.00006028	0.00006028		0	0	0		0.005		0%			0%	
Potassium	A	mg/L	0.01574	0.01574		0.0125	0	0		1		126%	80	120	0%	S
Selenium	A	mg/L	0.00006023	0.00006023		0.00005	0	0		0.005		120%	80	120	0%	
Silicon	A	mg/L	0.001997	0.001997		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.00002452	0.00002452		0.00002	0	0		0.001		123%	80	120	0%	S
Sodium	A	mg/L	0.01573	0.01573		0.0125	0	0		1		126%	80	120	0%	S
Strontium	A	mg/L	0.00005978	0.00005978		0.00005	0	0		0.001		120%	80	120	0%	
Thallium	A	mg/L	0.00005515	0.00005515		0	0	0		0.001		0%			0%	
Thorium	A	mg/L	0.00002621	0.00002621		0	0	0		0.05		0%			0%	
Tin	A	mg/L	-0.001052	-0.001052		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.0001179	0.0001179		0	0	0		0.001		0%			0%	
Uranium	A	mg/L	0.0000579	0.0000579		0.00005	0	0		0.001		116%	80	120	0%	
Vanadium	A	mg/L	0.000225	0.000225		0	0	0		0.005		0%			0%	
Zinc	A	mg/L	6.046E-06	6.046E-06		0	0	0		0.01		0%			0%	
Iron, Ferrous	C	mg/L	0.001655	0.001655		0.00005	0	0		0.01	5	3310%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053866	0.05 ppb STD	ICPMS-6020B-C Cal2			2/24/2022 2:21:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Silicon as SiO2	C	mg/L	0.00427358	0.00427358		0.00428	0	0		0.214	0.9	100%	80	120	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053867	0.10 ppb STD	ICPMS-6020B-C Cal3			2/24/2022 2:28:1	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0001927	0.0001927		0.0001	0	0		0.01		193%	80	120	0%	S
Antimony	A	mg/L	0.0001154	0.0001154		0.0001	0	0		0.001		115%	80	120	0%	
Arsenic	A	mg/L	0.0001252	0.0001252		0.0001	0	0		0.001		125%	80	120	0%	S
Barium	A	mg/L	0.0001086	0.0001086		0.0001	0	0		0.0003		109%	80	120	0%	
Beryllium	A	mg/L	0.0001112	0.0001112		0.0001	0	0		0.001		111%	80	120	0%	
Boron	A	mg/L	0.00004432	0.00004432		0	0	0		0.1		0%			0%	
Cadmium	A	mg/L	0.0001182	0.0001182		0.0001	0	0		0.001		118%	80	120	0%	
Calcium	A	mg/L	0.02846	0.02846		0.025	0	0		1		114%	80	120	0%	
Cerium	A	mg/L	0.0001175	0.0001175		0.0001	0	0		0.001		118%	80	120	0%	
Chromium	A	mg/L	0.0001309	0.0001309		0.0001	0	0		0.001		131%	80	120	0%	S
Cobalt	A	mg/L	0.000115	0.000115		0.0001	0	0		0.001		115%	80	120	0%	
Copper	A	mg/L	0.0001332	0.0001332		0.0001	0	0		0.005		133%	80	120	0%	S
Iron	A	mg/L	0.003155	0.003155		0.0025	0	0		0.01		126%	80	120	0%	S
Lanthanum	A	mg/L	0.0001188	0.0001188		0.0001	0	0		0.001		119%	80	120	0%	
Lead	A	mg/L	0.0001094	0.0001094		0.0001	0	0		0.001		109%	80	120	0%	
Lithium	A	mg/L	0.001425	0.001425		0.00125	0	0		1		114%	80	120	0%	
Magnesium	A	mg/L	0.03055	0.03055		0.025	0	0		1		122%	80	120	0%	S
Manganese	A	mg/L	0.0001184	0.0001184		0.0001	0	0		0.001		118%	80	120	0%	
Mercury	A	mg/L	2.629E-06	2.629E-06		0.000002	0	0		0.001		131%	80	120	0%	S
Molybdenum	A	mg/L	0.0001163	0.0001163		0.0001	0	0		0.001		116%	80	120	0%	
Nickel	A	mg/L	0.00009726	0.00009726		0.0001	0	0		0.005		97%	80	120	0%	
Potassium	A	mg/L	0.03002	0.03002		0.025	0	0		1		120%	80	120	0%	
Selenium	A	mg/L	0.0001149	0.0001149		0.0001	0	0		0.005		115%	80	120	0%	
Silicon	A	mg/L	0.002612	0.002612		0.0004	0	0		0.1		653%	80	120	0%	S
Silver	A	mg/L	0.00004723	0.00004723		0.00004	0	0		0.001		118%	80	120	0%	
Sodium	A	mg/L	0.02943	0.02943		0.025	0	0		1		118%	80	120	0%	
Strontium	A	mg/L	0.0001199	0.0001199		0.0001	0	0		0.001		120%	80	120	0%	
Thallium	A	mg/L	0.0001085	0.0001085		0.0001	0	0		0.001		108%	80	120	0%	
Thorium	A	mg/L	0.00005532	0.00005532		0.0001	0	0		0.05		55%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053867	0.10 ppb STD	ICPMS-6020B-C	Cal3		2/24/2022 2:28:1	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Tin	A	mg/L	-0.001002	-0.001002		0.0001	0	0		0.001		-1002%	80	120	0%	S
Titanium	A	mg/L	0.0001326	0.0001326		0.0001	0	0		0.001		133%	80	120	0%	S
Uranium	A	mg/L	0.000109	0.000109		0.0001	0	0		0.001		109%	80	120	0%	
Vanadium	A	mg/L	0.0003143	0.0003143		0.0001	0	0		0.005		314%	80	120	0%	S
Zinc	A	mg/L	0.00001719	0.00001719		0.0001	0	0		0.01		17%	80	120	0%	S
Iron, Ferrous	C	mg/L	0.003155	0.003155		0.0001	0	0		0.01	5	3155%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.00558968	0.00558968		0.00856	0	0		0.214	0.9	65%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053868	0.5 ppb STD	ICPMS-6020B-C	Cal4		2/24/2022 2:34:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0008815	0.0008815		0.0005	0	0		0.01		176%	80	120	0%	S
Antimony	A	mg/L	0.0005548	0.0005548		0.0005	0	0		0.001		111%	80	120	0%	
Arsenic	A	mg/L	0.0005543	0.0005543		0.0005	0	0		0.001		111%	80	120	0%	
Barium	A	mg/L	0.0005093	0.0005093		0.0005	0	0		0.0003		102%	80	120	0%	
Beryllium	A	mg/L	0.0005553	0.0005553		0.0005	0	0		0.001		111%	80	120	0%	
Boron	A	mg/L	0.0008346	0.0008346		0.0005	0	0		0.1		167%	80	120	0%	S
Cadmium	A	mg/L	0.0005445	0.0005445		0.0005	0	0		0.001		109%	80	120	0%	
Calcium	A	mg/L	0.1401	0.1401		0.125	0	0		1		112%	80	120	0%	
Cerium	A	mg/L	0.0005447	0.0005447		0.0005	0	0		0.001		109%	80	120	0%	
Chromium	A	mg/L	0.0005646	0.0005646		0.0005	0	0		0.001		113%	80	120	0%	
Cobalt	A	mg/L	0.0005748	0.0005748		0.0005	0	0		0.001		115%	80	120	0%	
Copper	A	mg/L	0.0006005	0.0006005		0.0005	0	0		0.005		120%	80	120	0%	
Iron	A	mg/L	0.0149	0.0149		0.0125	0	0		0.01		119%	80	120	0%	
Lanthanum	A	mg/L	0.0005497	0.0005497		0.0005	0	0		0.001		110%	80	120	0%	
Lead	A	mg/L	0.0005288	0.0005288		0.0005	0	0		0.001		106%	80	120	0%	
Lithium	A	mg/L	0.007013	0.007013		0.00625	0	0		1		112%	80	120	0%	
Magnesium	A	mg/L	0.1446	0.1446		0.125	0	0		1		116%	80	120	0%	
Manganese	A	mg/L	0.000544	0.000544		0.0005	0	0		0.001		109%	80	120	0%	
Mercury	A	mg/L	9.489E-06	9.489E-06		0.00001	0	0		0.001		95%	80	120	0%	
Molybdenum	A	mg/L	0.0005215	0.0005215		0.0005	0	0		0.001		104%	80	120	0%	
Nickel	A	mg/L	0.0005883	0.0005883		0.0005	0	0		0.005		118%	80	120	0%	
Potassium	A	mg/L	0.1395	0.1395		0.125	0	0		1		112%	80	120	0%	
Selenium	A	mg/L	0.0005603	0.0005603		0.0005	0	0		0.005		112%	80	120	0%	



Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053868	0.5 ppb STD	ICPMS-6020B-C	Cal4		2/24/2022 2:34:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Silicon	A	mg/L	0.005589	0.005589		0.002	0	0		0.1		279%	80	120	0%	S
Silver	A	mg/L	0.0002164	0.0002164		0.0002	0	0		0.001		108%	80	120	0%	
Sodium	A	mg/L	0.143	0.143		0.125	0	0		1		114%	80	120	0%	
Strontium	A	mg/L	0.0005121	0.0005121		0.0005	0	0		0.001		102%	80	120	0%	
Thallium	A	mg/L	0.0005111	0.0005111		0.0005	0	0		0.001		102%	80	120	0%	
Thorium	A	mg/L	0.0003244	0.0003244		0.0005	0	0		0.05		65%	80	120	0%	S
Tin	A	mg/L	-0.0005134	-0.0005134		0.0005	0	0		0.001		-103%	80	120	0%	S
Titanium	A	mg/L	0.0005697	0.0005697		0.0005	0	0		0.001		114%	80	120	0%	
Uranium	A	mg/L	0.0005107	0.0005107		0.0005	0	0		0.001		102%	80	120	0%	
Vanadium	A	mg/L	0.0008272	0.0008272		0.0005	0	0		0.005		165%	80	120	0%	S
Zinc	A	mg/L	0.001024	0.001024		0.0005	0	0		0.01		205%	80	120	0%	S
Iron, Ferrous	C	mg/L	0.0149	0.0149		0.0005	0	0		0.01	5	2980%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.01196046	0.01196046		0.0428	0	0		0.214	0.9	28%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053869	1 ppb STD	ICPMS-6020B-C	Cal5		2/24/2022 2:41:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001288	0.001288		0.001	0	0		0.01		129%	80	120	0%	S
Antimony	A	mg/L	0.001115	0.001115		0.001	0	0		0.001		111%	80	120	0%	
Arsenic	A	mg/L	0.001165	0.001165		0.001	0	0		0.001		117%	80	120	0%	
Barium	A	mg/L	0.001071	0.001071		0.001	0	0		0.0003		107%	80	120	0%	
Beryllium	A	mg/L	0.001172	0.001172		0.001	0	0		0.001		117%	80	120	0%	
Boron	A	mg/L	0.0009141	0.0009141		0.001	0	0		0.1		91%	80	120	0%	
Cadmium	A	mg/L	0.001158	0.001158		0.001	0	0		0.001		116%	80	120	0%	
Calcium	A	mg/L	0.3017	0.3017		0.25	0	0		1		121%	80	120	0%	S
Cerium	A	mg/L	0.00119	0.00119		0.001	0	0		0.001		119%	80	120	0%	
Chromium	A	mg/L	0.001193	0.001193		0.001	0	0		0.001		119%	80	120	0%	
Cobalt	A	mg/L	0.001189	0.001189		0.001	0	0		0.001		119%	80	120	0%	
Copper	A	mg/L	0.001282	0.001282		0.001	0	0		0.005		128%	80	120	0%	S
Iron	A	mg/L	0.03216	0.03216		0.025	0	0		0.01		129%	80	120	0%	S
Lanthanum	A	mg/L	0.001184	0.001184		0.001	0	0		0.001		118%	80	120	0%	
Lead	A	mg/L	0.001115	0.001115		0.001	0	0		0.001		111%	80	120	0%	
Lithium	A	mg/L	0.01458	0.01458		0.0125	0	0		1		117%	80	120	0%	
Magnesium	A	mg/L	0.3114	0.3114		0.25	0	0		1		125%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053869	1 ppb STD	ICPMS-6020B-C	Cal5		2/24/2022 2:41:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Manganese	A	mg/L	0.001159	0.001159		0.001	0	0		0.001		116%	80	120	0%	
Mercury	A	mg/L	0.00002299	0.00002299		0.00002	0	0		0.001		115%	80	120	0%	
Molybdenum	A	mg/L	0.001097	0.001097		0.001	0	0		0.001		110%	80	120	0%	
Nickel	A	mg/L	0.001246	0.001246		0.001	0	0		0.005		125%	80	120	0%	S
Potassium	A	mg/L	0.297	0.297		0.25	0	0		1		119%	80	120	0%	
Selenium	A	mg/L	0.00124	0.00124		0.001	0	0		0.005		124%	80	120	0%	S
Silicon	A	mg/L	0.009481	0.009481		0.004	0	0		0.1		237%	80	120	0%	S
Silver	A	mg/L	0.0004509	0.0004509		0.0004	0	0		0.001		113%	80	120	0%	
Sodium	A	mg/L	0.3065	0.3065		0.25	0	0		1		123%	80	120	0%	S
Strontium	A	mg/L	0.00114	0.00114		0.001	0	0		0.001		114%	80	120	0%	
Thallium	A	mg/L	0.001127	0.001127		0.001	0	0		0.001		113%	80	120	0%	
Thorium	A	mg/L	0.0008477	0.0008477		0.001	0	0		0.05		85%	80	120	0%	
Tin	A	mg/L	0.00004232	0.00004232		0.001	0	0		0.001		4%	80	120	0%	S
Titanium	A	mg/L	0.001223	0.001223		0.001	0	0		0.001		122%	80	120	0%	S
Uranium	A	mg/L	0.001082	0.001082		0.001	0	0		0.001		108%	80	120	0%	
Vanadium	A	mg/L	0.001408	0.001408		0.001	0	0		0.005		141%	80	120	0%	S
Zinc	A	mg/L	0.001244	0.001244		0.001	0	0		0.01		124%	80	120	0%	S
Iron, Ferrous	C	mg/L	0.03216	0.03216		0.001	0	0		0.01	5	3216%	80	120	0%	S
Silicon as SiO2	C	mg/L	0.02028934	0.02028934		0.0856	0	0		0.214	0.9	24%	80	120	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053870	10 ppb STD	ICPMS-6020B-C	Cal6		2/24/2022 2:48:1	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.01071	0.01071		0.01	0	0		0.01		107%	90	110	0%	
Antimony	A	mg/L	0.01026	0.01026		0.01	0	0		0.001		103%	90	110	0%	
Arsenic	A	mg/L	0.01098	0.01098		0.01	0	0		0.001		110%	90	110	0%	
Barium	A	mg/L	0.01006	0.01006		0.01	0	0		0.0003		101%	90	110	0%	
Beryllium	A	mg/L	0.01055	0.01055		0.01	0	0		0.001		105%	90	110	0%	
Boron	A	mg/L	0.009733	0.009733		0.01	0	0		0.1		97%	90	110	0%	
Cadmium	A	mg/L	0.01055	0.01055		0.01	0	0		0.001		105%	90	110	0%	
Calcium	A	mg/L	2.834	2.834		2.5	0	0		1		113%	90	110	0%	S
Cerium	A	mg/L	0.01103	0.01103		0.01	0	0		0.001		110%	90	110	0%	
Chromium	A	mg/L	0.01077	0.01077		0.01	0	0		0.001		108%	90	110	0%	
Cobalt	A	mg/L	0.01072	0.01072		0.01	0	0		0.001		107%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053870	10 ppb STD	ICPMS-6020B-C Cal6			2/24/2022 2:48:1	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Copper	A	mg/L	0.01149	0.01149		0.01	0	0		0.005		115%	90	110	0%	S
Iron	A	mg/L	0.2888	0.2888		0.25	0	0		0.01		116%	90	110	0%	S
Lanthanum	A	mg/L	0.01119	0.01119		0.01	0	0		0.001		112%	90	110	0%	S
Lead	A	mg/L	0.01014	0.01014		0.01	0	0		0.001		101%	90	110	0%	
Lithium	A	mg/L	0.1353	0.1353		0.125	0	0		1		108%	90	110	0%	
Magnesium	A	mg/L	2.859	2.859		2.5	0	0		1		114%	90	110	0%	S
Manganese	A	mg/L	0.01076	0.01076		0.01	0	0		0.001		108%	90	110	0%	
Mercury	A	mg/L	0.0002155	0.0002155		0.0002	0	0		0.001		108%	90	110	0%	
Molybdenum	A	mg/L	0.01002	0.01002		0.01	0	0		0.001		100%	90	110	0%	
Nickel	A	mg/L	0.01168	0.01168		0.01	0	0		0.005		117%	90	110	0%	S
Potassium	A	mg/L	2.775	2.775		2.5	0	0		1		111%	90	110	0%	S
Selenium	A	mg/L	0.01133	0.01133		0.01	0	0		0.005		113%	90	110	0%	S
Silicon	A	mg/L	0.04442	0.04442		0.04	0	0		0.1		111%	90	110	0%	S
Silver	A	mg/L	0.00418	0.00418		0.004	0	0		0.001		104%	90	110	0%	
Sodium	A	mg/L	2.835	2.835		2.5	0	0		1		113%	90	110	0%	S
Strontium	A	mg/L	0.01089	0.01089		0.01	0	0		0.001		109%	90	110	0%	
Thallium	A	mg/L	0.01043	0.01043		0.01	0	0		0.001		104%	90	110	0%	
Thorium	A	mg/L	0.009573	0.009573		0.01	0	0		0.05		96%	90	110	0%	
Tin	A	mg/L	0.009855	0.009855		0.01	0	0		0.001		99%	90	110	0%	
Titanium	A	mg/L	0.01026	0.01026		0.01	0	0		0.001		103%	90	110	0%	
Uranium	A	mg/L	0.01012	0.01012		0.01	0	0		0.001		101%	90	110	0%	
Vanadium	A	mg/L	0.01048	0.01048		0.01	0	0		0.005		105%	90	110	0%	
Zinc	A	mg/L	0.01138	0.01138		0.01	0	0		0.01		114%	90	110	0%	S
Iron, Ferrous	C	mg/L	0.2888	0.2888		0.01	0	0		0.01	5	2888%	90	110	0%	S
Silicon as SiO2	C	mg/L	0.0950588	0.0950588		0.856	0	0		0.214	0.9	11%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053871	50 ppb STD	ICPMS-6020B-C Cal7			2/24/2022 2:54:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.05556	0.05556		0.05	0	0		0.01		111%	90	110	0%	S
Antimony	A	mg/L	0.05372	0.05372		0.05	0	0		0.001		107%	90	110	0%	
Arsenic	A	mg/L	0.05029	0.05029		0.05	0	0		0.001		101%	90	110	0%	
Barium	A	mg/L	0.05301	0.05301		0.05	0	0		0.0003		106%	90	110	0%	
Beryllium	A	mg/L	0.05505	0.05505		0.05	0	0		0.001		110%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053871	50 ppb STD	ICPMS-6020B-C Cal7				2/24/2022 2:54:5	1	R375174		0	0					
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Boron	A	mg/L	0.05468	0.05468		0.05	0	0		0.1		109%	90	110	0%	
Cadmium	A	mg/L	0.05543	0.05543		0.05	0	0		0.001		111%	90	110	0%	S
Calcium	A	mg/L	12.31	12.31		12.5	0	0		1		98%	90	110	0%	
Cerium	A	mg/L	0.04958	0.04958		0.05	0	0		0.001		99%	90	110	0%	
Chromium	A	mg/L	0.0498	0.0498		0.05	0	0		0.001		100%	90	110	0%	
Cobalt	A	mg/L	0.05391	0.05391		0.05	0	0		0.001		108%	90	110	0%	
Copper	A	mg/L	0.05169	0.05169		0.05	0	0		0.005		103%	90	110	0%	
Iron	A	mg/L	1.267	1.267		1.25	0	0		0.01		101%	90	110	0%	
Lanthanum	A	mg/L	0.04984	0.04984		0.05	0	0		0.001		100%	90	110	0%	
Lead	A	mg/L	0.0529	0.0529		0.05	0	0		0.001		106%	90	110	0%	
Lithium	A	mg/L	0.655	0.655		0.625	0	0		1		105%	90	110	0%	
Magnesium	A	mg/L	12.43	12.43		12.5	0	0		1		99%	90	110	0%	
Manganese	A	mg/L	0.04943	0.04943		0.05	0	0		0.001		99%	90	110	0%	
Mercury	A	mg/L	0.0009805	0.0009805		0.001	0	0		0.001		98%	90	110	0%	
Molybdenum	A	mg/L	0.05276	0.05276		0.05	0	0		0.001		106%	90	110	0%	
Nickel	A	mg/L	0.05314	0.05314		0.05	0	0		0.005		106%	90	110	0%	
Potassium	A	mg/L	12.11	12.11		12.5	0	0		1		97%	90	110	0%	
Selenium	A	mg/L	0.05242	0.05242		0.05	0	0		0.005		105%	90	110	0%	
Silicon	A	mg/L	0.2156	0.2156		0.2	0	0		0.1		108%	90	110	0%	
Silver	A	mg/L	0.0217	0.0217		0.02	0	0		0.001		108%	90	110	0%	
Sodium	A	mg/L	12.31	12.31		12.5	0	0		1		98%	90	110	0%	
Strontium	A	mg/L	0.04927	0.04927		0.05	0	0		0.001		99%	90	110	0%	
Thallium	A	mg/L	0.05093	0.05093		0.05	0	0		0.001		102%	90	110	0%	
Thorium	A	mg/L	0.04789	0.04789		0.05	0	0		0.05		96%	90	110	0%	
Tin	A	mg/L	0.04934	0.04934		0.05	0	0		0.001		99%	90	110	0%	
Titanium	A	mg/L	0.05307	0.05307		0.05	0	0		0.001		106%	90	110	0%	
Uranium	A	mg/L	0.05161	0.05161		0.05	0	0		0.001		103%	90	110	0%	
Vanadium	A	mg/L	0.04954	0.04954		0.05	0	0		0.005		99%	90	110	0%	
Zinc	A	mg/L	0.0522	0.0522		0.05	0	0		0.01		104%	90	110	0%	
Iron, Ferrous	C	mg/L	1.267	1.267		0.05	0	0		0.01	5	2534%	90	110	0%	S
Silicon as SiO2	C	mg/L	0.461384	0.461384		4.28	0	0		0.214	0.9	11%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053872	100 ppb STD	ICPMS-6020B-C Cal8			2/24/2022 3:01:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.09978	0.09978		0.1	0	0		0.01		100%	90	110	0%	
Antimony	A	mg/L	0.09811	0.09811		0.1	0	0		0.001		98%	90	110	0%	
Arsenic	A	mg/L	0.09904	0.09904		0.1	0	0		0.001		99%	90	110	0%	
Barium	A	mg/L	0.09719	0.09719		0.1	0	0		0.0003		97%	90	110	0%	
Beryllium	A	mg/L	0.1001	0.1001		0.1	0	0		0.001		100%	90	110	0%	
Boron	A	mg/L	0.09745	0.09745		0.1	0	0		0.1		97%	90	110	0%	
Cadmium	A	mg/L	0.09911	0.09911		0.1	0	0		0.001		99%	90	110	0%	
Calcium	A	mg/L	25.72	25.72		25	0	0		1		103%	90	110	0%	
Cerium	A	mg/L	0.1001	0.1001		0.1	0	0		0.001		100%	90	110	0%	
Chromium	A	mg/L	0.09753	0.09753		0.1	0	0		0.001		98%	90	110	0%	
Cobalt	A	mg/L	0.09955	0.09955		0.1	0	0		0.001		100%	90	110	0%	
Copper	A	mg/L	0.09984	0.09984		0.1	0	0		0.005		100%	90	110	0%	
Iron	A	mg/L	2.619	2.619		2.5	0	0		0.01		105%	90	110	0%	
Lanthanum	A	mg/L	0.09996	0.09996		0.1	0	0		0.001		100%	90	110	0%	
Lead	A	mg/L	0.09863	0.09863		0.1	0	0		0.001		99%	90	110	0%	
Lithium	A	mg/L	1.249	1.249		1.25	0	0		1		100%	90	110	0%	
Magnesium	A	mg/L	25.29	25.29		25	0	0		1		101%	90	110	0%	
Manganese	A	mg/L	0.09712	0.09712		0.1	0	0		0.001		97%	90	110	0%	
Mercury	A	mg/L	0.002008	0.002008		0.002	0	0		0.001		100%	90	110	0%	
Molybdenum	A	mg/L	0.09861	0.09861		0.1	0	0		0.001		99%	90	110	0%	
Nickel	A	mg/L	0.1007	0.1007		0.1	0	0		0.005		101%	90	110	0%	
Potassium	A	mg/L	25.17	25.17		25	0	0		1		101%	90	110	0%	
Selenium	A	mg/L	0.1014	0.1014		0.1	0	0		0.005		101%	90	110	0%	
Silicon	A	mg/L	0.3917	0.3917		0.4	0	0		0.1		98%	90	110	0%	
Silver	A	mg/L	0.03913	0.03913		0.04	0	0		0.001		98%	90	110	0%	
Sodium	A	mg/L	25.27	25.27		25	0	0		1		101%	90	110	0%	
Strontium	A	mg/L	0.09705	0.09705		0.1	0	0		0.001		97%	90	110	0%	
Thallium	A	mg/L	0.09853	0.09853		0.1	0	0		0.001		99%	90	110	0%	
Thorium	A	mg/L	0.09659	0.09659		0.1	0	0		0.05		97%	90	110	0%	
Tin	A	mg/L	0.1004	0.1004		0.1	0	0		0.001		100%	90	110	0%	
Titanium	A	mg/L	0.09844	0.09844		0.1	0	0		0.001		98%	90	110	0%	
Uranium	A	mg/L	0.09699	0.09699		0.1	0	0		0.001		97%	90	110	0%	
Vanadium	A	mg/L	0.09804	0.09804		0.1	0	0		0.005		98%	90	110	0%	
Zinc	A	mg/L	0.1017	0.1017		0.1	0	0		0.01		102%	90	110	0%	
Iron, Ferrous	C	mg/L	2.619	2.619		0.1	0	0		0.01	5	2619%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053872	100 ppb STD	ICPMS-6020B-C Cal8			2/24/2022 3:01:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Silicon as SiO2	C	mg/L	0.838238	0.838238		8.56	0	0		0.214	0.9	10%	90	110	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053873	1000 ppb STD	ICPMS-6020B-C Cal10			2/24/2022 3:07:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.9997	0.9997		1	0	0		0.01		100%	90	110	0%	
Antimony	A	mg/L	0.0001626	0.0001626		0	0	0		0.001		0%			0%	
Arsenic	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Barium	A	mg/L	1	1		1	0	0		0.0003		100%	90	110	0%	
Beryllium	A	mg/L	0.9997	0.9997		1	0	0		0.001		100%	90	110	0%	
Boron	A	mg/L	1	1		1	0	0		0.1		100%	90	110	0%	
Cadmium	A	mg/L	0.9998	0.9998		1	0	0		0.001		100%	90	110	0%	
Calcium	A	mg/L	49.67	49.67		50	0	0		1		99%	90	110	0%	
Cerium	A	mg/L	0.00002716	0.00002716		0	0	0		0.001		0%			0%	
Chromium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Cobalt	A	mg/L	0.9998	0.9998		1	0	0		0.001		100%	90	110	0%	
Copper	A	mg/L	0.9999	0.9999		1	0	0		0.005		100%	90	110	0%	
Iron	A	mg/L	5.998	5.998		6	0	0		0.01		100%	90	110	0%	
Lanthanum	A	mg/L	0.00001315	0.00001315		0	0	0		0.001		0%			0%	
Lead	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Lithium	A	mg/L	2.492	2.492		2.5	0	0		1		100%	90	110	0%	
Magnesium	A	mg/L	49.86	49.86		50	0	0		1		100%	90	110	0%	
Manganese	A	mg/L	1	1		1	0	0		0.001		100%	90		0%	
Mercury	A	mg/L	6.179E-06	6.179E-06		0	0	0		0.001		0%			0%	
Molybdenum	A	mg/L	0.0001383	0.0001383		0	0	0		0.001		0%			0%	
Nickel	A	mg/L	0.9998	0.9998		1	0	0		0.005		100%	90	110	0%	
Potassium	A	mg/L	50	50		50	0	0		1		100%	90	110	0%	
Selenium	A	mg/L	0.9997	0.9997		1	0	0		0.005		100%	90	110	0%	
Silicon	A	mg/L	0.001436	0.001436		0	0	0		0.1		0%			0%	
Silver	A	mg/L	0.3676	0.3676		0	0	0		0.001		0%			0%	
Sodium	A	mg/L	49.89	49.89		50	0	0		1		100%	90	110	0%	
Strontium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Thallium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Thorium	A	mg/L	1	1		1	0	0		0.05		100%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053873	1000 ppb STD	ICPMS-6020B-C	Cal10		2/24/2022 3:07:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Tin	A	mg/L	-0.001005	-0.001005		0	0	0		0.001		0%			0%	
Titanium	A	mg/L	0.005705	0.005705		1	0	0		0.001		1%	90	110	0%	S
Uranium	A	mg/L	1	1		1	0	0		0.001		100%	90	110	0%	
Vanadium	A	mg/L	1	1		1	0	0		0.005		100%	90	110	0%	
Zinc	A	mg/L	0.9997	0.9997		1	0	0		0.01		100%	90	110	0%	
Iron, Ferrous	C	mg/L	5.998	5.998		0	0	0		0.01	5	0%			0%	
Silicon as SiO2	C	mg/L	0.00307304	0.00307304		0	0	0		0.214	0.9	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053874	100 ppb Br STD	ICPMS-6020-W-	SAMP		2/24/2022 3:14:1	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0001006	0		0	0	0	0.0017836	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	-7.478E-06	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.00002215	0		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	0.00002463	0		0	0	0	8.516E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00008248	0.00008248		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	J
Cerium	A	mg/L	2.265E-06	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.00001563	0		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00002503	0.00002503		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.00003927	0		0	0	0	0.0001748	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	1.076E-06	0		0	0	0	6.805E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00005786	0.00005786		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.00001145	0		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	1.714E-06	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.00002303	0		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.00001879	0		0	0	0	0.0001769	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.0001289	0.0001289		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	0.00003429	0.00003429		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	J
Strontium	A	mg/L	0.00001055	0		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0004767	0.0004767		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	0.0003009	0.0003009		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	J
Titanium	A	mg/L	0.0001243	0.0001243		0	0	0	0.0001004	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	0.00005571	0.00005571		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	J
Boron	B	mg/L	0.003446	0		0	0	0	0.0039526	0.00561	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053874	100 ppb Br STD	ICPMS-6020-W-	SAMP		2/24/2022 3:14:1	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Calcium	B	mg/L	-0.001283	0		0	0	0	0.2027235	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.000235	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.000235	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	0.0003653	0		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	L
Potassium	B	mg/L	0.5139	0.5139		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	D
Sodium	B	mg/L	0.002836	0		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-0.0009897	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	-0.000891	0		0	0	0	0.0018612	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0.0001727	0		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053875	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 3:20:4	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0004115	0		0	0	0	0.0017836	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	-4.015E-05	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	
Barium	A	mg/L	2.078E-06	0		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	1.096E-06	0		0	0	0	8.516E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00003611	0.00003611		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	J
Cerium	A	mg/L	7.734E-07	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.00002425	0		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	9.883E-06	0		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00002243	0		0	0	0	0.0001748	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	4.967E-07	0		0	0	0	6.805E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00002865	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	1.355E-06	0		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	1.771E-07	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.00001075	0		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	-3.026E-05	0		0	0	0	0.0001769	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.00003521	0		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	8.949E-06	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	5.947E-07	0		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0001383	0.0001383		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	0.00008409	0.00008409		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	J
Titanium	A	mg/L	0.00004417	0		0	0	0	0.0001004	0.001	1	0%	0	0	0%	



Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053875	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 3:20:4	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Uranium	A	mg/L	0.00001534	0		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	0.001011	0		0	0	0	0.0039526	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0.0007131	0		0	0	0	0.2027235	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.0001036	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.0001036	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	0.0007741	0		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	L
Potassium	B	mg/L	0.01347	0		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0.001568	0		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-0.001029	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	-0.0008336	0		0	0	0	0.0018612	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0.00008701	0		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053876	QCS	ICPMS-6020-W-	ICV		2/24/2022 3:26:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.2462	0.2462		0.25	0	0	0.0017836	0.001	1	98%	90	110	0%	
Antimony	A	mg/L	0.04442	0.04442		0.05	0	0	6.768E-05	0.001	0.1	89%	90	110	0%	S
Arsenic	A	mg/L	0.04997	0.04997		0.05	0	0	8.203E-05	0.001	1	100%	90	110	0%	
Barium	A	mg/L	0.04689	0.04689		0.05	0	0	6.762E-05	0.001	1	94%	90	110	0%	
Beryllium	A	mg/L	0.02452	0.02452		0.025	0	0	8.516E-05	0.001	1	98%	90	110	0%	
Boron	A	mg/L	0.05094	0.05094		0.05	0	0	0.0039526	0.00561	1	102%	90	110	0%	
Cadmium	A	mg/L	0.02472	0.02472		0.025	0	0	2.308E-05	0.001	1	99%	90	110	0%	
Calcium	A	mg/L	2.548	2.548		2.5	0	0	0.2027235	0.02092	50	102%	90	110	0%	
Cerium	A	mg/L	0.05166	0.05166		0.05	0	0	0.0000222	0.001	0.1	103%	90	110	0%	
Chromium	A	mg/L	0.05023	0.05023		0.05	0	0	0.0002538	0.001	1	100%	90	110	0%	
Cobalt	A	mg/L	0.04895	0.04895		0.05	0	0	2.141E-05	0.001	1	98%	90	110	0%	
Copper	A	mg/L	0.05244	0.05244		0.05	0	0	0.0001748	0.001	1	105%	90	110	0%	
Iron	A	mg/L	0.2475	0.2475		0.25	0	0	0.0021157	0.00119	5	99%	90	110	0%	
Lanthanum	A	mg/L	0.05176	0.05176		0.05	0	0	6.805E-05	0.001	0.1	104%	90	110	0%	
Lead	A	mg/L	0.04796	0.04796		0.05	0	0	3.031E-05	0.001	1	96%	90	110	0%	
Magnesium	A	mg/L	2.58	2.58		2.5	0	0	0.0203306	0.00564	50	103%	90	110	0%	
Manganese	A	mg/L	0.2464	0.2464		0.25	0	0	7.309E-05	0.001	1	99%	90	110	0%	
Mercury	A	mg/L	0.001009	0.001009		0.001	0	0	3.043E-05	0.001	0.002	101%	90	110	0%	
Molybdenum	A	mg/L	0.04717	0.04717		0.05	0	0	8.113E-05	0.001	0.1	94%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053876	QCS	ICPMS-6020-W- ICV			2/24/2022 3:26:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Nickel	A	mg/L	0.05242	0.05242		0.05	0	0	0.0001769	0.001	1	105%	90	110	0%	
Potassium	A	mg/L	2.494	2.494		2.5	0	0	0.0215433	0.08139	50	100%	90	110	0%	
Selenium	A	mg/L	0.05116	0.05116		0.05	0	0	7.174E-05	0.001	1	102%	90	110	0%	
Silicon	A	mg/L	0.44	0.44		0.5	0	0	0.0033337	0.1	0.4	88%	90	110	0%	S
Silver	A	mg/L	0.02407	0.02407		0.025	0	0	2.644E-05	0.001	0.04	96%	90	110	0%	
Sodium	A	mg/L	2.565	2.565		2.5	0	0	0.0451914	0.02171	50	103%	90	110	0%	
Strontium	A	mg/L	0.04885	0.04885		0.05	0	0	9.743E-05	0.001	1	98%	90	110	0%	
Thallium	A	mg/L	0.04771	0.04771		0.05	0	0	4.842E-05	0.001	1	95%	90	110	0%	
Thorium	A	mg/L	0.04838	0.04838		0.05	0	0	3.018E-05	0.001	1	97%	90	110	0%	
Tin	A	mg/L	0.04842	0.04842		0.05	0	0	0.0009928	0.00132	0.1	97%	90	110	0%	
Titanium	A	mg/L	0.04773	0.04773		0.05	0	0	0.0001004	0.001	1	95%	90	110	0%	
Uranium	A	mg/L	0.04944	0.04944		0.05	0	0	2.468E-05	0.0003	1	99%	90	110	0%	
Vanadium	A	mg/L	0.04859	0.04859		0.05	0	0	0.0018612	0.0013	1	97%	90	110	0%	
Zinc	A	mg/L	0.05368	0.05368		0.05	0	0	0.0010089	0.00273	1	107%	90	110	0%	
Iron, Ferrous	C	mg/L	0.2475	0.2475		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053877	CCV	ICPMS-6020-W- CCV			2/24/2022 3:33:0	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.05385	0.05385		0.05	0	0	0.0017836	0.001	1	108%	90	110	0%	
Antimony	A	mg/L	0.05189	0.05189		0.05	0	0	6.768E-05	0.001	0.1	104%	90	110	0%	
Arsenic	A	mg/L	0.05044	0.05044		0.05	0	0	8.203E-05	0.001	1	101%	90	110	0%	
Barium	A	mg/L	0.05156	0.05156		0.05	0	0	6.762E-05	0.001	1	103%	90	110	0%	
Beryllium	A	mg/L	0.05206	0.05206		0.05	0	0	8.516E-05	0.001	1	104%	90	110	0%	
Boron	A	mg/L	0.05422	0.05422		0.05	0	0	0.0039526	0.00561	1	108%	90	110	0%	
Cadmium	A	mg/L	0.05338	0.05338		0.05	0	0	2.308E-05	0.001	1	107%	90	110	0%	
Calcium	A	mg/L	12.49	12.49		12.5	0	0	0.2027235	0.02092	50	100%	90	110	0%	
Cerium	A	mg/L	0.04874	0.04874		0.05	0	0	0.0000222	0.001	0.1	97%	90	110	0%	
Chromium	A	mg/L	0.05013	0.05013		0.05	0	0	0.0002538	0.001	1	100%	90	110	0%	
Cobalt	A	mg/L	0.05164	0.05164		0.05	0	0	2.141E-05	0.001	1	103%	90	110	0%	
Copper	A	mg/L	0.05147	0.05147		0.05	0	0	0.0001748	0.001	1	103%	90	110	0%	
Iron	A	mg/L	1.289	1.289		1.3	0	0	0.0021157	0.00119	5	99%	90	110	0%	
Lanthanum	A	mg/L	0.04924	0.04924		0.05	0	0	6.805E-05	0.001	0.1	98%	90	110	0%	
Lead	A	mg/L	0.05191	0.05191		0.05	0	0	3.031E-05	0.001	1	104%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053877	CCV	ICPMS-6020-W-	CCV		2/24/2022 3:33:0	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Magnesium	A	mg/L	12.39	12.39		12.5	0	0	0.0203306	0.00564	50	99%	90	110	0%	
Manganese	A	mg/L	0.0496	0.0496		0.05	0	0	7.309E-05	0.001	1	99%	90	110	0%	
Mercury	A	mg/L	0.0009831	0.0009831		0.001	0	0	3.043E-05	0.001	0.002	98%	90	110	0%	
Molybdenum	A	mg/L	0.05105	0.05105		0.05	0	0	8.113E-05	0.001	0.1	102%	90	110	0%	
Nickel	A	mg/L	0.05222	0.05222		0.05	0	0	0.0001769	0.001	1	104%	90	110	0%	
Potassium	A	mg/L	12.32	12.32		12.5	0	0	0.0215433	0.08139	50	99%	90	110	0%	
Selenium	A	mg/L	0.0527	0.0527		0.05	0	0	7.174E-05	0.001	1	105%	90	110	0%	
Silicon	A	mg/L	0.1884	0.1884		0.2	0	0	0.0033337	0.1	0.4	94%	90	110	0%	
Silver	A	mg/L	0.02053	0.02053		0.02	0	0	2.644E-05	0.001	0.04	103%	90	110	0%	
Sodium	A	mg/L	12.39	12.39		12.5	0	0	0.0451914	0.02171	50	99%	90	110	0%	
Strontium	A	mg/L	0.04918	0.04918		0.05	0	0	9.743E-05	0.001	1	98%	90	110	0%	
Thallium	A	mg/L	0.05182	0.05182		0.05	0	0	4.842E-05	0.001	1	104%	90	110	0%	
Thorium	A	mg/L	0.04797	0.04797		0.05	0	0	3.018E-05	0.001	1	96%	90	110	0%	
Tin	A	mg/L	0.05202	0.05202		0.05	0	0	0.0009928	0.00132	0.1	104%	90	110	0%	
Titanium	A	mg/L	0.05087	0.05087		0.05	0	0	0.0001004	0.001	1	102%	90	110	0%	
Uranium	A	mg/L	0.05043	0.05043		0.05	0	0	2.468E-05	0.0003	1	101%	90	110	0%	
Vanadium	A	mg/L	0.04946	0.04946		0.05	0	0	0.0018612	0.0013	1	99%	90	110	0%	
Zinc	A	mg/L	0.05151	0.05151		0.05	0	0	0.0010089	0.00273	1	103%	90	110	0%	
Iron, Ferrous	C	mg/L	1.289	1.289		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053878	CCB	ICPMS-6020-W-	CCB		2/24/2022 3:39:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	7.578E-06	7.578E-06		0	0	0	0.0017836	0.001	1	0%			0%	
Antimony	A	mg/L	0.0001476	0.0001476		0	0	0	6.768E-05	0.001	0.1	0%			0%	
Arsenic	A	mg/L	-3.353E-05	-3.353E-05		0	0	0	8.203E-05	0.001	1	0%			0%	
Barium	A	mg/L	-4.014E-07	-4.014E-07		0	0	0	6.762E-05	0.001	1	0%			0%	
Beryllium	A	mg/L	-1.353E-05	-1.353E-05		0	0	0	8.516E-05	0.001	1	0%			0%	
Boron	A	mg/L	-0.001457	-0.001457		0	0	0	0.0039526	0.00561	1	0%			0%	
Cadmium	A	mg/L	0.00001305	0.00001305		0	0	0	2.308E-05	0.001	1	0%			0%	
Calcium	A	mg/L	0.0006982	0.0006982		0	0	0	0.2027235	0.02092	50	0%			0%	
Cerium	A	mg/L	8.082E-07	8.082E-07		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	4.015E-07	4.015E-07		0	0	0	0.0002538	0.001	1	0%			0%	
Cobalt	A	mg/L	0.00000433	0.00000433		0	0	0	2.141E-05	0.001	1	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053878	CCB	ICPMS-6020-W-	CCB		2/24/2022 3:39:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Copper	A	mg/L	0.00001678	0.00001678		0	0	0	0.0001748	0.001	1	0%			0%	
Iron	A	mg/L	0.00009574	0.00009574		0	0	0	0.0021157	0.00119	5	0%			0%	
Lanthanum	A	mg/L	1.142E-06	1.142E-06		0	0	0	6.805E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00001564	0.00001564		0	0	0	3.031E-05	0.001	1	0%			0%	
Magnesium	A	mg/L	0.0001449	0.0001449		0	0	0	0.0203306	0.00564	50	0%			0%	
Manganese	A	mg/L	1.573E-06	1.573E-06		0	0	0	7.309E-05	0.001	1	0%			0%	
Mercury	A	mg/L	5.336E-06	5.336E-06		0	0	0	3.043E-05	0.001	0.002	0%			0%	
Molybdenum	A	mg/L	0.00003977	0.00003977		0	0	0	8.113E-05	0.001	0.1	0%			0%	
Nickel	A	mg/L	-2.122E-05	-2.122E-05		0	0	0	0.0001769	0.001	1	0%			0%	
Potassium	A	mg/L	0.01078	0.01078		0	0	0	0.0215433	0.08139	50	0%			0%	
Selenium	A	mg/L	0.00001911	0.00001911		0	0	0	7.174E-05	0.001	1	0%			0%	
Silicon	A	mg/L	-0.0009748	-0.0009748		0	0	0	0.0033337	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	5.317E-06	5.317E-06		0	0	0	2.644E-05	0.001	0.04	0%			0%	
Sodium	A	mg/L	0.001114	0.001114		0	0	0	0.0451914	0.02171	50	0%			0%	
Strontium	A	mg/L	8.996E-06	8.996E-06		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0001078	0.0001078		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00008041	0.00008041		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	
Tin	A	mg/L	0.00009862	0.00009862		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.00002208	0.00002208		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	8.527E-06	8.527E-06		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-0.0003462	-0.0003462		0	0	0	0.0018612	0.0013	1	0%	0	0	0%	
Zinc	A	mg/L	-2.143E-05	-2.143E-05		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	0.00009574	0.00009574		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053879	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 3:45:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	-9.288E-06	0		0	0	0	0.0017836	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	-3.646E-05	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	
Barium	A	mg/L	-2.913E-07	0		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-0.0000158	0		0	0	0	8.516E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	8.178E-06	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	8.124E-07	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	4.172E-06	0		0	0	0	0.0002538	0.001	1	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053879	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 3:45:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Cobalt	A	mg/L	2.393E-06	0		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00001375	0		0	0	0	0.0001748	0.001	1	0%	0	0	0%	
Lanthanum	A	mg/L	1.112E-06	0		0	0	0	6.805E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	9.256E-06	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	-1.085E-06	0		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	5.903E-07	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.00001125	0		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	-2.562E-05	0		0	0	0	0.0001769	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.00001289	0		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	3.719E-06	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	7.811E-06	0		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0000421	0		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00003409	0.00003409		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	J
Titanium	A	mg/L	-1.578E-07	0		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	4.152E-06	0		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	-0.00197	0		0	0	0	0.0039526	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0.002428	0		0	0	0	0.2027235	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.0001308	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.0001308	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	0.00003471	0		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	L
Potassium	B	mg/L	0.0117	0		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	-0.0006353	0		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-5.869E-05	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	-0.0004701	0		0	0	0	0.0018612	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	-1.489E-05	0		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053880	LRB	ICPMS-6020-W-	MBLK		2/24/2022 3:51:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.000208	0		0	0	0	0.0017836	0.001	1	0%	0	0	0%	
Antimony	A	mg/L	0.00003111	0		0	0	0	6.768E-05	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-0.0000299	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	
Barium	A	mg/L	5.938E-06	0		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-1.482E-05	0		0	0	0	8.516E-05	0.001	1	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053880	LRB	ICPMS-6020-W- MBLK			2/24/2022 3:51:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Boron	A	mg/L	-0.001883	0		0	0	0	0.0039526	0.00561	1	0%	0	0	0%	
Cadmium	A	mg/L	9.693E-06	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	
Calcium	A	mg/L	0.000563	0		0	0	0	0.2027235	0.02092	50	0%	0	0	0%	
Cerium	A	mg/L	4.98E-07	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	5.494E-06	0		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	1.738E-06	0		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00001903	0		0	0	0	0.0001748	0.001	1	0%	0	0	0%	
Iron	A	mg/L	0.0002034	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Lanthanum	A	mg/L	7.643E-07	0		0	0	0	6.805E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	8.743E-06	0		0	0	0	3.031E-05	0.0005	1	0%	0	0	0%	
Magnesium	A	mg/L	0.0001122	0		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	
Manganese	A	mg/L	6.587E-06	0		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	2.055E-07	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.00000508	0		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	-2.266E-05	0		0	0	0	0.0001769	0.001	1	0%	0	0	0%	
Potassium	A	mg/L	0.01127	0		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	
Selenium	A	mg/L	-4.37E-08	0		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0.001033	0		0	0	0	0.0033337	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	1.265E-06	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	0.001289	0		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	
Strontium	A	mg/L	6.165E-06	0		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00002518	0		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00002342	0		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	
Tin	A	mg/L	-0.001021	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.0000154	0		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	3.113E-06	0		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-0.0003534	0		0	0	0	0.0018612	0.0013	1	0%	0	0	0%	
Zinc	A	mg/L	0.00003317	0		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	0.0002034	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053881	LFB	ICPMS-6020-W- LFB			2/24/2022 3:58:0	1.03	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053881	LFB	ICPMS-6020-W-	LFB		2/24/2022 3:58:0	1.03	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0499	0.051397		0.05	0	0	0.0018371	0.001	1	103%	85	115	0%	
Antimony	A	mg/L	0.05105	0.0525815		0.05	0	0	6.971E-05	0.001	0.1	105%	85	115	0%	
Arsenic	A	mg/L	0.05022	0.0517266		0.05	0	0	8.449E-05	0.001	1	103%	85	115	0%	
Barium	A	mg/L	0.05004	0.0515412		0.05	0	0	6.965E-05	0.001	1	103%	85	115	0%	
Beryllium	A	mg/L	0.04747	0.0488941		0.05	0	0	8.771E-05	0.001	1	98%	85	115	0%	
Boron	A	mg/L	0.04717	0.0485851		0.05	0	0	0.0040712	0.0057783	1	97%	85	115	0%	
Cadmium	A	mg/L	0.05131	0.0528493		0.05	0	0	2.377E-05	0.001	1	106%	85	115	0%	
Calcium	A	mg/L	44.38	45.7114		50	0	0	0.2088052	0.0215476	50	91%	85	115	0%	
Cerium	A	mg/L	0.05145	0.0529935		0.05	0	0	2.287E-05	0.001	0.1	106%	85	115	0%	
Chromium	A	mg/L	0.04994	0.0514382		0.05	0	0	0.0002614	0.001	1	103%	85	115	0%	
Cobalt	A	mg/L	0.04943	0.0509129		0.05	0	0	2.205E-05	0.001	1	102%	85	115	0%	
Copper	A	mg/L	0.05021	0.0517163		0.05	0	0	0.0001801	0.001	1	103%	85	115	0%	
Iron	A	mg/L	4.671	4.81113		5.05	0	0	0.0021792	0.0012257	5	95%	85	115	0%	
Lanthanum	A	mg/L	0.0000206	0		0.05	0	0	7.009E-05	0.001	0.1	0%	85	115	0%	S
Lead	A	mg/L	0.05057	0.0520871		0.05	0	0	3.122E-05	0.001	1	104%	88	115	0%	
Magnesium	A	mg/L	48.59	50.0477		50	0	0	0.0209406	0.0058092	50	100%	85	115	0%	
Manganese	A	mg/L	0.04949	0.0509747		0.05	0	0	7.528E-05	0.001	1	102%	85	115	0%	
Mercury	A	mg/L	0.001014	0.00104442		0.001	0	0	3.134E-05	0.001	0.002	104%	85	115	0%	
Molybdenum	A	mg/L	0.05093	0.0524579		0.05	0	0	8.356E-05	0.001	0.1	105%	85	115	0%	
Nickel	A	mg/L	0.05102	0.0525506		0.05	0	0	0.0001822	0.001	1	105%	85	115	0%	
Potassium	A	mg/L	50.19	51.6957		50	0	0	0.0221896	0.0838317	50	103%	85	115	0%	
Selenium	A	mg/L	0.04787	0.0493061		0.05	0	0	7.389E-05	0.001	1	99%	85	115	0%	
Silicon	A	mg/L	0.1589	0.163667		0.2	0	0	0.0034337	0.1	0.4	82%	85	115	0%	S
Silver	A	mg/L	0.01989	0.0204867		0.02	0	0	2.723E-05	0.001	0.04	102%	85	115	0%	
Sodium	A	mg/L	49.26	50.7378		50	0	0	0.0465471	0.0223613	50	101%	85	115	0%	
Strontium	A	mg/L	0.0498	0.051294		0.05	0	0	0.0001004	0.001	1	103%	85	115	0%	
Thallium	A	mg/L	0.05119	0.0527257		0.05	0	0	4.987E-05	0.001	1	105%	85	115	0%	
Thorium	A	mg/L	0.04912	0.0505936		0.05	0	0	3.109E-05	0.001	1	101%	85	115	0%	
Tin	A	mg/L	0.05088	0.0524064		0.05	0	0	0.0010226	0.0013596	0.1	105%	85	115	0%	
Titanium	A	mg/L	0.05433	0.0559599		0.05	0	0	0.0001034	0.001	1	112%	85	115	0%	
Uranium	A	mg/L	0.05145	0.0529935		0.05	0	0	2.542E-05	0.0003	1	106%	85	115	0%	
Vanadium	A	mg/L	0.05044	0.0519532		0.05	0	0	0.001917	0.001339	1	104%	85	115	0%	
Zinc	A	mg/L	0.05083	0.0523549		0.05	0	0	0.0010392	0.0028119	1	105%	85	115	0%	
Iron, Ferrous	C	mg/L	4.671	4.81113		0	0	0	0.0021792	0.0012257	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053882	ICSA	ICPMS-6020-W-	ICSA		2/24/2022 4:04:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	43.57	43.57		40	0	0	0.0017836	0.001	1	109%	80	120	0%	
Antimony	A	mg/L	0.0002073	0.0002073		0	0	0	6.768E-05	0.001	0.1	0%			0%	
Arsenic	A	mg/L	0.00001776	0.00001776		0	0	0	8.203E-05	0.001	1	0%			0%	
Barium	A	mg/L	0.000192	0.000192		0	0	0	6.762E-05	0.001	1	0%			0%	
Beryllium	A	mg/L	-2.214E-05	-2.214E-05		0	0	0	8.516E-05	0.001	1	0%			0%	
Boron	A	mg/L	-0.001695	-0.001695		0	0	0	0.0039526	0.00561	1	0%			0%	
Cadmium	A	mg/L	0.0001035	0.0001035		0	0	0	2.308E-05	0.001	1	0%			0%	
Calcium	A	mg/L	129.6	129.6		120	0	0	0.2027235	0.02092	50	108%	80	120	0%	
Cerium	A	mg/L	9.772E-06	9.772E-06		0	0	0	0.0000222	0.001	0.1	0%			0%	
Chromium	A	mg/L	0.002039	0.002039		0	0	0	0.0002538	0.001	1	0%			0%	
Cobalt	A	mg/L	0.0002312	0.0002312		0	0	0	2.141E-05	0.001	1	0%			0%	
Copper	A	mg/L	0.000172	0.000172		0	0	0	0.0001748	0.001	1	0%			0%	
Iron	A	mg/L	112.6	112.6		100	0	0	0.0021157	0.00119	5	113%	80	120	0%	
Lanthanum	A	mg/L	6.473E-06	6.473E-06		0	0	0	6.805E-05	0.001	0.1	0%			0%	
Lead	A	mg/L	0.00005305	0.00005305		0	0	0	3.031E-05	0.001	1	0%			0%	
Magnesium	A	mg/L	44.99	44.99		50	0	0	0.0203306	0.00564	50	90%			0%	
Manganese	A	mg/L	0.000299	0.000299		0	0	0	7.309E-05	0.001	1	0%			0%	
Mercury	A	mg/L	2.895E-06	2.895E-06		0	0	0	3.043E-05	0.001	0.002	0%			0%	
Molybdenum	A	mg/L	0.903	0.903		0.8	0	0	8.113E-05	0.001	0.1	113%	80	120	0%	
Nickel	A	mg/L	0.0001245	0.0001245		0	0	0	0.0001769	0.001	1	0%			0%	
Potassium	A	mg/L	45.13	45.13		50	0	0	0.0215433	0.08139	50	90%			0%	
Selenium	A	mg/L	0.0003682	0.0003682		0	0	0	7.174E-05	0.001	1	0%			0%	
Silicon	A	mg/L	0.004005	0.004005		0	0	0	0.0033337	0.1	0.4	0%			0%	
Silver	A	mg/L	0.00001636	0.00001636		0	0	0	2.644E-05	0.001	0.04	0%			0%	
Sodium	A	mg/L	111.5	111.5		100	0	0	0.0451914	0.02171	50	111%			0%	
Strontium	A	mg/L	0.001085	0.001085		0	0	0	9.743E-05	0.001	1	0%			0%	
Thallium	A	mg/L	0.00004825	0.00004825		0	0	0	4.842E-05	0.001	1	0%			0%	
Thorium	A	mg/L	0.0001604	0.0001604		0	0	0	3.018E-05	0.001	1	0%			0%	
Tin	A	mg/L	-0.0008885	-0.0008885		0	0	0	0.0009928	0.00132	0.1	0%			0%	
Titanium	A	mg/L	0.8812	0.8812		0.8	0	0	0.0001004	0.001	1	110%			0%	
Uranium	A	mg/L	0.00003124	0.00003124		0	0	0	2.468E-05	0.0003	1	0%			0%	
Vanadium	A	mg/L	-0.001858	-0.001858		0	0	0	0.0018612	0.0013	1	0%			0%	
Zinc	A	mg/L	0.0003211	0.0003211		0	0	0	0.0010089	0.00273	1	0%			0%	
Iron, Ferrous	C	mg/L	112.6	112.6		0	0	0	0.0021157	0.00119	5	0%			0%	



Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053883	IC SAB	ICPMS-6020-W-	IC SAB		2/24/2022 4:10:4	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	42.41	42.41		40	0	0	0.0017836	0.001	1	106%	80	120	0%	
Antimony	A	mg/L	0.0001	0.0001		0	0	0	6.768E-05	0.001	0.1	0%			0%	
Arsenic	A	mg/L	0.0111	0.0111		0.01	0	0	8.203E-05	0.001	1	111%	80	120	0%	
Barium	A	mg/L	0.0001825	0.0001825		0	0	0	6.762E-05	0.001	1	0%			0%	
Beryllium	A	mg/L	-2.132E-05	-2.132E-05		0	0	0	8.516E-05	0.001	1	0%			0%	
Boron	A	mg/L	-0.001824	-0.001824		0	0	0	0.0039526	0.00561	1	0%			0%	
Cadmium	A	mg/L	0.01082	0.01082		0.01	0	0	2.308E-05	0.001	1	108%	80	120	0%	
Calcium	A	mg/L	127	127		120	0	0	0.2027235	0.02092	50	106%	80	120	0%	
Cerium	A	mg/L	9.212E-06	9.212E-06		0	0	0	0.0000222	0.001	0.1	0%			0%	
Chromium	A	mg/L	0.02382	0.02382		0.02	0	0	0.0002538	0.001	1	119%	80	120	0%	
Cobalt	A	mg/L	0.02205	0.02205		0.02	0	0	2.141E-05	0.001	1	110%	80	120	0%	
Copper	A	mg/L	0.02173	0.02173		0.02	0	0	0.0001748	0.001	1	109%	80	120	0%	
Iron	A	mg/L	110.2	110.2		100	0	0	0.0021157	0.00119	5	110%	80	120	0%	
Lanthanum	A	mg/L	5.837E-06	5.837E-06		0	0	0	6.805E-05	0.001	0.1	0%			0%	
Lead	A	mg/L	0.0000468	0.0000468		0	0	0	3.031E-05	0.001	1	0%			0%	
Magnesium	A	mg/L	44.54	44.54		40	0	0	0.0203306	0.00564	50	111%	80	120	0%	
Manganese	A	mg/L	0.02182	0.02182		0.02	0	0	7.309E-05	0.001	1	109%	80	120	0%	
Mercury	A	mg/L	3.033E-06	3.033E-06		0	0	0	3.043E-05	0.001	0.002	0%			0%	
Molybdenum	A	mg/L	0.8914	0.8914		0.8	0	0	8.113E-05	0.001	0.1	111%	80	120	0%	
Nickel	A	mg/L	0.02253	0.02253		0.02	0	0	0.0001769	0.001	1	113%	80	120	0%	
Potassium	A	mg/L	44.38	44.38		40	0	0	0.0215433	0.08139	50	111%	80	120	0%	
Selenium	A	mg/L	0.0118	0.0118		0.01	0	0	7.174E-05	0.001	1	118%	80	120	0%	
Silicon	A	mg/L	0.002351	0.002351		0	0	0	0.0033337	0.1	0.4	0%			0%	
Silver	A	mg/L	0.005299	0.005299		0.005	0	0	2.644E-05	0.001	0.04	106%	80	120	0%	
Sodium	A	mg/L	110.8	110.8		100	0	0	0.0451914	0.02171	50	111%	80	120	0%	
Strontium	A	mg/L	0.00109	0.00109		0	0	0	9.743E-05	0.001	1	0%			0%	
Thallium	A	mg/L	0.00002229	0.00002229		0	0	0	4.842E-05	0.001	1	0%			0%	
Thorium	A	mg/L	0.00008302	0.00008302		0	0	0	3.018E-05	0.001	1	0%			0%	
Tin	A	mg/L	-0.0009165	-0.0009165		0	0	0	0.0009928	0.00132	0.1	0%			0%	
Titanium	A	mg/L	0.8565	0.8565		0.8	0	0	0.0001004	0.001	1	107%	80	120	0%	
Uranium	A	mg/L	0.00002625	0.00002625		0	0	0	2.468E-05	0.0003	1	0%			0%	
Vanadium	A	mg/L	0.02014	0.02014		0.02	0	0	0.0018612	0.0013	1	101%	80	120	0%	
Zinc	A	mg/L	0.01104	0.01104		0.01	0	0	0.0010089	0.00273	1	110%	80	120	0%	
Iron, Ferrous	C	mg/L	110.2	110.2		0	0	0	0.0021157	0.00119	5	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053884	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 4:16:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001367	0		0	0	0	0.0017836	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	-0.0001082	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	
Barium	A	mg/L	8.583E-08	0		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-2.085E-05	0		0	0	0	8.516E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	6.715E-06	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	5.368E-07	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.903E-05	0		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	9.575E-07	0		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00002405	0		0	0	0	0.0001748	0.001	1	0%	0	0	0%	
Lead	A	mg/L	0.00000579	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	-6.476E-06	0		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	4.466E-07	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.0003294	0.0003294		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	J
Nickel	A	mg/L	-2.827E-05	0		0	0	0	0.0001769	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.00003917	0		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	1.946E-06	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	-2.071E-07	0		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00001765	0		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00001443	0		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.0002608	0.0002608		0	0	0	0.0001004	0.001	1	0%	0	0	0%	J
Uranium	A	mg/L	1.934E-06	0		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	-0.00228	0		0	0	0	0.0039526	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0.001518	0		0	0	0	0.2027235	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.001754	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.001754	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	0.000874	0		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	L
Potassium	B	mg/L	0.01599	0		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0.01727	0		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-0.001033	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	-0.001583	0		0	0	0	0.0018612	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0.00003099	0		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053885	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 4:23:1	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0006891	0		0	0	0	0.0017836	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	-0.0001172	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	
Barium	A	mg/L	-7.965E-07	0		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-2.397E-05	0		0	0	0	8.516E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	6.537E-06	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	5.488E-08	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.664E-05	0		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	7.046E-07	0		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	8.381E-06	0		0	0	0	0.0001748	0.001	1	0%	0	0	0%	
Lead	A	mg/L	2.867E-06	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	-4.916E-06	0		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	8.509E-08	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.00008203	0.00008203		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	J
Nickel	A	mg/L	-3.895E-05	0		0	0	0	0.0001769	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.00001144	0		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	1.131E-06	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	1.922E-06	0		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00001133	0		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	8.694E-06	0		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	
Titanium	A	mg/L	0.00007811	0		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	1.255E-06	0		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	
Boron	B	mg/L	-0.00287	0		0	0	0	0.0039526	0.00561	1	0%	0	0	0%	L
Calcium	B	mg/L	0.0005982	0		0	0	0	0.2027235	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.0006443	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.0006443	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	0.0006071	0		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	L
Potassium	B	mg/L	0.01091	0		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0.007549	0		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-0.001038	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	-0.001586	0		0	0	0	0.0018612	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0.00004403	0		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053886	CCV	ICPMS-6020-W- CCV			2/24/2022 4:29:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04967	0.04967		0.05	0	0	0.0017836	0.001	1	99%	90	110	0%	
Antimony	A	mg/L	0.05037	0.05037		0.05	0	0	6.768E-05	0.001	0.1	101%	90	110	0%	
Arsenic	A	mg/L	0.05219	0.05219		0.05	0	0	8.203E-05	0.001	1	104%	90	110	0%	
Barium	A	mg/L	0.04874	0.04874		0.05	0	0	6.762E-05	0.001	1	97%	90	110	0%	
Beryllium	A	mg/L	0.04524	0.04524		0.05	0	0	8.516E-05	0.001	1	90%	90	110	0%	
Boron	A	mg/L	0.04528	0.04528		0.05	0	0	0.0039526	0.00561	1	91%	90	110	0%	
Cadmium	A	mg/L	0.05162	0.05162		0.05	0	0	2.308E-05	0.001	1	103%	90	110	0%	
Calcium	A	mg/L	11.95	11.95		12.5	0	0	0.2027235	0.02092	50	96%	90	110	0%	
Cerium	A	mg/L	0.05217	0.05217		0.05	0	0	0.0000222	0.001	0.1	104%	90	110	0%	
Chromium	A	mg/L	0.0508	0.0508		0.05	0	0	0.0002538	0.001	1	102%	90	110	0%	
Cobalt	A	mg/L	0.05033	0.05033		0.05	0	0	2.141E-05	0.001	1	101%	90	110	0%	
Copper	A	mg/L	0.05353	0.05353		0.05	0	0	0.0001748	0.001	1	107%	90	110	0%	
Iron	A	mg/L	1.284	1.284		1.3	0	0	0.0021157	0.00119	5	99%	90	110	0%	
Lanthanum	A	mg/L	0.05185	0.05185		0.05	0	0	6.805E-05	0.001	0.1	104%	90	110	0%	
Lead	A	mg/L	0.05026	0.05026		0.05	0	0	3.031E-05	0.001	1	101%	90	110	0%	
Magnesium	A	mg/L	12.77	12.77		12.5	0	0	0.0203306	0.00564	50	102%	90	110	0%	
Manganese	A	mg/L	0.05072	0.05072		0.05	0	0	7.309E-05	0.001	1	101%	90	110	0%	
Mercury	A	mg/L	0.001003	0.001003		0.001	0	0	3.043E-05	0.001	0.002	100%	90	110	0%	
Molybdenum	A	mg/L	0.04875	0.04875		0.05	0	0	8.113E-05	0.001	0.1	97%	90	110	0%	
Nickel	A	mg/L	0.05394	0.05394		0.05	0	0	0.0001769	0.001	1	108%	90	110	0%	
Potassium	A	mg/L	12.56	12.56		12.5	0	0	0.0215433	0.08139	50	100%	90	110	0%	
Selenium	A	mg/L	0.05355	0.05355		0.05	0	0	7.174E-05	0.001	1	107%	90	110	0%	
Silicon	A	mg/L	0.1779	0.1779		0.2	0	0	0.0033337	0.1	0.4	89%	90	110	0%	S
Silver	A	mg/L	0.02014	0.02014		0.02	0	0	2.644E-05	0.001	0.04	101%	90	110	0%	
Sodium	A	mg/L	12.73	12.73		12.5	0	0	0.0451914	0.02171	50	102%	90	110	0%	
Strontium	A	mg/L	0.05088	0.05088		0.05	0	0	9.743E-05	0.001	1	102%	90	110	0%	
Thallium	A	mg/L	0.05017	0.05017		0.05	0	0	4.842E-05	0.001	1	100%	90	110	0%	
Thorium	A	mg/L	0.04929	0.04929		0.05	0	0	3.018E-05	0.001	1	99%	90	110	0%	
Tin	A	mg/L	0.04998	0.04998		0.05	0	0	0.0009928	0.00132	0.1	100%	90	110	0%	
Titanium	A	mg/L	0.04839	0.04839		0.05	0	0	0.0001004	0.001	1	97%	90	110	0%	
Uranium	A	mg/L	0.04942	0.04942		0.05	0	0	2.468E-05	0.0003	1	99%	90	110	0%	
Vanadium	A	mg/L	0.05043	0.05043		0.05	0	0	0.0018612	0.0013	1	101%	90	110	0%	
Zinc	A	mg/L	0.05441	0.05441		0.05	0	0	0.0010089	0.00273	1	109%	90	110	0%	
Iron, Ferrous	C	mg/L	1.284	1.284		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053887	CCB	ICPMS-6020-W-	CCB		2/24/2022 4:35:4	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0002149	0.0002149		0	0	0	0.0017836	0.001	1	0%				0%
Antimony	A	mg/L	0.0001211	0.0001211		0	0	0	6.768E-05	0.001	0.1	0%				0%
Arsenic	A	mg/L	-9.835E-05	-9.835E-05		0	0	0	8.203E-05	0.001	1	0%				0%
Barium	A	mg/L	1.136E-06	1.136E-06		0	0	0	6.762E-05	0.001	1	0%				0%
Beryllium	A	mg/L	-0.0000187	-0.0000187		0	0	0	8.516E-05	0.001	1	0%				0%
Boron	A	mg/L	-0.002284	-0.002284		0	0	0	0.0039526	0.00561	1	0%				0%
Cadmium	A	mg/L	0.00000658	0.00000658		0	0	0	2.308E-05	0.001	1	0%				0%
Calcium	A	mg/L	0.0004635	0.0004635		0	0	0	0.2027235	0.02092	50	0%				0%
Cerium	A	mg/L	7.46E-07	7.46E-07		0	0	0	0.0000222	0.001	0.1	0%	0	0		0%
Chromium	A	mg/L	-1.357E-05	-1.357E-05		0	0	0	0.0002538	0.001	1	0%				0%
Cobalt	A	mg/L	1.276E-06	1.276E-06		0	0	0	2.141E-05	0.001	1	0%				0%
Copper	A	mg/L	0.00001701	0.00001701		0	0	0	0.0001748	0.001	1	0%				0%
Iron	A	mg/L	0.0004518	0.0004518		0	0	0	0.0021157	0.00119	5	0%				0%
Lanthanum	A	mg/L	1.007E-06	1.007E-06		0	0	0	6.805E-05	0.001	0.1	0%	0	0		0%
Lead	A	mg/L	8.442E-06	8.442E-06		0	0	0	3.031E-05	0.001	1	0%				0%
Magnesium	A	mg/L	0.0001511	0.0001511		0	0	0	0.0203306	0.00564	50	0%				0%
Manganese	A	mg/L	-2.298E-06	-2.298E-06		0	0	0	7.309E-05	0.001	1	0%				0%
Mercury	A	mg/L	0.0000021	0.0000021		0	0	0	3.043E-05	0.001	0.002	0%				0%
Molybdenum	A	mg/L	0.00005527	0.00005527		0	0	0	8.113E-05	0.001	0.1	0%				0%
Nickel	A	mg/L	-0.0000302	-0.0000302		0	0	0	0.0001769	0.001	1	0%				0%
Potassium	A	mg/L	0.01104	0.01104		0	0	0	0.0215433	0.08139	50	0%				0%
Selenium	A	mg/L	0.00001788	0.00001788		0	0	0	7.174E-05	0.001	1	0%				0%
Silicon	A	mg/L	-0.0009076	-0.0009076		0	0	0	0.0033337	0.1	0.4	0%	0	0		0%
Silver	A	mg/L	1.629E-06	1.629E-06		0	0	0	2.644E-05	0.001	0.04	0%				0%
Sodium	A	mg/L	0.005313	0.005313		0	0	0	0.0451914	0.02171	50	0%				0%
Strontium	A	mg/L	1.682E-06	1.682E-06		0	0	0	9.743E-05	0.001	1	0%	0	0		0%
Thallium	A	mg/L	0.00009284	0.00009284		0	0	0	4.842E-05	0.001	1	0%	0	0		0%
Thorium	A	mg/L	0.00005259	0.00005259		0	0	0	3.018E-05	0.001	1	0%	0	0		0%
Tin	A	mg/L	0.00008948	0.00008948		0	0	0	0.0009928	0.00132	0.1	0%	0	0		0%
Titanium	A	mg/L	0.00005348	0.00005348		0	0	0	0.0001004	0.001	1	0%	0	0		0%
Uranium	A	mg/L	5.455E-06	5.455E-06		0	0	0	2.468E-05	0.0003	1	0%	0	0		0%
Vanadium	A	mg/L	-0.0012	-0.0012		0	0	0	0.0018612	0.0013	1	0%	0	0		0%
Zinc	A	mg/L	-2.492E-05	-2.492E-05		0	0	0	0.0010089	0.00273	1	0%	0	0		0%
Iron, Ferrous	C	mg/L	0.0004518	0.0004518		0	0	0	0.0021157	0.00119	5	0%	0	0		0%

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053888	MB-163954	ICPMS-6020-W-	MBLK		2/24/2022 4:41:5	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001407	0		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	
Antimony	A	mg/L	0.00005433	0		0	0	0	0.0002799	0.001	0.1	0%	0	0	0%	
Arsenic	A	mg/L	-2.449E-05	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	
Barium	A	mg/L	0.00009118	0		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Beryllium	A	mg/L	-2.386E-05	0		0	0	0	0.0001071	0.01	1	0%	0	0	0%	
Boron	A	mg/L	-0.001872	0		0	0	0	0.0203802	0.01467	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00001367	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	
Calcium	A	mg/L	0.004623	0		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	
Cerium	A	mg/L	2.451E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	0.00001906	0		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00001836	0		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.0003929	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	
Iron	A	mg/L	0.0009491	0		0	0	0	0.007424	0.00513	5	0%	0	0	0%	
Lanthanum	A	mg/L	1.981E-06	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	0.00003762	0		0	0	0	7.716E-05	0.0005	1	0%	0	0	0%	
Magnesium	A	mg/L	0.00067	0		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	
Manganese	A	mg/L	0.00003554	0		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.00005035	0		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.0001562	0		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	
Potassium	A	mg/L	0.009837	0		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	
Selenium	A	mg/L	0.00002579	0		0	0	0	0.0001357	0.001	1	0%	0	0	0%	
Silicon	A	mg/L	0.01546	0		0	0	0	0.0422089	0.0053212	0.4	0%	0	0	0%	
Silver	A	mg/L	2.108E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	
Sodium	A	mg/L	0.005208	0		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	
Strontium	A	mg/L	0.00002045	0		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00003955	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.0001749	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	
Tin	A	mg/L	-0.0008129	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	
Titanium	A	mg/L	0.0004088	0		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	5.248E-06	0		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	-0.0009174	0		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	
Zinc	A	mg/L	0.0002014	0		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	
Silica	C	mg/L	0.03307203	0		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	0.03307203	0		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053889	LCS4-163954	ICPMS-6020-W-	LCS4		2/24/2022 4:48:1	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.4612	0.4612		0.5	0	0	0.0038747	0.0031975	1	92%	80	120	0%	
Antimony	A	mg/L	0.09896	0.09896		0.1	0	0	0.0002799	0.001	0.1	99%	80	120	0%	
Arsenic	A	mg/L	0.09573	0.09573		0.1	0	0	0.0003412	0.001	1	96%	80	120	0%	
Barium	A	mg/L	0.09008	0.09008		0.1	0	0	0.0002682	0.001	1	90%	80	120	0%	
Beryllium	A	mg/L	0.0411	0.0411		0.05	0	0	0.0001071	0.01	1	82%	80	120	0%	
Boron	A	mg/L	0.08794	0.08794		0.1	0	0	0.0203802	0.01467	1	88%	80	120	0%	
Cadmium	A	mg/L	0.04984	0.04984		0.05	0	0	1.821E-05	0.005	1	100%	80	120	0%	
Calcium	A	mg/L	4.693	4.693		5	0	0	0.0372936	0.1103481	50	94%	80	120	0%	
Cerium	A	mg/L	0.1068	0.1068		0.1	0	0	2.738E-05	0.001	0.1	107%	80	120	0%	
Chromium	A	mg/L	0.1007	0.1007		0.1	0	0	0.0015375	0.0015375	1	101%	80	120	0%	
Cobalt	A	mg/L	0.09951	0.09951		0.1	0	0	9.541E-05	0.001	1	100%	80	120	0%	
Copper	A	mg/L	0.1057	0.1057		0.1	0	0	0.0008747	0.00198	1	106%	80	120	0%	
Iron	A	mg/L	0.4978	0.4978		0.5	0	0	0.007424	0.00513	5	100%	80	120	0%	
Lanthanum	A	mg/L	0.1058	0.1058		0.1	0	0	0.000055	0.001	0.1	106%	80	120	0%	
Lead	A	mg/L	0.1007	0.1007		0.1	0	0	7.716E-05	0.001	1	101%	88	115	0%	
Magnesium	A	mg/L	5.176	5.176		5	0	0	0.0104254	0.0081522	50	104%	80	120	0%	
Manganese	A	mg/L	0.5055	0.5055		0.5	0	0	0.0005399	0.001	1	101%	80	120	0%	
Molybdenum	A	mg/L	0.09447	0.09447		0.1	0	0	0.0001763	0.001	0.1	94%	80	120	0%	
Nickel	A	mg/L	0.1063	0.1063		0.1	0	0	0.0002288	0.0024200	1	106%	80	120	0%	
Potassium	A	mg/L	4.824	4.824		5	0	0	0.0765619	0.0261205	50	96%	80	120	0%	
Selenium	A	mg/L	0.09642	0.09642		0.1	0	0	0.0001357	0.001	1	96%	80	120	0%	
Silicon	A	mg/L	0.8375	0.8375		1	0	0	0.0422089	0.0053212	0.4	84%	80	120	0%	
Silver	A	mg/L	0.009473	0.009473		0.01	0	0	4.281E-05	0.001	0.04	95%	80	120	0%	
Sodium	A	mg/L	5.187	5.187		5	0	0	0.1019461	0.7330269	50	104%	80	120	0%	
Strontium	A	mg/L	0.1003	0.1003		0.1	0	0	0.0002433	0.001	1	100%	80	120	0%	
Thallium	A	mg/L	0.1	0.1		0.1	0	0	0.0001114	0.001	1	100%	80	120	0%	
Thorium	A	mg/L	0.09678	0.09678		0.1	0	0	0.0003796	0.00415	1	97%	80	120	0%	
Tin	A	mg/L	0.1013	0.1013		0.1	0	0	0.0018932	0.0011175	0.1	101%	80	120	0%	
Titanium	A	mg/L	0.09214	0.09214		0.1	0	0	0.0005733	0.001	1	92%	80	120	0%	
Uranium	A	mg/L	0.1019	0.1019		0.1	0	0	1.699E-05	0.0003	1	102%	80	120	0%	
Vanadium	A	mg/L	0.09894	0.09894		0.1	0	0	0.0039127	0.0021085	1	99%	80	120	0%	
Zinc	A	mg/L	0.09965	0.09965		0.1	0	0	0.0011617	0.0065544	1	100%	80	120	0%	
Silica	C	mg/L	1.79158	1.79158		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	1.79158	1.79158		2.14	0	0	0.0902933	0.0113831	5	84%	80	120	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053890	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 4:54:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0004434	0		0	0	0	0.0017836	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	-0.0000964	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	
Barium	A	mg/L	-1.248E-06	0		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00001039	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	8.731E-07	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	-1.102E-05	0		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	1.411E-06	0		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00001829	0		0	0	0	0.0001748	0.001	1	0%	0	0	0%	
Lead	A	mg/L	7.068E-06	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	6.521E-06	0		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	1.728E-06	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.00002713	0		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	-3.127E-05	0		0	0	0	0.0001769	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	-7.893E-07	0		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	1.661E-06	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	-6.174E-07	0		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0001106	0.0001106		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	0.00008418	0.00008418		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	J
Titanium	A	mg/L	-2.675E-06	0		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	4.733E-06	0		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	
Calcium	B	mg/L	-0.0005265	0		0	0	0	0.2027235	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.0001841	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.0001841	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	0.0006117	0		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	L
Potassium	B	mg/L	0.002791	0		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0.006231	0		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-0.001034	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	
Vanadium	B	mg/L	-0.001183	0		0	0	0	0.0018612	0.0013	1	0%	0	0	0%	
Zinc	B	mg/L	0.0001349	0		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053891	B22021435-001	ICPMS-6020-W-	SAMP		2/24/2022 5:00:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q



Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053891	B22021435-001	ICPMS-6020-W-	SAMP		2/24/2022 5:00:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.002432	0.002432		0	0	0	0.0017836	0.001	1	0%	0	0	0%	U
Arsenic	A	mg/L	-7.289E-05	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.004339	0.004339		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00001087	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	U
Cerium	A	mg/L	1.601E-06	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	U
Chromium	A	mg/L	0.0007699	0.0007699		0	0	0	0.0002538	0.001	1	0%	0	0	0%	J
Cobalt	A	mg/L	0.00004278	0.00004278		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.0003653	0.0003653		0	0	0	0.0001748	0.001	1	0%	0	0	0%	J
Lead	A	mg/L	0.00001174	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.006501	0.006501		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	2.082E-06	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	U
Molybdenum	A	mg/L	0.0002977	0.0002977		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	J
Nickel	A	mg/L	0.0006364	0.0006364		0	0	0	0.0001769	0.001	1	0%	0	0	0%	J
Selenium	A	mg/L	0.0002589	0.0002589		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	2.305E-06	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.1657	0.1657		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00004956	0.00004956		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	0.00002041	0		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.002172	0.002172		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.0000123	0		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	U
Calcium	B	mg/L	16.29	16.29		0	0	0	0.2027235	0.02092	50	0%	0	0	0%	D
Iron	B	mg/L	0.0008303	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	U
Iron, Ferrous	B	mg/L	0.0008303	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	U
Magnesium	B	mg/L	17.32	17.32		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	3.013	3.013		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	D
Sodium	B	mg/L	36.14	36.14		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	D
Tin	B	mg/L	-0.001081	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	U
Zinc	B	mg/L	0.001243	0.001243		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	JL

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053892	B22021435-001	ICPMS-6020-W-	SD		2/24/2022 5:06:5	5	R375174		0	2E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053892	B22021435-001	ICPMS-6020-W-	SD		2/24/2022 5:06:5	5	R375174		0	2E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.000968	0		0	0	0.002432	0.0089181	0.0043	1	0%				
Antimony	A	mg/L	0.00008277	0.00041385		0	0	0.0002514	0.0003384	0.0021	0.1	0%				N
Arsenic	A	mg/L	-5.084E-05	0		0	0	0	0.0004102	0.001	1	0%				
Barium	A	mg/L	0.0008851	0.0044255		0	0	0.004339	0.0003381	0.001	1	0%			2%	
Beryllium	A	mg/L	-2.334E-05	0		0	0	0	0.0004258	0.001	1	0%				
Boron	A	mg/L	0.004504	0.02252		0	0	0.03476	0.0197631	0.02805	1	0%				N
Cadmium	A	mg/L	7.375E-06	0		0	0	0	0.0001154	0.001	1	0%				
Calcium	A	mg/L	3.002	15.01		0	0	16.29	1.0136175	0.1046	50	0%			8%	
Cerium	A	mg/L	5.442E-07	0		0	0	0	0.000111	0.001	0.1	0%				
Chromium	A	mg/L	0.0001702	0		0	0	0.0007699	0.001269	0.001	1	0%				
Cobalt	A	mg/L	9.845E-06	0		0	0	4.278E-05	0.0001071	0.001	1	0%				
Copper	A	mg/L	0.0000928	0		0	0	0.0003653	0.0008742	0.00135	1	0%				
Iron	A	mg/L	0.0004224	0		0	0	0	0.0105787	0.00595	5	0%				
Lanthanum	A	mg/L	7.023E-07	0		0	0	0	0.0003403	0.001	0.1	0%				
Lead	A	mg/L	4.222E-06	0		0	0	0	0.0001516	0.001	1	0%				
Magnesium	A	mg/L	3.47	17.35		0	0	17.32	0.1016532	0.0282	50	0%			0%	
Manganese	A	mg/L	0.001305	0.006525		0	0	0.006501	0.0003655	0.001	1	0%			0%	
Mercury	A	mg/L	1.841E-07	0		0	0	0	0.0001522	0.001	0.002	0%				
Molybdenum	A	mg/L	0.00007245	0		0	0	0.0002977	0.0004057	0.001	0.1	0%				
Nickel	A	mg/L	0.00009834	0		0	0	0.0006364	0.0008844	0.00315	1	0%				
Potassium	A	mg/L	0.5617	2.8085		0	0	3.013	0.1077164	0.40695	50	0%			7%	
Selenium	A	mg/L	0.00004566	0		0	0	0.0002589	0.0003587	0.00165	1	0%				
Silicon	A	mg/L	4.321	21.605		0	0	22.93	0.0166685	0.1	0.4	0%			6%	
Silver	A	mg/L	-1.668E-07	0		0	0	0	0.0001322	0.001	0.04	0%				
Sodium	A	mg/L	7.296	36.48		0	0	36.14	0.225957	0.10855	50	0%			1%	
Strontium	A	mg/L	0.03189	0.15945		0	0	0.1657	0.0004872	0.001	1	0%			4%	
Thallium	A	mg/L	0.00001788	0		0	0	4.956E-05	0.0002421	0.001	1	0%				
Thorium	A	mg/L	0.00002202	0		0	0	0	0.0001509	0.00305	1	0%				
Tin	A	mg/L	-0.00104	0		0	0	0	0.0049642	0.0066	0.1	0%				
Titanium	A	mg/L	0.0004186	0.002093		0	0	0.002172	0.000502	0.001	1	0%				N
Uranium	A	mg/L	3.484E-06	0		0	0	0	0.0001234	0.0003	1	0%				
Vanadium	A	mg/L	0.00205	0.01025		0	0	0.006034	0.0093058	0.0065	1	0%				N
Zinc	A	mg/L	0.0002285	0		0	0	0.001243	0.0050446	0.01365	1	0%				
Iron, Ferrous	C	mg/L	0.0004224	0		0	0	0	0.0105787	0.00595	5	0%				

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053893	B22021435-001	ICPMS-6020-W- MS			2/24/2022 5:13:0	1.03	R375174		2E+07	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04518	0.0465354		0.05	0.002432	0	0.0018371	0.001	1	88%	75	125	0%	
Antimony	A	mg/L	0.04942	0.0509026		0.05	0.0002514	0	6.971E-05	0.001	0.1	101%	75	125	0%	
Arsenic	A	mg/L	0.0497	0.051191		0.05	0	0	8.449E-05	0.001	1	102%	75	125	0%	
Barium	A	mg/L	0.0529	0.054487		0.05	0.004339	0	6.965E-05	0.001	1	100%	75	125	0%	
Beryllium	A	mg/L	0.03915	0.0403245		0.05	0	0	8.771E-05	0.001	1	81%	75	125	0%	
Boron	A	mg/L	0.07354	0.0757462		0.05	0.03476	0	0.0040712	0.0057783	1	82%	75	125	0%	
Cadmium	A	mg/L	0.04879	0.0502537		0.05	0	0	2.377E-05	0.001	1	101%	75	125	0%	
Calcium	A	mg/L	55.75	57.4225		50	16.29	0	0.2088052	0.0215476	50	82%	75	125	0%	E
Cerium	A	mg/L	0.05048	0.0519944		0.05	0	0	2.287E-05	0.001	0.1	104%	75	125	0%	
Chromium	A	mg/L	0.04777	0.0492031		0.05	0.0007699	0	0.0002614	0.001	1	97%	75	125	0%	
Cobalt	A	mg/L	0.04625	0.0476375		0.05	4.278E-05	0	2.205E-05	0.001	1	95%	75	125	0%	
Copper	A	mg/L	0.04789	0.0493267		0.05	0.0003653	0	0.0001801	0.001	1	98%	75	125	0%	
Iron	A	mg/L	4.579	4.71637		5.05	0	0	0.0021792	0.0012257	5	93%	75	125	0%	
Lanthanum	A	mg/L	0.00001932	0		0.05	0	0	7.009E-05	0.001	0.1	0%	75	125	0%	S
Lead	A	mg/L	0.04835	0.0498005		0.05	0	0	3.122E-05	0.001	1	100%	88	115	0%	
Magnesium	A	mg/L	64.18	66.1054		50	17.32	0	0.0209406	0.0058092	50	98%	75	125	0%	E
Manganese	A	mg/L	0.05247	0.0540441		0.05	0.006501	0	7.528E-05	0.001	1	95%	75	125	0%	
Mercury	A	mg/L	0.000988	0.00101764		0.001	0	0	3.134E-05	0.001	0.002	102%	75	125	0%	
Molybdenum	A	mg/L	0.04698	0.0483894		0.05	0.0002977	0	8.356E-05	0.001	0.1	96%	75	125	0%	
Nickel	A	mg/L	0.04878	0.0502434		0.05	0.0006364	0	0.0001822	0.001	1	99%	75	125	0%	
Potassium	A	mg/L	48.84	50.3052		50	3.013	0	0.0221896	0.0838317	50	95%	75	125	0%	
Selenium	A	mg/L	0.05318	0.0547754		0.05	0.0002589	0	7.389E-05	0.001	1	109%	75	125	0%	
Silicon	A	mg/L	21.34	21.9802		0.2	22.93	0	0.0034337	0.1	0.4		75	125	0%	AE
Silver	A	mg/L	0.01872	0.0192816		0.02	0	0	2.723E-05	0.001	0.04	96%	75	125	0%	
Sodium	A	mg/L	82.25	84.7175		50	36.14	0	0.0465471	0.0223613	50	97%	75	125	0%	E
Strontium	A	mg/L	0.2086	0.214858		0.05	0.1657	0	0.0001004	0.001	1	98%	75	125	0%	
Thallium	A	mg/L	0.04897	0.0504391		0.05	4.956E-05	0	4.987E-05	0.001	1	101%	75	125	0%	
Thorium	A	mg/L	0.04762	0.0490486		0.05	0	0	3.109E-05	0.001	1	98%	75	125	0%	
Tin	A	mg/L	0.04784	0.0492752		0.05	0	0	0.0010226	0.0013596	0.1	99%	75	125	0%	
Titanium	A	mg/L	0.05116	0.0526948		0.05	0.002172	0	0.0001034	0.001	1	101%	75	125	0%	
Uranium	A	mg/L	0.04944	0.0509232		0.05	0	0	2.542E-05	0.0003	1	102%	75	125	0%	
Vanadium	A	mg/L	0.05479	0.0564337		0.05	0.006034	0	0.001917	0.001339	1	101%	75	125	0%	
Zinc	A	mg/L	0.05074	0.0522622		0.05	0.001243	0	0.0010392	0.0028119	1	102%	75	125	0%	
Iron, Ferrous	C	mg/L	4.579	4.71637		0	0	0	0.0021792	0.0012257	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053894	B22021435-001	ICPMS-6020-W- MSD			2/24/2022 5:19:2	1.03	R375174		2E+07	2E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04701	0.0484203		0.05	0.002432	0.0465354	0.0018371	0.001	1	92%	75	125	4%	
Antimony	A	mg/L	0.04987	0.0513661		0.05	0.0002514	0.0509026	6.971E-05	0.001	0.1	102%	75	125	1%	
Arsenic	A	mg/L	0.05014	0.0516442		0.05	0	0.051191	8.449E-05	0.001	1	103%	75	125	1%	
Barium	A	mg/L	0.05187	0.0534261		0.05	0.004339	0.054487	6.965E-05	0.001	1	98%	75	125	2%	
Beryllium	A	mg/L	0.04077	0.0419931		0.05	0	0.0403245	8.771E-05	0.001	1	84%	75	125	4%	
Boron	A	mg/L	0.07721	0.0795263		0.05	0.03476	0.0757462	0.0040712	0.0057783	1	90%	75	125	5%	
Cadmium	A	mg/L	0.04898	0.0504494		0.05	0	0.0502537	2.377E-05	0.001	1	101%	75	125	0%	
Calcium	A	mg/L	59	60.77		50	16.29	57.4225	0.2088052	0.0215476	50	89%	75	125	6%	E
Cerium	A	mg/L	0.05046	0.0519738		0.05	0	0.0519944	2.287E-05	0.001	0.1	104%	75	125	0%	
Chromium	A	mg/L	0.0477	0.049131		0.05	0.0007699	0.0492031	0.0002614	0.001	1	97%	75	125	0%	
Cobalt	A	mg/L	0.04563	0.0469989		0.05	4.278E-05	0.0476375	2.205E-05	0.001	1	94%	75	125	1%	
Copper	A	mg/L	0.04794	0.0493782		0.05	0.0003653	0.0493267	0.0001801	0.001	1	98%	75	125	0%	
Iron	A	mg/L	4.692	4.83276		5.05	0	4.71637	0.0021792	0.0012257	5	96%	75	125	2%	
Lanthanum	A	mg/L	0.00001946	0		0.05	0	0	7.009E-05	0.001	0.1	0%	75	125		S
Lead	A	mg/L	0.04883	0.0502949		0.05	0	0.0498005	3.122E-05	0.001	1	101%	88	115	1%	
Magnesium	A	mg/L	64.44	66.3732		50	17.32	66.1054	0.0209406	0.0058092	50	98%	75	125	0%	E
Manganese	A	mg/L	0.05255	0.0541265		0.05	0.006501	0.0540441	7.528E-05	0.001	1	95%	75	125	0%	
Mercury	A	mg/L	0.001022	0.00105266		0.001	0	0.0010176	3.134E-05	0.001	0.002	105%	75	125	3%	
Molybdenum	A	mg/L	0.04761	0.0490383		0.05	0.0002977	0.0483894	8.356E-05	0.001	0.1	97%	75	125	1%	
Nickel	A	mg/L	0.04874	0.0502022		0.05	0.0006364	0.0502434	0.0001822	0.001	1	99%	75	125	0%	
Potassium	A	mg/L	49.16	50.6348		50	3.013	50.3052	0.0221896	0.0838317	50	95%	75	125	1%	
Selenium	A	mg/L	0.05353	0.0551359		0.05	0.0002589	0.0547754	7.389E-05	0.001	1	110%	75	125	1%	
Silicon	A	mg/L	21.57	22.2171		0.2	22.93	21.9802	0.0034337	0.1	0.4		75	125	1%	AE
Silver	A	mg/L	0.01874	0.0193022		0.02	0	0.0192816	2.723E-05	0.001	0.04	97%	75	125	0%	
Sodium	A	mg/L	82.67	85.1501		50	36.14	84.7175	0.0465471	0.0223613	50	98%	75	125	1%	E
Strontium	A	mg/L	0.2102	0.216506		0.05	0.1657	0.214858	0.0001004	0.001	1	102%	75	125	1%	
Thallium	A	mg/L	0.04912	0.0505936		0.05	4.956E-05	0.0504391	4.987E-05	0.001	1	101%	75	125	0%	
Thorium	A	mg/L	0.04932	0.0507996		0.05	0	0.0490486	3.109E-05	0.001	1	102%	75	125	4%	
Tin	A	mg/L	0.04802	0.0494606		0.05	0	0.0492752	0.0010226	0.0013596	0.1	99%	75	125	0%	
Titanium	A	mg/L	0.05153	0.0530759		0.05	0.002172	0.0526948	0.0001034	0.001	1	102%	75	125	1%	
Uranium	A	mg/L	0.04951	0.0509953		0.05	0	0.0509232	2.542E-05	0.0003	1	102%	75	125	0%	
Vanadium	A	mg/L	0.05448	0.0561144		0.05	0.006034	0.0564337	0.001917	0.001339	1	100%	75	125	1%	
Zinc	A	mg/L	0.05074	0.0522622		0.05	0.001243	0.0522622	0.0010392	0.0028119	1	102%	75	125	0%	
Iron, Ferrous	C	mg/L	4.692	4.83276		0	0	4.71637	0.0021792	0.0012257	5	0%	0	0	2%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053895	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 5:25:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0004083	0		0	0	0	0.0017836	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	-1.072E-05	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	
Barium	A	mg/L	-1.994E-06	0		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	8.241E-06	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	3.543E-07	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	7.775E-06	0		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	6.704E-08	0		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00001849	0		0	0	0	0.0001748	0.001	1	0%	0	0	0%	
Lead	A	mg/L	5.053E-06	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	0.00000174	0		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	0.00000264	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.00006916	0		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	-3.024E-05	0		0	0	0	0.0001769	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	8.855E-06	0		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	8.627E-07	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	4.797E-06	0		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00006114	0.00006114		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	0.00007334	0.00007334		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	J
Titanium	A	mg/L	0.00004874	0		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00000547	0		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	
Calcium	B	mg/L	0.0001741	0		0	0	0	0.2027235	0.02092	50	0%	0	0	0%	L
Iron	B	mg/L	0.000311	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.000311	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	0.001711	0		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	L
Potassium	B	mg/L	0.008373	0		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0.01179	0		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-0.0009205	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	
Zinc	B	mg/L	0.00005929	0		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053896	B22021435-001	ICPMS-6020-W-	SAMP		2/24/2022 5:31:5	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053896	B22021435-001	ICPMS-6020-W-	SAMP		2/24/2022 5:31:5	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.0002552	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.004553	0.004553		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00001481	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	0.00005864	0.00005864		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	J
Cobalt	A	mg/L	0.000172	0.000172		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	0.00002753	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.00003854	0		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.01191	0.01191		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.0003757	0.0003757		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	J
Selenium	A	mg/L	0.0002543	0.0002543		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	9.546E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.1691	0.1691		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00004574	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.006937	0.006937		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00001692	0		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	U
Aluminum	B	mg/L	0.0815	0.0815		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	D
Calcium	B	mg/L	15.47	15.47		0	0	0	0.0372936	0.1103481	50	0%	0	0	0%	D
Chromium	B	mg/L	0.001148	0		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	LU
Copper	B	mg/L	0.0008693	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	LU
Iron	B	mg/L	0.07441	0.07441		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	17.69	17.69		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.000971	0.000971		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	2.856	2.856		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Sodium	B	mg/L	37.08	37.08		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	D
Thorium	B	mg/L	0.0002113	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	-0.0006525	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Vanadium	B	mg/L	0.01118	0.01118		0	0	0	0.0039127	0.0021085	1	0%	0	0	0%	D
Zinc	B	mg/L	0.001439	0.001439		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	JL

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053897	B22021435-001	ICPMS-6020-W-	SD		2/24/2022 5:38:0	5	163954	2/23/2022 9:	0	2E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053897	B22021435-001	ICPMS-6020-W- SD			2/24/2022 5:38:0	5	163954	2/23/2022 9:	0	2E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.01699	0.08495		0	0	0.0815	0.0193736	0.0159875	1	0%	0	0		N
Antimony	A	mg/L	0.0001049	0		0	0	0.0003776	0.0013997	0.0049	0.1	0%	0	0		
Arsenic	A	mg/L	0.0000345	0		0	0	0	0.0017061	0.0013383	1	0%	0	0		
Barium	A	mg/L	0.0009435	0.0047175		0	0	0.004553	0.0013411	0.0012039	1	0%	0	0		N
Beryllium	A	mg/L	-2.698E-05	0		0	0	0	0.0005353	0.01	1	0%	0	0		
Boron	A	mg/L	0.005047	0		0	0	0.03541	0.1019008	0.07335	1	0%	0	0		
Cadmium	A	mg/L	0.00001066	0		0	0	0	9.105E-05	0.005	1	0%	0	0		
Calcium	A	mg/L	3.09	15.45		0	0	15.47	0.1864681	0.5517403	50	0%	0	0	0%	
Cerium	A	mg/L	0.00001174	0		0	0	5.864E-05	0.0001369	0.001	0.1	0%	0	0		
Chromium	A	mg/L	0.0002167	0		0	0	0	0.0076875	0.0076875	1	0%	0	0		
Cobalt	A	mg/L	0.00003233	0		0	0	0.000172	0.0004771	0.001	1	0%	0	0		
Copper	A	mg/L	0.0002231	0		0	0	0	0.0043735	0.0099	1	0%	0	0		
Iron	A	mg/L	0.01485	0.07425		0	0	0.07441	0.0371198	0.02565	5	0%	0	0		N
Lanthanum	A	mg/L	5.141E-06	0		0	0	0	0.000275	0.001	0.1	0%	0	0		
Lead	A	mg/L	0.00001844	0		0	0	0	0.0003858	0.001	1	0%	0	0		
Magnesium	A	mg/L	3.564	17.82		0	0	17.69	0.0521269	0.0407608	50	0%	0	0	1%	
Manganese	A	mg/L	0.002395	0.011975		0	0	0.01191	0.0026994	0.0010695	1	0%	0	0		N
Molybdenum	A	mg/L	0.00007462	0		0	0	0.0003757	0.0008814	0.001	0.1	0%	0	0		
Nickel	A	mg/L	0.00018	0		0	0	0.000971	0.0011441	0.0121000	1	0%	0	0		
Potassium	A	mg/L	0.5714	2.857		0	0	2.856	0.3828097	0.1306027	50	0%	0	0		N
Selenium	A	mg/L	0.00004868	0		0	0	0.0002543	0.0006787	0.0029274	1	0%	0	0		
Silicon	A	mg/L	3.523	17.615		0	0	17.69	0.2110446	0.026606	0.4	0%	0	0	0%	
Silver	A	mg/L	1.162E-06	0		0	0	0	0.0002141	0.001	0.04	0%	0	0		
Sodium	A	mg/L	7.498	37.49		0	0	37.08	0.5097304	3.6651346	50	0%	0	0	1%	
Strontium	A	mg/L	0.03382	0.1691		0	0	0.1691	0.0012164	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00002256	0		0	0	0	0.0005569	0.001	1	0%	0	0		
Thorium	A	mg/L	0.00002618	0		0	0	0	0.0018981	0.02075	1	0%	0	0		
Tin	A	mg/L	-0.0009682	0		0	0	0	0.0094659	0.0055874	0.1	0%	0	0		
Titanium	A	mg/L	0.001341	0.006705		0	0	0.006937	0.0028666	0.001	1	0%	0	0		N
Uranium	A	mg/L	3.603E-06	0		0	0	0	8.495E-05	0.0004224	1	0%	0	0		
Vanadium	A	mg/L	0.003382	0		0	0	0.01118	0.0195637	0.0105423	1	0%	0	0		
Zinc	A	mg/L	0.00304	0.0152		0	0	0.001439	0.0058087	0.0327721	1	0%	0	0		N
Silica	C	mg/L	7.5364016	37.682008		0	0	0	0.4514666	0.0569155	5	0%	0	0		N
Silicon as SiO2	C	mg/L	7.5364016	37.682008		0	0	0	0.4514666	0.0569155	5	0%	0	0		N

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053898	B22021435-001	ICPMS-6020-W-	PDS1		2/24/2022 5:44:2	1.03	163954	2/23/2022 9:	2E+07	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.1209	0.124527		0.0515	0.0815	0	0.003991	0.0032934	1	84%	75	125	0%	
Antimony	A	mg/L	0.04774	0.0491722		0.0515	0.0003776	0	0.0002883	0.0010094	0.1	95%	75	125	0%	
Arsenic	A	mg/L	0.04701	0.0484203		0.0515	0	0	0.0003514	0.001	1	94%	75	125	0%	
Barium	A	mg/L	0.05326	0.0548578		0.0515	0.004553	0	0.0002763	0.001	1	98%	75	125	0%	
Beryllium	A	mg/L	0.03703	0.0381409		0.0515	0	0	0.0001103	0.01	1	74%	75	125	0%	S
Boron	A	mg/L	0.07646	0.0787538		0.0515	0.03541	0	0.0209916	0.0151101	1	84%	75	125	0%	
Cadmium	A	mg/L	0.04751	0.0489353		0.0515	0	0	1.876E-05	0.005	1	95%	75	125	0%	
Calcium	A	mg/L	55.82	57.4946		51.5	15.47	0	0.0384124	0.1136585	50	82%	75	125	0%	
Cerium	A	mg/L	0.05193	0.0534879		0.0515	5.864E-05	0	2.820E-05	0.001	0.1	104%	75	125	0%	
Chromium	A	mg/L	0.04871	0.0501713		0.0515	0	0	0.0015836	0.0015836	1	97%	75	125	0%	
Cobalt	A	mg/L	0.04676	0.0481628		0.0515	0.000172	0	9.827E-05	0.001	1	93%	75	125	0%	
Copper	A	mg/L	0.04863	0.0500889		0.0515	0	0	0.0009009	0.0020394	1	97%	75	125	0%	
Iron	A	mg/L	4.703	4.84409		5.15	0.07441	0	0.0076467	0.0052839	5	93%	75	125	0%	
Lanthanum	A	mg/L	0.00004262	0		0.0515	0	0	5.665E-05	0.001	0.1	0%	75	125	0%	S
Lead	A	mg/L	0.0481	0.049543		0.0515	0	0	7.947E-05	0.001	1	96%	80	120	0%	
Magnesium	A	mg/L	64.48	66.4144		51.5	17.69	0	0.0107381	0.0083967	50	95%	75	125	0%	
Manganese	A	mg/L	0.05778	0.0595134		0.0515	0.01191	0	0.0005561	0.001	1	92%	75	125	0%	
Molybdenum	A	mg/L	0.04735	0.0487705		0.0515	0.0003757	0	0.0001816	0.001	0.1	94%	75	125	0%	
Nickel	A	mg/L	0.0497	0.051191		0.0515	0.000971	0	0.0002357	0.0024926	1	98%	75	125	0%	
Potassium	A	mg/L	48.09	49.5327		51.5	2.856	0	0.0788588	0.0269042	50	91%	75	125	0%	
Selenium	A	mg/L	0.04695	0.0483585		0.0515	0.0002543	0	0.0001398	0.001	1	93%	75	125	0%	
Silicon	A	mg/L	18.3	18.849		0.206	17.69	0	0.0434752	0.0054808	0.4		0	0	0%	A
Silver	A	mg/L	0.0186	0.019158		0.0206	0	0	4.409E-05	0.001	0.04	93%	75	125	0%	
Sodium	A	mg/L	83.03	85.5209		51.5	37.08	0	0.1050045	0.7550177	50	94%	75	125	0%	
Strontium	A	mg/L	0.2151	0.221553		0.0515	0.1691	0	0.0002506	0.001	1	102%	75	125	0%	
Thallium	A	mg/L	0.0502	0.051706		0.0515	0	0	0.0001147	0.001	1	100%	75	125	0%	
Thorium	A	mg/L	0.04998	0.0514794		0.0515	0	0	0.000391	0.0042745	1	100%	75	125	0%	
Tin	A	mg/L	0.04895	0.0504185		0.0515	0	0	0.00195	0.001151	0.1	98%	75	125	0%	
Titanium	A	mg/L	0.0571	0.058813		0.0515	0.006937	0	0.0005905	0.001	1	101%	75	125	0%	
Uranium	A	mg/L	0.04959	0.0510777		0.0515	0	0	1.75E-05	0.0003	1	99%	75	125	0%	
Vanadium	A	mg/L	0.05783	0.0595649		0.0515	0.01118	0	0.0040301	0.0021717	1	94%	75	125	0%	
Zinc	A	mg/L	0.04907	0.0505421		0.0515	0.001439	0	0.0011966	0.0067511	1	95%	75	125	0%	
Silica	C	mg/L	39.14736	40.3217808		0	0	0	0.0930021	0.0117246	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	39.14736	40.3217808		0.0515	0	0	0.0930021	0.0117246	5	78295%	75	125	0%	S



Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053899	B22021435-001	ICPMS-6020-W- MS4			2/24/2022 5:50:3	1	163954	2/23/2022 9:	2E+07	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.5443	0.5443		0.5	0.0815	0	0.0038747	0.0031975	1	93%	75	125	0%	
Antimony	A	mg/L	0.1	0.1		0.1	0.0003776	0	0.0002799	0.001	0.1	100%	75	125	0%	
Arsenic	A	mg/L	0.09434	0.09434		0.1	0	0	0.0003412	0.001	1	94%	75	125	0%	
Barium	A	mg/L	0.09848	0.09848		0.1	0.004553	0	0.0002682	0.001	1	94%	75	125	0%	
Beryllium	A	mg/L	0.03803	0.03803		0.05	0	0	0.0001071	0.01	1	76%	75	125	0%	
Boron	A	mg/L	0.1174	0.1174		0.1	0.03541	0	0.0203802	0.01467	1	82%	75	125	0%	
Cadmium	A	mg/L	0.04967	0.04967		0.05	0	0	1.821E-05	0.005	1	99%	75	125	0%	
Calcium	A	mg/L	19.11	19.11		5	15.47	0	0.0372936	0.1103481	50	73%	75	125	0%	S
Cerium	A	mg/L	0.1078	0.1078		0.1	5.864E-05	0	2.738E-05	0.001	0.1	108%	75	125	0%	
Chromium	A	mg/L	0.09962	0.09962		0.1	0	0	0.0015375	0.0015375	1	100%	75	125	0%	
Cobalt	A	mg/L	0.09476	0.09476		0.1	0.000172	0	9.541E-05	0.001	1	95%	75	125	0%	
Copper	A	mg/L	0.102	0.102		0.1	0	0	0.0008747	0.00198	1	102%	75	125	0%	
Iron	A	mg/L	0.5754	0.5754		0.5	0.07441	0	0.007424	0.00513	5	100%	75	125	0%	
Lanthanum	A	mg/L	0.1068	0.1068		0.1	0	0	0.000055	0.001	0.1	107%	75	125	0%	
Lead	A	mg/L	0.09998	0.09998		0.1	0	0	7.716E-05	0.001	1	100%	88	115	0%	
Magnesium	A	mg/L	22.28	22.28		5	17.69	0	0.0104254	0.0081522	50	92%	75	125	0%	
Manganese	A	mg/L	0.5007	0.5007		0.5	0.01191	0	0.0005399	0.001	1	98%	75	125	0%	
Molybdenum	A	mg/L	0.09627	0.09627		0.1	0.0003757	0	0.0001763	0.001	0.1	96%	75	125	0%	
Nickel	A	mg/L	0.1026	0.1026		0.1	0.000971	0	0.0002288	0.0024200	1	102%	75	125	0%	
Potassium	A	mg/L	7.429	7.429		5	2.856	0	0.0765619	0.0261205	50	91%	75	125	0%	
Selenium	A	mg/L	0.09685	0.09685		0.1	0.0002543	0	0.0001357	0.001	1	97%	75	125	0%	
Silicon	A	mg/L	21.3	21.3		1	17.69	0	0.0422089	0.0053212	0.4		75	125	0%	A
Silver	A	mg/L	0.009477	0.009477		0.01	0	0	4.281E-05	0.001	0.04	95%	75	125	0%	
Sodium	A	mg/L	41.34	41.34		5	37.08	0	0.1019461	0.7330269	50		75	125	0%	A
Strontium	A	mg/L	0.2697	0.2697		0.1	0.1691	0	0.0002433	0.001	1	101%	75	125	0%	
Thallium	A	mg/L	0.1024	0.1024		0.1	0	0	0.0001114	0.001	1	102%	75	125	0%	
Thorium	A	mg/L	0.1017	0.1017		0.1	0	0	0.0003796	0.00415	1	102%	75	125	0%	
Tin	A	mg/L	0.1029	0.1029		0.1	0	0	0.0018932	0.0011175	0.1	103%	75	125	0%	
Titanium	A	mg/L	0.09684	0.09684		0.1	0.006937	0	0.0005733	0.001	1	90%	75	125	0%	
Uranium	A	mg/L	0.1017	0.1017		0.1	0	0	1.699E-05	0.0003	1	102%	75	125	0%	
Vanadium	A	mg/L	0.1088	0.1088		0.1	0.01118	0	0.0039127	0.0021085	1	98%	75	125	0%	
Zinc	A	mg/L	0.09905	0.09905		0.1	0.001439	0	0.0011617	0.0065544	1	98%	75	125	0%	
Silica	C	mg/L	45.56496	45.56496		0	0	0	0.0902933	0.0113831	5	0%	0	0	0%	
Silicon as SiO2	C	mg/L	45.56496	45.56496		2.14	0	0	0.0902933	0.0113831	5	2129%	75	125	0%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053900	CCV	ICPMS-6020-W-	CCV		2/24/2022 5:56:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04656	0.04656		0.05	0	0	0.0017836	0.001	1	93%	90	110	0%	
Antimony	A	mg/L	0.05163	0.05163		0.05	0	0	6.768E-05	0.001	0.1	103%	90	110	0%	
Arsenic	A	mg/L	0.04993	0.04993		0.05	0	0	8.203E-05	0.001	1	100%	90	110	0%	
Barium	A	mg/L	0.05075	0.05075		0.05	0	0	6.762E-05	0.001	1	101%	90	110	0%	
Beryllium	A	mg/L	0.04127	0.04127		0.05	0	0	8.516E-05	0.001	1	83%	90	110	0%	S
Boron	A	mg/L	0.04182	0.04182		0.05	0	0	0.0039526	0.00561	1	84%	90	110	0%	S
Cadmium	A	mg/L	0.05204	0.05204		0.05	0	0	2.308E-05	0.001	1	104%	90	110	0%	
Calcium	A	mg/L	11.2	11.2		12.5	0	0	0.2027235	0.02092	50	90%	90	110	0%	
Cerium	A	mg/L	0.05073	0.05073		0.05	0	0	0.0000222	0.001	0.1	101%	90	110	0%	
Chromium	A	mg/L	0.04882	0.04882		0.05	0	0	0.0002538	0.001	1	98%	90	110	0%	
Cobalt	A	mg/L	0.04623	0.04623		0.05	0	0	2.141E-05	0.001	1	92%	90	110	0%	
Copper	A	mg/L	0.05101	0.05101		0.05	0	0	0.0001748	0.001	1	102%	90	110	0%	
Iron	A	mg/L	1.253	1.253		1.3	0	0	0.0021157	0.00119	5	96%	90	110	0%	
Lanthanum	A	mg/L	0.05144	0.05144		0.05	0	0	6.805E-05	0.001	0.1	103%	90	110	0%	
Lead	A	mg/L	0.05007	0.05007		0.05	0	0	3.031E-05	0.001	1	100%	90	110	0%	
Magnesium	A	mg/L	12.33	12.33		12.5	0	0	0.0203306	0.00564	50	99%	90	110	0%	
Manganese	A	mg/L	0.04784	0.04784		0.05	0	0	7.309E-05	0.001	1	96%	90	110	0%	
Mercury	A	mg/L	0.0009665	0.0009665		0.001	0	0	3.043E-05	0.001	0.002	97%	90	110	0%	
Molybdenum	A	mg/L	0.04841	0.04841		0.05	0	0	8.113E-05	0.001	0.1	97%	90	110	0%	
Nickel	A	mg/L	0.05189	0.05189		0.05	0	0	0.0001769	0.001	1	104%	90	110	0%	
Potassium	A	mg/L	11.58	11.58		12.5	0	0	0.0215433	0.08139	50	93%	90	110	0%	
Selenium	A	mg/L	0.05394	0.05394		0.05	0	0	7.174E-05	0.001	1	108%	90	110	0%	
Silicon	A	mg/L	0.2478	0.2478		0.2	0	0	0.0033337	0.1	0.4	124%	90	110	0%	S
Silver	A	mg/L	0.02015	0.02015		0.02	0	0	2.644E-05	0.001	0.04	101%	90	110	0%	
Sodium	A	mg/L	12.39	12.39		12.5	0	0	0.0451914	0.02171	50	99%	90	110	0%	
Strontium	A	mg/L	0.04874	0.04874		0.05	0	0	9.743E-05	0.001	1	97%	90	110	0%	
Thallium	A	mg/L	0.05	0.05		0.05	0	0	4.842E-05	0.001	1	100%	90	110	0%	
Thorium	A	mg/L	0.04869	0.04869		0.05	0	0	3.018E-05	0.001	1	97%	90	110	0%	
Tin	A	mg/L	0.04983	0.04983		0.05	0	0	0.0009928	0.00132	0.1	100%	90	110	0%	
Titanium	A	mg/L	0.04534	0.04534		0.05	0	0	0.0001004	0.001	1	91%	90	110	0%	
Uranium	A	mg/L	0.05002	0.05002		0.05	0	0	2.468E-05	0.0003	1	100%	90	110	0%	
Vanadium	A	mg/L	0.04976	0.04976		0.05	0	0	0.0018612	0.0013	1	100%	90	110	0%	
Zinc	A	mg/L	0.05219	0.05219		0.05	0	0	0.0010089	0.00273	1	104%	90	110	0%	
Iron, Ferrous	C	mg/L	1.253	1.253		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053901	CCB	ICPMS-6020-W-	CCB		2/24/2022 6:03:0	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	1.836E-06	1.836E-06		0	0	0	0.0017836	0.001	1	0%				0%
Antimony	A	mg/L	0.0002073	0.0002073		0	0	0	6.768E-05	0.001	0.1	0%				0%
Arsenic	A	mg/L	-5.732E-06	-5.732E-06		0	0	0	8.203E-05	0.001	1	0%				0%
Barium	A	mg/L	-1.617E-06	-1.617E-06		0	0	0	6.762E-05	0.001	1	0%				0%
Beryllium	A	mg/L	-2.661E-05	-2.661E-05		0	0	0	8.516E-05	0.001	1	0%				0%
Boron	A	mg/L	-0.003027	-0.003027		0	0	0	0.0039526	0.00561	1	0%				0%
Cadmium	A	mg/L	0.00001018	0.00001018		0	0	0	2.308E-05	0.001	1	0%				0%
Calcium	A	mg/L	-0.0002194	-0.0002194		0	0	0	0.2027235	0.02092	50	0%				0%
Cerium	A	mg/L	1.069E-06	1.069E-06		0	0	0	0.0000222	0.001	0.1	0%	0	0		0%
Chromium	A	mg/L	5.598E-06	5.598E-06		0	0	0	0.0002538	0.001	1	0%				0%
Cobalt	A	mg/L	1.502E-06	1.502E-06		0	0	0	2.141E-05	0.001	1	0%				0%
Copper	A	mg/L	0.00003189	0.00003189		0	0	0	0.0001748	0.001	1	0%				0%
Iron	A	mg/L	0.0001669	0.0001669		0	0	0	0.0021157	0.00119	5	0%				0%
Lanthanum	A	mg/L	6.584E-07	6.584E-07		0	0	0	6.805E-05	0.001	0.1	0%	0	0		0%
Lead	A	mg/L	4.903E-06	4.903E-06		0	0	0	3.031E-05	0.001	1	0%				0%
Magnesium	A	mg/L	0.0004814	0.0004814		0	0	0	0.0203306	0.00564	50	0%				0%
Manganese	A	mg/L	8.792E-06	8.792E-06		0	0	0	7.309E-05	0.001	1	0%				0%
Mercury	A	mg/L	1.798E-06	1.798E-06		0	0	0	3.043E-05	0.001	0.002	0%				0%
Molybdenum	A	mg/L	0.00003307	0.00003307		0	0	0	8.113E-05	0.001	0.1	0%				0%
Nickel	A	mg/L	-2.902E-05	-2.902E-05		0	0	0	0.0001769	0.001	1	0%				0%
Potassium	A	mg/L	0.005246	0.005246		0	0	0	0.0215433	0.08139	50	0%				0%
Selenium	A	mg/L	4.464E-06	4.464E-06		0	0	0	7.174E-05	0.001	1	0%				0%
Silicon	A	mg/L	0.02797	0.02797		0	0	0	0.0033337	0.1	0.4	0%	0	0		0%
Silver	A	mg/L	1.761E-07	1.761E-07		0	0	0	2.644E-05	0.001	0.04	0%				0%
Sodium	A	mg/L	0.01179	0.01179		0	0	0	0.0451914	0.02171	50	0%				0%
Strontium	A	mg/L	1.307E-07	1.307E-07		0	0	0	9.743E-05	0.001	1	0%	0	0		0%
Thallium	A	mg/L	0.0001904	0.0001904		0	0	0	4.842E-05	0.001	1	0%	0	0		0%
Thorium	A	mg/L	0.00008054	0.00008054		0	0	0	3.018E-05	0.001	1	0%	0	0		0%
Tin	A	mg/L	0.00007908	0.00007908		0	0	0	0.0009928	0.00132	0.1	0%	0	0		0%
Titanium	A	mg/L	2.317E-06	2.317E-06		0	0	0	0.0001004	0.001	1	0%	0	0		0%
Uranium	A	mg/L	5.087E-06	5.087E-06		0	0	0	2.468E-05	0.0003	1	0%	0	0		0%
Vanadium	A	mg/L	0.002583	0.002583		0	0	0	0.0018612	0.0013	1	0%	0	0		0%
Zinc	A	mg/L	0.00004448	0.00004448		0	0	0	0.0010089	0.00273	1	0%	0	0		0%
Iron, Ferrous	C	mg/L	0.0001669	0.0001669		0	0	0	0.0021157	0.00119	5	0%	0	0		0%

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053902	B22021435-001	ICPMS-6020-W-	MSD4		2/24/2022 6:09:2	1	163954	2/23/2022 9:	2E+07	2E+07						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.5493	0.5493		0.5	0.0815	0.5443	0.0038747	0.0031975	1	94%	75	125	1%	
Antimony	A	mg/L	0.1	0.1		0.1	0.0003776	0.1	0.0002799	0.001	0.1	100%	75	125	0%	
Arsenic	A	mg/L	0.09591	0.09591		0.1	0	0.09434	0.0003412	0.001	1	96%	75	125	2%	
Barium	A	mg/L	0.0974	0.0974		0.1	0.004553	0.09848	0.0002682	0.001	1	93%	75	125	1%	
Beryllium	A	mg/L	0.0382	0.0382		0.05	0	0.03803	0.0001071	0.01	1	76%	75	125	0%	
Boron	A	mg/L	0.118	0.118		0.1	0.03541	0.1174	0.0203802	0.01467	1	83%	75	125	1%	
Cadmium	A	mg/L	0.05014	0.05014		0.05	0	0.04967	1.821E-05	0.005	1	100%	75	125	1%	
Calcium	A	mg/L	19.19	19.19		5	15.47	19.11	0.0372936	0.1103481	50	74%	75	125	0%	S
Cerium	A	mg/L	0.1077	0.1077		0.1	5.864E-05	0.1078	2.738E-05	0.001	0.1	108%	75	125	0%	
Chromium	A	mg/L	0.1006	0.1006		0.1	0	0.09962	0.0015375	0.0015375	1	101%	75	125	1%	
Cobalt	A	mg/L	0.09518	0.09518		0.1	0.000172	0.09476	9.541E-05	0.001	1	95%	75	125	0%	
Copper	A	mg/L	0.103	0.103		0.1	0	0.102	0.0008747	0.00198	1	103%	75	125	1%	
Iron	A	mg/L	0.5782	0.5782		0.5	0.07441	0.5754	0.007424	0.00513	5	101%	75	125	0%	
Lanthanum	A	mg/L	0.1071	0.1071		0.1	0	0.1068	0.000055	0.001	0.1	107%	75	125	0%	
Lead	A	mg/L	0.1018	0.1018		0.1	0	0.09998	7.716E-05	0.001	1	102%	88	115	2%	
Magnesium	A	mg/L	22.59	22.59		5	17.69	22.28	0.0104254	0.0081522	50	98%	75	125	1%	
Manganese	A	mg/L	0.5042	0.5042		0.5	0.01191	0.5007	0.0005399	0.001	1	98%	75	125	1%	
Molybdenum	A	mg/L	0.09573	0.09573		0.1	0.0003757	0.09627	0.0001763	0.001	0.1	95%	75	125	1%	
Nickel	A	mg/L	0.1037	0.1037		0.1	0.000971	0.1026	0.0002288	0.0024200	1	103%	75	125	1%	
Potassium	A	mg/L	7.62	7.62		5	2.856	7.429	0.0765619	0.0261205	50	95%	75	125	3%	
Selenium	A	mg/L	0.09672	0.09672		0.1	0.0002543	0.09685	0.0001357	0.001	1	96%	75	125	0%	
Silicon	A	mg/L	22.13	22.13		1	17.69	21.3	0.0422089	0.0053212	0.4		75	125	4%	A
Silver	A	mg/L	0.00952	0.00952		0.01	0	0.009477	4.281E-05	0.001	0.04	95%	75	125	0%	
Sodium	A	mg/L	41.26	41.26		5	37.08	41.34	0.1019461	0.7330269	50		75	125	0%	A
Strontium	A	mg/L	0.2721	0.2721		0.1	0.1691	0.2697	0.0002433	0.001	1	103%	75	125	1%	
Thallium	A	mg/L	0.1011	0.1011		0.1	0	0.1024	0.0001114	0.001	1	101%	75	125	1%	
Thorium	A	mg/L	0.09953	0.09953		0.1	0	0.1017	0.0003796	0.00415	1	100%	75	125	2%	
Tin	A	mg/L	0.1042	0.1042		0.1	0	0.1029	0.0018932	0.0011175	0.1	104%	75	125	1%	
Titanium	A	mg/L	0.09568	0.09568		0.1	0.006937	0.09684	0.0005733	0.001	1	89%	75	125	1%	
Uranium	A	mg/L	0.1032	0.1032		0.1	0	0.1017	1.699E-05	0.0003	1	103%	75	125	1%	
Vanadium	A	mg/L	0.1106	0.1106		0.1	0.01118	0.1088	0.0039127	0.0021085	1	99%	75	125	2%	
Zinc	A	mg/L	0.1006	0.1006		0.1	0.001439	0.09905	0.0011617	0.0065544	1	99%	75	125	2%	
Silica	C	mg/L	47.340496	47.340496		0	0	45.56496	0.0902933	0.0113831	5	0%	0	0	4%	
Silicon as SiO2	C	mg/L	47.340496	47.340496		2.14	0	45.56496	0.0902933	0.0113831	5	2212%	75	125	4%	S

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053903	Rinse	ICPMS-6020-W-	SAMP		2/24/2022 6:15:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.0003852	0		0	0	0	0.0017836	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	-1.512E-05	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	
Barium	A	mg/L	-6.79E-07	0		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00001192	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	
Cerium	A	mg/L	1.021E-06	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	4.931E-06	0		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	8.487E-07	0		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	
Copper	A	mg/L	0.00003012	0		0	0	0	0.0001748	0.001	1	0%	0	0	0%	
Lead	A	mg/L	0.00000444	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	
Manganese	A	mg/L	0.00001099	0		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	5.735E-08	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	
Molybdenum	A	mg/L	0.00002109	0		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	-3.144E-05	0		0	0	0	0.0001769	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	3.908E-06	0		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	
Silver	A	mg/L	2.783E-07	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	
Strontium	A	mg/L	9.781E-07	0		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.000196	0.000196		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	0.00009406	0.00009406		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	J
Titanium	A	mg/L	-5.797E-06	0		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	4.463E-06	0		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	
Iron	B	mg/L	0.0001206	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.0001206	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	0.001236	0		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	L
Potassium	B	mg/L	0.002134	0		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	L
Sodium	B	mg/L	0.01155	0		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	L
Tin	B	mg/L	-0.001031	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	
Zinc	B	mg/L	0.0001167	0		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	L

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053904	B22021435-006	ICPMS-6020-W-	SAMP		2/24/2022 6:21:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.002964	0.002964		0	0	0	0.0017836	0.001	1	0%	0	0	0%	U
Arsenic	A	mg/L	0.0005587	0.0005587		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	J
Barium	A	mg/L	0.01189	0.01189		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053904	B22021435-006	ICPMS-6020-W-	SAMP		2/24/2022 6:21:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Cadmium	A	mg/L	0.00001234	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	U
Cerium	A	mg/L	2.498E-06	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	U
Chromium	A	mg/L	0.0004786	0.0004786		0	0	0	0.0002538	0.001	1	0%	0	0	0%	J
Cobalt	A	mg/L	0.0001587	0.0001587		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.0004046	0.0004046		0	0	0	0.0001748	0.001	1	0%	0	0	0%	J
Lead	A	mg/L	0.00001458	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.002413	0.002413		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	0.0009344	0.0009344		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	J
Molybdenum	A	mg/L	0.001612	0.001612		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.0005556	0.0005556		0	0	0	0.0001769	0.001	1	0%	0	0	0%	J
Selenium	A	mg/L	0.000473	0.000473		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	5.424E-06	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.2933	0.2933		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00008341	0.00008341		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	J
Thorium	A	mg/L	0.00002626	0		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.002007	0.002007		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00006706	0.00006706		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	J
Iron	B	mg/L	0.01137	0.01137		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.01137	0.01137		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	38.74	38.74		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	2.711	2.711		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	D
Tin	B	mg/L	-0.001066	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	U
Zinc	B	mg/L	0.00131	0.00131		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	JL

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053905	B22021435-006	ICPMS-6020-W-	SAMP		2/24/2022 6:28:0	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.0009712	0.0009712		0	0	0	0.0003412	0.001	1	0%	0	0	0%	J
Barium	A	mg/L	0.01182	0.01182		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00001767	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	0.00005486	0.00005486		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	J
Cobalt	A	mg/L	0.0002193	0.0002193		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	0.00002512	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.00006631	0		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	U

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053905	B22021435-006	ICPMS-6020-W-	SAMP		2/24/2022 6:28:0	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Manganese	A	mg/L	0.00298	0.00298		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.001593	0.001593		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	
Selenium	A	mg/L	0.0004152	0.0004152		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	0.00002363	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.2982	0.2982		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00005948	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.004853	0.004853		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00007004	0.00007004		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.03391	0.03391		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	D
Chromium	B	mg/L	0.001033	0		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	LU
Copper	B	mg/L	0.0007733	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	LU
Iron	B	mg/L	0.1411	0.1411		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	38.29	38.29		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.0006919	0.0006919		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	2.644	2.644		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Thorium	B	mg/L	0.0002066	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	-0.0007601	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Zinc	B	mg/L	0.001596	0.001596		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	JL

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053906	B22021435-012	ICPMS-6020-W-	SAMP		2/24/2022 6:34:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.007881	0.007881		0	0	0	0.0017836	0.001	1	0%	0	0	0%	
Arsenic	A	mg/L	-4.757E-05	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.00525	0.00525		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	7.676E-06	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	U
Cerium	A	mg/L	6.161E-06	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	U
Chromium	A	mg/L	0.002345	0.002345		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00004687	0.00004687		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.001297	0.001297		0	0	0	0.0001748	0.001	1	0%	0	0	0%	
Lead	A	mg/L	0.00003494	0.00003494		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.0004721	0.0004721		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	J
Mercury	A	mg/L	6.213E-06	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	U
Molybdenum	A	mg/L	0.000126	0.000126		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	J

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053906	B22021435-012	ICPMS-6020-W-	SAMP		2/24/2022 6:34:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Nickel	A	mg/L	0.0008352	0.0008352		0	0	0	0.0001769	0.001	1	0%	0	0	0%	J
Selenium	A	mg/L	0.0001481	0.0001481		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	2.914E-06	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.06799	0.06799		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00004292	0		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	U
Thorium	A	mg/L	8.124E-06	0		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.002392	0.002392		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00002096	0		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	U
Iron	B	mg/L	0.009109	0.009109		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.009109	0.009109		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	9.536	9.536		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	5.631	5.631		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	D
Sodium	B	mg/L	35.12	35.12		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	D
Tin	B	mg/L	-0.0006524	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	U
Zinc	B	mg/L	0.01267	0.01267		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	D

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053907	B22021435-012	ICPMS-6020-W-	SAMP		2/24/2022 6:40:3	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.0002246	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.00576	0.00576		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	9.571E-06	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	0.00002109	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	U
Cobalt	A	mg/L	0.00005941	0		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	U
Lanthanum	A	mg/L	0.00001031	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.00004389	0		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.0004408	0		0	0	0	0.0005399	0.001	1	0%	0	0	0%	U
Molybdenum	A	mg/L	0.0001291	0		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	U
Selenium	A	mg/L	0.0001415	0.0001415		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	3.812E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.0716	0.0716		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00002475	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.003126	0.003126		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.0000209	0.0000209		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J



Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053907	B22021435-012	ICPMS-6020-W-	SAMP		2/24/2022 6:40:3	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	B	mg/L	0.01653	0.01653		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	D
Chromium	B	mg/L	0.002534	0.002534		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	DU
Copper	B	mg/L	0.001031	0.001031		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	JL
Iron	B	mg/L	0.02569	0.02569		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	9.545	9.545		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.0005641	0.0005641		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	4.177	4.177		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Sodium	B	mg/L	33.51	33.51		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	D
Thorium	B	mg/L	0.0001025	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	-0.0001709	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Zinc	B	mg/L	0.02498	0.02498		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	D

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053908	B22021435-017	ICPMS-6020-W-	SAMP		2/24/2022 6:46:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.00415	0.00415		0	0	0	0.0017836	0.001	1	0%	0	0	0%	U
Arsenic	A	mg/L	0.0003528	0.0003528		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	J
Barium	A	mg/L	0.004894	0.004894		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	5.239E-06	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	U
Cerium	A	mg/L	0.00001986	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	U
Chromium	A	mg/L	0.00002285	0		0	0	0	0.0002538	0.001	1	0%	0	0	0%	U
Cobalt	A	mg/L	0.0003848	0.0003848		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.0005269	0.0005269		0	0	0	0.0001748	0.001	1	0%	0	0	0%	J
Lead	A	mg/L	0.00002309	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.4948	0.4948		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	0.0003288	0.0003288		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	J
Molybdenum	A	mg/L	0.001166	0.001166		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	
Nickel	A	mg/L	0.001367	0.001367		0	0	0	0.0001769	0.001	1	0%	0	0	0%	
Selenium	A	mg/L	0.00002507	0		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	U
Silver	A	mg/L	6.697E-06	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.07383	0.07383		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00002463	0		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	U
Thorium	A	mg/L	0.00000632	0		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.002281	0.002281		0	0	0	0.0001004	0.001	1	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053908	B22021435-017	ICPMS-6020-W-	SAMP		2/24/2022 6:46:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Uranium	A	mg/L	0.00001658	0		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	U
Iron	B	mg/L	0.3869	0.3869		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.3869	0.3869		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	11.39	11.39		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	2.134	2.134		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	D
Sodium	B	mg/L	41.79	41.79		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	D
Tin	B	mg/L	-0.001072	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	U
Vanadium	B	mg/L	-0.0004716	0		0	0	0	0.0018612	0.0013	1	0%	0	0	0%	U
Zinc	B	mg/L	0.001597	0.001597		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	JL

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053909	B22021435-017	ICPMS-6020-W-	SAMP		2/24/2022 6:53:0	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.0007168	0.0007168		0	0	0	0.0003412	0.001	1	0%	0	0	0%	J
Barium	A	mg/L	0.00504	0.00504		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	9.499E-06	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	0.00008776	0.00008776		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	J
Cobalt	A	mg/L	0.0004149	0.0004149		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	0.00002087	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.0003524	0.0003524		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.4854	0.4854		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.001812	0.001812		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	
Selenium	A	mg/L	0.00006218	0		0	0	0	0.0001357	0.001	1	0%	0	0	0%	U
Silver	A	mg/L	0.00006205	0.00006205		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	J
Strontium	A	mg/L	0.08133	0.08133		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00001698	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.003938	0.003938		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00002416	0.00002416		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.02057	0.02057		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	D
Chromium	B	mg/L	0.000253	0		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	LU
Copper	B	mg/L	0.001522	0.001522		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	JL
Iron	B	mg/L	0.4245	0.4245		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	12.28	12.28		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.001422	0.001422		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053909	B22021435-017	ICPMS-6020-W-	SAMP		2/24/2022 6:53:0	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Potassium	B	mg/L	2.127	2.127		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Sodium	B	mg/L	43.36	43.36		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	D
Thorium	B	mg/L	0.00007031	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	-0.000764	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Zinc	B	mg/L	0.002726	0.002726		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	JL

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053910	B22021435-022	ICPMS-6020-W-	SAMP		2/24/2022 6:59:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001169	0		0	0	0	0.0017836	0.001	1	0%	0	0	0%	U
Arsenic	A	mg/L	-0.0001237	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.008067	0.008067		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	8.376E-06	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	U
Cerium	A	mg/L	3.441E-07	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	U
Chromium	A	mg/L	0.001872	0.001872		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00003197	0.00003197		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.0003733	0.0003733		0	0	0	0.0001748	0.001	1	0%	0	0	0%	J
Lead	A	mg/L	8.698E-06	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.001213	0.001213		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	4.844E-06	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	U
Molybdenum	A	mg/L	0.0002996	0.0002996		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	J
Nickel	A	mg/L	0.0002144	0.0002144		0	0	0	0.0001769	0.001	1	0%	0	0	0%	J
Selenium	A	mg/L	0.0003918	0.0003918		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	-6.495E-07	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.1528	0.1528		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0000138	0		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	U
Thorium	A	mg/L	2.648E-06	0		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.001486	0.001486		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00002881	0.00002881		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	J
Iron	B	mg/L	0.001915	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	U
Iron, Ferrous	B	mg/L	0.001915	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	U
Magnesium	B	mg/L	21.59	21.59		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	2.752	2.752		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	D
Tin	B	mg/L	-0.001073	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	U

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053910	B22021435-022	ICPMS-6020-W-	SAMP		2/24/2022 6:59:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Zinc	B	mg/L	0.0008808	0		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	LU
Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053911	B22021435-022	ICPMS-6020-W-	SAMP		2/24/2022 7:05:3	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.0002216	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.008247	0.008247		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00001433	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	5.667E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	U
Cobalt	A	mg/L	0.00006946	0		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	U
Lanthanum	A	mg/L	5.293E-06	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.00004225	0		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.001417	0.001417		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.0003491	0.0003491		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	J
Selenium	A	mg/L	0.0003165	0.0003165		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	-4.513E-07	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.1594	0.1594		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	7.699E-06	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.001941	0.001941		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00002806	0.00002806		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.005419	0.005419		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	DU
Chromium	B	mg/L	0.002138	0.002138		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	DU
Copper	B	mg/L	0.0004886	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	LU
Iron	B	mg/L	0.01229	0.01229		0	0	0	0.007424	0.00513	5	0%	0	0	0%	DU
Magnesium	B	mg/L	21.67	21.67		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.0002439	0.0002439		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	2.737	2.737		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Thorium	B	mg/L	0.00005174	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	-0.0008279	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Zinc	B	mg/L	0.003892	0.003892		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	JL

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053912	B22021435-027	ICPMS-6020-W-	SAMP		2/24/2022 7:11:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.001127	0		0	0	0	0.0017836	0.001	1	0%	0	0	0%	U
Arsenic	A	mg/L	-0.0001199	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.007429	0.007429		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	7.588E-06	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	U
Cerium	A	mg/L	7.523E-07	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	U
Chromium	A	mg/L	0.001851	0.001851		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.0000307	0.0000307		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.0001257	0		0	0	0	0.0001748	0.001	1	0%	0	0	0%	U
Lead	A	mg/L	9.681E-06	0		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.0006348	0.0006348		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	J
Mercury	A	mg/L	2.36E-07	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	U
Molybdenum	A	mg/L	0.0002807	0.0002807		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	J
Nickel	A	mg/L	0.0001299	0		0	0	0	0.0001769	0.001	1	0%	0	0	0%	U
Selenium	A	mg/L	0.0003007	0.0003007		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	-5.54E-07	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.151	0.151		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	7.165E-06	0		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	U
Thorium	A	mg/L	8.229E-07	0		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.001472	0.001472		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00002767	0.00002767		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	J
Iron	B	mg/L	0.001006	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	U
Iron, Ferrous	B	mg/L	0.001006	0		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	U
Magnesium	B	mg/L	20.85	20.85		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	2.788	2.788		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	D
Sodium	B	mg/L	49.08	49.08		0	0	0	0.0451914	0.02171	50	0%	0	0	0%	D
Tin	B	mg/L	-0.001093	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	U
Zinc	B	mg/L	0.0002877	0		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	LU

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053913	CCV	ICPMS-6020-W-	CCV		2/24/2022 7:18:0	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04774	0.04774		0.05	0	0	0.0017836	0.001	1	95%	90	110	0%	
Antimony	A	mg/L	0.05046	0.05046		0.05	0	0	6.768E-05	0.001	0.1	101%	90	110	0%	
Arsenic	A	mg/L	0.0496	0.0496		0.05	0	0	8.203E-05	0.001	1	99%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053913	CCV	ICPMS-6020-W-	CCV		2/24/2022 7:18:0	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Barium	A	mg/L	0.04977	0.04977		0.05	0	0	6.762E-05	0.001	1	100%	90	110	0%	
Beryllium	A	mg/L	0.04144	0.04144		0.05	0	0	8.516E-05	0.001	1	83%	90	110	0%	S
Boron	A	mg/L	0.04136	0.04136		0.05	0	0	0.0039526	0.00561	1	83%	90	110	0%	S
Cadmium	A	mg/L	0.05132	0.05132		0.05	0	0	2.308E-05	0.001	1	103%	90	110	0%	
Calcium	A	mg/L	10.74	10.74		12.5	0	0	0.2027235	0.02092	50	86%	90	110	0%	S
Cerium	A	mg/L	0.05063	0.05063		0.05	0	0	0.0000222	0.001	0.1	101%	90	110	0%	
Chromium	A	mg/L	0.04859	0.04859		0.05	0	0	0.0002538	0.001	1	97%	90	110	0%	
Cobalt	A	mg/L	0.04904	0.04904		0.05	0	0	2.141E-05	0.001	1	98%	90	110	0%	
Copper	A	mg/L	0.05043	0.05043		0.05	0	0	0.0001748	0.001	1	101%	90	110	0%	
Iron	A	mg/L	1.23	1.23		1.3	0	0	0.0021157	0.00119	5	95%	90	110	0%	
Lanthanum	A	mg/L	0.05031	0.05031		0.05	0	0	6.805E-05	0.001	0.1	101%	90	110	0%	
Lead	A	mg/L	0.0502	0.0502		0.05	0	0	3.031E-05	0.001	1	100%	90	110	0%	
Magnesium	A	mg/L	12.48	12.48		12.5	0	0	0.0203306	0.00564	50	100%	90	110	0%	
Manganese	A	mg/L	0.04771	0.04771		0.05	0	0	7.309E-05	0.001	1	95%	90	110	0%	
Mercury	A	mg/L	0.0009838	0.0009838		0.001	0	0	3.043E-05	0.001	0.002	98%	90	110	0%	
Molybdenum	A	mg/L	0.0477	0.0477		0.05	0	0	8.113E-05	0.001	0.1	95%	90	110	0%	
Nickel	A	mg/L	0.05084	0.05084		0.05	0	0	0.0001769	0.001	1	102%	90	110	0%	
Potassium	A	mg/L	11.7	11.7		12.5	0	0	0.0215433	0.08139	50	94%	90	110	0%	
Selenium	A	mg/L	0.05258	0.05258		0.05	0	0	7.174E-05	0.001	1	105%	90	110	0%	
Silicon	A	mg/L	0.1905	0.1905		0.2	0	0	0.0033337	0.1	0.4	95%	90	110	0%	
Silver	A	mg/L	0.01961	0.01961		0.02	0	0	2.644E-05	0.001	0.04	98%	90	110	0%	
Sodium	A	mg/L	12.48	12.48		12.5	0	0	0.0451914	0.02171	50	100%	90	110	0%	
Strontium	A	mg/L	0.04796	0.04796		0.05	0	0	9.743E-05	0.001	1	96%	90	110	0%	
Thallium	A	mg/L	0.05042	0.05042		0.05	0	0	4.842E-05	0.001	1	101%	90	110	0%	
Thorium	A	mg/L	0.04768	0.04768		0.05	0	0	3.018E-05	0.001	1	95%	90	110	0%	
Tin	A	mg/L	0.04899	0.04899		0.05	0	0	0.0009928	0.00132	0.1	98%	90	110	0%	
Titanium	A	mg/L	0.04712	0.04712		0.05	0	0	0.0001004	0.001	1	94%	90	110	0%	
Uranium	A	mg/L	0.05047	0.05047		0.05	0	0	2.468E-05	0.0003	1	101%	90	110	0%	
Vanadium	A	mg/L	0.0506	0.0506		0.05	0	0	0.0018612	0.0013	1	101%	90	110	0%	
Zinc	A	mg/L	0.05119	0.05119		0.05	0	0	0.0010089	0.00273	1	102%	90	110	0%	
Iron, Ferrous	C	mg/L	1.23	1.23		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053914	CCB	ICPMS-6020-W-	CCB		2/24/2022 7:24:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	-2.978E-05	-2.978E-05		0	0	0	0.0017836	0.001	1	0%				0%
Antimony	A	mg/L	0.0001438	0.0001438		0	0	0	6.768E-05	0.001	0.1	0%				0%
Arsenic	A	mg/L	0.00003406	0.00003406		0	0	0	8.203E-05	0.001	1	0%				0%
Barium	A	mg/L	-2.719E-06	-2.719E-06		0	0	0	6.762E-05	0.001	1	0%				0%
Beryllium	A	mg/L	-0.0000277	-0.0000277		0	0	0	8.516E-05	0.001	1	0%				0%
Boron	A	mg/L	-0.003573	-0.003573		0	0	0	0.0039526	0.00561	1	0%				0%
Cadmium	A	mg/L	4.515E-06	4.515E-06		0	0	0	2.308E-05	0.001	1	0%				0%
Calcium	A	mg/L	-0.0002947	-0.0002947		0	0	0	0.2027235	0.02092	50	0%				0%
Cerium	A	mg/L	5.166E-07	5.166E-07		0	0	0	0.0000222	0.001	0.1	0%	0	0		0%
Chromium	A	mg/L	9.914E-06	9.914E-06		0	0	0	0.0002538	0.001	1	0%				0%
Cobalt	A	mg/L	-2.466E-07	-2.466E-07		0	0	0	2.141E-05	0.001	1	0%				0%
Copper	A	mg/L	0.00003405	0.00003405		0	0	0	0.0001748	0.001	1	0%				0%
Iron	A	mg/L	0.0001392	0.0001392		0	0	0	0.0021157	0.00119	5	0%				0%
Lanthanum	A	mg/L	1.167E-06	1.167E-06		0	0	0	6.805E-05	0.001	0.1	0%	0	0		0%
Lead	A	mg/L	-1.081E-06	-1.081E-06		0	0	0	3.031E-05	0.001	1	0%				0%
Magnesium	A	mg/L	0.0003821	0.0003821		0	0	0	0.0203306	0.00564	50	0%				0%
Manganese	A	mg/L	0.00001017	0.00001017		0	0	0	7.309E-05	0.001	1	0%				0%
Mercury	A	mg/L	3.428E-06	3.428E-06		0	0	0	3.043E-05	0.001	0.002	0%				0%
Molybdenum	A	mg/L	0.00002641	0.00002641		0	0	0	8.113E-05	0.001	0.1	0%				0%
Nickel	A	mg/L	-2.941E-05	-2.941E-05		0	0	0	0.0001769	0.001	1	0%				0%
Potassium	A	mg/L	0.009116	0.009116		0	0	0	0.0215433	0.08139	50	0%				0%
Selenium	A	mg/L	-5.512E-07	-5.512E-07		0	0	0	7.174E-05	0.001	1	0%				0%
Silicon	A	mg/L	0.008115	0.008115		0	0	0	0.0033337	0.1	0.4	0%	0	0		0%
Silver	A	mg/L	-5.757E-07	-5.757E-07		0	0	0	2.644E-05	0.001	0.04	0%				0%
Sodium	A	mg/L	0.01842	0.01842		0	0	0	0.0451914	0.02171	50	0%				0%
Strontium	A	mg/L	-4.967E-06	-4.967E-06		0	0	0	9.743E-05	0.001	1	0%	0	0		0%
Thallium	A	mg/L	0.0001613	0.0001613		0	0	0	4.842E-05	0.001	1	0%	0	0		0%
Thorium	A	mg/L	0.00005547	0.00005547		0	0	0	3.018E-05	0.001	1	0%	0	0		0%
Tin	A	mg/L	0.0001021	0.0001021		0	0	0	0.0009928	0.00132	0.1	0%	0	0		0%
Titanium	A	mg/L	0.00002427	0.00002427		0	0	0	0.0001004	0.001	1	0%	0	0		0%
Uranium	A	mg/L	3.517E-06	3.517E-06		0	0	0	2.468E-05	0.0003	1	0%	0	0		0%
Vanadium	A	mg/L	0.004122	0.004122		0	0	0	0.0018612	0.0013	1	0%	0	0		0%
Zinc	A	mg/L	-1.566E-05	-1.566E-05		0	0	0	0.0010089	0.00273	1	0%	0	0		0%
Iron, Ferrous	C	mg/L	0.0001392	0.0001392		0	0	0	0.0021157	0.00119	5	0%	0	0		0%

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053915	B22021435-027	ICPMS-6020-W-	SAMP		2/24/2022 7:30:3	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.0002249	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.007342	0.007342		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00001172	0		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	U
Cerium	A	mg/L	2.048E-06	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	U
Cobalt	A	mg/L	0.00006242	0		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	U
Lanthanum	A	mg/L	1.349E-06	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.00001743	0		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	U
Manganese	A	mg/L	0.0008532	0.0008532		0	0	0	0.0005399	0.001	1	0%	0	0	0%	J
Molybdenum	A	mg/L	0.0003713	0.0003713		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	J
Selenium	A	mg/L	0.0003074	0.0003074		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	-3.796E-07	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.1558	0.1558		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00007605	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.001889	0.001889		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00003073	0.00003073		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.00226	0		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	LU
Chromium	B	mg/L	0.002238	0.002238		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	DU
Copper	B	mg/L	0.0004148	0		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	LU
Iron	B	mg/L	0.002062	0		0	0	0	0.007424	0.00513	5	0%	0	0	0%	LU
Magnesium	B	mg/L	21.01	21.01		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Nickel	B	mg/L	0.000297	0.000297		0	0	0	0.0002288	0.0024200	1	0%	0	0	0%	JL
Potassium	B	mg/L	2.717	2.717		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Sodium	B	mg/L	49.54	49.54		0	0	0	0.1019461	0.7330269	50	0%	0	0	0%	D
Thorium	B	mg/L	0.000142	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	-0.0007836	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Zinc	B	mg/L	0.0003139	0		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	LU

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053916	B22021435-032	ICPMS-6020-W-	SAMP		2/24/2022 7:36:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.004871	0.004871		0	0	0	0.0017836	0.001	1	0%	0	0	0%	U
Arsenic	A	mg/L	-3.273E-05	0		0	0	0	8.203E-05	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.02096	0.02096		0	0	0	6.762E-05	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00001973	0		0	0	0	2.308E-05	0.001	1	0%	0	0	0%	U



Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053916	B22021435-032	ICPMS-6020-W-	SAMP		2/24/2022 7:36:5	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Cerium	A	mg/L	3.969E-06	0		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	U
Chromium	A	mg/L	0.001605	0.001605		0	0	0	0.0002538	0.001	1	0%	0	0	0%	
Cobalt	A	mg/L	0.00009329	0.00009329		0	0	0	2.141E-05	0.001	1	0%	0	0	0%	J
Copper	A	mg/L	0.000735	0.000735		0	0	0	0.0001748	0.001	1	0%	0	0	0%	J
Lead	A	mg/L	0.00006166	0.00006166		0	0	0	3.031E-05	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.01968	0.01968		0	0	0	7.309E-05	0.001	1	0%	0	0	0%	
Mercury	A	mg/L	4.243E-06	0		0	0	0	3.043E-05	0.001	0.002	0%	0	0	0%	U
Molybdenum	A	mg/L	0.0003204	0.0003204		0	0	0	8.113E-05	0.001	0.1	0%	0	0	0%	J
Selenium	A	mg/L	0.0004316	0.0004316		0	0	0	7.174E-05	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	-2.191E-07	0		0	0	0	2.644E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.1863	0.1863		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00004576	0		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	U
Thorium	A	mg/L	8.752E-06	0		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.001579	0.001579		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00002625	0.00002625		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	J
Iron	B	mg/L	0.007911	0.007911		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Iron, Ferrous	B	mg/L	0.007911	0.007911		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	
Magnesium	B	mg/L	24.12	24.12		0	0	0	0.0203306	0.00564	50	0%	0	0	0%	D
Potassium	B	mg/L	2.845	2.845		0	0	0	0.0215433	0.08139	50	0%	0	0	0%	D
Tin	B	mg/L	-0.001082	0		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	U
Zinc	B	mg/L	0.004233	0.004233		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	D

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053917	B22021435-032	ICPMS-6020-W-	SAMP		2/24/2022 7:43:0	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Arsenic	A	mg/L	0.0003178	0		0	0	0	0.0003412	0.001	1	0%	0	0	0%	U
Barium	A	mg/L	0.02175	0.02175		0	0	0	0.0002682	0.001	1	0%	0	0	0%	
Cadmium	A	mg/L	0.00002744	0.00002744		0	0	0	1.821E-05	0.005	1	0%	0	0	0%	J
Cerium	A	mg/L	0.0000188	0		0	0	0	2.738E-05	0.001	0.1	0%	0	0	0%	U
Cobalt	A	mg/L	0.0001406	0.0001406		0	0	0	9.541E-05	0.001	1	0%	0	0	0%	J
Lanthanum	A	mg/L	9.464E-06	0		0	0	0	0.000055	0.001	0.1	0%	0	0	0%	U
Lead	A	mg/L	0.000365	0.000365		0	0	0	7.716E-05	0.001	1	0%	0	0	0%	J
Manganese	A	mg/L	0.02096	0.02096		0	0	0	0.0005399	0.001	1	0%	0	0	0%	
Molybdenum	A	mg/L	0.0004568	0.0004568		0	0	0	0.0001763	0.001	0.1	0%	0	0	0%	J

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053917	B22021435-032	ICPMS-6020-W-	SAMP		2/24/2022 7:43:0	1	163954	2/23/2022 9:	0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Selenium	A	mg/L	0.0004044	0.0004044		0	0	0	0.0001357	0.001	1	0%	0	0	0%	J
Silver	A	mg/L	1.622E-06	0		0	0	0	4.281E-05	0.001	0.04	0%	0	0	0%	U
Strontium	A	mg/L	0.1891	0.1891		0	0	0	0.0002433	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.00002157	0		0	0	0	0.0001114	0.001	1	0%	0	0	0%	U
Titanium	A	mg/L	0.002284	0.002284		0	0	0	0.0005733	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	0.00002796	0.00002796		0	0	0	1.699E-05	0.0003	1	0%	0	0	0%	J
Aluminum	B	mg/L	0.01215	0.01215		0	0	0	0.0038747	0.0031975	1	0%	0	0	0%	D
Chromium	B	mg/L	0.001837	0.001837		0	0	0	0.0015375	0.0015375	1	0%	0	0	0%	DU
Copper	B	mg/L	0.001405	0.001405		0	0	0	0.0008747	0.00198	1	0%	0	0	0%	JL
Iron	B	mg/L	0.03683	0.03683		0	0	0	0.007424	0.00513	5	0%	0	0	0%	D
Magnesium	B	mg/L	24.05	24.05		0	0	0	0.0104254	0.0081522	50	0%	0	0	0%	D
Potassium	B	mg/L	2.779	2.779		0	0	0	0.0765619	0.0261205	50	0%	0	0	0%	D
Thorium	B	mg/L	0.00006899	0		0	0	0	0.0003796	0.00415	1	0%	0	0	0%	LU
Tin	B	mg/L	-0.0008191	0		0	0	0	0.0018932	0.0011175	0.1	0%	0	0	0%	U
Zinc	B	mg/L	0.007992	0.007992		0	0	0	0.0011617	0.0065544	1	0%	0	0	0%	D

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053918	CCV	ICPMS-6020-W-	CCV		2/24/2022 7:49:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	0.04629	0.04629		0.05	0	0	0.0017836	0.001	1	93%	90	110	0%	
Antimony	A	mg/L	0.05008	0.05008		0.05	0	0	6.768E-05	0.001	0.1	100%	90	110	0%	
Arsenic	A	mg/L	0.05005	0.05005		0.05	0	0	8.203E-05	0.001	1	100%	90	110	0%	
Barium	A	mg/L	0.05004	0.05004		0.05	0	0	6.762E-05	0.001	1	100%	90	110	0%	
Beryllium	A	mg/L	0.04027	0.04027		0.05	0	0	8.516E-05	0.001	1	81%	90	110	0%	S
Boron	A	mg/L	0.03989	0.03989		0.05	0	0	0.0039526	0.00561	1	80%	90	110	0%	S
Cadmium	A	mg/L	0.05063	0.05063		0.05	0	0	2.308E-05	0.001	1	101%	90	110	0%	
Calcium	A	mg/L	10.8	10.8		12.5	0	0	0.2027235	0.02092	50	86%	90	110	0%	S
Cerium	A	mg/L	0.05093	0.05093		0.05	0	0	0.0000222	0.001	0.1	102%	90	110	0%	
Chromium	A	mg/L	0.04821	0.04821		0.05	0	0	0.0002538	0.001	1	96%	90	110	0%	
Cobalt	A	mg/L	0.04844	0.04844		0.05	0	0	2.141E-05	0.001	1	97%	90	110	0%	
Copper	A	mg/L	0.05063	0.05063		0.05	0	0	0.0001748	0.001	1	101%	90	110	0%	
Iron	A	mg/L	1.215	1.215		1.3	0	0	0.0021157	0.00119	5	93%	90	110	0%	
Lanthanum	A	mg/L	0.05073	0.05073		0.05	0	0	6.805E-05	0.001	0.1	101%	90	110	0%	
Lead	A	mg/L	0.05019	0.05019		0.05	0	0	3.031E-05	0.001	1	100%	90	110	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053918	CCV	ICPMS-6020-W- CCV			2/24/2022 7:49:2	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Magnesium	A	mg/L	12.37	12.37		12.5	0	0	0.0203306	0.00564	50	99%	90	110	0%	
Manganese	A	mg/L	0.04777	0.04777		0.05	0	0	7.309E-05	0.001	1	96%	90	110	0%	
Mercury	A	mg/L	0.000987	0.000987		0.001	0	0	3.043E-05	0.001	0.002	99%	90	110	0%	
Molybdenum	A	mg/L	0.04714	0.04714		0.05	0	0	8.113E-05	0.001	0.1	94%	90	110	0%	
Nickel	A	mg/L	0.05096	0.05096		0.05	0	0	0.0001769	0.001	1	102%	90	110	0%	
Potassium	A	mg/L	11.63	11.63		12.5	0	0	0.0215433	0.08139	50	93%	90	110	0%	
Selenium	A	mg/L	0.05274	0.05274		0.05	0	0	7.174E-05	0.001	1	105%	90	110	0%	
Silicon	A	mg/L	0.1915	0.1915		0.2	0	0	0.0033337	0.1	0.4	96%	90	110	0%	
Silver	A	mg/L	0.01945	0.01945		0.02	0	0	2.644E-05	0.001	0.04	97%	90	110	0%	
Sodium	A	mg/L	12.45	12.45		12.5	0	0	0.0451914	0.02171	50	100%	90	110	0%	
Strontium	A	mg/L	0.04883	0.04883		0.05	0	0	9.743E-05	0.001	1	98%	90	110	0%	
Thallium	A	mg/L	0.04993	0.04993		0.05	0	0	4.842E-05	0.001	1	100%	90	110	0%	
Thorium	A	mg/L	0.04848	0.04848		0.05	0	0	3.018E-05	0.001	1	97%	90	110	0%	
Tin	A	mg/L	0.04935	0.04935		0.05	0	0	0.0009928	0.00132	0.1	99%	90	110	0%	
Titanium	A	mg/L	0.04589	0.04589		0.05	0	0	0.0001004	0.001	1	92%	90	110	0%	
Uranium	A	mg/L	0.05026	0.05026		0.05	0	0	2.468E-05	0.0003	1	101%	90	110	0%	
Vanadium	A	mg/L	0.05049	0.05049		0.05	0	0	0.0018612	0.0013	1	101%	90	110	0%	
Zinc	A	mg/L	0.05195	0.05195		0.05	0	0	0.0010089	0.00273	1	104%	90	110	0%	
Iron, Ferrous	C	mg/L	1.215	1.215		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053919	CCB	ICPMS-6020-W- CCB			2/24/2022 7:55:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Aluminum	A	mg/L	-3.406E-05	-3.406E-05		0	0	0	0.0017836	0.001	1	0%			0%	
Antimony	A	mg/L	0.0001446	0.0001446		0	0	0	6.768E-05	0.001	0.1	0%			0%	
Arsenic	A	mg/L	0.00002228	0.00002228		0	0	0	8.203E-05	0.001	1	0%			0%	
Barium	A	mg/L	4.78E-08	4.78E-08		0	0	0	6.762E-05	0.001	1	0%			0%	
Beryllium	A	mg/L	-3.063E-05	-3.063E-05		0	0	0	8.516E-05	0.001	1	0%			0%	
Boron	A	mg/L	-0.003663	-0.003663		0	0	0	0.0039526	0.00561	1	0%			0%	
Cadmium	A	mg/L	4.156E-06	4.156E-06		0	0	0	2.308E-05	0.001	1	0%			0%	
Calcium	A	mg/L	-0.0001768	-0.0001768		0	0	0	0.2027235	0.02092	50	0%			0%	
Cerium	A	mg/L	5.32E-07	5.32E-07		0	0	0	0.0000222	0.001	0.1	0%	0	0	0%	
Chromium	A	mg/L	5.502E-06	5.502E-06		0	0	0	0.0002538	0.001	1	0%			0%	
Cobalt	A	mg/L	-6.812E-07	-6.812E-07		0	0	0	2.141E-05	0.001	1	0%			0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist					
15053919	CCB	ICPMS-6020-W-	CCB		2/24/2022 7:55:3	1	R375174		0	0						
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Copper	A	mg/L	0.00003322	0.00003322		0	0	0	0.0001748	0.001	1	0%			0%	
Iron	A	mg/L	0.0008335	0.0008335		0	0	0	0.0021157	0.00119	5	0%			0%	
Lanthanum	A	mg/L	5.094E-07	5.094E-07		0	0	0	6.805E-05	0.001	0.1	0%	0	0	0%	
Lead	A	mg/L	-1.747E-07	-1.747E-07		0	0	0	3.031E-05	0.001	1	0%			0%	
Magnesium	A	mg/L	0.0004081	0.0004081		0	0	0	0.0203306	0.00564	50	0%			0%	
Manganese	A	mg/L	8.491E-06	8.491E-06		0	0	0	7.309E-05	0.001	1	0%			0%	
Mercury	A	mg/L	2.654E-06	2.654E-06		0	0	0	3.043E-05	0.001	0.002	0%			0%	
Molybdenum	A	mg/L	0.00003047	0.00003047		0	0	0	8.113E-05	0.001	0.1	0%			0%	
Nickel	A	mg/L	0.001556	0.001556		0	0	0	0.0001769	0.001	1	0%			0%	
Potassium	A	mg/L	0.003138	0.003138		0	0	0	0.0215433	0.08139	50	0%			0%	
Selenium	A	mg/L	1.253E-06	1.253E-06		0	0	0	7.174E-05	0.001	1	0%			0%	
Silicon	A	mg/L	0.006823	0.006823		0	0	0	0.0033337	0.1	0.4	0%	0	0	0%	
Silver	A	mg/L	-6.668E-07	-6.668E-07		0	0	0	2.644E-05	0.001	0.04	0%			0%	
Sodium	A	mg/L	0.01532	0.01532		0	0	0	0.0451914	0.02171	50	0%			0%	
Strontium	A	mg/L	-7.553E-07	-7.553E-07		0	0	0	9.743E-05	0.001	1	0%	0	0	0%	
Thallium	A	mg/L	0.0002533	0.0002533		0	0	0	4.842E-05	0.001	1	0%	0	0	0%	
Thorium	A	mg/L	0.00005466	0.00005466		0	0	0	3.018E-05	0.001	1	0%	0	0	0%	
Tin	A	mg/L	0.00009848	0.00009848		0	0	0	0.0009928	0.00132	0.1	0%	0	0	0%	
Titanium	A	mg/L	-9.386E-06	-9.386E-06		0	0	0	0.0001004	0.001	1	0%	0	0	0%	
Uranium	A	mg/L	3.639E-06	3.639E-06		0	0	0	2.468E-05	0.0003	1	0%	0	0	0%	
Vanadium	A	mg/L	0.00347	0.00347		0	0	0	0.0018612	0.0013	1	0%	0	0	0%	
Zinc	A	mg/L	-7.795E-05	-7.795E-05		0	0	0	0.0010089	0.00273	1	0%	0	0	0%	
Iron, Ferrous	C	mg/L	0.0008335	0.0008335		0	0	0	0.0021157	0.00119	5	0%	0	0	0%	

## Batch Summary Report

Batch Folder: D:\Agilent\ICPMH\1\DATA\220224ADoD.b\  
 Analysis File: 220224ADoD.batch.bin  
 Tune Step: #1 No Gas  
               #2 H2  
               #3 He

	Rjct	Acq. Date-Time	Data File	Sample Name	Type	Level	Dilution
1		2022-02-24 13:23:51	001BLKV.d	Rinse	BlkVrfy		1.0000
2		2022-02-24 13:30:04	002BLKV.d	Rinse	BlkVrfy		1.0000
3		2022-02-24 13:36:17	003BLKV.d	Rinse	BlkVrfy		1.0000
4		2022-02-24 13:42:30	004BLKV.d	Rinse	BlkVrfy		1.0000
5		2022-02-24 13:48:43	005BLKV.d	Rinse	BlkVrfy		1.0000
6		2022-02-24 13:54:56	006BLKV.d	Rinse	BlkVrfy		1.0000
7		2022-02-24 14:01:09	007BLKV.d	Rinse	BlkVrfy		1.0000
8		2022-02-24 14:07:24	008CALB.d	Cal Blk	CalBlk	1	1.0000
9		2022-02-24 14:15:00	009CAL.S.d	0.025 ppb STD	CalStd	2	1.0000
10		2022-02-24 14:21:38	010CAL.S.d	0.05 ppb STD	CalStd	3	1.0000
11		2022-02-24 14:28:17	011CAL.S.d	0.10 ppb STD	CalStd	4	1.0000
12		2022-02-24 14:34:55	012CAL.S.d	0.5 ppb STD	CalStd	5	1.0000
13		2022-02-24 14:41:34	013CAL.S.d	1 ppb STD	CalStd	6	1.0000
14		2022-02-24 14:48:12	014CAL.S.d	10 ppb STD	CalStd	7	1.0000
15		2022-02-24 14:54:50	015CAL.S.d	50 ppb STD	CalStd	8	1.0000
16		2022-02-24 15:01:24	016CAL.S.d	100 ppb STD	CalStd	9	1.0000
17		2022-02-24 15:07:53	017CAL.S.d	1000 ppb STD	CalStd	10	1.0000
18		2022-02-24 15:14:19	018CAL.S.d	100 ppb Br STD	CalStd	11	1.0000
19		2022-02-24 15:20:40	019BLKV.d	Rinse	BlkVrfy		1.0000
20		2022-02-24 15:26:54	020_QC1.d	QCS	QC1		1.0000
21		2022-02-24 15:33:09	021_CC.V.d	CCV	CCV		1.0000
22		2022-02-24 15:39:24	022_CCB.d	CCB	CCB		1.0000
23		2022-02-24 15:45:39	023BLKV.d	Rinse	BlkVrfy		1.0000
24		2022-02-24 15:51:53	024MBLK.d	LRB	MBLK		1.0000
25		2022-02-24 15:58:08	025_LFB.d	LFB	LFB		1.0300

## Batch Summary Report

	Rjct	Acq. Date-Time	Data File	Sample Name	Type	Level	Dilution
26		2022-02-24 16:04:23	026ICSA.d	ICSA	ICSA		1.0000
27		2022-02-24 16:10:41	027ICSB.d	ICSAB	ICSAB		1.0000
28		2022-02-24 16:16:58	028BLKV.d	Rinse	BlkVrfy		1.0000
29		2022-02-24 16:23:12	029BLKV.d	Rinse	BlkVrfy		1.0000
30		2022-02-24 16:29:25	030_CCV.d	CCV	CCV		1.0000
31		2022-02-24 16:35:40	031_CCB.d	CCB	CCB		1.0000
32		2022-02-24 16:41:55	032ARef.d	MB-163954	AllRef		1.0000
33		2022-02-24 16:48:10	033LCS4.d	LCS4-163954	LCS4		1.0000
34		2022-02-24 16:54:24	034BLKV.d	Rinse	BlkVrfy		1.0000
35		2022-02-24 17:00:37	035SMPL.d	B22021435-001A	Sample		1.0000
36		2022-02-24 17:06:53	036ARef.d	B22021435-001ADIL	AllRef		5.0000
37		2022-02-24 17:13:08	037MS.d	B22021435-001AMS	MS		1.0300
38		2022-02-24 17:19:23	038MSD.d	B22021435-001AMSD	MSD		1.0300
39		2022-02-24 17:25:38	039BLKV.d	Rinse	BlkVrfy		1.0000
40		2022-02-24 17:31:52	040SMPL.d	B22021435-001B	Sample		1.0000
41		2022-02-24 17:38:07	041SMPL.d	B22021435-001BDIL	Sample		5.0000
42		2022-02-24 17:44:22	042ARef.d	B22021435-001BPDS1	AllRef		1.0300
43		2022-02-24 17:50:37	043MS4.d	B22021435-001BMS4	MS4		1.0000
44		2022-02-24 17:56:53	044_CCV.d	CCV	CCV		1.0000
45		2022-02-24 18:03:08	045_CCB.d	CCB	CCB		1.0000
46		2022-02-24 18:09:22	046MSD4.d	B22021435-001BMSD4	MSD4		1.0000
47		2022-02-24 18:15:37	047BLKV.d	Rinse	BlkVrfy		1.0000
48		2022-02-24 18:21:51	048SMPL.d	B22021435-006A	Sample		1.0000
49		2022-02-24 18:28:07	049SMPL.d	B22021435-006B	Sample		1.0000
50		2022-02-24 18:34:22	050SMPL.d	B22021435-012A	Sample		1.0000
51		2022-02-24 18:40:36	051SMPL.d	B22021435-012B	Sample		1.0000
52		2022-02-24 18:46:50	052SMPL.d	B22021435-017A	Sample		1.0000
53		2022-02-24 18:53:04	053SMPL.d	B22021435-017B	Sample		1.0000
54		2022-02-24 18:59:20	054SMPL.d	B22021435-022A	Sample		1.0000
55		2022-02-24 19:05:35	055SMPL.d	B22021435-022B	Sample		1.0000
56		2022-02-24 19:11:50	056SMPL.d	B22021435-027A	Sample		1.0000
57		2022-02-24 19:18:05	057_CCV.d	CCV	CCV		1.0000

## Batch Summary Report

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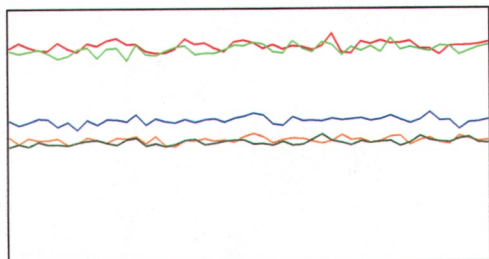
	Rjct	Acq. Date-Time	Data File	Sample Name	Type	Level	Dilution
58		2022-02-24 19:24:22	058 CCB.d	CCB	CCB		1.0000
59		2022-02-24 19:30:38	059SMPL.d	B22021435-027B	Sample		1.0000
60		2022-02-24 19:36:53	060SMPL.d	B22021435-032A	Sample		1.0000
61		2022-02-24 19:43:09	061SMPL.d	B22021435-032B	Sample		1.0000
62		2022-02-24 19:49:23	062 CCV.d	CCV	CCV		1.0000
63		2022-02-24 19:55:38	063 CCB.d	CCB	CCB		1.0000

# Tune Report

Operator Name elim  
 Acq/Data Batch D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
 Acq. Date-Time 2022-02-24 10:56:28  
 Report Comment ICPMS207-B JPV  
 Instrument Name G8403A JP17281923

[No Gas]

## Sensitivity



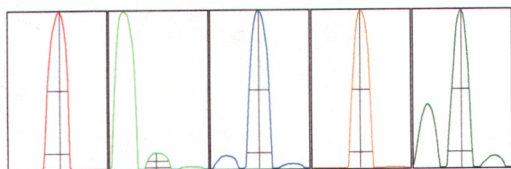
Mass	Range	Count	RSD%	Background
9	500000	429821	2.065	1.100
24	100000	84495	2.181	1.700
59	200000	112579	2.475	0.700
115	200000	97107	2.439	1.100
208	100000	47586	2.279	2.900

Sampling Period [sec] 0.514  
 Integration Time [sec] 0.1

## Oxide/Doubly Charged Ratio

Oxide 156 / 140 0.871 %  
 Doubly Charged 70 / 140 1.066 %

## Resolution/Axis



Mass	Peak Height	Axis	W-50%	W-10%
9	445279.59	9.10	0.62	0.759
24	85377.33	23.95	0.65	0.773
59	112022.68	59.00	0.60	0.760
115	97675.87	115.00	0.54	0.709
208	47627.62	208.00	0.53	0.746

Integration Time [sec] 0.1  
 Acquisition Time [sec] 37.4  
 Y Axis Linear

## Tune Parameters

### Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.91 L/min	Dilution Gas	0.18 L/min
RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.00 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

### Lens Parameters

Extract 1	0.0 V	Omega Lens	10.3 V	Deflect	14.4 V
Extract 2	-190.0 V	Cell Entrance	-30 V	Plate Bias	-35 V



# Tune Report

Omega Bias -65 V

Cell Exit -50 V

## Cell Parameters

Use Gas No

3rd Gas Flow —

Energy Discrimination 5.0 V

He Flow 0.0 mL/min

OctP Bias -8.0 V

H2 Flow 0.0 mL/min

OctP RF 160 V

## QP Parameters

Mass Gain 125

Axis Gain 0.9987

QP Bias -3.0 V

Mass Offset 126

Axis Offset 0.13

## Hardware Settings

### Torch

Torch H -0.9 mm

Torch V -0.6 mm

### EM

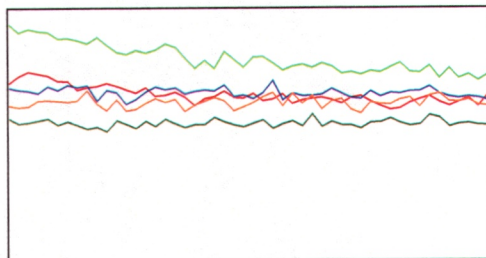
Discriminator 4.9 mV

Analog HV 2340 V

Pulse HV 1777 V

[H2]

## Sensitivity



Mass	Range	Count	RSD%	Background
9	50000	33101	5.540	0.400
24	20000	16099	7.413	0.200
59	50000	33386	2.909	0.000
115	100000	63079	3.240	0.300
208	50000	27286	2.636	0.700

Sampling Period [sec] 0.514

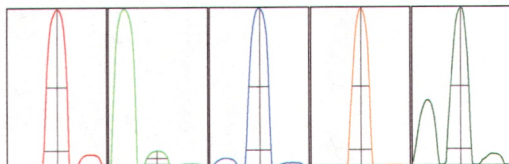
Integration Time [sec] 0.1

## Oxide/Doubly Charged Ratio

Oxide ---

Doubly Charged 70 / 140 0.897 %

## Resolution/Axis



Mass	Peak Height	Axis	W-50%	W-10%
9	31766.62	9.05	0.62	0.753
24	14732.54	24.00	0.63	0.766
59	32589.10	59.05	0.60	0.753
115	63686.14	115.05	0.52	0.704
208	26970.29	208.00	0.55	0.752

Integration Time [sec] 0.1

Acquisition Time [sec] 37.4

Y Axis Linear

## Tune Parameters

### Plasma Parameters

# Tune Report

Plasma Mode	---	Nebulizer Gas	0.91 L/min	Dilution Gas	0.18 L/min
RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.00 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

## Lens Parameters

Extract 1	0.0 V	Omega Lens	10.7 V	Deflect	2.2 V
Extract 2	-165.0 V	Cell Entrance	-30 V	Plate Bias	-80 V
Omega Bias	-70 V	Cell Exit	-50 V		

## Cell Parameters

Use Gas	Yes	3rd Gas Flow	---	Energy Discrimination	5.0 V
He Flow	0.0 mL/min	OctP Bias	-18.0 V		
H2 Flow	3.8 mL/min	OctP RF	190 V		

## QP Parameters

Mass Gain	125	Axis Gain	0.9987	QP Bias	-13.0 V
Mass Offset	126	Axis Offset	0.13		

## Hardware Settings

### Torch

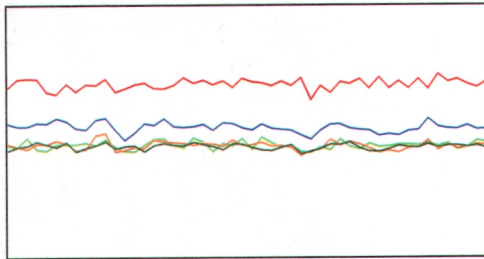
Torch H	-0.9 mm	Torch V	-0.6 mm
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### EM

Discriminator	4.9 mV	Analog HV	2340 V	Pulse HV	1777 V
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[He]

## Sensitivity



Mass	Range	Count	RSD%	Background
9	5000	3442	2.940	1.300
24	5000	2236	3.565	0.400
59	50000	25829	3.902	0.100
115	50000	22298	3.892	0.100
208	50000	22052	2.690	0.800

Sampling Period [sec] 0.514

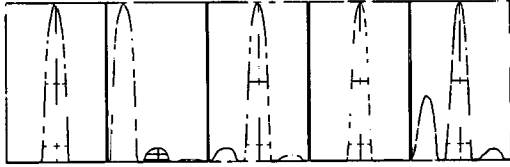
Integration Time [sec] 0.1

## Oxide/Doubly Charged Ratio

Oxide	---
Doubly Charged	70 / 140 0.961 %

## Resolution/Axis

# Tune Report



Mass	Peak Height	Axis	W-50%	W-10%
9	3468.31	9.05	0.62	0.759
24	2171.13	24.05	0.63	0.766
59	25661.30	59.05	0.59	0.746
115	22425.72	115.05	0.51	0.693
208	21683.98	208.00	0.50	0.727

Integration Time [sec] 0.1  
 Acquisition Time [sec] 37.4  
 Y Axis Linear

## Tune Parameters

### Plasma Parameters

Plasma Mode	—	Nebulizer Gas	0.91 L/min	Dilution Gas	0.18 L/min
RF Power	1600 W	Option Gas	—	Auxiliary Gas	0.90 L/min
RF Matching	1.00 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

### Lens Parameters

Extract 1	0.0 V	Omega Lens	10.9 V	Deflect	-0.6 V
Extract 2	-205.0 V	Cell Entrance	-30 V	Plate Bias	-80 V
Omega Bias	-75 V	Cell Exit	-50 V		

### Cell Parameters

Use Gas	Yes	3rd Gas Flow	—	Energy Discrimination	5.0 V
He Flow	4.0 mL/min	OctP Bias	-18.0 V		
H2 Flow	0.0 mL/min	OctP RF	190 V		

### QP Parameters

Mass Gain	125	Axis Gain	0.9987	QP Bias	-13.0 V
Mass Offset	126	Axis Offset	0.13		

### Hardware Settings

#### Torch

Torch H	-0.9 mm	Torch V	-0.6 mm
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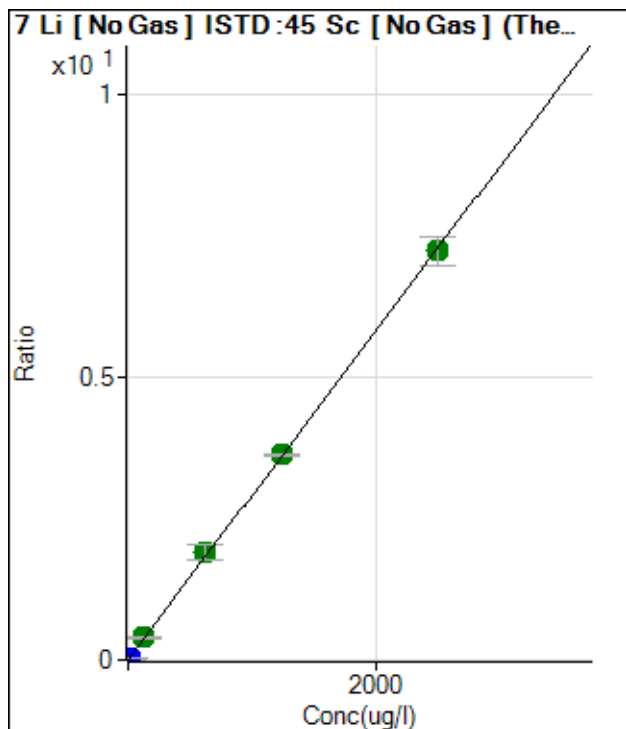
#### EM

Discriminator	4.9 mV	Analog HV	2340 V	Pulse HV	1777 V
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Calibration for 021\_CC.V.d

Batch Folder: D:\Agilent\ICPMH\1\DATA\220224ADoD.b\  
 Analysis File: 220224ADoD.batch.bin  
 DA Date-Time: 2022-02-24 15:36:08  
 Calibration Title:  
 Calibration Method: External Calibration  
 VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	008CALB.d	Cal Blk	2022-02-24 14:07:24
2	009CALS.d	0.025 ppb STD	2022-02-24 14:15:00
3	010CALS.d	0.05 ppb STD	2022-02-24 14:21:38
4	011CALS.d	0.10 ppb STD	2022-02-24 14:28:17
5	012CALS.d	0.5 ppb STD	2022-02-24 14:34:55
6	013CALS.d	1 ppb STD	2022-02-24 14:41:34
7	014CALS.d	10 ppb STD	2022-02-24 14:48:12
8	015CALS.d	50 ppb STD	2022-02-24 14:54:50
9	016CALS.d	100 ppb STD	2022-02-24 15:01:24
10	017CALS.d	1000 ppb STD	2022-02-24 15:07:53
11	018CALS.d	100 ppb Br STD	2022-02-24 15:14:19



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	14411.93	0.001		9.	
2	<input type="checkbox"/>	0.313	0.396	22359.31	0.002		10	26.
3	<input type="checkbox"/>	0.625	0.822	33530.86	0.003		13	31.
4	<input type="checkbox"/>	1.250	1.425	51185.48	0.005		0.	14.
5	<input type="checkbox"/>	6.250	7.013	189568.27	0.021		4.	12.
6	<input type="checkbox"/>	12.500	14.579	391202.23	0.043		0.	16.
7	<input type="checkbox"/>	125.00	135.29	3567417.3	0.393		3.	8.2
8	<input type="checkbox"/>	625.00	655.02	15808447.	1.899		15	4.8
9	<input type="checkbox"/>	1250.0	1249.0	32948191.	3.620		1.	-0.1
10	<input type="checkbox"/>	2500.0	2492.4	65677528.	7.223		6.	-0.3
11	<input type="checkbox"/>			48622.63	0.005		14	

$y = 0.0029 * x + 0.0015$

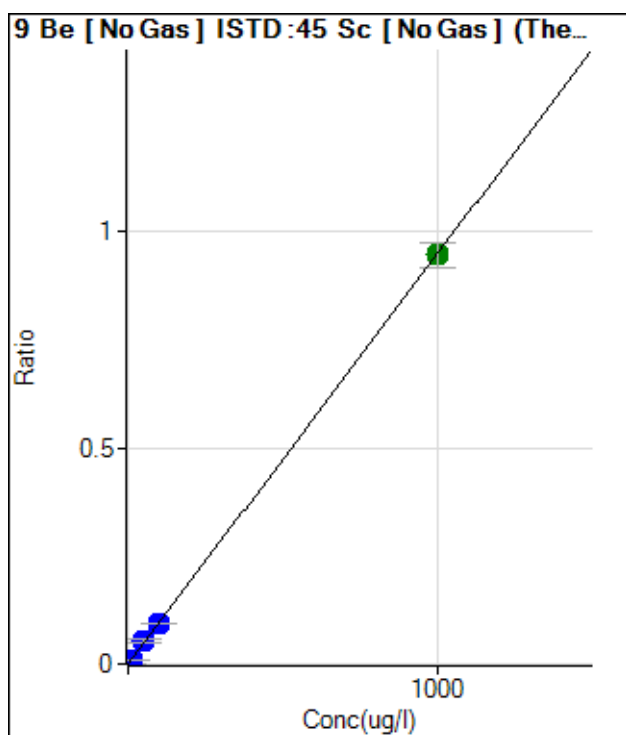
$R = 0.9999$

DL = 0.1527 ug/l

BEC = 0.5327 ug/l

Weight: 1/y

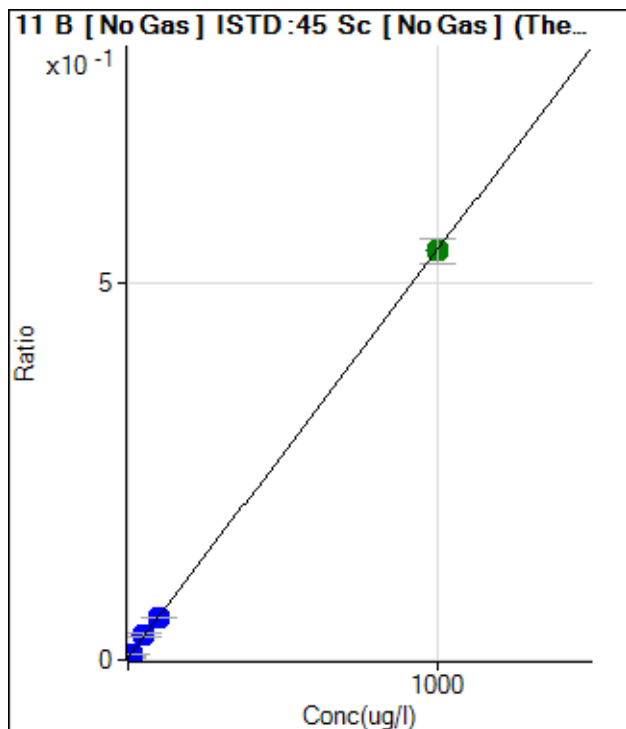
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	341.27	0.000		5.	
2	<input type="checkbox"/>	0.025	0.034	567.57	0.000		10	34.
3	<input type="checkbox"/>	0.050	0.064	832.86	0.000		10	28.
4	<input type="checkbox"/>	0.100	0.111	1278.13	0.000		7.	11.
5	<input type="checkbox"/>	0.500	0.555	4874.81	0.000		4.	11.
6	<input type="checkbox"/>	1.000	1.172	10235.08	0.001		0.	17.
7	<input type="checkbox"/>	10.000	10.551	90855.33	0.010		4.	5.5
8	<input type="checkbox"/>	50.000	55.054	433655.06	0.052		16	10.
9	<input type="checkbox"/>	100.00	100.05	862339.36	0.094		1.	0.1
10	<input type="checkbox"/>	1000.0	999.73	8606375.6	0.946		6.	0.0
11	<input type="checkbox"/>			552.90	0.000		16	

$y = 9.4662E-004 * x + 3.6454E-005$

$R = 1.0000$



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	30573.58	0.003		8.	
2	<input type="checkbox"/>			30083.76	0.003		9.	
3	<input type="checkbox"/>	0.050	0.624	30859.64	0.003		12	114
4	<input type="checkbox"/>	0.100	0.044	29742.29	0.003		3.	-55.
5	<input type="checkbox"/>	0.500	0.835	32298.53	0.003		1.	66.
6	<input type="checkbox"/>	1.000	0.914	33635.23	0.003		1.	-8.6
7	<input type="checkbox"/>	10.000	9.733	77171.81	0.008		4.	-2.7
8	<input type="checkbox"/>	50.000	54.680	272107.86	0.032		16	9.4
9	<input type="checkbox"/>	100.00	97.445	507483.77	0.055		1.	-2.6
10	<input type="checkbox"/>	1000.0	1000.0	4928851.4	0.542		6.	0.0
11	<input type="checkbox"/>			47154.40	0.005		14	

$y = 5.3871E-004 * x + 0.0033$

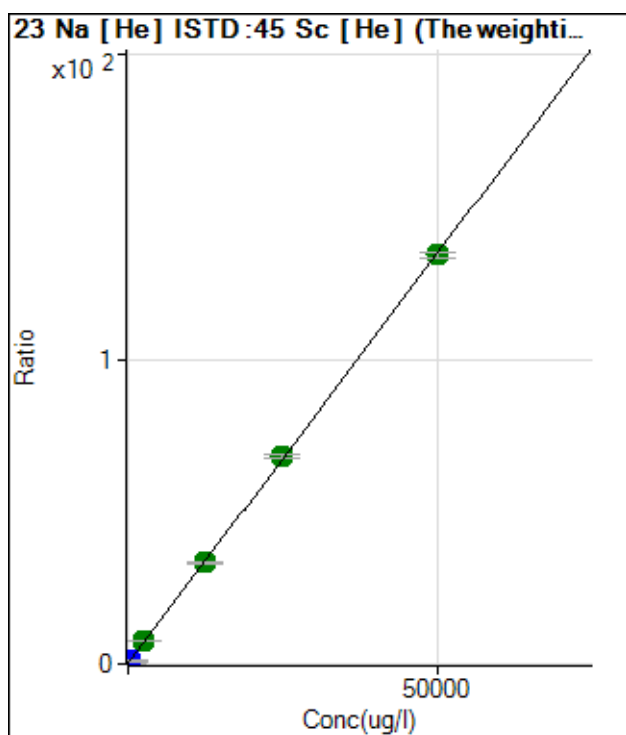
R = 1.0000

DL = 1.547 ug/l

BEC = 6.073 ug/l

Weight: 1/y

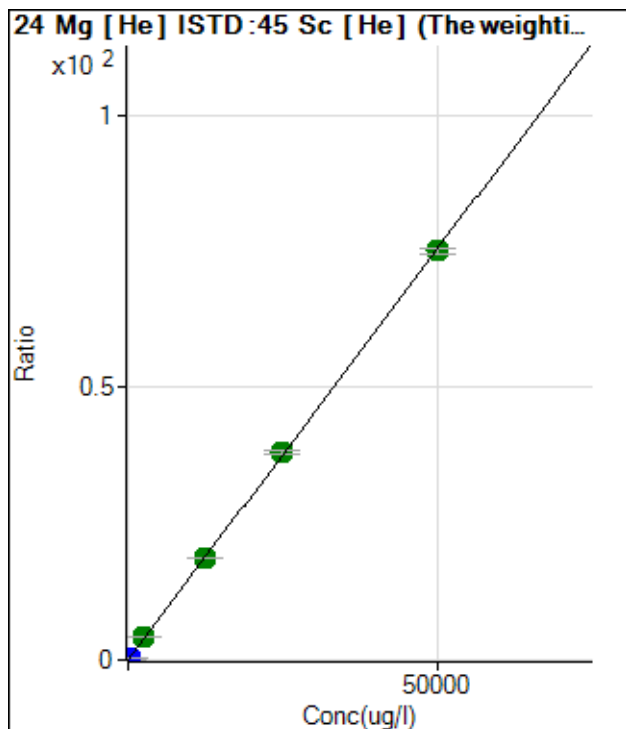
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	65873.22	0.126		1.	
2	<input type="checkbox"/>	6.250	5.053	71668.37	0.140		0.	-19.
3	<input type="checkbox"/>	12.500	15.734	85912.21	0.169		0.	25.
4	<input type="checkbox"/>	25.000	29.433	105902.84	0.205		0.	17.
5	<input type="checkbox"/>	125.00	142.97	259528.15	0.511		1.	14.
6	<input type="checkbox"/>	250.00	306.52	482896.71	0.950		1.	22.
7	<input type="checkbox"/>	2500.0	2835.1	3952064.9	7.749		0.	13.
8	<input type="checkbox"/>	12500.	12307.	17353718.	33.21		1.	-1.5
9	<input type="checkbox"/>	25000.	25273.	36395672.	68.07		1.	1.1
10	<input type="checkbox"/>	50000.	49894.	70333372.	134.2		1.	-0.2
11	<input type="checkbox"/>			70795.36	0.134		16	

$y = 0.0027 * x + 0.1267$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	708.61	0.001		15	
2	<input type="checkbox"/>	6.250	6.934	6032.60	0.011		4.	10.
3	<input type="checkbox"/>	12.500	16.459	13296.28	0.026		3.	31.
4	<input type="checkbox"/>	25.000	30.551	24381.45	0.047		0.	22.
5	<input type="checkbox"/>	125.00	144.58	111285.00	0.219		1.	15.
6	<input type="checkbox"/>	250.00	311.42	238967.73	0.470		1.	24.
7	<input type="checkbox"/>	2500.0	2859.1	2197257.0	4.308		1.	14.
8	<input type="checkbox"/>	12500.	12430.	9784005.1	18.72		0.	-0.6
9	<input type="checkbox"/>	25000.	25287.	20366247.	38.09		2.	1.1
10	<input type="checkbox"/>	50000.	49855.	39341671.	75.10		1.	-0.3
11	<input type="checkbox"/>			1021.34	0.001		10	

$$y = 0.0015 * x + 0.0014$$

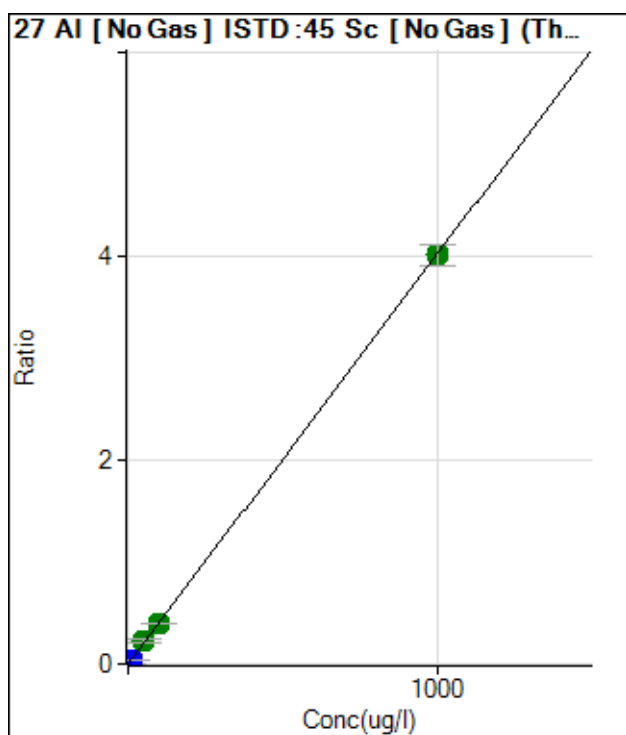
R = 1.0000

DL = 0.4269 ug/l

BEC = 0.904 ug/l

Weight: 1/y

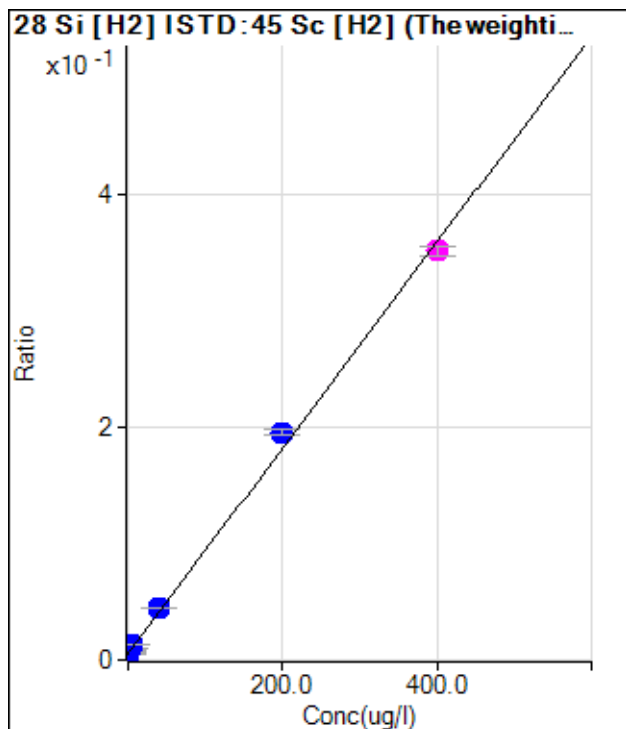
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	8013.30	0.000		5.	
2	<input type="checkbox"/>			12511.93	0.001		9.	
3	<input type="checkbox"/>	0.050	0.205	14480.77	0.001		12	309
4	<input type="checkbox"/>	0.100	0.193	14700.62	0.001		1.	92.
5	<input type="checkbox"/>	0.500	0.882	38211.31	0.004		7.	76.
6	<input type="checkbox"/>	1.000	1.288	53825.27	0.006		0.	28.
7	<input type="checkbox"/>	10.000	10.709	397328.92	0.043		3.	7.1
8	<input type="checkbox"/>	50.000	55.560	1860595.3	0.223		16	11.
9	<input type="checkbox"/>	100.00	99.776	3651955.0	0.401		1.	-0.2
10	<input type="checkbox"/>	1000.0	999.73	36508113.	4.013		5.	0.0
11	<input type="checkbox"/>			11622.37	0.001		11	

$$y = 0.0040 * x + 8.5575E-004$$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	18232.63	0.005		26	
2	<input type="checkbox"/>			20574.38	0.006		1.	
3	<input type="checkbox"/>	0.200	1.997	23437.79	0.007		2.	898
4	<input type="checkbox"/>	0.400	2.612	25246.05	0.007		1.	553
5	<input type="checkbox"/>	2.000	5.589	33456.76	0.010		3.	179
6	<input type="checkbox"/>	4.000	9.481	44785.43	0.013		3.	137
7	<input type="checkbox"/>	40.000	44.420	146473.81	0.044		3.	11.
8	<input type="checkbox"/>	200.00	215.58	642569.37	0.195		3.	7.8
9	<input type="checkbox"/>	400.00	391.68	1179039.4	0.351		2.	-2.1
10	<input type="checkbox"/>			21365.79	0.006		3.	
11	<input type="checkbox"/>			17134.70	0.004		3.	

$y = 8.8327E-004 * x + 0.0052$

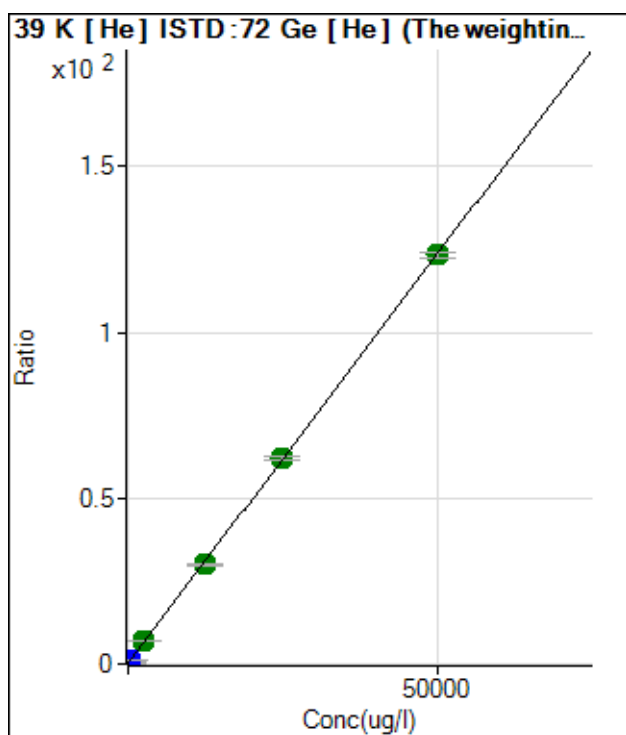
R = 0.9990

DL = 4.623 ug/l

BEC = 5.929 ug/l

Weight: 1/y

Min Conc: <None>

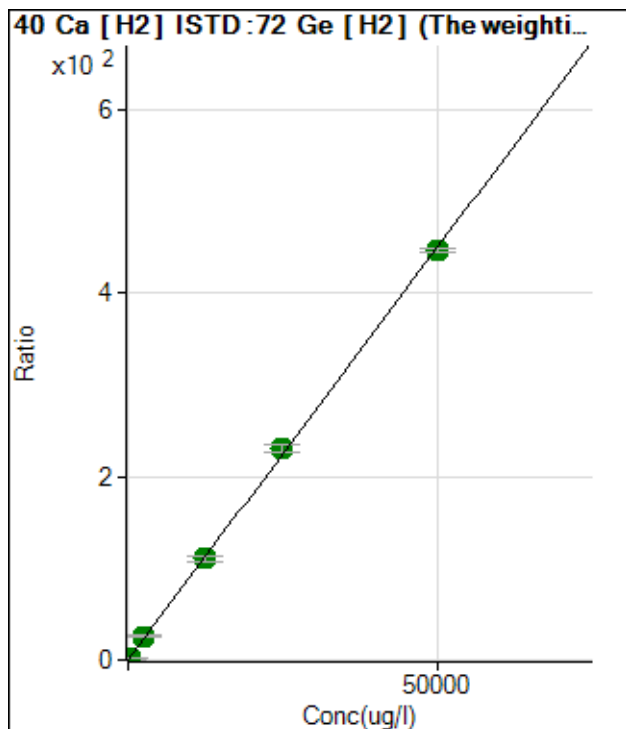


	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	67202.08	0.213		0.	
2	<input type="checkbox"/>	6.250	8.684	73225.85	0.235		1.	38.
3	<input type="checkbox"/>	12.500	15.742	78666.71	0.252		1.	25.
4	<input type="checkbox"/>	25.000	30.024	90411.67	0.287		1.	20.
5	<input type="checkbox"/>	125.00	139.52	173426.74	0.557		1.	11.
6	<input type="checkbox"/>	250.00	296.97	294562.99	0.945		0.	18.
7	<input type="checkbox"/>	2500.0	2774.5	2171650.2	7.048		1.	11.
8	<input type="checkbox"/>	12500.	12106.	9600336.3	30.03		1.	-3.1
9	<input type="checkbox"/>	25000.	25168.	20278485.	62.21		1.	0.7
10	<input type="checkbox"/>	50000.	49999.	38854906.	123.3		1.	0.0
11	<input type="checkbox"/>			479232.98	1.479		10	

$y = 0.0025 * x + 0.2136$

R = 0.9999





	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	92084.12	0.079		23	
2	<input type="checkbox"/>	6.250	4.968	134521.32	0.124		4.	-20.
3	<input type="checkbox"/>	12.500	13.420	221305.95	0.200		4.	7.4
4	<input type="checkbox"/>	25.000	28.458	367303.34	0.334		3.	13.
5	<input type="checkbox"/>	125.00	140.06	1454280.7	1.335		4.	12.
6	<input type="checkbox"/>	250.00	301.67	3023427.1	2.784		3.	20.
7	<input type="checkbox"/>	2500.0	2833.8	27734245.	25.48		5.	13.
8	<input type="checkbox"/>	12500.	12312.	12221296	110.4		5.	-1.5
9	<input type="checkbox"/>	25000.	25717.	25865266	230.6		4.	2.9
10	<input type="checkbox"/>	50000.	49671.	48511681	445.4		1.	-0.7
11	<input type="checkbox"/>			77264.02	0.068		4.	

$y = 0.0090 * x + 0.0797$

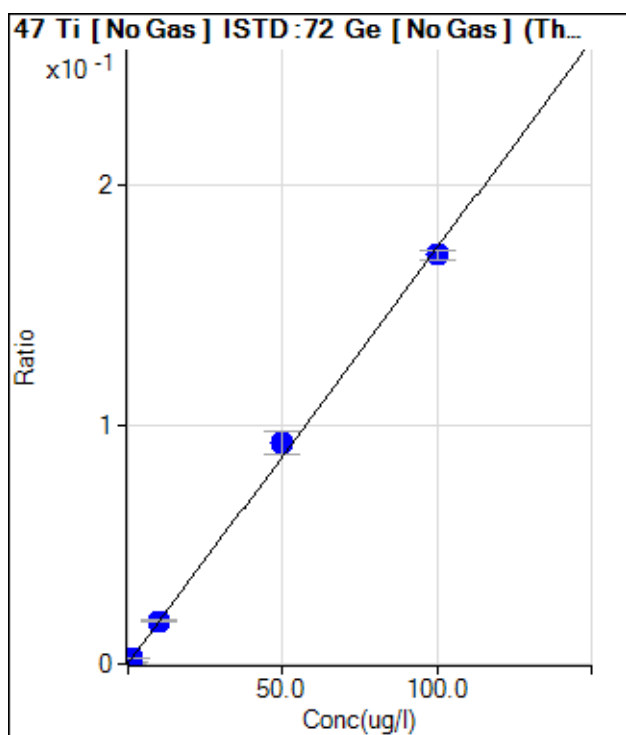
R = 0.9999

DL = 6.358 ug/l

BEC = 8.888 ug/l

Weight: 1/y

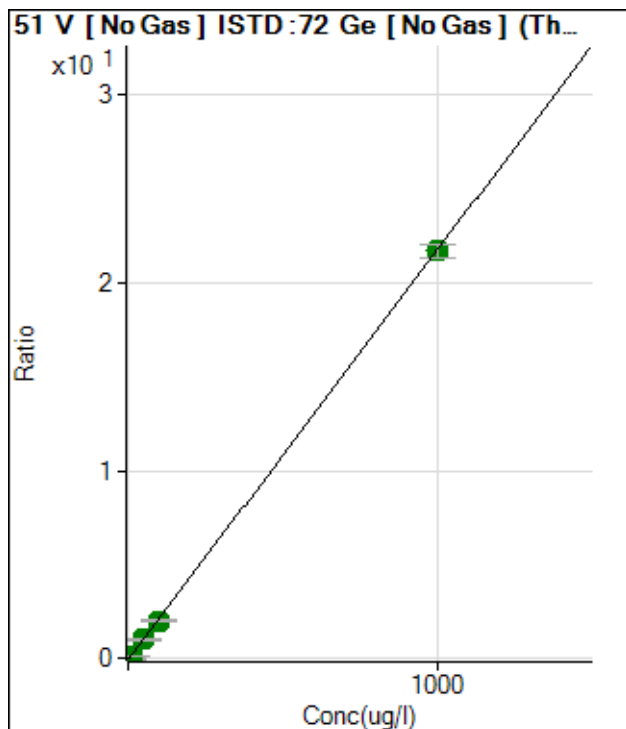
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	310.32	0.000		10	
2	<input type="checkbox"/>	0.025	0.111	689.16	0.000		26	344
3	<input type="checkbox"/>	0.050	0.118	710.81	0.000		45	135
4	<input type="checkbox"/>	0.100	0.133	790.82	0.000		8.	32.
5	<input type="checkbox"/>	0.500	0.570	2372.59	0.001		7.	13.
6	<input type="checkbox"/>	1.000	1.223	4862.39	0.002		1.	22.
7	<input type="checkbox"/>	10.000	10.257	39157.73	0.017		2.	2.6
8	<input type="checkbox"/>	50.000	53.070	185850.35	0.092		10	6.1
9	<input type="checkbox"/>	100.00	98.437	365741.41	0.170		2.	-1.6
10	<input type="checkbox"/>			21062.92	0.010		1.	
11	<input type="checkbox"/>			780.81	0.000		2.	

$y = 0.0017 * x + 1.3802E-004$

R = 0.9994



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	-125413.4	-0.05		-2	
2	<input type="checkbox"/>	0.025	1.668	-42488.71	-0.01		-1	657
3	<input type="checkbox"/>	0.050	1.518	-46724.07	-0.02		-1	293
4	<input type="checkbox"/>	0.100	1.597	-45199.28	-0.02		-6	149
5	<input type="checkbox"/>	0.500	1.780	-35787.10	-0.01		-8	256
6	<input type="checkbox"/>	1.000	2.982	19840.55	0.009		10	198
7	<input type="checkbox"/>	10.000	11.231	412660.75	0.188		2.	12.
8	<input type="checkbox"/>	50.000	50.893	2121730.7	1.053		11	1.8
9	<input type="checkbox"/>	100.00	96.308	4371867.3	2.042		1.	-3.7
10	<input type="checkbox"/>	1000.0	1000.3	45615737.	21.73		3.	0.0
11	<input type="checkbox"/>			-47610.47	-0.02		-9	

$y = 0.0218 * x - 0.0558$

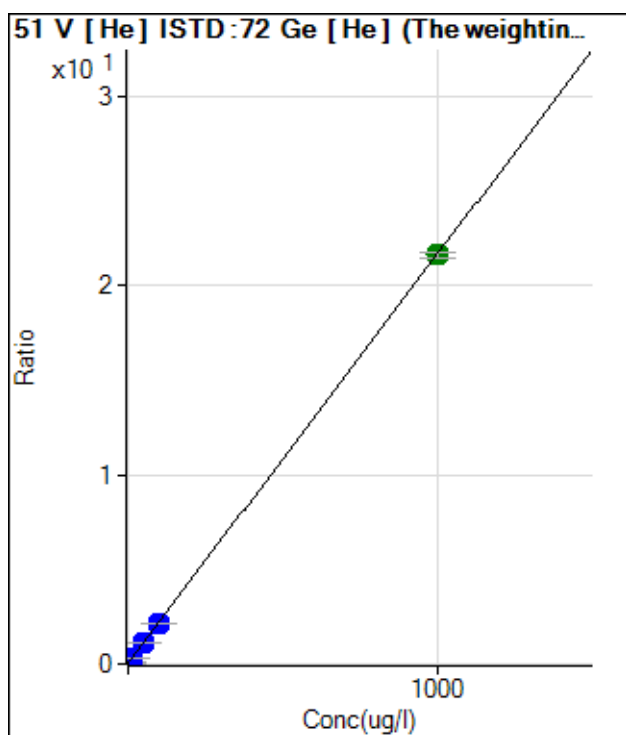
R = 1.0000

DL = 1.958 ug/l

BEC = -2.56 ug/l

Weight: 1/y

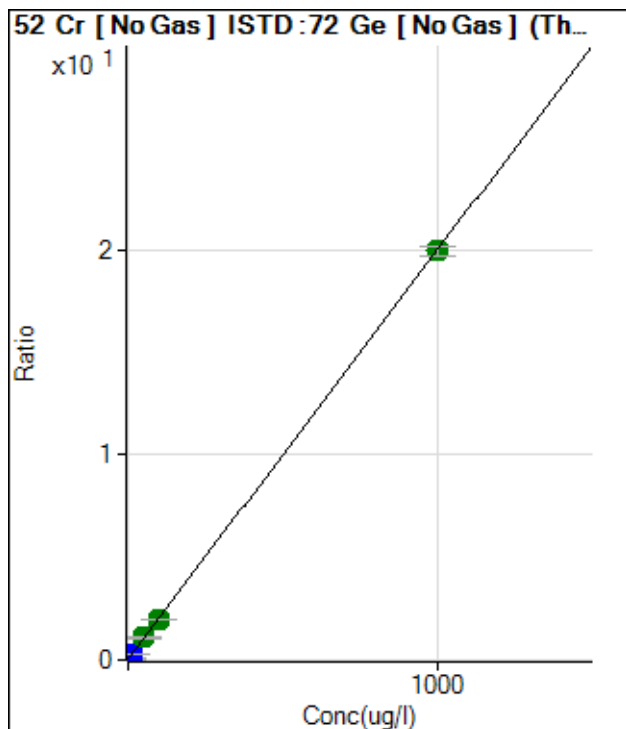
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	15962.03	0.050		1.	
2	<input type="checkbox"/>	0.025	0.223	17305.76	0.055		2.	791
3	<input type="checkbox"/>	0.050	0.225	17325.79	0.055		2.	350
4	<input type="checkbox"/>	0.100	0.314	18083.38	0.057		0.	214
5	<input type="checkbox"/>	0.500	0.827	21335.46	0.068		2.	65.
6	<input type="checkbox"/>	1.000	1.408	25263.89	0.081		1.	40.
7	<input type="checkbox"/>	10.000	10.482	85210.10	0.276		1.	4.8
8	<input type="checkbox"/>	50.000	49.539	357328.90	1.118		1.	-0.9
9	<input type="checkbox"/>	100.00	98.041	705004.34	2.162		0.	-2.0
10	<input type="checkbox"/>	1000.0	1000.2	6801436.0	21.59		1.	0.0
11	<input type="checkbox"/>			10224.69	0.031		10	

$y = 0.0215 * x + 0.0507$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	107804.53	0.047		7.	
2	<input type="checkbox"/>	0.025	0.392	115376.45	0.055		8.	146
3	<input type="checkbox"/>	0.050	0.383	117338.36	0.055		9.	666
4	<input type="checkbox"/>	0.100	0.357	118166.25	0.055		2.	257
5	<input type="checkbox"/>	0.500	0.939	140264.87	0.066		1.	87.
6	<input type="checkbox"/>	1.000	1.386	162411.37	0.075		0.	38.
7	<input type="checkbox"/>	10.000	10.531	562383.69	0.257		0.	5.3
8	<input type="checkbox"/>	50.000	52.994	2222379.1	1.102		11	6.0
9	<input type="checkbox"/>	100.00	97.823	4270622.1	1.995		0.	-2.2
10	<input type="checkbox"/>	1000.0	1000.0	41878412.	19.95		2.	0.0
11	<input type="checkbox"/>			74957.33	0.034		8.	

$y = 0.0199 * x + 0.0479$

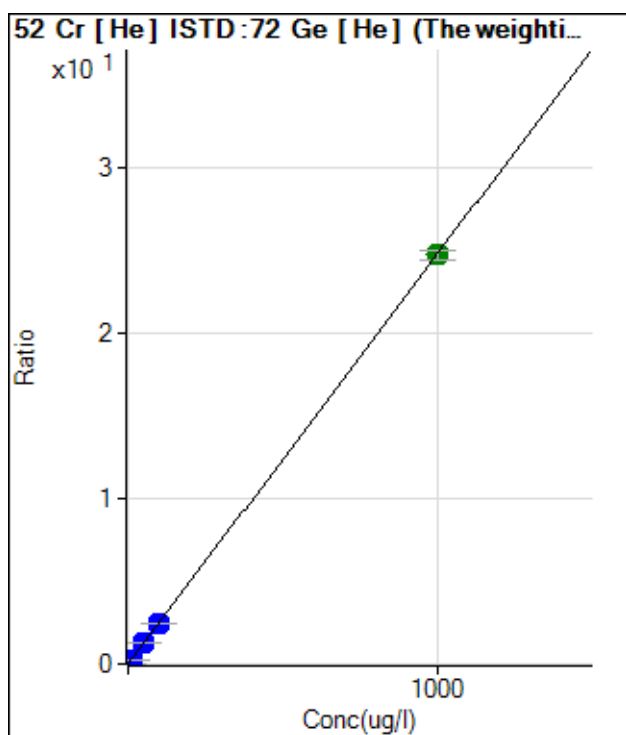
R = 1.0000

DL = 0.5496 ug/l

BEC = 2.405 ug/l

Weight: 1/y

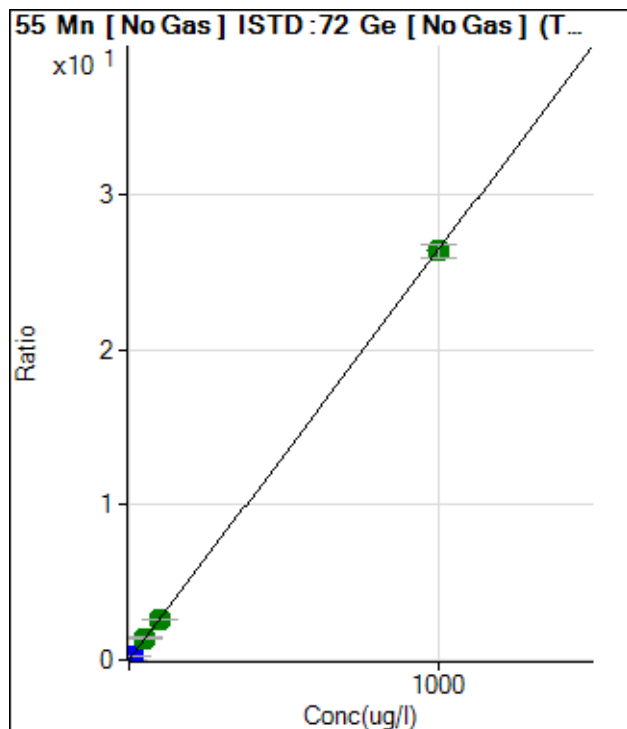
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	532.23	0.001		1.	
2	<input type="checkbox"/>	0.025	0.040	833.36	0.002		4.	58.
3	<input type="checkbox"/>	0.050	0.067	1043.38	0.003		9.	33.
4	<input type="checkbox"/>	0.100	0.131	1550.09	0.004		6.	30.
5	<input type="checkbox"/>	0.500	0.565	4875.28	0.015		4.	12.
6	<input type="checkbox"/>	1.000	1.193	9734.38	0.031		1.	19.
7	<input type="checkbox"/>	10.000	10.774	82702.82	0.268		1.	7.7
8	<input type="checkbox"/>	50.000	49.797	394559.21	1.234		0.	-0.4
9	<input type="checkbox"/>	100.00	97.529	787522.66	2.416		0.	-2.5
10	<input type="checkbox"/>	1000.0	1000.2	7797753.6	24.76		2.	0.0
11	<input type="checkbox"/>			677.80	0.002		4.	

$y = 0.0248 * x + 0.0017$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	6961.19	0.003		11	
2	<input type="checkbox"/>	0.025	0.038	8488.97	0.004		10	52.
3	<input type="checkbox"/>	0.050	0.071	10509.61	0.005		7.	41.
4	<input type="checkbox"/>	0.100	0.134	14248.68	0.006		6.	33.
5	<input type="checkbox"/>	0.500	0.579	38714.07	0.018		2.	15.
6	<input type="checkbox"/>	1.000	1.202	74918.69	0.034		1.	20.
7	<input type="checkbox"/>	10.000	10.657	620584.22	0.284		3.	6.6
8	<input type="checkbox"/>	50.000	53.835	2869247.5	1.423		10	7.7
9	<input type="checkbox"/>	100.00	99.471	5621698.5	2.627		2.	-0.5
10	<input type="checkbox"/>	1000.0	999.85	55351725.	26.37		3.	0.0
11	<input type="checkbox"/>			9497.60	0.004		8.	

$y = 0.0264 * x + 0.0031$

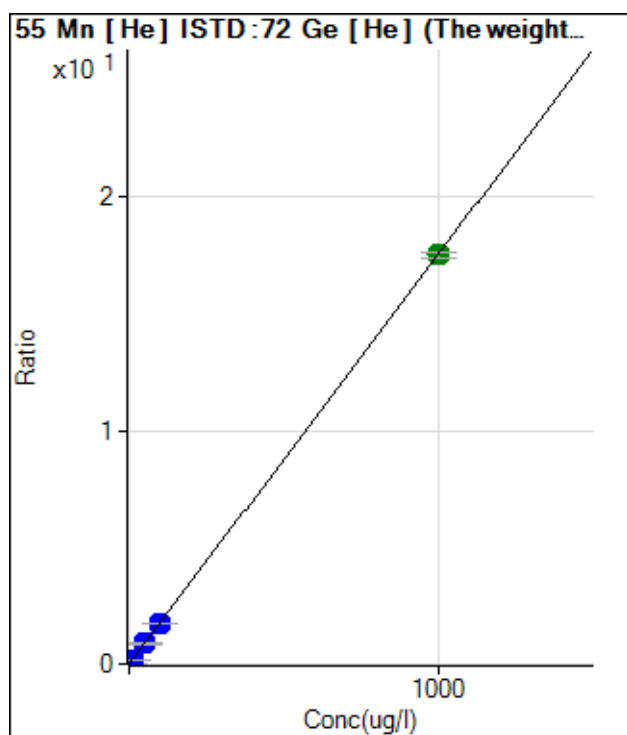
R = 1.0000

DL = 0.03858 ug/l

BEC = 0.1174 ug/l

Weight: 1/y

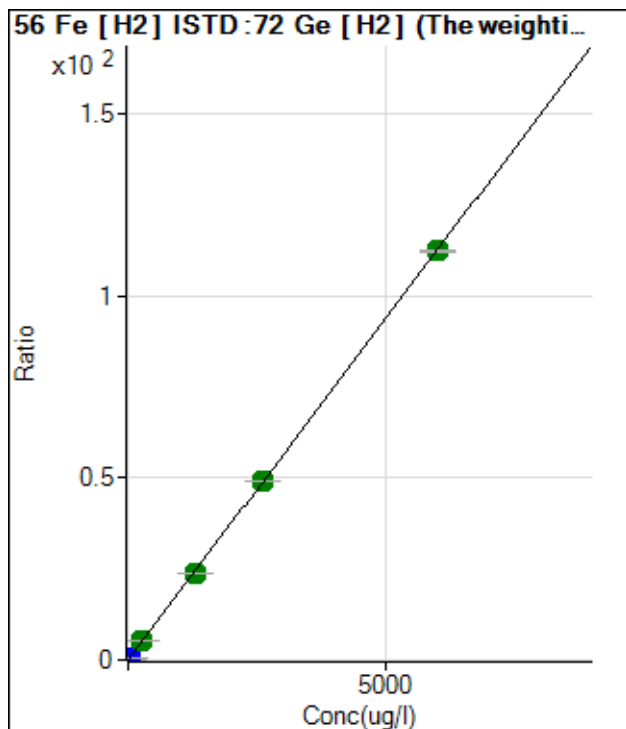
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	182.96	0.000		7.	
2	<input type="checkbox"/>	0.025	0.028	332.27	0.001		12	11.
3	<input type="checkbox"/>	0.050	0.060	507.24	0.001		3.	19.
4	<input type="checkbox"/>	0.100	0.118	834.19	0.002		1.	18.
5	<input type="checkbox"/>	0.500	0.544	3144.71	0.010		2.	8.8
6	<input type="checkbox"/>	1.000	1.159	6505.14	0.020		2.	15.
7	<input type="checkbox"/>	10.000	10.759	58213.04	0.188		1.	7.6
8	<input type="checkbox"/>	50.000	49.431	276779.35	0.866		0.	-1.1
9	<input type="checkbox"/>	100.00	97.116	554399.55	1.700		0.	-2.9
10	<input type="checkbox"/>	1000.0	1000.3	5514773.0	17.51		1.	0.0
11	<input type="checkbox"/>			253.29	0.000		12	

$y = 0.0175 * x + 5.8132E-004$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	6573.12	0.005		14	
2	<input type="checkbox"/>	0.650	0.778	21864.92	0.020		3.	19.
3	<input type="checkbox"/>	1.300	1.655	40481.41	0.036		2.	27.
4	<input type="checkbox"/>	2.600	3.155	70928.10	0.064		1.	21.
5	<input type="checkbox"/>	13.000	14.895	309604.32	0.284		0.	14.
6	<input type="checkbox"/>	26.000	32.162	659613.13	0.607		1.	23.
7	<input type="checkbox"/>	260.00	288.76	5886970.1	5.411		1.	11.
8	<input type="checkbox"/>	1300.0	1267.2	26236423.	23.73		0.	-2.5
9	<input type="checkbox"/>	2600.0	2618.9	54970981.	49.03		0.	0.7
10	<input type="checkbox"/>	6000.0	5997.5	12228900	112.2		0.	0.0
11	<input type="checkbox"/>			11355.85	0.010		1.	

$y = 0.0187 * x + 0.0056$

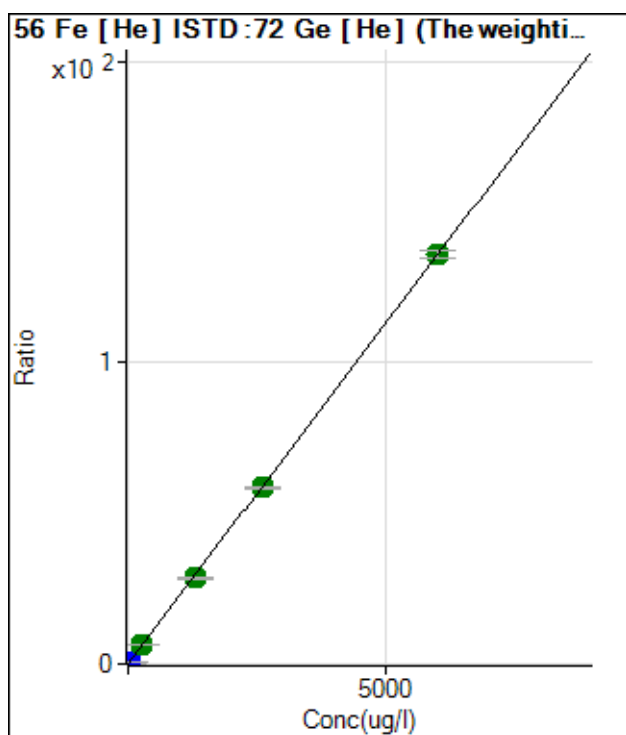
R = 1.0000

DL = 0.1344 ug/l

BEC = 0.3005 ug/l

Weight: 1/y

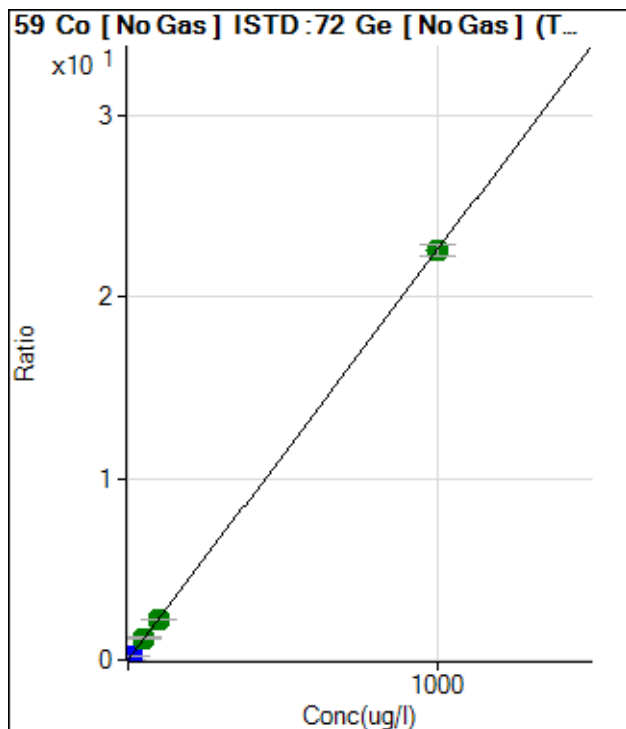
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	5246.25	0.016		2.	
2	<input type="checkbox"/>	0.650	0.780	10681.33	0.034		1.	20.
3	<input type="checkbox"/>	1.300	1.625	16629.49	0.053		5.	25.
4	<input type="checkbox"/>	2.600	3.173	27774.16	0.088		1.	22.
5	<input type="checkbox"/>	13.000	14.907	109928.14	0.353		1.	14.
6	<input type="checkbox"/>	26.000	31.771	228747.88	0.734		0.	22.
7	<input type="checkbox"/>	260.00	289.81	2021433.4	6.560		0.	11.
8	<input type="checkbox"/>	1300.0	1259.5	9094757.9	28.45		1.	-3.1
9	<input type="checkbox"/>	2600.0	2590.0	19068073.	58.49		1.	-0.4
10	<input type="checkbox"/>	6000.0	6011.7	42749953.	135.7		1.	0.2
11	<input type="checkbox"/>			7576.27	0.023		9.	

$y = 0.0226 * x + 0.0167$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	345.98	0.000		17	
2	<input type="checkbox"/>	0.025	0.030	1716.72	0.000		7.	19.
3	<input type="checkbox"/>	0.050	0.063	3327.13	0.001		10	26.
4	<input type="checkbox"/>	0.100	0.115	5892.84	0.002		9.	15.
5	<input type="checkbox"/>	0.500	0.575	27581.25	0.013		3.	15.
6	<input type="checkbox"/>	1.000	1.189	57952.40	0.026		0.	18.
7	<input type="checkbox"/>	10.000	10.718	527117.53	0.241		2.	7.2
8	<input type="checkbox"/>	50.000	53.910	2446593.9	1.213		10	7.8
9	<input type="checkbox"/>	100.00	99.552	4796419.6	2.241		1.	-0.4
10	<input type="checkbox"/>	1000.0	999.84	47228322.	22.50		2.	0.0
11	<input type="checkbox"/>			1573.64	0.000		24	

$$y = 0.0225 * x + 1.5329E-004$$

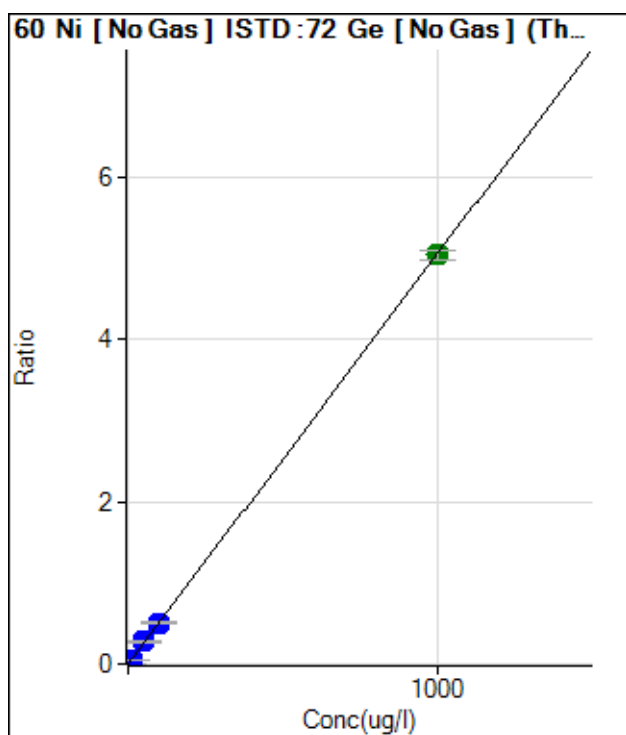
R = 1.0000

DL = 0.003502 ug/l

BEC = 0.00681 ug/l

Weight: 1/y

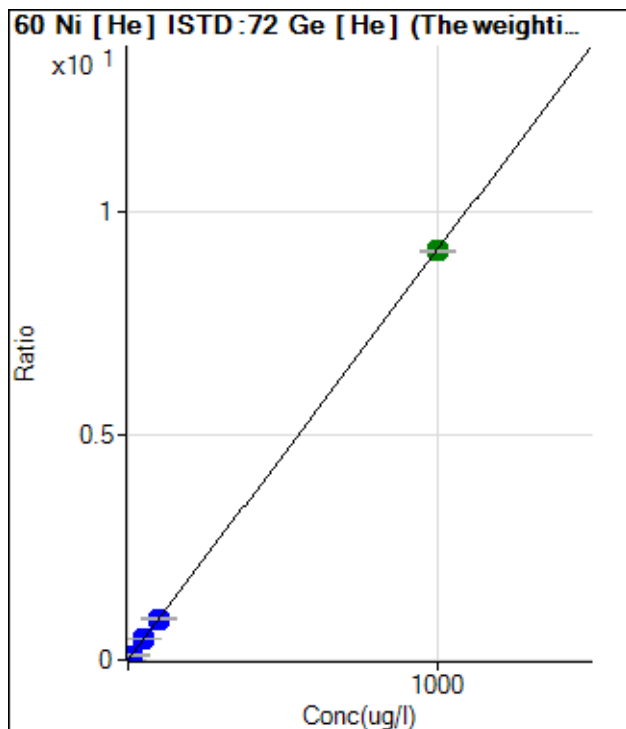
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	805.10	0.000		9.	
2	<input type="checkbox"/>	0.025	0.026	1008.04	0.000		20	4.2
3	<input type="checkbox"/>	0.050	0.058	1380.67	0.000		5.	16.
4	<input type="checkbox"/>	0.100	0.100	1853.11	0.000		5.	0.2
5	<input type="checkbox"/>	0.500	0.571	6814.78	0.003		1.	14.
6	<input type="checkbox"/>	1.000	1.178	13532.81	0.006		3.	17.
7	<input type="checkbox"/>	10.000	10.417	115295.36	0.052		2.	4.2
8	<input type="checkbox"/>	50.000	54.020	548438.90	0.272		12	8.0
9	<input type="checkbox"/>	100.00	99.373	1071019.9	0.500		3.	-0.6
10	<input type="checkbox"/>	1000.0	999.85	10563680.	5.033		2.	0.0
11	<input type="checkbox"/>			1600.25	0.000		12	

$$y = 0.0050 * x + 3.5778E-004$$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	166.67	0.000		27	
2	<input type="checkbox"/>	0.025	0.033	258.89	0.000		12	33.
3	<input type="checkbox"/>	0.050	0.060	335.56	0.001		15	20.
4	<input type="checkbox"/>	0.100	0.097	444.46	0.001		4.	-2.7
5	<input type="checkbox"/>	0.500	0.588	1832.35	0.005		5.	17.
6	<input type="checkbox"/>	1.000	1.246	3702.72	0.011		3.	24.
7	<input type="checkbox"/>	10.000	11.680	32948.16	0.106		0.	16.
8	<input type="checkbox"/>	50.000	53.140	154887.29	0.484		0.	6.3
9	<input type="checkbox"/>	100.00	100.65	299063.97	0.917		1.	0.7
10	<input type="checkbox"/>	1000.0	999.76	2868113.0	9.108		0.	0.0
11	<input type="checkbox"/>			230.00	0.000		12	

$y = 0.0091 * x + 5.2829E-004$

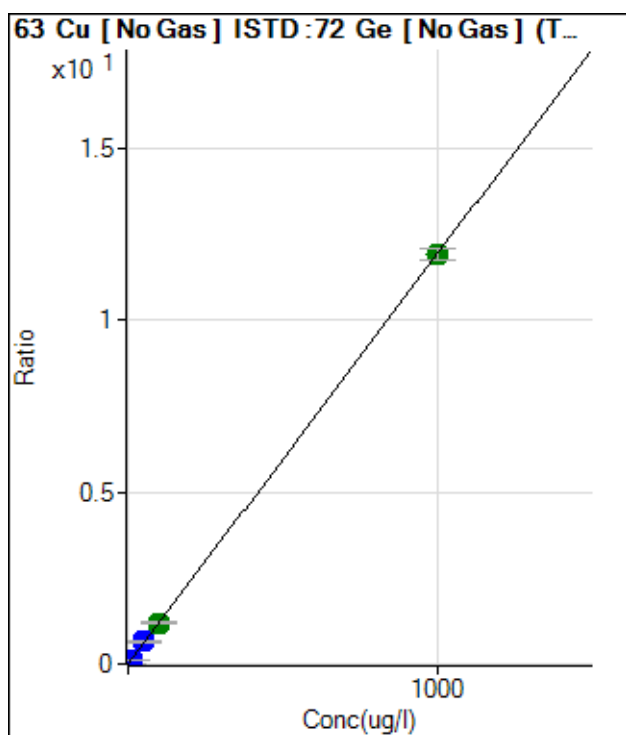
R = 1.0000

DL = 0.04741 ug/l

BEC = 0.05799 ug/l

Weight: 1/y

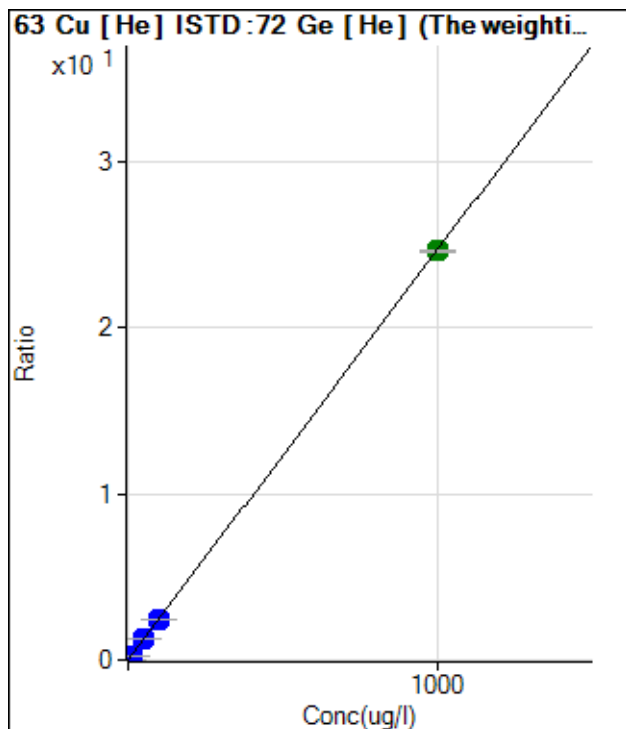
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	1612.07	0.000		7.	
2	<input type="checkbox"/>	0.025	0.047	2632.63	0.001		7.	86.
3	<input type="checkbox"/>	0.050	0.081	3544.53	0.001		12	61.
4	<input type="checkbox"/>	0.100	0.133	4937.49	0.002		1.	32.
5	<input type="checkbox"/>	0.500	0.660	18097.41	0.008		13	31.
6	<input type="checkbox"/>	1.000	1.226	32962.85	0.015		0.	22.
7	<input type="checkbox"/>	10.000	10.977	287022.34	0.131		2.	9.8
8	<input type="checkbox"/>	50.000	55.789	1340920.8	0.665		10	11.
9	<input type="checkbox"/>	100.00	100.39	2559986.9	1.196		2.	0.4
10	<input type="checkbox"/>	1000.0	999.66	24984410.	11.90		2.	0.0
11	<input type="checkbox"/>			8215.61	0.003		7.	

$y = 0.0119 * x + 7.1565E-004$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	415.59	0.001		5.	
2	<input type="checkbox"/>	0.025	0.034	673.22	0.002		4.	36.
3	<input type="checkbox"/>	0.050	0.075	990.84	0.003		2.	50.
4	<input type="checkbox"/>	0.100	0.133	1447.12	0.004		1.	33.
5	<input type="checkbox"/>	0.500	0.601	5012.53	0.016		1.	20.
6	<input type="checkbox"/>	1.000	1.282	10251.20	0.032		2.	28.
7	<input type="checkbox"/>	10.000	11.490	87577.69	0.284		0.	14.
8	<input type="checkbox"/>	50.000	51.687	407192.17	1.274		0.	3.4
9	<input type="checkbox"/>	100.00	99.838	801720.92	2.459		0.	-0.2
10	<input type="checkbox"/>	1000.0	999.91	7753494.1	24.62		0.	0.0
11	<input type="checkbox"/>			742.21	0.002		10	

$$y = 0.0246 * x + 0.0013$$

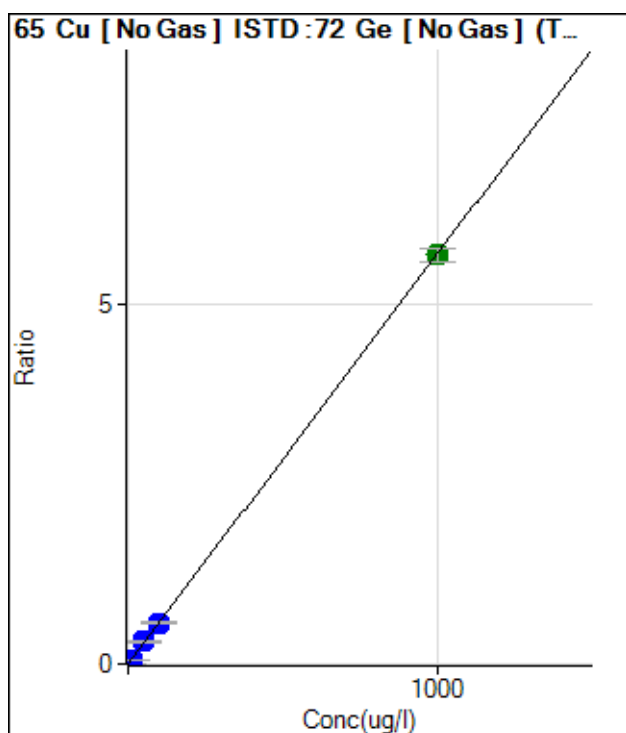
R = 1.0000

DL = 0.008999 ug/l

BEC = 0.0537 ug/l

Weight: 1/y

Min Conc: <None>

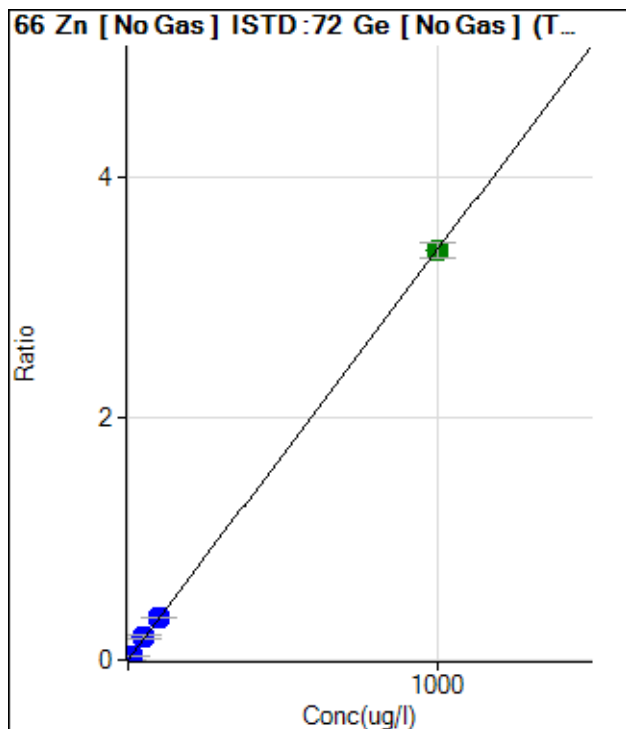


	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	670.29	0.000		2.	
2	<input type="checkbox"/>	0.025	0.042	1109.16	0.000		11	68.
3	<input type="checkbox"/>	0.050	0.075	1533.36	0.000		6.	50.
4	<input type="checkbox"/>	0.100	0.135	2281.10	0.001		2.	34.
5	<input type="checkbox"/>	0.500	0.589	7675.79	0.003		1.	17.
6	<input type="checkbox"/>	1.000	1.214	15469.06	0.007		2.	21.
7	<input type="checkbox"/>	10.000	10.868	135324.19	0.062		2.	8.7
8	<input type="checkbox"/>	50.000	55.737	638459.69	0.316		10	11.
9	<input type="checkbox"/>	100.00	100.91	1226262.5	0.573		2.	0.9
10	<input type="checkbox"/>	1000.0	999.61	11903977.	5.673		3.	0.0
11	<input type="checkbox"/>			1476.01	0.000		11	

$$y = 0.0057 * x + 2.9692E-004$$

R = 1.0000





	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	4123.58	0.001		12	
2	<input type="checkbox"/>			4486.05	0.002		3.	
3	<input type="checkbox"/>	0.050	0.002	3903.44	0.001		4.	-95.
4	<input type="checkbox"/>	0.100	-0.034	3693.76	0.001		8.	-13
5	<input type="checkbox"/>	0.500	0.901	10289.78	0.004		5.	80.
6	<input type="checkbox"/>	1.000	1.157	12379.40	0.005		1.	15.
7	<input type="checkbox"/>	10.000	10.666	82897.64	0.038		3.	6.7
8	<input type="checkbox"/>	50.000	55.785	384887.65	0.190		9.	11.
9	<input type="checkbox"/>	100.00	101.77	741701.18	0.346		1.	1.8
10	<input type="checkbox"/>	1000.0	999.52	7108163.3	3.387		3.	0.0
11	<input type="checkbox"/>			5465.26	0.002		5.	

$y = 0.0034 * x + 0.0018$

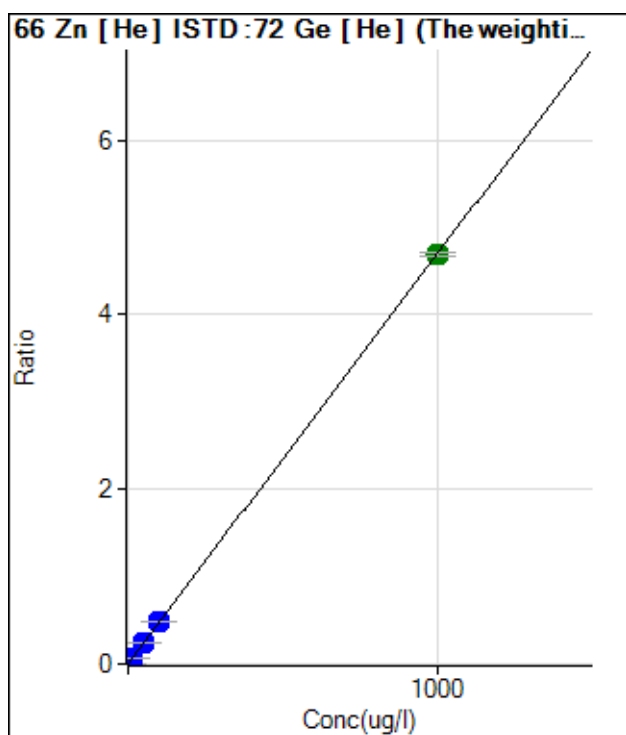
R = 1.0000

DL = 0.1998 ug/l

BEC = 0.5414 ug/l

Weight: 1/y

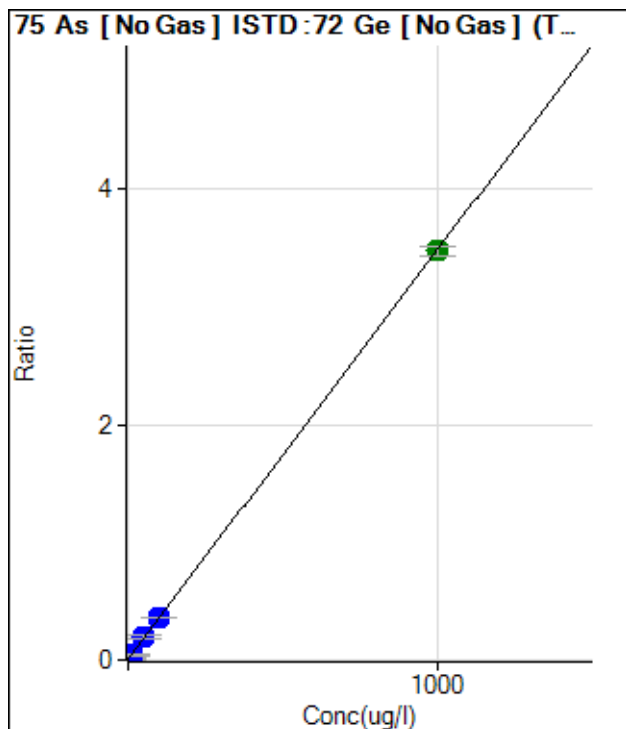
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	784.47	0.002		3.	
2	<input type="checkbox"/>			943.37	0.003		6.	
3	<input type="checkbox"/>	0.050	0.006	785.58	0.002		6.	-87.
4	<input type="checkbox"/>	0.100	0.017	808.92	0.002		3.	-82.
5	<input type="checkbox"/>	0.500	1.024	2267.97	0.007		3.	104
6	<input type="checkbox"/>	1.000	1.244	2591.36	0.008		4.	24.
7	<input type="checkbox"/>	10.000	11.379	17187.97	0.055		1.	13.
8	<input type="checkbox"/>	50.000	52.201	78926.42	0.247		1.	4.4
9	<input type="checkbox"/>	100.00	101.72	156083.55	0.478		0.	1.7
10	<input type="checkbox"/>	1000.0	999.70	1475017.8	4.684		0.	0.0
11	<input type="checkbox"/>			1074.49	0.003		10	

$y = 0.0047 * x + 0.0025$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t .	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	15242.63	0.006		41	
2	<input type="checkbox"/>	0.025	-0.234	12397.04	0.006		19	-10
3	<input type="checkbox"/>	0.050	-0.304	12162.32	0.005		11	-70
4	<input type="checkbox"/>	0.100	-0.203	13101.36	0.006		34	-30
5	<input type="checkbox"/>	0.500	0.071	14879.07	0.007		6.	-85.
6	<input type="checkbox"/>	1.000	0.638	19419.01	0.009		4.	-36.
7	<input type="checkbox"/>	10.000	10.171	91945.39	0.042		6.	1.7
8	<input type="checkbox"/>	50.000	55.075	399307.39	0.198		10	10.
9	<input type="checkbox"/>	100.00	100.88	764295.05	0.357		1.	0.9
10	<input type="checkbox"/>	1000.0	999.65	7298200.6	3.477		2.	0.0
11	<input type="checkbox"/>			12670.17	0.005		17	

$y = 0.0035 * x + 0.0068$

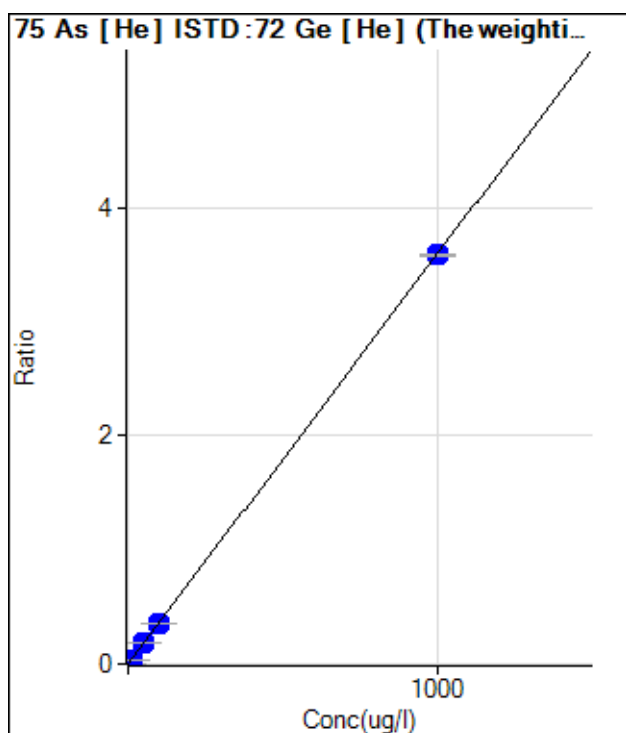
R = 1.0000

DL = 2.413 ug/l

BEC = 1.96 ug/l

Weight: 1/y

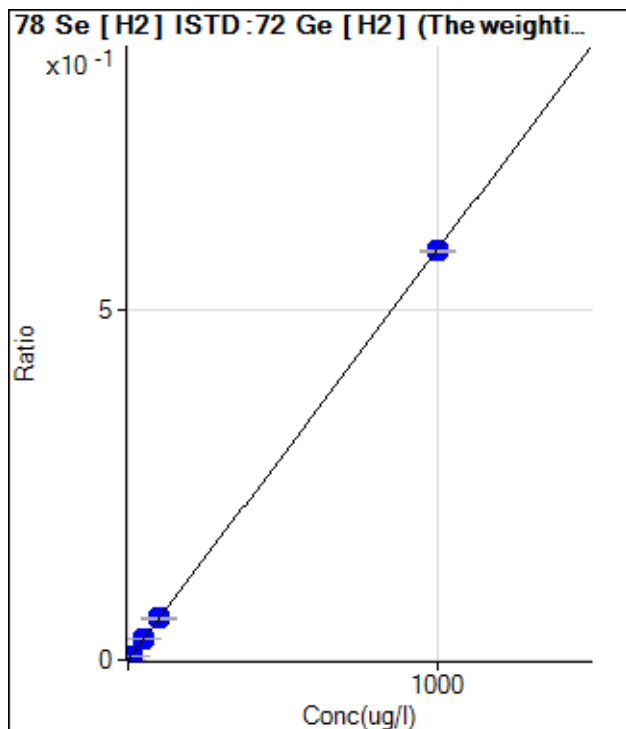
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t .	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	282.87	0.000		3.	
2	<input type="checkbox"/>	0.025	0.034	318.67	0.001		4.	37.
3	<input type="checkbox"/>	0.050	0.069	357.87	0.001		1.	38.
4	<input type="checkbox"/>	0.100	0.125	424.00	0.001		0.	25.
5	<input type="checkbox"/>	0.500	0.554	898.41	0.002		0.	10.
6	<input type="checkbox"/>	1.000	1.165	1582.39	0.005		0.	16.
7	<input type="checkbox"/>	10.000	10.979	12407.09	0.040		0.	9.8
8	<input type="checkbox"/>	50.000	50.289	57925.39	0.181		0.	0.6
9	<input type="checkbox"/>	100.00	99.040	116052.95	0.356		0.	-1.0
10	<input type="checkbox"/>	1000.0	1000.0	1129579.0	3.587		0.	0.0
11	<input type="checkbox"/>			282.67	0.000		11	

$y = 0.0036 * x + 8.9965E-004$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	26.00	0.000		22	
2	<input type="checkbox"/>	0.025	0.030	43.56	0.000		16	21.
3	<input type="checkbox"/>	0.050	0.060	63.78	0.000		5.	20.
4	<input type="checkbox"/>	0.100	0.115	98.33	0.000		6.	14.
5	<input type="checkbox"/>	0.500	0.560	380.89	0.000		4.	12.
6	<input type="checkbox"/>	1.000	1.240	810.58	0.000		2.	24.
7	<input type="checkbox"/>	10.000	11.328	7226.24	0.006		0.	13.
8	<input type="checkbox"/>	50.000	52.419	33899.41	0.030		0.	4.8
9	<input type="checkbox"/>	100.00	101.35	66436.70	0.059		1.	1.4
10	<input type="checkbox"/>	1000.0	999.73	636380.33	0.584		0.	0.0
11	<input type="checkbox"/>			110.89	0.000		6.	

$$y = 5.8448E-004 * x + 2.2480E-005$$

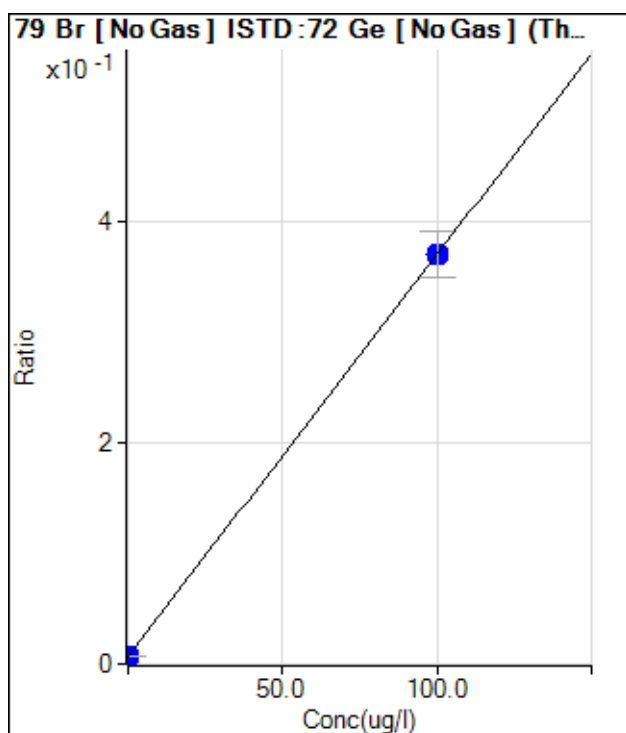
R = 1.0000

DL = 0.02605 ug/l

BEC = 0.03846 ug/l

Weight: 1/y

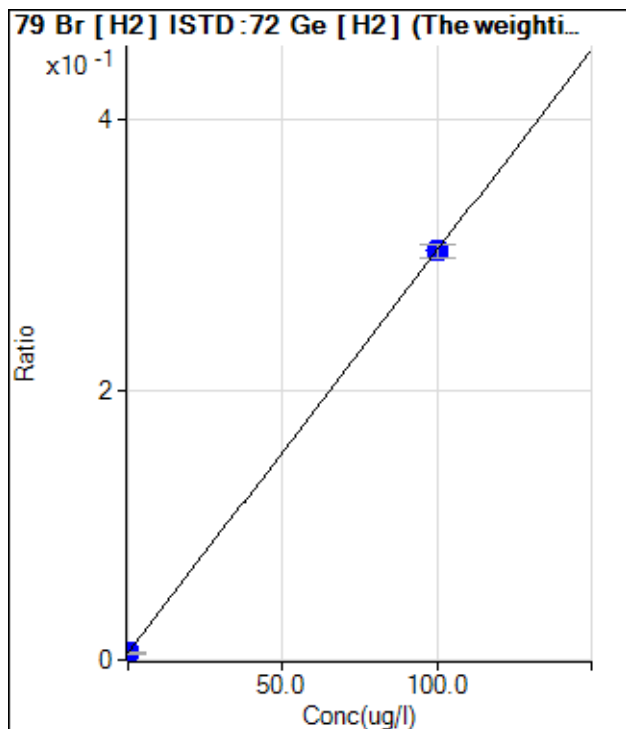
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	15217.88	0.006		8.	
2	<input type="checkbox"/>			18815.02	0.009		11	
3	<input type="checkbox"/>			18781.65	0.008		5.	
4	<input type="checkbox"/>			18921.53	0.008		2.	
5	<input type="checkbox"/>			19104.87	0.009		4.	
6	<input type="checkbox"/>			18758.31	0.008		4.	
7	<input type="checkbox"/>			18428.59	0.008		2.	
8	<input type="checkbox"/>			15927.23	0.007		8.	
9	<input type="checkbox"/>			21056.93	0.009		4.	
10	<input type="checkbox"/>			25488.65	0.012		1.	
11	<input type="checkbox"/>	100.00	100.00	812852.10	0.370		11	0.0

$$y = 0.0036 * x + 0.0068$$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	6045.98	0.005		23	
2	<input type="checkbox"/>			7706.77	0.007		2.	
3	<input type="checkbox"/>			7933.15	0.007		8.	
4	<input type="checkbox"/>			7700.12	0.007		6.	
5	<input type="checkbox"/>			7447.18	0.006		9.	
6	<input type="checkbox"/>			7317.37	0.006		4.	
7	<input type="checkbox"/>			7407.23	0.006		1.	
8	<input type="checkbox"/>			6754.89	0.006		4.	
9	<input type="checkbox"/>			8918.46	0.008		4.	
10	<input type="checkbox"/>			19564.45	0.018		1.	
11	<input type="checkbox"/>	100.00	100.00	343082.34	0.302		3.	0.0

$y = 0.0030 * x + 0.0052$

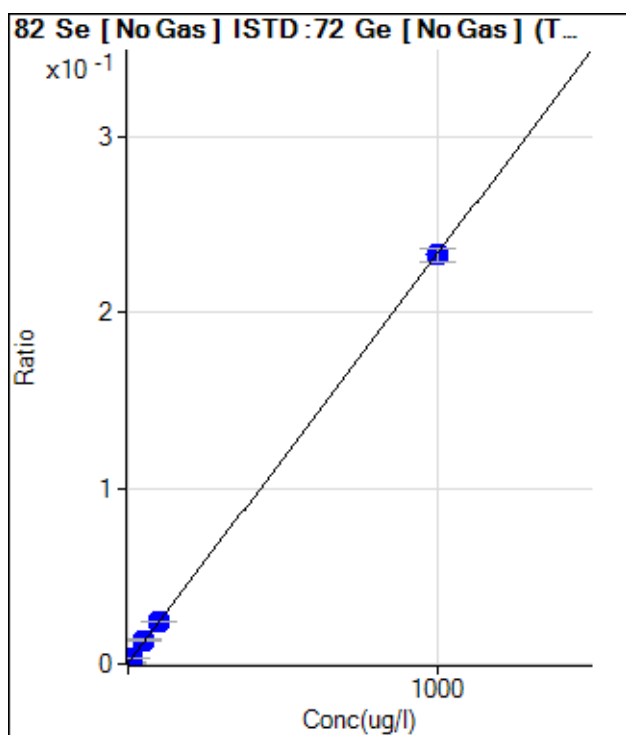
R = 1.0000

DL = 1.231 ug/l

BEC = 1.753 ug/l

Weight: 1/y

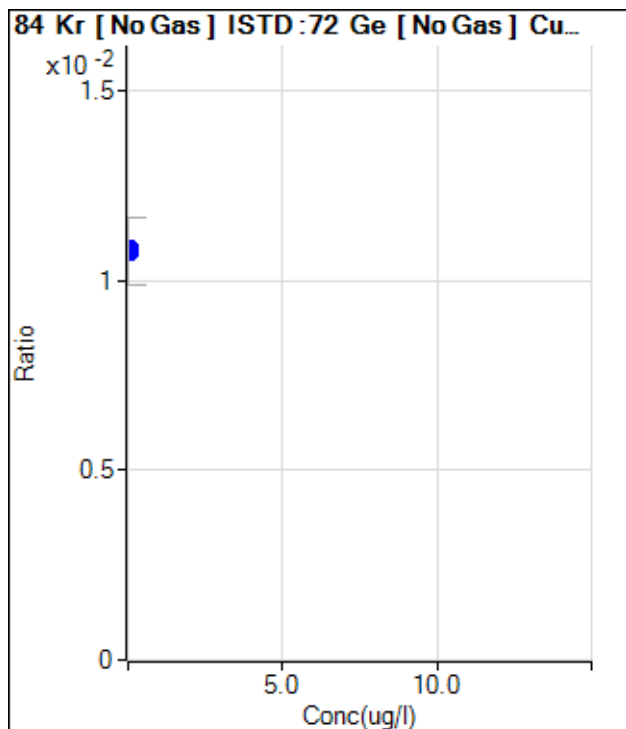
Min Conc: <None>



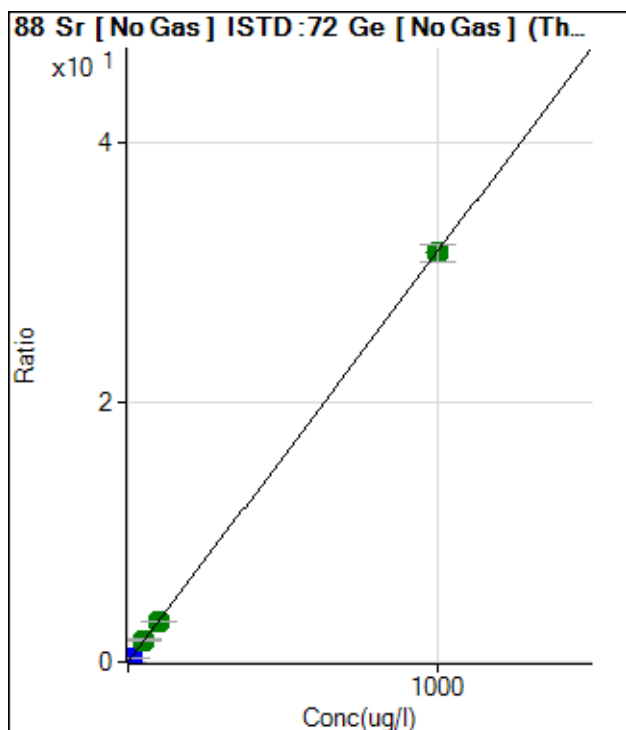
	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	1001.44	0.000		16	
2	<input type="checkbox"/>	0.025	-0.234	791.56	0.000		46	-10
3	<input type="checkbox"/>	0.050	-0.243	813.95	0.000		18	-58
4	<input type="checkbox"/>	0.100	-0.060	922.50	0.000		19	-15
5	<input type="checkbox"/>	0.500	0.342	1100.92	0.000		8.	-31.
6	<input type="checkbox"/>	1.000	0.911	1410.03	0.000		4.	-8.9
7	<input type="checkbox"/>	10.000	10.954	6526.04	0.003		4.	9.5
8	<input type="checkbox"/>	50.000	55.363	26831.75	0.013		9.	10.
9	<input type="checkbox"/>	100.00	103.15	52242.80	0.024		0.	3.2
10	<input type="checkbox"/>	1000.0	999.40	488116.23	0.232		3.	-0.1
11	<input type="checkbox"/>			1338.29	0.000		9.	

$y = 2.3231E-004 * x + 4.4344E-004$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000		24439.78	0.010		16	
2	<input type="checkbox"/>			22170.51	0.010		28	
3	<input type="checkbox"/>			19611.20	0.009		10	
4	<input type="checkbox"/>			21819.90	0.010		1.	
5	<input type="checkbox"/>			21686.61	0.010		4.	
6	<input type="checkbox"/>			22149.79	0.010		3.	
7	<input type="checkbox"/>			26678.34	0.012		1.	
8	<input type="checkbox"/>			44636.89	0.022		8.	
9	<input type="checkbox"/>			65304.41	0.030		1.	
10	<input type="checkbox"/>			438996.22	0.209		2.	
11	<input type="checkbox"/>			22972.74	0.010		9.	



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	1097.87	0.000		11	
2	<input type="checkbox"/>	0.025	0.030	2964.44	0.001		9.	20.
3	<input type="checkbox"/>	0.050	0.063	5217.30	0.002		13	26.
4	<input type="checkbox"/>	0.100	0.115	8841.90	0.004		2.	15.
5	<input type="checkbox"/>	0.500	0.546	37244.16	0.017		3.	9.2
6	<input type="checkbox"/>	1.000	1.146	78692.02	0.036		3.	14.
7	<input type="checkbox"/>	10.000	10.515	723977.46	0.331		4.	5.1
8	<input type="checkbox"/>	50.000	52.922	3361672.6	1.667		9.	5.8
9	<input type="checkbox"/>	100.00	99.678	6717697.9	3.139		2.	-0.3
10	<input type="checkbox"/>	1000.0	999.88	66062570.	31.48		4.	0.0
11	<input type="checkbox"/>			2841.35	0.001		23	

$y = 0.0315 * x + 4.8322E-004$

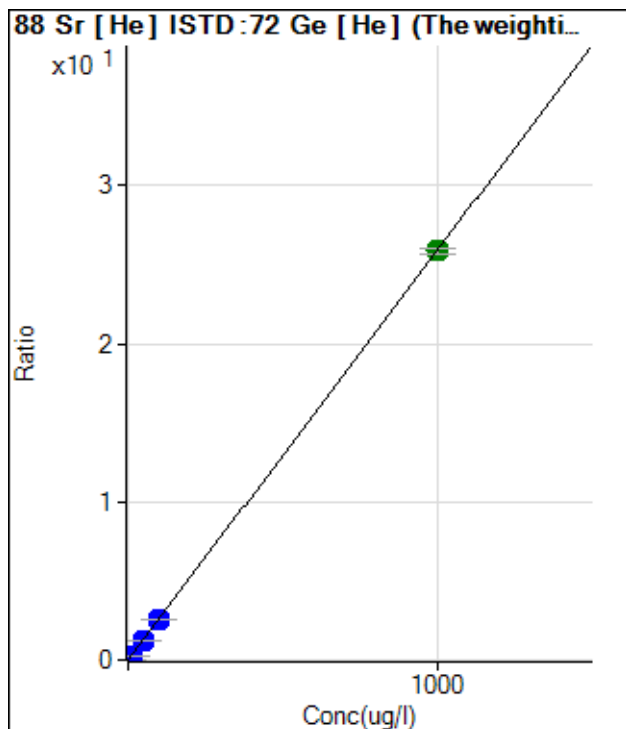
R = 1.0000

DL = 0.005285 ug/l

BEC = 0.01535 ug/l

Weight: 1/y

Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	384.45	0.001		7.	
2	<input type="checkbox"/>	0.025	0.025	584.46	0.001		3.	0.9
3	<input type="checkbox"/>	0.050	0.060	863.36	0.002		8.	19.
4	<input type="checkbox"/>	0.100	0.120	1358.96	0.004		1.	19.
5	<input type="checkbox"/>	0.500	0.512	4499.62	0.014		2.	2.4
6	<input type="checkbox"/>	1.000	1.140	9568.79	0.030		1.	14.
7	<input type="checkbox"/>	10.000	10.891	87102.31	0.282		1.	8.9
8	<input type="checkbox"/>	50.000	49.270	407411.10	1.274		0.	-1.5
9	<input type="checkbox"/>	100.00	97.048	818019.15	2.509		0.	-3.0
10	<input type="checkbox"/>	1000.0	1000.3	8142059.3	25.85		1.	0.0
11	<input type="checkbox"/>			488.90	0.001		7.	

$y = 0.0258 * x + 0.0012$

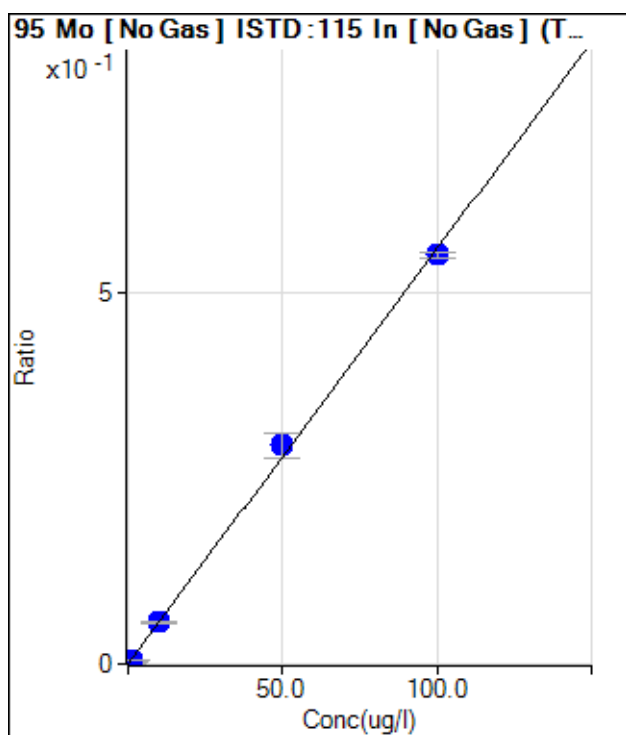
R = 1.0000

DL = 0.01066 ug/l

BEC = 0.04733 ug/l

Weight: 1/y

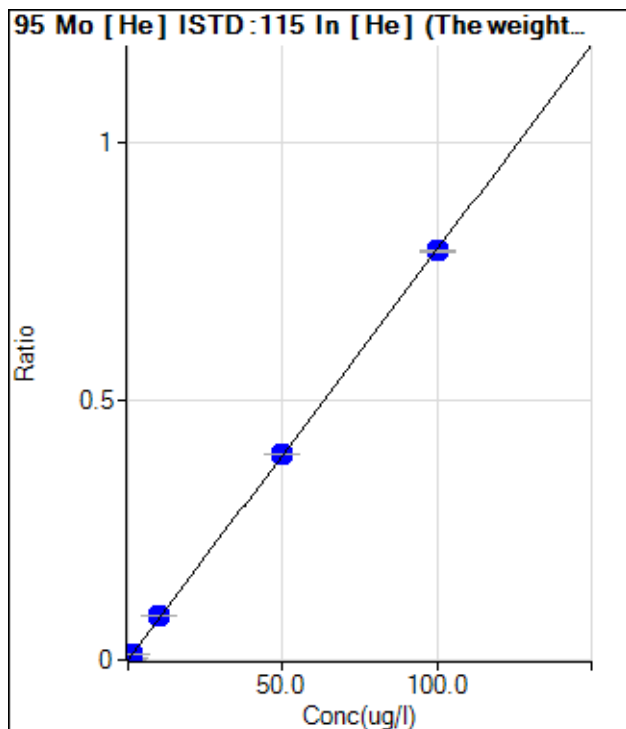
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	50.00	0.000		20	
2	<input type="checkbox"/>	0.025	0.029	423.34	0.000		10	14.
3	<input type="checkbox"/>	0.050	0.065	931.15	0.000		11	30.
4	<input type="checkbox"/>	0.100	0.116	1643.44	0.000		3.	16.
5	<input type="checkbox"/>	0.500	0.521	7196.30	0.002		5.	4.3
6	<input type="checkbox"/>	1.000	1.097	15486.22	0.006		2.	9.7
7	<input type="checkbox"/>	10.000	10.023	141516.72	0.056		1.	0.2
8	<input type="checkbox"/>	50.000	52.763	670563.07	0.295		11	5.5
9	<input type="checkbox"/>	100.00	98.615	1353504.8	0.552		1.	-1.4
10	<input type="checkbox"/>			1885.69	0.000		5.	
11	<input type="checkbox"/>			378.89	0.000		5.	

$y = 0.0056 * x + 1.8649E-005$

R = 0.9995



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t .	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	18.89	0.000		57	
2	<input type="checkbox"/>	0.025	0.024	125.55	0.000		5.	-5.5
3	<input type="checkbox"/>	0.050	0.058	283.34	0.000		22	16.
4	<input type="checkbox"/>	0.100	0.119	556.68	0.001		2.	18.
5	<input type="checkbox"/>	0.500	0.550	2486.90	0.004		1.	10.
6	<input type="checkbox"/>	1.000	1.178	5318.80	0.009		1.	17.
7	<input type="checkbox"/>	10.000	10.834	48642.38	0.085		1.	8.3
8	<input type="checkbox"/>	50.000	50.261	228959.97	0.398		0.	0.5
9	<input type="checkbox"/>	100.00	99.784	457101.03	0.790		0.	-0.2
10	<input type="checkbox"/>			382.23	0.000		10	
11	<input type="checkbox"/>			92.22	0.000		0.	

$y = 0.0079 * x + 3.3122E-005$

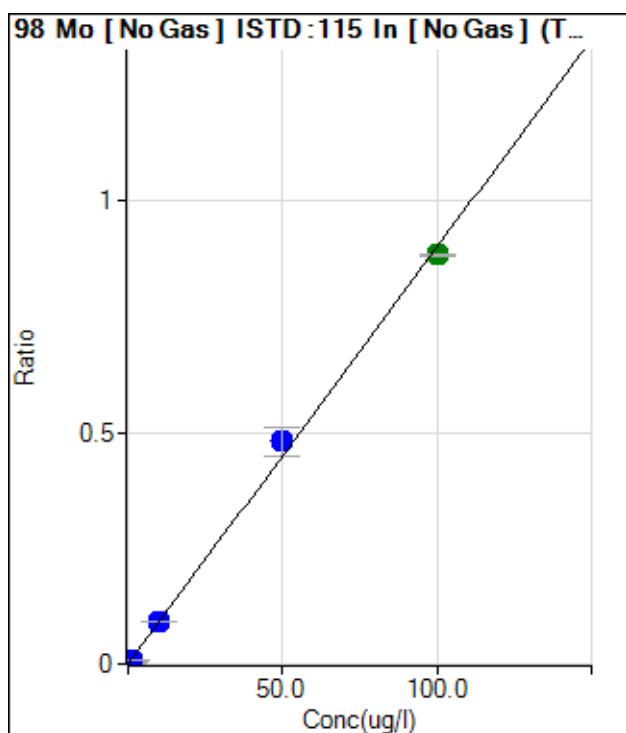
R = 1.0000

DL = 0.007155 ug/l

BEC = 0.004183 ug/l

Weight: 1/y

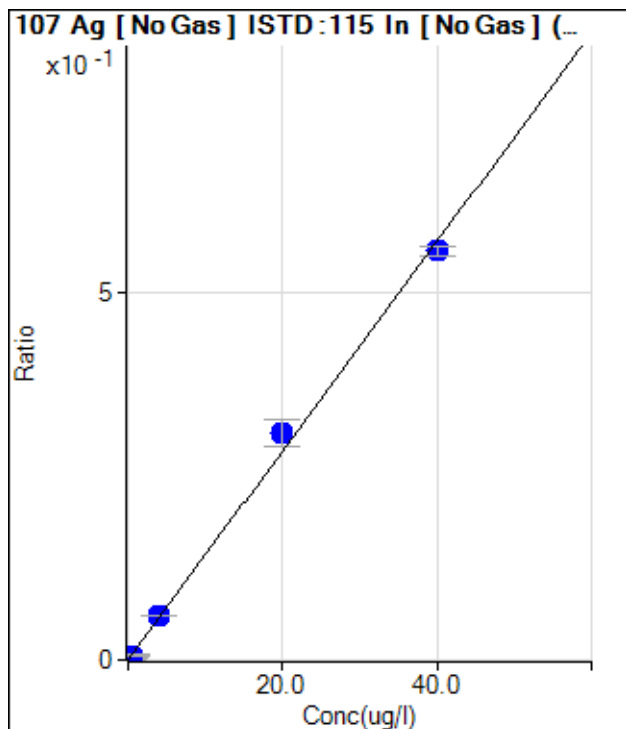
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t .	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	74.45	0.000		40	
2	<input type="checkbox"/>	0.025	0.028	658.42	0.000		10	13.
3	<input type="checkbox"/>	0.050	0.065	1482.10	0.000		9.	30.
4	<input type="checkbox"/>	0.100	0.113	2556.08	0.001		5.	12.
5	<input type="checkbox"/>	0.500	0.516	11425.40	0.004		5.	3.2
6	<input type="checkbox"/>	1.000	1.085	24585.19	0.009		1.	8.5
7	<input type="checkbox"/>	10.000	10.169	230403.80	0.091		2.	1.7
8	<input type="checkbox"/>	50.000	53.508	1089869.4	0.480		13	7.0
9	<input type="checkbox"/>	100.00	98.228	2163531.5	0.882		0.	-1.8
10	<input type="checkbox"/>			2711.19	0.001		4.	
11	<input type="checkbox"/>			480.63	0.000		16	

$y = 0.0090 * x + 2.8011E-005$

R = 0.9992



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t .	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	200.08	0.000		7.	
2	<input type="checkbox"/>	0.010	0.012	562.90	0.000		17	17.
3	<input type="checkbox"/>	0.020	0.025	1029.12	0.000		3.	22.
4	<input type="checkbox"/>	0.040	0.047	1828.86	0.000		4.	18.
5	<input type="checkbox"/>	0.200	0.216	7703.86	0.003		4.	8.2
6	<input type="checkbox"/>	0.400	0.451	16268.50	0.006		2.	12.
7	<input type="checkbox"/>	4.000	4.180	149660.09	0.059		1.	4.5
8	<input type="checkbox"/>	20.000	21.697	698401.06	0.308		12	8.5
9	<input type="checkbox"/>	40.000	39.133	1360845.4	0.555		2.	-2.2
10	<input type="checkbox"/>			12401614.	5.216		2.	
11	<input type="checkbox"/>			1456.00	0.000		10	

$y = 0.0142 * x + 7.5886E-005$

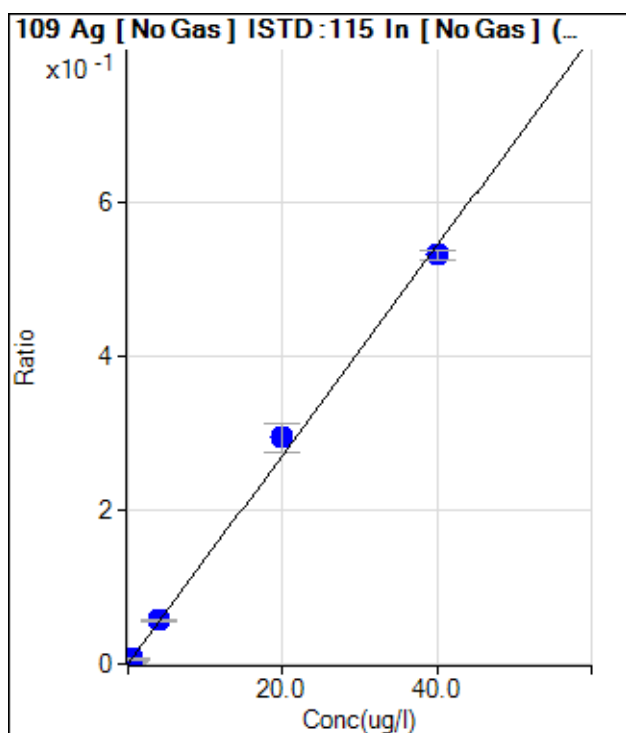
R = 0.9989

DL = 0.001144 ug/l

BEC = 0.005348 ug/l

Weight: 1/y

Min Conc: <None>

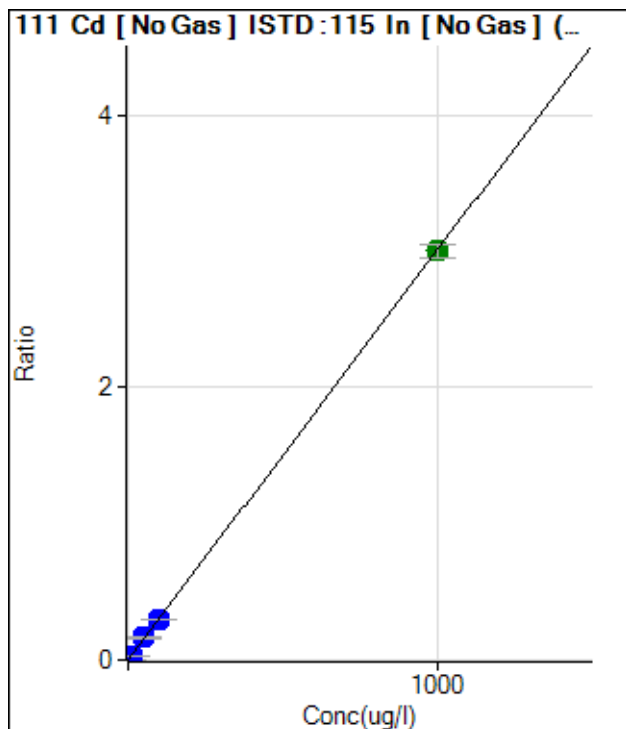


	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t .	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	192.08	0.000		9.	
2	<input type="checkbox"/>	0.010	0.012	561.57	0.000		8.	23.
3	<input type="checkbox"/>	0.020	0.026	1045.79	0.000		7.	32.
4	<input type="checkbox"/>	0.040	0.048	1764.82	0.000		4.	18.
5	<input type="checkbox"/>	0.200	0.215	7343.53	0.003		5.	7.6
6	<input type="checkbox"/>	0.400	0.457	15785.10	0.006		1.	14.
7	<input type="checkbox"/>	4.000	4.156	142596.37	0.056		1.	3.9
8	<input type="checkbox"/>	20.000	21.647	667585.09	0.294		12	8.2
9	<input type="checkbox"/>	40.000	39.160	1304840.8	0.532		2.	-2.1
10	<input type="checkbox"/>			12028910.	5.060		4.	
11	<input type="checkbox"/>			1440.66	0.000		11	

$y = 0.0136 * x + 7.2874E-005$

R = 0.9989





	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t .	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	70.61	0.000		41	
2	<input type="checkbox"/>	0.025	0.026	243.08	0.000		17	3.2
3	<input type="checkbox"/>	0.050	0.061	514.09	0.000		8.	22.
4	<input type="checkbox"/>	0.100	0.118	936.95	0.000		2.	18.
5	<input type="checkbox"/>	0.500	0.535	4003.22	0.001		2.	7.0
6	<input type="checkbox"/>	1.000	1.158	8812.65	0.003		1.	15.
7	<input type="checkbox"/>	10.000	10.508	79611.96	0.031		1.	5.1
8	<input type="checkbox"/>	50.000	54.994	374596.27	0.165		12	10.
9	<input type="checkbox"/>	100.00	99.533	732670.17	0.299		1.	-0.5
10	<input type="checkbox"/>	1000.0	999.79	7139479.7	3.003		3.	0.0
11	<input type="checkbox"/>			673.67	0.000		17	

$y = 0.0030 * x + 2.7451E-005$

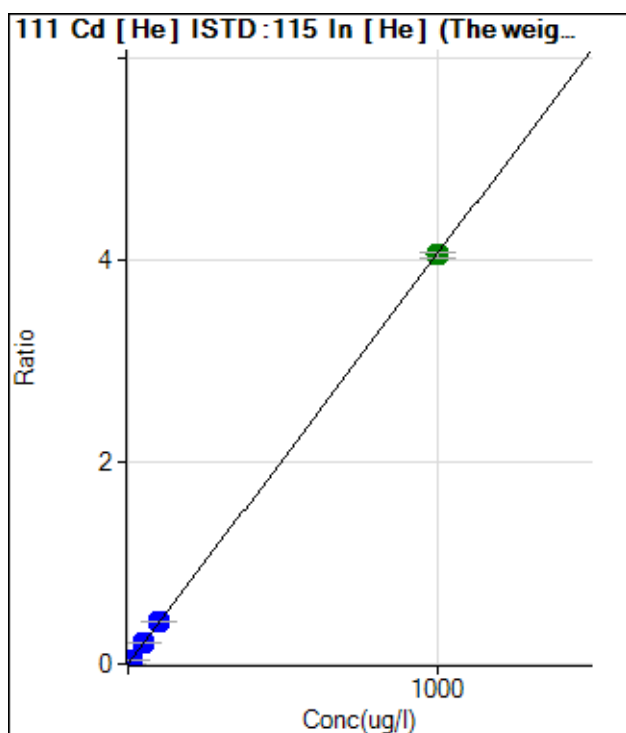
R = 1.0000

DL = 0.01133 ug/l

BEC = 0.009139 ug/l

Weight: 1/y

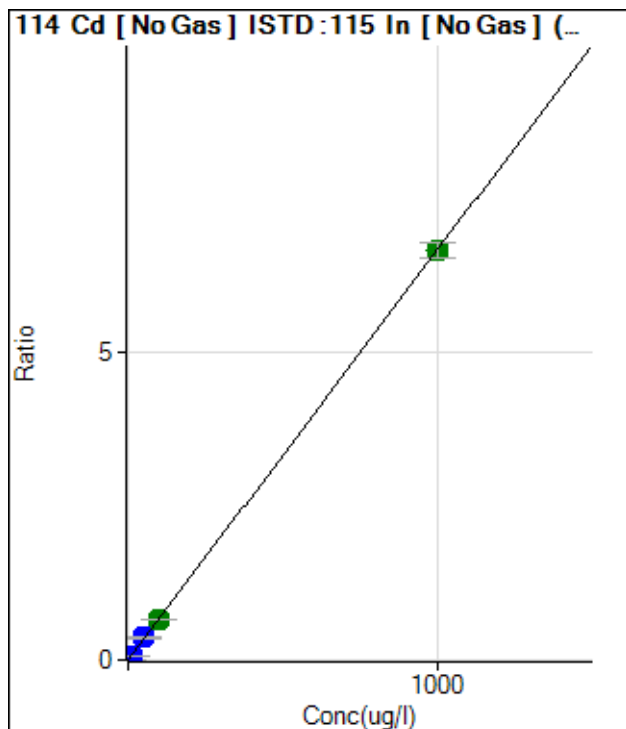
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t .	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	16.78	0.000		23	
2	<input type="checkbox"/>	0.025	0.030	87.00	0.000		4.	21.
3	<input type="checkbox"/>	0.050	0.062	162.33	0.000		4.	24.
4	<input type="checkbox"/>	0.100	0.123	302.33	0.000		3.	23.
5	<input type="checkbox"/>	0.500	0.568	1320.95	0.002		1.	13.
6	<input type="checkbox"/>	1.000	1.203	2785.72	0.004		1.	20.
7	<input type="checkbox"/>	10.000	11.193	25717.18	0.045		0.	11.
8	<input type="checkbox"/>	50.000	51.574	120187.36	0.208		1.	3.1
9	<input type="checkbox"/>	100.00	101.39	237610.98	0.410		0.	1.4
10	<input type="checkbox"/>	1000.0	999.77	2266273.0	4.049		1.	0.0
11	<input type="checkbox"/>			136.33	0.000		6.	

$y = 0.0041 * x + 2.9352E-005$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t .	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	86.05	0.000		49	
2	<input type="checkbox"/>	0.025	0.029	532.01	0.000		13	17.
3	<input type="checkbox"/>	0.050	0.065	1123.23	0.000		8.	29.
4	<input type="checkbox"/>	0.100	0.118	2010.48	0.000		3.	18.
5	<input type="checkbox"/>	0.500	0.544	8952.53	0.003		3.	8.9
6	<input type="checkbox"/>	1.000	1.158	19437.53	0.007		2.	15.
7	<input type="checkbox"/>	10.000	10.547	176881.46	0.070		2.	5.5
8	<input type="checkbox"/>	50.000	55.434	836577.58	0.368		11	10.
9	<input type="checkbox"/>	100.00	99.109	1615488.9	0.659		1.	-0.9
10	<input type="checkbox"/>	1000.0	999.81	15808858.	6.650		3.	0.0
11	<input type="checkbox"/>			1495.51	0.000		17	

$y = 0.0067 * x + 3.3658E-005$

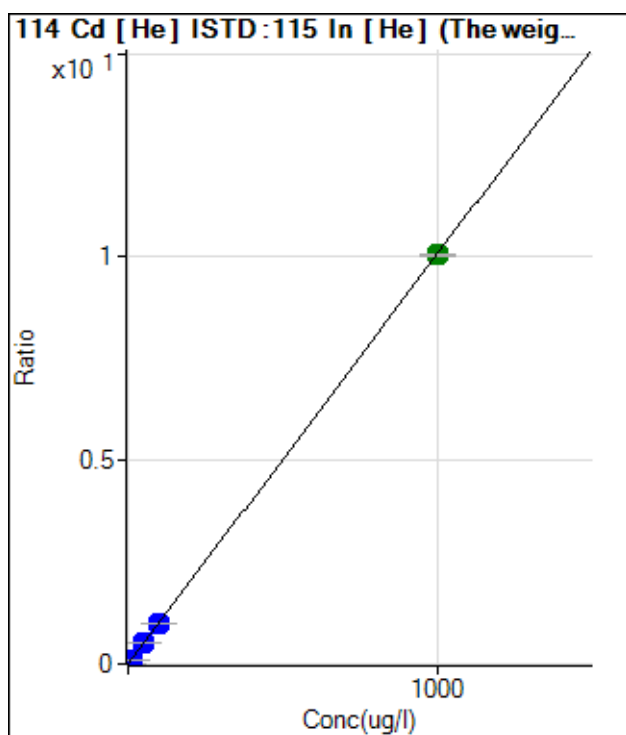
R = 1.0000

DL = 0.00753 ug/l

BEC = 0.00506 ug/l

Weight: 1/y

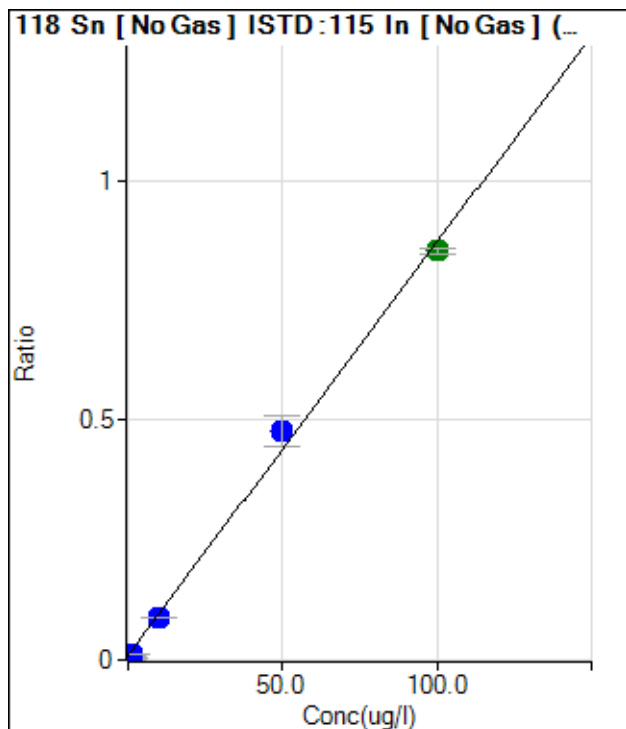
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t .	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	13.99	0.000		37	
2	<input type="checkbox"/>	0.025	0.032	198.96	0.000		8.	29.
3	<input type="checkbox"/>	0.050	0.068	406.90	0.000		4.	35.
4	<input type="checkbox"/>	0.100	0.122	714.69	0.001		1.	21.
5	<input type="checkbox"/>	0.500	0.556	3182.09	0.005		0.	11.
6	<input type="checkbox"/>	1.000	1.197	6856.92	0.012		0.	19.
7	<input type="checkbox"/>	10.000	10.888	62064.49	0.109		0.	8.9
8	<input type="checkbox"/>	50.000	50.448	291776.07	0.507		0.	0.9
9	<input type="checkbox"/>	100.00	98.707	574104.47	0.992		0.	-1.3
10	<input type="checkbox"/>	1000.0	1000.0	5626907.7	10.05		0.	0.0
11	<input type="checkbox"/>			340.29	0.000		10	

$y = 0.0101 * x + 2.4469E-005$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	25335.83	0.009		12	
2	<input type="checkbox"/>	0.025	-0.976	2914.54	0.001		9.	-40
3	<input type="checkbox"/>	0.050	-0.960	3377.07	0.001		8.	-20
4	<input type="checkbox"/>	0.100	-0.914	4385.36	0.001		4.	-10
5	<input type="checkbox"/>	0.500	-0.445	14285.62	0.005		1.	-18
6	<input type="checkbox"/>	1.000	0.102	26475.71	0.010		1.	-89.
7	<input type="checkbox"/>	10.000	9.290	225918.86	0.089		1.	-7.1
8	<input type="checkbox"/>	50.000	54.260	1080379.8	0.476		13	8.5
9	<input type="checkbox"/>	100.00	97.956	2090495.7	0.853		1.	-2.0
10	<input type="checkbox"/>			4831.88	0.002		12	
11	<input type="checkbox"/>			2917.86	0.001		4.	

$y = 0.0086 * x + 0.0097$

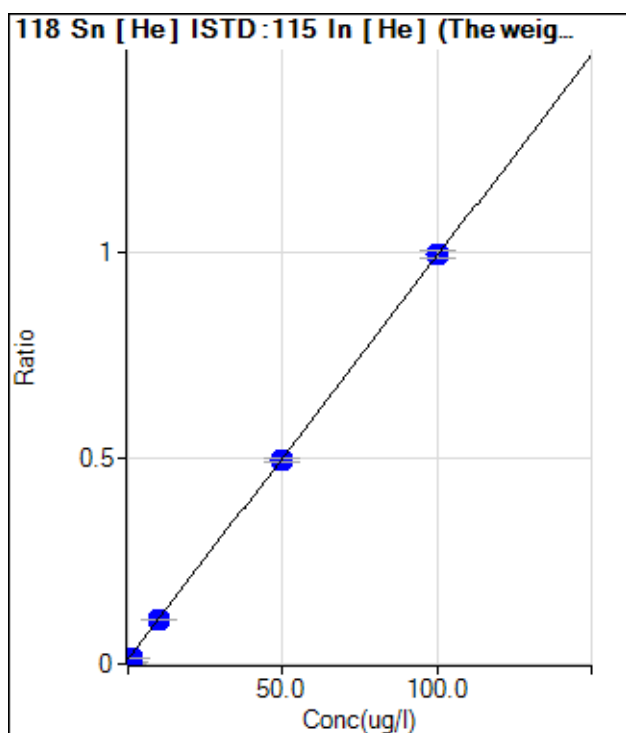
$R = 0.9987$

DL = 0.4041 ug/l

BEC = 1.122 ug/l

Weight: 1/y

Min Conc: <None>

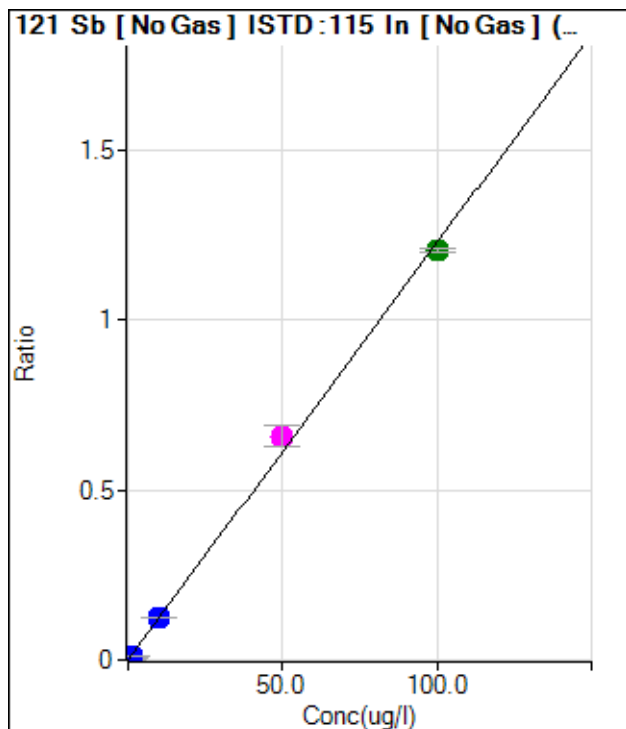


	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	6802.79	0.011		1.	
2	<input type="checkbox"/>	0.025	-1.061	870.10	0.001		25	-43
3	<input type="checkbox"/>	0.050	-1.052	930.04	0.001		6.	-22
4	<input type="checkbox"/>	0.100	-1.002	1205.62	0.002		0.	-11
5	<input type="checkbox"/>	0.500	-0.513	3899.45	0.006		1.	-20
6	<input type="checkbox"/>	1.000	0.042	7001.78	0.012		1.	-95.
7	<input type="checkbox"/>	10.000	9.855	61367.60	0.108		2.	-1.4
8	<input type="checkbox"/>	50.000	49.343	284387.75	0.494		1.	-1.3
9	<input type="checkbox"/>	100.00	100.35	574609.14	0.993		1.	0.4
10	<input type="checkbox"/>			1163.39	0.002		9.	
11	<input type="checkbox"/>			816.70	0.001		17	

$y = 0.0098 * x + 0.0119$

$R = 0.9999$

Calibration for 021\_CCV.d



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	272.70	0.000		5.	
2	<input type="checkbox"/>	0.025	0.037	1299.86	0.000		7.	48.
3	<input type="checkbox"/>	0.050	0.063	2117.38	0.000		9.	26.
4	<input type="checkbox"/>	0.100	0.115	3718.87	0.001		3.	15.
5	<input type="checkbox"/>	0.500	0.555	16900.82	0.006		3.	11.
6	<input type="checkbox"/>	1.000	1.115	34584.68	0.013		0.	11.
7	<input type="checkbox"/>	10.000	10.261	317020.53	0.125		1.	2.6
8	<input type="checkbox"/>	50.000	53.720	1494745.3	0.658		9.	7.4
9	<input type="checkbox"/>	100.00	98.112	2945482.0	1.202		0.	-1.9
10	<input type="checkbox"/>			4988.40	0.002		5.	
11	<input type="checkbox"/>			1636.93	0.000		9.	

$y = 0.0123 * x + 1.0334E-004$

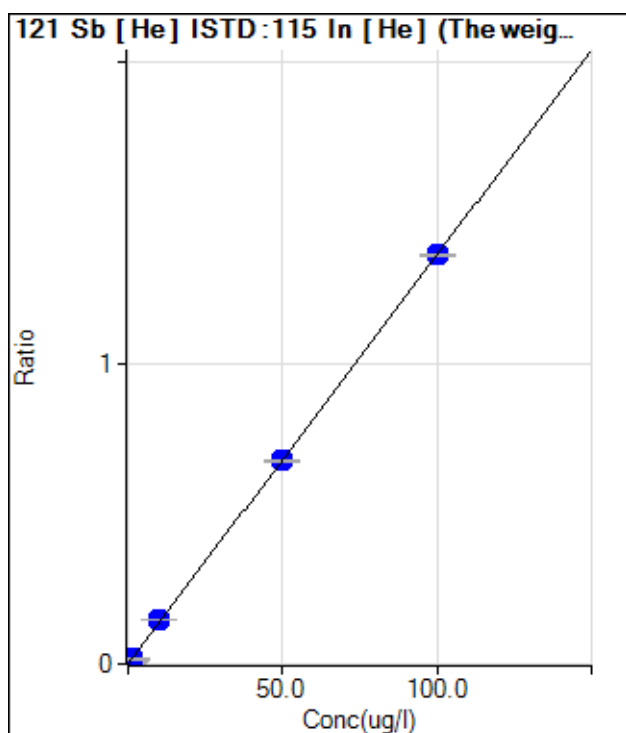
R = 0.9991

DL = 0.001321 ug/l

BEC = 0.008436 ug/l

Weight: 1/y

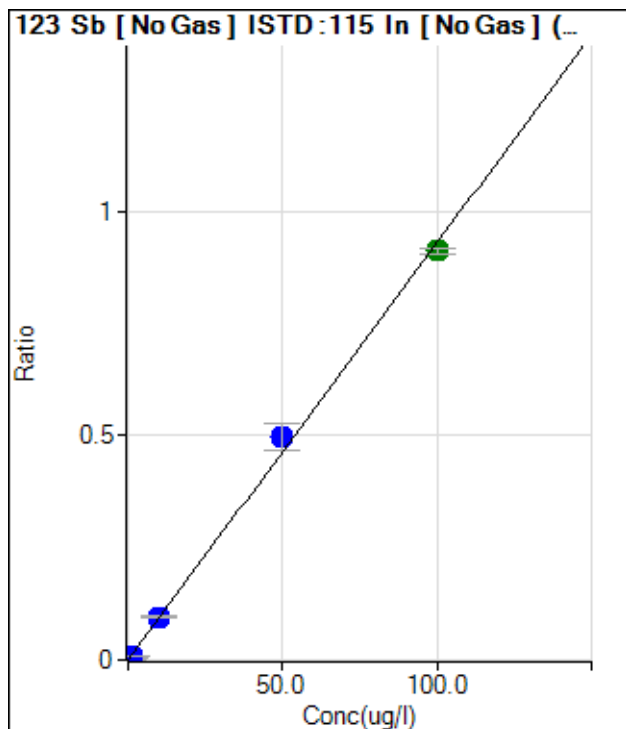
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	93.34	0.000		5.	
2	<input type="checkbox"/>	0.025	0.033	345.37	0.000		12	30.
3	<input type="checkbox"/>	0.050	0.060	567.40	0.001		4.	21.
4	<input type="checkbox"/>	0.100	0.113	971.80	0.001		0.	13.
5	<input type="checkbox"/>	0.500	0.567	4457.83	0.007		1.	13.
6	<input type="checkbox"/>	1.000	1.164	9087.18	0.016		1.	16.
7	<input type="checkbox"/>	10.000	10.760	82972.17	0.146		1.	7.6
8	<input type="checkbox"/>	50.000	49.774	389157.15	0.676		1.	-0.5
9	<input type="checkbox"/>	100.00	100.03	786466.75	1.359		0.	0.0
10	<input type="checkbox"/>			1067.82	0.001		2.	
11	<input type="checkbox"/>			401.71	0.000		14	

$y = 0.0136 * x + 1.6335E-004$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	216.69	0.000		9.	
2	<input type="checkbox"/>	0.025	0.037	984.13	0.000		8.	46.
3	<input type="checkbox"/>	0.050	0.062	1595.59	0.000		10	24.
4	<input type="checkbox"/>	0.100	0.113	2785.22	0.001		3.	13.
5	<input type="checkbox"/>	0.500	0.552	12772.41	0.005		3.	10.
6	<input type="checkbox"/>	1.000	1.118	26304.11	0.010		0.	11.
7	<input type="checkbox"/>	10.000	10.294	241226.35	0.095		2.	2.9
8	<input type="checkbox"/>	50.000	53.619	1130206.5	0.498		11	7.2
9	<input type="checkbox"/>	100.00	98.160	2235013.1	0.912		1.	-1.8
10	<input type="checkbox"/>			4223.40	0.001		3.	
11	<input type="checkbox"/>			1237.85	0.000		8.	

$y = 0.0093 * x + 8.2382E-005$

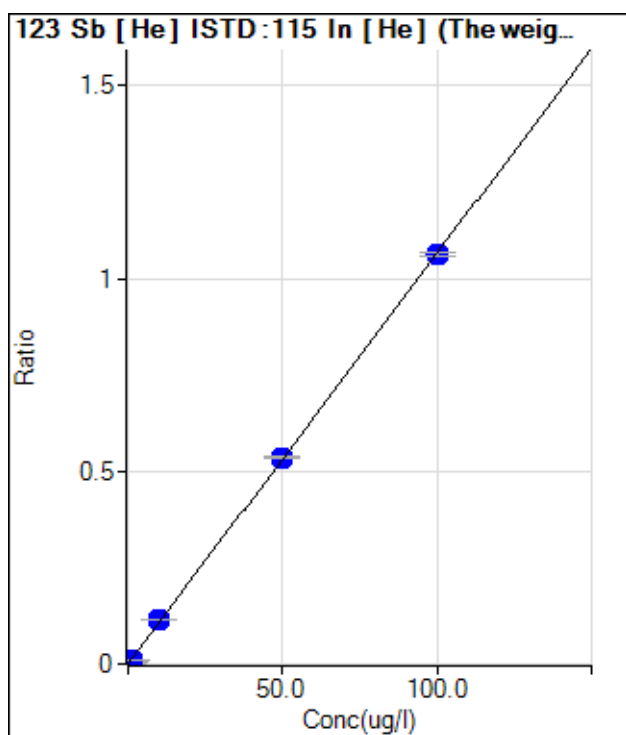
R = 0.9992

DL = 0.002597 ug/l

BEC = 0.008867 ug/l

Weight: 1/y

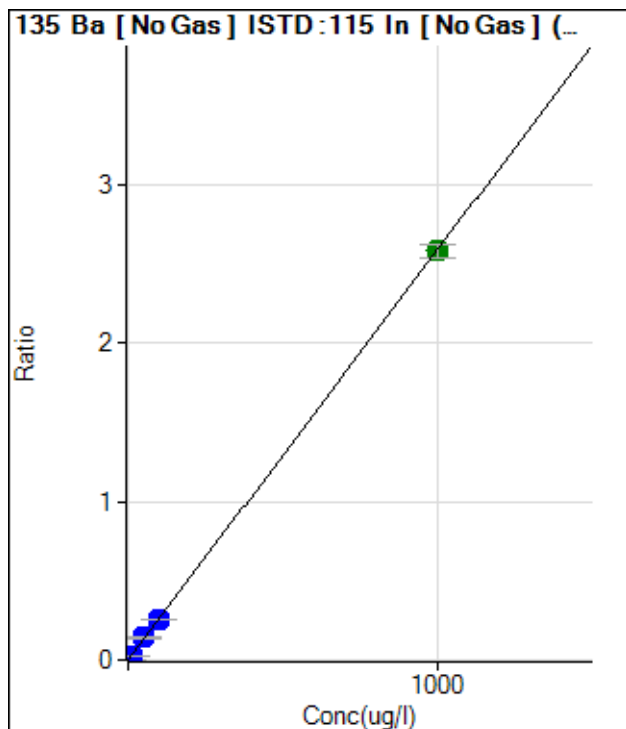
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	72.68	0.000		6.	
2	<input type="checkbox"/>	0.025	0.035	283.70	0.000		5.	39.
3	<input type="checkbox"/>	0.050	0.062	453.72	0.000		5.	24.
4	<input type="checkbox"/>	0.100	0.113	762.10	0.001		1.	13.
5	<input type="checkbox"/>	0.500	0.570	3509.46	0.006		1.	14.
6	<input type="checkbox"/>	1.000	1.146	7002.45	0.012		0.	14.
7	<input type="checkbox"/>	10.000	10.859	65531.14	0.115		1.	8.6
8	<input type="checkbox"/>	50.000	50.380	308309.49	0.536		0.	0.8
9	<input type="checkbox"/>	100.00	99.722	613630.72	1.060		0.	-0.3
10	<input type="checkbox"/>			835.44	0.001		7.	
11	<input type="checkbox"/>			319.70	0.000		8.	

$y = 0.0106 * x + 1.2714E-004$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	29.94	0.000		36	
2	<input type="checkbox"/>	0.025	0.030	206.26	0.000		33	21.
3	<input type="checkbox"/>	0.050	0.062	415.85	0.000		5.	24.
4	<input type="checkbox"/>	0.100	0.117	768.50	0.000		13	17.
5	<input type="checkbox"/>	0.500	0.550	3503.51	0.001		2.	10.
6	<input type="checkbox"/>	1.000	1.069	6957.97	0.002		3.	6.9
7	<input type="checkbox"/>	10.000	10.255	66696.97	0.026		4.	2.6
8	<input type="checkbox"/>	50.000	54.604	319809.10	0.140		10	9.2
9	<input type="checkbox"/>	100.00	98.385	621974.41	0.253		1.	-1.6
10	<input type="checkbox"/>	1000.0	999.92	6132473.7	2.579		3.	0.0
11	<input type="checkbox"/>			222.90	0.000		32	

$$y = 0.0026 * x + 1.1380E-005$$

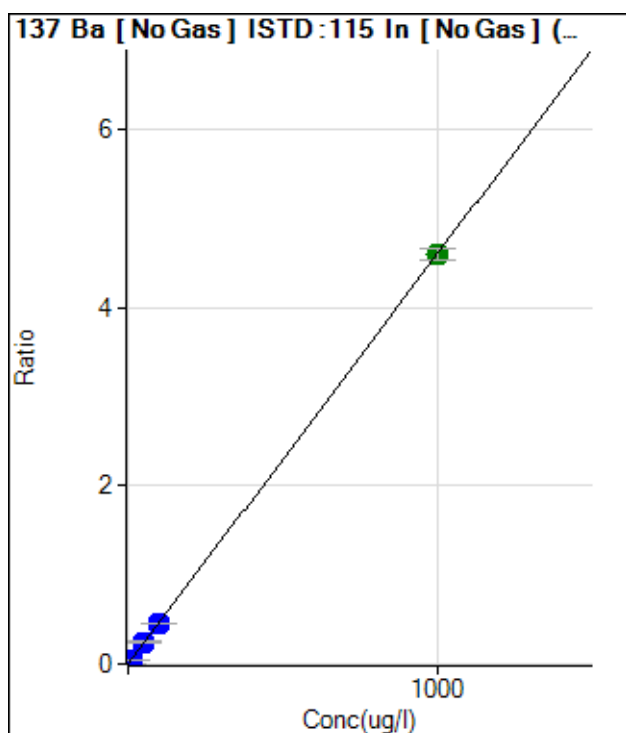
R = 1.0000

DL = 0.004777 ug/l

BEC = 0.004411 ug/l

Weight: 1/y

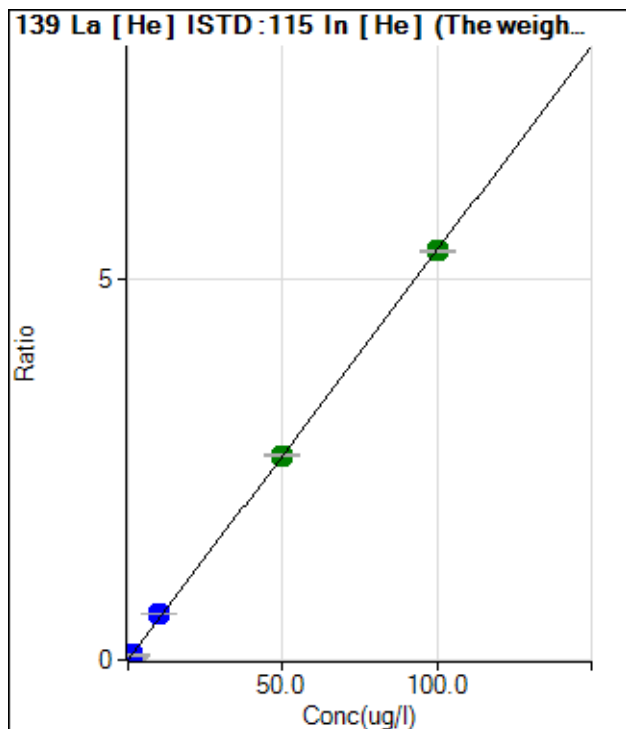
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	89.82	0.000		64	
2	<input type="checkbox"/>	0.025	0.031	419.18	0.000		6.	26.
3	<input type="checkbox"/>	0.050	0.062	765.18	0.000		22	23.
4	<input type="checkbox"/>	0.100	0.109	1307.48	0.000		13	8.6
5	<input type="checkbox"/>	0.500	0.509	5813.06	0.002		12	1.9
6	<input type="checkbox"/>	1.000	1.071	12454.23	0.005		0.	7.1
7	<input type="checkbox"/>	10.000	10.061	116607.60	0.046		2.	0.6
8	<input type="checkbox"/>	50.000	53.010	553662.55	0.243		8.	6.0
9	<input type="checkbox"/>	100.00	97.188	1094604.3	0.446		0.	-2.8
10	<input type="checkbox"/>	1000.0	1000.1	10928074.	4.596		2.	0.0
11	<input type="checkbox"/>			352.64	0.000		25	

$$y = 0.0046 * x + 3.4969E-005$$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	8.89	0.000		77	
2	<input type="checkbox"/>	0.025	0.028	876.70	0.001		12	13.
3	<input type="checkbox"/>	0.050	0.060	1856.81	0.003		2.	19.
4	<input type="checkbox"/>	0.100	0.119	3652.72	0.006		5.	18.
5	<input type="checkbox"/>	0.500	0.550	16709.00	0.029		1.	9.9
6	<input type="checkbox"/>	1.000	1.184	36104.54	0.063		2.	18.
7	<input type="checkbox"/>	10.000	11.191	340179.42	0.600		2.	11.
8	<input type="checkbox"/>	50.000	49.838	1537513.5	2.672		0.	-0.3
9	<input type="checkbox"/>	100.00	99.960	3101211.1	5.361		0.	0.0
10	<input type="checkbox"/>			403.34	0.000		2.	
11	<input type="checkbox"/>			43.33	0.000		27	

$y = 0.0536 * x + 1.5512E-005$

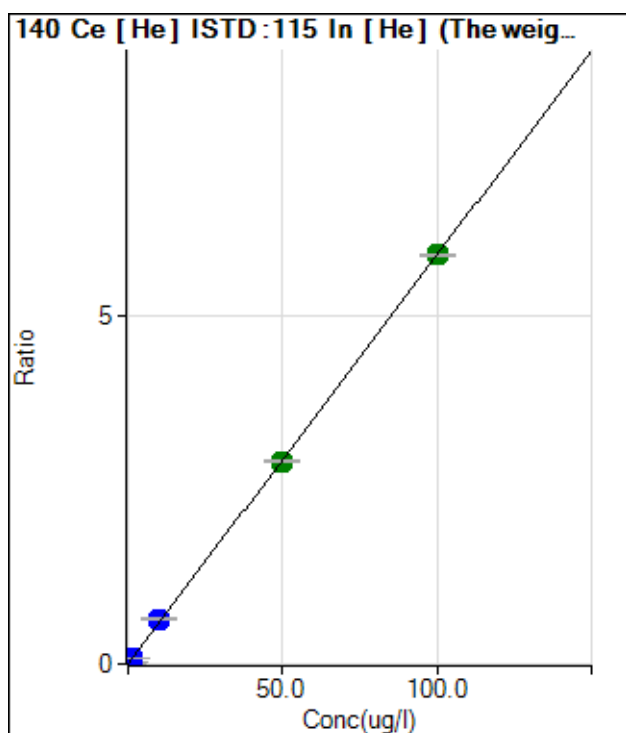
R = 0.9999

DL = 0.0006735 ug/l

BEC = 0.0002892 ug/l

Weight: 1/y

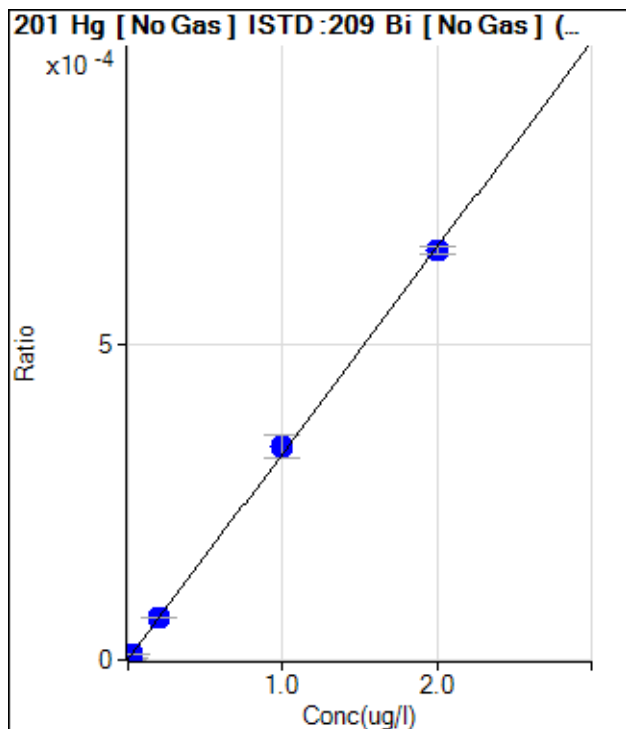
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	20.00	0.000		67	
2	<input type="checkbox"/>	0.025	0.028	944.48	0.001		7.	10.
3	<input type="checkbox"/>	0.050	0.063	2144.63	0.003		5.	25.
4	<input type="checkbox"/>	0.100	0.118	3963.92	0.006		1.	17.
5	<input type="checkbox"/>	0.500	0.545	18124.09	0.032		0.	8.9
6	<input type="checkbox"/>	1.000	1.190	39692.14	0.069		0.	19.
7	<input type="checkbox"/>	10.000	11.033	366841.04	0.647		2.	10.
8	<input type="checkbox"/>	50.000	49.584	1673273.9	2.908		0.	-0.8
9	<input type="checkbox"/>	100.00	100.10	3397183.4	5.872		0.	0.1
10	<input type="checkbox"/>			911.15	0.001		12	
11	<input type="checkbox"/>			100.00	0.000		14	

$y = 0.0587 * x + 3.5088E-005$

R = 0.9999



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	15.00	0.000		10	
2	<input type="checkbox"/>			12.67	0.000		15	
3	<input type="checkbox"/>	0.001	0.001	17.33	0.000		3.	-25.
4	<input type="checkbox"/>	0.002	0.002	21.33	0.000		24	-15.
5	<input type="checkbox"/>	0.010	0.009	49.99	0.000		11	-10.
6	<input type="checkbox"/>	0.020	0.023	108.31	0.000		6.	13.
7	<input type="checkbox"/>	0.200	0.204	867.53	0.000		0.	2.0
8	<input type="checkbox"/>	1.000	1.030	3858.12	0.000		10	3.0
9	<input type="checkbox"/>	2.000	1.984	7694.68	0.000		1.	-0.8
10	<input type="checkbox"/>			41.32	0.000		16	
11	<input type="checkbox"/>			15.67	0.000		43	

$y = 3.2568E-004 * x + 1.1605E-006$

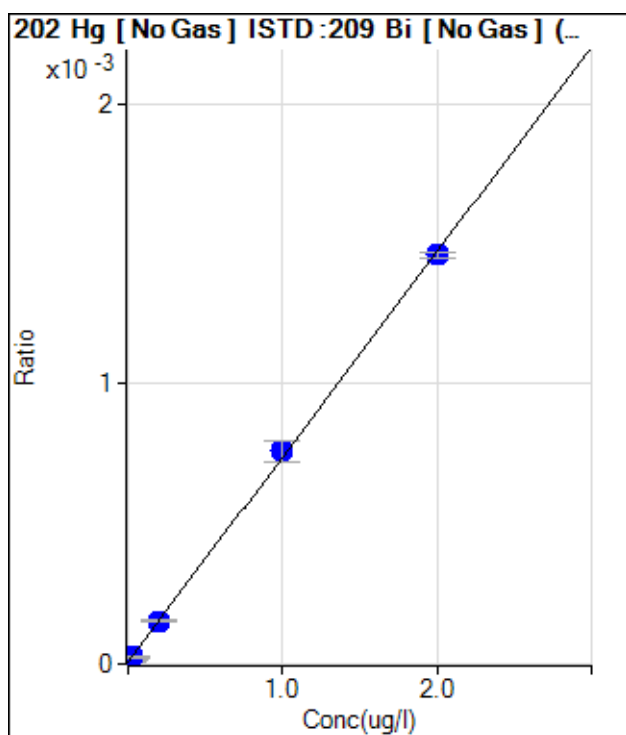
R = 0.9998

DL = 0.001083 ug/l

BEC = 0.003563 ug/l

Weight: 1/y

Min Conc: <None>

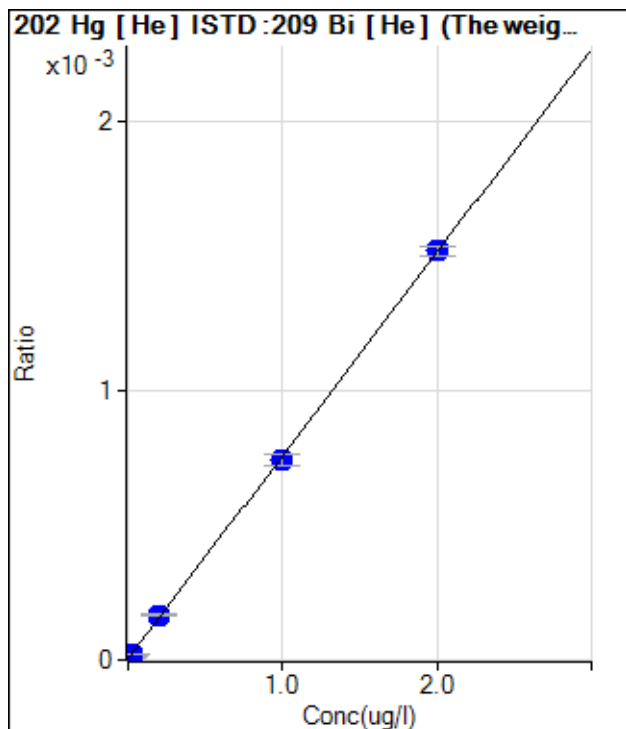


	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	96.65	0.000		11	
2	<input type="checkbox"/>			92.31	0.000		13	
3	<input type="checkbox"/>	0.001	0.001	97.98	0.000		1.	-39.
4	<input type="checkbox"/>	0.002	0.002	111.98	0.000		12	0.2
5	<input type="checkbox"/>	0.010	0.011	194.30	0.000		6.	14.
6	<input type="checkbox"/>	0.020	0.023	305.94	0.000		1.	14.
7	<input type="checkbox"/>	0.200	0.200	1973.09	0.000		2.	0.0
8	<input type="checkbox"/>	1.000	1.029	8710.76	0.000		10	2.9
9	<input type="checkbox"/>	2.000	1.986	17350.76	0.001		1.	-0.7
10	<input type="checkbox"/>			139.30	0.000		7.	
11	<input type="checkbox"/>			96.65	0.000		6.	

$y = 7.3147E-004 * x + 7.4963E-006$

R = 0.9999





	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	22.00	0.000		15	
2	<input type="checkbox"/>			24.99	0.000		13	
3	<input type="checkbox"/>	0.001	0.002	30.99	0.000		8.	111
4	<input type="checkbox"/>	0.002	0.003	32.99	0.000		2.	31.
5	<input type="checkbox"/>	0.010	0.009	60.99	0.000		4.	-5.1
6	<input type="checkbox"/>	0.020	0.023	116.31	0.000		7.	14.
7	<input type="checkbox"/>	0.200	0.215	906.52	0.000		3.	7.7
8	<input type="checkbox"/>	1.000	0.980	3865.46	0.000		5.	-2.0
9	<input type="checkbox"/>	2.000	2.008	7793.38	0.001		2.	0.4
10	<input type="checkbox"/>			43.32	0.000		14	
11	<input type="checkbox"/>			29.33	0.000		23	

$y = 7.5561E-004 * x + 4.1221E-006$

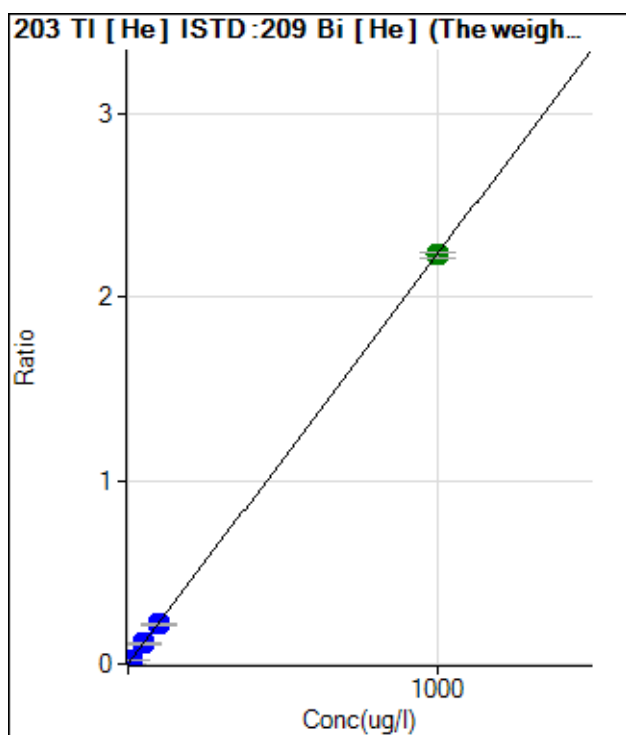
R = 0.9999

DL = 0.002564 ug/l

BEC = 0.005455 ug/l

Weight: 1/y

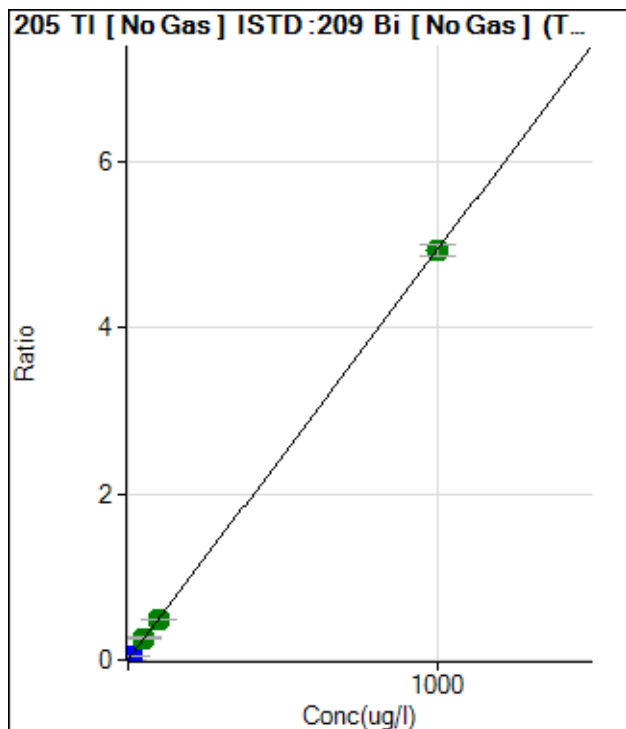
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	136.05	0.000		11	
2	<input type="checkbox"/>	0.025	0.023	416.17	0.000		8.	-6.2
3	<input type="checkbox"/>	0.050	0.058	839.03	0.000		3.	16.
4	<input type="checkbox"/>	0.100	0.103	1379.29	0.000		4.	3.2
5	<input type="checkbox"/>	0.500	0.503	6197.26	0.001		1.	0.7
6	<input type="checkbox"/>	1.000	1.090	13270.58	0.002		1.	9.0
7	<input type="checkbox"/>	10.000	10.121	122565.47	0.022		0.	1.2
8	<input type="checkbox"/>	50.000	49.533	572933.24	0.110		1.	-0.9
9	<input type="checkbox"/>	100.00	97.230	1109670.2	0.216		2.	-2.8
10	<input type="checkbox"/>	1000.0	1000.2	10976192.	2.228		1.	0.0
11	<input type="checkbox"/>			6336.05	0.001		7.	

$y = 0.0022 * x + 2.5506E-005$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	734.47	0.000		16	
2	<input type="checkbox"/>	0.025	0.027	2279.10	0.000		13	9.1
3	<input type="checkbox"/>	0.050	0.058	4242.92	0.000		8.	16.
4	<input type="checkbox"/>	0.100	0.112	7624.45	0.000		3.	12.
5	<input type="checkbox"/>	0.500	0.526	32559.76	0.002		2.	5.3
6	<input type="checkbox"/>	1.000	1.134	71375.35	0.005		1.	13.
7	<input type="checkbox"/>	10.000	10.354	655886.39	0.051		1.	3.5
8	<input type="checkbox"/>	50.000	52.956	2994274.5	0.261		9.	5.9
9	<input type="checkbox"/>	100.00	99.956	5857311.8	0.492		1.	0.0
10	<input type="checkbox"/>	1000.0	999.85	56060915.	4.929		2.	0.0
11	<input type="checkbox"/>			30408.27	0.002		16	

$$y = 0.0049 * x + 5.7293E-005$$

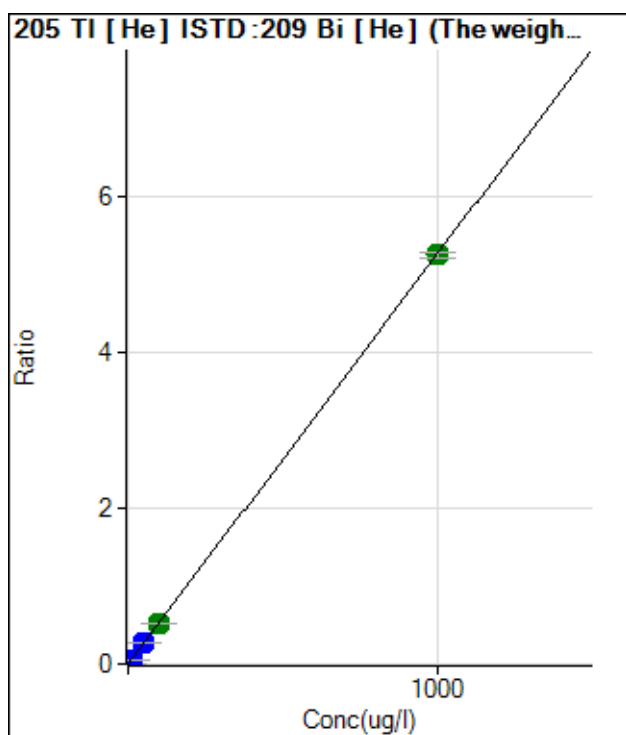
R = 1.0000

DL = 0.005758 ug/l

BEC = 0.01162 ug/l

Weight: 1/y

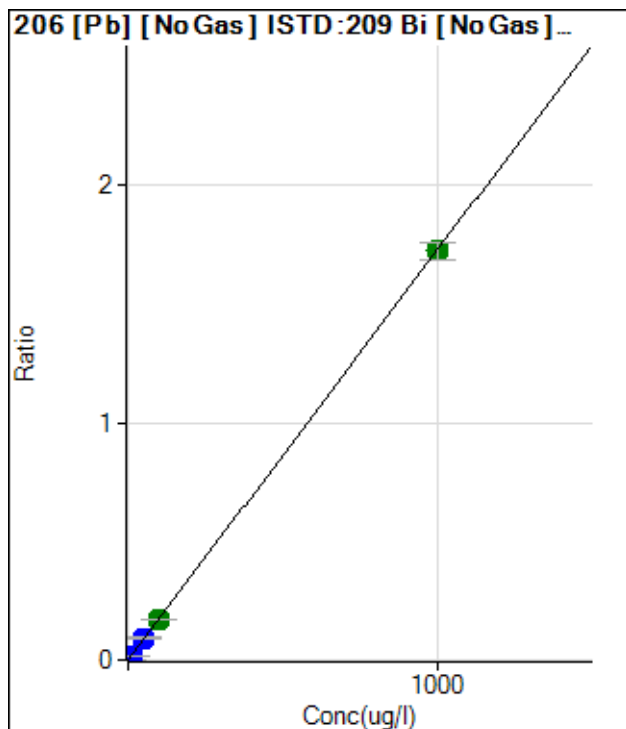
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	318.80	0.000		4.	
2	<input type="checkbox"/>	0.025	0.025	1035.12	0.000		1.	1.9
3	<input type="checkbox"/>	0.050	0.055	1889.56	0.000		8.	10.
4	<input type="checkbox"/>	0.100	0.109	3395.14	0.000		3.	8.5
5	<input type="checkbox"/>	0.500	0.511	14792.80	0.002		3.	2.2
6	<input type="checkbox"/>	1.000	1.127	32261.09	0.006		0.	12.
7	<input type="checkbox"/>	10.000	10.426	297001.03	0.054		0.	4.3
8	<input type="checkbox"/>	50.000	50.930	1385764.5	0.267		1.	1.9
9	<input type="checkbox"/>	100.00	98.531	2645553.6	0.516		1.	-1.5
10	<input type="checkbox"/>	1000.0	1000.0	25817143.	5.241		1.	0.0
11	<input type="checkbox"/>			15419.78	0.002		11	

$$y = 0.0052 * x + 5.9739E-005$$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	557.79	0.000		13	
2	<input type="checkbox"/>	0.025	0.032	1173.39	0.000		11	28.
3	<input type="checkbox"/>	0.050	0.059	1783.47	0.000		6.	17.
4	<input type="checkbox"/>	0.100	0.110	2902.55	0.000		2.	9.7
5	<input type="checkbox"/>	0.500	0.527	11688.53	0.001		3.	5.4
6	<input type="checkbox"/>	1.000	1.121	24973.41	0.002		1.	12.
7	<input type="checkbox"/>	10.000	10.075	223522.16	0.017		1.	0.7
8	<input type="checkbox"/>	50.000	53.068	1049714.5	0.091		9.	6.1
9	<input type="checkbox"/>	100.00	98.571	2020708.3	0.170		1.	-1.4
10	<input type="checkbox"/>	1000.0	999.98	19607999.	1.724		4.	0.0
11	<input type="checkbox"/>			1796.80	0.000		16	

$y = 0.0017 * x + 4.3296E-005$

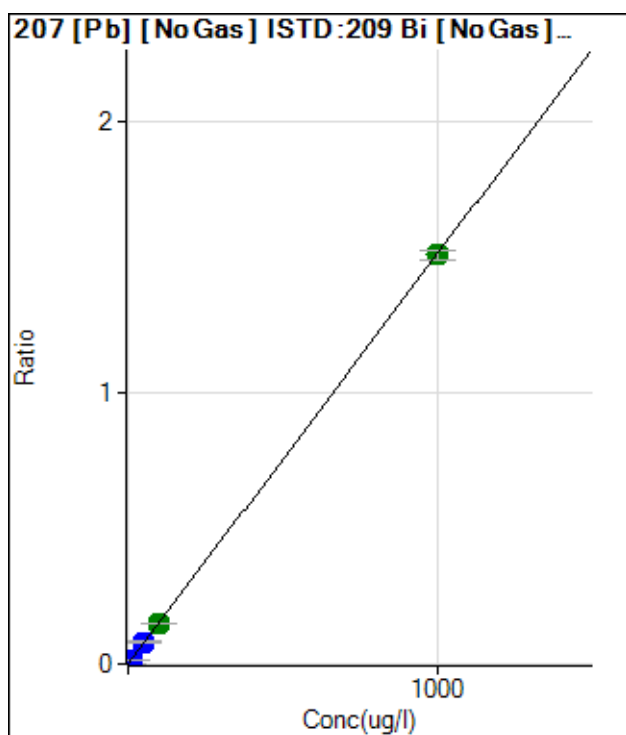
R = 1.0000

DL = 0.009959 ug/l

BEC = 0.02511 ug/l

Weight: 1/y

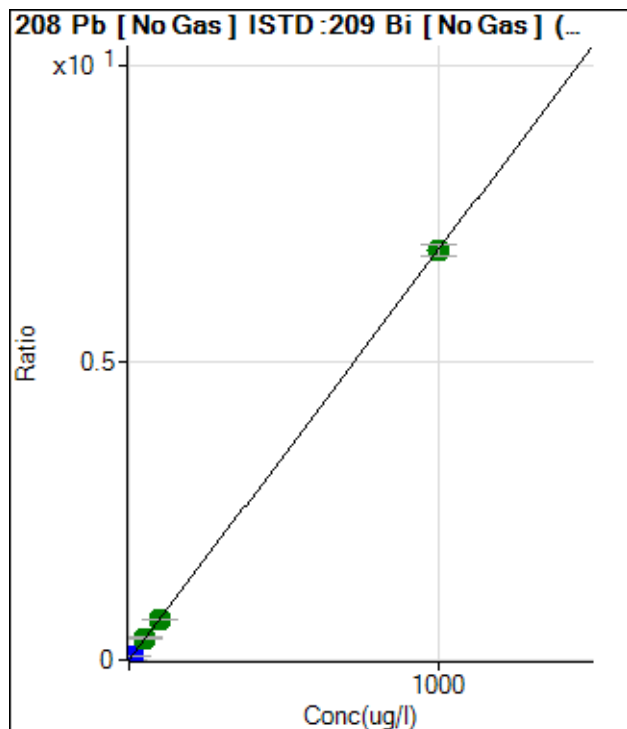
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	504.46	0.000		4.	
2	<input type="checkbox"/>	0.025	0.029	980.04	0.000		9.	14.
3	<input type="checkbox"/>	0.050	0.066	1696.79	0.000		10	31.
4	<input type="checkbox"/>	0.100	0.110	2554.71	0.000		2.	10.
5	<input type="checkbox"/>	0.500	0.527	10223.97	0.000		2.	5.4
6	<input type="checkbox"/>	1.000	1.126	21924.74	0.001		2.	12.
7	<input type="checkbox"/>	10.000	10.088	195589.58	0.015		1.	0.9
8	<input type="checkbox"/>	50.000	52.612	908636.65	0.079		11	5.2
9	<input type="checkbox"/>	100.00	99.064	1774504.4	0.149		0.	-0.9
10	<input type="checkbox"/>	1000.0	999.96	17136516.	1.506		2.	0.0
11	<input type="checkbox"/>			1655.67	0.000		16	

$y = 0.0015 * x + 3.9060E-005$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	2320.10	0.000		6.	
2	<input type="checkbox"/>	0.025	0.030	4614.79	0.000		9.	20.
3	<input type="checkbox"/>	0.050	0.062	7410.87	0.000		10	23.
4	<input type="checkbox"/>	0.100	0.109	11620.95	0.000		1.	9.4
5	<input type="checkbox"/>	0.500	0.529	46821.42	0.003		2.	5.8
6	<input type="checkbox"/>	1.000	1.115	99080.05	0.007		2.	11.
7	<input type="checkbox"/>	10.000	10.137	896309.99	0.069		1.	1.4
8	<input type="checkbox"/>	50.000	52.897	4168765.4	0.363		10	5.8
9	<input type="checkbox"/>	100.00	98.633	8057229.4	0.678		1.	-1.4
10	<input type="checkbox"/>	1000.0	999.99	78149913.	6.872		2.	0.0
11	<input type="checkbox"/>			7316.39	0.000		13	

$$y = 0.0069 * x + 1.7991E-004$$

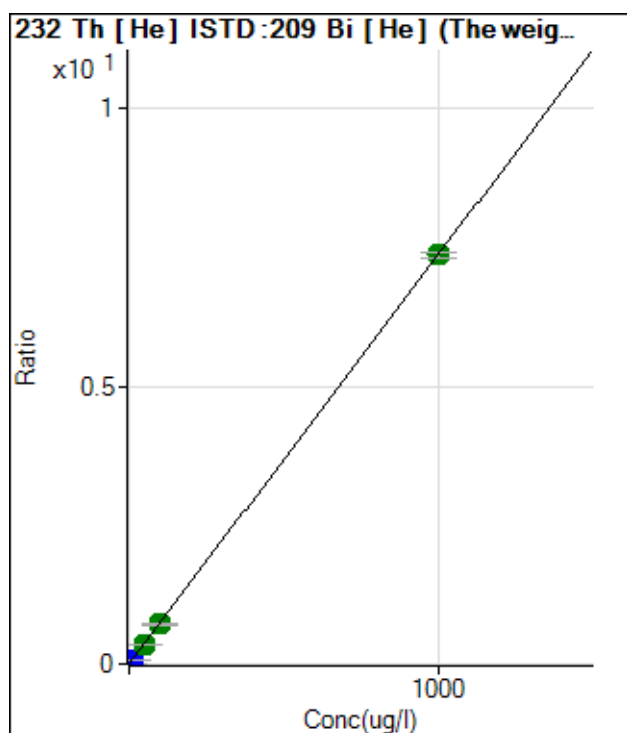
R = 1.0000

DL = 0.005118 ug/l

BEC = 0.02618 ug/l

Weight: 1/y

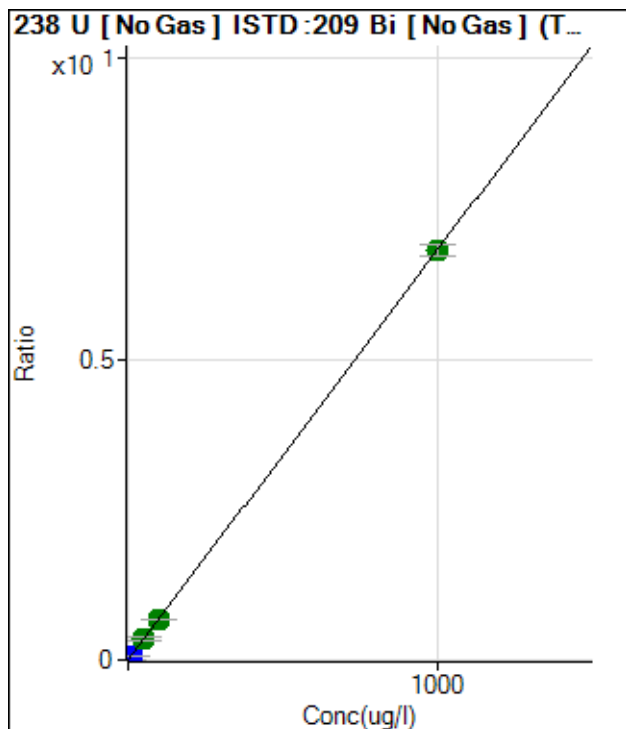
Min Conc: <None>



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	240.10	0.000		8.	
2	<input type="checkbox"/>	0.025	0.011	655.62	0.000		7.	-57.
3	<input type="checkbox"/>	0.050	0.026	1290.59	0.000		3.	-47.
4	<input type="checkbox"/>	0.100	0.055	2442.55	0.000		4.	-44.
5	<input type="checkbox"/>	0.500	0.324	13149.88	0.002		3.	-35.
6	<input type="checkbox"/>	1.000	0.848	34006.20	0.006		2.	-15.
7	<input type="checkbox"/>	10.000	9.573	383003.86	0.070		1.	-4.3
8	<input type="checkbox"/>	50.000	47.894	1830965.2	0.352		1.	-4.2
9	<input type="checkbox"/>	100.00	96.586	3644018.2	0.711		1.	-3.4
10	<input type="checkbox"/>	1000.0	1000.4	36286464.	7.367		1.	0.0
11	<input type="checkbox"/>			12098.52	0.002		3.	

$$y = 0.0074 * x + 4.5016E-005$$

R = 1.0000



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t .	RS D	%RE
1	<input type="checkbox"/>	0.000	0.000	16.33	0.000		31	
2	<input type="checkbox"/>	0.025	0.027	2185.42	0.000		7.	7.2
3	<input type="checkbox"/>	0.050	0.058	4848.60	0.000		9.	15.
4	<input type="checkbox"/>	0.100	0.109	9252.43	0.000		2.	9.0
5	<input type="checkbox"/>	0.500	0.511	42594.82	0.003		3.	2.1
6	<input type="checkbox"/>	1.000	1.082	92861.31	0.007		1.	8.2
7	<input type="checkbox"/>	10.000	10.119	882258.21	0.068		1.	1.2
8	<input type="checkbox"/>	50.000	51.609	4019191.2	0.350		9.	3.2
9	<input type="checkbox"/>	100.00	96.988	7830166.4	0.658		1.	-3.0
10	<input type="checkbox"/>	1000.0	1000.2	77270631.	6.794		2.	0.0
11	<input type="checkbox"/>			4814.60	0.000		9.	

$y = 0.0068 * x + 1.2487E-006$

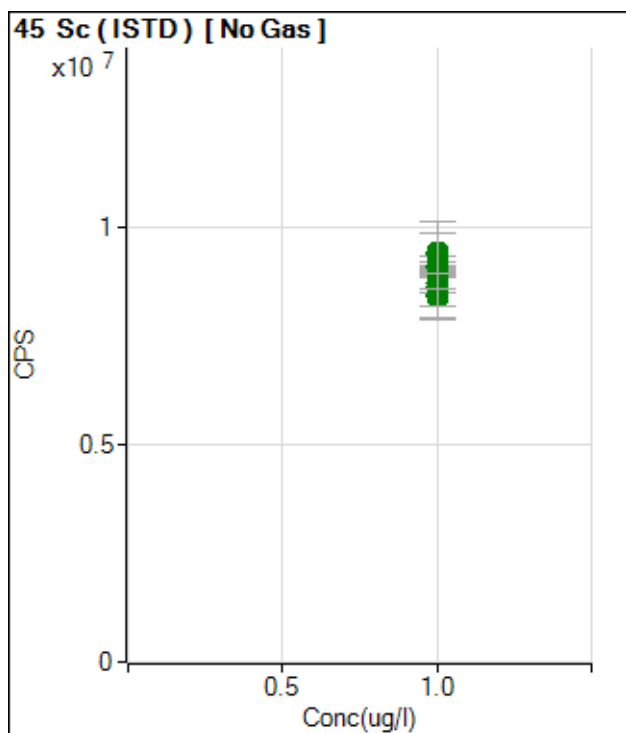
R = 1.0000

DL = 0.0001718 ug/l

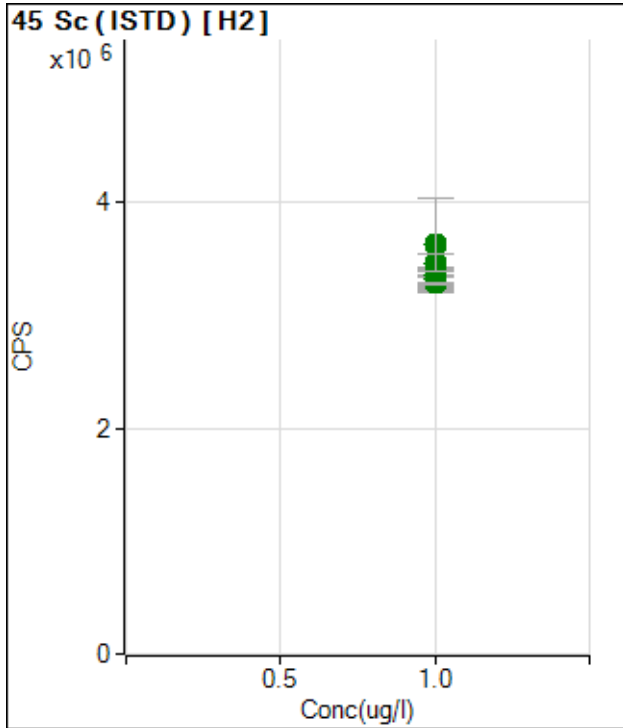
BEC = 0.0001838 ug/l

Weight: 1/y

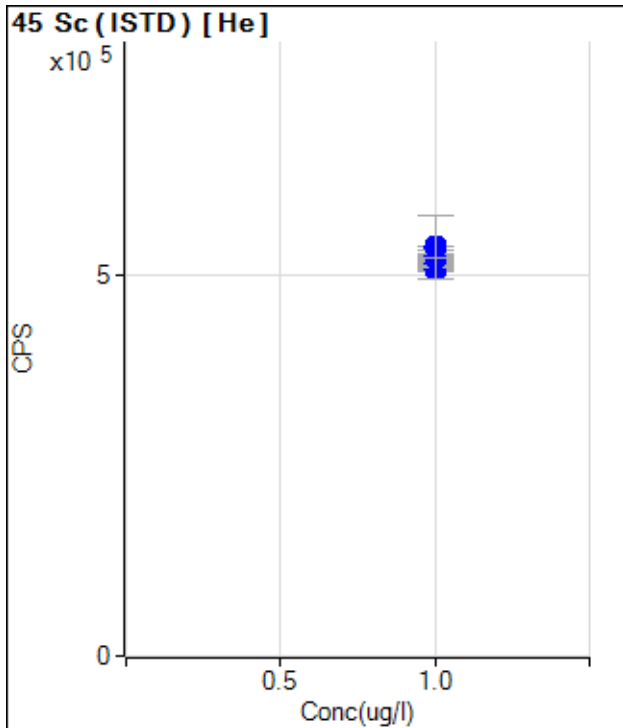
Min Conc: <None>



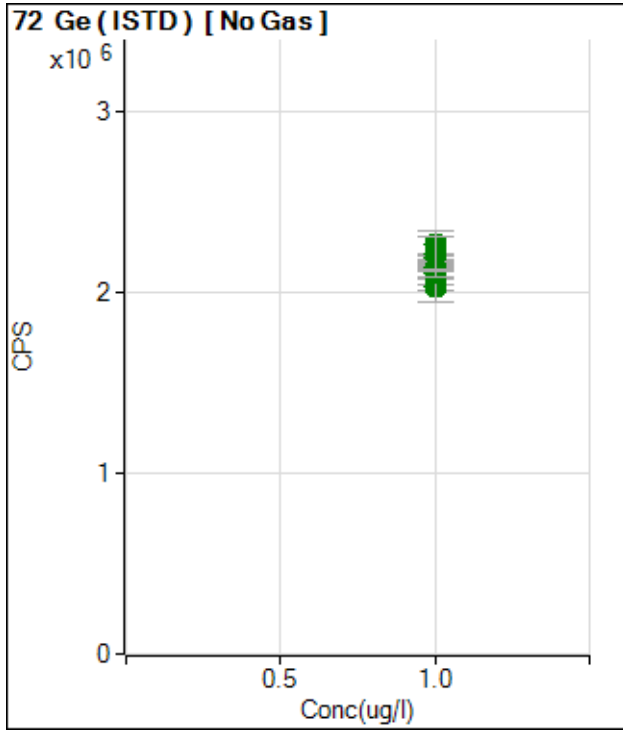
	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t .	RS D	%RE
1	<input type="checkbox"/>	1.000		9394061.9			9.	
2	<input type="checkbox"/>	1.000		8371597.4			11	
3	<input type="checkbox"/>	1.000		8629562.2			10	
4	<input type="checkbox"/>	1.000		9023987.3			0.	
5	<input type="checkbox"/>	1.000		8681977.0			4.	
6	<input type="checkbox"/>	1.000		8934951.5			0.	
7	<input type="checkbox"/>	1.000		9069678.0			2.	
8	<input type="checkbox"/>	1.000		8440816.4			13	
9	<input type="checkbox"/>	1.000		9102367.4			2.	
10	<input type="checkbox"/>	1.000		9111160.7			4.	
11	<input type="checkbox"/>	1.000		9345063.1			16	



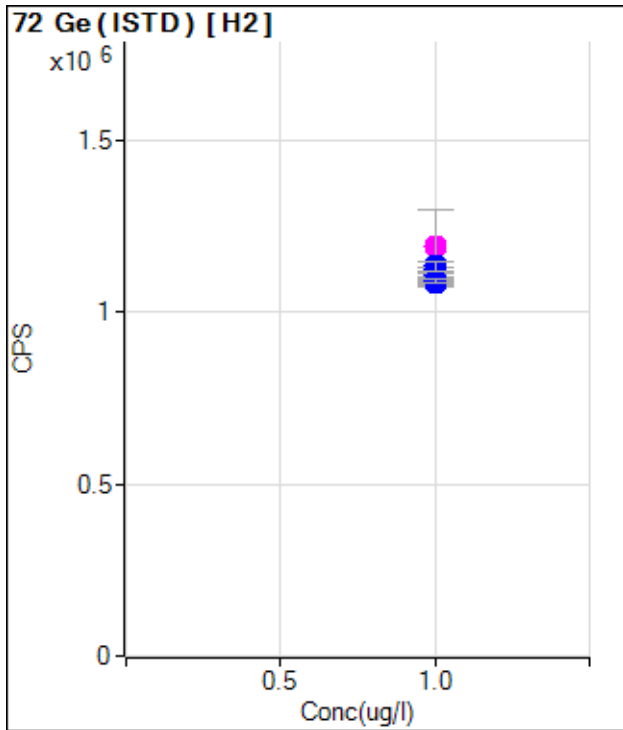
	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		3625073.3			22	
2	<input type="checkbox"/>	1.000		3327466.5			4	
3	<input type="checkbox"/>	1.000		3344735.6			5	
4	<input type="checkbox"/>	1.000		3344867.3			4	
5	<input type="checkbox"/>	1.000		3285755.5			4	
6	<input type="checkbox"/>	1.000		3287839.2			3	
7	<input type="checkbox"/>	1.000		3290951.6			4	
8	<input type="checkbox"/>	1.000		3281979.3			4	
9	<input type="checkbox"/>	1.000		3355601.0			4	
10	<input type="checkbox"/>	1.000		3283925.9			0	
11	<input type="checkbox"/>	1.000		3464688.3			4	



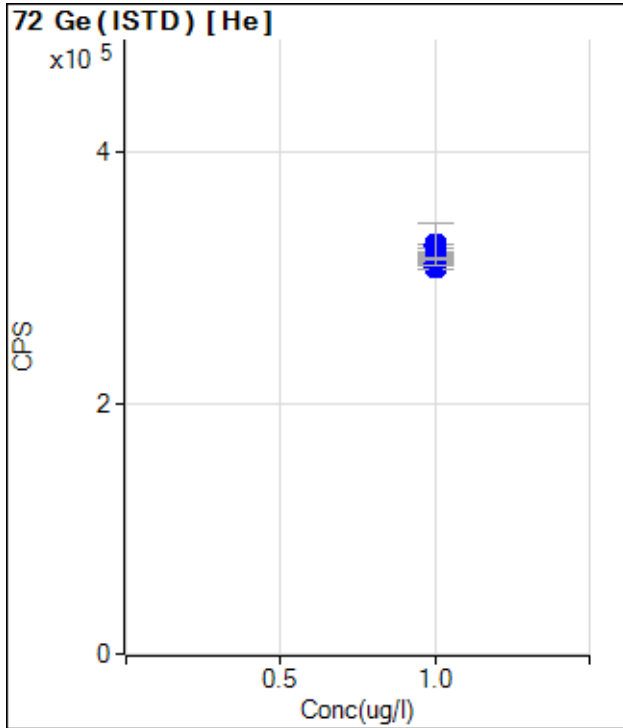
	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		520057.51			2	
2	<input type="checkbox"/>	1.000		510911.57			0	
3	<input type="checkbox"/>	1.000		508388.63			0	
4	<input type="checkbox"/>	1.000		514544.19			1	
5	<input type="checkbox"/>	1.000		507825.13			1	
6	<input type="checkbox"/>	1.000		507975.30			1	
7	<input type="checkbox"/>	1.000		509999.32			0	
8	<input type="checkbox"/>	1.000		522478.95			0	
9	<input type="checkbox"/>	1.000		534694.87			1	
10	<input type="checkbox"/>	1.000		523851.20			0	
11	<input type="checkbox"/>	1.000		536165.94			15	



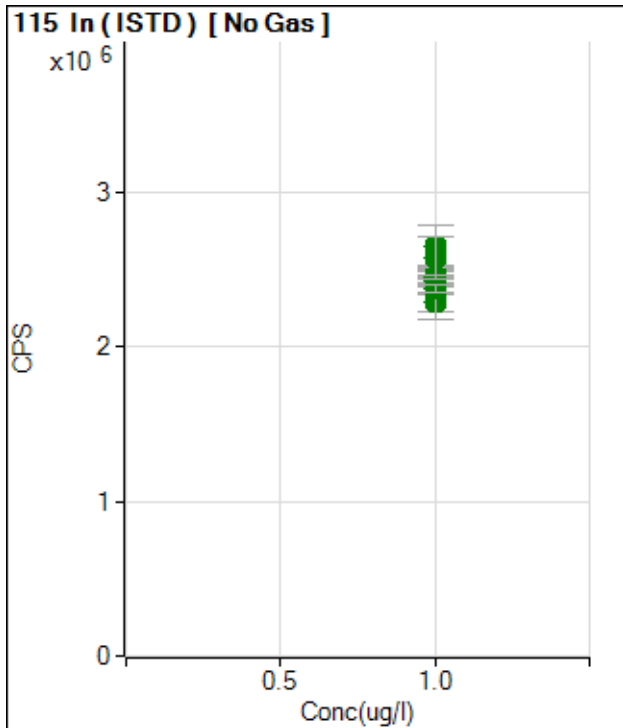
	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		2259730.3			7.	
2	<input type="checkbox"/>	1.000		2079914.6			7.	
3	<input type="checkbox"/>	1.000		2124443.1			8.	
4	<input type="checkbox"/>	1.000		2149140.1			0.	
5	<input type="checkbox"/>	1.000		2108005.3			3.	
6	<input type="checkbox"/>	1.000		2152199.2			0.	
7	<input type="checkbox"/>	1.000		2183955.4			1.	
8	<input type="checkbox"/>	1.000		2027911.6			8.	
9	<input type="checkbox"/>	1.000		2140652.8			2.	
10	<input type="checkbox"/>	1.000		2099206.4			2.	
11	<input type="checkbox"/>	1.000		2209862.9			8.	



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		1188911.4			18	
2	<input type="checkbox"/>	1.000		1082564.8			1.	
3	<input type="checkbox"/>	1.000		1105977.1			2.	
4	<input type="checkbox"/>	1.000		1096596.8			3.	
5	<input type="checkbox"/>	1.000		1088177.9			2.	
6	<input type="checkbox"/>	1.000		1085382.5			1.	
7	<input type="checkbox"/>	1.000		1087727.4			1.	
8	<input type="checkbox"/>	1.000		1105599.4			1.	
9	<input type="checkbox"/>	1.000		1121001.3			1.	
10	<input type="checkbox"/>	1.000		1089063.9			0.	
11	<input type="checkbox"/>	1.000		1132553.9			2.	

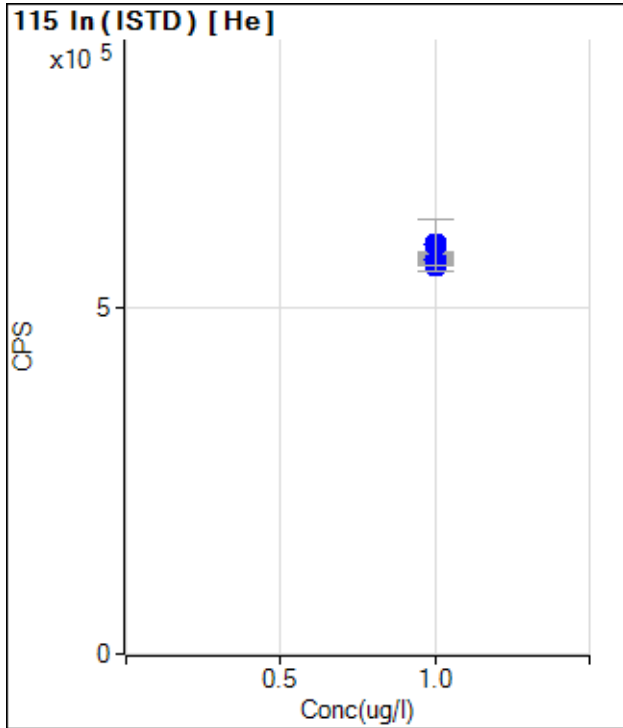


	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		314560.53			2.	
2	<input type="checkbox"/>	1.000		311596.48			1.	
3	<input type="checkbox"/>	1.000		311701.50			1.	
4	<input type="checkbox"/>	1.000		314399.32			1.	
5	<input type="checkbox"/>	1.000		311168.49			0.	
6	<input type="checkbox"/>	1.000		311639.83			1.	
7	<input type="checkbox"/>	1.000		308111.89			0.	
8	<input type="checkbox"/>	1.000		319613.68			0.	
9	<input type="checkbox"/>	1.000		325959.56			1.	
10	<input type="checkbox"/>	1.000		314902.85			0.	
11	<input type="checkbox"/>	1.000		326318.67			10	

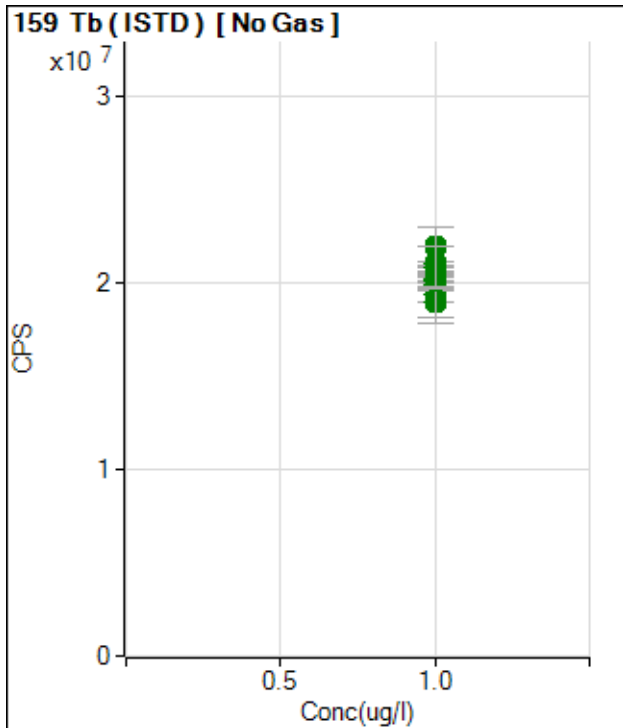


	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		2646717.6			11	
2	<input type="checkbox"/>	1.000		2342204.5			9.	
3	<input type="checkbox"/>	1.000		2430530.7			7.	
4	<input type="checkbox"/>	1.000		2453139.7			2.	
5	<input type="checkbox"/>	1.000		2451377.2			3.	
6	<input type="checkbox"/>	1.000		2513229.2			1.	
7	<input type="checkbox"/>	1.000		2520256.2			0.	
8	<input type="checkbox"/>	1.000		2285476.1			9.	
9	<input type="checkbox"/>	1.000		2450619.6			0.	
10	<input type="checkbox"/>	1.000		2378601.5			2.	
11	<input type="checkbox"/>	1.000		2574880.6			10	

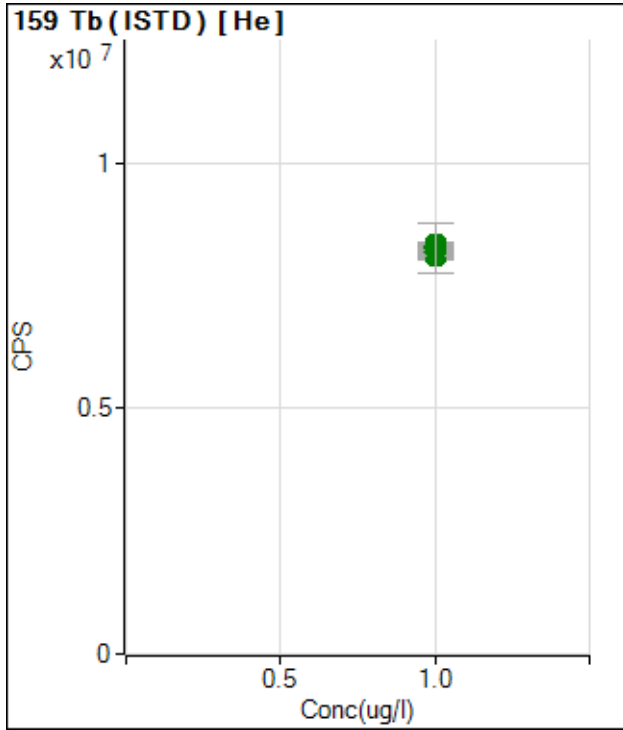




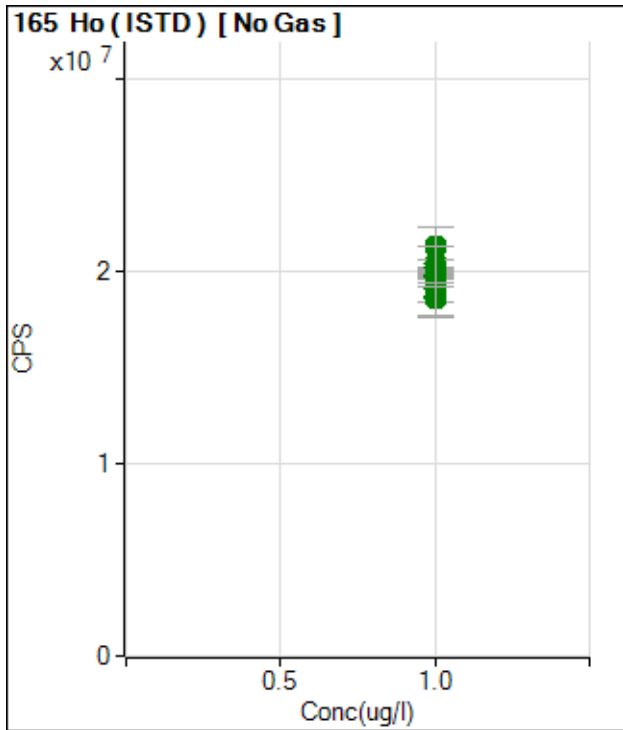
	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		571481.68			0.	
2	<input type="checkbox"/>	1.000		570203.74			0.	
3	<input type="checkbox"/>	1.000		575760.50			0.	
4	<input type="checkbox"/>	1.000		572012.41			0.	
5	<input type="checkbox"/>	1.000		566511.24			0.	
6	<input type="checkbox"/>	1.000		568411.77			0.	
7	<input type="checkbox"/>	1.000		566869.48			1.	
8	<input type="checkbox"/>	1.000		575247.78			0.	
9	<input type="checkbox"/>	1.000		578487.36			0.	
10	<input type="checkbox"/>	1.000		559606.56			0.	
11	<input type="checkbox"/>	1.000		589389.18			12	



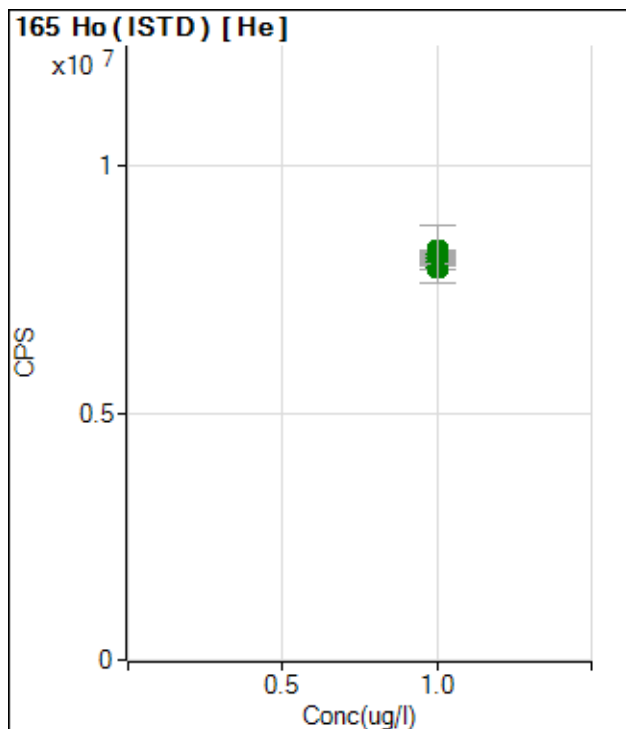
	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		21920775.			10	
2	<input type="checkbox"/>	1.000		19340621.			12	
3	<input type="checkbox"/>	1.000		19698569.			7.	
4	<input type="checkbox"/>	1.000		20261083.			1.	
5	<input type="checkbox"/>	1.000		19940452.			3.	
6	<input type="checkbox"/>	1.000		20486765.			0.	
7	<input type="checkbox"/>	1.000		21016067.			0.	
8	<input type="checkbox"/>	1.000		18975604.			12	
9	<input type="checkbox"/>	1.000		20120399.			1.	
10	<input type="checkbox"/>	1.000		20177533.			3.	
11	<input type="checkbox"/>	1.000		20811516.			11	



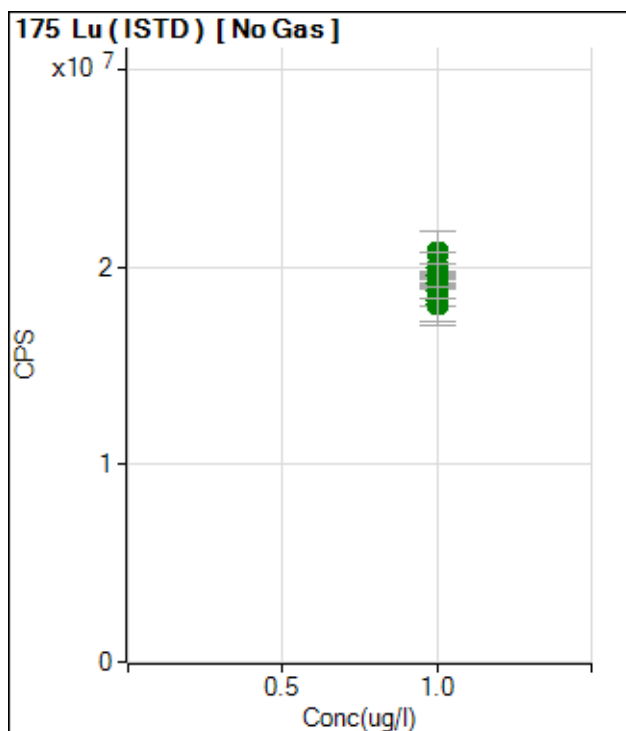
	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		8139137.5			1.	
2	<input type="checkbox"/>	1.000		8314495.1			1.	
3	<input type="checkbox"/>	1.000		8196347.4			0.	
4	<input type="checkbox"/>	1.000		8191325.1			1.	
5	<input type="checkbox"/>	1.000		8336258.3			0.	
6	<input type="checkbox"/>	1.000		8310337.1			1.	
7	<input type="checkbox"/>	1.000		8299789.7			1.	
8	<input type="checkbox"/>	1.000		8096045.9			1.	
9	<input type="checkbox"/>	1.000		8135437.9			0.	
10	<input type="checkbox"/>	1.000		8137482.9			0.	
11	<input type="checkbox"/>	1.000		8282299.5			12	



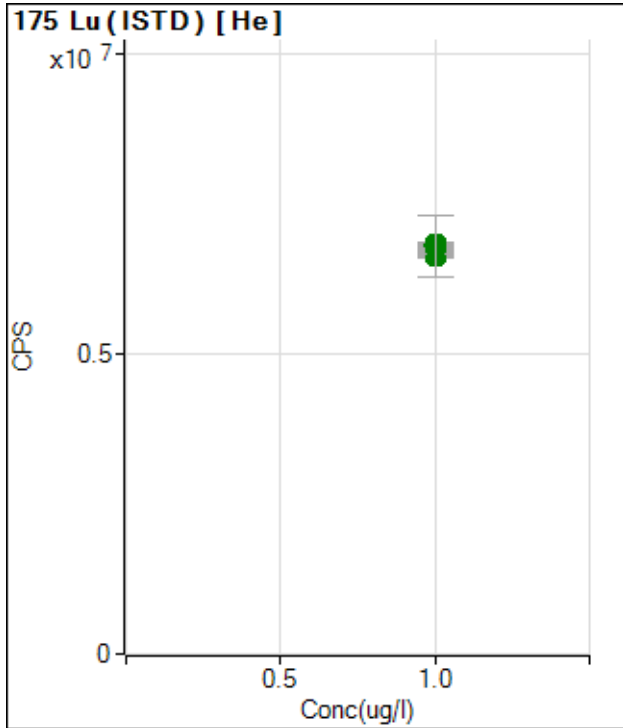
	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		21297447.			10	
2	<input type="checkbox"/>	1.000		18672967.			11	
3	<input type="checkbox"/>	1.000		19159400.			7.	
4	<input type="checkbox"/>	1.000		19864086.			1.	
5	<input type="checkbox"/>	1.000		19463744.			2.	
6	<input type="checkbox"/>	1.000		19970531.			1.	
7	<input type="checkbox"/>	1.000		20423023.			2.	
8	<input type="checkbox"/>	1.000		18696075.			10	
9	<input type="checkbox"/>	1.000		19800166.			1.	
10	<input type="checkbox"/>	1.000		19748947.			3.	
11	<input type="checkbox"/>	1.000		20273145.			10	



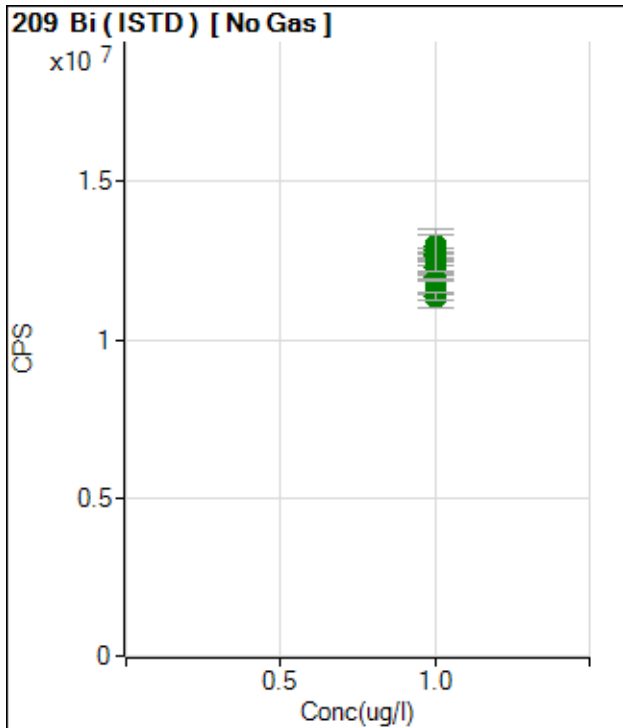
	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		7953554.9			1.	
2	<input type="checkbox"/>	1.000		8179966.0			0.	
3	<input type="checkbox"/>	1.000		8177796.2			1.	
4	<input type="checkbox"/>	1.000		8157514.9			1.	
5	<input type="checkbox"/>	1.000		8188633.7			1.	
6	<input type="checkbox"/>	1.000		8240956.0			1.	
7	<input type="checkbox"/>	1.000		8284936.5			0.	
8	<input type="checkbox"/>	1.000		8016930.9			0.	
9	<input type="checkbox"/>	1.000		8076673.8			0.	
10	<input type="checkbox"/>	1.000		8064049.1			1.	
11	<input type="checkbox"/>	1.000		8226784.1			14	



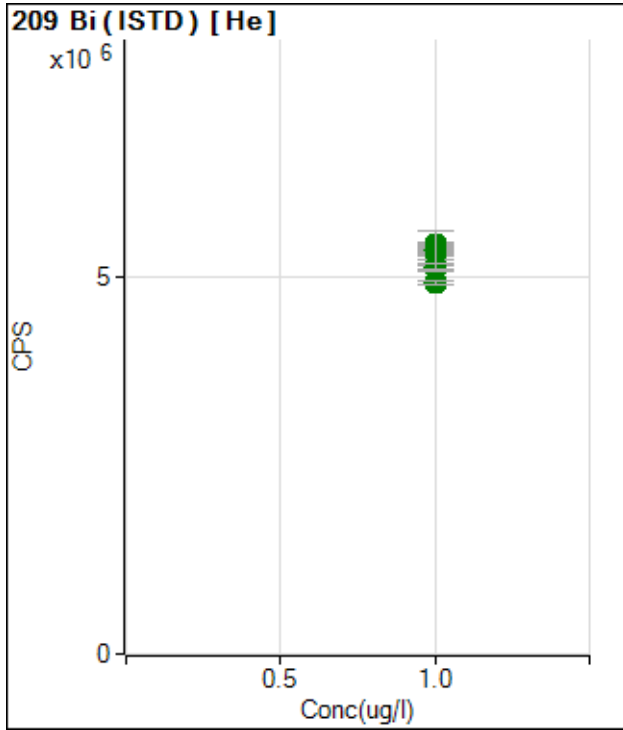
	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		20734808.			10	
2	<input type="checkbox"/>	1.000		18308449.			11	
3	<input type="checkbox"/>	1.000		18793870.			7.	
4	<input type="checkbox"/>	1.000		19378777.			2.	
5	<input type="checkbox"/>	1.000		19235658.			3.	
6	<input type="checkbox"/>	1.000		19603627.			1.	
7	<input type="checkbox"/>	1.000		19967938.			1.	
8	<input type="checkbox"/>	1.000		18131670.			11	
9	<input type="checkbox"/>	1.000		19534350.			0.	
10	<input type="checkbox"/>	1.000		19223449.			1.	
11	<input type="checkbox"/>	1.000		19578132.			11	



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		6629808.5			1.	
2	<input type="checkbox"/>	1.000		6742691.4			1.	
3	<input type="checkbox"/>	1.000		6716269.9			0.	
4	<input type="checkbox"/>	1.000		6777499.5			1.	
5	<input type="checkbox"/>	1.000		6782679.2			1.	
6	<input type="checkbox"/>	1.000		6776789.3			0.	
7	<input type="checkbox"/>	1.000		6812621.6			1.	
8	<input type="checkbox"/>	1.000		6679053.5			1.	
9	<input type="checkbox"/>	1.000		6774363.1			0.	
10	<input type="checkbox"/>	1.000		6681637.0			0.	
11	<input type="checkbox"/>	1.000		6782084.1			15	



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		12940743.			8.	
2	<input type="checkbox"/>	1.000		11977933.			8.	
3	<input type="checkbox"/>	1.000		12343719.			7.	
4	<input type="checkbox"/>	1.000		12477518.			2.	
5	<input type="checkbox"/>	1.000		12282985.			3.	
6	<input type="checkbox"/>	1.000		12634887.			1.	
7	<input type="checkbox"/>	1.000		12834063.			0.	
8	<input type="checkbox"/>	1.000		11528810.			8.	
9	<input type="checkbox"/>	1.000		11884682.			0.	
10	<input type="checkbox"/>	1.000		11377232.			2.	
11	<input type="checkbox"/>	1.000		12727587.			9.	



	R j c t	Conc.	Calc Conc.	CPS	Ratio	D e t	RS D	%RE
1	<input type="checkbox"/>	1.000		5333749.3			1.	
2	<input type="checkbox"/>	1.000		5355471.2			1.	
3	<input type="checkbox"/>	1.000		5421866.1			1.	
4	<input type="checkbox"/>	1.000		5402046.1			2.	
5	<input type="checkbox"/>	1.000		5403827.3			1.	
6	<input type="checkbox"/>	1.000		5409602.1			0.	
7	<input type="checkbox"/>	1.000		5429711.9			0.	
8	<input type="checkbox"/>	1.000		5191306.0			1.	
9	<input type="checkbox"/>	1.000		5123575.6			1.	
10	<input type="checkbox"/>	1.000		4925637.4			1.	
11	<input type="checkbox"/>	1.000		5360628.1			9.	

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 001BLKV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 13:23:51  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas		ug/l	17370.85
Be	9	45	1	No Gas		ug/l	934.85
B	11	45	1	No Gas		ug/l	62215.66
Na	23	45	3	He		ug/l	64233.05
Mg	24	45	3	He		ug/l	2096.00
Al	27	45	1	No Gas		ug/l	31596.73
Si	28	45	2	H2		ug/l	23766.73
K	39	72	3	He		ug/l	64053.92
Ca	40	72	2	H2		ug/l	131942.36
Ti	47	72	1	No Gas		ug/l	316.99
V	51	72	1	No Gas		ug/l	-5026.66
V	51	72	3	He		ug/l	13038.02
Cr	52	72	1	No Gas		ug/l	99330.05
Cr	52	72	3	He		ug/l	1032.27
Mn	55	72	1	No Gas		ug/l	7553.67
Mn	55	72	3	He		ug/l	268.62
Fe	56	72	2	H2		ug/l	16569.44
Fe	56	72	3	He		ug/l	8779.85
Co	59	72	1	No Gas		ug/l	528.96
Ni	60	72	1	No Gas		ug/l	1107.85
Ni	60	72	3	He		ug/l	287.78
Cu	63	72	1	No Gas		ug/l	3117.60
Cu	63	72	3	He		ug/l	884.52
Cu	65	72	1	No Gas		ug/l	1537.37
Zn	66	72	1	No Gas		ug/l	8413.92
Zn	66	72	3	He		ug/l	1510.09
As	75	72	1	No Gas		ug/l	11360.38
As	75	72	3	He		ug/l	261.07
Se	78	72	2	H2		ug/l	27.22
Br	79	72	1	No Gas		ug/l	12600.54
Br	79	72	2	H2		ug/l	5034.25
Se	82	72	1	No Gas		ug/l	818.49
Kr	84	72	1	No Gas		ug/l	21286.86
Sr	88	72	1	No Gas		ug/l	2195.84
Sr	88	72	3	He		ug/l	545.57
Mo	95	115	1	No Gas		ug/l	184.45
Mo	95	115	3	He		ug/l	67.78
Mo	98	115	1	No Gas		ug/l	303.34
Ag	107	115	1	No Gas		ug/l	398.17
Ag	109	115	1	No Gas		ug/l	348.14
Cd	111	115	1	No Gas		ug/l	167.10

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He		ug/l	43.00
Cd	114	115	1	No Gas		ug/l	303.00
Cd	114	115	3	He		ug/l	101.37
Sn	118	115	1	No Gas		ug/l	2135.94
Sn	118	115	3	He		ug/l	496.68
Sb	121	115	1	No Gas		ug/l	661.42
Sb	121	115	3	He		ug/l	164.69
Sb	123	115	1	No Gas		ug/l	497.06
Sb	123	115	3	He		ug/l	125.34
Ba	135	115	1	No Gas		ug/l	179.65
Ba	137	115	1	No Gas		ug/l	329.35
La	139	115	3	He		ug/l	43.33
Ce	140	115	3	He		ug/l	153.34
Hg	201	209	1	No Gas		ug/l	35.32
Hg	202	209	1	No Gas		ug/l	120.31
Hg	202	209	3	He		ug/l	40.32
Tl	203	209	3	He		ug/l	431.51
Tl	205	209	1	No Gas		ug/l	2826.99
Tl	205	209	3	He		ug/l	1000.44
[Pb]	206	209	1	No Gas		ug/l	2019.07
[Pb]	207	209	1	No Gas		ug/l	1861.27
Pb	208	209	1	No Gas		ug/l	8465.69
Th	232	209	3	He		ug/l	837.03
U	238	209	1	No Gas		ug/l	181.30

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9089181.87	
Sc	45	2	H2	3697367.61	
Sc	45	3	He	488200.26	
Ge	72	1	No Gas	2339985.25	
Ge	72	2	H2	1109992.14	
Ge	72	3	He	296759.67	
In	115	1	No Gas	2750856.18	
In	115	3	He	552325.85	
Tb	159	1	No Gas	20415454.11	
Tb	159	3	He	8275016.18	
Ho	165	1	No Gas	19977414.00	
Ho	165	3	He	8146333.76	
Lu	175	1	No Gas	19697606.49	
Lu	175	3	He	6796236.94	
Bi	209	1	No Gas	14025537.99	
Bi	209	3	He	5506654.04	

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 002BLKV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 13:30:04  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas		ug/l	17063.05
Be	9	45	1	No Gas		ug/l	486.25
B	11	45	1	No Gas		ug/l	46661.56
Na	23	45	3	He		ug/l	46820.31
Mg	24	45	3	He		ug/l	1081.24
Al	27	45	1	No Gas		ug/l	20182.60
Si	28	45	2	H2		ug/l	18604.32
K	39	72	3	He		ug/l	64675.41
Ca	40	72	2	H2		ug/l	97913.85
Ti	47	72	1	No Gas		ug/l	298.64
V	51	72	1	No Gas		ug/l	-28640.35
V	51	72	3	He		ug/l	13904.40
Cr	52	72	1	No Gas		ug/l	102139.90
Cr	52	72	3	He		ug/l	621.13
Mn	55	72	1	No Gas		ug/l	7180.88
Mn	55	72	3	He		ug/l	221.96
Fe	56	72	2	H2		ug/l	7380.99
Fe	56	72	3	He		ug/l	5301.30
Co	59	72	1	No Gas		ug/l	429.15
Ni	60	72	1	No Gas		ug/l	874.96
Ni	60	72	3	He		ug/l	210.00
Cu	63	72	1	No Gas		ug/l	1942.25
Cu	63	72	3	He		ug/l	515.91
Cu	65	72	1	No Gas		ug/l	869.71
Zn	66	72	1	No Gas		ug/l	5544.84
Zn	66	72	3	He		ug/l	1022.27
As	75	72	1	No Gas		ug/l	15487.36
As	75	72	3	He		ug/l	268.13
Se	78	72	2	H2		ug/l	26.22
Br	79	72	1	No Gas		ug/l	14548.50
Br	79	72	2	H2		ug/l	6162.47
Se	82	72	1	No Gas		ug/l	894.50
Kr	84	72	1	No Gas		ug/l	21173.56
Sr	88	72	1	No Gas		ug/l	1031.33
Sr	88	72	3	He		ug/l	405.56
Mo	95	115	1	No Gas		ug/l	48.89
Mo	95	115	3	He		ug/l	8.89
Mo	98	115	1	No Gas		ug/l	86.95
Ag	107	115	1	No Gas		ug/l	246.10
Ag	109	115	1	No Gas		ug/l	190.74
Cd	111	115	1	No Gas		ug/l	116.61



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He		ug/l	29.78
Cd	114	115	1	No Gas		ug/l	253.52
Cd	114	115	3	He		ug/l	74.54
Sn	118	115	1	No Gas		ug/l	1623.55
Sn	118	115	3	He		ug/l	453.34
Sb	121	115	1	No Gas		ug/l	328.71
Sb	121	115	3	He		ug/l	103.01
Sb	123	115	1	No Gas		ug/l	259.70
Sb	123	115	3	He		ug/l	83.34
Ba	135	115	1	No Gas		ug/l	43.25
Ba	137	115	1	No Gas		ug/l	56.55
La	139	115	3	He		ug/l	11.11
Ce	140	115	3	He		ug/l	21.11
Hg	201	209	1	No Gas		ug/l	16.67
Hg	202	209	1	No Gas		ug/l	81.32
Hg	202	209	3	He		ug/l	20.33
Tl	203	209	3	He		ug/l	290.78
Tl	205	209	1	No Gas		ug/l	1767.91
Tl	205	209	3	He		ug/l	656.28
[Pb]	206	209	1	No Gas		ug/l	1046.72
[Pb]	207	209	1	No Gas		ug/l	942.26
Pb	208	209	1	No Gas		ug/l	4209.18
Th	232	209	3	He		ug/l	400.17
U	238	209	1	No Gas		ug/l	21.66

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9214938.80	
Sc	45	2	H2	3747410.63	
Sc	45	3	He	499090.91	
Ge	72	1	No Gas	2298904.62	
Ge	72	2	H2	1126333.85	
Ge	72	3	He	303662.34	
In	115	1	No Gas	2758827.58	
In	115	3	He	558080.34	
Tb	159	1	No Gas	20311618.40	
Tb	159	3	He	8238947.30	
Ho	165	1	No Gas	19654194.55	
Ho	165	3	He	8204122.22	
Lu	175	1	No Gas	19003198.57	
Lu	175	3	He	6887041.74	
Bi	209	1	No Gas	13749298.03	
Bi	209	3	He	5560346.16	

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 003BLKV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 13:36:17  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas		ug/l	17461.66
Be	9	45	1	No Gas		ug/l	446.92
B	11	45	1	No Gas		ug/l	44606.37
Na	23	45	3	He		ug/l	54475.86
Mg	24	45	3	He		ug/l	1081.23
Al	27	45	1	No Gas		ug/l	20292.74
Si	28	45	2	H2		ug/l	17847.67
K	39	72	3	He		ug/l	65525.67
Ca	40	72	2	H2		ug/l	92386.35
Ti	47	72	1	No Gas		ug/l	296.97
V	51	72	1	No Gas		ug/l	-63803.38
V	51	72	3	He		ug/l	14073.42
Cr	52	72	1	No Gas		ug/l	103875.50
Cr	52	72	3	He		ug/l	545.57
Mn	55	72	1	No Gas		ug/l	7094.34
Mn	55	72	3	He		ug/l	202.63
Fe	56	72	2	H2		ug/l	6676.59
Fe	56	72	3	He		ug/l	5259.58
Co	59	72	1	No Gas		ug/l	359.29
Ni	60	72	1	No Gas		ug/l	868.31
Ni	60	72	3	He		ug/l	164.45
Cu	63	72	1	No Gas		ug/l	1637.42
Cu	63	72	3	He		ug/l	416.26
Cu	65	72	1	No Gas		ug/l	740.99
Zn	66	72	1	No Gas		ug/l	4842.54
Zn	66	72	3	He		ug/l	1033.38
As	75	72	1	No Gas		ug/l	15162.18
As	75	72	3	He		ug/l	269.47
Se	78	72	2	H2		ug/l	24.67
Br	79	72	1	No Gas		ug/l	15124.70
Br	79	72	2	H2		ug/l	6132.50
Se	82	72	1	No Gas		ug/l	813.56
Kr	84	72	1	No Gas		ug/l	22046.51
Sr	88	72	1	No Gas		ug/l	1111.17
Sr	88	72	3	He		ug/l	380.01
Mo	95	115	1	No Gas		ug/l	64.45
Mo	95	115	3	He		ug/l	27.78
Mo	98	115	1	No Gas		ug/l	98.54
Ag	107	115	1	No Gas		ug/l	190.08
Ag	109	115	1	No Gas		ug/l	188.74
Cd	111	115	1	No Gas		ug/l	102.91

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He		ug/l	24.78
Cd	114	115	1	No Gas		ug/l	193.07
Cd	114	115	3	He		ug/l	58.10
Sn	118	115	1	No Gas		ug/l	1643.51
Sn	118	115	3	He		ug/l	436.68
Sb	121	115	1	No Gas		ug/l	315.70
Sb	121	115	3	He		ug/l	92.01
Sb	123	115	1	No Gas		ug/l	218.69
Sb	123	115	3	He		ug/l	63.34
Ba	135	115	1	No Gas		ug/l	43.25
Ba	137	115	1	No Gas		ug/l	46.57
La	139	115	3	He		ug/l	8.89
Ce	140	115	3	He		ug/l	23.33
Hg	201	209	1	No Gas		ug/l	16.67
Hg	202	209	1	No Gas		ug/l	79.65
Hg	202	209	3	He		ug/l	22.33
Tl	203	209	3	He		ug/l	189.41
Tl	205	209	1	No Gas		ug/l	1285.63
Tl	205	209	3	He		ug/l	501.55
[Pb]	206	209	1	No Gas		ug/l	817.81
[Pb]	207	209	1	No Gas		ug/l	684.47
Pb	208	209	1	No Gas		ug/l	3174.61
Th	232	209	3	He		ug/l	340.81
U	238	209	1	No Gas		ug/l	14.67

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9105666.97	
Sc	45	2	H2	3394812.35	
Sc	45	3	He	489840.45	
Ge	72	1	No Gas	2300457.04	
Ge	72	2	H2	1084596.40	
Ge	72	3	He	303116.08	
In	115	1	No Gas	2680862.41	
In	115	3	He	549860.53	
Tb	159	1	No Gas	19952698.04	
Tb	159	3	He	8263622.92	
Ho	165	1	No Gas	19207738.10	
Ho	165	3	He	8171475.20	
Lu	175	1	No Gas	18754798.51	
Lu	175	3	He	6835144.07	
Bi	209	1	No Gas	13211389.30	
Bi	209	3	He	5429540.96	

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 004BLKV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 13:42:30  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas		ug/l	16207.77
Be	9	45	1	No Gas		ug/l	409.26
B	11	45	1	No Gas		ug/l	37542.65
Na	23	45	3	He		ug/l	57105.41
Mg	24	45	3	He		ug/l	984.75
Al	27	45	1	No Gas		ug/l	19478.27
Si	28	45	2	H2		ug/l	17795.10
K	39	72	3	He		ug/l	65404.20
Ca	40	72	2	H2		ug/l	90929.76
Ti	47	72	1	No Gas		ug/l	365.39
V	51	72	1	No Gas		ug/l	-69837.23
V	51	72	3	He		ug/l	14171.31
Cr	52	72	1	No Gas		ug/l	105415.64
Cr	52	72	3	He		ug/l	524.46
Mn	55	72	1	No Gas		ug/l	6681.65
Mn	55	72	3	He		ug/l	193.96
Fe	56	72	2	H2		ug/l	6865.17
Fe	56	72	3	He		ug/l	5082.69
Co	59	72	1	No Gas		ug/l	296.08
Ni	60	72	1	No Gas		ug/l	691.98
Ni	60	72	3	He		ug/l	156.67
Cu	63	72	1	No Gas		ug/l	1470.00
Cu	63	72	3	He		ug/l	401.93
Cu	65	72	1	No Gas		ug/l	664.29
Zn	66	72	1	No Gas		ug/l	4390.05
Zn	66	72	3	He		ug/l	953.37
As	75	72	1	No Gas		ug/l	12755.45
As	75	72	3	He		ug/l	258.87
Se	78	72	2	H2		ug/l	22.67
Br	79	72	1	No Gas		ug/l	15957.25
Br	79	72	2	H2		ug/l	6222.34
Se	82	72	1	No Gas		ug/l	848.63
Kr	84	72	1	No Gas		ug/l	21879.88
Sr	88	72	1	No Gas		ug/l	954.81
Sr	88	72	3	He		ug/l	374.45
Mo	95	115	1	No Gas		ug/l	51.11
Mo	95	115	3	He		ug/l	14.45
Mo	98	115	1	No Gas		ug/l	87.92
Ag	107	115	1	No Gas		ug/l	186.74
Ag	109	115	1	No Gas		ug/l	194.75
Cd	111	115	1	No Gas		ug/l	82.02

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He		ug/l	22.44
Cd	114	115	1	No Gas		ug/l	166.26
Cd	114	115	3	He		ug/l	52.99
Sn	118	115	1	No Gas		ug/l	1523.74
Sn	118	115	3	He		ug/l	436.68
Sb	121	115	1	No Gas		ug/l	250.70
Sb	121	115	3	He		ug/l	80.01
Sb	123	115	1	No Gas		ug/l	201.69
Sb	123	115	3	He		ug/l	67.34
Ba	135	115	1	No Gas		ug/l	33.27
Ba	137	115	1	No Gas		ug/l	76.51
La	139	115	3	He		ug/l	13.33
Ce	140	115	3	He		ug/l	15.56
Hg	201	209	1	No Gas		ug/l	12.67
Hg	202	209	1	No Gas		ug/l	72.32
Hg	202	209	3	He		ug/l	21.33
Tl	203	209	3	He		ug/l	148.73
Tl	205	209	1	No Gas		ug/l	1007.82
Tl	205	209	3	He		ug/l	396.83
[Pb]	206	209	1	No Gas		ug/l	728.91
[Pb]	207	209	1	No Gas		ug/l	601.13
Pb	208	209	1	No Gas		ug/l	2785.69
Th	232	209	3	He		ug/l	310.13
U	238	209	1	No Gas		ug/l	8.00

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8292254.20	
Sc	45	2	H2	3483974.72	
Sc	45	3	He	493449.70	
Ge	72	1	No Gas	2081061.28	
Ge	72	2	H2	1091802.04	
Ge	72	3	He	301316.73	
In	115	1	No Gas	2460516.01	
In	115	3	He	548844.54	
Tb	159	1	No Gas	18020398.52	
Tb	159	3	He	8213576.52	
Ho	165	1	No Gas	17402467.17	
Ho	165	3	He	8132866.85	
Lu	175	1	No Gas	17093313.23	
Lu	175	3	He	6736550.48	
Bi	209	1	No Gas	12491665.61	
Bi	209	3	He	5411814.22	

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 005BLKV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 13:48:43  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas		ug/l	15519.47
Be	9	45	1	No Gas		ug/l	391.93
B	11	45	1	No Gas		ug/l	38792.97
Na	23	45	3	He		ug/l	60220.95
Mg	24	45	3	He		ug/l	1131.14
Al	27	45	1	No Gas		ug/l	20572.22
Si	28	45	2	H2		ug/l	18076.21
K	39	72	3	He		ug/l	65656.37
Ca	40	72	2	H2		ug/l	89660.36
Ti	47	72	1	No Gas		ug/l	285.29
V	51	72	1	No Gas		ug/l	-38879.49
V	51	72	3	He		ug/l	14969.88
Cr	52	72	1	No Gas		ug/l	104337.69
Cr	52	72	3	He		ug/l	546.68
Mn	55	72	1	No Gas		ug/l	6961.19
Mn	55	72	3	He		ug/l	183.96
Fe	56	72	2	H2		ug/l	6387.83
Fe	56	72	3	He		ug/l	5234.56
Co	59	72	1	No Gas		ug/l	359.29
Ni	60	72	1	No Gas		ug/l	715.27
Ni	60	72	3	He		ug/l	165.56
Cu	63	72	1	No Gas		ug/l	1518.69
Cu	63	72	3	He		ug/l	391.26
Cu	65	72	1	No Gas		ug/l	700.30
Zn	66	72	1	No Gas		ug/l	4785.68
Zn	66	72	3	He		ug/l	958.93
As	75	72	1	No Gas		ug/l	12692.50
As	75	72	3	He		ug/l	260.73
Se	78	72	2	H2		ug/l	25.11
Br	79	72	1	No Gas		ug/l	16073.83
Br	79	72	2	H2		ug/l	6521.90
Se	82	72	1	No Gas		ug/l	904.23
Kr	84	72	1	No Gas		ug/l	21466.77
Sr	88	72	1	No Gas		ug/l	1077.91
Sr	88	72	3	He		ug/l	396.67
Mo	95	115	1	No Gas		ug/l	63.33
Mo	95	115	3	He		ug/l	10.00
Mo	98	115	1	No Gas		ug/l	78.68
Ag	107	115	1	No Gas		ug/l	200.75
Ag	109	115	1	No Gas		ug/l	163.40
Cd	111	115	1	No Gas		ug/l	80.00

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He		ug/l	19.55
Cd	114	115	1	No Gas		ug/l	145.17
Cd	114	115	3	He		ug/l	44.88
Sn	118	115	1	No Gas		ug/l	1527.06
Sn	118	115	3	He		ug/l	448.90
Sb	121	115	1	No Gas		ug/l	271.36
Sb	121	115	3	He		ug/l	81.68
Sb	123	115	1	No Gas		ug/l	209.69
Sb	123	115	3	He		ug/l	70.01
Ba	135	115	1	No Gas		ug/l	33.27
Ba	137	115	1	No Gas		ug/l	29.94
La	139	115	3	He		ug/l	11.11
Ce	140	115	3	He		ug/l	21.11
Hg	201	209	1	No Gas		ug/l	12.00
Hg	202	209	1	No Gas		ug/l	87.65
Hg	202	209	3	He		ug/l	21.33
Tl	203	209	3	He		ug/l	152.73
Tl	205	209	1	No Gas		ug/l	906.70
Tl	205	209	3	He		ug/l	362.15
[Pb]	206	209	1	No Gas		ug/l	745.58
[Pb]	207	209	1	No Gas		ug/l	628.91
Pb	208	209	1	No Gas		ug/l	2820.13
Th	232	209	3	He		ug/l	284.79
U	238	209	1	No Gas		ug/l	12.33

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8735819.21	
Sc	45	2	H2	3487259.91	
Sc	45	3	He	498513.72	
Ge	72	1	No Gas	2211625.32	
Ge	72	2	H2	1094927.93	
Ge	72	3	He	306856.47	
In	115	1	No Gas	2569403.45	
In	115	3	He	558435.77	
Tb	159	1	No Gas	19115223.51	
Tb	159	3	He	8119438.06	
Ho	165	1	No Gas	18660221.44	
Ho	165	3	He	8015263.89	
Lu	175	1	No Gas	17993827.98	
Lu	175	3	He	6754466.68	
Bi	209	1	No Gas	13039620.25	
Bi	209	3	He	5395197.28	

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 006BLKV.d  
**Data Path Name** D:\Agilent\ICPMH1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 13:54:56  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas		ug/l	14697.66
Be	9	45	1	No Gas		ug/l	361.93
B	11	45	1	No Gas		ug/l	34478.12
Na	23	45	3	He		ug/l	60787.71
Mg	24	45	3	He		ug/l	1134.47
Al	27	45	1	No Gas		ug/l	19603.98
Si	28	45	2	H2		ug/l	17251.56
K	39	72	3	He		ug/l	66233.40
Ca	40	72	2	H2		ug/l	87898.45
Ti	47	72	1	No Gas		ug/l	315.32
V	51	72	1	No Gas		ug/l	-54773.27
V	51	72	3	He		ug/l	15104.46
Cr	52	72	1	No Gas		ug/l	107007.80
Cr	52	72	3	He		ug/l	564.46
Mn	55	72	1	No Gas		ug/l	6758.18
Mn	55	72	3	He		ug/l	188.63
Fe	56	72	2	H2		ug/l	6289.37
Fe	56	72	3	He		ug/l	5012.59
Co	59	72	1	No Gas		ug/l	309.39
Ni	60	72	1	No Gas		ug/l	718.60
Ni	60	72	3	He		ug/l	143.33
Cu	63	72	1	No Gas		ug/l	1488.01
Cu	63	72	3	He		ug/l	403.93
Cu	65	72	1	No Gas		ug/l	660.95
Zn	66	72	1	No Gas		ug/l	4632.75
Zn	66	72	3	He		ug/l	950.04
As	75	72	1	No Gas		ug/l	12376.09
As	75	72	3	He		ug/l	269.07
Se	78	72	2	H2		ug/l	23.00
Br	79	72	1	No Gas		ug/l	16323.56
Br	79	72	2	H2		ug/l	6578.47
Se	82	72	1	No Gas		ug/l	757.55
Kr	84	72	1	No Gas		ug/l	21586.72
Sr	88	72	1	No Gas		ug/l	1131.14
Sr	88	72	3	He		ug/l	381.12
Mo	95	115	1	No Gas		ug/l	50.00
Mo	95	115	3	He		ug/l	32.22
Mo	98	115	1	No Gas		ug/l	74.58
Ag	107	115	1	No Gas		ug/l	174.74
Ag	109	115	1	No Gas		ug/l	172.07
Cd	111	115	1	No Gas		ug/l	72.03



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He		ug/l	19.89
Cd	114	115	1	No Gas		ug/l	119.80
Cd	114	115	3	He		ug/l	45.86
Sn	118	115	1	No Gas		ug/l	1633.52
Sn	118	115	3	He		ug/l	428.90
Sb	121	115	1	No Gas		ug/l	284.70
Sb	121	115	3	He		ug/l	83.01
Sb	123	115	1	No Gas		ug/l	202.69
Sb	123	115	3	He		ug/l	56.67
Ba	135	115	1	No Gas		ug/l	46.57
Ba	137	115	1	No Gas		ug/l	23.29
La	139	115	3	He		ug/l	14.44
Ce	140	115	3	He		ug/l	22.22
Hg	201	209	1	No Gas		ug/l	9.00
Hg	202	209	1	No Gas		ug/l	89.65
Hg	202	209	3	He		ug/l	20.67
Tl	203	209	3	He		ug/l	120.05
Tl	205	209	1	No Gas		ug/l	783.36
Tl	205	209	3	He		ug/l	316.80
[Pb]	206	209	1	No Gas		ug/l	675.58
[Pb]	207	209	1	No Gas		ug/l	530.02
Pb	208	209	1	No Gas		ug/l	2643.46
Th	232	209	3	He		ug/l	276.78
U	238	209	1	No Gas		ug/l	10.67

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9255764.44	
Sc	45	2	H2	3437841.99	
Sc	45	3	He	499219.40	
Ge	72	1	No Gas	2279343.27	
Ge	72	2	H2	1088113.98	
Ge	72	3	He	307234.13	
In	115	1	No Gas	2705791.13	
In	115	3	He	561390.66	
Tb	159	1	No Gas	20124263.34	
Tb	159	3	He	8188612.23	
Ho	165	1	No Gas	19629421.44	
Ho	165	3	He	8279378.25	
Lu	175	1	No Gas	19256748.99	
Lu	175	3	He	6797058.49	
Bi	209	1	No Gas	13507538.49	
Bi	209	3	He	5409128.79	

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 007BLKV.d  
**Data Path Name** D:\Agilent\ICPMH1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 14:01:09  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas		ug/l	13812.46
Be	9	45	1	No Gas		ug/l	361.93
B	11	45	1	No Gas		ug/l	33317.15
Na	23	45	3	He		ug/l	62798.09
Mg	24	45	3	He		ug/l	632.09
Al	27	45	1	No Gas		ug/l	7755.38
Si	28	45	2	H2		ug/l	18454.90
K	39	72	3	He		ug/l	67186.43
Ca	40	72	2	H2		ug/l	94880.19
Ti	47	72	1	No Gas		ug/l	296.97
V	51	72	1	No Gas		ug/l	-49647.19
V	51	72	3	He		ug/l	15868.59
Cr	52	72	1	No Gas		ug/l	109577.96
Cr	52	72	3	He		ug/l	512.24
Mn	55	72	1	No Gas		ug/l	6961.18
Mn	55	72	3	He		ug/l	180.63
Fe	56	72	2	H2		ug/l	6382.82
Fe	56	72	3	He		ug/l	5087.69
Co	59	72	1	No Gas		ug/l	352.64
Ni	60	72	1	No Gas		ug/l	778.48
Ni	60	72	3	He		ug/l	158.89
Cu	63	72	1	No Gas		ug/l	1550.04
Cu	63	72	3	He		ug/l	406.59
Cu	65	72	1	No Gas		ug/l	676.96
Zn	66	72	1	No Gas		ug/l	3927.04
Zn	66	72	3	He		ug/l	840.03
As	75	72	1	No Gas		ug/l	12998.75
As	75	72	3	He		ug/l	276.73
Se	78	72	2	H2		ug/l	30.00
Br	79	72	1	No Gas		ug/l	16843.13
Br	79	72	2	H2		ug/l	6808.17
Se	82	72	1	No Gas		ug/l	867.03
Kr	84	72	1	No Gas		ug/l	22836.83
Sr	88	72	1	No Gas		ug/l	1151.10
Sr	88	72	3	He		ug/l	367.78
Mo	95	115	1	No Gas		ug/l	77.78
Mo	95	115	3	He		ug/l	24.45
Mo	98	115	1	No Gas		ug/l	84.58
Ag	107	115	1	No Gas		ug/l	190.75
Ag	109	115	1	No Gas		ug/l	170.74
Cd	111	115	1	No Gas		ug/l	67.33

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He		ug/l	19.00
Cd	114	115	1	No Gas		ug/l	77.53
Cd	114	115	3	He		ug/l	33.17
Sn	118	115	1	No Gas		ug/l	24229.63
Sn	118	115	3	He		ug/l	6520.44
Sb	121	115	1	No Gas		ug/l	298.03
Sb	121	115	3	He		ug/l	104.68
Sb	123	115	1	No Gas		ug/l	221.02
Sb	123	115	3	He		ug/l	58.68
Ba	135	115	1	No Gas		ug/l	33.27
Ba	137	115	1	No Gas		ug/l	63.21
La	139	115	3	He		ug/l	16.66
Ce	140	115	3	He		ug/l	21.11
Hg	201	209	1	No Gas		ug/l	8.67
Hg	202	209	1	No Gas		ug/l	92.98
Hg	202	209	3	He		ug/l	23.33
Tl	203	209	3	He		ug/l	140.72
Tl	205	209	1	No Gas		ug/l	746.69
Tl	205	209	3	He		ug/l	330.80
[Pb]	206	209	1	No Gas		ug/l	696.69
[Pb]	207	209	1	No Gas		ug/l	545.57
Pb	208	209	1	No Gas		ug/l	2582.33
Th	232	209	3	He		ug/l	288.12
U	238	209	1	No Gas		ug/l	17.00

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9138762.81	
Sc	45	2	H2	3424392.26	
Sc	45	3	He	499302.79	
Ge	72	1	No Gas	2266461.72	
Ge	72	2	H2	1086144.36	
Ge	72	3	He	307800.88	
In	115	1	No Gas	2667047.55	
In	115	3	He	557694.96	
Tb	159	1	No Gas	20141733.52	
Tb	159	3	He	8143565.05	
Ho	165	1	No Gas	19469603.08	
Ho	165	3	He	8128360.57	
Lu	175	1	No Gas	18972702.24	
Lu	175	3	He	6750988.04	
Bi	209	1	No Gas	13473335.74	
Bi	209	3	He	5463492.02	

# ICPMS207-B Analytical Data

**Sample Name** Cal Blk  
**File Name** 008CALB.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 14:07:24  
**Sample Type** CalBlk  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.000	ug/l	14411.93
Be	9	45	1	No Gas	0.000	ug/l	341.27
B	11	45	1	No Gas	0.000	ug/l	30573.58
Na	23	45	3	He	0.000	ug/l	65873.22
Mg	24	45	3	He	0.000	ug/l	708.61
Al	27	45	1	No Gas	0.000	ug/l	8013.30
Si	28	45	2	H2	0.000	ug/l	18232.63
K	39	72	3	He	0.000	ug/l	67202.08
Ca	40	72	2	H2	0.000	ug/l	92084.12
Ti	47	72	1	No Gas	0.000	ug/l	310.32
V	51	72	1	No Gas	0.000	ug/l	-125413.48
V	51	72	3	He	0.000	ug/l	15962.03
Cr	52	72	1	No Gas	0.000	ug/l	107804.53
Cr	52	72	3	He	0.000	ug/l	532.23
Mn	55	72	1	No Gas	0.000	ug/l	6961.19
Mn	55	72	3	He	0.000	ug/l	182.96
Fe	56	72	2	H2	0.000	ug/l	6573.12
Fe	56	72	3	He	0.000	ug/l	5246.25
Co	59	72	1	No Gas	0.000	ug/l	345.98
Ni	60	72	1	No Gas	0.000	ug/l	805.10
Ni	60	72	3	He	0.000	ug/l	166.67
Cu	63	72	1	No Gas	0.000	ug/l	1612.07
Cu	63	72	3	He	0.000	ug/l	415.59
Cu	65	72	1	No Gas	0.000	ug/l	670.29
Zn	66	72	1	No Gas	0.000	ug/l	4123.58
Zn	66	72	3	He	0.000	ug/l	784.47
As	75	72	1	No Gas	0.000	ug/l	15242.63
As	75	72	3	He	0.000	ug/l	282.87
Se	78	72	2	H2	0.000	ug/l	26.00
Br	79	72	1	No Gas	0.000	ug/l	15217.88
Br	79	72	2	H2	0.000	ug/l	6045.98
Se	82	72	1	No Gas	0.000	ug/l	1001.44
Kr	84	72	1	No Gas		ug/l	24439.78
Sr	88	72	1	No Gas	0.000	ug/l	1097.87
Sr	88	72	3	He	0.000	ug/l	384.45
Mo	95	115	1	No Gas	0.000	ug/l	50.00
Mo	95	115	3	He	0.000	ug/l	18.89
Mo	98	115	1	No Gas	0.000	ug/l	74.45
Ag	107	115	1	No Gas	0.000	ug/l	200.08
Ag	109	115	1	No Gas	0.000	ug/l	192.08
Cd	111	115	1	No Gas	0.000	ug/l	70.61

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.000	ug/l	16.78
Cd	114	115	1	No Gas	0.000	ug/l	86.05
Cd	114	115	3	He	0.000	ug/l	13.99
Sn	118	115	1	No Gas	0.000	ug/l	25335.83
Sn	118	115	3	He	0.000	ug/l	6802.79
Sb	121	115	1	No Gas	0.000	ug/l	272.70
Sb	121	115	3	He	0.000	ug/l	93.34
Sb	123	115	1	No Gas	0.000	ug/l	216.69
Sb	123	115	3	He	0.000	ug/l	72.68
Ba	135	115	1	No Gas	0.000	ug/l	29.94
Ba	137	115	1	No Gas	0.000	ug/l	89.82
La	139	115	3	He	0.000	ug/l	8.89
Ce	140	115	3	He	0.000	ug/l	20.00
Hg	201	209	1	No Gas	0.000	ug/l	15.00
Hg	202	209	1	No Gas	0.000	ug/l	96.65
Hg	202	209	3	He	0.000	ug/l	22.00
Tl	203	209	3	He	0.000	ug/l	136.05
Tl	205	209	1	No Gas	0.000	ug/l	734.47
Tl	205	209	3	He	0.000	ug/l	318.80
[Pb]	206	209	1	No Gas	0.000	ug/l	557.79
[Pb]	207	209	1	No Gas	0.000	ug/l	504.46
Pb	208	209	1	No Gas	0.000	ug/l	2320.10
Th	232	209	3	He	0.000	ug/l	240.10
U	238	209	1	No Gas	0.000	ug/l	16.33

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9394061.91	100.0
Sc	45	2	H2	3625073.34	100.0
Sc	45	3	He	520057.51	100.0
Ge	72	1	No Gas	2259730.34	100.0
Ge	72	2	H2	1188911.43	100.0
Ge	72	3	He	314560.53	100.0
In	115	1	No Gas	2646717.61	100.0
In	115	3	He	571481.68	100.0
Tb	159	1	No Gas	21920775.42	100.0
Tb	159	3	He	8139137.50	100.0
Ho	165	1	No Gas	21297447.74	100.0
Ho	165	3	He	7953554.99	100.0
Lu	175	1	No Gas	20734808.45	100.0
Lu	175	3	He	6629808.58	100.0
Bi	209	1	No Gas	12940743.49	100.0
Bi	209	3	He	5333749.35	100.0

# ICPMS207-B Analytical Data

**Sample Name** 0.025 ppb STD  
**File Name** 009CAL5.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 14:15:00  
**Sample Type** CalStd  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020B-Cal  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.396	ug/l	22359.31
Be	9	45	1	No Gas	0.034	ug/l	567.57
B	11	45	1	No Gas	0.646	ug/l	30083.76
Na	23	45	3	He	5.053	ug/l	71668.37
Mg	24	45	3	He	6.934	ug/l	6032.60
Al	27	45	1	No Gas	0.162	ug/l	12511.93
Si	28	45	2	H2	1.068	ug/l	20574.38
K	39	72	3	He	8.684	ug/l	73225.85
Ca	40	72	2	H2	4.968	ug/l	134521.32
Ti	47	72	1	No Gas	0.111	ug/l	689.16
V	51	72	1	No Gas	1.668	ug/l	-42488.71
V	51	72	3	He	0.223	ug/l	17305.76
Cr	52	72	1	No Gas	0.392	ug/l	115376.45
Cr	52	72	3	He	0.040	ug/l	833.36
Mn	55	72	1	No Gas	0.038	ug/l	8488.97
Mn	55	72	3	He	0.028	ug/l	332.27
Fe	56	72	2	H2	0.778	ug/l	21864.92
Fe	56	72	3	He	0.780	ug/l	10681.33
Co	59	72	1	No Gas	0.030	ug/l	1716.72
Ni	60	72	1	No Gas	0.026	ug/l	1008.04
Ni	60	72	3	He	0.033	ug/l	258.89
Cu	63	72	1	No Gas	0.047	ug/l	2632.63
Cu	63	72	3	He	0.034	ug/l	673.22
Cu	65	72	1	No Gas	0.042	ug/l	1109.16
Zn	66	72	1	No Gas	0.096	ug/l	4486.05
Zn	66	72	3	He	0.114	ug/l	943.37
As	75	72	1	No Gas	-0.234	ug/l	12397.04
As	75	72	3	He	0.034	ug/l	318.67
Se	78	72	2	H2	0.030	ug/l	43.56
Br	79	72	1	No Gas	0.643	ug/l	18815.02
Br	79	72	2	H2	0.640	ug/l	7706.77
Se	82	72	1	No Gas	-0.234	ug/l	791.56
Kr	84	72	1	No Gas		ug/l	22170.51
Sr	88	72	1	No Gas	0.030	ug/l	2964.44
Sr	88	72	3	He	0.025	ug/l	584.46
Mo	95	115	1	No Gas	0.029	ug/l	423.34
Mo	95	115	3	He	0.024	ug/l	125.55
Mo	98	115	1	No Gas	0.028	ug/l	658.42
Ag	107	115	1	No Gas	0.012	ug/l	562.90
Ag	109	115	1	No Gas	0.012	ug/l	561.57
Cd	111	115	1	No Gas	0.026	ug/l	243.08

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.030	ug/l	87.00
Cd	114	115	1	No Gas	0.029	ug/l	532.01
Cd	114	115	3	He	0.032	ug/l	198.96
Sn	118	115	1	No Gas	-0.976	ug/l	2914.54
Sn	118	115	3	He	-1.061	ug/l	870.10
Sb	121	115	1	No Gas	0.037	ug/l	1299.86
Sb	121	115	3	He	0.033	ug/l	345.37
Sb	123	115	1	No Gas	0.037	ug/l	984.13
Sb	123	115	3	He	0.035	ug/l	283.70
Ba	135	115	1	No Gas	0.030	ug/l	206.26
Ba	137	115	1	No Gas	0.031	ug/l	419.18
La	139	115	3	He	0.028	ug/l	876.70
Ce	140	115	3	He	0.028	ug/l	944.48
Hg	201	209	1	No Gas	0.000	ug/l	12.67
Hg	202	209	1	No Gas	0.000	ug/l	92.31
Hg	202	209	3	He	0.001	ug/l	24.99
Tl	203	209	3	He	0.023	ug/l	416.17
Tl	205	209	1	No Gas	0.027	ug/l	2279.10
Tl	205	209	3	He	0.025	ug/l	1035.12
[Pb]	206	209	1	No Gas	0.032	ug/l	1173.39
[Pb]	207	209	1	No Gas	0.029	ug/l	980.04
Pb	208	209	1	No Gas	0.030	ug/l	4614.79
Th	232	209	3	He	0.011	ug/l	655.62
U	238	209	1	No Gas	0.027	ug/l	2185.42

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8371597.49	89.1
Sc	45	2	H2	3327466.58	91.8
Sc	45	3	He	510911.57	98.2
Ge	72	1	No Gas	2079914.63	92.0
Ge	72	2	H2	1082564.85	91.1
Ge	72	3	He	311596.48	99.1
In	115	1	No Gas	2342204.55	88.5
In	115	3	He	570203.74	99.8
Tb	159	1	No Gas	19340621.60	88.2
Tb	159	3	He	8314495.14	102.2
Ho	165	1	No Gas	18672967.83	87.7
Ho	165	3	He	8179966.08	102.8
Lu	175	1	No Gas	18308449.26	88.3
Lu	175	3	He	6742691.46	101.7
Bi	209	1	No Gas	11977933.80	92.6
Bi	209	3	He	5355471.29	100.4

# ICPMS207-B Analytical Data

**Sample Name** 0.05 ppb STD  
**File Name** 010CAL5.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 14:21:38  
**Sample Type** CalStd  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020B-Cal  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.822	ug/l	33530.86
Be	9	45	1	No Gas	0.064	ug/l	832.86
B	11	45	1	No Gas	0.624	ug/l	30859.64
Na	23	45	3	He	15.734	ug/l	85912.21
Mg	24	45	3	He	16.459	ug/l	13296.28
Al	27	45	1	No Gas	0.205	ug/l	14480.77
Si	28	45	2	H2	1.997	ug/l	23437.79
K	39	72	3	He	15.742	ug/l	78666.71
Ca	40	72	2	H2	13.420	ug/l	221305.95
Ti	47	72	1	No Gas	0.118	ug/l	710.81
V	51	72	1	No Gas	1.518	ug/l	-46724.07
V	51	72	3	He	0.225	ug/l	17325.79
Cr	52	72	1	No Gas	0.383	ug/l	117338.36
Cr	52	72	3	He	0.067	ug/l	1043.38
Mn	55	72	1	No Gas	0.071	ug/l	10509.61
Mn	55	72	3	He	0.060	ug/l	507.24
Fe	56	72	2	H2	1.655	ug/l	40481.41
Fe	56	72	3	He	1.625	ug/l	16629.49
Co	59	72	1	No Gas	0.063	ug/l	3327.13
Ni	60	72	1	No Gas	0.058	ug/l	1380.67
Ni	60	72	3	He	0.060	ug/l	335.56
Cu	63	72	1	No Gas	0.081	ug/l	3544.53
Cu	63	72	3	He	0.075	ug/l	990.84
Cu	65	72	1	No Gas	0.075	ug/l	1533.36
Zn	66	72	1	No Gas	0.002	ug/l	3903.44
Zn	66	72	3	He	0.006	ug/l	785.58
As	75	72	1	No Gas	-0.304	ug/l	12162.32
As	75	72	3	He	0.069	ug/l	357.87
Se	78	72	2	H2	0.060	ug/l	63.78
Br	79	72	1	No Gas	0.580	ug/l	18781.65
Br	79	72	2	H2	0.655	ug/l	7933.15
Se	82	72	1	No Gas	-0.243	ug/l	813.95
Kr	84	72	1	No Gas		ug/l	19611.20
Sr	88	72	1	No Gas	0.063	ug/l	5217.30
Sr	88	72	3	He	0.060	ug/l	863.36
Mo	95	115	1	No Gas	0.065	ug/l	931.15
Mo	95	115	3	He	0.058	ug/l	283.34
Mo	98	115	1	No Gas	0.065	ug/l	1482.10
Ag	107	115	1	No Gas	0.025	ug/l	1029.12
Ag	109	115	1	No Gas	0.026	ug/l	1045.79
Cd	111	115	1	No Gas	0.061	ug/l	514.09



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.062	ug/l	162.33
Cd	114	115	1	No Gas	0.065	ug/l	1123.23
Cd	114	115	3	He	0.068	ug/l	406.90
Sn	118	115	1	No Gas	-0.960	ug/l	3377.07
Sn	118	115	3	He	-1.052	ug/l	930.04
Sb	121	115	1	No Gas	0.063	ug/l	2117.38
Sb	121	115	3	He	0.060	ug/l	567.40
Sb	123	115	1	No Gas	0.062	ug/l	1595.59
Sb	123	115	3	He	0.062	ug/l	453.72
Ba	135	115	1	No Gas	0.062	ug/l	415.85
Ba	137	115	1	No Gas	0.062	ug/l	765.18
La	139	115	3	He	0.060	ug/l	1856.81
Ce	140	115	3	He	0.063	ug/l	2144.63
Hg	201	209	1	No Gas	0.001	ug/l	17.33
Hg	202	209	1	No Gas	0.001	ug/l	97.98
Hg	202	209	3	He	0.002	ug/l	30.99
Tl	203	209	3	He	0.058	ug/l	839.03
Tl	205	209	1	No Gas	0.058	ug/l	4242.92
Tl	205	209	3	He	0.055	ug/l	1889.56
[Pb]	206	209	1	No Gas	0.059	ug/l	1783.47
[Pb]	207	209	1	No Gas	0.066	ug/l	1696.79
Pb	208	209	1	No Gas	0.062	ug/l	7410.87
Th	232	209	3	He	0.026	ug/l	1290.59
U	238	209	1	No Gas	0.058	ug/l	4848.60

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8629562.24	91.9
Sc	45	2	H2	3344735.61	92.3
Sc	45	3	He	508388.63	97.8
Ge	72	1	No Gas	2124443.13	94.0
Ge	72	2	H2	1105977.11	93.0
Ge	72	3	He	311701.50	99.1
In	115	1	No Gas	2430530.72	91.8
In	115	3	He	575760.50	100.7
Tb	159	1	No Gas	19698569.75	89.9
Tb	159	3	He	8196347.41	100.7
Ho	165	1	No Gas	19159400.81	90.0
Ho	165	3	He	8177796.21	102.8
Lu	175	1	No Gas	18793870.92	90.6
Lu	175	3	He	6716269.99	101.3
Bi	209	1	No Gas	12343719.55	95.4
Bi	209	3	He	5421866.14	101.7

# ICPMS207-B Analytical Data

**Sample Name** 0.10 ppb STD  
**File Name** 011CAL.S.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 14:28:17  
**Sample Type** CalStd  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020B-Cal  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.425	ug/l	51185.48
Be	9	45	1	No Gas	0.111	ug/l	1278.13
B	11	45	1	No Gas	0.044	ug/l	29742.29
Na	23	45	3	He	29.433	ug/l	105902.84
Mg	24	45	3	He	30.551	ug/l	24381.45
Al	27	45	1	No Gas	0.193	ug/l	14700.62
Si	28	45	2	H2	2.612	ug/l	25246.05
K	39	72	3	He	30.024	ug/l	90411.67
Ca	40	72	2	H2	28.458	ug/l	367303.34
Ti	47	72	1	No Gas	0.133	ug/l	790.82
V	51	72	1	No Gas	1.597	ug/l	-45199.28
V	51	72	3	He	0.314	ug/l	18083.38
Cr	52	72	1	No Gas	0.357	ug/l	118166.25
Cr	52	72	3	He	0.131	ug/l	1550.09
Mn	55	72	1	No Gas	0.134	ug/l	14248.68
Mn	55	72	3	He	0.118	ug/l	834.19
Fe	56	72	2	H2	3.155	ug/l	70928.10
Fe	56	72	3	He	3.173	ug/l	27774.16
Co	59	72	1	No Gas	0.115	ug/l	5892.84
Ni	60	72	1	No Gas	0.100	ug/l	1853.11
Ni	60	72	3	He	0.097	ug/l	444.46
Cu	63	72	1	No Gas	0.133	ug/l	4937.49
Cu	63	72	3	He	0.133	ug/l	1447.12
Cu	65	72	1	No Gas	0.135	ug/l	2281.10
Zn	66	72	1	No Gas	-0.034	ug/l	3693.76
Zn	66	72	3	He	0.017	ug/l	808.92
As	75	72	1	No Gas	-0.203	ug/l	13101.36
As	75	72	3	He	0.125	ug/l	424.00
Se	78	72	2	H2	0.115	ug/l	98.33
Br	79	72	1	No Gas	0.562	ug/l	18921.53
Br	79	72	2	H2	0.608	ug/l	7700.12
Se	82	72	1	No Gas	-0.060	ug/l	922.50
Kr	84	72	1	No Gas		ug/l	21819.90
Sr	88	72	1	No Gas	0.115	ug/l	8841.90
Sr	88	72	3	He	0.120	ug/l	1358.96
Mo	95	115	1	No Gas	0.116	ug/l	1643.44
Mo	95	115	3	He	0.119	ug/l	556.68
Mo	98	115	1	No Gas	0.113	ug/l	2556.08
Ag	107	115	1	No Gas	0.047	ug/l	1828.86
Ag	109	115	1	No Gas	0.048	ug/l	1764.82
Cd	111	115	1	No Gas	0.118	ug/l	936.95

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.123	ug/l	302.33
Cd	114	115	1	No Gas	0.118	ug/l	2010.48
Cd	114	115	3	He	0.122	ug/l	714.69
Sn	118	115	1	No Gas	-0.914	ug/l	4385.36
Sn	118	115	3	He	-1.002	ug/l	1205.62
Sb	121	115	1	No Gas	0.115	ug/l	3718.87
Sb	121	115	3	He	0.113	ug/l	971.80
Sb	123	115	1	No Gas	0.113	ug/l	2785.22
Sb	123	115	3	He	0.113	ug/l	762.10
Ba	135	115	1	No Gas	0.117	ug/l	768.50
Ba	137	115	1	No Gas	0.109	ug/l	1307.48
La	139	115	3	He	0.119	ug/l	3652.72
Ce	140	115	3	He	0.118	ug/l	3963.92
Hg	201	209	1	No Gas	0.002	ug/l	21.33
Hg	202	209	1	No Gas	0.002	ug/l	111.98
Hg	202	209	3	He	0.003	ug/l	32.99
Tl	203	209	3	He	0.103	ug/l	1379.29
Tl	205	209	1	No Gas	0.112	ug/l	7624.45
Tl	205	209	3	He	0.109	ug/l	3395.14
[Pb]	206	209	1	No Gas	0.110	ug/l	2902.55
[Pb]	207	209	1	No Gas	0.110	ug/l	2554.71
Pb	208	209	1	No Gas	0.109	ug/l	11620.95
Th	232	209	3	He	0.055	ug/l	2442.55
U	238	209	1	No Gas	0.109	ug/l	9252.43

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9023987.36	96.1
Sc	45	2	H2	3344867.33	92.3
Sc	45	3	He	514544.19	98.9
Ge	72	1	No Gas	2149140.18	95.1
Ge	72	2	H2	1096596.83	92.2
Ge	72	3	He	314399.32	99.9
In	115	1	No Gas	2453139.78	92.7
In	115	3	He	572012.41	100.1
Tb	159	1	No Gas	20261083.49	92.4
Tb	159	3	He	8191325.10	100.6
Ho	165	1	No Gas	19864086.30	93.3
Ho	165	3	He	8157514.99	102.6
Lu	175	1	No Gas	19378777.26	93.5
Lu	175	3	He	6777499.50	102.2
Bi	209	1	No Gas	12477518.71	96.4
Bi	209	3	He	5402046.13	101.3

# ICPMS207-B Analytical Data

**Sample Name** 0.5 ppb STD  
**File Name** 012CAL5.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 14:34:55  
**Sample Type** CalStd  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020B-Cal  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	7.013	ug/l	189568.27
Be	9	45	1	No Gas	0.555	ug/l	4874.81
B	11	45	1	No Gas	0.835	ug/l	32298.53
Na	23	45	3	He	142.978	ug/l	259528.15
Mg	24	45	3	He	144.583	ug/l	111285.00
Al	27	45	1	No Gas	0.882	ug/l	38211.31
Si	28	45	2	H2	5.589	ug/l	33456.76
K	39	72	3	He	139.529	ug/l	173426.74
Ca	40	72	2	H2	140.068	ug/l	1454280.79
Ti	47	72	1	No Gas	0.570	ug/l	2372.59
V	51	72	1	No Gas	1.780	ug/l	-35787.10
V	51	72	3	He	0.827	ug/l	21335.46
Cr	52	72	1	No Gas	0.939	ug/l	140264.87
Cr	52	72	3	He	0.565	ug/l	4875.28
Mn	55	72	1	No Gas	0.579	ug/l	38714.07
Mn	55	72	3	He	0.544	ug/l	3144.71
Fe	56	72	2	H2	14.895	ug/l	309604.32
Fe	56	72	3	He	14.907	ug/l	109928.14
Co	59	72	1	No Gas	0.575	ug/l	27581.25
Ni	60	72	1	No Gas	0.571	ug/l	6814.78
Ni	60	72	3	He	0.588	ug/l	1832.35
Cu	63	72	1	No Gas	0.660	ug/l	18097.41
Cu	63	72	3	He	0.601	ug/l	5012.53
Cu	65	72	1	No Gas	0.589	ug/l	7675.79
Zn	66	72	1	No Gas	0.901	ug/l	10289.78
Zn	66	72	3	He	1.024	ug/l	2267.97
As	75	72	1	No Gas	0.071	ug/l	14879.07
As	75	72	3	He	0.554	ug/l	898.41
Se	78	72	2	H2	0.560	ug/l	380.89
Br	79	72	1	No Gas	0.635	ug/l	19104.87
Br	79	72	2	H2	0.543	ug/l	7447.18
Se	82	72	1	No Gas	0.342	ug/l	1100.92
Kr	84	72	1	No Gas		ug/l	21686.61
Sr	88	72	1	No Gas	0.546	ug/l	37244.16
Sr	88	72	3	He	0.512	ug/l	4499.62
Mo	95	115	1	No Gas	0.521	ug/l	7196.30
Mo	95	115	3	He	0.550	ug/l	2486.90
Mo	98	115	1	No Gas	0.516	ug/l	11425.40
Ag	107	115	1	No Gas	0.216	ug/l	7703.86
Ag	109	115	1	No Gas	0.215	ug/l	7343.53
Cd	111	115	1	No Gas	0.535	ug/l	4003.22

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.568	ug/l	1320.95
Cd	114	115	1	No Gas	0.544	ug/l	8952.53
Cd	114	115	3	He	0.556	ug/l	3182.09
Sn	118	115	1	No Gas	-0.445	ug/l	14285.62
Sn	118	115	3	He	-0.513	ug/l	3899.45
Sb	121	115	1	No Gas	0.555	ug/l	16900.82
Sb	121	115	3	He	0.567	ug/l	4457.83
Sb	123	115	1	No Gas	0.552	ug/l	12772.41
Sb	123	115	3	He	0.570	ug/l	3509.46
Ba	135	115	1	No Gas	0.550	ug/l	3503.51
Ba	137	115	1	No Gas	0.509	ug/l	5813.06
La	139	115	3	He	0.550	ug/l	16709.00
Ce	140	115	3	He	0.545	ug/l	18124.09
Hg	201	209	1	No Gas	0.009	ug/l	49.99
Hg	202	209	1	No Gas	0.011	ug/l	194.30
Hg	202	209	3	He	0.009	ug/l	60.99
Tl	203	209	3	He	0.503	ug/l	6197.26
Tl	205	209	1	No Gas	0.526	ug/l	32559.76
Tl	205	209	3	He	0.511	ug/l	14792.80
[Pb]	206	209	1	No Gas	0.527	ug/l	11688.53
[Pb]	207	209	1	No Gas	0.527	ug/l	10223.97
Pb	208	209	1	No Gas	0.529	ug/l	46821.42
Th	232	209	3	He	0.324	ug/l	13149.88
U	238	209	1	No Gas	0.511	ug/l	42594.82

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8681977.00	92.4
Sc	45	2	H2	3285755.58	90.6
Sc	45	3	He	507825.13	97.6
Ge	72	1	No Gas	2108005.35	93.3
Ge	72	2	H2	1088177.94	91.5
Ge	72	3	He	311168.49	98.9
In	115	1	No Gas	2451377.22	92.6
In	115	3	He	566511.24	99.1
Tb	159	1	No Gas	19940452.88	91.0
Tb	159	3	He	8336258.36	102.4
Ho	165	1	No Gas	19463744.73	91.4
Ho	165	3	He	8188633.76	103.0
Lu	175	1	No Gas	19235658.52	92.8
Lu	175	3	He	6782679.21	102.3
Bi	209	1	No Gas	12282985.26	94.9
Bi	209	3	He	5403827.32	101.3

# ICPMS207-B Analytical Data

**Sample Name** 1 ppb STD  
**File Name** 013CAL.S.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 14:41:34  
**Sample Type** CalStd  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020B-Cal  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	14.579	ug/l	391202.23
Be	9	45	1	No Gas	1.172	ug/l	10235.08
B	11	45	1	No Gas	0.914	ug/l	33635.23
Na	23	45	3	He	306.529	ug/l	482896.71
Mg	24	45	3	He	311.424	ug/l	238967.73
Al	27	45	1	No Gas	1.288	ug/l	53825.27
Si	28	45	2	H2	9.481	ug/l	44785.43
K	39	72	3	He	296.972	ug/l	294562.99
Ca	40	72	2	H2	301.672	ug/l	3023427.12
Ti	47	72	1	No Gas	1.223	ug/l	4862.39
V	51	72	1	No Gas	2.982	ug/l	19840.55
V	51	72	3	He	1.408	ug/l	25263.89
Cr	52	72	1	No Gas	1.386	ug/l	162411.37
Cr	52	72	3	He	1.193	ug/l	9734.38
Mn	55	72	1	No Gas	1.202	ug/l	74918.69
Mn	55	72	3	He	1.159	ug/l	6505.14
Fe	56	72	2	H2	32.162	ug/l	659613.13
Fe	56	72	3	He	31.771	ug/l	228747.88
Co	59	72	1	No Gas	1.189	ug/l	57952.40
Ni	60	72	1	No Gas	1.178	ug/l	13532.81
Ni	60	72	3	He	1.246	ug/l	3702.72
Cu	63	72	1	No Gas	1.226	ug/l	32962.85
Cu	63	72	3	He	1.282	ug/l	10251.20
Cu	65	72	1	No Gas	1.214	ug/l	15469.06
Zn	66	72	1	No Gas	1.157	ug/l	12379.40
Zn	66	72	3	He	1.244	ug/l	2591.36
As	75	72	1	No Gas	0.638	ug/l	19419.01
As	75	72	3	He	1.165	ug/l	1582.39
Se	78	72	2	H2	1.240	ug/l	810.58
Br	79	72	1	No Gas	0.538	ug/l	18758.31
Br	79	72	2	H2	0.511	ug/l	7317.37
Se	82	72	1	No Gas	0.911	ug/l	1410.03
Kr	84	72	1	No Gas		ug/l	22149.79
Sr	88	72	1	No Gas	1.146	ug/l	78692.02
Sr	88	72	3	He	1.140	ug/l	9568.79
Mo	95	115	1	No Gas	1.097	ug/l	15486.22
Mo	95	115	3	He	1.178	ug/l	5318.80
Mo	98	115	1	No Gas	1.085	ug/l	24585.19
Ag	107	115	1	No Gas	0.451	ug/l	16268.50
Ag	109	115	1	No Gas	0.457	ug/l	15785.10
Cd	111	115	1	No Gas	1.158	ug/l	8812.65

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	1.203	ug/l	2785.72
Cd	114	115	1	No Gas	1.158	ug/l	19437.53
Cd	114	115	3	He	1.197	ug/l	6856.92
Sn	118	115	1	No Gas	0.102	ug/l	26475.71
Sn	118	115	3	He	0.042	ug/l	7001.78
Sb	121	115	1	No Gas	1.115	ug/l	34584.68
Sb	121	115	3	He	1.164	ug/l	9087.18
Sb	123	115	1	No Gas	1.118	ug/l	26304.11
Sb	123	115	3	He	1.146	ug/l	7002.45
Ba	135	115	1	No Gas	1.069	ug/l	6957.97
Ba	137	115	1	No Gas	1.071	ug/l	12454.23
La	139	115	3	He	1.184	ug/l	36104.54
Ce	140	115	3	He	1.190	ug/l	39692.14
Hg	201	209	1	No Gas	0.023	ug/l	108.31
Hg	202	209	1	No Gas	0.023	ug/l	305.94
Hg	202	209	3	He	0.023	ug/l	116.31
Tl	203	209	3	He	1.090	ug/l	13270.58
Tl	205	209	1	No Gas	1.134	ug/l	71375.35
Tl	205	209	3	He	1.127	ug/l	32261.09
[Pb]	206	209	1	No Gas	1.121	ug/l	24973.41
[Pb]	207	209	1	No Gas	1.126	ug/l	21924.74
Pb	208	209	1	No Gas	1.115	ug/l	99080.05
Th	232	209	3	He	0.848	ug/l	34006.20
U	238	209	1	No Gas	1.082	ug/l	92861.31

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8934951.57	95.1
Sc	45	2	H2	3287839.22	90.7
Sc	45	3	He	507975.30	97.7
Ge	72	1	No Gas	2152199.20	95.2
Ge	72	2	H2	1085382.51	91.3
Ge	72	3	He	311639.83	99.1
In	115	1	No Gas	2513229.20	95.0
In	115	3	He	568411.77	99.5
Tb	159	1	No Gas	20486765.84	93.5
Tb	159	3	He	8310337.13	102.1
Ho	165	1	No Gas	19970531.50	93.8
Ho	165	3	He	8240956.03	103.6
Lu	175	1	No Gas	19603627.10	94.5
Lu	175	3	He	6776789.36	102.2
Bi	209	1	No Gas	12634887.35	97.6
Bi	209	3	He	5409602.19	101.4

# ICPMS207-B Analytical Data

**Sample Name** 10 ppb STD  
**File Name** 014CAL.S.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 14:48:12  
**Sample Type** CalStd  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020B-Cal  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	135.299	ug/l	3567417.30
Be	9	45	1	No Gas	10.551	ug/l	90855.33
B	11	45	1	No Gas	9.733	ug/l	77171.81
Na	23	45	3	He	2835.166	ug/l	3952064.98
Mg	24	45	3	He	2859.162	ug/l	2197257.03
Al	27	45	1	No Gas	10.709	ug/l	397328.92
Si	28	45	2	H2	44.420	ug/l	146473.81
K	39	72	3	He	2774.534	ug/l	2171650.26
Ca	40	72	2	H2	2833.859	ug/l	27734245.56
Ti	47	72	1	No Gas	10.257	ug/l	39157.73
V	51	72	1	No Gas	11.231	ug/l	412660.75
V	51	72	3	He	10.482	ug/l	85210.10
Cr	52	72	1	No Gas	10.531	ug/l	562383.69
Cr	52	72	3	He	10.774	ug/l	82702.82
Mn	55	72	1	No Gas	10.657	ug/l	620584.22
Mn	55	72	3	He	10.759	ug/l	58213.04
Fe	56	72	2	H2	288.762	ug/l	5886970.10
Fe	56	72	3	He	289.814	ug/l	2021433.47
Co	59	72	1	No Gas	10.718	ug/l	527117.53
Ni	60	72	1	No Gas	10.417	ug/l	115295.36
Ni	60	72	3	He	11.680	ug/l	32948.16
Cu	63	72	1	No Gas	10.977	ug/l	287022.34
Cu	63	72	3	He	11.490	ug/l	87577.69
Cu	65	72	1	No Gas	10.868	ug/l	135324.19
Zn	66	72	1	No Gas	10.666	ug/l	82897.64
Zn	66	72	3	He	11.379	ug/l	17187.97
As	75	72	1	No Gas	10.171	ug/l	91945.39
As	75	72	3	He	10.979	ug/l	12407.09
Se	78	72	2	H2	11.328	ug/l	7226.24
Br	79	72	1	No Gas	0.461	ug/l	18428.59
Br	79	72	2	H2	0.535	ug/l	7407.23
Se	82	72	1	No Gas	10.954	ug/l	6526.04
Kr	84	72	1	No Gas		ug/l	26678.34
Sr	88	72	1	No Gas	10.515	ug/l	723977.46
Sr	88	72	3	He	10.891	ug/l	87102.31
Mo	95	115	1	No Gas	10.023	ug/l	141516.72
Mo	95	115	3	He	10.834	ug/l	48642.38
Mo	98	115	1	No Gas	10.169	ug/l	230403.80
Ag	107	115	1	No Gas	4.180	ug/l	149660.09
Ag	109	115	1	No Gas	4.156	ug/l	142596.37
Cd	111	115	1	No Gas	10.508	ug/l	79611.96



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	11.193	ug/l	25717.18
Cd	114	115	1	No Gas	10.547	ug/l	176881.46
Cd	114	115	3	He	10.888	ug/l	62064.49
Sn	118	115	1	No Gas	9.290	ug/l	225918.86
Sn	118	115	3	He	9.855	ug/l	61367.60
Sb	121	115	1	No Gas	10.261	ug/l	317020.53
Sb	121	115	3	He	10.760	ug/l	82972.17
Sb	123	115	1	No Gas	10.294	ug/l	241226.35
Sb	123	115	3	He	10.859	ug/l	65531.14
Ba	135	115	1	No Gas	10.255	ug/l	66696.97
Ba	137	115	1	No Gas	10.061	ug/l	116607.60
La	139	115	3	He	11.191	ug/l	340179.42
Ce	140	115	3	He	11.033	ug/l	366841.04
Hg	201	209	1	No Gas	0.204	ug/l	867.53
Hg	202	209	1	No Gas	0.200	ug/l	1973.09
Hg	202	209	3	He	0.215	ug/l	906.52
Tl	203	209	3	He	10.121	ug/l	122565.47
Tl	205	209	1	No Gas	10.354	ug/l	655886.39
Tl	205	209	3	He	10.426	ug/l	297001.03
[Pb]	206	209	1	No Gas	10.075	ug/l	223522.16
[Pb]	207	209	1	No Gas	10.088	ug/l	195589.58
Pb	208	209	1	No Gas	10.137	ug/l	896309.99
Th	232	209	3	He	9.573	ug/l	383003.86
U	238	209	1	No Gas	10.119	ug/l	882258.21

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9069678.06	96.5
Sc	45	2	H2	3290951.62	90.8
Sc	45	3	He	509999.32	98.1
Ge	72	1	No Gas	2183955.48	96.6
Ge	72	2	H2	1087727.46	91.5
Ge	72	3	He	308111.89	97.9
In	115	1	No Gas	2520256.22	95.2
In	115	3	He	566869.48	99.2
Tb	159	1	No Gas	21016067.41	95.9
Tb	159	3	He	8299789.71	102.0
Ho	165	1	No Gas	20423023.34	95.9
Ho	165	3	He	8284936.52	104.2
Lu	175	1	No Gas	19967938.48	96.3
Lu	175	3	He	6812621.60	102.8
Bi	209	1	No Gas	12834063.64	99.2
Bi	209	3	He	5429711.90	101.8

# ICPMS207-B Analytical Data

**Sample Name** 50 ppb STD  
**File Name** 015CAL5.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 14:54:50  
**Sample Type** CalStd  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020B-Cal  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	655.020	ug/l	15808447.02
Be	9	45	1	No Gas	55.054	ug/l	433655.06
B	11	45	1	No Gas	54.680	ug/l	272107.86
Na	23	45	3	He	12307.433	ug/l	17353718.91
Mg	24	45	3	He	12430.354	ug/l	9784005.16
Al	27	45	1	No Gas	55.560	ug/l	1860595.30
Si	28	45	2	H2	215.586	ug/l	642569.37
K	39	72	3	He	12106.423	ug/l	9600336.31
Ca	40	72	2	H2	12312.274	ug/l	122212962.83
Ti	47	72	1	No Gas	53.070	ug/l	185850.35
V	51	72	1	No Gas	50.893	ug/l	2121730.76
V	51	72	3	He	49.539	ug/l	357328.90
Cr	52	72	1	No Gas	52.994	ug/l	2222379.10
Cr	52	72	3	He	49.797	ug/l	394559.21
Mn	55	72	1	No Gas	53.835	ug/l	2869247.57
Mn	55	72	3	He	49.431	ug/l	276779.35
Fe	56	72	2	H2	1267.269	ug/l	26236423.42
Fe	56	72	3	He	1259.504	ug/l	9094757.98
Co	59	72	1	No Gas	53.910	ug/l	2446593.98
Ni	60	72	1	No Gas	54.020	ug/l	548438.90
Ni	60	72	3	He	53.140	ug/l	154887.29
Cu	63	72	1	No Gas	55.789	ug/l	1340920.84
Cu	63	72	3	He	51.687	ug/l	407192.17
Cu	65	72	1	No Gas	55.737	ug/l	638459.69
Zn	66	72	1	No Gas	55.785	ug/l	384887.65
Zn	66	72	3	He	52.201	ug/l	78926.42
As	75	72	1	No Gas	55.075	ug/l	399307.39
As	75	72	3	He	50.289	ug/l	57925.39
Se	78	72	2	H2	52.419	ug/l	33899.41
Br	79	72	1	No Gas	0.311	ug/l	15927.23
Br	79	72	2	H2	0.299	ug/l	6754.89
Se	82	72	1	No Gas	55.363	ug/l	26831.75
Kr	84	72	1	No Gas		ug/l	44636.89
Sr	88	72	1	No Gas	52.922	ug/l	3361672.60
Sr	88	72	3	He	49.270	ug/l	407411.10
Mo	95	115	1	No Gas	52.763	ug/l	670563.07
Mo	95	115	3	He	50.261	ug/l	228959.97
Mo	98	115	1	No Gas	53.508	ug/l	1089869.43
Ag	107	115	1	No Gas	21.697	ug/l	698401.06
Ag	109	115	1	No Gas	21.647	ug/l	667585.09
Cd	111	115	1	No Gas	54.994	ug/l	374596.27

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	51.574	ug/l	120187.36
Cd	114	115	1	No Gas	55.434	ug/l	836577.58
Cd	114	115	3	He	50.448	ug/l	291776.07
Sn	118	115	1	No Gas	54.260	ug/l	1080379.82
Sn	118	115	3	He	49.343	ug/l	284387.75
Sb	121	115	1	No Gas	53.720	ug/l	1494745.31
Sb	121	115	3	He	49.774	ug/l	389157.15
Sb	123	115	1	No Gas	53.619	ug/l	1130206.58
Sb	123	115	3	He	50.380	ug/l	308309.49
Ba	135	115	1	No Gas	54.604	ug/l	319809.10
Ba	137	115	1	No Gas	53.010	ug/l	553662.55
La	139	115	3	He	49.838	ug/l	1537513.55
Ce	140	115	3	He	49.584	ug/l	1673273.97
Hg	201	209	1	No Gas	1.030	ug/l	3858.12
Hg	202	209	1	No Gas	1.029	ug/l	8710.76
Hg	202	209	3	He	0.980	ug/l	3865.46
Tl	203	209	3	He	49.533	ug/l	572933.24
Tl	205	209	1	No Gas	52.956	ug/l	2994274.54
Tl	205	209	3	He	50.930	ug/l	1385764.51
[Pb]	206	209	1	No Gas	53.068	ug/l	1049714.58
[Pb]	207	209	1	No Gas	52.612	ug/l	908636.65
Pb	208	209	1	No Gas	52.897	ug/l	4168765.49
Th	232	209	3	He	47.894	ug/l	1830965.28
U	238	209	1	No Gas	51.609	ug/l	4019191.28

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8440816.40	89.9
Sc	45	2	H2	3281979.34	90.5
Sc	45	3	He	522478.95	100.5
Ge	72	1	No Gas	2027911.62	89.7
Ge	72	2	H2	1105599.49	93.0
Ge	72	3	He	319613.68	101.6
In	115	1	No Gas	2285476.14	86.4
In	115	3	He	575247.78	100.7
Tb	159	1	No Gas	18975604.10	86.6
Tb	159	3	He	8096045.92	99.5
Ho	165	1	No Gas	18696075.83	87.8
Ho	165	3	He	8016930.92	100.8
Lu	175	1	No Gas	18131670.93	87.4
Lu	175	3	He	6679053.56	100.7
Bi	209	1	No Gas	11528810.11	89.1
Bi	209	3	He	5191306.09	97.3

# ICPMS207-B Analytical Data

**Sample Name** 100 ppb STD  
**File Name** 016CAL.S.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 15:01:24  
**Sample Type** CalStd  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020B-Cal  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1249.028	ug/l	32948191.52
Be	9	45	1	No Gas	100.057	ug/l	862339.36
B	11	45	1	No Gas	97.445	ug/l	507483.77
Na	23	45	3	He	25273.171	ug/l	36395672.24
Mg	24	45	3	He	25287.072	ug/l	20366247.40
Al	27	45	1	No Gas	99.776	ug/l	3651955.05
Si	28	45	2	H2	391.689	ug/l	1179039.42
K	39	72	3	He	25168.950	ug/l	20278485.53
Ca	40	72	2	H2	25717.127	ug/l	258652663.55
Ti	47	72	1	No Gas	98.437	ug/l	365741.41
V	51	72	1	No Gas	96.308	ug/l	4371867.30
V	51	72	3	He	98.041	ug/l	705004.34
Cr	52	72	1	No Gas	97.823	ug/l	4270622.15
Cr	52	72	3	He	97.529	ug/l	787522.66
Mn	55	72	1	No Gas	99.471	ug/l	5621698.52
Mn	55	72	3	He	97.116	ug/l	554399.55
Fe	56	72	2	H2	2618.986	ug/l	54970981.96
Fe	56	72	3	He	2590.057	ug/l	19068073.44
Co	59	72	1	No Gas	99.552	ug/l	4796419.68
Ni	60	72	1	No Gas	99.373	ug/l	1071019.91
Ni	60	72	3	He	100.657	ug/l	299063.97
Cu	63	72	1	No Gas	100.395	ug/l	2559986.91
Cu	63	72	3	He	99.838	ug/l	801720.92
Cu	65	72	1	No Gas	100.917	ug/l	1226262.57
Zn	66	72	1	No Gas	101.770	ug/l	741701.18
Zn	66	72	3	He	101.722	ug/l	156083.55
As	75	72	1	No Gas	100.881	ug/l	764295.05
As	75	72	3	He	99.040	ug/l	116052.95
Se	78	72	2	H2	101.357	ug/l	66436.70
Br	79	72	1	No Gas	0.848	ug/l	21056.93
Br	79	72	2	H2	0.919	ug/l	8918.46
Se	82	72	1	No Gas	103.156	ug/l	52242.80
Kr	84	72	1	No Gas		ug/l	65304.41
Sr	88	72	1	No Gas	99.678	ug/l	6717697.95
Sr	88	72	3	He	97.048	ug/l	818019.15
Mo	95	115	1	No Gas	98.615	ug/l	1353504.81
Mo	95	115	3	He	99.784	ug/l	457101.03
Mo	98	115	1	No Gas	98.228	ug/l	2163531.55
Ag	107	115	1	No Gas	39.133	ug/l	1360845.41
Ag	109	115	1	No Gas	39.160	ug/l	1304840.83
Cd	111	115	1	No Gas	99.533	ug/l	732670.17

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	101.393	ug/l	237610.98
Cd	114	115	1	No Gas	99.109	ug/l	1615488.90
Cd	114	115	3	He	98.707	ug/l	574104.47
Sn	118	115	1	No Gas	97.956	ug/l	2090495.73
Sn	118	115	3	He	100.359	ug/l	574609.14
Sb	121	115	1	No Gas	98.112	ug/l	2945482.08
Sb	121	115	3	He	100.035	ug/l	786466.75
Sb	123	115	1	No Gas	98.160	ug/l	2235013.10
Sb	123	115	3	He	99.722	ug/l	613630.72
Ba	135	115	1	No Gas	98.385	ug/l	621974.41
Ba	137	115	1	No Gas	97.188	ug/l	1094604.38
La	139	115	3	He	99.960	ug/l	3101211.14
Ce	140	115	3	He	100.103	ug/l	3397183.42
Hg	201	209	1	No Gas	1.984	ug/l	7694.68
Hg	202	209	1	No Gas	1.986	ug/l	17350.76
Hg	202	209	3	He	2.008	ug/l	7793.38
Tl	203	209	3	He	97.230	ug/l	1109670.26
Tl	205	209	1	No Gas	99.956	ug/l	5857311.86
Tl	205	209	3	He	98.531	ug/l	2645553.60
[Pb]	206	209	1	No Gas	98.571	ug/l	2020708.37
[Pb]	207	209	1	No Gas	99.064	ug/l	1774504.42
Pb	208	209	1	No Gas	98.633	ug/l	8057229.49
Th	232	209	3	He	96.586	ug/l	3644018.27
U	238	209	1	No Gas	96.988	ug/l	7830166.46

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9102367.48	96.9
Sc	45	2	H2	3355601.08	92.6
Sc	45	3	He	534694.87	102.8
Ge	72	1	No Gas	2140652.89	94.7
Ge	72	2	H2	1121001.33	94.3
Ge	72	3	He	325959.56	103.6
In	115	1	No Gas	2450619.62	92.6
In	115	3	He	578487.36	101.2
Tb	159	1	No Gas	20120399.69	91.8
Tb	159	3	He	8135437.96	100.0
Ho	165	1	No Gas	19800166.55	93.0
Ho	165	3	He	8076673.84	101.5
Lu	175	1	No Gas	19534350.75	94.2
Lu	175	3	He	6774363.14	102.2
Bi	209	1	No Gas	11884682.67	91.8
Bi	209	3	He	5123575.69	96.1

# ICPMS207-B Analytical Data

**Sample Name** 1000 ppb STD  
**File Name** 017CAL.S.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 15:07:53  
**Sample Type** CalStd  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020B-Cal  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2492.454	ug/l	65677528.83
Be	9	45	1	No Gas	999.736	ug/l	8606375.69
B	11	45	1	No Gas	1000.024	ug/l	4928851.47
Na	23	45	3	He	49894.468	ug/l	70333372.84
Mg	24	45	3	He	49855.557	ug/l	39341671.00
Al	27	45	1	No Gas	999.737	ug/l	36508113.62
Si	28	45	2	H2	1.436	ug/l	21365.79
K	39	72	3	He	49999.918	ug/l	38854906.09
Ca	40	72	2	H2	49671.377	ug/l	485116819.73
Ti	47	72	1	No Gas	5.705	ug/l	21062.92
V	51	72	1	No Gas	1000.309	ug/l	45615737.16
V	51	72	3	He	1000.213	ug/l	6801436.01
Cr	52	72	1	No Gas	1000.062	ug/l	41878412.17
Cr	52	72	3	He	1000.249	ug/l	7797753.63
Mn	55	72	1	No Gas	999.854	ug/l	55351725.89
Mn	55	72	3	He	1000.309	ug/l	5514773.07
Fe	56	72	2	H2	5997.587	ug/l	122289004.70
Fe	56	72	3	He	6011.761	ug/l	42749953.03
Co	59	72	1	No Gas	999.842	ug/l	47228322.90
Ni	60	72	1	No Gas	999.857	ug/l	10563680.83
Ni	60	72	3	He	999.760	ug/l	2868113.01
Cu	63	72	1	No Gas	999.661	ug/l	24984410.69
Cu	63	72	3	He	999.917	ug/l	7753494.13
Cu	65	72	1	No Gas	999.612	ug/l	11903977.65
Zn	66	72	1	No Gas	999.527	ug/l	7108163.34
Zn	66	72	3	He	999.704	ug/l	1475017.81
As	75	72	1	No Gas	999.657	ug/l	7298200.63
As	75	72	3	He	1000.072	ug/l	1129579.07
Se	78	72	2	H2	999.730	ug/l	636380.33
Br	79	72	1	No Gas	1.481	ug/l	25488.65
Br	79	72	2	H2	4.283	ug/l	19564.45
Se	82	72	1	No Gas	999.407	ug/l	488116.23
Kr	84	72	1	No Gas		ug/l	438996.22
Sr	88	72	1	No Gas	999.881	ug/l	66062570.73
Sr	88	72	3	He	1000.323	ug/l	8142059.33
Mo	95	115	1	No Gas	0.138	ug/l	1885.69
Mo	95	115	3	He	0.082	ug/l	382.23
Mo	98	115	1	No Gas	0.124	ug/l	2711.19
Ag	107	115	1	No Gas	367.584	ug/l	12401614.86
Ag	109	115	1	No Gas	372.169	ug/l	12028910.04
Cd	111	115	1	No Gas	999.792	ug/l	7139479.72

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	999.770	ug/l	2266273.05
Cd	114	115	1	No Gas	999.812	ug/l	15808858.64
Cd	114	115	3	He	1000.098	ug/l	5626907.70
Sn	118	115	1	No Gas	-0.886	ug/l	4831.88
Sn	118	115	3	He	-1.005	ug/l	1163.39
Sb	121	115	1	No Gas	0.163	ug/l	4988.40
Sb	121	115	3	He	0.128	ug/l	1067.82
Sb	123	115	1	No Gas	0.182	ug/l	4223.40
Sb	123	115	3	He	0.128	ug/l	835.44
Ba	135	115	1	No Gas	999.929	ug/l	6132473.75
Ba	137	115	1	No Gas	1000.130	ug/l	10928074.14
La	139	115	3	He	0.013	ug/l	403.34
Ce	140	115	3	He	0.027	ug/l	911.15
Hg	201	209	1	No Gas	0.008	ug/l	41.32
Hg	202	209	1	No Gas	0.007	ug/l	139.30
Hg	202	209	3	He	0.006	ug/l	43.32
Tl	203	209	3	He	1000.299	ug/l	10976192.97
Tl	205	209	1	No Gas	999.853	ug/l	56060915.28
Tl	205	209	3	He	1000.096	ug/l	25817143.43
[Pb]	206	209	1	No Gas	999.989	ug/l	19607999.29
[Pb]	207	209	1	No Gas	999.962	ug/l	17136516.97
Pb	208	209	1	No Gas	999.990	ug/l	78149913.69
Th	232	209	3	He	1000.451	ug/l	36286464.08
U	238	209	1	No Gas	1000.219	ug/l	77270631.31

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9111160.73	97.0
Sc	45	2	H2	3283925.99	90.6
Sc	45	3	He	523851.20	100.7
Ge	72	1	No Gas	2099206.46	92.9
Ge	72	2	H2	1089063.90	91.6
Ge	72	3	He	314902.85	100.1
In	115	1	No Gas	2378601.59	89.9
In	115	3	He	559606.56	97.9
Tb	159	1	No Gas	20177533.70	92.0
Tb	159	3	He	8137482.93	100.0
Ho	165	1	No Gas	19748947.63	92.7
Ho	165	3	He	8064049.18	101.4
Lu	175	1	No Gas	19223449.44	92.7
Lu	175	3	He	6681637.08	100.8
Bi	209	1	No Gas	11377232.34	87.9
Bi	209	3	He	4925637.47	92.3

# ICPMS207-B Analytical Data

**Sample Name** 100 ppb Br STD  
**File Name** 018CAL.S.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 15:14:19  
**Sample Type** CalStd  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.291	ug/l	48622.63
Be	9	45	1	No Gas	0.025	ug/l	552.90
B	11	45	1	No Gas	3.446	ug/l	47154.40
Na	23	45	3	He	2.836	ug/l	70795.36
Mg	24	45	3	He	0.365	ug/l	1021.34
Al	27	45	1	No Gas	0.101	ug/l	11622.37
Si	28	45	2	H2	-0.332	ug/l	17134.70
K	39	72	3	He	513.855	ug/l	479232.98
Ca	40	72	2	H2	-1.283	ug/l	77264.02
Ti	47	72	1	No Gas	0.124	ug/l	780.81
V	51	72	1	No Gas	1.579	ug/l	-47610.47
V	51	72	3	He	-0.891	ug/l	10224.69
Cr	52	72	1	No Gas	-0.692	ug/l	74957.33
Cr	52	72	3	He	0.016	ug/l	677.80
Mn	55	72	1	No Gas	0.046	ug/l	9497.60
Mn	55	72	3	He	0.011	ug/l	253.29
Fe	56	72	2	H2	0.235	ug/l	11355.85
Fe	56	72	3	He	0.296	ug/l	7576.27
Co	59	72	1	No Gas	0.025	ug/l	1573.64
Ni	60	72	1	No Gas	0.074	ug/l	1600.25
Ni	60	72	3	He	0.019	ug/l	230.00
Cu	63	72	1	No Gas	0.253	ug/l	8215.61
Cu	63	72	3	He	0.039	ug/l	742.21
Cu	65	72	1	No Gas	0.066	ug/l	1476.01
Zn	66	72	1	No Gas	0.191	ug/l	5465.26
Zn	66	72	3	He	0.173	ug/l	1074.49
As	75	72	1	No Gas	-0.293	ug/l	12670.17
As	75	72	3	He	-0.007	ug/l	282.67
Se	78	72	2	H2	0.129	ug/l	110.89
Br	79	72	1	No Gas	100.000	ug/l	812852.10
Br	79	72	2	H2	100.000	ug/l	343082.34
Se	82	72	1	No Gas	0.712	ug/l	1338.29
Kr	84	72	1	No Gas		ug/l	22972.74
Sr	88	72	1	No Gas	0.025	ug/l	2841.35
Sr	88	72	3	He	0.011	ug/l	488.90
Mo	95	115	1	No Gas	0.023	ug/l	378.89
Mo	95	115	3	He	0.016	ug/l	92.22
Mo	98	115	1	No Gas	0.018	ug/l	480.63
Ag	107	115	1	No Gas	0.034	ug/l	1456.00
Ag	109	115	1	No Gas	0.036	ug/l	1440.66
Cd	111	115	1	No Gas	0.078	ug/l	673.67



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.050	ug/l	136.33
Cd	114	115	1	No Gas	0.082	ug/l	1495.51
Cd	114	115	3	He	0.055	ug/l	340.29
Sn	118	115	1	No Gas	-0.990	ug/l	2917.86
Sn	118	115	3	He	-1.074	ug/l	816.70
Sb	121	115	1	No Gas	0.044	ug/l	1636.93
Sb	121	115	3	He	0.039	ug/l	401.71
Sb	123	115	1	No Gas	0.043	ug/l	1237.85
Sb	123	115	3	He	0.039	ug/l	319.70
Ba	135	115	1	No Gas	0.030	ug/l	222.90
Ba	137	115	1	No Gas	0.022	ug/l	352.64
La	139	115	3	He	0.001	ug/l	43.33
Ce	140	115	3	He	0.002	ug/l	100.00
Hg	201	209	1	No Gas	0.000	ug/l	15.67
Hg	202	209	1	No Gas	0.000	ug/l	96.65
Hg	202	209	3	He	0.002	ug/l	29.33
Tl	203	209	3	He	0.521	ug/l	6336.05
Tl	205	209	1	No Gas	0.477	ug/l	30408.27
Tl	205	209	3	He	0.541	ug/l	15419.78
[Pb]	206	209	1	No Gas	0.057	ug/l	1796.80
[Pb]	207	209	1	No Gas	0.061	ug/l	1655.67
Pb	208	209	1	No Gas	0.058	ug/l	7316.39
Th	232	209	3	He	0.301	ug/l	12098.52
U	238	209	1	No Gas	0.056	ug/l	4814.60

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9345063.13	99.5
Sc	45	2	H2	3464688.34	95.6
Sc	45	3	He	536165.94	103.1
Ge	72	1	No Gas	2209862.96	97.8
Ge	72	2	H2	1132553.94	95.3
Ge	72	3	He	326318.67	103.7
In	115	1	No Gas	2574880.64	97.3
In	115	3	He	589389.18	103.1
Tb	159	1	No Gas	20811516.83	94.9
Tb	159	3	He	8282299.56	101.8
Ho	165	1	No Gas	20273145.56	95.2
Ho	165	3	He	8226784.10	103.4
Lu	175	1	No Gas	19578132.03	94.4
Lu	175	3	He	6782084.14	102.3
Bi	209	1	No Gas	12727587.84	98.4
Bi	209	3	He	5360628.12	100.5

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 019BLKV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 15:20:40  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.585	ug/l	28822.06
Be	9	45	1	No Gas	0.001	ug/l	333.94
B	11	45	1	No Gas	1.011	ug/l	33984.17
Na	23	45	3	He	1.568	ug/l	68383.24
Mg	24	45	3	He	0.774	ug/l	1320.79
Al	27	45	1	No Gas	0.411	ug/l	22313.31
Si	28	45	2	H2	-0.602	ug/l	16363.57
K	39	72	3	He	13.468	ug/l	78308.16
Ca	40	72	2	H2	0.713	ug/l	96231.64
Ti	47	72	1	No Gas	0.044	ug/l	460.48
V	51	72	1	No Gas	1.884	ug/l	-31755.42
V	51	72	3	He	-0.834	ug/l	10405.93
Cr	52	72	1	No Gas	-0.647	ug/l	75218.35
Cr	52	72	3	He	0.024	ug/l	731.35
Mn	55	72	1	No Gas	0.022	ug/l	7886.51
Mn	55	72	3	He	0.001	ug/l	191.96
Fe	56	72	2	H2	0.104	ug/l	8452.62
Fe	56	72	3	He	0.164	ug/l	6464.62
Co	59	72	1	No Gas	0.010	ug/l	805.10
Ni	60	72	1	No Gas	0.012	ug/l	898.25
Ni	60	72	3	He	-0.030	ug/l	80.00
Cu	63	72	1	No Gas	0.130	ug/l	4858.76
Cu	63	72	3	He	0.022	ug/l	594.56
Cu	65	72	1	No Gas	0.036	ug/l	1079.81
Zn	66	72	1	No Gas	0.086	ug/l	4560.23
Zn	66	72	3	He	0.087	ug/l	920.03
As	75	72	1	No Gas	-0.391	ug/l	11681.06
As	75	72	3	He	-0.040	ug/l	239.73
Se	78	72	2	H2	0.035	ug/l	48.11
Br	79	72	1	No Gas	3.676	ug/l	43195.41
Br	79	72	2	H2	3.491	ug/l	17442.73
Se	82	72	1	No Gas	-0.278	ug/l	812.36
Kr	84	72	1	No Gas		ug/l	22356.29
Sr	88	72	1	No Gas	0.009	ug/l	1640.19
Sr	88	72	3	He	0.001	ug/l	393.34
Mo	95	115	1	No Gas	0.011	ug/l	195.56
Mo	95	115	3	He	0.008	ug/l	55.56
Mo	98	115	1	No Gas	0.028	ug/l	700.89
Ag	107	115	1	No Gas	0.009	ug/l	501.55
Ag	109	115	1	No Gas	0.010	ug/l	502.88
Cd	111	115	1	No Gas	0.032	ug/l	306.71

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.026	ug/l	77.67
Cd	114	115	1	No Gas	0.036	ug/l	677.33
Cd	114	115	3	He	0.030	ug/l	191.70
Sn	118	115	1	No Gas	-1.029	ug/l	1966.25
Sn	118	115	3	He	-1.132	ug/l	484.45
Sb	121	115	1	No Gas	0.021	ug/l	881.78
Sb	121	115	3	He	0.018	ug/l	237.69
Sb	123	115	1	No Gas	0.020	ug/l	674.42
Sb	123	115	3	He	0.018	ug/l	186.35
Ba	135	115	1	No Gas	0.008	ug/l	76.51
Ba	137	115	1	No Gas	0.002	ug/l	109.78
La	139	115	3	He	0.000	ug/l	24.45
Ce	140	115	3	He	0.001	ug/l	46.67
Hg	201	209	1	No Gas	0.000	ug/l	14.67
Hg	202	209	1	No Gas	-0.002	ug/l	74.32
Hg	202	209	3	He	0.000	ug/l	23.00
Tl	203	209	3	He	0.175	ug/l	2250.43
Tl	205	209	1	No Gas	0.138	ug/l	9149.88
Tl	205	209	3	He	0.178	ug/l	5355.23
[Pb]	206	209	1	No Gas	0.029	ug/l	1153.39
[Pb]	207	209	1	No Gas	0.029	ug/l	1021.16
Pb	208	209	1	No Gas	0.029	ug/l	4650.36
Th	232	209	3	He	0.084	ug/l	3589.94
U	238	209	1	No Gas	0.015	ug/l	1302.48

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8916896.23	94.9
Sc	45	2	H2	3473501.74	95.8
Sc	45	3	He	522397.05	100.4
Ge	72	1	No Gas	2149980.15	95.1
Ge	72	2	H2	1117209.85	94.0
Ge	72	3	He	317361.19	100.9
In	115	1	No Gas	2478292.06	93.6
In	115	3	He	580344.66	101.6
Tb	159	1	No Gas	20389406.61	93.0
Tb	159	3	He	8192039.56	100.6
Ho	165	1	No Gas	19710981.33	92.6
Ho	165	3	He	8146317.75	102.4
Lu	175	1	No Gas	18833392.94	90.8
Lu	175	3	He	6729223.15	101.5
Bi	209	1	No Gas	12370406.09	95.6
Bi	209	3	He	5404178.57	101.3

# ICPMS207-B Analytical Data

**Sample Name** QCS  
**File Name** 020\_QC1.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 15:26:54  
**Sample Type** QC1  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	49.798	ug/l	1343284.14
Be	9	45	1	No Gas	24.524	ug/l	214120.46
B	11	45	1	No Gas	50.939	ug/l	283082.88
Na	23	45	3	He	2565.379	ug/l	3701941.20
Mg	24	45	3	He	2579.712	ug/l	2048988.12
Al	27	45	1	No Gas	246.155	ug/l	9106147.78
Si	28	45	2	H2	440.025	ug/l	1349955.59
K	39	72	3	He	2493.673	ug/l	2069251.67
Ca	40	72	2	H2	2548.129	ug/l	26225786.53
Ti	47	72	1	No Gas	47.734	ug/l	183769.07
V	51	72	1	No Gas	47.259	ug/l	2159069.49
V	51	72	3	He	48.588	ug/l	357215.17
Cr	52	72	1	No Gas	48.471	ug/l	2245036.70
Cr	52	72	3	He	50.229	ug/l	405289.32
Mn	55	72	1	No Gas	249.496	ug/l	14588569.48
Mn	55	72	3	He	246.427	ug/l	1404545.18
Fe	56	72	2	H2	247.516	ug/l	5306646.82
Fe	56	72	3	He	249.307	ug/l	1837762.50
Co	59	72	1	No Gas	48.949	ug/l	2442523.17
Ni	60	72	1	No Gas	48.853	ug/l	546236.86
Ni	60	72	3	He	52.419	ug/l	155623.14
Cu	63	72	1	No Gas	51.175	ug/l	1351918.45
Cu	63	72	3	He	52.436	ug/l	420689.55
Cu	65	72	1	No Gas	50.577	ug/l	636784.15
Zn	66	72	1	No Gas	51.507	ug/l	390889.15
Zn	66	72	3	He	53.676	ug/l	82633.91
As	75	72	1	No Gas	48.717	ug/l	390118.96
As	75	72	3	He	49.967	ug/l	58615.38
Se	78	72	2	H2	51.163	ug/l	34225.61
Br	79	72	1	No Gas	2.620	ug/l	36190.22
Br	79	72	2	H2	2.901	ug/l	15837.36
Se	82	72	1	No Gas	50.362	ug/l	26916.18
Kr	84	72	1	No Gas		ug/l	44043.06
Sr	88	72	1	No Gas	48.871	ug/l	3411630.97
Sr	88	72	3	He	48.845	ug/l	411316.39
Mo	95	115	1	No Gas	47.166	ug/l	666718.12
Mo	95	115	3	He	50.948	ug/l	232089.82
Mo	98	115	1	No Gas	47.625	ug/l	1079860.30
Ag	107	115	1	No Gas	24.072	ug/l	863046.34
Ag	109	115	1	No Gas	24.194	ug/l	830611.35
Cd	111	115	1	No Gas	24.601	ug/l	186589.13

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	26.308	ug/l	61328.26
Cd	114	115	1	No Gas	24.717	ug/l	415156.47
Cd	114	115	3	He	25.828	ug/l	149404.44
Sn	118	115	1	No Gas	48.421	ug/l	1076103.64
Sn	118	115	3	He	51.121	ug/l	294443.02
Sb	121	115	1	No Gas	45.110	ug/l	1394669.74
Sb	121	115	3	He	48.827	ug/l	381905.05
Sb	123	115	1	No Gas	44.423	ug/l	1041876.35
Sb	123	115	3	He	48.942	ug/l	299585.08
Ba	135	115	1	No Gas	47.912	ug/l	312080.16
Ba	137	115	1	No Gas	46.893	ug/l	544663.71
La	139	115	3	He	51.758	ug/l	1596626.40
Ce	140	115	3	He	51.665	ug/l	1743832.18
Hg	201	209	1	No Gas	0.945	ug/l	3933.13
Hg	202	209	1	No Gas	0.953	ug/l	8958.21
Hg	202	209	3	He	1.009	ug/l	4004.14
Tl	203	209	3	He	48.877	ug/l	568836.01
Tl	205	209	1	No Gas	47.710	ug/l	2993776.41
Tl	205	209	3	He	50.545	ug/l	1383398.07
[Pb]	206	209	1	No Gas	48.273	ug/l	1060275.19
[Pb]	207	209	1	No Gas	47.571	ug/l	912767.38
Pb	208	209	1	No Gas	47.957	ug/l	4196624.85
Th	232	209	3	He	48.376	ug/l	1861393.31
U	238	209	1	No Gas	49.444	ug/l	4272501.07

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9287142.83	98.9
Sc	45	2	H2	3421781.38	94.4
Sc	45	3	He	527445.56	101.4
Ge	72	1	No Gas	2224536.12	98.4
Ge	72	2	H2	1143656.23	96.2
Ge	72	3	He	325553.95	103.5
In	115	1	No Gas	2541917.49	96.0
In	115	3	He	575700.09	100.7
Tb	159	1	No Gas	20885325.01	95.3
Tb	159	3	He	8072021.01	99.2
Ho	165	1	No Gas	20588596.41	96.7
Ho	165	3	He	7946068.81	99.9
Lu	175	1	No Gas	19737507.02	95.2
Lu	175	3	He	6644354.64	100.2
Bi	209	1	No Gas	12777619.53	98.7
Bi	209	3	He	5231104.34	98.1

# ICPMS207-B Analytical Data

**Sample Name** CCV  
**File Name** 021\_CCV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 15:33:09  
**Sample Type** CCV  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	630.948	ug/l	16003182.41
Be	9	45	1	No Gas	52.055	ug/l	430845.13
B	11	45	1	No Gas	54.218	ug/l	283900.42
Na	23	45	3	He	12394.425	ug/l	18268049.31
Mg	24	45	3	He	12387.539	ug/l	10191643.33
Al	27	45	1	No Gas	53.848	ug/l	1895632.80
Si	28	45	2	H2	188.419	ug/l	573813.04
K	39	72	3	He	12315.915	ug/l	10081048.95
Ca	40	72	2	H2	12488.656	ug/l	126193716.77
Ti	47	72	1	No Gas	50.872	ug/l	186397.32
V	51	72	1	No Gas	49.866	ug/l	2173856.50
V	51	72	3	He	49.462	ug/l	368294.99
Cr	52	72	1	No Gas	51.556	ug/l	2265130.71
Cr	52	72	3	He	50.130	ug/l	409980.46
Mn	55	72	1	No Gas	52.146	ug/l	2907104.43
Mn	55	72	3	He	49.604	ug/l	286697.44
Fe	56	72	2	H2	1289.192	ug/l	27168212.88
Fe	56	72	3	He	1261.622	ug/l	9404035.47
Co	59	72	1	No Gas	51.639	ug/l	2453443.02
Ni	60	72	1	No Gas	52.578	ug/l	559479.68
Ni	60	72	3	He	52.222	ug/l	157133.04
Cu	63	72	1	No Gas	54.108	ug/l	1360396.99
Cu	63	72	3	He	51.466	ug/l	418527.29
Cu	65	72	1	No Gas	53.580	ug/l	641461.66
Zn	66	72	1	No Gas	53.707	ug/l	387773.79
Zn	66	72	3	He	51.508	ug/l	80400.15
As	75	72	1	No Gas	52.712	ug/l	400455.32
As	75	72	3	He	50.443	ug/l	59974.30
Se	78	72	2	H2	52.699	ug/l	34685.14
Br	79	72	1	No Gas	2.005	ug/l	29631.66
Br	79	72	2	H2	2.002	ug/l	12577.28
Se	82	72	1	No Gas	54.479	ug/l	27620.10
Kr	84	72	1	No Gas		ug/l	44967.33
Sr	88	72	1	No Gas	50.982	ug/l	3383932.59
Sr	88	72	3	He	49.175	ug/l	419773.61
Mo	95	115	1	No Gas	51.047	ug/l	682618.82
Mo	95	115	3	He	49.543	ug/l	231304.23
Mo	98	115	1	No Gas	50.724	ug/l	1088439.05
Ag	107	115	1	No Gas	20.528	ug/l	695652.00
Ag	109	115	1	No Gas	20.728	ug/l	672961.00
Cd	111	115	1	No Gas	52.775	ug/l	378436.25

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	50.943	ug/l	121656.55
Cd	114	115	1	No Gas	53.385	ug/l	847397.29
Cd	114	115	3	He	49.998	ug/l	296323.41
Sn	118	115	1	No Gas	52.021	ug/l	1092617.97
Sn	118	115	3	He	49.267	ug/l	290996.19
Sb	121	115	1	No Gas	51.296	ug/l	1500223.10
Sb	121	115	3	He	49.765	ug/l	398716.34
Sb	123	115	1	No Gas	51.891	ug/l	1150608.28
Sb	123	115	3	He	49.555	ug/l	310739.38
Ba	135	115	1	No Gas	52.214	ug/l	321382.29
Ba	137	115	1	No Gas	51.560	ug/l	565612.92
La	139	115	3	He	49.239	ug/l	1556517.86
Ce	140	115	3	He	48.738	ug/l	1685286.40
Hg	201	209	1	No Gas	0.996	ug/l	3831.12
Hg	202	209	1	No Gas	1.018	ug/l	8826.15
Hg	202	209	3	He	0.983	ug/l	3891.46
Tl	203	209	3	He	48.922	ug/l	567907.69
Tl	205	209	1	No Gas	51.824	ug/l	3003999.95
Tl	205	209	3	He	50.173	ug/l	1370097.31
[Pb]	206	209	1	No Gas	51.961	ug/l	1053660.84
[Pb]	207	209	1	No Gas	52.076	ug/l	922788.37
Pb	208	209	1	No Gas	51.913	ug/l	4195751.73
Th	232	209	3	He	47.969	ug/l	1840346.28
U	238	209	1	No Gas	50.432	ug/l	4027137.52

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8866156.41	94.4
Sc	45	2	H2	3339100.98	92.1
Sc	45	3	He	546149.73	105.0
Ge	72	1	No Gas	2126140.41	94.1
Ge	72	2	H2	1125441.33	94.7
Ge	72	3	He	329937.46	104.9
In	115	1	No Gas	2409200.51	91.0
In	115	3	He	589513.16	103.2
Tb	159	1	No Gas	20079657.49	91.6
Tb	159	3	He	8247739.32	101.3
Ho	165	1	No Gas	19527865.10	91.7
Ho	165	3	He	8168198.27	102.7
Lu	175	1	No Gas	18827695.37	90.8
Lu	175	3	He	6802455.40	102.6
Bi	209	1	No Gas	11858547.71	91.6
Bi	209	3	He	5209808.22	97.7

# ICPMS207-B Analytical Data

**Sample Name** CCB  
**File Name** 022\_CCB.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 15:39:24  
**Sample Type** CCB  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.542	ug/l	27989.52
Be	9	45	1	No Gas	-0.014	ug/l	212.63
B	11	45	1	No Gas	-1.457	ug/l	22356.75
Na	23	45	3	He	1.114	ug/l	69065.24
Mg	24	45	3	He	0.145	ug/l	841.69
Al	27	45	1	No Gas	0.008	ug/l	7978.84
Si	28	45	2	H2	-0.975	ug/l	14972.88
K	39	72	3	He	10.782	ug/l	78086.86
Ca	40	72	2	H2	0.698	ug/l	96416.35
Ti	47	72	1	No Gas	0.022	ug/l	387.06
V	51	72	1	No Gas	1.685	ug/l	-41687.43
V	51	72	3	He	-0.346	ug/l	14073.42
Cr	52	72	1	No Gas	-0.546	ug/l	80539.70
Cr	52	72	3	He	0.000	ug/l	553.35
Mn	55	72	1	No Gas	0.020	ug/l	7906.46
Mn	55	72	3	He	0.002	ug/l	197.96
Fe	56	72	2	H2	0.096	ug/l	8322.44
Fe	56	72	3	He	0.221	ug/l	7042.12
Co	59	72	1	No Gas	0.004	ug/l	545.59
Ni	60	72	1	No Gas	0.016	ug/l	975.17
Ni	60	72	3	He	-0.021	ug/l	108.89
Cu	63	72	1	No Gas	0.085	ug/l	3776.01
Cu	63	72	3	He	0.017	ug/l	564.23
Cu	65	72	1	No Gas	0.023	ug/l	928.40
Zn	66	72	1	No Gas	-0.004	ug/l	3967.02
Zn	66	72	3	He	-0.021	ug/l	777.80
As	75	72	1	No Gas	-0.774	ug/l	9019.25
As	75	72	3	He	-0.034	ug/l	253.40
Se	78	72	2	H2	0.019	ug/l	37.67
Br	79	72	1	No Gas	1.267	ug/l	24808.87
Br	79	72	2	H2	1.299	ug/l	10190.09
Se	82	72	1	No Gas	-0.179	ug/l	874.63
Kr	84	72	1	No Gas		ug/l	23082.65
Sr	88	72	1	No Gas	0.005	ug/l	1433.90
Sr	88	72	3	He	0.009	ug/l	473.34
Mo	95	115	1	No Gas	0.040	ug/l	631.13
Mo	95	115	3	He	0.034	ug/l	176.67
Mo	98	115	1	No Gas	0.040	ug/l	1011.78
Ag	107	115	1	No Gas	0.005	ug/l	390.16
Ag	109	115	1	No Gas	0.006	ug/l	386.16
Cd	111	115	1	No Gas	0.010	ug/l	153.19



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.012	ug/l	44.11
Cd	114	115	1	No Gas	0.013	ug/l	313.87
Cd	114	115	3	He	0.013	ug/l	88.20
Sn	118	115	1	No Gas	0.099	ug/l	26998.98
Sn	118	115	3	He	0.038	ug/l	7111.82
Sb	121	115	1	No Gas	0.147	ug/l	4937.38
Sb	121	115	3	He	0.121	ug/l	1045.48
Sb	123	115	1	No Gas	0.148	ug/l	3755.89
Sb	123	115	3	He	0.124	ug/l	837.11
Ba	135	115	1	No Gas	0.009	ug/l	86.49
Ba	137	115	1	No Gas	0.000	ug/l	86.49
La	139	115	3	He	0.001	ug/l	44.44
Ce	140	115	3	He	0.001	ug/l	47.78
Hg	201	209	1	No Gas	0.004	ug/l	31.99
Hg	202	209	1	No Gas	0.004	ug/l	129.31
Hg	202	209	3	He	0.005	ug/l	43.66
Tl	203	209	3	He	0.130	ug/l	1693.46
Tl	205	209	1	No Gas	0.108	ug/l	7443.24
Tl	205	209	3	He	0.134	ug/l	4095.61
[Pb]	206	209	1	No Gas	0.019	ug/l	977.82
[Pb]	207	209	1	No Gas	0.017	ug/l	836.70
Pb	208	209	1	No Gas	0.016	ug/l	3672.45
Th	232	209	3	He	0.080	ug/l	3415.82
U	238	209	1	No Gas	0.009	ug/l	754.54

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9148707.25	97.4
Sc	45	2	H2	3417504.34	94.3
Sc	45	3	He	532576.97	102.4
Ge	72	1	No Gas	2195019.63	97.1
Ge	72	2	H2	1121303.53	94.3
Ge	72	3	He	325113.99	103.4
In	115	1	No Gas	2603600.25	98.4
In	115	3	He	579190.77	101.3
Tb	159	1	No Gas	21007848.15	95.8
Tb	159	3	He	8302159.26	102.0
Ho	165	1	No Gas	20451543.53	96.0
Ho	165	3	He	8164547.38	102.7
Lu	175	1	No Gas	19871588.39	95.8
Lu	175	3	He	6842184.76	103.2
Bi	209	1	No Gas	12835396.16	99.2
Bi	209	3	He	5362655.18	100.5

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 023BLKV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 15:45:39  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.220	ug/l	21113.08
Be	9	45	1	No Gas	-0.016	ug/l	206.96
B	11	45	1	No Gas	-1.970	ug/l	21403.65
Na	23	45	3	He	-0.635	ug/l	66448.00
Mg	24	45	3	He	0.035	ug/l	751.86
Al	27	45	1	No Gas	-0.009	ug/l	7933.27
Si	28	45	2	H2	0.007	ug/l	13645.69
K	39	72	3	He	11.695	ug/l	77611.15
Ca	40	72	2	H2	2.428	ug/l	94864.81
Ti	47	72	1	No Gas	0.000	ug/l	316.99
V	51	72	1	No Gas	1.777	ug/l	-40461.41
V	51	72	3	He	-0.470	ug/l	13004.68
Cr	52	72	1	No Gas	-0.584	ug/l	83526.67
Cr	52	72	3	He	0.004	ug/l	574.46
Mn	55	72	1	No Gas	0.006	ug/l	7497.08
Mn	55	72	3	He	-0.001	ug/l	179.97
Fe	56	72	2	H2	0.131	ug/l	7603.00
Fe	56	72	3	He	0.187	ug/l	6688.27
Co	59	72	1	No Gas	0.002	ug/l	475.73
Ni	60	72	1	No Gas	-0.019	ug/l	605.48
Ni	60	72	3	He	-0.026	ug/l	94.44
Cu	63	72	1	No Gas	0.052	ug/l	3062.22
Cu	63	72	3	He	0.014	ug/l	531.57
Cu	65	72	1	No Gas	0.016	ug/l	889.05
Zn	66	72	1	No Gas	-0.057	ug/l	3781.05
Zn	66	72	3	He	-0.015	ug/l	775.58
As	75	72	1	No Gas	-0.177	ug/l	14398.74
As	75	72	3	He	-0.036	ug/l	246.13
Se	78	72	2	H2	0.013	ug/l	27.89
Br	79	72	1	No Gas	1.002	ug/l	23952.44
Br	79	72	2	H2	1.571	ug/l	9287.89
Se	82	72	1	No Gas	-0.344	ug/l	837.29
Kr	84	72	1	No Gas		ug/l	22073.08
Sr	88	72	1	No Gas	0.004	ug/l	1430.58
Sr	88	72	3	He	0.008	ug/l	456.68
Mo	95	115	1	No Gas	0.011	ug/l	224.45
Mo	95	115	3	He	0.009	ug/l	62.22
Mo	98	115	1	No Gas	0.011	ug/l	333.97
Ag	107	115	1	No Gas	0.004	ug/l	350.81
Ag	109	115	1	No Gas	0.004	ug/l	336.14
Cd	111	115	1	No Gas	0.007	ug/l	134.04

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.009	ug/l	36.89
Cd	114	115	1	No Gas	0.008	ug/l	238.67
Cd	114	115	3	He	0.009	ug/l	65.98
Sn	118	115	1	No Gas	-0.059	ug/l	24906.00
Sn	118	115	3	He	-0.014	ug/l	6782.78
Sb	121	115	1	No Gas	0.051	ug/l	1977.34
Sb	121	115	3	He	0.053	ug/l	509.39
Sb	123	115	1	No Gas	0.050	ug/l	1492.23
Sb	123	115	3	He	0.055	ug/l	413.38
Ba	135	115	1	No Gas	0.001	ug/l	36.59
Ba	137	115	1	No Gas	0.000	ug/l	93.15
La	139	115	3	He	0.001	ug/l	43.33
Ce	140	115	3	He	0.001	ug/l	47.78
Hg	201	209	1	No Gas	0.001	ug/l	21.33
Hg	202	209	1	No Gas	-0.001	ug/l	94.65
Hg	202	209	3	He	0.001	ug/l	24.66
Tl	203	209	3	He	0.051	ug/l	755.66
Tl	205	209	1	No Gas	0.042	ug/l	3558.28
Tl	205	209	3	He	0.056	ug/l	1898.90
[Pb]	206	209	1	No Gas	0.010	ug/l	800.03
[Pb]	207	209	1	No Gas	0.010	ug/l	717.80
Pb	208	209	1	No Gas	0.009	ug/l	3251.30
Th	232	209	3	He	0.034	ug/l	1598.74
U	238	209	1	No Gas	0.004	ug/l	392.26

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9743394.71	103.7
Sc	45	2	H2	2642790.89	72.9
Sc	45	3	He	531680.85	102.2
Ge	72	1	No Gas	2308006.91	102.1
Ge	72	2	H2	952517.29	80.1
Ge	72	3	He	320159.52	101.8
In	115	1	No Gas	2738896.32	103.5
In	115	3	He	576296.29	100.8
Tb	159	1	No Gas	22538626.16	102.8
Tb	159	3	He	8256646.04	101.4
Ho	165	1	No Gas	21988695.21	103.2
Ho	165	3	He	8076538.86	101.5
Lu	175	1	No Gas	21655197.77	104.4
Lu	175	3	He	6743827.29	101.7
Bi	209	1	No Gas	13441228.98	103.9
Bi	209	3	He	5399340.94	101.2

# ICPMS207-B Analytical Data

**Sample Name** LRB  
**File Name** 024MBLK.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224\ADoD.b  
**Acq Time** 2022-02-24 15:51:53  
**Sample Type** MBLK  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.208	ug/l	18643.53
Be	9	45	1	No Gas	-0.015	ug/l	195.96
B	11	45	1	No Gas	-1.883	ug/l	19592.48
Na	23	45	3	He	1.289	ug/l	68754.95
Mg	24	45	3	He	0.112	ug/l	808.42
Al	27	45	1	No Gas	0.208	ug/l	14719.51
Si	28	45	2	H2	1.033	ug/l	20364.78
K	39	72	3	He	11.271	ug/l	76661.88
Ca	40	72	2	H2	0.563	ug/l	92247.21
Ti	47	72	1	No Gas	0.015	ug/l	353.70
V	51	72	1	No Gas	1.740	ug/l	-38207.80
V	51	72	3	He	-0.353	ug/l	13698.64
Cr	52	72	1	No Gas	-0.352	ug/l	86240.15
Cr	52	72	3	He	0.005	ug/l	580.01
Mn	55	72	1	No Gas	0.026	ug/l	7969.75
Mn	55	72	3	He	0.007	ug/l	221.29
Fe	56	72	2	H2	0.203	ug/l	10253.92
Fe	56	72	3	He	0.288	ug/l	7357.60
Co	59	72	1	No Gas	0.002	ug/l	405.87
Ni	60	72	1	No Gas	-0.014	ug/l	608.81
Ni	60	72	3	He	-0.023	ug/l	102.22
Cu	63	72	1	No Gas	0.056	ug/l	2908.13
Cu	63	72	3	He	0.019	ug/l	568.57
Cu	65	72	1	No Gas	0.026	ug/l	942.41
Zn	66	72	1	No Gas	0.062	ug/l	4323.49
Zn	66	72	3	He	0.033	ug/l	840.03
As	75	72	1	No Gas	-0.090	ug/l	13445.44
As	75	72	3	He	-0.030	ug/l	251.60
Se	78	72	2	H2	0.000	ug/l	24.44
Br	79	72	1	No Gas	0.836	ug/l	20723.78
Br	79	72	2	H2	0.896	ug/l	8578.92
Se	82	72	1	No Gas	0.010	ug/l	942.76
Kr	84	72	1	No Gas		ug/l	21966.52
Sr	88	72	1	No Gas	0.008	ug/l	1550.35
Sr	88	72	3	He	0.006	ug/l	440.01
Mo	95	115	1	No Gas	0.005	ug/l	118.89
Mo	95	115	3	He	0.009	ug/l	58.89
Mo	98	115	1	No Gas	0.006	ug/l	206.81
Ag	107	115	1	No Gas	0.001	ug/l	236.10
Ag	109	115	1	No Gas	0.002	ug/l	241.43
Cd	111	115	1	No Gas	0.007	ug/l	120.57

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.007	ug/l	33.78
Cd	114	115	1	No Gas	0.010	ug/l	245.05
Cd	114	115	3	He	0.011	ug/l	75.39
Sn	118	115	1	No Gas	-1.021	ug/l	2169.20
Sn	118	115	3	He	-1.122	ug/l	528.90
Sb	121	115	1	No Gas	0.031	ug/l	1209.18
Sb	121	115	3	He	0.031	ug/l	332.04
Sb	123	115	1	No Gas	0.031	ug/l	925.46
Sb	123	115	3	He	0.030	ug/l	252.36
Ba	135	115	1	No Gas	0.010	ug/l	99.80
Ba	137	115	1	No Gas	0.006	ug/l	159.68
La	139	115	3	He	0.001	ug/l	32.22
Ce	140	115	3	He	0.000	ug/l	36.67
Hg	201	209	1	No Gas	0.000	ug/l	15.00
Hg	202	209	1	No Gas	-0.001	ug/l	91.65
Hg	202	209	3	He	0.000	ug/l	23.00
Tl	203	209	3	He	0.030	ug/l	489.54
Tl	205	209	1	No Gas	0.025	ug/l	2286.88
Tl	205	209	3	He	0.030	ug/l	1168.52
[Pb]	206	209	1	No Gas	0.009	ug/l	743.36
[Pb]	207	209	1	No Gas	0.009	ug/l	666.69
Pb	208	209	1	No Gas	0.009	ug/l	3039.05
Th	232	209	3	He	0.023	ug/l	1164.52
U	238	209	1	No Gas	0.003	ug/l	284.95

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8897556.31	94.7
Sc	45	2	H2	3307051.93	91.2
Sc	45	3	He	528291.64	101.6
Ge	72	1	No Gas	2136896.82	94.6
Ge	72	2	H2	1088058.31	91.5
Ge	72	3	He	317567.66	101.0
In	115	1	No Gas	2565237.89	96.9
In	115	3	He	569860.17	99.7
Tb	159	1	No Gas	20697866.72	94.4
Tb	159	3	He	8302339.55	102.0
Ho	165	1	No Gas	20294528.61	95.3
Ho	165	3	He	8147264.32	102.4
Lu	175	1	No Gas	19700584.89	95.0
Lu	175	3	He	6650014.15	100.3
Bi	209	1	No Gas	12883425.26	99.6
Bi	209	3	He	5356778.34	100.4

# ICPMS207-B Analytical Data

**Sample Name** LFB  
**File Name** 025\_LFB.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 15:58:08  
**Sample Type** LFB  
**Total Dilution** 1.0300  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	2308.351	ug/l	56736561.99
Be	9	45	1	No Gas	48.892	ug/l	392527.62
B	11	45	1	No Gas	48.582	ug/l	250466.64
Na	23	45	3	He	50739.447	ug/l	71820298.37
Mg	24	45	3	He	50044.360	ug/l	39653173.01
Al	27	45	1	No Gas	51.401	ug/l	1756129.80
Si	28	45	2	H2	163.622	ug/l	478934.97
K	39	72	3	He	51697.767	ug/l	39831606.63
Ca	40	72	2	H2	45715.914	ug/l	445202480.13
Ti	47	72	1	No Gas	55.956	ug/l	198253.70
V	51	72	1	No Gas	50.453	ug/l	2127404.93
V	51	72	3	He	51.956	ug/l	365790.09
Cr	52	72	1	No Gas	50.662	ug/l	2158447.20
Cr	52	72	3	He	51.438	ug/l	398116.37
Mn	55	72	1	No Gas	51.537	ug/l	2779122.04
Mn	55	72	3	He	50.977	ug/l	278826.78
Fe	56	72	2	H2	4810.841	ug/l	97416339.57
Fe	56	72	3	He	5205.068	ug/l	36699539.91
Co	59	72	1	No Gas	50.909	ug/l	2337296.20
Ni	60	72	1	No Gas	51.043	ug/l	524883.00
Ni	60	72	3	He	52.550	ug/l	149632.89
Cu	63	72	1	No Gas	52.163	ug/l	1268840.12
Cu	63	72	3	He	51.711	ug/l	397961.88
Cu	65	72	1	No Gas	51.297	ug/l	594942.59
Zn	66	72	1	No Gas	51.125	ug/l	357365.49
Zn	66	72	3	He	52.357	ug/l	77353.90
As	75	72	1	No Gas	51.311	ug/l	377960.16
As	75	72	3	He	51.726	ug/l	58200.63
Se	78	72	2	H2	49.307	ug/l	31264.89
Br	79	72	1	No Gas	2.391	ug/l	31938.58
Br	79	72	2	H2	1.800	ug/l	11668.26
Se	82	72	1	No Gas	51.008	ug/l	25139.53
Kr	84	72	1	No Gas		ug/l	43389.18
Sr	88	72	1	No Gas	51.464	ug/l	3306790.62
Sr	88	72	3	He	51.296	ug/l	414325.98
Mo	95	115	1	No Gas	52.454	ug/l	660397.93
Mo	95	115	3	He	52.899	ug/l	228826.41
Mo	98	115	1	No Gas	52.477	ug/l	1059643.78
Ag	107	115	1	No Gas	20.485	ug/l	653287.52
Ag	109	115	1	No Gas	20.528	ug/l	627024.87
Cd	111	115	1	No Gas	52.249	ug/l	352398.50

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	51.627	ug/l	114243.05
Cd	114	115	1	No Gas	52.847	ug/l	789225.97
Cd	114	115	3	He	50.263	ug/l	276032.87
Sn	118	115	1	No Gas	52.402	ug/l	1035513.69
Sn	118	115	3	He	51.437	ug/l	281476.28
Sb	121	115	1	No Gas	52.725	ug/l	1449733.78
Sb	121	115	3	He	51.106	ug/l	379394.80
Sb	123	115	1	No Gas	52.582	ug/l	1096762.65
Sb	123	115	3	He	51.377	ug/l	298521.77
Ba	135	115	1	No Gas	52.807	ug/l	306262.49
Ba	137	115	1	No Gas	51.544	ug/l	532151.17
La	139	115	3	He	0.021	ug/l	630.02
Ce	140	115	3	He	52.998	ug/l	1698252.46
Hg	201	209	1	No Gas	1.046	ug/l	3812.12
Hg	202	209	1	No Gas	1.078	ug/l	8856.83
Hg	202	209	3	He	1.044	ug/l	3802.45
Tl	203	209	3	He	49.919	ug/l	533009.72
Tl	205	209	1	No Gas	52.725	ug/l	2893317.53
Tl	205	209	3	He	51.698	ug/l	1298421.55
[Pb]	206	209	1	No Gas	52.365	ug/l	1005098.19
[Pb]	207	209	1	No Gas	51.991	ug/l	873032.08
Pb	208	209	1	No Gas	52.086	ug/l	3987440.29
Th	232	209	3	He	50.591	ug/l	1784934.87
U	238	209	1	No Gas	52.993	ug/l	4003450.64

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8859074.94	94.3
Sc	45	2	H2	3555615.60	98.1
Sc	45	3	He	541754.26	104.2
Ge	72	1	No Gas	2113438.41	93.5
Ge	72	2	H2	1161399.17	97.7
Ge	72	3	He	321579.52	102.2
In	115	1	No Gas	2340435.88	88.4
In	115	3	He	562692.70	98.5
Tb	159	1	No Gas	19899484.62	90.8
Tb	159	3	He	8066183.40	99.1
Ho	165	1	No Gas	19690379.27	92.5
Ho	165	3	He	7973755.03	100.3
Lu	175	1	No Gas	19399979.09	93.6
Lu	175	3	He	6537067.88	98.6
Bi	209	1	No Gas	11584466.70	89.5
Bi	209	3	He	4935826.25	92.5

# ICPMS207-B Analytical Data

**Sample Name** ICSA  
**File Name** 026ICSA.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 16:04:23  
**Sample Type** ICSA  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.991	ug/l	37979.74
Be	9	45	1	No Gas	-0.022	ug/l	131.98
B	11	45	1	No Gas	-1.695	ug/l	20254.94
Na	23	45	3	He	111468.626	ug/l	151188485.53
Mg	24	45	3	He	44987.641	ug/l	34172030.57
Al	27	45	1	No Gas	43567.376	ug/l	1500887248.75
Si	28	45	2	H2	4.005	ug/l	26555.60
K	39	72	3	He	45133.504	ug/l	33937780.88
Ca	40	72	2	H2	129644.159	ug/l	1173759104.42
Ti	47	72	1	No Gas	881.162	ug/l	3155415.33
V	51	72	1	No Gas	2.589	ug/l	386.07
V	51	72	3	He	-1.858	ug/l	3267.05
Cr	52	72	1	No Gas	0.795	ug/l	131623.07
Cr	52	72	3	He	2.039	ug/l	15890.84
Mn	55	72	1	No Gas	0.318	ug/l	23732.13
Mn	55	72	3	He	0.299	ug/l	1772.09
Fe	56	72	2	H2	112569.802	ug/l	2127877349.06
Fe	56	72	3	He	111398.037	ug/l	766392018.35
Co	59	72	1	No Gas	0.231	ug/l	11058.95
Ni	60	72	1	No Gas	1.010	ug/l	11225.43
Ni	60	72	3	He	0.124	ug/l	506.68
Cu	63	72	1	No Gas	3.390	ug/l	84526.14
Cu	63	72	3	He	0.172	ug/l	1693.10
Cu	65	72	1	No Gas	0.792	ug/l	9903.34
Zn	66	72	1	No Gas	0.818	ug/l	9553.35
Zn	66	72	3	He	0.321	ug/l	1216.72
As	75	72	1	No Gas	-0.483	ug/l	10359.25
As	75	72	3	He	0.018	ug/l	293.67
Se	78	72	2	H2	0.368	ug/l	240.00
Br	79	72	1	No Gas	2.736	ug/l	34512.61
Br	79	72	2	H2	1.140	ug/l	8692.06
Se	82	72	1	No Gas	-0.787	ug/l	540.98
Kr	84	72	1	No Gas		ug/l	21806.65
Sr	88	72	1	No Gas	1.101	ug/l	72622.69
Sr	88	72	3	He	1.085	ug/l	8916.14
Mo	95	115	1	No Gas	902.978	ug/l	11802834.96
Mo	95	115	3	He	944.957	ug/l	4032682.44
Mo	98	115	1	No Gas	892.716	ug/l	18707485.90
Ag	107	115	1	No Gas	0.016	ug/l	720.31
Ag	109	115	1	No Gas	0.017	ug/l	701.63
Cd	111	115	1	No Gas	0.075	ug/l	597.16



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.322	ug/l	719.35
Cd	114	115	1	No Gas	0.103	ug/l	1684.95
Cd	114	115	3	He	0.239	ug/l	1308.96
Sn	118	115	1	No Gas	-0.888	ug/l	4708.13
Sn	118	115	3	He	-0.978	ug/l	1258.96
Sb	121	115	1	No Gas	0.207	ug/l	6221.68
Sb	121	115	3	He	0.173	ug/l	1357.87
Sb	123	115	1	No Gas	0.207	ug/l	4735.62
Sb	123	115	3	He	0.170	ug/l	1045.81
Ba	135	115	1	No Gas	0.197	ug/l	1214.32
Ba	137	115	1	No Gas	0.192	ug/l	2145.92
La	139	115	3	He	0.006	ug/l	195.56
Ce	140	115	3	He	0.010	ug/l	327.78
Hg	201	209	1	No Gas	0.004	ug/l	28.99
Hg	202	209	1	No Gas	0.002	ug/l	102.65
Hg	202	209	3	He	0.003	ug/l	30.99
Tl	203	209	3	He	0.056	ug/l	734.32
Tl	205	209	1	No Gas	0.048	ug/l	3317.11
Tl	205	209	3	He	0.057	ug/l	1758.82
[Pb]	206	209	1	No Gas	0.057	ug/l	1592.33
[Pb]	207	209	1	No Gas	0.052	ug/l	1331.19
Pb	208	209	1	No Gas	0.053	ug/l	6162.82
Th	232	209	3	He	0.160	ug/l	6036.49
U	238	209	1	No Gas	0.031	ug/l	2411.08

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8712754.51	92.7
Sc	45	2	H2	3028984.74	83.6
Sc	45	3	He	504279.57	97.0
Ge	72	1	No Gas	2086342.69	92.3
Ge	72	2	H2	1009688.12	84.9
Ge	72	3	He	304665.94	96.9
In	115	1	No Gas	2376808.10	89.8
In	115	3	He	538937.20	94.3
Tb	159	1	No Gas	20358551.38	92.9
Tb	159	3	He	8094543.63	99.5
Ho	165	1	No Gas	19693825.21	92.5
Ho	165	3	He	7970375.09	100.2
Lu	175	1	No Gas	19307140.42	93.1
Lu	175	3	He	6742102.02	101.7
Bi	209	1	No Gas	11386742.36	88.0
Bi	209	3	He	4920677.06	92.3

# ICPMS207-B Analytical Data

**Sample Name** ICSAB  
**File Name** 027ICSB.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 16:10:41  
**Sample Type** ICSAB  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.544	ug/l	26635.90
Be	9	45	1	No Gas	-0.021	ug/l	137.97
B	11	45	1	No Gas	-1.824	ug/l	19498.31
Na	23	45	3	He	110823.384	ug/l	152268009.95
Mg	24	45	3	He	44540.448	ug/l	34274380.87
Al	27	45	1	No Gas	42409.373	ug/l	1448778413.97
Si	28	45	2	H2	2.351	ug/l	21659.70
K	39	72	3	He	44381.254	ug/l	33741986.72
Ca	40	72	2	H2	127037.271	ug/l	1143776215.92
Ti	47	72	1	No Gas	856.531	ug/l	3075717.49
V	51	72	1	No Gas	23.582	ug/l	948626.56
V	51	72	3	He	20.139	ug/l	149270.50
Cr	52	72	1	No Gas	22.274	ug/l	1017218.25
Cr	52	72	3	He	23.823	ug/l	182157.38
Mn	55	72	1	No Gas	22.291	ug/l	1223317.36
Mn	55	72	3	He	21.822	ug/l	117848.84
Fe	56	72	2	H2	110216.590	ug/l	2071617891.58
Fe	56	72	3	He	112716.280	ug/l	783941407.13
Co	59	72	1	No Gas	22.046	ug/l	1027370.95
Ni	60	72	1	No Gas	21.831	ug/l	228228.80
Ni	60	72	3	He	22.527	ug/l	63366.26
Cu	63	72	1	No Gas	26.473	ug/l	653709.23
Cu	63	72	3	He	21.733	ug/l	165228.88
Cu	65	72	1	No Gas	21.693	ug/l	255559.78
Zn	66	72	1	No Gas	11.091	ug/l	81610.03
Zn	66	72	3	He	11.043	ug/l	16695.14
As	75	72	1	No Gas	10.858	ug/l	92183.34
As	75	72	3	He	11.101	ug/l	12538.60
Se	78	72	2	H2	11.799	ug/l	6948.11
Br	79	72	1	No Gas	3.459	ug/l	39939.09
Br	79	72	2	H2	1.089	ug/l	8492.37
Se	82	72	1	No Gas	10.496	ug/l	5966.73
Kr	84	72	1	No Gas		ug/l	22656.14
Sr	88	72	1	No Gas	1.108	ug/l	73451.62
Sr	88	72	3	He	1.090	ug/l	9058.48
Mo	95	115	1	No Gas	891.361	ug/l	11854932.60
Mo	95	115	3	He	941.426	ug/l	4057953.69
Mo	98	115	1	No Gas	889.717	ug/l	18956290.41
Ag	107	115	1	No Gas	5.299	ug/l	178517.16
Ag	109	115	1	No Gas	5.251	ug/l	169613.43
Cd	111	115	1	No Gas	10.688	ug/l	76252.11

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	11.363	ug/l	25072.36
Cd	114	115	1	No Gas	10.815	ug/l	170624.95
Cd	114	115	3	He	10.990	ug/l	60157.56
Sn	118	115	1	No Gas	-0.916	ug/l	4182.34
Sn	118	115	3	He	-1.007	ug/l	1117.83
Sb	121	115	1	No Gas	0.101	ug/l	3204.02
Sb	121	115	3	He	0.097	ug/l	806.10
Sb	123	115	1	No Gas	0.100	ug/l	2406.11
Sb	123	115	3	He	0.097	ug/l	632.74
Ba	135	115	1	No Gas	0.181	ug/l	1127.81
Ba	137	115	1	No Gas	0.183	ug/l	2046.10
La	139	115	3	He	0.006	ug/l	178.89
Ce	140	115	3	He	0.009	ug/l	313.34
Hg	201	209	1	No Gas	0.002	ug/l	21.66
Hg	202	209	1	No Gas	0.000	ug/l	88.32
Hg	202	209	3	He	0.003	ug/l	31.66
Tl	203	209	3	He	0.026	ug/l	412.84
Tl	205	209	1	No Gas	0.022	ug/l	1936.82
Tl	205	209	3	He	0.027	ug/l	996.44
[Pb]	206	209	1	No Gas	0.048	ug/l	1470.09
[Pb]	207	209	1	No Gas	0.046	ug/l	1264.51
Pb	208	209	1	No Gas	0.047	ug/l	5876.11
Th	232	209	3	He	0.083	ug/l	3243.05
U	238	209	1	No Gas	0.026	ug/l	2099.76

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8686107.70	92.5
Sc	45	2	H2	2961700.32	81.7
Sc	45	3	He	510817.59	98.2
Ge	72	1	No Gas	2086342.68	92.3
Ge	72	2	H2	1004141.14	84.5
Ge	72	3	He	308021.21	97.9
In	115	1	No Gas	2411349.45	91.1
In	115	3	He	544346.29	95.3
Tb	159	1	No Gas	21014590.73	95.9
Tb	159	3	He	8313615.30	102.1
Ho	165	1	No Gas	20636126.24	96.9
Ho	165	3	He	8184494.26	102.9
Lu	175	1	No Gas	20071531.24	96.8
Lu	175	3	He	6825815.11	103.0
Bi	209	1	No Gas	11840625.29	91.5
Bi	209	3	He	4940811.97	92.6

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 028BLKV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 16:16:58  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.323	ug/l	21157.82
Be	9	45	1	No Gas	-0.021	ug/l	142.97
B	11	45	1	No Gas	-2.280	ug/l	17422.99
Na	23	45	3	He	17.269	ug/l	88237.80
Mg	24	45	3	He	0.874	ug/l	1360.70
Al	27	45	1	No Gas	1.367	ug/l	54166.65
Si	28	45	2	H2	-1.071	ug/l	14214.50
K	39	72	3	He	15.994	ug/l	81113.02
Ca	40	72	2	H2	1.518	ug/l	103230.69
Ti	47	72	1	No Gas	0.261	ug/l	1241.31
V	51	72	1	No Gas	2.353	ug/l	-10596.20
V	51	72	3	He	-1.583	ug/l	5335.43
Cr	52	72	1	No Gas	-1.479	ug/l	38670.68
Cr	52	72	3	He	-0.019	ug/l	392.23
Mn	55	72	1	No Gas	0.037	ug/l	8528.94
Mn	55	72	3	He	-0.006	ug/l	150.64
Fe	56	72	2	H2	1.754	ug/l	42539.30
Fe	56	72	3	He	1.478	ug/l	16019.90
Co	59	72	1	No Gas	0.001	ug/l	365.95
Ni	60	72	1	No Gas	0.022	ug/l	981.42
Ni	60	72	3	He	-0.028	ug/l	86.67
Cu	63	72	1	No Gas	0.773	ug/l	20844.50
Cu	63	72	3	He	0.024	ug/l	613.23
Cu	65	72	1	No Gas	0.048	ug/l	1195.20
Zn	66	72	1	No Gas	0.080	ug/l	4431.47
Zn	66	72	3	He	0.031	ug/l	844.47
As	75	72	1	No Gas	-0.563	ug/l	10251.82
As	75	72	3	He	-0.108	ug/l	164.13
Se	78	72	2	H2	0.039	ug/l	50.22
Br	79	72	1	No Gas	1.086	ug/l	22502.89
Br	79	72	2	H2	0.636	ug/l	7866.60
Se	82	72	1	No Gas	-0.321	ug/l	775.15
Kr	84	72	1	No Gas		ug/l	22739.64
Sr	88	72	1	No Gas	0.004	ug/l	1287.52
Sr	88	72	3	He	0.000	ug/l	392.23
Mo	95	115	1	No Gas	0.329	ug/l	4655.26
Mo	95	115	3	He	0.260	ug/l	1168.95
Mo	98	115	1	No Gas	0.327	ug/l	7423.79
Ag	107	115	1	No Gas	0.002	ug/l	257.44
Ag	109	115	1	No Gas	0.002	ug/l	241.43
Cd	111	115	1	No Gas	0.003	ug/l	91.05

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.004	ug/l	25.78
Cd	114	115	1	No Gas	0.007	ug/l	195.35
Cd	114	115	3	He	0.009	ug/l	62.26
Sn	118	115	1	No Gas	-1.033	ug/l	1906.36
Sn	118	115	3	He	-1.120	ug/l	537.79
Sb	121	115	1	No Gas	0.033	ug/l	1266.52
Sb	121	115	3	He	0.033	ug/l	342.04
Sb	123	115	1	No Gas	0.031	ug/l	923.12
Sb	123	115	3	He	0.031	ug/l	254.70
Ba	135	115	1	No Gas	0.001	ug/l	33.27
Ba	137	115	1	No Gas	0.000	ug/l	86.49
La	139	115	3	He	0.000	ug/l	20.00
Ce	140	115	3	He	0.001	ug/l	36.67
Hg	201	209	1	No Gas	-0.001	ug/l	11.67
Hg	202	209	1	No Gas	-0.002	ug/l	71.65
Hg	202	209	3	He	0.000	ug/l	23.99
Tl	203	209	3	He	0.019	ug/l	360.15
Tl	205	209	1	No Gas	0.018	ug/l	1770.13
Tl	205	209	3	He	0.020	ug/l	875.05
[Pb]	206	209	1	No Gas	0.007	ug/l	676.69
[Pb]	207	209	1	No Gas	0.007	ug/l	611.13
Pb	208	209	1	No Gas	0.006	ug/l	2699.01
Th	232	209	3	He	0.014	ug/l	798.35
U	238	209	1	No Gas	0.002	ug/l	177.30

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8563593.55	91.2
Sc	45	2	H2	3309695.97	91.3
Sc	45	3	He	511155.68	98.3
Ge	72	1	No Gas	2104041.87	93.1
Ge	72	2	H2	1105987.58	93.0
Ge	72	3	He	321108.87	102.1
In	115	1	No Gas	2495210.46	94.3
In	115	3	He	563616.21	98.6
Tb	159	1	No Gas	19909243.33	90.8
Tb	159	3	He	8084742.22	99.3
Ho	165	1	No Gas	19393100.75	91.1
Ho	165	3	He	7983355.00	100.4
Lu	175	1	No Gas	19328476.96	93.2
Lu	175	3	He	6573149.95	99.1
Bi	209	1	No Gas	12330095.16	95.3
Bi	209	3	He	5293978.65	99.3

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 029BLKV.d  
**Data Path Name** D:\Agilent\ICPMH1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 16:23:12  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.247	ug/l	20138.69
Be	9	45	1	No Gas	-0.024	ug/l	122.64
B	11	45	1	No Gas	-2.870	ug/l	15381.31
Na	23	45	3	He	7.549	ug/l	77568.53
Mg	24	45	3	He	0.607	ug/l	1201.00
Al	27	45	1	No Gas	0.689	ug/l	32219.27
Si	28	45	2	H2	-1.101	ug/l	13918.10
K	39	72	3	He	10.910	ug/l	77030.55
Ca	40	72	2	H2	0.598	ug/l	93055.71
Ti	47	72	1	No Gas	0.078	ug/l	597.28
V	51	72	1	No Gas	2.232	ug/l	-15527.73
V	51	72	3	He	-1.586	ug/l	5306.54
Cr	52	72	1	No Gas	-1.528	ug/l	38067.02
Cr	52	72	3	He	-0.017	ug/l	410.01
Mn	55	72	1	No Gas	0.020	ug/l	7903.14
Mn	55	72	3	He	-0.005	ug/l	158.64
Fe	56	72	2	H2	0.644	ug/l	19342.23
Fe	56	72	3	He	0.560	ug/l	9390.80
Co	59	72	1	No Gas	0.001	ug/l	369.27
Ni	60	72	1	No Gas	0.002	ug/l	801.77
Ni	60	72	3	He	-0.039	ug/l	55.56
Cu	63	72	1	No Gas	0.357	ug/l	10849.70
Cu	63	72	3	He	0.008	ug/l	489.57
Cu	65	72	1	No Gas	0.023	ug/l	929.74
Zn	66	72	1	No Gas	0.032	ug/l	4235.08
Zn	66	72	3	He	0.044	ug/l	864.48
As	75	72	1	No Gas	-0.838	ug/l	8498.72
As	75	72	3	He	-0.117	ug/l	153.53
Se	78	72	2	H2	0.011	ug/l	32.00
Br	79	72	1	No Gas	0.669	ug/l	20070.90
Br	79	72	2	H2	0.623	ug/l	7730.12
Se	82	72	1	No Gas	-0.222	ug/l	855.95
Kr	84	72	1	No Gas		ug/l	21959.92
Sr	88	72	1	No Gas	0.001	ug/l	1137.79
Sr	88	72	3	He	0.002	ug/l	407.79
Mo	95	115	1	No Gas	0.082	ug/l	1228.95
Mo	95	115	3	He	0.069	ug/l	337.79
Mo	98	115	1	No Gas	0.071	ug/l	1704.70
Ag	107	115	1	No Gas	0.001	ug/l	236.10
Ag	109	115	1	No Gas	0.001	ug/l	222.76
Cd	111	115	1	No Gas	0.003	ug/l	97.14

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.003	ug/l	24.44
Cd	114	115	1	No Gas	0.007	ug/l	198.26
Cd	114	115	3	He	0.006	ug/l	51.62
Sn	118	115	1	No Gas	-1.038	ug/l	1846.48
Sn	118	115	3	He	-1.130	ug/l	495.57
Sb	121	115	1	No Gas	0.020	ug/l	889.12
Sb	121	115	3	He	0.018	ug/l	233.03
Sb	123	115	1	No Gas	0.020	ug/l	681.08
Sb	123	115	3	He	0.019	ug/l	193.02
Ba	135	115	1	No Gas	0.000	ug/l	26.61
Ba	137	115	1	No Gas	-0.001	ug/l	79.84
La	139	115	3	He	0.000	ug/l	13.33
Ce	140	115	3	He	0.000	ug/l	22.22
Hg	201	209	1	No Gas	-0.001	ug/l	13.00
Hg	202	209	1	No Gas	-0.003	ug/l	67.66
Hg	202	209	3	He	0.000	ug/l	23.33
Tl	203	209	3	He	0.012	ug/l	284.78
Tl	205	209	1	No Gas	0.011	ug/l	1473.43
Tl	205	209	3	He	0.014	ug/l	741.65
[Pb]	206	209	1	No Gas	0.004	ug/l	664.47
[Pb]	207	209	1	No Gas	0.005	ug/l	612.24
Pb	208	209	1	No Gas	0.003	ug/l	2600.12
Th	232	209	3	He	0.009	ug/l	606.93
U	238	209	1	No Gas	0.001	ug/l	127.31

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8915591.86	94.9
Sc	45	2	H2	3261115.35	90.0
Sc	45	3	He	527764.60	101.5
Ge	72	1	No Gas	2182120.56	96.6
Ge	72	2	H2	1092976.99	91.9
Ge	72	3	He	320283.76	101.8
In	115	1	No Gas	2571271.18	97.1
In	115	3	He	579605.08	101.4
Tb	159	1	No Gas	20962497.80	95.6
Tb	159	3	He	8540111.79	104.9
Ho	165	1	No Gas	20393554.71	95.8
Ho	165	3	He	8506423.73	107.0
Lu	175	1	No Gas	20060067.07	96.7
Lu	175	3	He	6909540.91	104.2
Bi	209	1	No Gas	13024695.65	100.6
Bi	209	3	He	5567133.15	104.4

# ICPMS207-B Analytical Data

**Sample Name** CCV  
**File Name** 030\_CCV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 16:29:25  
**Sample Type** CCV  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	522.506	ug/l	13231072.79
Be	9	45	1	No Gas	45.238	ug/l	373776.03
B	11	45	1	No Gas	45.283	ug/l	241337.35
Na	23	45	3	He	12733.515	ug/l	17805559.88
Mg	24	45	3	He	12774.271	ug/l	9971521.48
Al	27	45	1	No Gas	49.668	ug/l	1747098.39
Si	28	45	2	H2	177.932	ug/l	504211.46
K	39	72	3	He	12561.943	ug/l	9941179.43
Ca	40	72	2	H2	11951.654	ug/l	113750019.34
Ti	47	72	1	No Gas	48.391	ug/l	181880.95
V	51	72	1	No Gas	49.150	ug/l	2196037.74
V	51	72	3	He	50.426	ug/l	362769.29
Cr	52	72	1	No Gas	48.348	ug/l	2184209.76
Cr	52	72	3	He	50.799	ug/l	401748.08
Mn	55	72	1	No Gas	50.051	ug/l	2862143.83
Mn	55	72	3	He	50.722	ug/l	283479.63
Fe	56	72	2	H2	1284.192	ug/l	25497954.97
Fe	56	72	3	He	1319.405	ug/l	9509480.61
Co	59	72	1	No Gas	50.327	ug/l	2450251.38
Ni	60	72	1	No Gas	49.959	ug/l	544191.17
Ni	60	72	3	He	53.936	ug/l	156934.53
Cu	63	72	1	No Gas	51.251	ug/l	1321554.38
Cu	63	72	3	He	53.534	ug/l	420978.07
Cu	65	72	1	No Gas	50.737	ug/l	622850.57
Zn	66	72	1	No Gas	52.657	ug/l	389655.92
Zn	66	72	3	He	54.410	ug/l	82085.01
As	75	72	1	No Gas	50.566	ug/l	394194.31
As	75	72	3	He	52.194	ug/l	60005.90
Se	78	72	2	H2	53.547	ug/l	33193.57
Br	79	72	1	No Gas	0.674	ug/l	20044.25
Br	79	72	2	H2	0.653	ug/l	7586.99
Se	82	72	1	No Gas	52.459	ug/l	27328.03
Kr	84	72	1	No Gas		ug/l	44686.89
Sr	88	72	1	No Gas	50.763	ug/l	3455893.02
Sr	88	72	3	He	50.885	ug/l	419999.30
Mo	95	115	1	No Gas	48.749	ug/l	674076.05
Mo	95	115	3	He	52.997	ug/l	238021.07
Mo	98	115	1	No Gas	49.308	ug/l	1094115.46
Ag	107	115	1	No Gas	20.136	ug/l	706454.90
Ag	109	115	1	No Gas	19.931	ug/l	670729.18
Cd	111	115	1	No Gas	51.033	ug/l	379363.87



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	53.763	ug/l	123527.45
Cd	114	115	1	No Gas	51.619	ug/l	849201.42
Cd	114	115	3	He	52.588	ug/l	299918.06
Sn	118	115	1	No Gas	49.975	ug/l	1088867.90
Sn	118	115	3	He	51.354	ug/l	291654.07
Sb	121	115	1	No Gas	50.322	ug/l	1524280.86
Sb	121	115	3	He	51.867	ug/l	399942.90
Sb	123	115	1	No Gas	50.373	ug/l	1158840.39
Sb	123	115	3	He	51.905	ug/l	313141.55
Ba	135	115	1	No Gas	50.750	ug/l	323891.95
Ba	137	115	1	No Gas	48.741	ug/l	553864.17
La	139	115	3	He	51.845	ug/l	1576453.38
Ce	140	115	3	He	52.174	ug/l	1736362.70
Hg	201	209	1	No Gas	0.974	ug/l	4045.81
Hg	202	209	1	No Gas	0.971	ug/l	9094.94
Hg	202	209	3	He	1.003	ug/l	3983.80
Tl	203	209	3	He	49.887	ug/l	581097.54
Tl	205	209	1	No Gas	50.166	ug/l	3137300.68
Tl	205	209	3	He	51.363	ug/l	1407356.21
[Pb]	206	209	1	No Gas	49.854	ug/l	1090277.81
[Pb]	207	209	1	No Gas	49.795	ug/l	950938.20
Pb	208	209	1	No Gas	50.259	ug/l	4377706.16
Th	232	209	3	He	49.285	ug/l	1897332.72
U	238	209	1	No Gas	49.419	ug/l	4251791.08

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8905649.87	94.8
Sc	45	2	H2	3101971.15	85.6
Sc	45	3	He	518274.71	99.7
Ge	72	1	No Gas	2181287.70	96.5
Ge	72	2	H2	1059910.87	89.1
Ge	72	3	He	319264.80	101.5
In	115	1	No Gas	2526421.82	95.5
In	115	3	He	568285.25	99.4
Tb	159	1	No Gas	21240534.58	96.9
Tb	159	3	He	8024768.34	98.6
Ho	165	1	No Gas	21095810.90	99.1
Ho	165	3	He	7946267.39	99.9
Lu	175	1	No Gas	20610225.75	99.4
Lu	175	3	He	6594188.33	99.5
Bi	209	1	No Gas	12819117.82	99.1
Bi	209	3	He	5231703.51	98.1

# ICPMS207-B Analytical Data

**Sample Name** CCB  
**File Name** 031\_CCB.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 16:35:40  
**Sample Type** CCB  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.590	ug/l	28220.07
Be	9	45	1	No Gas	-0.019	ug/l	162.64
B	11	45	1	No Gas	-2.284	ug/l	17718.80
Na	23	45	3	He	5.313	ug/l	74065.46
Mg	24	45	3	He	0.151	ug/l	835.04
Al	27	45	1	No Gas	0.215	ug/l	14889.72
Si	28	45	2	H2	-0.908	ug/l	13883.38
K	39	72	3	He	11.039	ug/l	78143.85
Ca	40	72	2	H2	0.464	ug/l	90713.10
Ti	47	72	1	No Gas	0.053	ug/l	497.18
V	51	72	1	No Gas	2.147	ug/l	-19372.31
V	51	72	3	He	-1.200	ug/l	8081.15
Cr	52	72	1	No Gas	-1.294	ug/l	47619.21
Cr	52	72	3	He	-0.014	ug/l	440.01
Mn	55	72	1	No Gas	0.028	ug/l	8236.01
Mn	55	72	3	He	-0.002	ug/l	175.63
Fe	56	72	2	H2	0.452	ug/l	15233.27
Fe	56	72	3	He	0.487	ug/l	8980.13
Co	59	72	1	No Gas	0.001	ug/l	392.56
Ni	60	72	1	No Gas	-0.004	ug/l	731.90
Ni	60	72	3	He	-0.030	ug/l	82.22
Cu	63	72	1	No Gas	0.204	ug/l	6763.62
Cu	63	72	3	He	0.017	ug/l	564.90
Cu	65	72	1	No Gas	0.020	ug/l	881.05
Zn	66	72	1	No Gas	-0.012	ug/l	3865.23
Zn	66	72	3	He	-0.025	ug/l	771.14
As	75	72	1	No Gas	-0.433	ug/l	11444.76
As	75	72	3	He	-0.098	ug/l	177.53
Se	78	72	2	H2	0.018	ug/l	35.67
Br	79	72	1	No Gas	0.525	ug/l	18671.68
Br	79	72	2	H2	0.403	ug/l	6941.25
Se	82	72	1	No Gas	-0.182	ug/l	863.02
Kr	84	72	1	No Gas		ug/l	22616.15
Sr	88	72	1	No Gas	0.004	ug/l	1324.11
Sr	88	72	3	He	0.002	ug/l	411.12
Mo	95	115	1	No Gas	0.055	ug/l	844.48
Mo	95	115	3	He	0.040	ug/l	208.89
Mo	98	115	1	No Gas	0.049	ug/l	1197.97
Ag	107	115	1	No Gas	0.002	ug/l	254.77
Ag	109	115	1	No Gas	0.001	ug/l	229.43
Cd	111	115	1	No Gas	0.005	ug/l	110.32

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.005	ug/l	28.67
Cd	114	115	1	No Gas	0.007	ug/l	199.23
Cd	114	115	3	He	0.006	ug/l	51.59
Sn	118	115	1	No Gas	0.089	ug/l	26869.02
Sn	118	115	3	He	0.022	ug/l	7167.43
Sb	121	115	1	No Gas	0.119	ug/l	4021.99
Sb	121	115	3	He	0.081	ug/l	750.43
Sb	123	115	1	No Gas	0.121	ug/l	3105.66
Sb	123	115	3	He	0.088	ug/l	631.74
Ba	135	115	1	No Gas	0.001	ug/l	36.59
Ba	137	115	1	No Gas	0.001	ug/l	103.13
La	139	115	3	He	0.001	ug/l	41.11
Ce	140	115	3	He	0.001	ug/l	46.67
Hg	201	209	1	No Gas	0.001	ug/l	22.00
Hg	202	209	1	No Gas	0.002	ug/l	116.31
Hg	202	209	3	He	0.002	ug/l	32.66
Tl	203	209	3	He	0.106	ug/l	1500.69
Tl	205	209	1	No Gas	0.093	ug/l	6907.41
Tl	205	209	3	He	0.108	ug/l	3582.59
[Pb]	206	209	1	No Gas	0.011	ug/l	821.14
[Pb]	207	209	1	No Gas	0.007	ug/l	667.80
Pb	208	209	1	No Gas	0.008	ug/l	3181.29
Th	232	209	3	He	0.053	ug/l	2473.90
U	238	209	1	No Gas	0.005	ug/l	511.58

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8682261.95	92.4
Sc	45	2	H2	3126661.99	86.3
Sc	45	3	He	525383.67	101.0
Ge	72	1	No Gas	2154340.44	95.3
Ge	72	2	H2	1081989.13	91.0
Ge	72	3	He	324520.13	103.2
In	115	1	No Gas	2577413.64	97.4
In	115	3	He	591562.26	103.5
Tb	159	1	No Gas	21374594.26	97.5
Tb	159	3	He	8577455.80	105.4
Ho	165	1	No Gas	21020589.85	98.7
Ho	165	3	He	8470536.59	106.5
Lu	175	1	No Gas	20648251.27	99.6
Lu	175	3	He	6886942.53	103.9
Bi	209	1	No Gas	13387919.80	103.5
Bi	209	3	He	5722223.30	107.3

# ICPMS207-B Analytical Data

**Sample Name** MB-163954  
**File Name** 032ARef.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 16:41:55  
**Sample Type** AIRRef  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.367	ug/l	22531.68
Be	9	45	1	No Gas	-0.024	ug/l	119.98
B	11	45	1	No Gas	-1.872	ug/l	19557.10
Na	23	45	3	He	5.208	ug/l	69543.01
Mg	24	45	3	He	0.670	ug/l	1174.39
Al	27	45	1	No Gas	1.407	ug/l	56193.88
Si	28	45	2	H2	15.459	ug/l	55930.12
K	39	72	3	He	9.837	ug/l	71828.16
Ca	40	72	2	H2	4.623	ug/l	119743.05
Ti	47	72	1	No Gas	0.409	ug/l	1798.60
V	51	72	1	No Gas	3.019	ug/l	21656.13
V	51	72	3	He	-0.917	ug/l	9353.02
Cr	52	72	1	No Gas	-0.766	ug/l	69104.50
Cr	52	72	3	He	0.019	ug/l	653.35
Mn	55	72	1	No Gas	0.252	ug/l	20633.45
Mn	55	72	3	He	0.036	ug/l	363.27
Fe	56	72	2	H2	0.949	ug/l	23124.80
Fe	56	72	3	He	1.072	ug/l	12349.31
Co	59	72	1	No Gas	0.018	ug/l	1201.01
Ni	60	72	1	No Gas	0.165	ug/l	2521.89
Ni	60	72	3	He	0.156	ug/l	590.02
Cu	63	72	1	No Gas	0.569	ug/l	15874.31
Cu	63	72	3	He	0.393	ug/l	3320.39
Cu	65	72	1	No Gas	0.344	ug/l	4756.69
Zn	66	72	1	No Gas	0.188	ug/l	5236.04
Zn	66	72	3	He	0.201	ug/l	1036.71
As	75	72	1	No Gas	-0.219	ug/l	12806.68
As	75	72	3	He	-0.024	ug/l	245.20
Se	78	72	2	H2	0.026	ug/l	37.11
Br	79	72	1	No Gas	1.539	ug/l	26178.42
Br	79	72	2	H2	1.601	ug/l	9867.16
Se	82	72	1	No Gas	-0.218	ug/l	829.15
Kr	84	72	1	No Gas		ug/l	22053.14
Sr	88	72	1	No Gas	0.019	ug/l	2302.31
Sr	88	72	3	He	0.020	ug/l	528.90
Mo	95	115	1	No Gas	0.050	ug/l	760.03
Mo	95	115	3	He	0.054	ug/l	260.00
Mo	98	115	1	No Gas	0.053	ug/l	1271.80
Ag	107	115	1	No Gas	0.002	ug/l	268.11
Ag	109	115	1	No Gas	0.002	ug/l	242.77
Cd	111	115	1	No Gas	0.009	ug/l	138.08

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.010	ug/l	38.89
Cd	114	115	1	No Gas	0.011	ug/l	264.30
Cd	114	115	3	He	0.014	ug/l	90.97
Sn	118	115	1	No Gas	-0.813	ug/l	6721.63
Sn	118	115	3	He	-0.884	ug/l	1836.80
Sb	121	115	1	No Gas	0.054	ug/l	1948.00
Sb	121	115	3	He	0.060	ug/l	553.74
Sb	123	115	1	No Gas	0.054	ug/l	1483.90
Sb	123	115	3	He	0.057	ug/l	411.72
Ba	135	115	1	No Gas	0.106	ug/l	718.60
Ba	137	115	1	No Gas	0.091	ug/l	1147.78
La	139	115	3	He	0.002	ug/l	68.89
Ce	140	115	3	He	0.002	ug/l	101.11
Hg	201	209	1	No Gas	0.006	ug/l	39.66
Hg	202	209	1	No Gas	0.007	ug/l	163.30
Hg	202	209	3	He	0.007	ug/l	49.66
Tl	203	209	3	He	0.041	ug/l	638.27
Tl	205	209	1	No Gas	0.039	ug/l	3247.09
Tl	205	209	3	He	0.040	ug/l	1468.01
[Pb]	206	209	1	No Gas	0.037	ug/l	1411.20
[Pb]	207	209	1	No Gas	0.037	ug/l	1256.74
Pb	208	209	1	No Gas	0.038	ug/l	5762.76
Th	232	209	3	He	0.175	ug/l	7325.68
U	238	209	1	No Gas	0.005	ug/l	484.25

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8651339.11	92.1
Sc	45	2	H2	2955056.31	81.5
Sc	45	3	He	495015.71	95.2
Ge	72	1	No Gas	2121302.68	93.9
Ge	72	2	H2	988167.81	83.1
Ge	72	3	He	302196.97	96.1
In	115	1	No Gas	2528497.91	95.5
In	115	3	He	563502.67	98.6
Tb	159	1	No Gas	21876844.20	99.8
Tb	159	3	He	8519578.55	104.7
Ho	165	1	No Gas	21300091.43	100.0
Ho	165	3	He	8384665.72	105.4
Lu	175	1	No Gas	20910596.94	100.8
Lu	175	3	He	6824974.32	102.9
Bi	209	1	No Gas	13148370.98	101.6
Bi	209	3	He	5499875.47	103.1

# ICPMS207-B Analytical Data

**Sample Name** LCS4-163954  
**File Name** 033LCS4.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 16:48:10  
**Sample Type** LCS4  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	76.886	ug/l	1828345.25
Be	9	45	1	No Gas	41.102	ug/l	317416.21
B	11	45	1	No Gas	87.944	ug/l	412889.11
Na	23	45	3	He	5186.982	ug/l	7002415.31
Mg	24	45	3	He	5176.463	ug/l	3881045.97
Al	27	45	1	No Gas	461.191	ug/l	15100640.75
Si	28	45	2	H2	837.477	ug/l	2118232.60
K	39	72	3	He	4823.503	ug/l	3794500.67
Ca	40	72	2	H2	4693.430	ug/l	42910169.49
Ti	47	72	1	No Gas	92.137	ug/l	332162.93
V	51	72	1	No Gas	92.740	ug/l	4078057.15
V	51	72	3	He	98.940	ug/l	684599.56
Cr	52	72	1	No Gas	96.184	ug/l	4080262.45
Cr	52	72	3	He	100.708	ug/l	782624.70
Mn	55	72	1	No Gas	508.975	ug/l	27877515.69
Mn	55	72	3	He	505.525	ug/l	2776552.12
Fe	56	72	2	H2	497.762	ug/l	9488244.78
Fe	56	72	3	He	514.071	ug/l	3646482.97
Co	59	72	1	No Gas	99.513	ug/l	4645420.01
Ni	60	72	1	No Gas	96.911	ug/l	1013196.18
Ni	60	72	3	He	106.340	ug/l	304042.38
Cu	63	72	1	No Gas	101.296	ug/l	2505268.26
Cu	63	72	3	He	105.741	ug/l	817140.13
Cu	65	72	1	No Gas	100.223	ug/l	1180816.32
Zn	66	72	1	No Gas	97.961	ug/l	693301.68
Zn	66	72	3	He	99.653	ug/l	147184.55
As	75	72	1	No Gas	95.239	ug/l	701368.43
As	75	72	3	He	95.728	ug/l	107968.08
Se	78	72	2	H2	96.418	ug/l	57361.22
Br	79	72	1	No Gas	1.680	ug/l	26801.73
Br	79	72	2	H2	1.706	ug/l	10473.05
Se	82	72	1	No Gas	95.821	ug/l	47189.79
Kr	84	72	1	No Gas		ug/l	65434.73
Sr	88	72	1	No Gas	106.082	ug/l	6933391.00
Sr	88	72	3	He	100.309	ug/l	813712.37
Mo	95	115	1	No Gas	94.470	ug/l	1357086.05
Mo	95	115	3	He	102.367	ug/l	472301.62
Mo	98	115	1	No Gas	95.289	ug/l	2195806.19
Ag	107	115	1	No Gas	9.473	ug/l	345080.59
Ag	109	115	1	No Gas	9.553	ug/l	332885.57
Cd	111	115	1	No Gas	48.277	ug/l	371947.45

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	50.946	ug/l	120256.19
Cd	114	115	1	No Gas	48.743	ug/l	831348.19
Cd	114	115	3	He	49.837	ug/l	291956.39
Sn	118	115	1	No Gas	101.315	ug/l	2258979.26
Sn	118	115	3	He	103.436	ug/l	596265.27
Sb	121	115	1	No Gas	97.014	ug/l	3045599.07
Sb	121	115	3	He	99.331	ug/l	786541.93
Sb	123	115	1	No Gas	98.957	ug/l	2356457.83
Sb	123	115	3	He	100.359	ug/l	621975.26
Ba	135	115	1	No Gas	91.816	ug/l	606778.13
Ba	137	115	1	No Gas	90.080	ug/l	1062260.00
La	139	115	3	He	105.766	ug/l	3304881.23
Ce	140	115	3	He	106.790	ug/l	3650193.80
Hg	201	209	1	No Gas	0.006	ug/l	40.32
Hg	202	209	1	No Gas	0.006	ug/l	157.30
Hg	202	209	3	He	0.008	ug/l	55.99
Tl	203	209	3	He	97.415	ug/l	1237659.27
Tl	205	209	1	No Gas	101.071	ug/l	6678207.40
Tl	205	209	3	He	99.999	ug/l	2988797.05
[Pb]	206	209	1	No Gas	100.031	ug/l	2311557.64
[Pb]	207	209	1	No Gas	101.460	ug/l	2048507.71
Pb	208	209	1	No Gas	100.744	ug/l	9278147.88
Th	232	209	3	He	96.781	ug/l	4064321.80
U	238	209	1	No Gas	101.897	ug/l	9266994.21

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8253599.06	87.9
Sc	45	2	H2	2841872.93	78.4
Sc	45	3	He	497675.47	95.7
Ge	72	1	No Gas	2092173.60	92.6
Ge	72	2	H2	1017341.07	85.6
Ge	72	3	He	313725.42	99.7
In	115	1	No Gas	2597104.72	98.1
In	115	3	He	582637.09	102.0
Tb	159	1	No Gas	22066709.89	100.7
Tb	159	3	He	8716536.02	107.1
Ho	165	1	No Gas	21538829.95	101.1
Ho	165	3	He	8578740.42	107.9
Lu	175	1	No Gas	21569693.31	104.0
Lu	175	3	He	6945567.46	104.8
Bi	209	1	No Gas	13509552.06	104.4
Bi	209	3	He	5702394.46	106.9

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 034BLKV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224\ADoD.b  
**Acq Time** 2022-02-24 16:54:24  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.111	ug/l	16068.92
Be	9	45	1	No Gas	-0.025	ug/l	113.65
B	11	45	1	No Gas	-3.124	ug/l	13670.99
Na	23	45	3	He	6.231	ug/l	75431.13
Mg	24	45	3	He	0.612	ug/l	1201.00
Al	27	45	1	No Gas	0.443	ug/l	22729.98
Si	28	45	2	H2	-1.066	ug/l	12584.41
K	39	72	3	He	2.791	ug/l	71444.02
Ca	40	72	2	H2	-0.526	ug/l	77949.01
Ti	47	72	1	No Gas	-0.003	ug/l	291.96
V	51	72	1	No Gas	2.285	ug/l	-12557.98
V	51	72	3	He	-1.183	ug/l	8185.65
Cr	52	72	1	No Gas	-1.296	ug/l	48517.00
Cr	52	72	3	He	-0.011	ug/l	460.01
Mn	55	72	1	No Gas	0.020	ug/l	7983.02
Mn	55	72	3	He	0.007	ug/l	225.29
Fe	56	72	2	H2	0.184	ug/l	9424.20
Fe	56	72	3	He	0.253	ug/l	7255.78
Co	59	72	1	No Gas	0.001	ug/l	405.87
Ni	60	72	1	No Gas	-0.027	ug/l	492.37
Ni	60	72	3	He	-0.031	ug/l	78.89
Cu	63	72	1	No Gas	0.062	ug/l	3208.31
Cu	63	72	3	He	0.018	ug/l	573.90
Cu	65	72	1	No Gas	0.024	ug/l	957.75
Zn	66	72	1	No Gas	0.163	ug/l	5249.70
Zn	66	72	3	He	0.135	ug/l	1012.26
As	75	72	1	No Gas	-0.597	ug/l	10652.44
As	75	72	3	He	-0.096	ug/l	179.53
Se	78	72	2	H2	-0.001	ug/l	22.89
Br	79	72	1	No Gas	0.291	ug/l	17226.21
Br	79	72	2	H2	0.318	ug/l	6402.07
Se	82	72	1	No Gas	-0.136	ug/l	905.56
Kr	84	72	1	No Gas		ug/l	22003.17
Sr	88	72	1	No Gas	0.003	ug/l	1260.89
Sr	88	72	3	He	-0.001	ug/l	391.12
Mo	95	115	1	No Gas	0.027	ug/l	447.79
Mo	95	115	3	He	0.022	ug/l	121.11
Mo	98	115	1	No Gas	0.027	ug/l	720.65
Ag	107	115	1	No Gas	0.002	ug/l	260.77
Ag	109	115	1	No Gas	0.002	ug/l	260.11
Cd	111	115	1	No Gas	0.006	ug/l	118.00



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.008	ug/l	36.67
Cd	114	115	1	No Gas	0.010	ug/l	269.97
Cd	114	115	3	He	0.012	ug/l	88.46
Sn	118	115	1	No Gas	-1.034	ug/l	1989.53
Sn	118	115	3	He	-1.128	ug/l	517.79
Sb	121	115	1	No Gas	0.164	ug/l	5536.01
Sb	121	115	3	He	0.116	ug/l	1030.81
Sb	123	115	1	No Gas	0.166	ug/l	4259.77
Sb	123	115	3	He	0.111	ug/l	772.10
Ba	135	115	1	No Gas	0.002	ug/l	46.57
Ba	137	115	1	No Gas	-0.001	ug/l	76.51
La	139	115	3	He	0.001	ug/l	33.33
Ce	140	115	3	He	0.001	ug/l	51.11
Hg	201	209	1	No Gas	0.001	ug/l	20.00
Hg	202	209	1	No Gas	-0.001	ug/l	91.31
Hg	202	209	3	He	0.002	ug/l	31.32
Tl	203	209	3	He	0.109	ug/l	1549.38
Tl	205	209	1	No Gas	0.111	ug/l	8449.44
Tl	205	209	3	He	0.114	ug/l	3780.73
[Pb]	206	209	1	No Gas	0.007	ug/l	787.81
[Pb]	207	209	1	No Gas	0.009	ug/l	736.69
Pb	208	209	1	No Gas	0.007	ug/l	3231.29
Th	232	209	3	He	0.084	ug/l	3830.77
U	238	209	1	No Gas	0.005	ug/l	471.58

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8662543.26	92.2
Sc	45	2	H2	2922963.51	80.6
Sc	45	3	He	525834.94	101.1
Ge	72	1	No Gas	2206299.64	97.6
Ge	72	2	H2	1038850.98	87.4
Ge	72	3	He	324000.29	103.0
In	115	1	No Gas	2624068.06	99.1
In	115	3	He	591845.74	103.6
Tb	159	1	No Gas	22776212.08	103.9
Tb	159	3	He	8690624.07	106.8
Ho	165	1	No Gas	22253320.45	104.5
Ho	165	3	He	8688841.35	109.2
Lu	175	1	No Gas	21977567.62	106.0
Lu	175	3	He	7096605.94	107.0
Bi	209	1	No Gas	14180446.17	109.6
Bi	209	3	He	5766170.86	108.1

# ICPMS207-B Analytical Data

**Sample Name** B22021435-001A  
**File Name** 035SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 17:00:37  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.626	ug/l	31682.94
Be	9	45	1	No Gas	-0.026	ug/l	113.31
B	11	45	1	No Gas	34.758	ug/l	207574.11
Na	23	45	3	He	36143.099	ug/l	52820259.77
Mg	24	45	3	He	17316.168	ug/l	14161403.39
Al	27	45	1	No Gas	2.432	ug/l	100236.82
Si	28	45	2	H2	22929.036	ug/l	66244877.09
K	39	72	3	He	3012.667	ug/l	2535196.54
Ca	40	72	2	H2	16291.528	ug/l	158779969.37
Ti	47	72	1	No Gas	2.172	ug/l	8721.38
V	51	72	1	No Gas	9.631	ug/l	344086.52
V	51	72	3	He	6.034	ug/l	60013.71
Cr	52	72	1	No Gas	-0.322	ug/l	92538.74
Cr	52	72	3	He	0.770	ug/l	6889.42
Mn	55	72	1	No Gas	6.565	ug/l	393077.71
Mn	55	72	3	He	6.501	ug/l	37981.50
Fe	56	72	2	H2	0.830	ug/l	22986.28
Fe	56	72	3	He	0.873	ug/l	12071.37
Co	59	72	1	No Gas	0.043	ug/l	2485.29
Ni	60	72	1	No Gas	0.720	ug/l	8881.81
Ni	60	72	3	He	0.636	ug/l	2101.28
Cu	63	72	1	No Gas	0.630	ug/l	18315.49
Cu	63	72	3	He	0.365	ug/l	3425.05
Cu	65	72	1	No Gas	0.411	ug/l	5869.54
Zn	66	72	1	No Gas	1.264	ug/l	13647.39
Zn	66	72	3	He	1.243	ug/l	2759.17
As	75	72	1	No Gas	-0.307	ug/l	12841.58
As	75	72	3	He	-0.073	ug/l	211.93
Se	78	72	2	H2	0.259	ug/l	188.67
Br	79	72	1	No Gas	20.851	ug/l	184004.70
Br	79	72	2	H2	21.808	ug/l	76142.32
Se	82	72	1	No Gas	-0.134	ug/l	919.57
Kr	84	72	1	No Gas		ug/l	95437.85
Sr	88	72	1	No Gas	169.462	ug/l	11905525.50
Sr	88	72	3	He	165.736	ug/l	1422774.27
Mo	95	115	1	No Gas	0.298	ug/l	4356.25
Mo	95	115	3	He	0.323	ug/l	1495.64
Mo	98	115	1	No Gas	0.306	ug/l	7165.45
Ag	107	115	1	No Gas	0.002	ug/l	280.12
Ag	109	115	1	No Gas	0.002	ug/l	273.44
Cd	111	115	1	No Gas	0.007	ug/l	128.01

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.009	ug/l	37.66
Cd	114	115	1	No Gas	0.011	ug/l	273.90
Cd	114	115	3	He	0.012	ug/l	84.03
Sn	118	115	1	No Gas	-1.081	ug/l	891.60
Sn	118	115	3	He	-1.173	ug/l	250.00
Sb	121	115	1	No Gas	0.250	ug/l	8171.87
Sb	121	115	3	He	0.254	ug/l	2087.37
Sb	123	115	1	No Gas	0.251	ug/l	6243.68
Sb	123	115	3	He	0.255	ug/l	1636.59
Ba	135	115	1	No Gas	4.493	ug/l	29942.75
Ba	137	115	1	No Gas	4.339	ug/l	51589.83
La	139	115	3	He	0.001	ug/l	36.67
Ce	140	115	3	He	0.002	ug/l	74.44
Hg	201	209	1	No Gas	0.000	ug/l	17.00
Hg	202	209	1	No Gas	-0.003	ug/l	64.32
Hg	202	209	3	He	0.002	ug/l	30.66
Tl	203	209	3	He	0.060	ug/l	856.37
Tl	205	209	1	No Gas	0.050	ug/l	3863.93
Tl	205	209	3	He	0.058	ug/l	1950.93
[Pb]	206	209	1	No Gas	0.014	ug/l	876.70
[Pb]	207	209	1	No Gas	0.011	ug/l	723.36
Pb	208	209	1	No Gas	0.012	ug/l	3357.96
Th	232	209	3	He	0.020	ug/l	1048.47
U	238	209	1	No Gas	0.012	ug/l	1091.50

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9497249.60	101.1
Sc	45	2	H2	3265802.06	90.1
Sc	45	3	He	542870.96	104.4
Ge	72	1	No Gas	2234303.61	98.9
Ge	72	2	H2	1085416.40	91.3
Ge	72	3	He	332067.23	105.6
In	115	1	No Gas	2587828.81	97.8
In	115	3	He	576947.03	101.0
Tb	159	1	No Gas	21531518.05	98.2
Tb	159	3	He	8495178.00	104.4
Ho	165	1	No Gas	20976395.03	98.5
Ho	165	3	He	8395529.19	105.6
Lu	175	1	No Gas	20549055.83	99.1
Lu	175	3	He	6982198.62	105.3
Bi	209	1	No Gas	12898239.20	99.7
Bi	209	3	He	5368911.77	100.7

# ICPMS207-B Analytical Data

**Sample Name** B22021435-001ADIL  
**File Name** 036ARef.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 17:06:53  
**Sample Type** AIRRef  
**Total Dilution** 5.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.925	ug/l	16990.29
Be	9	45	1	No Gas	-0.117	ug/l	116.98
B	11	45	1	No Gas	22.519	ug/l	46541.87
Na	23	45	3	He	36477.870	ug/l	9930432.98
Mg	24	45	3	He	17348.625	ug/l	2630012.67
Al	27	45	1	No Gas	4.840	ug/l	38770.83
Si	28	45	2	H2	21605.257	ug/l	10688965.17
K	39	72	3	He	2808.346	ug/l	504602.34
Ca	40	72	2	H2	15012.095	ug/l	26926204.63
Ti	47	72	1	No Gas	2.093	ug/l	1806.94
V	51	72	1	No Gas	15.412	ug/l	26733.73
V	51	72	3	He	10.249	ug/l	29984.90
Cr	52	72	1	No Gas	-2.949	ug/l	75496.32
Cr	52	72	3	He	0.851	ug/l	1865.69
Mn	55	72	1	No Gas	6.646	ug/l	79493.22
Mn	55	72	3	He	6.523	ug/l	7400.06
Fe	56	72	2	H2	2.112	ug/l	13484.78
Fe	56	72	3	He	2.589	ug/l	8961.77
Co	59	72	1	No Gas	0.049	ug/l	775.15
Ni	60	72	1	No Gas	0.638	ug/l	2089.35
Ni	60	72	3	He	0.492	ug/l	450.01
Cu	63	72	1	No Gas	0.800	ug/l	5468.56
Cu	63	72	3	He	0.464	ug/l	1139.49
Cu	65	72	1	No Gas	0.509	ug/l	1826.86
Zn	66	72	1	No Gas	1.000	ug/l	5236.82
Zn	66	72	3	He	1.142	ug/l	1125.61
As	75	72	1	No Gas	0.098	ug/l	14447.56
As	75	72	3	He	-0.254	ug/l	226.60
Se	78	72	2	H2	0.228	ug/l	49.00
Br	79	72	1	No Gas	7.727	ug/l	25885.29
Br	79	72	2	H2	6.751	ug/l	9201.36
Se	82	72	1	No Gas	-0.084	ug/l	916.10
Kr	84	72	1	No Gas		ug/l	34646.13
Sr	88	72	1	No Gas	170.589	ug/l	2242855.86
Sr	88	72	3	He	159.465	ug/l	260795.68
Mo	95	115	1	No Gas	0.362	ug/l	1056.71
Mo	95	115	3	He	0.374	ug/l	353.34
Mo	98	115	1	No Gas	0.350	ug/l	1644.06
Ag	107	115	1	No Gas	-0.001	ug/l	184.74
Ag	109	115	1	No Gas	0.001	ug/l	188.75
Cd	111	115	1	No Gas	0.025	ug/l	106.83

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.026	ug/l	28.44
Cd	114	115	1	No Gas	0.037	ug/l	206.66
Cd	114	115	3	He	0.048	ug/l	67.90
Sn	118	115	1	No Gas	-5.198	ug/l	1773.27
Sn	118	115	3	He	-5.651	ug/l	481.14
Sb	121	115	1	No Gas	0.408	ug/l	2762.22
Sb	121	115	3	He	0.393	ug/l	696.09
Sb	123	115	1	No Gas	0.414	ug/l	2132.04
Sb	123	115	3	He	0.417	ug/l	573.40
Ba	135	115	1	No Gas	4.492	ug/l	5789.74
Ba	137	115	1	No Gas	4.425	ug/l	10203.57
La	139	115	3	He	0.004	ug/l	30.00
Ce	140	115	3	He	0.003	ug/l	37.78
Hg	201	209	1	No Gas	0.005	ug/l	19.33
Hg	202	209	1	No Gas	-0.009	ug/l	83.99
Hg	202	209	3	He	0.001	ug/l	23.66
Tl	203	209	3	He	0.121	ug/l	440.85
Tl	205	209	1	No Gas	0.089	ug/l	1970.16
Tl	205	209	3	He	0.118	ug/l	1021.12
[Pb]	206	209	1	No Gas	0.034	ug/l	747.80
[Pb]	207	209	1	No Gas	0.020	ug/l	613.35
Pb	208	209	1	No Gas	0.021	ug/l	2840.14
Th	232	209	3	He	0.110	ug/l	1152.52
U	238	209	1	No Gas	0.017	ug/l	338.61

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8329525.02	88.7
Sc	45	2	H2	2794278.39	77.1
Sc	45	3	He	503041.92	96.7
Ge	72	1	No Gas	2102832.89	93.1
Ge	72	2	H2	996429.89	83.8
Ge	72	3	He	315931.70	100.4
In	115	1	No Gas	2542506.23	96.1
In	115	3	He	565009.84	98.9
Tb	159	1	No Gas	21582052.96	98.5
Tb	159	3	He	8467422.96	104.0
Ho	165	1	No Gas	21260304.76	99.8
Ho	165	3	He	8413600.38	105.8
Lu	175	1	No Gas	21020800.69	101.4
Lu	175	3	He	6904683.66	104.1
Bi	209	1	No Gas	13761127.12	106.3
Bi	209	3	He	5560707.45	104.3

# ICPMS207-B Analytical Data

**Sample Name** B22021435-001AMS  
**File Name** 037MS.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 17:13:08  
**Sample Type** MS  
**Total Dilution** 1.0300  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1763.756	ug/l	41737243.27
Be	9	45	1	No Gas	40.320	ug/l	311981.53
B	11	45	1	No Gas	75.750	ug/l	361191.63
Na	23	45	3	He	84716.356	ug/l	111954109.44
Mg	24	45	3	He	66102.822	ug/l	48919119.69
Al	27	45	1	No Gas	46.539	ug/l	1531722.41
Si	28	45	2	H2	21977.328	ug/l	51255188.56
K	39	72	3	He	50303.815	ug/l	37431051.39
Ca	40	72	2	H2	57427.250	ug/l	489899492.23
Ti	47	72	1	No Gas	52.695	ug/l	179394.10
V	51	72	1	No Gas	53.038	ug/l	2153228.39
V	51	72	3	He	56.435	ug/l	382337.80
Cr	52	72	1	No Gas	47.528	ug/l	1950169.83
Cr	52	72	3	He	49.206	ug/l	367805.83
Mn	55	72	1	No Gas	55.473	ug/l	2875688.46
Mn	55	72	3	He	54.043	ug/l	285456.58
Fe	56	72	2	H2	4716.293	ug/l	83972680.56
Fe	56	72	3	He	4864.494	ug/l	33123110.27
Co	59	72	1	No Gas	47.640	ug/l	2105254.10
Ni	60	72	1	No Gas	47.029	ug/l	465151.33
Ni	60	72	3	He	50.246	ug/l	138172.81
Cu	63	72	1	No Gas	48.745	ug/l	1139708.30
Cu	63	72	3	He	49.328	ug/l	366622.30
Cu	65	72	1	No Gas	48.166	ug/l	536549.01
Zn	66	72	1	No Gas	51.737	ug/l	347430.90
Zn	66	72	3	He	52.263	ug/l	74568.22
As	75	72	1	No Gas	52.082	ug/l	368318.69
As	75	72	3	He	51.191	ug/l	55626.91
Se	78	72	2	H2	54.779	ug/l	30470.63
Br	79	72	1	No Gas	25.425	ug/l	194875.71
Br	79	72	2	H2	25.062	ug/l	76058.89
Se	82	72	1	No Gas	55.588	ug/l	26235.72
Kr	84	72	1	No Gas		ug/l	108742.67
Sr	88	72	1	No Gas	222.582	ug/l	13747818.78
Sr	88	72	3	He	214.810	ug/l	1674428.31
Mo	95	115	1	No Gas	48.390	ug/l	629187.13
Mo	95	115	3	He	50.858	ug/l	218175.59
Mo	98	115	1	No Gas	49.546	ug/l	1033156.73
Ag	107	115	1	No Gas	19.282	ug/l	636002.68
Ag	109	115	1	No Gas	19.235	ug/l	607855.76
Cd	111	115	1	No Gas	49.774	ug/l	347304.22

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	50.896	ug/l	111701.88
Cd	114	115	1	No Gas	50.254	ug/l	776524.16
Cd	114	115	3	He	49.750	ug/l	270974.25
Sn	118	115	1	No Gas	49.271	ug/l	1008586.76
Sn	118	115	3	He	49.762	ug/l	270214.19
Sb	121	115	1	No Gas	50.684	ug/l	1442349.02
Sb	121	115	3	He	50.745	ug/l	373628.88
Sb	123	115	1	No Gas	50.906	ug/l	1098151.81
Sb	123	115	3	He	51.251	ug/l	295360.94
Ba	135	115	1	No Gas	55.823	ug/l	334527.27
Ba	137	115	1	No Gas	54.492	ug/l	581536.43
La	139	115	3	He	0.020	ug/l	586.68
Ce	140	115	3	He	51.991	ug/l	1652308.31
Hg	201	209	1	No Gas	1.006	ug/l	4015.81
Hg	202	209	1	No Gas	1.040	ug/l	9385.42
Hg	202	209	3	He	1.018	ug/l	3896.46
Tl	203	209	3	He	48.184	ug/l	541139.50
Tl	205	209	1	No Gas	50.437	ug/l	3037315.06
Tl	205	209	3	He	49.395	ug/l	1304980.88
[Pb]	206	209	1	No Gas	49.845	ug/l	1049540.50
[Pb]	207	209	1	No Gas	49.436	ug/l	909873.73
Pb	208	209	1	No Gas	49.803	ug/l	4180048.15
Th	232	209	3	He	49.048	ug/l	1820533.15
U	238	209	1	No Gas	50.922	ug/l	4223169.10

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8495117.85	90.4
Sc	45	2	H2	2718661.34	75.0
Sc	45	3	He	505996.84	97.3
Ge	72	1	No Gas	2029436.88	89.8
Ge	72	2	H2	979604.24	82.4
Ge	72	3	He	310552.61	98.7
In	115	1	No Gas	2414182.12	91.2
In	115	3	He	558008.94	97.6
Tb	159	1	No Gas	21251433.60	96.9
Tb	159	3	He	8331055.66	102.4
Ho	165	1	No Gas	21353980.52	100.3
Ho	165	3	He	8229368.14	103.5
Lu	175	1	No Gas	21090872.01	101.7
Lu	175	3	He	6733121.95	101.6
Bi	209	1	No Gas	12647502.08	97.7
Bi	209	3	He	5191302.90	97.3

# ICPMS207-B Analytical Data

**Sample Name** B22021435-001AMSD  
**File Name** 038MSD.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 17:19:23  
**Sample Type** MSD  
**Total Dilution** 1.0300  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1897.243	ug/l	45085063.32
Be	9	45	1	No Gas	41.989	ug/l	326435.57
B	11	45	1	No Gas	79.531	ug/l	379017.33
Na	23	45	3	He	85146.904	ug/l	112698190.54
Mg	24	45	3	He	66372.910	ug/l	49196675.00
Al	27	45	1	No Gas	48.422	ug/l	1600670.81
Si	28	45	2	H2	22214.602	ug/l	53298242.07
K	39	72	3	He	50637.390	ug/l	37874006.38
Ca	40	72	2	H2	60768.982	ug/l	521421656.62
Ti	47	72	1	No Gas	53.077	ug/l	186898.42
V	51	72	1	No Gas	51.394	ug/l	2156723.59
V	51	72	3	He	56.115	ug/l	382227.30
Cr	52	72	1	No Gas	46.771	ug/l	1986964.53
Cr	52	72	3	He	49.126	ug/l	369112.88
Mn	55	72	1	No Gas	54.013	ug/l	2891994.89
Mn	55	72	3	He	54.131	ug/l	287385.62
Fe	56	72	2	H2	4833.026	ug/l	86585755.20
Fe	56	72	3	He	4882.058	ug/l	33412908.81
Co	59	72	1	No Gas	47.000	ug/l	2144293.42
Ni	60	72	1	No Gas	47.080	ug/l	481003.55
Ni	60	72	3	He	50.200	ug/l	138764.66
Cu	63	72	1	No Gas	48.430	ug/l	1170196.99
Cu	63	72	3	He	49.379	ug/l	368873.85
Cu	65	72	1	No Gas	48.105	ug/l	553772.52
Zn	66	72	1	No Gas	50.669	ug/l	351911.70
Zn	66	72	3	He	52.267	ug/l	74959.00
As	75	72	1	No Gas	51.030	ug/l	373474.69
As	75	72	3	He	51.648	ug/l	56408.73
Se	78	72	2	H2	55.134	ug/l	30849.86
Br	79	72	1	No Gas	25.099	ug/l	199097.26
Br	79	72	2	H2	26.104	ug/l	79473.60
Se	82	72	1	No Gas	54.383	ug/l	26553.83
Kr	84	72	1	No Gas		ug/l	111131.85
Sr	88	72	1	No Gas	220.646	ug/l	14080111.08
Sr	88	72	3	He	216.468	ug/l	1696036.95
Mo	95	115	1	No Gas	49.040	ug/l	645295.30
Mo	95	115	3	He	51.239	ug/l	220387.44
Mo	98	115	1	No Gas	49.078	ug/l	1036437.56
Ag	107	115	1	No Gas	19.306	ug/l	643746.41
Ag	109	115	1	No Gas	19.065	ug/l	609684.81
Cd	111	115	1	No Gas	49.841	ug/l	351995.55



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	51.174	ug/l	112605.25
Cd	114	115	1	No Gas	50.451	ug/l	788623.39
Cd	114	115	3	He	49.990	ug/l	272997.99
Sn	118	115	1	No Gas	49.457	ug/l	1023929.90
Sn	118	115	3	He	50.219	ug/l	273389.07
Sb	121	115	1	No Gas	51.204	ug/l	1474380.34
Sb	121	115	3	He	51.243	ug/l	378318.43
Sb	123	115	1	No Gas	51.362	ug/l	1120891.38
Sb	123	115	3	He	51.356	ug/l	296751.98
Ba	135	115	1	No Gas	54.905	ug/l	332941.74
Ba	137	115	1	No Gas	53.430	ug/l	577163.47
La	139	115	3	He	0.020	ug/l	592.24
Ce	140	115	3	He	51.975	ug/l	1656183.08
Hg	201	209	1	No Gas	1.039	ug/l	4110.82
Hg	202	209	1	No Gas	1.054	ug/l	9420.10
Hg	202	209	3	He	1.053	ug/l	3955.47
Tl	203	209	3	He	48.904	ug/l	538813.25
Tl	205	209	1	No Gas	50.598	ug/l	3019365.75
Tl	205	209	3	He	50.579	ug/l	1310985.24
[Pb]	206	209	1	No Gas	50.090	ug/l	1045875.05
[Pb]	207	209	1	No Gas	50.301	ug/l	917012.68
Pb	208	209	1	No Gas	50.291	ug/l	4183475.03
Th	232	209	3	He	50.797	ug/l	1849777.08
U	238	209	1	No Gas	50.995	ug/l	4193074.16

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8492295.89	90.4
Sc	45	2	H2	2796423.80	77.1
Sc	45	3	He	506799.49	97.5
Ge	72	1	No Gas	2097337.99	92.8
Ge	72	2	H2	985424.55	82.9
Ge	72	3	He	312168.60	99.2
In	115	1	No Gas	2434148.34	92.0
In	115	3	He	559451.82	97.9
Tb	159	1	No Gas	21095502.68	96.2
Tb	159	3	He	8205924.39	100.8
Ho	165	1	No Gas	20792098.24	97.6
Ho	165	3	He	8162813.41	102.6
Lu	175	1	No Gas	20630963.99	99.5
Lu	175	3	He	6800567.62	102.6
Bi	209	1	No Gas	12532300.02	96.8
Bi	209	3	He	5092717.36	95.5

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 039BLKV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 17:25:38  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.871	ug/l	58737.54
Be	9	45	1	No Gas	-0.027	ug/l	91.65
B	11	45	1	No Gas	-2.670	ug/l	15477.44
Na	23	45	3	He	11.795	ug/l	80006.69
Mg	24	45	3	He	1.711	ug/l	1989.52
Al	27	45	1	No Gas	0.408	ug/l	21092.11
Si	28	45	2	H2	0.905	ug/l	16998.53
K	39	72	3	He	8.373	ug/l	74132.50
Ca	40	72	2	H2	0.174	ug/l	81269.27
Ti	47	72	1	No Gas	0.049	ug/l	478.82
V	51	72	1	No Gas	0.529	ug/l	-97077.42
V	51	72	3	He	1.986	ug/l	29595.25
Cr	52	72	1	No Gas	-0.314	ug/l	89275.20
Cr	52	72	3	He	0.008	ug/l	596.68
Mn	55	72	1	No Gas	0.054	ug/l	9703.98
Mn	55	72	3	He	0.002	ug/l	193.63
Fe	56	72	2	H2	0.311	ug/l	11450.99
Fe	56	72	3	He	0.463	ug/l	8584.50
Co	59	72	1	No Gas	0.000	ug/l	329.35
Ni	60	72	1	No Gas	-0.022	ug/l	525.64
Ni	60	72	3	He	-0.030	ug/l	80.00
Cu	63	72	1	No Gas	0.021	ug/l	2060.31
Cu	63	72	3	He	0.018	ug/l	562.56
Cu	65	72	1	No Gas	0.023	ug/l	913.07
Zn	66	72	1	No Gas	0.015	ug/l	4038.50
Zn	66	72	3	He	0.059	ug/l	876.70
As	75	72	1	No Gas	-0.497	ug/l	10995.71
As	75	72	3	He	-0.011	ug/l	272.60
Se	78	72	2	H2	0.009	ug/l	27.67
Br	79	72	1	No Gas	0.879	ug/l	21333.54
Br	79	72	2	H2	0.806	ug/l	7616.92
Se	82	72	1	No Gas	-0.461	ug/l	718.48
Kr	84	72	1	No Gas		ug/l	21180.33
Sr	88	72	1	No Gas	0.005	ug/l	1357.37
Sr	88	72	3	He	0.005	ug/l	426.67
Mo	95	115	1	No Gas	0.069	ug/l	1043.38
Mo	95	115	3	He	0.057	ug/l	282.23
Mo	98	115	1	No Gas	0.069	ug/l	1659.00
Ag	107	115	1	No Gas	0.001	ug/l	226.09
Ag	109	115	1	No Gas	0.001	ug/l	221.43
Cd	111	115	1	No Gas	0.005	ug/l	106.54

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.006	ug/l	31.11
Cd	114	115	1	No Gas	0.008	ug/l	227.07
Cd	114	115	3	He	0.010	ug/l	71.36
Sn	118	115	1	No Gas	-0.920	ug/l	4438.63
Sn	118	115	3	He	-1.024	ug/l	1097.83
Sb	121	115	1	No Gas	0.248	ug/l	8060.18
Sb	121	115	3	He	0.192	ug/l	1605.25
Sb	123	115	1	No Gas	0.246	ug/l	6085.96
Sb	123	115	3	He	0.189	ug/l	1236.85
Ba	135	115	1	No Gas	0.005	ug/l	63.21
Ba	137	115	1	No Gas	-0.002	ug/l	66.53
La	139	115	3	He	0.000	ug/l	21.11
Ce	140	115	3	He	0.000	ug/l	32.22
Hg	201	209	1	No Gas	0.004	ug/l	31.32
Hg	202	209	1	No Gas	0.002	ug/l	118.65
Hg	202	209	3	He	0.003	ug/l	33.99
Tl	203	209	3	He	0.081	ug/l	1144.51
Tl	205	209	1	No Gas	0.061	ug/l	4858.70
Tl	205	209	3	He	0.082	ug/l	2726.05
[Pb]	206	209	1	No Gas	0.006	ug/l	725.58
[Pb]	207	209	1	No Gas	0.005	ug/l	637.80
Pb	208	209	1	No Gas	0.005	ug/l	2902.37
Th	232	209	3	He	0.073	ug/l	3252.39
U	238	209	1	No Gas	0.005	ug/l	519.58

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8448374.51	89.9
Sc	45	2	H2	2813521.78	77.6
Sc	45	3	He	505543.91	97.2
Ge	72	1	No Gas	2148929.07	95.1
Ge	72	2	H2	1000161.37	84.1
Ge	72	3	He	316469.37	100.6
In	115	1	No Gas	2568485.40	97.0
In	115	3	He	579409.50	101.4
Tb	159	1	No Gas	21694640.75	99.0
Tb	159	3	He	8647034.02	106.2
Ho	165	1	No Gas	21488486.90	100.9
Ho	165	3	He	8520485.81	107.1
Lu	175	1	No Gas	21216022.36	102.3
Lu	175	3	He	6995740.60	105.5
Bi	209	1	No Gas	13535009.52	104.6
Bi	209	3	He	5561319.90	104.3

# ICPMS207-B Analytical Data

**Sample Name** B22021435-001B  
**File Name** 040SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 17:31:52  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.872	ug/l	56342.44
Be	9	45	1	No Gas	-0.022	ug/l	126.31
B	11	45	1	No Gas	35.410	ug/l	180731.94
Na	23	45	3	He	37082.406	ug/l	47332489.85
Mg	24	45	3	He	17687.321	ug/l	12634663.71
Al	27	45	1	No Gas	81.500	ug/l	2651986.35
Si	28	45	2	H2	17692.213	ug/l	41491506.65
K	39	72	3	He	2855.711	ug/l	2152729.71
Ca	40	72	2	H2	15470.264	ug/l	129542718.99
Ti	47	72	1	No Gas	6.937	ug/l	24685.42
V	51	72	1	No Gas	6.498	ug/l	173451.20
V	51	72	3	He	11.182	ug/l	86605.74
Cr	52	72	1	No Gas	1.796	ug/l	169562.77
Cr	52	72	3	He	1.148	ug/l	8939.42
Mn	55	72	1	No Gas	12.247	ug/l	661489.58
Mn	55	72	3	He	11.914	ug/l	62117.14
Fe	56	72	2	H2	74.415	ug/l	1304243.99
Fe	56	72	3	He	74.273	ug/l	503019.04
Co	59	72	1	No Gas	0.172	ug/l	8159.46
Ni	60	72	1	No Gas	0.955	ug/l	10483.01
Ni	60	72	3	He	0.971	ug/l	2783.62
Cu	63	72	1	No Gas	1.182	ug/l	29993.32
Cu	63	72	3	He	0.869	ug/l	6749.88
Cu	65	72	1	No Gas	0.897	ug/l	10929.81
Zn	66	72	1	No Gas	1.345	ug/l	12961.90
Zn	66	72	3	He	1.439	ug/l	2741.38
As	75	72	1	No Gas	0.011	ug/l	13848.98
As	75	72	3	He	0.255	ug/l	538.80
Se	78	72	2	H2	0.254	ug/l	159.56
Br	79	72	1	No Gas	9.456	ug/l	83420.63
Br	79	72	2	H2	9.970	ug/l	32542.12
Se	82	72	1	No Gas	-0.088	ug/l	857.43
Kr	84	72	1	No Gas		ug/l	90691.69
Sr	88	72	1	No Gas	178.807	ug/l	11419216.03
Sr	88	72	3	He	169.132	ug/l	1298662.78
Mo	95	115	1	No Gas	0.376	ug/l	5213.21
Mo	95	115	3	He	0.394	ug/l	1727.89
Mo	98	115	1	No Gas	0.368	ug/l	8188.88
Ag	107	115	1	No Gas	0.010	ug/l	518.89
Ag	109	115	1	No Gas	0.010	ug/l	500.88
Cd	111	115	1	No Gas	0.015	ug/l	175.16

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.011	ug/l	40.78
Cd	114	115	1	No Gas	0.013	ug/l	294.11
Cd	114	115	3	He	0.015	ug/l	94.91
Sn	118	115	1	No Gas	-0.652	ug/l	9920.54
Sn	118	115	3	He	-0.771	ug/l	2390.22
Sb	121	115	1	No Gas	0.376	ug/l	11555.23
Sb	121	115	3	He	0.381	ug/l	2926.94
Sb	123	115	1	No Gas	0.378	ug/l	8816.99
Sb	123	115	3	He	0.388	ug/l	2328.76
Ba	135	115	1	No Gas	4.756	ug/l	30156.23
Ba	137	115	1	No Gas	4.553	ug/l	51473.07
La	139	115	3	He	0.028	ug/l	816.70
Ce	140	115	3	He	0.059	ug/l	1903.48
Hg	201	209	1	No Gas	0.006	ug/l	40.32
Hg	202	209	1	No Gas	0.012	ug/l	210.96
Hg	202	209	3	He	0.011	ug/l	69.32
Tl	203	209	3	He	0.042	ug/l	658.28
Tl	205	209	1	No Gas	0.034	ug/l	2901.46
Tl	205	209	3	He	0.046	ug/l	1652.11
[Pb]	206	209	1	No Gas	0.037	ug/l	1377.86
[Pb]	207	209	1	No Gas	0.042	ug/l	1321.19
Pb	208	209	1	No Gas	0.039	ug/l	5727.19
Th	232	209	3	He	0.211	ug/l	8835.88
U	238	209	1	No Gas	0.017	ug/l	1496.46

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8090217.01	86.1
Sc	45	2	H2	2652378.28	73.2
Sc	45	3	He	474211.71	91.2
Ge	72	1	No Gas	2028268.90	89.8
Ge	72	2	H2	932453.66	78.4
Ge	72	3	He	296974.59	94.4
In	115	1	No Gas	2455701.62	92.8
In	115	3	He	547545.95	95.8
Tb	159	1	No Gas	21068251.68	96.1
Tb	159	3	He	8561378.05	105.2
Ho	165	1	No Gas	20985555.02	98.5
Ho	165	3	He	8561785.75	107.6
Lu	175	1	No Gas	20996744.96	101.3
Lu	175	3	He	7011475.86	105.8
Bi	209	1	No Gas	12882706.76	99.6
Bi	209	3	He	5517973.70	103.5

# ICPMS207-B Analytical Data

**Sample Name** B22021435-001BDIL  
**File Name** 041SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 17:38:07  
**Sample Type** Sample  
**Total Dilution** 5.0000  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	3.565	ug/l	28439.90
Be	9	45	1	No Gas	-0.135	ug/l	86.65
B	11	45	1	No Gas	25.237	ug/l	47168.07
Na	23	45	3	He	37489.567	ug/l	9853235.55
Mg	24	45	3	He	17820.040	ug/l	2608256.78
Al	27	45	1	No Gas	84.955	ug/l	543631.81
Si	28	45	2	H2	17612.996	ug/l	8263334.81
K	39	72	3	He	2857.184	ug/l	495291.56
Ca	40	72	2	H2	15449.898	ug/l	26334381.58
Ti	47	72	1	No Gas	6.707	ug/l	5060.97
V	51	72	1	No Gas	14.592	ug/l	19120.64
V	51	72	3	He	16.910	ug/l	37759.32
Cr	52	72	1	No Gas	-0.503	ug/l	94287.29
Cr	52	72	3	He	1.083	ug/l	2155.73
Mn	55	72	1	No Gas	12.777	ug/l	144711.66
Mn	55	72	3	He	11.976	ug/l	12988.13
Fe	56	72	2	H2	74.234	ug/l	268613.82
Fe	56	72	3	He	75.769	ug/l	109610.17
Co	59	72	1	No Gas	0.162	ug/l	1806.54
Ni	60	72	1	No Gas	0.809	ug/l	2405.44
Ni	60	72	3	He	0.900	ug/l	662.24
Cu	63	72	1	No Gas	1.392	ug/l	8281.01
Cu	63	72	3	He	1.115	ug/l	2081.74
Cu	65	72	1	No Gas	1.179	ug/l	3365.08
Zn	66	72	1	No Gas	14.186	ug/l	23520.27
Zn	66	72	3	He	15.201	ug/l	5110.93
As	75	72	1	No Gas	-0.669	ug/l	13131.77
As	75	72	3	He	0.173	ug/l	312.60
Se	78	72	2	H2	0.243	ug/l	48.22
Br	79	72	1	No Gas	12.547	ug/l	32688.83
Br	79	72	2	H2	12.033	ug/l	11724.86
Se	82	72	1	No Gas	-1.868	ug/l	734.48
Kr	84	72	1	No Gas		ug/l	34883.06
Sr	88	72	1	No Gas	182.180	ug/l	2358466.10
Sr	88	72	3	He	169.082	ug/l	267361.34
Mo	95	115	1	No Gas	0.373	ug/l	1093.38
Mo	95	115	3	He	0.422	ug/l	398.90
Mo	98	115	1	No Gas	0.374	ug/l	1759.77
Ag	107	115	1	No Gas	0.006	ug/l	230.76
Ag	109	115	1	No Gas	0.002	ug/l	197.41
Cd	111	115	1	No Gas	0.031	ug/l	113.42

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.034	ug/l	32.11
Cd	114	115	1	No Gas	0.039	ug/l	212.62
Cd	114	115	3	He	0.053	ug/l	74.81
Sn	118	115	1	No Gas	-4.841	ug/l	3330.48
Sn	118	115	3	He	-5.304	ug/l	871.15
Sb	121	115	1	No Gas	0.518	ug/l	3450.44
Sb	121	115	3	He	0.544	ug/l	933.46
Sb	123	115	1	No Gas	0.525	ug/l	2657.52
Sb	123	115	3	He	0.512	ug/l	692.09
Ba	135	115	1	No Gas	4.751	ug/l	6149.22
Ba	137	115	1	No Gas	4.718	ug/l	10926.03
La	139	115	3	He	0.026	ug/l	165.56
Ce	140	115	3	He	0.059	ug/l	411.12
Hg	201	209	1	No Gas	0.012	ug/l	26.66
Hg	202	209	1	No Gas	0.008	ug/l	120.64
Hg	202	209	3	He	0.016	ug/l	36.66
Tl	203	209	3	He	0.105	ug/l	407.50
Tl	205	209	1	No Gas	0.093	ug/l	2039.06
Tl	205	209	3	He	0.113	ug/l	1005.78
[Pb]	206	209	1	No Gas	0.094	ug/l	1045.61
[Pb]	207	209	1	No Gas	0.090	ug/l	918.93
Pb	208	209	1	No Gas	0.092	ug/l	4236.97
Th	232	209	3	He	0.131	ug/l	1343.95
U	238	209	1	No Gas	0.018	ug/l	350.61

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	7951933.42	84.6
Sc	45	2	H2	2647657.75	73.0
Sc	45	3	He	485746.06	93.4
Ge	72	1	No Gas	2063381.12	91.3
Ge	72	2	H2	947094.37	79.7
Ge	72	3	He	305484.09	97.1
In	115	1	No Gas	2526038.32	95.4
In	115	3	He	568504.29	99.5
Tb	159	1	No Gas	21925705.14	100.0
Tb	159	3	He	8714395.44	107.1
Ho	165	1	No Gas	21513962.58	101.0
Ho	165	3	He	8538785.57	107.4
Lu	175	1	No Gas	21337539.71	102.9
Lu	175	3	He	6988822.43	105.4
Bi	209	1	No Gas	13851503.94	107.0
Bi	209	3	He	5652656.60	106.0

# ICPMS207-B Analytical Data

**Sample Name** B22021435-001BPDS1  
**File Name** 042ARef.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 17:44:22  
**Sample Type** AllRef  
**Total Dilution** 1.0300  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1685.469	ug/l	35582186.72
Be	9	45	1	No Gas	38.144	ug/l	263291.52
B	11	45	1	No Gas	78.749	ug/l	333568.57
Na	23	45	3	He	85523.517	ug/l	104356325.11
Mg	24	45	3	He	66411.035	ug/l	45378448.02
Al	27	45	1	No Gas	124.568	ug/l	3648301.44
Si	28	45	2	H2	18845.378	ug/l	40009629.93
K	39	72	3	He	49528.152	ug/l	34757447.82
Ca	40	72	2	H2	57491.316	ug/l	454369309.97
Ti	47	72	1	No Gas	58.814	ug/l	186853.28
V	51	72	1	No Gas	54.676	ug/l	2073321.57
V	51	72	3	He	59.569	ug/l	379782.34
Cr	52	72	1	No Gas	50.000	ug/l	1911309.53
Cr	52	72	3	He	50.167	ug/l	353635.53
Mn	55	72	1	No Gas	63.048	ug/l	3049084.90
Mn	55	72	3	He	59.513	ug/l	296439.65
Fe	56	72	2	H2	4844.428	ug/l	79936065.75
Fe	56	72	3	He	5065.930	ug/l	32531796.48
Co	59	72	1	No Gas	48.165	ug/l	1983756.19
Ni	60	72	1	No Gas	47.206	ug/l	435386.87
Ni	60	72	3	He	51.190	ug/l	132754.21
Cu	63	72	1	No Gas	49.217	ug/l	1073613.21
Cu	63	72	3	He	50.094	ug/l	351125.85
Cu	65	72	1	No Gas	48.515	ug/l	504235.12
Zn	66	72	1	No Gas	50.068	ug/l	313820.16
Zn	66	72	3	He	50.539	ug/l	68031.07
As	75	72	1	No Gas	47.643	ug/l	315576.63
As	75	72	3	He	48.416	ug/l	49632.48
Se	78	72	2	H2	48.355	ug/l	24926.31
Br	79	72	1	No Gas	11.530	ug/l	89424.37
Br	79	72	2	H2	10.631	ug/l	32618.75
Se	82	72	1	No Gas	48.494	ug/l	21441.04
Kr	84	72	1	No Gas		ug/l	105541.55
Sr	88	72	1	No Gas	234.258	ug/l	13495475.65
Sr	88	72	3	He	221.524	ug/l	1628527.81
Mo	95	115	1	No Gas	48.772	ug/l	621776.22
Mo	95	115	3	He	51.684	ug/l	215677.65
Mo	98	115	1	No Gas	49.274	ug/l	1008131.83
Ag	107	115	1	No Gas	19.153	ug/l	618747.91
Ag	109	115	1	No Gas	19.001	ug/l	588220.12
Cd	111	115	1	No Gas	48.385	ug/l	330873.56



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	50.087	ug/l	106934.48
Cd	114	115	1	No Gas	48.996	ug/l	741891.32
Cd	114	115	3	He	48.938	ug/l	259301.36
Sn	118	115	1	No Gas	50.418	ug/l	1010896.22
Sn	118	115	3	He	51.556	ug/l	272151.15
Sb	121	115	1	No Gas	49.384	ug/l	1377234.95
Sb	121	115	3	He	49.930	ug/l	357620.34
Sb	123	115	1	No Gas	49.168	ug/l	1040044.87
Sb	123	115	3	He	50.132	ug/l	281036.53
Ba	135	115	1	No Gas	54.460	ug/l	319836.61
Ba	137	115	1	No Gas	54.862	ug/l	573951.12
La	139	115	3	He	0.044	ug/l	1248.96
Ce	140	115	3	He	53.483	ug/l	1653421.63
Hg	201	209	1	No Gas	0.959	ug/l	3834.12
Hg	202	209	1	No Gas	0.978	ug/l	8848.82
Hg	202	209	3	He	1.032	ug/l	3835.46
Tl	203	209	3	He	50.439	ug/l	550022.43
Tl	205	209	1	No Gas	49.684	ug/l	2996152.98
Tl	205	209	3	He	51.710	ug/l	1326593.28
[Pb]	206	209	1	No Gas	49.482	ug/l	1044042.83
[Pb]	207	209	1	No Gas	48.745	ug/l	898725.70
Pb	208	209	1	No Gas	49.544	ug/l	4165993.31
Th	232	209	3	He	51.480	ug/l	1855463.76
U	238	209	1	No Gas	51.078	ug/l	4243846.30

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	7503123.11	79.9
Sc	45	2	H2	2474124.80	68.3
Sc	45	3	He	467197.30	89.8
Ge	72	1	No Gas	1885166.99	83.4
Ge	72	2	H2	907669.18	76.3
Ge	72	3	He	292886.07	93.1
In	115	1	No Gas	2344523.91	88.6
In	115	3	He	542826.58	95.0
Tb	159	1	No Gas	20813399.33	94.9
Tb	159	3	He	8195681.12	100.7
Ho	165	1	No Gas	20467034.23	96.1
Ho	165	3	He	8112103.64	102.0
Lu	175	1	No Gas	20435047.45	98.6
Lu	175	3	He	6658970.98	100.4
Bi	209	1	No Gas	12599180.46	97.4
Bi	209	3	He	5040593.70	94.5

# ICPMS207-B Analytical Data

**Sample Name** B22021435-001BMS4  
**File Name** 043MS4.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224\ADoD.b  
**Acq Time** 2022-02-24 17:50:37  
**Sample Type** MS4  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	70.756	ug/l	1701374.26
Be	9	45	1	No Gas	38.025	ug/l	296925.53
B	11	45	1	No Gas	117.427	ug/l	548207.32
Na	23	45	3	He	41337.599	ug/l	54040918.08
Mg	24	45	3	He	22277.643	ug/l	16299552.98
Al	27	45	1	No Gas	544.312	ug/l	18013790.57
Si	28	45	2	H2	21295.848	ug/l	51357235.05
K	39	72	3	He	7429.165	ug/l	5737005.89
Ca	40	72	2	H2	19112.235	ug/l	166284942.42
Ti	47	72	1	No Gas	96.838	ug/l	348976.38
V	51	72	1	No Gas	99.141	ug/l	4368038.38
V	51	72	3	He	108.840	ug/l	742257.07
Cr	52	72	1	No Gas	94.147	ug/l	3990423.97
Cr	52	72	3	He	99.617	ug/l	764608.72
Mn	55	72	1	No Gas	498.176	ug/l	27286105.16
Mn	55	72	3	He	500.651	ug/l	2715869.51
Fe	56	72	2	H2	575.441	ug/l	10451637.94
Fe	56	72	3	He	580.586	ug/l	4067363.52
Co	59	72	1	No Gas	94.759	ug/l	4427894.27
Ni	60	72	1	No Gas	93.494	ug/l	977737.37
Ni	60	72	3	He	102.603	ug/l	289769.90
Cu	63	72	1	No Gas	95.862	ug/l	2371081.84
Cu	63	72	3	He	101.959	ug/l	778253.22
Cu	65	72	1	No Gas	95.889	ug/l	1130290.22
Zn	66	72	1	No Gas	95.593	ug/l	676136.24
Zn	66	72	3	He	99.054	ug/l	144487.77
As	75	72	1	No Gas	94.333	ug/l	693919.91
As	75	72	3	He	94.341	ug/l	105095.16
Se	78	72	2	H2	96.850	ug/l	54892.82
Br	79	72	1	No Gas	7.980	ug/l	74259.54
Br	79	72	2	H2	8.159	ug/l	28605.04
Se	82	72	1	No Gas	95.209	ug/l	46826.61
Kr	84	72	1	No Gas		ug/l	135393.46
Sr	88	72	1	No Gas	277.310	ug/l	18125707.18
Sr	88	72	3	He	269.698	ug/l	2160172.66
Mo	95	115	1	No Gas	96.273	ug/l	1341670.94
Mo	95	115	3	He	101.637	ug/l	461169.48
Mo	98	115	1	No Gas	98.292	ug/l	2197841.39
Ag	107	115	1	No Gas	9.477	ug/l	334693.94
Ag	109	115	1	No Gas	9.475	ug/l	320763.96
Cd	111	115	1	No Gas	48.950	ug/l	365915.80

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	50.444	ug/l	117101.82
Cd	114	115	1	No Gas	49.241	ug/l	815068.16
Cd	114	115	3	He	49.670	ug/l	286173.36
Sn	118	115	1	No Gas	102.852	ug/l	2227512.32
Sn	118	115	3	He	104.624	ug/l	593095.42
Sb	121	115	1	No Gas	98.869	ug/l	3013443.62
Sb	121	115	3	He	99.514	ug/l	774982.97
Sb	123	115	1	No Gas	100.046	ug/l	2313105.70
Sb	123	115	3	He	101.150	ug/l	616553.42
Ba	135	115	1	No Gas	99.433	ug/l	638209.94
Ba	137	115	1	No Gas	98.479	ug/l	1125629.64
La	139	115	3	He	106.817	ug/l	3282684.60
Ce	140	115	3	He	107.813	ug/l	3624419.18
Hg	201	209	1	No Gas	0.011	ug/l	62.65
Hg	202	209	1	No Gas	0.014	ug/l	239.29
Hg	202	209	3	He	0.013	ug/l	77.31
Tl	203	209	3	He	99.874	ug/l	1213737.83
Tl	205	209	1	No Gas	99.990	ug/l	6605716.01
Tl	205	209	3	He	102.440	ug/l	2928655.94
[Pb]	206	209	1	No Gas	99.654	ug/l	2303084.62
[Pb]	207	209	1	No Gas	99.743	ug/l	2014068.55
Pb	208	209	1	No Gas	99.984	ug/l	9208362.85
Th	232	209	3	He	101.694	ug/l	4085028.09
U	238	209	1	No Gas	101.653	ug/l	9252515.27

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8253876.00	87.9
Sc	45	2	H2	2727041.17	75.2
Sc	45	3	He	485715.27	93.4
Ge	72	1	No Gas	2076603.02	91.9
Ge	72	2	H2	969430.19	81.5
Ge	72	3	He	309845.96	98.5
In	115	1	No Gas	2489909.97	94.1
In	115	3	He	573033.37	100.3
Tb	159	1	No Gas	22067516.32	100.7
Tb	159	3	He	8668980.03	106.5
Ho	165	1	No Gas	21959584.02	103.1
Ho	165	3	He	8591521.22	108.0
Lu	175	1	No Gas	21957810.37	105.9
Lu	175	3	He	7011633.16	105.8
Bi	209	1	No Gas	13401972.79	103.6
Bi	209	3	He	5454457.34	102.3

# ICPMS207-B Analytical Data

**Sample Name** CCV  
**File Name** 044\_CCV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 17:56:53  
**Sample Type** CCV  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	454.783	ug/l	11025708.61
Be	9	45	1	No Gas	41.273	ug/l	326702.01
B	11	45	1	No Gas	41.824	ug/l	215724.75
Na	23	45	3	He	12388.386	ug/l	16987125.86
Mg	24	45	3	He	12332.170	ug/l	9438650.13
Al	27	45	1	No Gas	46.564	ug/l	1568400.31
Si	28	45	2	H2	247.794	ug/l	602012.23
K	39	72	3	He	11578.350	ug/l	9254462.01
Ca	40	72	2	H2	11200.321	ug/l	100463131.26
Ti	47	72	1	No Gas	45.344	ug/l	169247.15
V	51	72	1	No Gas	49.247	ug/l	2184882.41
V	51	72	3	He	49.761	ug/l	361597.49
Cr	52	72	1	No Gas	45.884	ug/l	2065027.76
Cr	52	72	3	He	48.817	ug/l	389725.65
Mn	55	72	1	No Gas	47.597	ug/l	2704398.98
Mn	55	72	3	He	47.838	ug/l	269894.12
Fe	56	72	2	H2	1253.222	ug/l	23462853.07
Fe	56	72	3	He	1253.440	ug/l	9119826.07
Co	59	72	1	No Gas	46.231	ug/l	2235906.40
Ni	60	72	1	No Gas	46.212	ug/l	500669.28
Ni	60	72	3	He	51.892	ug/l	152402.15
Cu	63	72	1	No Gas	48.365	ug/l	1238927.51
Cu	63	72	3	He	51.006	ug/l	404886.34
Cu	65	72	1	No Gas	49.139	ug/l	599619.12
Zn	66	72	1	No Gas	51.226	ug/l	376643.00
Zn	66	72	3	He	52.194	ug/l	79517.48
As	75	72	1	No Gas	49.545	ug/l	384129.62
As	75	72	3	He	49.927	ug/l	57945.78
Se	78	72	2	H2	53.944	ug/l	31547.26
Br	79	72	1	No Gas	0.515	ug/l	18515.15
Br	79	72	2	H2	0.605	ug/l	7014.47
Se	82	72	1	No Gas	51.541	ug/l	26674.15
Kr	84	72	1	No Gas		ug/l	42401.27
Sr	88	72	1	No Gas	51.023	ug/l	3452526.96
Sr	88	72	3	He	48.737	ug/l	406061.99
Mo	95	115	1	No Gas	48.415	ug/l	678333.49
Mo	95	115	3	He	50.546	ug/l	234017.38
Mo	98	115	1	No Gas	48.715	ug/l	1095204.56
Ag	107	115	1	No Gas	20.150	ug/l	715367.79
Ag	109	115	1	No Gas	20.005	ug/l	680532.36
Cd	111	115	1	No Gas	51.618	ug/l	387898.88

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	52.023	ug/l	123232.87
Cd	114	115	1	No Gas	52.037	ug/l	865865.22
Cd	114	115	3	He	51.089	ug/l	300324.89
Sn	118	115	1	No Gas	49.832	ug/l	1097811.87
Sn	118	115	3	He	50.094	ug/l	293338.73
Sb	121	115	1	No Gas	50.743	ug/l	1555420.85
Sb	121	115	3	He	50.504	ug/l	401343.84
Sb	123	115	1	No Gas	51.629	ug/l	1200154.03
Sb	123	115	3	He	51.066	ug/l	317609.85
Ba	135	115	1	No Gas	51.461	ug/l	332151.72
Ba	137	115	1	No Gas	50.745	ug/l	583412.17
La	139	115	3	He	51.443	ug/l	1613015.81
Ce	140	115	3	He	50.733	ug/l	1740261.61
Hg	201	209	1	No Gas	0.959	ug/l	4288.50
Hg	202	209	1	No Gas	0.968	ug/l	9787.62
Hg	202	209	3	He	0.966	ug/l	4103.48
Tl	203	209	3	He	48.439	ug/l	603077.13
Tl	205	209	1	No Gas	49.996	ug/l	3370155.05
Tl	205	209	3	He	50.240	ug/l	1471483.68
[Pb]	206	209	1	No Gas	49.259	ug/l	1161918.35
[Pb]	207	209	1	No Gas	49.403	ug/l	1018196.89
Pb	208	209	1	No Gas	50.065	ug/l	4706396.28
Th	232	209	3	He	48.695	ug/l	2003857.56
U	238	209	1	No Gas	50.018	ug/l	4644473.12

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8376524.35	89.2
Sc	45	2	H2	2684197.89	74.0
Sc	45	3	He	508122.09	97.7
Ge	72	1	No Gas	2150548.62	95.2
Ge	72	2	H2	999982.70	84.1
Ge	72	3	He	322036.39	102.4
In	115	1	No Gas	2502634.13	94.6
In	115	3	He	584759.77	102.3
Tb	159	1	No Gas	22288828.88	101.7
Tb	159	3	He	8613023.87	105.8
Ho	165	1	No Gas	22110443.42	103.8
Ho	165	3	He	8510154.44	107.0
Lu	175	1	No Gas	21891841.70	105.6
Lu	175	3	He	7031884.08	106.1
Bi	209	1	No Gas	13687428.47	105.8
Bi	209	3	He	5587264.77	104.8

# ICPMS207-B Analytical Data

**Sample Name** CCB  
**File Name** 045\_CCB.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 18:03:08  
**Sample Type** CCB  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.215	ug/l	40867.66
Be	9	45	1	No Gas	-0.027	ug/l	90.98
B	11	45	1	No Gas	-3.027	ug/l	13249.78
Na	23	45	3	He	11.787	ug/l	78333.47
Mg	24	45	3	He	0.481	ug/l	1031.33
Al	27	45	1	No Gas	0.002	ug/l	6967.22
Si	28	45	2	H2	27.972	ug/l	81872.46
K	39	72	3	He	5.246	ug/l	70566.36
Ca	40	72	2	H2	-0.219	ug/l	76739.13
Ti	47	72	1	No Gas	0.002	ug/l	300.31
V	51	72	1	No Gas	1.813	ug/l	-34971.49
V	51	72	3	He	2.583	ug/l	33140.54
Cr	52	72	1	No Gas	-0.269	ug/l	89965.40
Cr	52	72	3	He	0.006	ug/l	570.01
Mn	55	72	1	No Gas	0.067	ug/l	10303.20
Mn	55	72	3	He	0.009	ug/l	228.96
Fe	56	72	2	H2	0.167	ug/l	8641.27
Fe	56	72	3	He	0.334	ug/l	7544.54
Co	59	72	1	No Gas	0.002	ug/l	395.89
Ni	60	72	1	No Gas	-0.020	ug/l	545.60
Ni	60	72	3	He	-0.029	ug/l	82.22
Cu	63	72	1	No Gas	0.026	ug/l	2169.03
Cu	63	72	3	He	0.032	ug/l	656.55
Cu	65	72	1	No Gas	0.032	ug/l	1008.44
Zn	66	72	1	No Gas	-0.017	ug/l	3758.05
Zn	66	72	3	He	0.044	ug/l	841.14
As	75	72	1	No Gas	-0.553	ug/l	10325.21
As	75	72	3	He	-0.006	ug/l	273.80
Se	78	72	2	H2	0.004	ug/l	24.78
Br	79	72	1	No Gas	0.275	ug/l	16413.45
Br	79	72	2	H2	0.283	ug/l	5979.40
Se	82	72	1	No Gas	-0.043	ug/l	918.10
Kr	84	72	1	No Gas		ug/l	21333.44
Sr	88	72	1	No Gas	0.005	ug/l	1360.71
Sr	88	72	3	He	0.000	ug/l	382.23
Mo	95	115	1	No Gas	0.033	ug/l	516.68
Mo	95	115	3	He	0.029	ug/l	151.12
Mo	98	115	1	No Gas	0.038	ug/l	930.66
Ag	107	115	1	No Gas	0.000	ug/l	198.08
Ag	109	115	1	No Gas	0.001	ug/l	210.75
Cd	111	115	1	No Gas	0.010	ug/l	144.91

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.008	ug/l	34.33
Cd	114	115	1	No Gas	0.010	ug/l	255.28
Cd	114	115	3	He	0.009	ug/l	64.58
Sn	118	115	1	No Gas	0.079	ug/l	26209.04
Sn	118	115	3	He	0.033	ug/l	6941.76
Sb	121	115	1	No Gas	0.208	ug/l	6714.96
Sb	121	115	3	He	0.177	ug/l	1455.22
Sb	123	115	1	No Gas	0.207	ug/l	5086.78
Sb	123	115	3	He	0.179	ug/l	1153.16
Ba	135	115	1	No Gas	0.005	ug/l	63.21
Ba	137	115	1	No Gas	-0.002	ug/l	69.86
La	139	115	3	He	0.001	ug/l	28.89
Ce	140	115	3	He	0.001	ug/l	55.56
Hg	201	209	1	No Gas	0.003	ug/l	31.66
Hg	202	209	1	No Gas	0.003	ug/l	135.64
Hg	202	209	3	He	0.002	ug/l	31.32
Tl	203	209	3	He	0.249	ug/l	3320.42
Tl	205	209	1	No Gas	0.190	ug/l	13771.78
Tl	205	209	3	He	0.259	ug/l	8104.38
[Pb]	206	209	1	No Gas	0.006	ug/l	731.14
[Pb]	207	209	1	No Gas	0.005	ug/l	641.13
Pb	208	209	1	No Gas	0.005	ug/l	2951.26
Th	232	209	3	He	0.081	ug/l	3645.98
U	238	209	1	No Gas	0.005	ug/l	494.91

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8083146.88	86.0
Sc	45	2	H2	2732227.33	75.4
Sc	45	3	He	494627.27	95.1
Ge	72	1	No Gas	2115830.42	93.6
Ge	72	2	H2	987337.76	83.0
Ge	72	3	He	311535.36	99.0
In	115	1	No Gas	2535992.30	95.8
In	115	3	He	567594.47	99.3
Tb	159	1	No Gas	21610094.33	98.6
Tb	159	3	He	8538281.42	104.9
Ho	165	1	No Gas	21084666.63	99.0
Ho	165	3	He	8488189.24	106.7
Lu	175	1	No Gas	20585187.17	99.3
Lu	175	3	He	6934372.25	104.6
Bi	209	1	No Gas	13820848.82	106.8
Bi	209	3	He	5715652.75	107.2

# ICPMS207-B Analytical Data

**Sample Name** B22021435-001BMSD4  
**File Name** 046MSD4.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224\ADoD.b  
**Acq Time** 2022-02-24 18:09:22  
**Sample Type** MSD4  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	68.355	ug/l	1553544.04
Be	9	45	1	No Gas	38.203	ug/l	281775.49
B	11	45	1	No Gas	117.965	ug/l	520099.93
Na	23	45	3	He	41257.880	ug/l	52627613.66
Mg	24	45	3	He	22589.465	ug/l	16126968.56
Al	27	45	1	No Gas	549.336	ug/l	17167835.99
Si	28	45	2	H2	22131.376	ug/l	49648559.61
K	39	72	3	He	7620.328	ug/l	5693454.29
Ca	40	72	2	H2	19189.316	ug/l	158319627.38
Ti	47	72	1	No Gas	95.684	ug/l	327365.01
V	51	72	1	No Gas	99.577	ug/l	4166858.27
V	51	72	3	He	110.627	ug/l	729900.14
Cr	52	72	1	No Gas	95.201	ug/l	3829533.97
Cr	52	72	3	He	100.627	ug/l	747515.27
Mn	55	72	1	No Gas	505.209	ug/l	26272915.47
Mn	55	72	3	He	504.226	ug/l	2647322.53
Fe	56	72	2	H2	578.186	ug/l	9957379.42
Fe	56	72	3	He	590.004	ug/l	3999902.37
Co	59	72	1	No Gas	95.178	ug/l	4222209.02
Ni	60	72	1	No Gas	93.449	ug/l	927801.09
Ni	60	72	3	He	103.711	ug/l	283466.61
Cu	63	72	1	No Gas	97.684	ug/l	2294136.19
Cu	63	72	3	He	102.998	ug/l	760902.12
Cu	65	72	1	No Gas	96.601	ug/l	1081045.83
Zn	66	72	1	No Gas	96.338	ug/l	646759.68
Zn	66	72	3	He	100.606	ug/l	142028.23
As	75	72	1	No Gas	95.203	ug/l	664899.21
As	75	72	3	He	95.912	ug/l	103405.15
Se	78	72	2	H2	96.722	ug/l	51997.08
Br	79	72	1	No Gas	8.130	ug/l	71564.49
Br	79	72	2	H2	8.291	ug/l	27488.27
Se	82	72	1	No Gas	95.706	ug/l	44693.55
Kr	84	72	1	No Gas		ug/l	131106.02
Sr	88	72	1	No Gas	283.016	ug/l	17563711.99
Sr	88	72	3	He	272.083	ug/l	2109175.18
Mo	95	115	1	No Gas	95.731	ug/l	1285853.45
Mo	95	115	3	He	103.252	ug/l	454025.74
Mo	98	115	1	No Gas	96.306	ug/l	2075824.40
Ag	107	115	1	No Gas	9.520	ug/l	324096.67
Ag	109	115	1	No Gas	9.462	ug/l	308698.49
Cd	111	115	1	No Gas	49.047	ug/l	353385.39



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	51.219	ug/l	115229.05
Cd	114	115	1	No Gas	49.605	ug/l	791349.74
Cd	114	115	3	He	50.140	ug/l	279941.44
Sn	118	115	1	No Gas	104.174	ug/l	2173991.47
Sn	118	115	3	He	104.853	ug/l	575975.85
Sb	121	115	1	No Gas	98.915	ug/l	2906227.63
Sb	121	115	3	He	101.255	ug/l	764141.71
Sb	123	115	1	No Gas	100.029	ug/l	2229010.29
Sb	123	115	3	He	102.436	ug/l	605046.84
Ba	135	115	1	No Gas	98.845	ug/l	611621.40
Ba	137	115	1	No Gas	97.398	ug/l	1073587.62
La	139	115	3	He	107.093	ug/l	3189273.98
Ce	140	115	3	He	107.738	ug/l	3509669.91
Hg	201	209	1	No Gas	0.007	ug/l	42.32
Hg	202	209	1	No Gas	0.013	ug/l	213.63
Hg	202	209	3	He	0.011	ug/l	67.65
Tl	203	209	3	He	99.056	ug/l	1185438.90
Tl	205	209	1	No Gas	101.028	ug/l	6377075.25
Tl	205	209	3	He	101.076	ug/l	2845575.54
[Pb]	206	209	1	No Gas	102.240	ug/l	2257210.78
[Pb]	207	209	1	No Gas	102.058	ug/l	1968872.30
Pb	208	209	1	No Gas	101.850	ug/l	8961261.80
Th	232	209	3	He	99.526	ug/l	3936961.99
U	238	209	1	No Gas	103.199	ug/l	8973896.59

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	7787436.11	82.9
Sc	45	2	H2	2540251.25	70.1
Sc	45	3	He	473919.11	91.1
Ge	72	1	No Gas	1970879.48	87.2
Ge	72	2	H2	919471.65	77.3
Ge	72	3	He	299869.25	95.3
In	115	1	No Gas	2398426.47	90.6
In	115	3	He	555301.72	97.2
Tb	159	1	No Gas	20903924.44	95.4
Tb	159	3	He	8456463.67	103.9
Ho	165	1	No Gas	20558036.06	96.5
Ho	165	3	He	8520975.88	107.1
Lu	175	1	No Gas	20498336.16	98.9
Lu	175	3	He	6940627.00	104.7
Bi	209	1	No Gas	12801940.15	98.9
Bi	209	3	He	5372735.24	100.7

# ICPMS207-B Analytical Data

**Sample Name** Rinse  
**File Name** 047BLKV.d  
**Data Path Name** D:\Agilent\ICPMH1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 18:15:37  
**Sample Type** BlkVrfy  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.562	ug/l	23967.10
Be	9	45	1	No Gas	-0.026	ug/l	94.98
B	11	45	1	No Gas	-2.891	ug/l	12944.07
Na	23	45	3	He	11.553	ug/l	77929.29
Mg	24	45	3	He	1.236	ug/l	1593.60
Al	27	45	1	No Gas	0.385	ug/l	18261.22
Si	28	45	2	H2	48.152	ug/l	123118.28
K	39	72	3	He	2.134	ug/l	69307.22
Ca	40	72	2	H2	-0.872	ug/l	68723.99
Ti	47	72	1	No Gas	-0.006	ug/l	261.93
V	51	72	1	No Gas	1.032	ug/l	-67856.67
V	51	72	3	He	2.069	ug/l	30183.12
Cr	52	72	1	No Gas	-0.353	ug/l	82874.36
Cr	52	72	3	He	0.005	ug/l	574.46
Mn	55	72	1	No Gas	0.074	ug/l	10213.36
Mn	55	72	3	He	0.011	ug/l	244.95
Fe	56	72	2	H2	0.121	ug/l	7536.20
Fe	56	72	3	He	0.247	ug/l	7047.14
Co	59	72	1	No Gas	0.001	ug/l	352.64
Ni	60	72	1	No Gas	-0.024	ug/l	479.06
Ni	60	72	3	He	-0.031	ug/l	76.67
Cu	63	72	1	No Gas	0.029	ug/l	2157.03
Cu	63	72	3	He	0.030	ug/l	653.55
Cu	65	72	1	No Gas	0.034	ug/l	999.77
Zn	66	72	1	No Gas	0.096	ug/l	4371.34
Zn	66	72	3	He	0.117	ug/l	962.26
As	75	72	1	No Gas	0.655	ug/l	18195.98
As	75	72	3	He	-0.015	ug/l	267.73
Se	78	72	2	H2	0.004	ug/l	23.67
Br	79	72	1	No Gas	0.554	ug/l	17869.09
Br	79	72	2	H2	0.569	ug/l	6608.44
Se	82	72	1	No Gas	-0.443	ug/l	687.94
Kr	84	72	1	No Gas		ug/l	20607.16
Sr	88	72	1	No Gas	0.003	ug/l	1201.01
Sr	88	72	3	He	0.001	ug/l	395.56
Mo	95	115	1	No Gas	0.021	ug/l	346.67
Mo	95	115	3	He	0.020	ug/l	107.78
Mo	98	115	1	No Gas	0.024	ug/l	616.68
Ag	107	115	1	No Gas	0.000	ug/l	198.08
Ag	109	115	1	No Gas	0.001	ug/l	223.43
Cd	111	115	1	No Gas	0.010	ug/l	146.33

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.010	ug/l	40.67
Cd	114	115	1	No Gas	0.012	ug/l	284.25
Cd	114	115	3	He	0.012	ug/l	85.96
Sn	118	115	1	No Gas	-1.031	ug/l	1966.25
Sn	118	115	3	He	-1.120	ug/l	548.90
Sb	121	115	1	No Gas	0.237	ug/l	7635.54
Sb	121	115	3	He	0.185	ug/l	1538.57
Sb	123	115	1	No Gas	0.235	ug/l	5741.44
Sb	123	115	3	He	0.191	ug/l	1236.18
Ba	135	115	1	No Gas	0.003	ug/l	46.57
Ba	137	115	1	No Gas	-0.001	ug/l	79.84
La	139	115	3	He	0.001	ug/l	25.55
Ce	140	115	3	He	0.001	ug/l	54.44
Hg	201	209	1	No Gas	0.000	ug/l	17.00
Hg	202	209	1	No Gas	0.000	ug/l	103.65
Hg	202	209	3	He	0.000	ug/l	24.00
Tl	203	209	3	He	0.215	ug/l	2912.83
Tl	205	209	1	No Gas	0.196	ug/l	14139.97
Tl	205	209	3	He	0.221	ug/l	7024.69
[Pb]	206	209	1	No Gas	0.006	ug/l	750.03
[Pb]	207	209	1	No Gas	0.006	ug/l	663.36
Pb	208	209	1	No Gas	0.004	ug/l	2932.37
Th	232	209	3	He	0.094	ug/l	4251.07
U	238	209	1	No Gas	0.004	ug/l	442.59

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	7740017.77	82.4
Sc	45	2	H2	2574354.37	71.0
Sc	45	3	He	494011.69	95.0
Ge	72	1	No Gas	2050916.14	90.8
Ge	72	2	H2	955939.87	80.4
Ge	72	3	He	316623.67	100.7
In	115	1	No Gas	2553218.15	96.5
In	115	3	He	573457.83	100.3
Tb	159	1	No Gas	21632235.01	98.7
Tb	159	3	He	8663790.57	106.4
Ho	165	1	No Gas	21535075.78	101.1
Ho	165	3	He	8598395.49	108.1
Lu	175	1	No Gas	21149534.83	102.0
Lu	175	3	He	7094939.06	107.0
Bi	209	1	No Gas	14091219.89	108.9
Bi	209	3	He	5762375.89	108.0

# ICPMS207-B Analytical Data

**Sample Name** B22021435-006A  
**File Name** 048SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 18:21:51  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.726	ug/l	31938.28
Be	9	45	1	No Gas	-0.025	ug/l	115.65
B	11	45	1	No Gas	65.223	ug/l	336501.68
Na	23	45	3	He	95849.965	ug/l	132706700.25
Mg	24	45	3	He	38740.794	ug/l	30040372.32
Al	27	45	1	No Gas	2.964	ug/l	111720.23
Si	28	45	2	H2	20730.358	ug/l	53486141.23
K	39	72	3	He	2710.552	ug/l	2184767.02
Ca	40	72	2	H2	36457.433	ug/l	321870959.62
Ti	47	72	1	No Gas	2.007	ug/l	7764.90
V	51	72	1	No Gas	16.773	ug/l	664428.93
V	51	72	3	He	13.911	ug/l	111100.27
Cr	52	72	1	No Gas	-0.772	ug/l	69736.02
Cr	52	72	3	He	0.479	ug/l	4292.87
Mn	55	72	1	No Gas	2.389	ug/l	141852.75
Mn	55	72	3	He	2.413	ug/l	13577.88
Fe	56	72	2	H2	11.373	ug/l	215093.67
Fe	56	72	3	He	11.263	ug/l	85915.75
Co	59	72	1	No Gas	0.159	ug/l	7993.04
Ni	60	72	1	No Gas	0.763	ug/l	9011.62
Ni	60	72	3	He	0.556	ug/l	1773.45
Cu	63	72	1	No Gas	1.095	ug/l	29514.21
Cu	63	72	3	He	0.405	ug/l	3578.06
Cu	65	72	1	No Gas	0.515	ug/l	6904.42
Zn	66	72	1	No Gas	1.401	ug/l	14117.74
Zn	66	72	3	He	1.310	ug/l	2734.72
As	75	72	1	No Gas	0.583	ug/l	18945.21
As	75	72	3	He	0.559	ug/l	920.41
Se	78	72	2	H2	0.473	ug/l	294.23
Br	79	72	1	No Gas	111.585	ug/l	884655.09
Br	79	72	2	H2	118.842	ug/l	353269.77
Se	82	72	1	No Gas	1.358	ug/l	1628.32
Kr	84	72	1	No Gas		ug/l	142897.76
Sr	88	72	1	No Gas	290.198	ug/l	19607263.27
Sr	88	72	3	He	293.337	ug/l	2404007.20
Mo	95	115	1	No Gas	1.612	ug/l	21993.67
Mo	95	115	3	He	1.760	ug/l	7854.42
Mo	98	115	1	No Gas	1.610	ug/l	35238.80
Ag	107	115	1	No Gas	0.005	ug/l	371.49
Ag	109	115	1	No Gas	0.007	ug/l	397.50
Cd	111	115	1	No Gas	0.011	ug/l	144.10

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.009	ug/l	38.00
Cd	114	115	1	No Gas	0.012	ug/l	281.31
Cd	114	115	3	He	0.013	ug/l	89.04
Sn	118	115	1	No Gas	-1.066	ug/l	1157.76
Sn	118	115	3	He	-1.158	ug/l	327.78
Sb	121	115	1	No Gas	0.079	ug/l	2614.17
Sb	121	115	3	He	0.079	ug/l	691.76
Sb	123	115	1	No Gas	0.078	ug/l	1963.34
Sb	123	115	3	He	0.077	ug/l	533.06
Ba	135	115	1	No Gas	12.108	ug/l	75959.13
Ba	137	115	1	No Gas	11.891	ug/l	132910.11
La	139	115	3	He	0.002	ug/l	58.89
Ce	140	115	3	He	0.002	ug/l	102.22
Hg	201	209	1	No Gas	0.059	ug/l	256.29
Hg	202	209	1	No Gas	1.153	ug/l	10764.19
Hg	202	209	3	He	0.934	ug/l	3743.78
Tl	203	209	3	He	0.112	ug/l	1452.00
Tl	205	209	1	No Gas	0.083	ug/l	5929.18
Tl	205	209	3	He	0.108	ug/l	3287.07
[Pb]	206	209	1	No Gas	0.016	ug/l	902.26
[Pb]	207	209	1	No Gas	0.015	ug/l	776.69
Pb	208	209	1	No Gas	0.015	ug/l	3543.54
Th	232	209	3	He	0.026	ug/l	1257.23
U	238	209	1	No Gas	0.067	ug/l	5779.13

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8761023.18	93.3
Sc	45	2	H2	2918748.27	80.5
Sc	45	3	He	514774.96	99.0
Ge	72	1	No Gas	2145471.38	94.9
Ge	72	2	H2	984204.24	82.8
Ge	72	3	He	317047.87	100.8
In	115	1	No Gas	2430765.02	91.8
In	115	3	He	562271.08	98.4
Tb	159	1	No Gas	21364824.28	97.5
Tb	159	3	He	8375671.42	102.9
Ho	165	1	No Gas	20997649.20	98.6
Ho	165	3	He	8357860.38	105.1
Lu	175	1	No Gas	20745236.17	100.1
Lu	175	3	He	6884246.19	103.8
Bi	209	1	No Gas	12654112.38	97.8
Bi	209	3	He	5273071.01	98.9

# ICPMS207-B Analytical Data

**Sample Name** B22021435-006B  
**File Name** 049SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 18:28:07  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.355	ug/l	42533.03
Be	9	45	1	No Gas	-0.028	ug/l	79.32
B	11	45	1	No Gas	65.190	ug/l	298679.31
Na	23	45	3	He	95691.356	ug/l	118777197.12
Mg	24	45	3	He	38291.316	ug/l	26619117.87
Al	27	45	1	No Gas	33.906	ug/l	1064670.34
Si	28	45	2	H2	19996.593	ug/l	45090865.31
K	39	72	3	He	2643.864	ug/l	1918823.63
Ca	40	72	2	H2	35134.675	ug/l	279262148.98
Ti	47	72	1	No Gas	4.853	ug/l	16659.53
V	51	72	1	No Gas	15.307	ug/l	538601.78
V	51	72	3	He	18.540	ug/l	128415.37
Cr	52	72	1	No Gas	1.894	ug/l	166844.44
Cr	52	72	3	He	1.033	ug/l	7775.43
Mn	55	72	1	No Gas	3.323	ug/l	176851.82
Mn	55	72	3	He	2.980	ug/l	15047.34
Fe	56	72	2	H2	141.137	ug/l	2346750.60
Fe	56	72	3	He	140.009	ug/l	906515.94
Co	59	72	1	No Gas	0.219	ug/l	9930.37
Ni	60	72	1	No Gas	0.944	ug/l	9937.10
Ni	60	72	3	He	0.692	ug/l	1947.92
Cu	63	72	1	No Gas	1.556	ug/l	37501.77
Cu	63	72	3	He	0.773	ug/l	5807.66
Cu	65	72	1	No Gas	0.906	ug/l	10591.43
Zn	66	72	1	No Gas	1.537	ug/l	13685.81
Zn	66	72	3	He	1.596	ug/l	2844.74
As	75	72	1	No Gas	0.797	ug/l	18833.36
As	75	72	3	He	0.971	ug/l	1250.16
Se	78	72	2	H2	0.415	ug/l	235.00
Br	79	72	1	No Gas	33.429	ug/l	249803.34
Br	79	72	2	H2	34.377	ug/l	95294.30
Se	82	72	1	No Gas	0.754	ug/l	1206.67
Kr	84	72	1	No Gas		ug/l	132762.20
Sr	88	72	1	No Gas	303.927	ug/l	18631864.67
Sr	88	72	3	He	298.196	ug/l	2198860.00
Mo	95	115	1	No Gas	1.593	ug/l	21234.72
Mo	95	115	3	He	1.785	ug/l	7496.45
Mo	98	115	1	No Gas	1.601	ug/l	34277.37
Ag	107	115	1	No Gas	0.024	ug/l	975.77
Ag	109	115	1	No Gas	0.024	ug/l	938.41
Cd	111	115	1	No Gas	0.015	ug/l	173.72

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.013	ug/l	42.45
Cd	114	115	1	No Gas	0.013	ug/l	282.70
Cd	114	115	3	He	0.018	ug/l	106.96
Sn	118	115	1	No Gas	-0.760	ug/l	7397.29
Sn	118	115	3	He	-0.824	ug/l	2034.61
Sb	121	115	1	No Gas	0.120	ug/l	3753.55
Sb	121	115	3	He	0.130	ug/l	1024.14
Sb	123	115	1	No Gas	0.129	ug/l	3052.64
Sb	123	115	3	He	0.131	ug/l	806.77
Ba	135	115	1	No Gas	11.923	ug/l	73113.08
Ba	137	115	1	No Gas	11.824	ug/l	129146.74
La	139	115	3	He	0.025	ug/l	721.14
Ce	140	115	3	He	0.055	ug/l	1721.23
Hg	201	209	1	No Gas	0.082	ug/l	334.94
Hg	202	209	1	No Gas	1.469	ug/l	13091.47
Hg	202	209	3	He	1.125	ug/l	4471.19
Tl	203	209	3	He	0.069	ug/l	937.75
Tl	205	209	1	No Gas	0.047	ug/l	3470.49
Tl	205	209	3	He	0.059	ug/l	1944.93
[Pb]	206	209	1	No Gas	0.067	ug/l	1907.93
[Pb]	207	209	1	No Gas	0.069	ug/l	1736.79
Pb	208	209	1	No Gas	0.066	ug/l	7679.80
Th	232	209	3	He	0.207	ug/l	8200.53
U	238	209	1	No Gas	0.070	ug/l	5774.80

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	7850307.19	83.6
Sc	45	2	H2	2551463.07	70.4
Sc	45	3	He	461457.86	88.7
Ge	72	1	No Gas	1959474.11	86.7
Ge	72	2	H2	886239.28	74.5
Ge	72	3	He	285281.19	90.7
In	115	1	No Gas	2397620.19	90.6
In	115	3	He	529174.74	92.6
Tb	159	1	No Gas	20740897.87	94.6
Tb	159	3	He	8360045.90	102.7
Ho	165	1	No Gas	20564139.67	96.6
Ho	165	3	He	8194561.98	103.0
Lu	175	1	No Gas	20505479.76	98.9
Lu	175	3	He	6737455.50	101.6
Bi	209	1	No Gas	12236827.61	94.6
Bi	209	3	He	5235569.81	98.2

# ICPMS207-B Analytical Data

**Sample Name** B22021435-012A  
**File Name** 050SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 18:34:22  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	5.607	ug/l	161857.83
Be	9	45	1	No Gas	-0.031	ug/l	66.66
B	11	45	1	No Gas	34.705	ug/l	199886.40
Na	23	45	3	He	35119.054	ug/l	50870547.02
Mg	24	45	3	He	9535.544	ug/l	7729406.07
Al	27	45	1	No Gas	7.881	ug/l	295637.81
Si	28	45	2	H2	18617.847	ug/l	51211525.10
K	39	72	3	He	5631.426	ug/l	4697852.33
Ca	40	72	2	H2	9875.462	ug/l	93527582.62
Ti	47	72	1	No Gas	2.392	ug/l	9466.35
V	51	72	1	No Gas	17.975	ug/l	740223.91
V	51	72	3	He	14.478	ug/l	120943.55
Cr	52	72	1	No Gas	1.033	ug/l	150818.52
Cr	52	72	3	He	2.345	ug/l	19926.87
Mn	55	72	1	No Gas	0.475	ug/l	34452.18
Mn	55	72	3	He	0.472	ug/l	2950.38
Fe	56	72	2	H2	9.109	ug/l	185686.58
Fe	56	72	3	He	8.521	ug/l	69704.56
Co	59	72	1	No Gas	0.047	ug/l	2661.65
Ni	60	72	1	No Gas	0.865	ug/l	10383.10
Ni	60	72	3	He	0.835	ug/l	2713.60
Cu	63	72	1	No Gas	1.548	ug/l	42209.53
Cu	63	72	3	He	1.297	ug/l	11090.32
Cu	65	72	1	No Gas	1.318	ug/l	17134.92
Zn	66	72	1	No Gas	12.382	ug/l	96482.60
Zn	66	72	3	He	12.668	ug/l	20616.81
As	75	72	1	No Gas	-0.218	ug/l	13335.92
As	75	72	3	He	-0.048	ug/l	243.13
Se	78	72	2	H2	0.148	ug/l	115.11
Br	79	72	1	No Gas	21.487	ug/l	187031.98
Br	79	72	2	H2	21.784	ug/l	73911.71
Se	82	72	1	No Gas	0.117	ug/l	1037.45
Kr	84	72	1	No Gas		ug/l	52197.21
Sr	88	72	1	No Gas	71.354	ug/l	4952935.66
Sr	88	72	3	He	67.992	ug/l	586462.99
Mo	95	115	1	No Gas	0.126	ug/l	1881.24
Mo	95	115	3	He	0.132	ug/l	634.46
Mo	98	115	1	No Gas	0.119	ug/l	2841.55
Ag	107	115	1	No Gas	0.003	ug/l	303.46
Ag	109	115	1	No Gas	0.002	ug/l	256.77
Cd	111	115	1	No Gas	0.005	ug/l	113.79



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.006	ug/l	32.55
Cd	114	115	1	No Gas	0.008	ug/l	220.64
Cd	114	115	3	He	0.009	ug/l	69.09
Sn	118	115	1	No Gas	-0.652	ug/l	10493.29
Sn	118	115	3	He	-0.714	ug/l	2893.66
Sb	121	115	1	No Gas	1.181	ug/l	37838.69
Sb	121	115	3	He	1.235	ug/l	9958.86
Sb	123	115	1	No Gas	1.187	ug/l	28851.03
Sb	123	115	3	He	1.234	ug/l	7791.27
Ba	135	115	1	No Gas	5.327	ug/l	35718.46
Ba	137	115	1	No Gas	5.250	ug/l	62773.15
La	139	115	3	He	0.003	ug/l	103.33
Ce	140	115	3	He	0.006	ug/l	233.34
Hg	201	209	1	No Gas	0.003	ug/l	28.99
Hg	202	209	1	No Gas	0.004	ug/l	137.31
Hg	202	209	3	He	0.006	ug/l	49.66
Tl	203	209	3	He	0.056	ug/l	844.37
Tl	205	209	1	No Gas	0.043	ug/l	3658.32
Tl	205	209	3	He	0.056	ug/l	1979.61
[Pb]	206	209	1	No Gas	0.037	ug/l	1456.76
[Pb]	207	209	1	No Gas	0.035	ug/l	1251.18
Pb	208	209	1	No Gas	0.035	ug/l	5713.85
Th	232	209	3	He	0.008	ug/l	590.25
U	238	209	1	No Gas	0.021	ug/l	1954.42

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9099637.31	96.9
Sc	45	2	H2	3110507.53	85.8
Sc	45	3	He	538094.52	103.5
Ge	72	1	No Gas	2203958.05	97.5
Ge	72	2	H2	1054955.47	88.7
Ge	72	3	He	333501.24	106.0
In	115	1	No Gas	2598892.39	98.2
In	115	3	He	587937.52	102.9
Tb	159	1	No Gas	22226570.58	101.4
Tb	159	3	He	8745328.25	107.4
Ho	165	1	No Gas	21804734.39	102.4
Ho	165	3	He	8647499.38	108.7
Lu	175	1	No Gas	21203794.72	102.3
Lu	175	3	He	7174206.77	108.2
Bi	209	1	No Gas	13602855.90	105.1
Bi	209	3	He	5633547.72	105.6

# ICPMS207-B Analytical Data

**Sample Name** B22021435-012B  
**File Name** 051SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 18:40:36  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	3.757	ug/l	98612.14
Be	9	45	1	No Gas	-0.032	ug/l	51.99
B	11	45	1	No Gas	33.732	ug/l	170151.48
Na	23	45	3	He	33505.398	ug/l	42754567.42
Mg	24	45	3	He	9545.367	ug/l	6815823.94
Al	27	45	1	No Gas	16.530	ug/l	533232.14
Si	28	45	2	H2	18080.298	ug/l	40893175.99
K	39	72	3	He	4177.461	ug/l	3060967.45
Ca	40	72	2	H2	9408.979	ug/l	76012000.16
Ti	47	72	1	No Gas	3.126	ug/l	11141.41
V	51	72	1	No Gas	15.205	ug/l	551269.30
V	51	72	3	He	20.239	ug/l	141837.74
Cr	52	72	1	No Gas	2.853	ug/l	209314.73
Cr	52	72	3	He	2.534	ug/l	18772.00
Mn	55	72	1	No Gas	0.774	ug/l	47015.11
Mn	55	72	3	He	0.441	ug/l	2418.05
Fe	56	72	2	H2	25.692	ug/l	437979.11
Fe	56	72	3	He	25.812	ug/l	174697.59
Co	59	72	1	No Gas	0.059	ug/l	2981.09
Ni	60	72	1	No Gas	0.565	ug/l	6405.38
Ni	60	72	3	He	0.564	ug/l	1651.22
Cu	63	72	1	No Gas	1.291	ug/l	32167.49
Cu	63	72	3	He	1.031	ug/l	7782.18
Cu	65	72	1	No Gas	1.012	ug/l	12079.19
Zn	66	72	1	No Gas	23.699	ug/l	164228.04
Zn	66	72	3	He	24.979	ug/l	34817.07
As	75	72	1	No Gas	-0.353	ug/l	11149.07
As	75	72	3	He	0.225	ug/l	496.87
Se	78	72	2	H2	0.141	ug/l	94.56
Br	79	72	1	No Gas	11.577	ug/l	97658.09
Br	79	72	2	H2	12.005	ug/l	36840.53
Se	82	72	1	No Gas	-0.090	ug/l	845.43
Kr	84	72	1	No Gas		ug/l	49272.88
Sr	88	72	1	No Gas	73.390	ug/l	4622041.09
Sr	88	72	3	He	71.598	ug/l	539581.30
Mo	95	115	1	No Gas	0.129	ug/l	1813.46
Mo	95	115	3	He	0.153	ug/l	671.13
Mo	98	115	1	No Gas	0.127	ug/l	2856.97
Ag	107	115	1	No Gas	0.004	ug/l	317.47
Ag	109	115	1	No Gas	0.005	ug/l	351.48
Cd	111	115	1	No Gas	0.008	ug/l	124.05

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.009	ug/l	35.00
Cd	114	115	1	No Gas	0.007	ug/l	192.62
Cd	114	115	3	He	0.010	ug/l	65.17
Sn	118	115	1	No Gas	-0.171	ug/l	20017.91
Sn	118	115	3	He	-0.218	ug/l	5277.69
Sb	121	115	1	No Gas	0.677	ug/l	20544.00
Sb	121	115	3	He	0.724	ug/l	5398.58
Sb	123	115	1	No Gas	0.683	ug/l	15720.02
Sb	123	115	3	He	0.738	ug/l	4307.76
Ba	135	115	1	No Gas	5.761	ug/l	36358.59
Ba	137	115	1	No Gas	5.760	ug/l	64792.00
La	139	115	3	He	0.010	ug/l	306.67
Ce	140	115	3	He	0.021	ug/l	686.69
Hg	201	209	1	No Gas	0.006	ug/l	38.99
Hg	202	209	1	No Gas	0.015	ug/l	242.29
Hg	202	209	3	He	0.016	ug/l	85.98
Tl	203	209	3	He	0.024	ug/l	429.51
Tl	205	209	1	No Gas	0.017	ug/l	1854.59
Tl	205	209	3	He	0.025	ug/l	1023.12
[Pb]	206	209	1	No Gas	0.044	ug/l	1547.88
[Pb]	207	209	1	No Gas	0.044	ug/l	1358.97
Pb	208	209	1	No Gas	0.044	ug/l	6255.06
Th	232	209	3	He	0.102	ug/l	4321.12
U	238	209	1	No Gas	0.021	ug/l	1861.10

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	7939746.18	84.5
Sc	45	2	H2	2558149.62	70.6
Sc	45	3	He	473956.53	91.1
Ge	72	1	No Gas	1999953.40	88.5
Ge	72	2	H2	899751.72	75.7
Ge	72	3	He	291398.15	92.6
In	115	1	No Gas	2445750.19	92.4
In	115	3	He	539880.96	94.5
Tb	159	1	No Gas	21359327.33	97.4
Tb	159	3	He	8572891.55	105.3
Ho	165	1	No Gas	20911525.16	98.2
Ho	165	3	He	8483886.29	106.7
Lu	175	1	No Gas	20945230.32	101.0
Lu	175	3	He	6889606.50	103.9
Bi	209	1	No Gas	12991780.03	100.4
Bi	209	3	He	5401941.86	101.3

# ICPMS207-B Analytical Data

**Sample Name** B22021435-017A  
**File Name** 052SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 18:46:50  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.915	ug/l	37329.22
Be	9	45	1	No Gas	-0.032	ug/l	56.99
B	11	45	1	No Gas	56.021	ug/l	298760.97
Na	23	45	3	He	41793.633	ug/l	60086981.88
Mg	24	45	3	He	11385.317	ug/l	9161726.78
Al	27	45	1	No Gas	4.150	ug/l	156390.74
Si	28	45	2	H2	22978.034	ug/l	62920420.05
K	39	72	3	He	2134.252	ug/l	1808341.87
Ca	40	72	2	H2	9957.735	ug/l	94161786.80
Ti	47	72	1	No Gas	2.281	ug/l	8996.83
V	51	72	1	No Gas	3.868	ug/l	62451.92
V	51	72	3	He	-0.472	ug/l	13413.94
Cr	52	72	1	No Gas	-1.220	ug/l	52061.81
Cr	52	72	3	He	0.023	ug/l	746.69
Mn	55	72	1	No Gas	495.123	ug/l	28741943.52
Mn	55	72	3	He	494.847	ug/l	2863692.91
Fe	56	72	2	H2	386.851	ug/l	7634222.91
Fe	56	72	3	He	381.035	ug/l	2849165.34
Co	59	72	1	No Gas	0.385	ug/l	19441.02
Ni	60	72	1	No Gas	1.296	ug/l	15184.50
Ni	60	72	3	He	1.367	ug/l	4291.77
Cu	63	72	1	No Gas	0.828	ug/l	23286.56
Cu	63	72	3	He	0.527	ug/l	4725.16
Cu	65	72	1	No Gas	0.556	ug/l	7607.71
Zn	66	72	1	No Gas	1.655	ug/l	16424.89
Zn	66	72	3	He	1.597	ug/l	3295.95
As	75	72	1	No Gas	-0.043	ug/l	14667.02
As	75	72	3	He	0.353	ug/l	715.47
Se	78	72	2	H2	0.025	ug/l	39.11
Br	79	72	1	No Gas	22.741	ug/l	196792.55
Br	79	72	2	H2	23.268	ug/l	78446.97
Se	82	72	1	No Gas	0.030	ug/l	984.37
Kr	84	72	1	No Gas		ug/l	55159.24
Sr	88	72	1	No Gas	77.666	ug/l	5391285.28
Sr	88	72	3	He	73.830	ug/l	631218.30
Mo	95	115	1	No Gas	1.166	ug/l	17055.78
Mo	95	115	3	He	1.322	ug/l	6102.45
Mo	98	115	1	No Gas	1.165	ug/l	27322.34
Ag	107	115	1	No Gas	0.007	ug/l	441.53
Ag	109	115	1	No Gas	0.008	ug/l	489.61
Cd	111	115	1	No Gas	0.001	ug/l	84.52

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.006	ug/l	32.11
Cd	114	115	1	No Gas	0.005	ug/l	183.94
Cd	114	115	3	He	0.011	ug/l	77.12
Sn	118	115	1	No Gas	-1.072	ug/l	1134.47
Sn	118	115	3	He	-1.162	ug/l	316.67
Sb	121	115	1	No Gas	0.615	ug/l	19910.75
Sb	121	115	3	He	0.674	ug/l	5416.92
Sb	123	115	1	No Gas	0.602	ug/l	14748.55
Sb	123	115	3	He	0.671	ug/l	4222.73
Ba	135	115	1	No Gas	4.973	ug/l	33490.52
Ba	137	115	1	No Gas	4.894	ug/l	58640.20
La	139	115	3	He	0.003	ug/l	115.56
Ce	140	115	3	He	0.020	ug/l	697.80
Hg	201	209	1	No Gas	0.022	ug/l	110.98
Hg	202	209	1	No Gas	0.408	ug/l	4094.49
Hg	202	209	3	He	0.329	ug/l	1407.46
Tl	203	209	3	He	0.035	ug/l	570.91
Tl	205	209	1	No Gas	0.025	ug/l	2380.24
Tl	205	209	3	He	0.035	ug/l	1343.94
[Pb]	206	209	1	No Gas	0.023	ug/l	1110.05
[Pb]	207	209	1	No Gas	0.023	ug/l	993.38
Pb	208	209	1	No Gas	0.023	ug/l	4538.12
Th	232	209	3	He	0.006	ug/l	510.22
U	238	209	1	No Gas	0.017	ug/l	1528.79

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9067443.63	96.5
Sc	45	2	H2	3096476.52	85.4
Sc	45	3	He	534134.39	102.7
Ge	72	1	No Gas	2220520.32	98.3
Ge	72	2	H2	1053375.93	88.6
Ge	72	3	He	330557.51	105.1
In	115	1	No Gas	2643345.58	99.9
In	115	3	He	581341.16	101.7
Tb	159	1	No Gas	22492432.48	102.6
Tb	159	3	He	8691751.24	106.8
Ho	165	1	No Gas	21883838.90	102.8
Ho	165	3	He	8564869.05	107.7
Lu	175	1	No Gas	21383250.21	103.1
Lu	175	3	He	7003470.10	105.6
Bi	209	1	No Gas	13583278.22	105.0
Bi	209	3	He	5573324.95	104.5

# ICPMS207-B Analytical Data

**Sample Name** B22021435-017B  
**File Name** 053SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 18:53:04  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	1.283	ug/l	40497.34
Be	9	45	1	No Gas	-0.029	ug/l	66.99
B	11	45	1	No Gas	58.003	ug/l	265770.82
Na	23	45	3	He	43362.685	ug/l	55023969.74
Mg	24	45	3	He	12279.950	ug/l	8721808.48
Al	27	45	1	No Gas	20.565	ug/l	640963.72
Si	28	45	2	H2	21416.817	ug/l	49162233.76
K	39	72	3	He	2126.649	ug/l	1626660.70
Ca	40	72	2	H2	10250.062	ug/l	84488038.40
Ti	47	72	1	No Gas	3.938	ug/l	13468.08
V	51	72	1	No Gas	2.385	ug/l	-8048.38
V	51	72	3	He	4.399	ug/l	43409.23
Cr	52	72	1	No Gas	0.422	ug/l	108922.36
Cr	52	72	3	He	0.253	ug/l	2373.54
Mn	55	72	1	No Gas	478.295	ug/l	24377298.32
Mn	55	72	3	He	485.353	ug/l	2535031.18
Fe	56	72	2	H2	424.548	ug/l	7302536.60
Fe	56	72	3	He	427.554	ug/l	2884940.23
Co	59	72	1	No Gas	0.415	ug/l	18325.19
Ni	60	72	1	No Gas	1.283	ug/l	13186.48
Ni	60	72	3	He	1.422	ug/l	4022.80
Cu	63	72	1	No Gas	1.870	ug/l	44453.16
Cu	63	72	3	He	1.522	ug/l	11577.25
Cu	65	72	1	No Gas	1.533	ug/l	17385.98
Zn	66	72	1	No Gas	2.588	ug/l	20511.08
Zn	66	72	3	He	2.726	ug/l	4551.85
As	75	72	1	No Gas	0.076	ug/l	13722.90
As	75	72	3	He	0.717	ug/l	1035.22
Se	78	72	2	H2	0.062	ug/l	54.00
Br	79	72	1	No Gas	12.264	ug/l	99359.53
Br	79	72	2	H2	12.208	ug/l	38158.03
Se	82	72	1	No Gas	0.112	ug/l	905.03
Kr	84	72	1	No Gas		ug/l	53399.17
Sr	88	72	1	No Gas	87.285	ug/l	5311295.88
Sr	88	72	3	He	81.328	ug/l	627455.06
Mo	95	115	1	No Gas	1.812	ug/l	24553.40
Mo	95	115	3	He	2.093	ug/l	9040.70
Mo	98	115	1	No Gas	1.865	ug/l	40517.78
Ag	107	115	1	No Gas	0.062	ug/l	2315.12
Ag	109	115	1	No Gas	0.064	ug/l	2299.78
Cd	111	115	1	No Gas	0.011	ug/l	145.88

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.010	ug/l	37.67
Cd	114	115	1	No Gas	0.009	ug/l	222.45
Cd	114	115	3	He	0.009	ug/l	65.45
Sn	118	115	1	No Gas	-0.764	ug/l	7427.26
Sn	118	115	3	He	-0.708	ug/l	2707.78
Sb	121	115	1	No Gas	1.871	ug/l	55634.80
Sb	121	115	3	He	1.981	ug/l	14748.18
Sb	123	115	1	No Gas	1.878	ug/l	42373.05
Sb	123	115	3	He	2.002	ug/l	11664.34
Ba	135	115	1	No Gas	5.152	ug/l	32166.80
Ba	137	115	1	No Gas	5.040	ug/l	55958.34
La	139	115	3	He	0.021	ug/l	617.80
Ce	140	115	3	He	0.088	ug/l	2822.52
Hg	201	209	1	No Gas	0.056	ug/l	250.62
Hg	202	209	1	No Gas	0.903	ug/l	8625.07
Hg	202	209	3	He	0.696	ug/l	2882.74
Tl	203	209	3	He	0.021	ug/l	392.83
Tl	205	209	1	No Gas	0.013	ug/l	1572.33
Tl	205	209	3	He	0.017	ug/l	808.35
[Pb]	206	209	1	No Gas	0.353	ug/l	8410.48
[Pb]	207	209	1	No Gas	0.363	ug/l	7559.97
Pb	208	209	1	No Gas	0.352	ug/l	33572.15
Th	232	209	3	He	0.070	ug/l	3059.59
U	238	209	1	No Gas	0.024	ug/l	2132.42

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	7788682.73	82.9
Sc	45	2	H2	2595695.20	71.6
Sc	45	3	He	471477.53	90.7
Ge	72	1	No Gas	1944115.59	86.0
Ge	72	2	H2	918047.64	77.2
Ge	72	3	He	298323.27	94.8
In	115	1	No Gas	2436126.44	92.0
In	115	3	He	544506.27	95.3
Tb	159	1	No Gas	21197264.22	96.7
Tb	159	3	He	8489472.61	104.3
Ho	165	1	No Gas	20870570.88	98.0
Ho	165	3	He	8532648.18	107.3
Lu	175	1	No Gas	20851426.94	100.6
Lu	175	3	He	7050891.84	106.4
Bi	209	1	No Gas	12995314.80	100.4
Bi	209	3	He	5437501.66	101.9

# ICPMS207-B Analytical Data

**Sample Name** B22021435-022A  
**File Name** 054SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 18:59:20  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.396	ug/l	23925.69
Be	9	45	1	No Gas	-0.032	ug/l	56.32
B	11	45	1	No Gas	43.725	ug/l	238414.15
Na	23	45	3	He	52024.268	ug/l	74677809.44
Mg	24	45	3	He	21589.305	ug/l	17349323.47
Al	27	45	1	No Gas	1.169	ug/l	49327.70
Si	28	45	2	H2	20848.428	ug/l	46240456.78
K	39	72	3	He	2751.579	ug/l	2354653.16
Ca	40	72	2	H2	22744.802	ug/l	187920118.50
Ti	47	72	1	No Gas	1.486	ug/l	6005.63
V	51	72	1	No Gas	16.855	ug/l	688387.02
V	51	72	3	He	13.602	ug/l	115763.94
Cr	52	72	1	No Gas	0.430	ug/l	124717.47
Cr	52	72	3	He	1.872	ug/l	16177.82
Mn	55	72	1	No Gas	1.225	ug/l	78323.02
Mn	55	72	3	He	1.213	ug/l	7344.70
Fe	56	72	2	H2	1.915	ug/l	38181.30
Fe	56	72	3	He	1.624	ug/l	17967.38
Co	59	72	1	No Gas	0.032	ug/l	1932.96
Ni	60	72	1	No Gas	0.374	ug/l	4947.73
Ni	60	72	3	He	0.214	ug/l	835.59
Cu	63	72	1	No Gas	0.730	ug/l	20805.83
Cu	63	72	3	He	0.373	ug/l	3540.39
Cu	65	72	1	No Gas	0.435	ug/l	6122.41
Zn	66	72	1	No Gas	0.955	ug/l	11219.28
Zn	66	72	3	He	0.881	ug/l	2227.96
As	75	72	1	No Gas	-0.202	ug/l	13492.07
As	75	72	3	He	-0.124	ug/l	153.60
Se	78	72	2	H2	0.392	ug/l	231.78
Br	79	72	1	No Gas	55.830	ug/l	463274.52
Br	79	72	2	H2	68.614	ug/l	193080.81
Se	82	72	1	No Gas	0.640	ug/l	1310.80
Kr	84	72	1	No Gas		ug/l	89880.39
Sr	88	72	1	No Gas	161.754	ug/l	11257048.59
Sr	88	72	3	He	152.841	ug/l	1330645.74
Mo	95	115	1	No Gas	0.300	ug/l	4340.68
Mo	95	115	3	He	0.330	ug/l	1545.65
Mo	98	115	1	No Gas	0.297	ug/l	6889.90
Ag	107	115	1	No Gas	-0.001	ug/l	170.07
Ag	109	115	1	No Gas	-0.001	ug/l	169.40
Cd	111	115	1	No Gas	0.006	ug/l	117.26



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.005	ug/l	30.00
Cd	114	115	1	No Gas	0.008	ug/l	229.07
Cd	114	115	3	He	0.012	ug/l	82.48
Sn	118	115	1	No Gas	-1.073	ug/l	1087.88
Sn	118	115	3	He	-1.164	ug/l	303.34
Sb	121	115	1	No Gas	0.027	ug/l	1103.49
Sb	121	115	3	He	0.023	ug/l	278.70
Sb	123	115	1	No Gas	0.028	ug/l	891.45
Sb	123	115	3	He	0.022	ug/l	211.36
Ba	135	115	1	No Gas	8.102	ug/l	53646.60
Ba	137	115	1	No Gas	8.067	ug/l	95181.19
La	139	115	3	He	0.000	ug/l	21.11
Ce	140	115	3	He	0.000	ug/l	32.22
Hg	201	209	1	No Gas	0.001	ug/l	21.67
Hg	202	209	1	No Gas	0.000	ug/l	99.31
Hg	202	209	3	He	0.005	ug/l	43.32
Tl	203	209	3	He	0.018	ug/l	370.15
Tl	205	209	1	No Gas	0.014	ug/l	1685.68
Tl	205	209	3	He	0.019	ug/l	896.39
[Pb]	206	209	1	No Gas	0.010	ug/l	811.14
[Pb]	207	209	1	No Gas	0.010	ug/l	721.13
Pb	208	209	1	No Gas	0.009	ug/l	3217.95
Th	232	209	3	He	0.003	ug/l	358.82
U	238	209	1	No Gas	0.029	ug/l	2644.07

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8930249.11	95.1
Sc	45	2	H2	2526190.73	69.7
Sc	45	3	He	533438.73	102.6
Ge	72	1	No Gas	2215118.36	98.0
Ge	72	2	H2	925686.97	77.9
Ge	72	3	He	336749.52	107.1
In	115	1	No Gas	2585503.63	97.7
In	115	3	He	583560.85	102.1
Tb	159	1	No Gas	22372951.96	102.1
Tb	159	3	He	8714604.92	107.1
Ho	165	1	No Gas	22209465.56	104.3
Ho	165	3	He	8617747.65	108.4
Lu	175	1	No Gas	21840873.85	105.3
Lu	175	3	He	7126217.27	107.5
Bi	209	1	No Gas	13571583.73	104.9
Bi	209	3	He	5563467.50	104.3

# ICPMS207-B Analytical Data

**Sample Name** B22021435-022B  
**File Name** 055SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 19:05:35  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.784	ug/l	29337.32
Be	9	45	1	No Gas	-0.030	ug/l	61.32
B	11	45	1	No Gas	44.680	ug/l	210311.61
Na	23	45	3	He	52691.282	ug/l	66831337.34
Mg	24	45	3	He	21669.369	ug/l	15387106.19
Al	27	45	1	No Gas	5.419	ug/l	173841.68
Si	28	45	2	H2	17339.949	ug/l	38850122.15
K	39	72	3	He	2737.166	ug/l	2052019.95
Ca	40	72	2	H2	20224.727	ug/l	161925444.74
Ti	47	72	1	No Gas	1.941	ug/l	6915.26
V	51	72	1	No Gas	15.907	ug/l	573378.97
V	51	72	3	He	19.694	ug/l	140103.87
Cr	52	72	1	No Gas	2.982	ug/l	211542.77
Cr	52	72	3	He	2.138	ug/l	16107.73
Mn	55	72	1	No Gas	1.656	ug/l	92292.01
Mn	55	72	3	He	1.417	ug/l	7487.41
Fe	56	72	2	H2	12.293	ug/l	210596.11
Fe	56	72	3	He	10.176	ug/l	72684.99
Co	59	72	1	No Gas	0.069	ug/l	3387.03
Ni	60	72	1	No Gas	0.427	ug/l	4951.04
Ni	60	72	3	He	0.244	ug/l	811.14
Cu	63	72	1	No Gas	0.943	ug/l	23566.43
Cu	63	72	3	He	0.489	ug/l	3938.08
Cu	65	72	1	No Gas	0.559	ug/l	6847.70
Zn	66	72	1	No Gas	3.699	ug/l	28339.70
Zn	66	72	3	He	3.892	ug/l	6112.43
As	75	72	1	No Gas	-0.038	ug/l	13173.43
As	75	72	3	He	0.222	ug/l	499.80
Se	78	72	2	H2	0.317	ug/l	185.22
Br	79	72	1	No Gas	19.468	ug/l	152923.28
Br	79	72	2	H2	20.135	ug/l	58138.04
Se	82	72	1	No Gas	0.416	ug/l	1065.58
Kr	84	72	1	No Gas		ug/l	84285.34
Sr	88	72	1	No Gas	166.600	ug/l	10351767.87
Sr	88	72	3	He	159.376	ug/l	1215368.46
Mo	95	115	1	No Gas	0.349	ug/l	4734.15
Mo	95	115	3	He	0.404	ug/l	1751.23
Mo	98	115	1	No Gas	0.357	ug/l	7769.44
Ag	107	115	1	No Gas	0.000	ug/l	166.74
Ag	109	115	1	No Gas	0.000	ug/l	168.07
Cd	111	115	1	No Gas	0.008	ug/l	121.99

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.012	ug/l	41.33
Cd	114	115	1	No Gas	0.010	ug/l	241.99
Cd	114	115	3	He	0.014	ug/l	91.25
Sn	118	115	1	No Gas	-0.828	ug/l	6069.32
Sn	118	115	3	He	-0.913	ug/l	1612.33
Sb	121	115	1	No Gas	0.047	ug/l	1643.59
Sb	121	115	3	He	0.055	ug/l	492.73
Sb	123	115	1	No Gas	0.052	ug/l	1358.87
Sb	123	115	3	He	0.056	ug/l	388.71
Ba	135	115	1	No Gas	8.230	ug/l	50958.87
Ba	137	115	1	No Gas	8.247	ug/l	90996.43
La	139	115	3	He	0.005	ug/l	162.22
Ce	140	115	3	He	0.006	ug/l	198.89
Hg	201	209	1	No Gas	0.006	ug/l	39.66
Hg	202	209	1	No Gas	0.012	ug/l	211.29
Hg	202	209	3	He	0.010	ug/l	60.66
Tl	203	209	3	He	0.008	ug/l	225.43
Tl	205	209	1	No Gas	0.007	ug/l	1166.73
Tl	205	209	3	He	0.008	ug/l	532.89
[Pb]	206	209	1	No Gas	0.046	ug/l	1572.33
[Pb]	207	209	1	No Gas	0.041	ug/l	1287.85
Pb	208	209	1	No Gas	0.042	ug/l	5996.13
Th	232	209	3	He	0.052	ug/l	2269.11
U	238	209	1	No Gas	0.028	ug/l	2446.41

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	7692681.19	81.9
Sc	45	2	H2	2533649.42	69.9
Sc	45	3	He	471357.70	90.6
Ge	72	1	No Gas	1972903.85	87.3
Ge	72	2	H2	892486.86	75.1
Ge	72	3	He	294994.43	93.8
In	115	1	No Gas	2399355.84	90.7
In	115	3	He	541331.93	94.7
Tb	159	1	No Gas	20859871.22	95.2
Tb	159	3	He	8498702.99	104.4
Ho	165	1	No Gas	20798763.45	97.7
Ho	165	3	He	8539171.06	107.4
Lu	175	1	No Gas	20311832.58	98.0
Lu	175	3	He	6954408.28	104.9
Bi	209	1	No Gas	12751567.93	98.5
Bi	209	3	He	5325432.86	99.8

# ICPMS207-B Analytical Data

**Sample Name** B22021435-027A  
**File Name** 056SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 19:11:50  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.333	ug/l	22836.92
Be	9	45	1	No Gas	-0.031	ug/l	60.66
B	11	45	1	No Gas	40.663	ug/l	229126.98
Na	23	45	3	He	49084.749	ug/l	71677280.04
Mg	24	45	3	He	20851.740	ug/l	17044884.63
Al	27	45	1	No Gas	1.127	ug/l	48960.81
Si	28	45	2	H2	17441.612	ug/l	46889114.23
K	39	72	3	He	2787.776	ug/l	2383993.26
Ca	40	72	2	H2	19898.894	ug/l	189074683.02
Ti	47	72	1	No Gas	1.472	ug/l	5885.45
V	51	72	1	No Gas	16.698	ug/l	673770.93
V	51	72	3	He	13.735	ug/l	116703.01
Cr	52	72	1	No Gas	0.524	ug/l	127499.06
Cr	52	72	3	He	1.851	ug/l	15998.72
Mn	55	72	1	No Gas	0.629	ug/l	43070.97
Mn	55	72	3	He	0.635	ug/l	3937.41
Fe	56	72	2	H2	1.006	ug/l	25887.27
Fe	56	72	3	He	1.007	ug/l	13269.35
Co	59	72	1	No Gas	0.031	ug/l	1846.46
Ni	60	72	1	No Gas	0.253	ug/l	3573.36
Ni	60	72	3	He	0.130	ug/l	576.68
Cu	63	72	1	No Gas	0.488	ug/l	14278.03
Cu	63	72	3	He	0.126	ug/l	1487.11
Cu	65	72	1	No Gas	0.194	ug/l	3060.22
Zn	66	72	1	No Gas	0.427	ug/l	7175.77
Zn	66	72	3	He	0.288	ug/l	1292.29
As	75	72	1	No Gas	-0.342	ug/l	12291.08
As	75	72	3	He	-0.120	ug/l	158.20
Se	78	72	2	H2	0.301	ug/l	209.89
Br	79	72	1	No Gas	57.700	ug/l	473428.14
Br	79	72	2	H2	60.567	ug/l	196423.62
Se	82	72	1	No Gas	0.501	ug/l	1223.87
Kr	84	72	1	No Gas		ug/l	88575.21
Sr	88	72	1	No Gas	158.702	ug/l	10930054.45
Sr	88	72	3	He	150.992	ug/l	1314339.39
Mo	95	115	1	No Gas	0.281	ug/l	4118.40
Mo	95	115	3	He	0.307	ug/l	1448.97
Mo	98	115	1	No Gas	0.286	ug/l	6719.53
Ag	107	115	1	No Gas	-0.001	ug/l	176.07
Ag	109	115	1	No Gas	0.000	ug/l	175.40
Cd	111	115	1	No Gas	0.005	ug/l	106.89

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.003	ug/l	25.11
Cd	114	115	1	No Gas	0.008	ug/l	218.18
Cd	114	115	3	He	0.009	ug/l	67.30
Sn	118	115	1	No Gas	-1.093	ug/l	642.08
Sn	118	115	3	He	-1.186	ug/l	182.23
Sb	121	115	1	No Gas	0.010	ug/l	572.41
Sb	121	115	3	He	0.007	ug/l	149.68
Sb	123	115	1	No Gas	0.010	ug/l	462.39
Sb	123	115	3	He	0.011	ug/l	140.68
Ba	135	115	1	No Gas	7.465	ug/l	49893.46
Ba	137	115	1	No Gas	7.429	ug/l	88481.45
La	139	115	3	He	0.001	ug/l	34.45
Ce	140	115	3	He	0.001	ug/l	46.67
Hg	201	209	1	No Gas	0.000	ug/l	16.67
Hg	202	209	1	No Gas	-0.003	ug/l	66.99
Hg	202	209	3	He	0.000	ug/l	23.66
Tl	203	209	3	He	0.011	ug/l	269.44
Tl	205	209	1	No Gas	0.007	ug/l	1233.40
Tl	205	209	3	He	0.010	ug/l	606.93
[Pb]	206	209	1	No Gas	0.012	ug/l	843.37
[Pb]	207	209	1	No Gas	0.009	ug/l	693.36
Pb	208	209	1	No Gas	0.010	ug/l	3287.96
Th	232	209	3	He	0.001	ug/l	281.45
U	238	209	1	No Gas	0.028	ug/l	2523.74

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	9100834.50	96.9
Sc	45	2	H2	3040646.57	83.9
Sc	45	3	He	542626.45	104.3
Ge	72	1	No Gas	2187164.32	96.8
Ge	72	2	H2	1058875.12	89.1
Ge	72	3	He	336666.13	107.0
In	115	1	No Gas	2588969.44	97.8
In	115	3	He	588595.22	103.0
Tb	159	1	No Gas	22144343.15	101.0
Tb	159	3	He	8694023.82	106.8
Ho	165	1	No Gas	21710248.23	101.9
Ho	165	3	He	8545363.61	107.4
Lu	175	1	No Gas	21368710.46	103.1
Lu	175	3	He	7157153.46	108.0
Bi	209	1	No Gas	13338374.75	103.1
Bi	209	3	He	5513221.67	103.4

# ICPMS207-B Analytical Data

**Sample Name** CCV  
**File Name** 057\_CCV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 19:18:05  
**Sample Type** CCV  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	449.301	ug/l	10391682.10
Be	9	45	1	No Gas	41.436	ug/l	312603.60
B	11	45	1	No Gas	41.360	ug/l	203350.68
Na	23	45	3	He	12484.226	ug/l	17210090.86
Mg	24	45	3	He	12478.243	ug/l	9602864.73
Al	27	45	1	No Gas	47.735	ug/l	1532688.21
Si	28	45	2	H2	190.468	ug/l	472622.74
K	39	72	3	He	11700.480	ug/l	9436983.96
Ca	40	72	2	H2	10743.814	ug/l	96516606.54
Ti	47	72	1	No Gas	47.118	ug/l	167392.28
V	51	72	1	No Gas	51.158	ug/l	2162192.53
V	51	72	3	He	50.599	ug/l	370773.32
Cr	52	72	1	No Gas	48.011	ug/l	2051040.77
Cr	52	72	3	He	48.594	ug/l	391527.78
Mn	55	72	1	No Gas	50.041	ug/l	2704610.20
Mn	55	72	3	He	47.708	ug/l	271632.97
Fe	56	72	2	H2	1229.786	ug/l	23044488.89
Fe	56	72	3	He	1236.371	ug/l	9078255.44
Co	59	72	1	No Gas	49.038	ug/l	2259171.22
Ni	60	72	1	No Gas	48.309	ug/l	497940.54
Ni	60	72	3	He	50.838	ug/l	150681.05
Cu	63	72	1	No Gas	50.075	ug/l	1219696.13
Cu	63	72	3	He	50.433	ug/l	404015.85
Cu	65	72	1	No Gas	49.893	ug/l	579698.83
Zn	66	72	1	No Gas	51.344	ug/l	359744.10
Zn	66	72	3	He	51.195	ug/l	78731.02
As	75	72	1	No Gas	50.936	ug/l	375693.07
As	75	72	3	He	49.599	ug/l	58095.83
Se	78	72	2	H2	52.575	ug/l	30771.15
Br	79	72	1	No Gas	1.466	ug/l	24845.39
Br	79	72	2	H2	1.333	ug/l	9191.37
Se	82	72	1	No Gas	51.883	ug/l	25540.51
Kr	84	72	1	No Gas		ug/l	42247.71
Sr	88	72	1	No Gas	51.605	ug/l	3324179.15
Sr	88	72	3	He	47.964	ug/l	403274.03
Mo	95	115	1	No Gas	47.699	ug/l	655434.21
Mo	95	115	3	He	50.443	ug/l	231366.82
Mo	98	115	1	No Gas	47.399	ug/l	1046004.43
Ag	107	115	1	No Gas	19.609	ug/l	683913.98
Ag	109	115	1	No Gas	19.717	ug/l	658834.99
Cd	111	115	1	No Gas	50.524	ug/l	373011.37

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	51.983	ug/l	121973.16
Cd	114	115	1	No Gas	51.316	ug/l	839064.18
Cd	114	115	3	He	50.992	ug/l	296965.95
Sn	118	115	1	No Gas	48.992	ug/l	1059516.87
Sn	118	115	3	He	50.196	ug/l	291209.04
Sb	121	115	1	No Gas	50.423	ug/l	1518029.99
Sb	121	115	3	He	50.782	ug/l	399790.03
Sb	123	115	1	No Gas	50.461	ug/l	1151144.62
Sb	123	115	3	He	50.716	ug/l	312491.31
Ba	135	115	1	No Gas	50.446	ug/l	319345.63
Ba	137	115	1	No Gas	49.767	ug/l	562247.63
La	139	115	3	He	50.314	ug/l	1562797.79
Ce	140	115	3	He	50.629	ug/l	1720501.80
Hg	201	209	1	No Gas	0.974	ug/l	4160.82
Hg	202	209	1	No Gas	0.974	ug/l	9406.43
Hg	202	209	3	He	0.984	ug/l	4072.48
Tl	203	209	3	He	48.074	ug/l	583586.25
Tl	205	209	1	No Gas	50.422	ug/l	3253556.93
Tl	205	209	3	He	49.969	ug/l	1427336.39
[Pb]	206	209	1	No Gas	50.277	ug/l	1133491.95
[Pb]	207	209	1	No Gas	49.944	ug/l	984404.31
Pb	208	209	1	No Gas	50.201	ug/l	4512197.18
Th	232	209	3	He	47.678	ug/l	1913000.18
U	238	209	1	No Gas	50.472	ug/l	4480703.42

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8051743.55	85.7
Sc	45	2	H2	2722400.23	75.1
Sc	45	3	He	510825.58	98.2
Ge	72	1	No Gas	2061482.08	91.2
Ge	72	2	H2	1000659.58	84.2
Ge	72	3	He	324997.79	103.3
In	115	1	No Gas	2495370.13	94.3
In	115	3	He	579284.19	101.4
Tb	159	1	No Gas	21511520.76	98.1
Tb	159	3	He	8506408.19	104.5
Ho	165	1	No Gas	21188764.06	99.5
Ho	165	3	He	8345761.72	104.9
Lu	175	1	No Gas	20887327.22	100.7
Lu	175	3	He	6851590.62	103.3
Bi	209	1	No Gas	13217949.50	102.1
Bi	209	3	He	5449366.14	102.2

# ICPMS207-B Analytical Data

**Sample Name** CCB  
**File Name** 058\_CCB.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 19:24:22  
**Sample Type** CCB  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.611	ug/l	26372.04
Be	9	45	1	No Gas	-0.028	ug/l	81.32
B	11	45	1	No Gas	-3.573	ug/l	10719.43
Na	23	45	3	He	18.423	ug/l	83515.50
Mg	24	45	3	He	0.382	ug/l	918.21
Al	27	45	1	No Gas	-0.030	ug/l	5857.84
Si	28	45	2	H2	8.115	ug/l	33181.40
K	39	72	3	He	9.116	ug/l	70825.44
Ca	40	72	2	H2	-0.295	ug/l	74292.51
Ti	47	72	1	No Gas	0.024	ug/l	368.71
V	51	72	1	No Gas	1.664	ug/l	-38872.54
V	51	72	3	He	4.122	ug/l	41890.43
Cr	52	72	1	No Gas	-0.061	ug/l	95292.20
Cr	52	72	3	He	0.010	ug/l	580.02
Mn	55	72	1	No Gas	0.084	ug/l	10835.89
Mn	55	72	3	He	0.010	ug/l	227.63
Fe	56	72	2	H2	0.139	ug/l	7933.48
Fe	56	72	3	He	0.424	ug/l	7885.07
Co	59	72	1	No Gas	0.000	ug/l	302.74
Ni	60	72	1	No Gas	-0.024	ug/l	482.39
Ni	60	72	3	He	-0.029	ug/l	77.78
Cu	63	72	1	No Gas	0.025	ug/l	2063.65
Cu	63	72	3	He	0.034	ug/l	648.22
Cu	65	72	1	No Gas	0.030	ug/l	949.75
Zn	66	72	1	No Gas	-0.070	ug/l	3258.03
Zn	66	72	3	He	-0.016	ug/l	725.58
As	75	72	1	No Gas	0.018	ug/l	14076.15
As	75	72	3	He	0.034	ug/l	306.80
Se	78	72	2	H2	-0.001	ug/l	21.33
Br	79	72	1	No Gas	0.637	ug/l	18528.42
Br	79	72	2	H2	0.717	ug/l	7091.05
Se	82	72	1	No Gas	-0.186	ug/l	815.29
Kr	84	72	1	No Gas		ug/l	21230.21
Sr	88	72	1	No Gas	0.003	ug/l	1164.41
Sr	88	72	3	He	-0.005	ug/l	328.89
Mo	95	115	1	No Gas	0.026	ug/l	413.34
Mo	95	115	3	He	0.020	ug/l	104.44
Mo	98	115	1	No Gas	0.028	ug/l	693.98
Ag	107	115	1	No Gas	-0.001	ug/l	168.74
Ag	109	115	1	No Gas	-0.001	ug/l	160.06
Cd	111	115	1	No Gas	0.002	ug/l	84.49



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.005	ug/l	26.33
Cd	114	115	1	No Gas	0.005	ug/l	158.97
Cd	114	115	3	He	0.006	ug/l	43.57
Sn	118	115	1	No Gas	0.102	ug/l	26225.92
Sn	118	115	3	He	0.105	ug/l	6958.42
Sb	121	115	1	No Gas	0.141	ug/l	4543.86
Sb	121	115	3	He	0.122	ug/l	980.80
Sb	123	115	1	No Gas	0.144	ug/l	3524.47
Sb	123	115	3	He	0.121	ug/l	764.43
Ba	135	115	1	No Gas	0.002	ug/l	43.25
Ba	137	115	1	No Gas	-0.003	ug/l	56.55
La	139	115	3	He	0.001	ug/l	42.22
Ce	140	115	3	He	0.001	ug/l	35.56
Hg	201	209	1	No Gas	0.003	ug/l	27.32
Hg	202	209	1	No Gas	0.002	ug/l	119.31
Hg	202	209	3	He	0.003	ug/l	35.99
Tl	203	209	3	He	0.208	ug/l	2625.99
Tl	205	209	1	No Gas	0.161	ug/l	11608.64
Tl	205	209	3	He	0.213	ug/l	6304.03
[Pb]	206	209	1	No Gas	0.000	ug/l	595.57
[Pb]	207	209	1	No Gas	0.001	ug/l	548.90
Pb	208	209	1	No Gas	-0.001	ug/l	2353.43
Th	232	209	3	He	0.055	ug/l	2447.22
U	238	209	1	No Gas	0.004	ug/l	342.94

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	7961039.59	84.7
Sc	45	2	H2	2674337.96	73.8
Sc	45	3	He	476979.29	91.7
Ge	72	1	No Gas	2042385.41	90.4
Ge	72	2	H2	964201.63	81.1
Ge	72	3	He	301319.74	95.8
In	115	1	No Gas	2490680.07	94.1
In	115	3	He	540924.04	94.7
Tb	159	1	No Gas	21145189.86	96.5
Tb	159	3	He	8057582.45	99.0
Ho	165	1	No Gas	20756149.79	97.5
Ho	165	3	He	7938263.24	99.8
Lu	175	1	No Gas	20498701.52	98.9
Lu	175	3	He	6562251.76	99.0
Bi	209	1	No Gas	13639722.33	105.4
Bi	209	3	He	5403377.29	101.3

# ICPMS207-B Analytical Data

**Sample Name** B22021435-027B  
**File Name** 059SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 19:30:38  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.885	ug/l	30513.44
Be	9	45	1	No Gas	-0.030	ug/l	62.66
B	11	45	1	No Gas	41.947	ug/l	192036.10
Na	23	45	3	He	49535.287	ug/l	62472788.51
Mg	24	45	3	He	21011.034	ug/l	14834198.75
Al	27	45	1	No Gas	2.260	ug/l	73672.85
Si	28	45	2	H2	16842.389	ug/l	36291948.28
K	39	72	3	He	2717.035	ug/l	2031643.53
Ca	40	72	2	H2	18994.181	ug/l	151405118.12
Ti	47	72	1	No Gas	1.889	ug/l	6529.71
V	51	72	1	No Gas	16.152	ug/l	561938.78
V	51	72	3	He	19.587	ug/l	139037.02
Cr	52	72	1	No Gas	3.249	ug/l	215343.19
Cr	52	72	3	He	2.238	ug/l	16792.97
Mn	55	72	1	No Gas	1.176	ug/l	65198.00
Mn	55	72	3	He	0.853	ug/l	4564.47
Fe	56	72	2	H2	2.062	ug/l	39293.73
Fe	56	72	3	He	2.247	ug/l	19824.98
Co	59	72	1	No Gas	0.062	ug/l	2967.77
Ni	60	72	1	No Gas	0.486	ug/l	5373.68
Ni	60	72	3	He	0.297	ug/l	951.15
Cu	63	72	1	No Gas	0.872	ug/l	21215.24
Cu	63	72	3	He	0.415	ug/l	3393.39
Cu	65	72	1	No Gas	0.512	ug/l	6127.09
Zn	66	72	1	No Gas	0.362	ug/l	5845.13
Zn	66	72	3	He	0.314	ug/l	1165.61
As	75	72	1	No Gas	-0.043	ug/l	12497.73
As	75	72	3	He	0.225	ug/l	501.87
Se	78	72	2	H2	0.307	ug/l	179.55
Br	79	72	1	No Gas	18.092	ug/l	138565.47
Br	79	72	2	H2	19.053	ug/l	55008.65
Se	82	72	1	No Gas	0.221	ug/l	941.70
Kr	84	72	1	No Gas		ug/l	83361.69
Sr	88	72	1	No Gas	169.150	ug/l	10169859.40
Sr	88	72	3	He	155.821	ug/l	1184935.59
Mo	95	115	1	No Gas	0.371	ug/l	5067.59
Mo	95	115	3	He	0.425	ug/l	1850.13
Mo	98	115	1	No Gas	0.380	ug/l	8314.98
Ag	107	115	1	No Gas	0.000	ug/l	171.40
Ag	109	115	1	No Gas	-0.001	ug/l	156.73
Cd	111	115	1	No Gas	0.007	ug/l	120.03

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.009	ug/l	36.44
Cd	114	115	1	No Gas	0.010	ug/l	237.99
Cd	114	115	3	He	0.012	ug/l	77.42
Sn	118	115	1	No Gas	-0.784	ug/l	7031.16
Sn	118	115	3	He	-0.886	ug/l	1762.35
Sb	121	115	1	No Gas	0.078	ug/l	2571.17
Sb	121	115	3	He	0.078	ug/l	662.75
Sb	123	115	1	No Gas	0.083	ug/l	2063.69
Sb	123	115	3	He	0.081	ug/l	536.73
Ba	135	115	1	No Gas	7.526	ug/l	46856.39
Ba	137	115	1	No Gas	7.342	ug/l	81409.18
La	139	115	3	He	0.001	ug/l	47.78
Ce	140	115	3	He	0.002	ug/l	84.44
Hg	201	209	1	No Gas	0.007	ug/l	43.66
Hg	202	209	1	No Gas	0.012	ug/l	206.29
Hg	202	209	3	He	0.011	ug/l	66.99
Tl	203	209	3	He	0.075	ug/l	1011.12
Tl	205	209	1	No Gas	0.058	ug/l	4348.54
Tl	205	209	3	He	0.076	ug/l	2413.19
[Pb]	206	209	1	No Gas	0.019	ug/l	974.48
[Pb]	207	209	1	No Gas	0.017	ug/l	833.37
Pb	208	209	1	No Gas	0.017	ug/l	3831.35
Th	232	209	3	He	0.142	ug/l	5745.57
U	238	209	1	No Gas	0.031	ug/l	2683.74

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	7483406.97	79.7
Sc	45	2	H2	2436675.41	67.2
Sc	45	3	He	468665.69	90.1
Ge	72	1	No Gas	1921015.40	85.0
Ge	72	2	H2	888333.09	74.7
Ge	72	3	He	294130.99	93.5
In	115	1	No Gas	2433328.34	91.9
In	115	3	He	543922.55	95.2
Tb	159	1	No Gas	21218861.03	96.8
Tb	159	3	He	8406781.38	103.3
Ho	165	1	No Gas	21249274.99	99.8
Ho	165	3	He	8443399.87	106.2
Lu	175	1	No Gas	20877121.18	100.7
Lu	175	3	He	6849813.69	103.3
Bi	209	1	No Gas	12895128.53	99.6
Bi	209	3	He	5269925.72	98.8

# ICPMS207-B Analytical Data

**Sample Name** B22021435-032A  
**File Name** 060SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 19:36:53  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.383	ug/l	23404.67
Be	9	45	1	No Gas	-0.031	ug/l	59.32
B	11	45	1	No Gas	46.949	ug/l	252656.64
Na	23	45	3	He	60040.792	ug/l	85810812.05
Mg	24	45	3	He	24118.227	ug/l	19299432.47
Al	27	45	1	No Gas	4.871	ug/l	180421.92
Si	28	45	2	H2	17128.467	ug/l	45014357.04
K	39	72	3	He	2845.097	ug/l	2370422.38
Ca	40	72	2	H2	23260.472	ug/l	214272548.33
Ti	47	72	1	No Gas	1.579	ug/l	6174.21
V	51	72	1	No Gas	15.621	ug/l	613896.04
V	51	72	3	He	12.507	ug/l	105093.44
Cr	52	72	1	No Gas	0.220	ug/l	112289.99
Cr	52	72	3	He	1.605	ug/l	13597.43
Mn	55	72	1	No Gas	20.369	ug/l	1159083.44
Mn	55	72	3	He	19.680	ug/l	113270.87
Fe	56	72	2	H2	7.911	ug/l	157776.37
Fe	56	72	3	He	7.745	ug/l	62863.55
Co	59	72	1	No Gas	0.093	ug/l	4827.95
Ni	60	72	1	No Gas	1.174	ug/l	13466.19
Ni	60	72	3	He	1.115	ug/l	3507.11
Cu	63	72	1	No Gas	1.178	ug/l	31651.52
Cu	63	72	3	He	0.735	ug/l	6373.78
Cu	65	72	1	No Gas	0.814	ug/l	10574.08
Zn	66	72	1	No Gas	4.207	ug/l	34574.25
Zn	66	72	3	He	4.233	ug/l	7324.11
As	75	72	1	No Gas	-0.324	ug/l	12141.67
As	75	72	3	He	-0.033	ug/l	256.73
Se	78	72	2	H2	0.432	ug/l	282.00
Br	79	72	1	No Gas	61.115	ug/l	491942.36
Br	79	72	2	H2	62.339	ug/l	195741.61
Se	82	72	1	No Gas	0.550	ug/l	1230.80
Kr	84	72	1	No Gas		ug/l	100422.39
Sr	88	72	1	No Gas	191.332	ug/l	12950151.38
Sr	88	72	3	He	186.337	ug/l	1581089.70
Mo	95	115	1	No Gas	0.320	ug/l	4675.24
Mo	95	115	3	He	0.372	ug/l	1727.90
Mo	98	115	1	No Gas	0.325	ug/l	7579.16
Ag	107	115	1	No Gas	0.000	ug/l	187.41
Ag	109	115	1	No Gas	0.000	ug/l	179.41
Cd	111	115	1	No Gas	0.018	ug/l	214.36

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.020	ug/l	63.11
Cd	114	115	1	No Gas	0.020	ug/l	429.36
Cd	114	115	3	He	0.024	ug/l	153.59
Sn	118	115	1	No Gas	-1.082	ug/l	871.63
Sn	118	115	3	He	-1.174	ug/l	245.56
Sb	121	115	1	No Gas	0.070	ug/l	2492.47
Sb	121	115	3	He	0.071	ug/l	652.08
Sb	123	115	1	No Gas	0.072	ug/l	1943.33
Sb	123	115	3	He	0.073	ug/l	525.06
Ba	135	115	1	No Gas	21.636	ug/l	143996.76
Ba	137	115	1	No Gas	20.955	ug/l	248168.33
La	139	115	3	He	0.003	ug/l	115.55
Ce	140	115	3	He	0.004	ug/l	155.56
Hg	201	209	1	No Gas	0.003	ug/l	30.32
Hg	202	209	1	No Gas	-0.002	ug/l	81.98
Hg	202	209	3	He	0.004	ug/l	39.66
Tl	203	209	3	He	0.060	ug/l	866.38
Tl	205	209	1	No Gas	0.046	ug/l	3758.35
Tl	205	209	3	He	0.063	ug/l	2118.36
[Pb]	206	209	1	No Gas	0.063	ug/l	2041.28
[Pb]	207	209	1	No Gas	0.065	ug/l	1817.91
Pb	208	209	1	No Gas	0.062	ug/l	8085.44
Th	232	209	3	He	0.009	ug/l	592.25
U	238	209	1	No Gas	0.026	ug/l	2397.74

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8972350.17	95.5
Sc	45	2	H2	2973237.75	82.0
Sc	45	3	He	531232.15	102.1
Ge	72	1	No Gas	2168136.50	95.9
Ge	72	2	H2	1026296.30	86.3
Ge	72	3	He	328208.41	104.3
In	115	1	No Gas	2615158.98	98.8
In	115	3	He	580484.22	101.6
Tb	159	1	No Gas	21975188.79	100.2
Tb	159	3	He	8598518.01	105.6
Ho	165	1	No Gas	21852035.22	102.6
Ho	165	3	He	8597652.97	108.1
Lu	175	1	No Gas	21084230.15	101.7
Lu	175	3	He	7073292.73	106.7
Bi	209	1	No Gas	13557055.52	104.8
Bi	209	3	He	5408061.23	101.4

# ICPMS207-B Analytical Data

**Sample Name** B22021435-032B  
**File Name** 061SMPL.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 19:43:09  
**Sample Type** Sample  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-T  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.691	ug/l	26840.41
Be	9	45	1	No Gas	-0.030	ug/l	61.99
B	11	45	1	No Gas	50.267	ug/l	229783.94
Na	23	45	3	He	60169.647	ug/l	75685946.09
Mg	24	45	3	He	24048.732	ug/l	16936932.82
Al	27	45	1	No Gas	12.151	ug/l	375819.93
Si	28	45	2	H2	16895.541	ug/l	37169377.56
K	39	72	3	He	2779.242	ug/l	2070749.78
Ca	40	72	2	H2	22731.141	ug/l	182499616.52
Ti	47	72	1	No Gas	2.284	ug/l	8072.04
V	51	72	1	No Gas	14.663	ug/l	512766.08
V	51	72	3	He	18.046	ug/l	128913.55
Cr	52	72	1	No Gas	2.619	ug/l	196830.01
Cr	52	72	3	He	1.837	ug/l	13835.42
Mn	55	72	1	No Gas	21.174	ug/l	1103554.03
Mn	55	72	3	He	20.958	ug/l	107779.32
Fe	56	72	2	H2	36.827	ug/l	621838.77
Fe	56	72	3	He	37.438	ug/l	252827.99
Co	59	72	1	No Gas	0.141	ug/l	6518.55
Ni	60	72	1	No Gas	1.348	ug/l	14048.96
Ni	60	72	3	He	1.294	ug/l	3612.69
Cu	63	72	1	No Gas	1.847	ug/l	44640.53
Cu	63	72	3	He	1.405	ug/l	10537.68
Cu	65	72	1	No Gas	1.449	ug/l	16726.28
Zn	66	72	1	No Gas	7.716	ug/l	54896.45
Zn	66	72	3	He	7.992	ug/l	11708.12
As	75	72	1	No Gas	0.050	ug/l	13745.76
As	75	72	3	He	0.318	ug/l	598.13
Se	78	72	2	H2	0.404	ug/l	231.67
Br	79	72	1	No Gas	19.480	ug/l	152502.71
Br	79	72	2	H2	20.287	ug/l	58696.09
Se	82	72	1	No Gas	0.584	ug/l	1148.79
Kr	84	72	1	No Gas		ug/l	93439.81
Sr	88	72	1	No Gas	191.298	ug/l	11841387.53
Sr	88	72	3	He	189.080	ug/l	1433669.20
Mo	95	115	1	No Gas	0.457	ug/l	6115.79
Mo	95	115	3	He	0.507	ug/l	2201.29
Mo	98	115	1	No Gas	0.450	ug/l	9672.36
Ag	107	115	1	No Gas	0.002	ug/l	236.10
Ag	109	115	1	No Gas	0.002	ug/l	222.09
Cd	111	115	1	No Gas	0.024	ug/l	232.11

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.026	ug/l	72.56
Cd	114	115	1	No Gas	0.024	ug/l	453.94
Cd	114	115	3	He	0.027	ug/l	163.34
Sn	118	115	1	No Gas	-0.819	ug/l	6205.82
Sn	118	115	3	He	-0.891	ug/l	1732.34
Sb	121	115	1	No Gas	0.120	ug/l	3729.54
Sb	121	115	3	He	0.129	ug/l	1045.15
Sb	123	115	1	No Gas	0.128	ug/l	3016.63
Sb	123	115	3	He	0.133	ug/l	837.44
Ba	135	115	1	No Gas	22.283	ug/l	136661.74
Ba	137	115	1	No Gas	21.753	ug/l	237651.08
La	139	115	3	He	0.009	ug/l	284.45
Ce	140	115	3	He	0.019	ug/l	618.91
Hg	201	209	1	No Gas	0.008	ug/l	47.32
Hg	202	209	1	No Gas	0.013	ug/l	215.63
Hg	202	209	3	He	0.014	ug/l	76.98
Tl	203	209	3	He	0.020	ug/l	372.16
Tl	205	209	1	No Gas	0.015	ug/l	1612.33
Tl	205	209	3	He	0.022	ug/l	917.74
[Pb]	206	209	1	No Gas	0.370	ug/l	8566.13
[Pb]	207	209	1	No Gas	0.358	ug/l	7267.58
Pb	208	209	1	No Gas	0.365	ug/l	33799.24
Th	232	209	3	He	0.069	ug/l	2938.85
U	238	209	1	No Gas	0.028	ug/l	2407.08

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	7642187.13	81.4
Sc	45	2	H2	2489351.31	68.7
Sc	45	3	He	467495.22	89.9
Ge	72	1	No Gas	1975509.42	87.4
Ge	72	2	H2	894809.49	75.3
Ge	72	3	He	293306.07	93.2
In	115	1	No Gas	2399737.16	90.7
In	115	3	He	543725.17	95.1
Tb	159	1	No Gas	21095434.07	96.2
Tb	159	3	He	8475699.67	104.1
Ho	165	1	No Gas	20666736.84	97.0
Ho	165	3	He	8376495.26	105.3
Lu	175	1	No Gas	20457915.11	98.7
Lu	175	3	He	6883424.95	103.8
Bi	209	1	No Gas	12692460.46	98.1
Bi	209	3	He	5313552.94	99.6

# ICPMS207-B Analytical Data

**Sample Name** CCV  
**File Name** 062\_CCV.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 19:49:23  
**Sample Type** CCV  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	428.837	ug/l	10013103.68
Be	9	45	1	No Gas	40.272	ug/l	307254.82
B	11	45	1	No Gas	39.893	ug/l	199275.96
Na	23	45	3	He	12451.667	ug/l	16994795.72
Mg	24	45	3	He	12373.874	ug/l	9427660.44
Al	27	45	1	No Gas	46.294	ug/l	1501503.08
Si	28	45	2	H2	191.517	ug/l	468166.78
K	39	72	3	He	11627.439	ug/l	9299731.53
Ca	40	72	2	H2	10801.190	ug/l	97023229.81
Ti	47	72	1	No Gas	45.895	ug/l	165669.00
V	51	72	1	No Gas	47.438	ug/l	2031708.03
V	51	72	3	He	50.494	ug/l	366886.53
Cr	52	72	1	No Gas	47.697	ug/l	2070671.78
Cr	52	72	3	He	48.207	ug/l	385114.85
Mn	55	72	1	No Gas	49.578	ug/l	2722021.16
Mn	55	72	3	He	47.775	ug/l	269715.67
Fe	56	72	2	H2	1214.954	ug/l	22765032.56
Fe	56	72	3	He	1244.270	ug/l	9058159.19
Co	59	72	1	No Gas	48.440	ug/l	2263989.11
Ni	60	72	1	No Gas	47.104	ug/l	493236.37
Ni	60	72	3	He	50.956	ug/l	149744.39
Cu	63	72	1	No Gas	49.257	ug/l	1219595.99
Cu	63	72	3	He	50.628	ug/l	402144.25
Cu	65	72	1	No Gas	49.113	ug/l	579509.37
Zn	66	72	1	No Gas	51.485	ug/l	365970.40
Zn	66	72	3	He	51.949	ug/l	79201.33
As	75	72	1	No Gas	49.562	ug/l	371306.78
As	75	72	3	He	50.051	ug/l	58127.94
Se	78	72	2	H2	52.742	ug/l	30862.22
Br	79	72	1	No Gas	1.184	ug/l	22999.39
Br	79	72	2	H2	1.173	ug/l	8715.35
Se	82	72	1	No Gas	51.020	ug/l	25537.53
Kr	84	72	1	No Gas		ug/l	42925.17
Sr	88	72	1	No Gas	51.836	ug/l	3391907.29
Sr	88	72	3	He	48.829	ug/l	407090.07
Mo	95	115	1	No Gas	47.141	ug/l	661279.85
Mo	95	115	3	He	50.242	ug/l	231254.52
Mo	98	115	1	No Gas	47.950	ug/l	1078263.45
Ag	107	115	1	No Gas	19.451	ug/l	690986.91
Ag	109	115	1	No Gas	19.661	ug/l	669286.87
Cd	111	115	1	No Gas	50.110	ug/l	376625.17



# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	52.025	ug/l	122512.44
Cd	114	115	1	No Gas	50.630	ug/l	842838.38
Cd	114	115	3	He	50.784	ug/l	296793.35
Sn	118	115	1	No Gas	49.351	ug/l	1086119.09
Sn	118	115	3	He	50.731	ug/l	295259.34
Sb	121	115	1	No Gas	49.898	ug/l	1528981.71
Sb	121	115	3	He	51.040	ug/l	403233.31
Sb	123	115	1	No Gas	50.080	ug/l	1164068.44
Sb	123	115	3	He	51.003	ug/l	315371.99
Ba	135	115	1	No Gas	50.387	ug/l	325333.21
Ba	137	115	1	No Gas	50.045	ug/l	575193.23
La	139	115	3	He	50.734	ug/l	1581485.67
Ce	140	115	3	He	50.934	ug/l	1736841.61
Hg	201	209	1	No Gas	0.968	ug/l	4208.16
Hg	202	209	1	No Gas	0.964	ug/l	9484.80
Hg	202	209	3	He	0.987	ug/l	4104.48
Tl	203	209	3	He	48.005	ug/l	585482.40
Tl	205	209	1	No Gas	49.931	ug/l	3276740.19
Tl	205	209	3	He	49.420	ug/l	1417949.69
[Pb]	206	209	1	No Gas	50.267	ug/l	1153372.59
[Pb]	207	209	1	No Gas	49.742	ug/l	997488.78
Pb	208	209	1	No Gas	50.193	ug/l	4590013.36
Th	232	209	3	He	48.477	ug/l	1954016.93
U	238	209	1	No Gas	50.264	ug/l	4541650.31

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8107375.61	86.3
Sc	45	2	H2	2683255.85	74.0
Sc	45	3	He	505749.22	97.2
Ge	72	1	No Gas	2082203.90	92.1
Ge	72	2	H2	1000462.77	84.1
Ge	72	3	He	322276.73	102.5
In	115	1	No Gas	2518235.83	95.1
In	115	3	He	581264.35	101.7
Tb	159	1	No Gas	21484534.19	98.0
Tb	159	3	He	8583957.93	105.5
Ho	165	1	No Gas	20889905.63	98.1
Ho	165	3	He	8550627.10	107.5
Lu	175	1	No Gas	20949234.33	101.0
Lu	175	3	He	6903758.57	104.1
Bi	209	1	No Gas	13344933.38	103.1
Bi	209	3	He	5473431.20	102.6

# ICPMS207-B Analytical Data

**Sample Name** CCB  
**File Name** 063\_CCB.d  
**Data Path Name** D:\Agilent\ICPMH\1\DATA\220224ADoD.b  
**Acq Time** 2022-02-24 19:55:38  
**Sample Type** CCB  
**Total Dilution** 1.0000  
**Comment** ICPMS-6020-W-D  
**Operator** CAR/SRH/JPV/AEM  
**Method** SW6020/SW6020B

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Li	7	45	1	No Gas	0.618	ug/l	26652.62
Be	9	45	1	No Gas	-0.031	ug/l	60.66
B	11	45	1	No Gas	-3.663	ug/l	10374.39
Na	23	45	3	He	15.319	ug/l	82772.67
Mg	24	45	3	He	0.408	ug/l	974.77
Al	27	45	1	No Gas	-0.034	ug/l	5765.60
Si	28	45	2	H2	6.823	ug/l	30621.11
K	39	72	3	He	3.138	ug/l	69028.21
Ca	40	72	2	H2	-0.177	ug/l	76050.87
Ti	47	72	1	No Gas	-0.009	ug/l	250.25
V	51	72	1	No Gas	0.289	ug/l	-98807.36
V	51	72	3	He	3.470	ug/l	39136.23
Cr	52	72	1	No Gas	-0.102	ug/l	94287.14
Cr	52	72	3	He	0.006	ug/l	570.01
Mn	55	72	1	No Gas	0.071	ug/l	10206.68
Mn	55	72	3	He	0.008	ug/l	227.62
Fe	56	72	2	H2	0.834	ug/l	20970.12
Fe	56	72	3	He	0.288	ug/l	7229.07
Co	59	72	1	No Gas	-0.001	ug/l	286.10
Ni	60	72	1	No Gas	-0.029	ug/l	439.14
Ni	60	72	3	He	1.556	ug/l	4606.51
Cu	63	72	1	No Gas	0.030	ug/l	2216.40
Cu	63	72	3	He	0.033	ug/l	667.55
Cu	65	72	1	No Gas	0.036	ug/l	1037.79
Zn	66	72	1	No Gas	-0.019	ug/l	3661.35
Zn	66	72	3	He	-0.078	ug/l	663.35
As	75	72	1	No Gas	-0.303	ug/l	11911.77
As	75	72	3	He	0.022	ug/l	305.47
Se	78	72	2	H2	0.001	ug/l	22.55
Br	79	72	1	No Gas	0.541	ug/l	18032.24
Br	79	72	2	H2	0.675	ug/l	7034.46
Se	82	72	1	No Gas	-0.270	ug/l	782.48
Kr	84	72	1	No Gas		ug/l	21470.16
Sr	88	72	1	No Gas	0.003	ug/l	1194.36
Sr	88	72	3	He	-0.001	ug/l	375.56
Mo	95	115	1	No Gas	0.030	ug/l	468.90
Mo	95	115	3	He	0.025	ug/l	132.22
Mo	98	115	1	No Gas	0.028	ug/l	707.32
Ag	107	115	1	No Gas	-0.001	ug/l	162.73
Ag	109	115	1	No Gas	0.001	ug/l	198.08
Cd	111	115	1	No Gas	0.006	ug/l	106.68

# ICPMS207-B Analytical Data

Name	Mass	ISTD	Tune Step	Tune Mode	Conc.	Units	CPS
Cd	111	115	3	He	0.005	ug/l	27.45
Cd	114	115	1	No Gas	0.004	ug/l	150.06
Cd	114	115	3	He	0.005	ug/l	43.48
Sn	118	115	1	No Gas	0.098	ug/l	25749.26
Sn	118	115	3	He	0.045	ug/l	7031.80
Sb	121	115	1	No Gas	0.146	ug/l	4669.27
Sb	121	115	3	He	0.113	ug/l	966.80
Sb	123	115	1	No Gas	0.145	ug/l	3531.48
Sb	123	115	3	He	0.113	ug/l	759.10
Ba	135	115	1	No Gas	0.006	ug/l	63.21
Ba	137	115	1	No Gas	0.000	ug/l	86.49
La	139	115	3	He	0.001	ug/l	24.44
Ce	140	115	3	He	0.001	ug/l	37.78
Hg	201	209	1	No Gas	0.005	ug/l	36.66
Hg	202	209	1	No Gas	0.002	ug/l	124.98
Hg	202	209	3	He	0.003	ug/l	34.99
Tl	203	209	3	He	0.300	ug/l	3964.86
Tl	205	209	1	No Gas	0.253	ug/l	17655.40
Tl	205	209	3	He	0.311	ug/l	9656.06
[Pb]	206	209	1	No Gas	0.000	ug/l	584.46
[Pb]	207	209	1	No Gas	0.000	ug/l	532.24
Pb	208	209	1	No Gas	0.000	ug/l	2450.11
Th	232	209	3	He	0.055	ug/l	2555.28
U	238	209	1	No Gas	0.004	ug/l	356.27

Name	Mass	Tune Step	Tune Mode	CPS	ISTD Recovery %
Sc	45	1	No Gas	8095690.34	86.2
Sc	45	2	H2	2714464.72	74.9
Sc	45	3	He	493058.79	94.8
Ge	72	1	No Gas	2069660.24	91.6
Ge	72	2	H2	973046.06	81.8
Ge	72	3	He	311849.18	99.1
In	115	1	No Gas	2477807.21	93.6
In	115	3	He	569649.06	99.7
Tb	159	1	No Gas	21533016.84	98.2
Tb	159	3	He	8483803.40	104.2
Ho	165	1	No Gas	20990697.25	98.6
Ho	165	3	He	8397986.54	105.6
Lu	175	1	No Gas	21025189.03	101.4
Lu	175	3	He	6858583.55	103.5
Bi	209	1	No Gas	13817624.04	106.8
Bi	209	3	He	5711545.02	107.1

# Energy Laboratories Inc

# Spike LOG

Standard ID: ME220215 AUDIGSPK

Standard Name: AUDIGSPK

Date Prepared: 2/15/2022

Date Expires: 10/25/2022

Department: ME

Vendor:

Lot Number:

Balance ID:

Comments:

---

Type: Secondary

BY: Amanda E. McDani

Status: Open

Final Volume: 50 mL

Stock Source

ME211202A U Stock

ME220215 Th Sec Th Seondary Stock

ME211222 Ce 2nd Ce Secondary Stock

ME211222 La Sec La Secondary Stock

ME211229A AU 2n Au 2nd source Stock

ME211025A Te Stock

**Base Units**

ug/mL

ug/mL

ug/mL

ug/mL

ug/mL

ug/mL

**Amount Added**

5 mL

5 mL

5 mL

5 mL

15 mL

15 mL

Analvtes

**CAS**

Conc: **ug/mL**

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211202A  
Standard Name: U Stock  
Date Prepared: 12/2/2021  
Date Expires: 12/2/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S210517021  
Balance ID:  
Comments:

Type: Primary  
BY: Amanda E. McDani  
Status: New

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Uranium	14419	500	mL	12/2/2022

**Final Volume:**  
500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

# U

### 1.0 DESCRIPTION:

**PlasmaCAL ICP/ICPMS Standard - Uranium 1000 µg/ml**  
 Catalogue Number: 140-051-920/-921/-925  
 Starting Material: Uranyl Nitrate 99.99%  
 Lot Number: **S210517021**  
 Matrix: 4% HNO<sub>3</sub> (See Section 3 for actual matrix)  
 Expiration Date (End of month): **May 2023** (or 15 months after bottle is opened, whichever comes first)

### 2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **1004 µg/ml +/- 4 µg/ml**  
**985 µg/g +/- 4 µg/g**  
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)  
 Traceability: NIST Standard Reference Material 3164 Lot: **080521**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u<sub>i</sub>) including uncertainty established during characterization of the material (u<sub>char</sub>), the between bottle variation (u<sub>bb</sub>), short-term stability (u<sub>sts</sub>) and long-term stability (u<sub>lts</sub>) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

### 3.0 REFERENCE VALUES:

Density: **1.020 g/ml @ 24.0 °C**  
 Actual Matrix: **4.0% (v/v) HNO<sub>3</sub>**

% abundance of stable isotopes : <sup>238</sup>U : 99.82% ; <sup>235</sup>U : 0.18%  
 Note : The uranyl nitrate comes from a depleted source of uranium.

**ID #: 14419**

Opened: \_\_\_\_\_  
 ICP/ICPMS Standard Uranium  
**Expires: 5/31/2023**  
 Rec'd: 10/20/2021  
 Enerav Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0252</b>	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0026	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	N/A
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0020	Sb	<0.0010	Yb	<0.0010
Cu	<0.0010	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	<0.0010	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

### 4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Yaling Sui, Chemist  
 Certification Date: May 27, 2021

*Yaling Sui*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
  - AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (FAAS) et four au graphite (GFAA).*
  - Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.*
  - pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
  - Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
  - IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*
- For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en presumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est appropriée à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034 :** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Marktoberdorf  
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Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220215 TH SECONDARY STOCK  
Standard Name: Th Seondary Stock  
Date Prepared: 2/15/2022  
Date Expires: 2/15/2023  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: S2-TH706436  
Balance ID:  
Comments: Opened 2/15/2022; expires 2/15/2023

Type: Secondary  
BY: Amanda E. McDani  
Status: Open

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Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Thorium Single Analyste Custom Grad	13749	500	mL	2/15/

**Final Volume:** 500 mL

Stock Source

**Base Units**

**Amount Added**

Analvtes

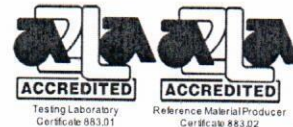
**CAS**

Conc: **ug/mL**



**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: CGTH1  
 Lot Number: R2-TH698957  
 Matrix: 5% (v/v) HNO3  
 Value / Analyte(s): 1 000 µg/mL ea:  
 Thorium  
 Starting Material: TH(NO3)4\*4H2O  
 Starting Material Lot#: 2250  
 Starting Material Purity: 99.9905%

**ID #: 13749**  
 Opened: \_\_\_\_\_  
 Thorium Single Analyte Custom Grade Solut  
**Expires: 11/16/2024**  
 Rec'd: 4/12/2021  
 Eneray Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

**3.0 CERTIFIED VALUES AND UNCERTAINTIES**

**Certified Value:** 1000 ± 4 µg/mL  
**Density:** 1.026 g/mL (measured at 20 ± 4 °C)

**Assay Information:**

**Assay Method #1**      **1000 ± 3 µg/mL**  
 EDTA NIST SRM 928 Lot Number: 928

**Assay Method #2**      **1002 ± 4 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:

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

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

$k$  = 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

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

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

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  $\mu\text{m}$ .

M Ag < 0.000448	M Eu < 0.000224	O Na 0.064009	M Se < 0.005827	M Zn 0.003180
O Al 0.010950	M Fe 0.012379	M Nb < 0.003138	i Si <	M Zr < 0.010310
M As < 0.038776	M Ga < 0.004931	M Nd 0.004692	M Sm 0.000870	
M Au < 0.000224	M Gd 0.000300	M Ni < 0.006724	M Sn < 0.028242	
M B < 0.021293	M Ge < 0.008965	M Os < 0.000224	M Sr 0.002579	
M Ba 0.001315	M Hf < 0.000224	i P <	M Ta < 0.001344	
M Be < 0.000224	M Hg < 0.000448	M Pb 0.003283	M Tb < 0.001793	
M Bi < 0.001793	M Ho < 0.001344	M Pd < 0.000448	M Te < 0.010086	
O Ca 0.051913	M In 0.000134	M Pr 0.001201	s Th <	
M Cd < 0.001344	M Ir < 0.000224	M Pt < 0.000224	M Ti < 0.004258	
M Ce 0.015404	O K 0.028897	M Rb < 0.005155	M Tl < 0.000224	
M Co < 0.001344	M La 0.003573	M Re < 0.000224	M Tm < 0.000224	
M Cr < 0.015465	M Li < 0.000448	M Rh < 0.000224	M U 0.006557	
M Cs < 0.013896	M Lu < 0.000224	M Ru < 0.000224	M V < 0.001793	
M Cu 0.001470	O Mg 0.027885	i S <	M W < 0.000224	
M Dy 0.000196	M Mn 0.001812	M Sb < 0.004931	M Y 0.000859	
M Er < 0.002241	M Mo < 0.000896	M Sc < 0.000672	M Yb < 0.000224	

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](http://www.inorganicventures.com/TCT)

**Atomic Weight; Valence; Coordination Number; Chemical Form in Solution** - 232.04 +4 8 Th(OH) 3+ and Th(OH)22+

**Chemical Compatibility** -Soluble in HCl, and HNO3. Avoid H3PO4, H2SO4 and HF although solubilities may not be a problem depending upon pH and matrix (For example: ThF4 is soluble in acids). Avoid neutral to basic media. Th4+ is stable with most metals and inorganic anions forming an insoluble carbonate, oxide, fluoride, oxalate, sulfate and phosphate in neutral to slightly acidic media.

**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.

**Th Containing Samples (Preparation and Solution)** -Metal (Soluble in Aqua Regia); Oxide (The heated oxide is not soluble in acids except hot conc. H2SO4 ); Ores ( Na2O2 fusion at 480 ± 20EC for 7 minutes, cool and treat sintered mass with 50 mL cold water and stand until disintegrated. The mass is transferred to a beaker and acidified with HCl with 25 mL excess HCl added. Any residue is collected on a Whatman No. 42 filter, dried and ignited to 1000 EC in Pt0 crucible and the ash treated with H2SO4 / HF and fumed. If residue remains, then treat it by peroxide fusion as above.)

**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 232 amu	1 ppt	N/A	
ICP-OES 274.716 nm	0.08 / 0.008 µg/mL	1	Ti, Ta, Fe, V
ICP-OES 283.231 nm	0.07 / 0.007 µg/mL	1	U, Mo, Ti, Fe, Cr
ICP-OES 283.730 nm	0.07 / 0.007 µg/mL	1	U, Zr

### 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**

November 16, 2020

- The certification is valid within the measurement uncertainty specified provided the CRM/CRM 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/CRM is damaged, contaminated, or otherwise modified.

**11.2 Lot Expiration Date**

- **November 16, 2024**

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

- The lot expiration date reflects the period of time that the stability of a CRM/CRM can be supported by long term stability studies conducted on properly stored and handled CRM/CRMs. 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/CRM 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/CRM 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211222 CE 2ND SOURCE  
Standard Name: Ce Secondary Stock  
Date Prepared: 12/22/2021  
Date Expires: 12/22/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S210208003  
Balance ID:  
Type: Primary  
BY: Amanda E. McDani  
Status: Open  
Comments: opened 12/22/2021, expires 12/22/2022

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Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Cerium PlasmaCal Standard	14327	125	mL	12/22/2022

**Final Volume:**  
125 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

A Cerium

7440-45-1

1000

# Ce

**1.0 DESCRIPTION:** **PlasmaCAL ICP/ICPMS Standard - Cerium 1000 µg/ml**  
 Catalogue Number: 140-051-580/-581/-585  
 Starting Material: Cerium(III) Nitrate Hexahydrate 99.99+%  
 Lot Number: **S210208003**  
 Matrix: 4% HNO<sub>3</sub> (See Section 3 for actual matrix)  
 Expiration Date (End of month): **February 2023** (or 15 months after bottle is opened, whichever comes first)

**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**  
 Certified Concentration: **1003 µg/ml +/- 4 µg/ml**  
**982 µg/g +/- 4 µg/g**  
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)  
 Traceability: NIST Standard Reference Material 3110 Lot: **090504**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u<sub>i</sub>) including uncertainty established during characterization of the material (u<sub>char</sub>), the between bottle variation (u<sub>bb</sub>), short-term stability (u<sub>sts</sub>) and long-term stability (u<sub>lts</sub>) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**  
 Density: **1.021 g/ml @ 22.5 °C**  
 Actual Matrix: **4.0% (v/v) HNO<sub>3</sub>**

**ID #: 14327**  
 Opened: \_\_\_\_\_  
 Cerium PlasmaCal Standard  
**Expires: 2/28/2023**  
 Rec'd: 9/29/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<b>0.0102</b>	Sn	<0.0010
Al	<b>0.0148</b>	Ga	<b>0.0526</b>	Ni	<b>0.0064</b>	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<b>0.0235</b>	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	<b>0.0375</b>	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	N/A	La	<0.10	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0121</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	<0.0010	Si	<0.10		
Eu	<b>0.0035</b>	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**  
 Certification Approval: Yaling Sui, Chemist  
 Certification Date: February 22, 2021

*Yaling Sui*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
  - AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (FAAS) et four au graphite (GFAA).*
  - Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.*
  - pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
  - Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
  - IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*
- For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034:** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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**USA**  
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348 Route 11, Champlain,  
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Fax: +1 (800) 253-5549

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Fax: +33 (0) 1 60 92 05 67

**GERMANY**  
Alte Marktoberdorfer Straße 14, 87616  
Marktoberdorf  
Phone: +49 (0) 8342-89560-61  
Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211222 LA SECOND SOURCE  
Standard Name: La Secondary Stock  
Date Prepared: 12/22/2021  
Date Expires: 12/22/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S210803016  
Balance ID:  
Comments: opened 12/22/2021, expires 12/22/2022

Type: Primary  
BY: Amanda E. McDani  
Status: Open

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Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Lanthanum PlasmaCal Standard	14326	125	mL	12/22/2022

**Final Volume:**  
mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**



# La

**1.0 DESCRIPTION:** **PlasmaCAL ICP/ICPMS Standard - Lanthanum 1000 µg/ml**  
 Catalogue Number: 140-051-570/-571/-575  
 Starting Material: Lanthanum(III) Oxide 99.99+%  
 Lot Number: **S210803016**  
 Matrix: 4% HNO<sub>3</sub> (See Section 3 for actual matrix)  
 Expiration Date (End of month): **August 2023** (or 15 months after bottle is opened, whichever comes first)

**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**  
 Certified Concentration: **1005 µg/ml +/- 4 µg/ml**  
**985 µg/g +/- 3 µg/g**  
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)  
 Traceability: NIST Standard Reference Material 3127a Lot: **151030**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**  
 Density: **1.020 g/ml @ 23.2 °C**  
 Actual Matrix: **4.0% (v/v) HNO<sub>3</sub>**

**ID #: 14326**

Opened: \_\_\_\_\_

Lanthanum PlasmaCal Standard

**Expires: 8/31/2023**

Rec'd: 9/29/2021

Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

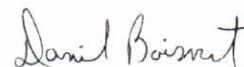
Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0106</b>	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<b>0.0889</b>	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0026	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<b>0.0031</b>	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0062
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	<b>0.0169</b>	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	<b>0.0272</b>	La	N/A	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<b>0.0020</b>
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<0.0010	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	<b>0.0156</b>	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**

Certification Approval: Daniel Boisvert, Chemist  
 Certification Date: August 12, 2021



## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*

- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*

- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.*

- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*

- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*

- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*

For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou au CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034 :** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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N.Y. 12919-4816  
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91140, Villebon-sur-Yvette  
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Fax: +33 (0) 1 60 92 05 67

**GERMANY**  
Alte Marktberdorfer Straße 14, 87616  
Marktberdorf  
Phone: +49 (0) 8342-89560-61  
Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211229A AU 2ND SOURCE  
Standard Name: Au 2nd source Stock  
Date Prepared: 12/29/2021  
Date Expires: 12/29/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S211129013  
Balance ID:  
Comments: opened 12/29/2021; expires 12/29/2022

Type: Primary  
BY: Amanda E. McDani  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Gold	14710	500	mL	12/29/2022

**Final Volume:**  
500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

ID #: 14710

Opened:

ICP/ICPMS Standard Gold

Expires: 12/31/2023

Rec'd: 12/29/2021

Eneray Laboratories Inc 1120 So. 27th Street

Billings MT 59107

**SCP SCIENC**

Providing Innovative Solutions to Analytical

**Certificate of Analysis****Au****1.0 DESCRIPTION:****PlasmaCAL ICP/ICPMS Standard - Gold 1000 µg/ml**

Catalogue Number: 140-052-790/-791/-795

Starting Material: Gold Metal 99.99%+

Lot Number: **S211129013**

Matrix: 10% HCl (See Section 3 for actual matrix)

Expiration Date (End of month): **December 2023** (or 15 months after bottle is opened, whichever comes first)**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**Certified Concentration: **1001 µg/ml +/- 4 µg/ml****982 µg/g +/- 4 µg/g**

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3121 Lot: **991806**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor ( $k$ ) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**Density: **1.019 g/ml @ 22.4 °C**Actual Matrix: **10.0% (v/v) HCl**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<b>0.3851</b>	Fe	<0.0090	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0062</b>	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	N/A	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<b>0.0434</b>	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<b>0.0048</b>	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<b>0.0362</b>	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<b>0.0029</b>	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0023</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.01	Zr	<0.0010
Er	<0.0010	Na	<b>0.0070</b>	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**

Certification Approval: Daniel Boisvert, Chemist

Certification Date: December 10, 2021

*Daniel Boisvert*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP* : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.  
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA* : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).  
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice* : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.  
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH* : Pour étalonnage de pH mètres et autres applications de chimie humide.  
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité* : Comme étalon pour les mesures de conductivité électrolytiques.  
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC* : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.  
For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisée, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034:** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**CORPORATE HEADQUARTERS**  
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348 Route 11, Champlain,  
N.Y. 12919-4816  
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Fax: +1 (800) 253-5549

**FRANCE**  
12 Ave. de Québec, Bat. IRIS  
91140, Villebon-sur-Yvette  
Phone: +33 (0) 1 69 18 71 17  
Fax: +33 (0) 1 60 92 05 67

**GERMANY**  
Alte Marktoberdorfer Straße 14, 87616  
Marktoberdorf  
Phone: +49 (0) 8342-89560-61  
Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211025A  
Standard Name: Te Stock  
Date Prepared: 10/25/2021  
Date Expires: 10/25/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S200130018  
Balance ID:  
Comments: Opened 10/25/2021; Expires 10/25/2022

Type: Primary  
BY: Stacy R. Hendricks  
Status: Open

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Chemical / Solvent Used	BottleNo	Amt	Units	Exp
ICP/ICPMS Standard Tellurium	14418	500	mL	10/25

**Final Volume:** 500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analyses**

**CAS**

Conc: **ug/mL**

# Te

**1.0 DESCRIPTION:** *PlasmaCAL ICP/ICPMS Standard - Tellurium 1000 µg/ml*  
 Catalogue Number: 140-051-520/-521/-525  
 Starting Material: Tellurium Metal 99.99+%  
 Lot Number: **S210615004**  
 Matrix: 10% HNO<sub>3</sub> (See Section 3 for actual matrix)  
 Expiration Date (End of month): **June 2023** (or 15 months after bottle is opened, whichever comes first)

**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**  
 Certified Concentration: **1005 µg/ml +/- 5 µg/ml**  
**958 µg/g +/- 5 µg/g**  
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)  
 Traceability: NIST Standard Reference Material 3156 Lot: **140830**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**  
 Density: **1.049 g/ml @ 25.5 °C**  
 Actual Matrix: **10.0% (v/v) HNO<sub>3</sub>**

**ID #: 14418**  
 Opened: \_\_\_\_\_  
 ICP/ICPMS Standard Tellurium  
**Expires: 6/30/2023**  
 Rec'd: 10/20/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

Trace Metal Impurities as tested by ICP-AES:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<b>0.0449</b>	Sn	<0.0010
Al	<0.0010	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<b>0.0184</b>	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	N/A
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<b>0.0028</b>	Ti	<0.0012
Bi	<0.0010	In	<b>0.0020</b>	Pt	<0.0010	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0020	Sb	<0.0010	Yb	<0.0010
Cu	<0.0010	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.1	Zr	<0.0010
Er	<0.0010	Na	<0.0025	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**  
 Certification Approval: Daniel Boisvert, Chemist  
 Certification Date: June 30, 2021

*Daniel Boisvert*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP* : Pour l'étalonnage de instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.
  - AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA* : Pour l'étalonnage de spectromètres d'absorption atomique flamme (FAAS) et four au graphite (GFAA).
  - Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice* : Pour l'optimisation des conditions analytiques afin de fournir des meilleurs réponses instrumentales et limites de détection pour SAA four au graphite.
  - pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH* : Pour étalonnage de pH mètres et autres applications de chimie humide.
  - Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité* : Comme étalon pour les mesures de conductivité électrolytiques.
  - IC Standards: For calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC* : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.
- For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034:** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220114A TUNE SOLUTION  
Standard Name: Tune Solution  
Date Prepared: 1/14/2022  
Date Expires: 12/7/2022  
Department: ME  
Vendor:  
Lot Number:  
Balance ID:

Type: Secondary  
BY: Stacy R. Hendricks  
Status: Open

Comments: All elements except Be at 10 ppb. Be is spiked at 210 ppb.

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Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid, 69.0-70.0%,0000282671	14178	5	mL	4/11/
Milli-Q H2O	391	493	mL	6/1/2
Multi Analyte Custom Grade Solution	13795	0.5	mL	12/7/
Beryllium Single Analyte Custom Grad	14679	0.2	mL	9/17/

**Final Volume:** 500 mL

**Stock Source**

ME220114 TUNE S Tune Solution Stock

**Base Units**

ug/mL

**Amount Added**

1 mL

**Analvtes**

**CAS**

Conc: ug/mL

**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: 2008TS  
 Lot Number: R2-MEB691898  
 Matrix: 3% (v/v) HNO3  
 Value / Analyte(s): 10 µg/mL ea:  
 Beryllium, Cobalt,  
 Indium, Magnesium,  
 Lead

**ID #: 13795**  
 Opened: \_\_\_\_\_  
 Multi Analyte Custom Grade Solution  
**Expires: 4/8/2024**  
 Rec'd: 4/29/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

**3.0 CERTIFIED VALUES AND UNCERTAINTIES**

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Beryllium, Be	10.01 ± 0.06 µg/mL	Cobalt, Co	10.01 ± 0.04 µg/mL
Indium, In	10.01 ± 0.04 µg/mL	Lead, Pb	10.01 ± 0.04 µg/mL
Magnesium, Mg	10.01 ± 0.05 µg/mL		

Density: 1.014 g/mL (measured at 20 ± 4 °C)

**Assay Information:**

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Be	ICP Assay	3105a	090514
Co	EDTA	928	928
Co	ICP Assay	traceable to 3113	M2-CO661665
Co	Calculated		See Sec. 4.2
In	ICP Assay	3124a	110516
In	EDTA	928	928
In	Calculated		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mg	Calculated		See Sec. 4.2
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Pb	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 ( $\mu\text{g/mL}$ )

N/A

## 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](http://www.inorganicventures.com/TCT)

## 8.0 HAZARDOUS INFORMATION

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

**9.0 HOMOGENEITY**

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

**10.0 QUALITY STANDARD DOCUMENTATION**

**10.1 ISO 9001 Quality Management System Registration**

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

**11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY**

**11.1 Certification Issue Date**

April 08, 2020

- 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, 2024**

- 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:**

Michael Booth  
Manager, Quality Control



**Certifying Officer:**

Paul Gaines  
CEO, Senior Technical Director



300 Technology Drive  
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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: Single Analyte Custom Grade Solution  
 Catalog Number: CGBE1  
 Lot Number: S2-BE708103  
 Matrix: 3% (v/v) HNO<sub>3</sub>  
 Value / Analyte(s): 1 000 µg/mL ea:  
                                   Beryllium  
 Starting Material: Beryllium Acetate  
 Starting Material Lot#: 2354  
 Starting Material Purity: 99.9997%

**ID #: 14679**

 Opened: \_\_\_\_\_  
 Beryllium Single Analyte Custom Grade Solut  
**Expires: 9/17/2026**  
 Rec'd: 12/28/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

**Certified Value:** 1002 ± 5 µg/mL  
**Density:** 1.020 g/mL (measured at 20 ± 4 °C)

### Assay Information:

<b>Assay Method #1</b>	<b>1003 ± 5 µg/mL</b> ICP Assay NIST SRM 3105a Lot Number: 090514
<b>Assay Method #2</b>	<b>1002 ± 6 µg/mL</b> 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 < 0.000940	M Eu < 0.000240	O Na 0.003944	M Se < 0.018000	O Zn 0.001126
M Al 0.005019	O Fe 0.001024	M Nb < 0.000240	O Si 0.021513	M Zr < 0.000470
M As < 0.005500	M Ga < 0.000710	M Ni < 0.000240	M Sm < 0.000240	
M Au < 0.000240	M Gd < 0.000240	M Ni <sup>SSN/2</sup> < 0.004700	M Sn < 0.003300	
M B < 0.045000	M Ge < 0.003100	M Os <sup>SSN/2</sup> < 0.000240	M Sr < 0.001900	
M Ba < 0.001900	M Hf < 0.000240	O P < 0.130000	M Ta < 0.000240	
s Be < 0.003300	M Hg < 0.000470	M Pb < 0.000470	M Tb < 0.000240	
M Bi < 0.003300	M Ho < 0.000240	M Pd < 0.000470	M Te < 0.009700	
O Ca 0.002919	M In < 0.001900	M Pr < 0.000240	M Th < 0.000240	
M Cd < 0.000470	M Ir < 0.000240	M Pt < 0.000240	O Ti < 0.003600	
M Ce < 0.000240	M K 0.004968	M Rb < 0.001500	M Tl < 0.000240	
O Co < 0.002100	M La < 0.000240	M Re < 0.000240	M Tm < 0.000240	
O Cr < 0.002100	M Li < 0.002200	M Rh < 0.000240	M U < 0.000240	
M Cs 0.000133	M Lu < 0.000240	M Ru < 0.000710	M V < 0.001500	
O Cu < 0.013000	O Mg 0.000819	i S < 0.000940	M W < 0.001700	
M Dy < 0.000240	O Mn < 0.001900	M Sb < 0.000940	M Y < 0.000940	
M Er < 0.000240	M Mo < 0.001700	M Sc < 0.003600	M Yb < 0.000240	

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](http://www.inorganicventures.com/TCT)

**Atomic Weight; Valence; Coordination Number; Chemical Form in Solution** - 9.01 ; +2 ; 4 ; Be(H<sub>2</sub>O)<sub>4</sub>+2

**Chemical Compatibility** -Soluble in HCl, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub> and HF aqueous matrices. Stable with all metals and inorganic anions.

**Stability** - 2-100 ppb levels stable for months in 1 % HNO<sub>3</sub> / LDPE container. 1-10,000 ppm solutions chemically stable for years in 5-10 % HNO<sub>3</sub> / LDPE container.

**Be Containing Samples (Preparation and Solution)** - Meta l(is best dissolved in diluted H<sub>2</sub>SO<sub>4</sub> ); BeO (boiling nitric, hydrochloric, or sulfuric acids or KHSO<sub>4</sub> fusion); Ores (H<sub>2</sub>SO<sub>4</sub>/HF digestion or carbonate fusion in Pt0); Organic Matrices (sulfuric/peroxide digestion or nitric/sulfuric/perchloric acid decomposition, or dry ash and dissolution according to the BeO procedure above).

**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 9 amu	4 ppt	N/A	
ICP-OES 234.861 nm	0.0003/0.00016 µg/mL	1	Fe, Ta, Mo
ICP-OES 313.042 nm	0.0003/0.00009 µg/mL	1	V, Ce, U
ICP-OES 313.107 nm	0.0007/0.0005 µg/mL	1	Ce, Th, Tm

## 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](http://inorganicventures.com); [info@inorganicventures.com](mailto:info@inorganicventures.com)

## 11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

**11.1 Certification Issue Date**

September 17, 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 17, 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 Approved By:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director





# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220114 TUNE STOCK  
 Standard Name: Tune Solution Stock      Type: Secondary  
 Date Prepared: 1/14/2022      BY: Stacy R. Hendricks  
 Date Expires: 12/22/2022  
 Department: ME      Status: Open  
 Vendor:  
 Lot Number:  
 Balance ID:  
 Comments: Solution is 1% HNO3 preserved

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Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid Instra Analyzed 000026478	13061	5	mL	5/12/
Milli-Q H2O	391	482.25	mL	6/1/2
Yittrium Single Analyte Custom Grade	14210	2.5	mL	1/25/
Cerium PlasmaCal Standard	14327	2.5	mL	12/22
Cobalt Single Analyte Custom Grade S	14683	2.5	mL	3/22/
Lithium Single Analyte Custom Grade	14687	2.5	mL	2/11/
Magnesium Single Analyte Custom Gr	14688	0.25	mL	4/23/
Thallium Single Analyte Custom Grade	14693	2.5	mL	8/5/2

**Final Volume:** 500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analvtes**

**CAS**

Conc: **ug/mL**

**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: CGY1  
Lot Number: S2-Y700840  
Matrix: 2% (v/v) HNO<sub>3</sub>  
Value / Analyte(s): 1 000 µg/mL ea:  
Yttrium  
Starting Material: Yttrium Oxide  
Starting Material Lot#: 623052  
Starting Material Purity: 99.9991%

**3.0 CERTIFIED VALUES AND UNCERTAINTIES**

**Certified Value:** 1000 ± 4 µg/mL  
**Density:** 1.011 g/mL (measured at 20 ± 4 °C)

**Assay Information:**

<b>Assay Method #1</b>	<b>999 ± 3 µg/mL</b> EDTA NIST SRM 928 Lot Number: 928
<b>Assay Method #2</b>	<b>1000 ± 5 µg/mL</b> ICP Assay NIST SRM 3167a Lot Number: 120314
<b>Assay Method #3</b>	<b>1001 ± 3 µg/mL</b> 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.

**ID #: 14210**

Opened: \_\_\_\_\_

Yttrium Single Analyte Custom Grade Solution

**Expires: 1/25/2025**

Rec'd: 8/27/2021

Eneray Laboratories Inc 1120 So. 27th Street  
Billings MT 59107

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

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

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

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

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 UHPA-Filtered Clean Room. An UHPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M Ag < 0.038000	M Eu < 0.002235	O Na < 0.060000	M Se < 0.027000	O Zn < 0.002642
O Al < 0.016000	O Fe < 0.000193	M Nb < 0.000570	O Si < 0.003658	O Zr < 0.012000
M As < 0.002300	M Ga < 0.000570	M Nd < 0.000570	M Sm < 0.000570	
M Au < 0.008000	M Gd < 0.000570	M Ni < 0.004600	M Sn < 0.001800	
O B < 0.022000	M Ge < 0.001200	M Os < 0.000570	O Sr < 0.003100	
M Ba < 0.001200	M Hf < 0.000570	n P <	M Ta < 0.000570	
O Be < 0.002900	M Hg < 0.002900	M Pb < 0.000833	M Tb < 0.000570	
M Bi < 0.005600	M Ho < 0.001524	i Pd <	M Te < 0.006900	
O Ca < 0.000304	M In < 0.002500	M Pr < 0.000570	M Th < 0.000570	
M Cd < 0.000570	M Ir < 0.000570	M Pt < 0.000570	M Ti < 0.005700	
M Ce < 0.000570	O K < 0.001117	M Rb < 0.001400	M Tl < 0.000570	
M Co < 0.000570	M La < 0.000570	M Re < 0.000570	M Tm < 0.001200	
M Cr < 0.003500	O Li < 0.004200	M Rh < 0.011000	M U < 0.000570	
M Cs < 0.005700	M Lu < 0.000570	M Ru < 0.000570	O V < 0.013000	
M Cu < 0.000365	O Mg < 0.000223	n S <	M W < 0.006900	
M Dy < 0.000508	O Mn < 0.001400	M Sb < 0.000365	s Y <	
M Er < 0.000197	M Mo < 0.006200	O Sc < 0.011000	M Yb < 0.003500	

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](http://www.inorganicventures.com/TCT)

**Atomic Weight; Valence; Coordination Number; Chemical Form in Solution** - 88.91 +3 6 Y(OH)(H<sub>2</sub>O)<sub>x+2</sub>

**Chemical Compatibility** -Soluble in HCl, H<sub>2</sub>SO<sub>4</sub> and HNO<sub>3</sub>. Avoid HF, H<sub>3</sub>PO<sub>4</sub> 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% HNO<sub>3</sub> / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO<sub>3</sub> / LDPE container.

**Y Containing Samples (Preparation and Solution)** - Metal (Soluble in acids); Oxide (Dissolve by heating in H<sub>2</sub>O/ HNO<sub>3</sub>); Ores (Carbonate fusion in PtO followed by HCl dissolution); Organic Matrices (Dry ash and dissolve in 1:1 H<sub>2</sub>O / HCl or HNO<sub>3</sub>).

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

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 89 amu	0.8 ppt	N/A	73Ge16O, 178Hf+2
ICP-OES 360.073 nm	0.005 / 0.000036 µg/mL	1	Ce, Th
ICP-OES 371.030 nm	0.004 / 0.00007 µg/mL	1	Ce
ICP-OES 377.433 nm	0.005 / 0.0009 µg/mL	1	Ta, Th

## 8.0 HAZARDOUS INFORMATION

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

## 9.0 HOMOGENEITY

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

## 10.0 QUALITY STANDARD DOCUMENTATION

### 10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; [inorganicventures.com](http://inorganicventures.com); [info@inorganicventures.com](mailto:info@inorganicventures.com)

## 11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

**11.1 Certification Issue Date**

January 25, 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**

- **January 25, 2025**

- 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director



# Ce

**1.0 DESCRIPTION:** **PlasmaCAL ICP/ICPMS Standard - Cerium 1000 µg/ml**  
 Catalogue Number: 140-051-580/-581/-585  
 Starting Material: Cerium(III) Nitrate Hexahydrate 99.99+%  
 Lot Number: **S210208003**  
 Matrix: 4% HNO<sub>3</sub> (See Section 3 for actual matrix)  
 Expiration Date (End of month): **February 2023** (or 15 months after bottle is opened, whichever comes first)

**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**  
 Certified Concentration: **1003 µg/ml +/- 4 µg/ml**  
**982 µg/g +/- 4 µg/g**  
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)  
 Traceability: NIST Standard Reference Material 3110 Lot: **090504**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u<sub>i</sub>) including uncertainty established during characterization of the material (u<sub>char</sub>), the between bottle variation (u<sub>bb</sub>), short-term stability (u<sub>sts</sub>) and long-term stability (u<sub>lts</sub>) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**  
 Density: **1.021 g/ml @ 22.5 °C**  
 Actual Matrix: **4.0% (v/v) HNO<sub>3</sub>**  
 Trace Metal Impurities as tested by ICP-MS:

**ID #: 14327**  
 Opened: \_\_\_\_\_  
 Cerium PlasmaCal Standard  
**Expires: 2/28/2023**  
 Rec'd: 9/29/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<b>0.0102</b>	Sn	<0.0010
Al	<b>0.0148</b>	Ga	<b>0.0526</b>	Ni	<b>0.0064</b>	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<b>0.0235</b>	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	<b>0.0375</b>	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	N/A	La	<0.10	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0121</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	<0.0010	Si	<0.10		
Eu	<b>0.0035</b>	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**  
 Certification Approval: Yaling Sui, Chemist  
 Certification Date: February 22, 2021

*Yaling Sui*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
  - AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (FAAS) et four au graphite (GFAA).*
  - Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleurs réponses instrumentales et limites de détection pour SAA four au graphite.*
  - pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
  - Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
  - IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*
- For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034:** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**CORPORATE HEADQUARTERS**  
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Fax: +1 (800) 253-5549

**USA**  
3<sup>rd</sup> Party Distribution Center  
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N.Y. 12919-4816  
Phone: +1 (800) 361-6820  
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SILIC 642, 91965  
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Fax: +33 (0) 1 60 92 05 67

**GERMANY**  
Alte Marktoberdorfer Straße 14, 87616  
Marktoberdorf  
Phone: +49 (0) 8342-89560-61  
Fax: +49 (0) 8342-89560-69

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: Single Analyte Custom Grade Solution  
Catalog Number: CGCO1  
Lot Number: S2-CO702699  
Matrix: 3% (v/v) HNO3  
Value / Analyte(s): 1 000 µg/mL ea:  
Cobalt  
Starting Material: Co Metal  
Starting Material Lot#: 2326  
Starting Material Purity: 99.9934%

**ID #: 14683**

Opened:  
Cobalt Single Analyte Custom Grade Solution  
**Expires: 3/22/2025**  
Rec'd: 12/28/2021  
Energy Laboratories Inc 1120 So. 27th Street  
Billings MT 59107

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

**Certified Value:** 998 ± 3 µg/mL  
**Density:** 1.018 g/mL (measured at 20 ± 4 °C)

### Assay Information:

<b>Assay Method #1</b>	<b>994 ± 5 µg/mL</b> ICP Assay NIST SRM 3113 Lot Number: 190630
<b>Assay Method #2</b>	<b>997 ± 3 µg/mL</b> EDTA NIST SRM 928 Lot Number: 928
<b>Assay Method #3</b>	<b>1001 ± 3 µg/mL</b> 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:

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

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

$k$  = 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

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

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

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  $\mu\text{m}$ .

M	Ag	<	0.001515	M	Eu	<	0.000590	O	Na	<	0.000778	M	Se	<	0.019000	M	Zn	<	0.000357
M	Al	<	0.024000	M	Fe	<	0.005262	M	Nb	<	0.000590	O	Si	<	0.007789	M	Zr	<	0.001200
i	As	<		M	Ga	<	0.000590	M	Nd	<	0.000590	M	Sm	<	0.000590				
M	Au	<	0.004100	M	Gd	<	0.000590	O	Ni	<	0.044207	M	Sn	<	0.001200				
M	B	<	0.031000	M	Ge	<	0.003000	M	Os	<	0.000590	O	Sr	<	0.000260				
M	Ba	<	0.000590	M	Hf	<	0.000590	n	P	<		M	Ta	<	0.001200				
O	Be	<	0.001300	M	Hg	<	0.001800	M	Pb	<	0.000336	M	Tb	<	0.000590				
M	Bi	<	0.003000	M	Ho	<	0.000590	M	Pd	<	0.000590	M	Te	<	0.005300				
O	Ca	<	0.001094	M	In	<	0.001200	M	Pr	<	0.000590	M	Th	<	0.000590				
M	Cd	<	0.004700	M	Ir	<	0.001200	M	Pt	<	0.002400	M	Ti	<	0.014000				
M	Ce	<	0.000590	O	K	<	0.000842	M	Rb	<	0.000590	M	Tl	<	0.000273				
s	Co	<		M	La	<	0.000590	M	Re	<	0.000590	M	Tm	<	0.000590				
M	Cr	<	0.021000	O	Li	<	0.000130	M	Rh	<	0.000590	M	U	<	0.000590				
M	Cs	<	0.002400	M	Lu	<	0.000590	M	Ru	<	0.007100	O	V	<	0.000880				
M	Cu	<	0.019577	O	Mg	<	0.000195	n	S	<		M	W	<	0.000590				
M	Dy	<	0.000590	M	Mn	<	0.001800	M	Sb	<	0.003600	M	Y	<	0.000590				
M	Er	<	0.000590	M	Mo	<	0.002400	O	Sc	<	0.001600	M	Yb	<	0.000590				

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](http://www.inorganicventures.com/TCT)

**Atomic Weight; Valence; Coordination Number; Chemical Form in Solution** - 58.93 +2 6 Co(H<sub>2</sub>O)<sub>6</sub>2+  
**Chemical Compatibility** - Stable in HCl, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, HF, H<sub>3</sub>PO<sub>4</sub>. Avoid basic media. Stable with most metals and inorganic anions in acidic media.

**Stability** - 2-100 ppb levels stable for months in 1% HNO<sub>3</sub> / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO<sub>3</sub> / LDPE container.

**Co Containing Samples (Preparation and Solution)** - Metal (soluble in HNO<sub>3</sub>); Oxides (Soluble in HCl); Ore (dissolve in HCl / HNO<sub>3</sub>).

**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 59 amu	2 ppt	n/a	42Ca16O1H , 40Ar18O1H , 36Ar23Na, 43Ca16O, 24Mg35Cl
ICP-OES 228.616 nm	0.01/0.001 µg/mL	1	
ICP-OES 237.862 nm	0.01/0.002 µg/mL	1	W, Re, Al, Ta
ICP-OES 238.892 nm	0.01/0.002 µg/mL	1	Fe, W, Ta

## 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](http://inorganicventures.com); [info@inorganicventures.com](mailto:info@inorganicventures.com)

## 11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

**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: CGLI1  
 Lot Number: S2-LI701641  
 Matrix: 0.1% (v/v) HNO3  
 Value / Analyte(s): 1 000 µg/mL ea:  
 Lithium  
 Starting Material: Lithium Carbonate  
 Starting Material Lot#: 1613  
 Starting Material Purity: 99.9962%

**ID #: 14687**  
 Opened:  
 Lithium Single Analyte Custom Grade Solution  
**Expires: 2/11/2025**  
 Rec'd: 12/28/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

**3.0 CERTIFIED VALUES AND UNCERTAINTIES**

**Certified Value:** 1000 ± 3 µg/mL  
**Density:** 1.005 g/mL (measured at 20 ± 4 °C)

**Assay Information:**

<b>Assay Method #1</b>	<b>997 ± 4 µg/mL</b> ICP Assay NIST SRM 3129a Lot Number: 100714
<b>Assay Method #2</b>	<b>1000 ± 1 µg/mL</b> Gravimetric NIST SRM Lot Number: See Sec. 4.2
<b>Assay Method #3</b>	<b>1001 ± 3 µg/mL</b> 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:

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

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

$k$  = 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

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

$k$  = 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 <	0.000500	M Eu <	0.000500	O Na	0.018534	M Se <	0.011000	M Zn	0.003494
O Al	0.000741	O Fe	0.004342	M Nb <	0.000500	M Si	0.111204	M Zr <	0.002000
M As <	0.011000	M Ga <	0.000500	M Nd <	0.000500	M Sm <	0.000500		
M Au <	0.010000	M Gd <	0.000500	M Ni <	0.007000	M Sn <	0.001000		
O B	0.000503	M Ge <	0.004500	M Os <	0.001000	M Sr	0.000243		
O Ba	0.000381	M Hf <	0.000500	O P <	0.045000	M Ta <	0.000500		
O Be	0.000046	M Hg <	0.000500	M Pb <	0.003000	M Tb <	0.000500		
M Bi <	0.000500	M Ho <	0.000500	M Pd <	0.000500	M Te <	0.005000		
O Ca	0.058249	M In <	0.000500	M Pr <	0.000500	M Th <	0.000500		
M Cd <	0.000500	M Ir <	0.000500	M Pt <	0.000500	M Ti <	0.002500		
M Ce <	0.000500	O K	0.029124	M Rb <	0.001000	M Tl <	0.000500		
M Co <	0.000500	M La <	0.000500	M Re <	0.000500	M Tm <	0.000500		
M Cr	0.000153	s Li <		M Rh <	0.000500	M U <	0.000500		
M Cs <	0.000500	M Lu <	0.000500	M Ru <	0.000500	M V	0.000953		
M Cu <	0.002000	O Mg	0.011649	O S	0.031772	M W <	0.001000		
M Dy <	0.000500	O Mn	0.000164	M Sb <	0.003000	M Y <	0.000500		
M Er <	0.000500	M Mo <	0.000500	M Sc <	0.001500	M Yb <	0.000500		

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](http://www.inorganicventures.com/TCT)

**Atomic Weight; Valence; Coordination Number; Chemical Form in Solution** - 6.94 +1 (6) Li+(aq) large effective radius due to hydration sphere

**Chemical Compatibility** -Soluble in HCl, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub> and HF aqueous matrices. Stable with all metals and inorganic anions.

**Stability** - 2-100 ppb levels stable for months in 1% HNO<sub>3</sub> / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO<sub>3</sub> / LDPE container.

**Li Containing Samples (Preparation and Solution)** -Metal (Dissolves very rapidly in water); Ores (Sodium carbonate fusion in Pt0 followed by HCl dissolution-blank levels of Li in sodium carbonate critical); Organic Matrices (Sulfuric / peroxide digestion or nitric / sulfuric / perchloric acid decomposition).

**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 7 amu	10 ppt	n/a	
ICP-OES 323.261 nm	1.1 / 0.05 micro;g/mL	1	Sb, Th, Ni
ICP-OES 460.286 nm	0.9 / 0.04 µg/mL	1	Zr, Th
ICP-OES 670.784 nm	0.002 / 0.00002 µg/mL	1	2nd order radiation from R.E.s on some optical designs

## 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](http://inorganicventures.com); [info@inorganicventures.com](mailto:info@inorganicventures.com)

## 11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

**11.1 Certification Issue Date**

February 11, 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**

- **February 11, 2025**

- 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:**

Michael Booth  
Director, 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: Single Analyte Custom Grade Solution  
 Catalog Number: CGMG10  
 Lot Number: S2-MG704239  
 Matrix: 2% (v/v) HNO3  
 Value / Analyte(s): 10 000 µg/mL ea:  
 Magnesium  
 Starting Material: Magnesium Metal  
 Starting Material Lot#: 2168  
 Starting Material Purity: 99.9984%

**ID #: 14688**  
 Opened:  
 Magnesium Single Analyte Custom Grade Sol  
**Expires: 4/23/2025**  
 Rec'd: 12/28/2021  
 Enerav Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

**Certified Value:** 10053 ± 30 µg/mL  
**Density:** 1.053 g/mL (measured at 20 ± 4 °C)

### Assay Information:

<b>Assay Method #1</b>	<b>10022 ± 62 µg/mL</b> ICP Assay NIST SRM 3131a Lot Number: 140110
<b>Assay Method #2</b>	<b>10078 ± 26 µg/mL</b> EDTA NIST SRM 928 Lot Number: 928
<b>Assay Method #3</b>	<b>10033 ± 26 µg/mL</b> 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:

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

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

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

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

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.

O Ag	0.002106	M	Eu	<	0.000910	O Na	0.071075	O Se	<	0.048000	O Zn	0.003299		
M Al	0.003553	M	Fe		0.002538	M Nb	<	0.000460	O Si	<	0.032000	O Zr	<	0.002700
M As	<	0.001400	M Ga	<	0.000460	M Nd	<	0.000910	M Sm	<	0.000460			
M Au	<	0.001400	M Gd	<	0.000460	O Ni	<	0.001600	M Sn	<	0.002300			
O B	0.006853	M	Ge	<	0.001400	M Os	<	0.000460	O Sr		0.000279			
O Ba	0.000964	M	Hf	<	0.000460	O P		0.015230	M Ta	<	0.000460			
O Be	<	0.000120	M Hg	<	0.000460	M Pb	<	0.000460	M Tb	<	0.000460			
M Bi	<	0.000460	M Ho	<	0.000460	M Pd	<	0.003200	M Te	<	0.007300			
O Ca	0.053306	M	In	<	0.000460	M Pr	<	0.000460	M Th	<	0.000460			
O Cd	<	0.000360	M Ir	<	0.000460	M Pt	<	0.001900	O Ti	<	0.001700			
M Ce	<	0.002300	M K		0.048229	M Rb		0.002411	M Tl		0.003046			
M Co	<	0.000910	M La	<	0.002800	M Re	<	0.000460	M Tm	<	0.000460			
M Cr	<	0.002300	O Li		0.027922	M Rh	<	0.000460	M U	<	0.000460			
M Cs	0.001040	M	Lu	<	0.000460	M Ru	<	0.000460	M V	<	0.000460			
O Cu	<	0.003000	s Mg	<		O S	<	0.190000	M W	<	0.000460			
M Dy	<	0.000460	O Mn		0.015230	M Sb		0.020814	O Y	<	0.000720			
M Er	<	0.000460	M Mo	<	0.000910	O Sc	<	0.000480	M Yb	<	0.000460			

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](http://www.inorganicventures.com/TCT)

**Atomic Weight; Valence; Coordination Number; Chemical Form in Solution** - 24.31 +2 6 Mg(H<sub>2</sub>O)<sub>6</sub>+2

**Chemical Compatibility** -Soluble in HCl, HNO<sub>3</sub>, and H<sub>2</sub>SO<sub>4</sub> avoid HF, H<sub>3</sub>PO<sub>4</sub> and neutral to basic media. Stable with most metals and inorganic anions forming insoluble silicates, carbonates, hydroxides, oxides, and tungstates in neutral and slightly acidic media.

**Stability** - 2-100 ppb levels stable for months in 1% HNO<sub>3</sub> / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-10% HNO<sub>3</sub> / LDPE container.

**Mg Containing Samples (Preparation and Solution)** -Metal (Best dissolved in diluted HNO<sub>3</sub>); Oxide (Readily soluble in above compatible aqueous acidic solutions); Ores (Carbonate fusion in Pt<sub>0</sub> followed by HCl dissolution); Organic Matrices (Sulfuric / peroxide digestion or nitric / sulfuric / perchloric acid decomposition, 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 24 amu	42 ppt	n/a	7Li17O, 48Ti+2 , 48Ca+2
ICP-OES 279.553 nm	0.0002 / 0.00003 µg/mL	1	Th
ICP-OES 280.270 nm	0.0003 / 0.00005 µg/mL	1	U, V
ICP-OES 285.213 nm	0.002 / 0.00003 µg/mL	1	U, Hf, Cr, Zr

## 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](http://inorganicventures.com); [info@inorganicventures.com](mailto:info@inorganicventures.com)

## 11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

**11.1 Certification Issue Date**

April 23, 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**

- **April 23, 2025**

- 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director



**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: CGTL1  
 Lot Number: R2-TL694852  
 Matrix: 1% (v/v) HNO3  
 Value / Analyte(s): 1 000 µg/mL ea:  
 Thallium  
 Starting Material: TINO3  
 Starting Material Lot#: 2118  
 Starting Material Purity: 99.9998%

**ID #: 14693**  
 Opened:  
 Thallium Single Analyte Custom Grade Solution  
**Expires: 8/5/2024**  
 Rec'd: 12/28/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

**3.0 CERTIFIED VALUES AND UNCERTAINTIES**

**Certified Value:** 1002 ± 5 µg/mL  
**Density:** 1.005 g/mL (measured at 20 ± 4 °C)

**Assay Information:**

- Assay Method #1**      **1003 ± 4 µg/mL**  
 ICP Assay NIST SRM 3158 Lot Number: 151215
- Assay Method #2**      **1000 ± 7 µg/mL**  
 Calculated NIST SRM Lot Number: See Sec. 4.2

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

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

**Characterization of CRM/RM by Two or More Methods**

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

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

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

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

$k$  = coverage factor = 2  
 $u_{char} = (\sum((w_i)^2 (u_{char i})^2))^{1/2}$  where  $u_{char i}$  are the errors from each characterization method  
 $u_{bb}$  = bottle to bottle homogeneity standard uncertainty  
 $u_{lts}$  = long term stability standard uncertainty (storage)  
 $u_{ts}$  = transport stability standard uncertainty

**Characterization of CRM/RM by One Method**

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

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

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

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

$k$  = coverage factor = 2  
 $u_{char a}$  = the errors from characterization  
 $u_{bb}$  = bottle to bottle homogeneity standard uncertainty  
 $u_{lts}$  = long term stability standard uncertainty (storage)  
 $u_{ts}$  = transport stability standard uncertainty

**4.0 TRACEABILITY TO NIST**

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

**4.1 Thermometer Calibration**

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

**4.2 Balance Calibration**

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

**4.3 Glassware Calibration**

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

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

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

M Ag < 0.000200	M Eu < 0.000200	O Na < 0.000256	M Se < 0.011019	O Zn < 0.000236
O Al < 0.004184	O Fe < 0.002824	M Nb < 0.000200	O Si < 0.000387	M Zr < 0.000200
M As < 0.002003	M Ga < 0.000200	M <sup>i</sup> Nd < 0.000200	M Sm < 0.000200	
O Au < 0.002824	M Gd < 0.000200	M <sup>i</sup> Ni < 0.000177	M Sn < 0.000601	
O B < 0.004184	M Ge < 0.000801	M <sup>i</sup> Os < 0.000198	O Sr < 0.000313	
M Ba < 0.000400	M Hf < 0.000200	O P < 0.010460	M Ta < 0.000200	
O Be < 0.000104	M Hg < 0.000794	M Pb < 0.000083	M Tb < 0.000200	
M Bi < 0.005209	M Ho < 0.000200	M Pd < 0.000400	M Te < 0.005008	
O Ca < 0.000250	M In < 0.000200	M Pr < 0.000200	M Th < 0.000200	
M Cd < 0.000135	M Ir < 0.000198	M Pt < 0.000801	O Ti < 0.001255	
M Ce < 0.000200	O K < 0.000636	M Rb < 0.000200	s Tl <	
M Co < 0.000601	M La < 0.000200	M Re < 0.000200	M Tm < 0.000200	
M Cr < 0.000801	O Li < 0.000177	M Rh < 0.000200	M U < 0.000200	
M Cs < 0.003606	M Lu < 0.000200	M Ru < 0.000397	M V < 0.002203	
M Cu < 0.001001	O Mg < 0.000054	O S < 0.015690	M W < 0.000601	
M Dy < 0.000200	M Mn < 0.000801	M Sb < 0.000400	M Y < 0.000200	
M Er < 0.000200	M Mo < 0.001202	O Sc < 0.000711	M Yb < 0.000200	

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](http://www.inorganicventures.com/TCT)

**Atomic Weight; Valence; Coordination Number; Chemical Form in Solution** - 204.38 + 16 Ti(H<sub>2</sub>O)<sub>6</sub>1+

**Chemical Compatibility** - Soluble in HCl, HNO<sub>3</sub>, and H<sub>2</sub>SO<sub>4</sub>. Stable with most metals and inorganic anions. The sulfite, thiocyanate and oxalate are moderately soluble; the phosphate and arsenite are slightly soluble and the sulfide is insoluble.

**Stability** - 2-100 ppb levels stable for months in 1% HNO<sub>3</sub> / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO<sub>3</sub> / LDPE container.

**Ti Containing Samples (Preparation and Solution)** -Metal (Best dissolved in HNO<sub>3</sub> which forms chiefly the Ti<sup>1+</sup> ion.); Oxide (The thalious oxide is readily soluble in water. The thallic oxide requires high levels of acid); Ores (Carbonate fusion in Pt<sub>0</sub> followed by HCl dissolution); Organic Matrices (Sulfuric/peroxide digestion or dry ash and dissolution in 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 205 amu	2 ppt	N/A	189Os16O
ICP-OES 190.864 nm	0.04 / 0.004 µg/mL	1	V, Ti
ICP-OES 276.787 nm	0.1 / 0.01 µg/mL	1	Ta, V, Fe, Cr
ICP-OES 351.924 nm	0.2 / 0.02 µg/mL	1	Th, Ce, Zr

## 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](http://inorganicventures.com); [info@inorganicventures.com](mailto:info@inorganicventures.com)

## 11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

**11.1 Certification Issue Date**

August 05, 2020

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

**11.2 Lot Expiration Date**

- **August 05, 2024**

- 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220112A 1000 PPB STANDARD  
 Standard Name: 1000 PPB Standard  
 Date Prepared: 1/12/2022  
 Date Expires: 11/18/2022  
 Department: ME  
 Vendor:  
 Lot Number:  
 Balance ID:  
 Comments: Made fresh daily

Type: Secondary  
 BY: Cindy Rohrer  
 Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Hydrochloric Acid E1421	14721	0.25	mL	1/4/2027
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Milli-Q H2O	391	48.25	mL	6/1/2100

**Final Volume:**  
 50 mL

**Stock Source**

ME211208 MSCAL MSCAL 2B  
 ME211118 MSCAL EL-MSCAL-5A  
 ME211229A AU 2n Au 2nd source Stock

**Base Units**

ug/mL  
 ug/mL  
 ug/mL

**Amount Added**

0.5 mL  
 0.5 mL  
 0.01 mL

**Analytes**

**CAS**

Conc: **mg/L**

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211208 MSCAL2B  
Standard Name: MSCAL 2B  
Date Prepared: 12/8/2021  
Date Expires: 12/8/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: S2-MEB704403  
Balance ID:  
Comments: Opened 12/08/2021; Expires 12/08/2022

Type: Primary  
BY: Stacy R. Hendricks  
Status: Open

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Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13793		mL	12/8/2022

**Final Volume:**  
mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**



## 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: EL-MSCAL-2B  
Lot Number: S2-MEB704403  
Matrix: 5% (v/v) HNO3  
Value / Analyte(s):  
100 µg/mL ea:  
Aluminum, Arsenic,  
Boron, Barium,  
Beryllium, Cadmium,  
Cobalt, Chromium,  
Copper, Iron,  
Manganese, Nickel,  
Lead, Selenium,  
Strontium, Thorium,  
Thallium, Uranium,  
Vanadium, Zinc,  
40 µg/mL ea:  
Silver

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

**ID #: 13793**

Opened: \_\_\_\_\_

Multi Analyte Custom Grade Solution

**Expires: 4/21/2025**

Rec'd: 4/29/2021

Energy Laboratories Inc 1120 So. 27th Street  
Billings MT 59107

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	100.0 ± 0.4 µg/mL	Arsenic, As	100.0 ± 0.9 µg/mL
Barium, Ba	100.0 ± 0.5 µg/mL	Beryllium, Be	100.0 ± 0.7 µg/mL
Boron, B	100.0 ± 0.7 µg/mL	Cadmium, Cd	100.0 ± 0.5 µg/mL
Chromium, Cr	100.0 ± 0.8 µg/mL	Cobalt, Co	100.0 ± 0.6 µg/mL
Copper, Cu	100.0 ± 0.5 µg/mL	Iron, Fe	100.1 ± 0.4 µg/mL
Lead, Pb	100.0 ± 0.6 µg/mL	Manganese, Mn	100.0 ± 0.5 µg/mL
Nickel, Ni	100.0 ± 0.6 µg/mL	Selenium, Se	100.0 ± 0.7 µg/mL
Silver, Ag	39.99 ± 0.18 µg/mL	Strontium, Sr	100.0 ± 0.4 µg/mL
Thallium, Tl	100.0 ± 0.6 µg/mL	Thorium, Th	100.0 ± 0.5 µg/mL
Uranium, U	100.0 ± 0.5 µg/mL	Vanadium, V	100.0 ± 0.5 µg/mL
Zinc, Zn	100.0 ± 0.5 µg/mL		

Density: 1.033 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
As	ICP Assay	3103a	100818
B	ICP Assay	3107	110830
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
Fe	Calculated		See Sec. 4.2
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Sr	EDTA	928	928
Sr	ICP Assay	Traceable to 3153a	K2-SR650985
Sr	Calculated		See Sec. 4.2
Th	EDTA	928	928
Th	Calculated		See Sec. 4.2
Tl	ICP Assay	3158	151215
U	ICP Assay	3164	080521
U	Calculated		See Sec. 4.2
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,  $X_{CRM/RM}$ , 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:

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

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

$k$  = 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

**Certified Abundance:**

#### IV's Certified Abundance

##### Isotope

Uranium 238U

Uranium 235U

##### Atom %

99.8 ± 0.1

0.24 ± 0.05

### 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

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

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

N/A

## 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](http://www.inorganicventures.com/TCT)

**8.0 HAZARDOUS INFORMATION**

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

**9.0 HOMOGENEITY**

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

**10.0 QUALITY STANDARD DOCUMENTATION**

**10.1 ISO 9001 Quality Management System Registration**

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

**11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY**

**11.1 Certification Issue Date**

April 21, 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**

- **April 21, 2025**

- 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211118 MSCAL-5A  
Standard Name: EL-MSCAL-5A  
Date Prepared: 11/18/2021  
Date Expires: 11/18/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: P2-MEB687200  
Balance ID:  
Comments: Opened 11/18/2021; Expires 11/18/2022

Type: Primary  
BY: Stacy R. Hendricks  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13175	500	mL	11/18/2022

**Final Volume:**  
500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

## 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: EL-MSCAL-5A

Lot Number: P2-MEB687200

Matrix: 3% (v/v) HNO<sub>3</sub>

Value / Analyte(s):

5 000 µg/mL ea:	Calcium,	Potassium,	Magnesium,
	Sodium,		
500 µg/mL ea:	Phosphorus,	Iron,	
250 µg/mL ea:	Lithium		

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Calcium, Ca	5 000 ± 20 µg/mL	Iron, Fe	499.9 ± 2.1 µg/mL
Lithium, Li	250.0 ± 1.1 µg/mL	Magnesium, Mg	5 000 ± 21 µg/mL
Phosphorus, P	499.8 ± 2.5 µg/mL	Potassium, K	5 000 ± 18 µg/mL
Sodium, Na	5 000 ± 18 µg/mL		

**Density:** 1.076 g/mL (measured at 20 ± 4 °C)

**Assay Information:**

**ID #: 13175**  
 Opened: \_\_\_\_\_  
 Multi Analyte Custom Grade Solution  
**Expires: 12/2/2023**  
 Rec'd: 10/12/2020  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	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
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L

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

N/A

## 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 outer bag.

- While stored in the sealed outer bag, transpiration of this CRM/RM is negligible. After opening the sealed outer 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 outer 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.

## 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](http://inorganicventures.com); [info@inorganicventures.com](mailto:info@inorganicventures.com)

## 11.0 CERTIFICATION, EXPIRATION AND PERIOD OF VALIDITY

### 11.1 Certification Issue Date

December 02, 2019

- 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 02, 2023**

- 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 outer 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:**

Michael Booth  
Manager, Quality Control



**Certifying Officer:**

Paul Gaines  
CEO, Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211229A AU 2ND SOURCE  
Standard Name: Au 2nd source Stock  
Date Prepared: 12/29/2021  
Date Expires: 12/29/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S211129013  
Balance ID:  
Comments: opened 12/29/2021; expires 12/29/2022

Type: Primary  
BY: Amanda E. McDani  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Gold	14710	500	mL	12/29/2022

**Final Volume:**  
500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

ID #: 14710

Opened:

ICP/ICPMS Standard Gold

Expires: 12/31/2023

Rec'd: 12/29/2021

Eneray Laboratories Inc 1120 So. 27th Street

Billings MT 59107

**SCP SCIENC**

Providing Innovative Solutions to Analytical

**Certificate of Analysis****Au****1.0 DESCRIPTION:****PlasmaCAL ICP/ICPMS Standard - Gold 1000 µg/ml**

Catalogue Number: 140-052-790/-791/-795

Starting Material: Gold Metal 99.99%+

Lot Number: **S211129013**

Matrix: 10% HCl (See Section 3 for actual matrix)

Expiration Date (End of month): **December 2023** (or 15 months after bottle is opened, whichever comes first)**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**Certified Concentration: **1001 µg/ml +/- 4 µg/ml****982 µg/g +/- 4 µg/g**

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3121 Lot: **991806**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor ( $k$ ) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**Density: **1.019 g/ml @ 22.4 °C**Actual Matrix: **10.0% (v/v) HCl**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<b>0.3851</b>	Fe	<0.0090	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0062</b>	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	N/A	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<b>0.0434</b>	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<b>0.0048</b>	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<b>0.0362</b>	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<b>0.0029</b>	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0023</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.01	Zr	<0.0010
Er	<0.0010	Na	<b>0.0070</b>	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**

Certification Approval: Daniel Boisvert, Chemist

Certification Date: December 10, 2021

*Daniel Boisvert*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP* : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.  
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA* : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).  
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice* : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.  
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH* : Pour étalonnage de pH mètres et autres applications de chimie humide.  
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité* : Comme étalon pour les mesures de conductivité électrolytiques.  
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC* : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.  
For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisée, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034:** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**CORPORATE HEADQUARTERS**  
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Baie D'Urfé (Montréal), Quebec,  
H9X 4B6 Canada  
Phone: +1 (800) 361-6820  
Fax: +1 (800) 253-5549

**USA**  
3<sup>rd</sup> Party Distribution Center  
348 Route 11, Champlain,  
N.Y. 12919-4816  
Phone: +1 (800) 361-6820  
Fax: +1 (800) 253-5549

**FRANCE**  
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91140, Villebon-sur-Yvette  
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**GERMANY**  
Alte Marktoberdorfer Straße 14, 87616  
Marktoberdorf  
Phone: +49 (0) 8342-89560-61  
Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220112 100 PPB STANDARD  
 Standard Name: 100 ppb Standard  
 Date Prepared: 1/12/2022  
 Date Expires: 11/18/2022  
 Department: ME  
 Vendor: Inorganic Ventures  
 Lot Number:  
 Balance ID:  
 Comments: Made Fresh Daily

Type: Secondary  
 BY: Cindy Rohrer  
 Status: Open

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Hydrochloric Acid E1421	14721	0.25	mL	1/4/2027
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Milli-Q H2O	391	48.335	mL	6/1/2100

**Final Volume:**  
 50 mL

<u>Stock Source</u>	<u>Base Units</u>	<u>Amount Added</u>
ME211221 MSCAL MSCAL 3C	ug/mL	0.05 mL
ME211118 MSCAL EL-MSCAL-5A	ug/mL	0.25 mL
ME220105 HgPrim Primary Hg Stock 2 PPM	ug/mL	0.05 mL
ME211208 MSCAL MSCAL 2B	ug/mL	0.05 mL
ME211229A AU 2n Au 2nd source Stock	ug/mL	0.01 mL
ME220110 Ce, La Ce, La Primary	ug/mL	0.05 mL

<u>Analytes</u>	<u>CAS</u>	Conc:	<u>mg/L</u>
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# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211221 MSCAL 3C  
Standard Name: MSCAL 3C  
Date Prepared: 12/21/2021  
Date Expires: 12/21/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: S2-MEB700780  
Balance ID:  
Comments: Opened 12/21/21; expires 12/21/22

Type: Primary  
BY: Stacy R. Hendricks  
Status: Open

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Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13473	250	mL	12/21/2022

**Final Volume:**  
250 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

**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: EL-MSCAL-3C  
 Lot Number: S2-MEB700780  
 Matrix: 3% (v/v) HNO<sub>3</sub>  
 tr. HF  
 Value / Analyte(s): 400 µg/mL ea:  
 Silicon,  
 100 µg/mL ea:  
 Tin,  
 Molybdenum,

*1-6-2025*

ID #: 13473

Opened: \_\_\_\_\_

Multi Analyte Custom Grade Solution

Expires: 1/6/2025

Rec'd: 1/15/2021

Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

Titanium,  
 Antimony

**3.0 CERTIFIED VALUES AND UNCERTAINTIES**

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	100.0 ± 0.8 µg/mL	Molybdenum, Mo	100.0 ± 0.6 µg/mL
Silicon, Si	399.9 ± 3.0 µg/mL	Tin, Sn	100.0 ± 0.6 µg/mL
Titanium, Ti	100.0 ± 0.7 µg/mL		

Density: 1.018 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
Si	ICP Assay	3150	130912
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	3162a	130925

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

$u_{\text{bb}}$  = bottle to bottle homogeneity standard uncertainty

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

$u_{\text{ts}}$  = 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

$u_{\text{bb}}$  = bottle to bottle homogeneity standard uncertainty

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

$u_{\text{ts}}$  = 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 ( $\mu\text{g/mL}$ )

N/A

## 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°  $\pm$  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](http://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**

January 06, 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**

- **January 06, 2025**

- 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211118 MSCAL-5A  
Standard Name: EL-MSCAL-5A  
Date Prepared: 11/18/2021  
Date Expires: 11/18/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: P2-MEB687200  
Balance ID:  
Comments: Opened 11/18/2021; Expires 11/18/2022

Type: Primary  
BY: Stacy R. Hendricks  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13175	500	mL	11/18/2022

**Final Volume:**  
500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

## 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: EL-MSCAL-5A

Lot Number: P2-MEB687200

Matrix: 3% (v/v) HNO<sub>3</sub>

Value / Analyte(s):

5 000 µg/mL ea:	Calcium,	Potassium,	Magnesium,
	Sodium,		
500 µg/mL ea:	Phosphorus,	Iron,	
250 µg/mL ea:	Lithium		

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Calcium, Ca	5 000 ± 20 µg/mL	Iron, Fe	499.9 ± 2.1 µg/mL
Lithium, Li	250.0 ± 1.1 µg/mL	Magnesium, Mg	5 000 ± 21 µg/mL
Phosphorus, P	499.8 ± 2.5 µg/mL	Potassium, K	5 000 ± 18 µg/mL
Sodium, Na	5 000 ± 18 µg/mL		

**Density:** 1.076 g/mL (measured at 20 ± 4 °C)

**Assay Information:**

**ID #: 13175**  
 Opened: \_\_\_\_\_  
 Multi Analyte Custom Grade Solution  
**Expires: 12/2/2023**  
 Rec'd: 10/12/2020  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	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
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L

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

N/A

## 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 outer bag.

- While stored in the sealed outer bag, transpiration of this CRM/RM is negligible. After opening the sealed outer 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 outer 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.

## 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](http://inorganicventures.com); [info@inorganicventures.com](mailto:info@inorganicventures.com)

## 11.0 CERTIFICATION, EXPIRATION AND PERIOD OF VALIDITY

### 11.1 Certification Issue Date

December 02, 2019

- 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 02, 2023**

- 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 outer 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:**

Michael Booth  
Manager, Quality Control



**Certifying Officer:**

Paul Gaines  
CEO, Senior Technical Director



# Energy Laboratories Inc

# Spike LOG

Standard ID: ME220105 HGPRIMARY  
Standard Name: Primary Hg Stock 2 PPM  
Date Prepared: 1/5/2022  
Date Expires: 12/29/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number:  
Balance ID:  
Type: Secondary  
BY: Amanda E. McDani  
Status: Open  
Comments: Made with different HG stock than QCS

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Hydrochloric Acid E1421	14721	0.25	mL	1/4/2027

**Final Volume:**  
25 mL

**Stock Source**

ME220110HG HG Stock  
ME211229A AU 2N Au 2nd source Stock

**Base Units**

ug/mL  
ug/mL

**Amount Added**

0.05 mL  
0.05 mL

**Analytes**

**CAS**

Conc: ug/mL



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220110HG  
Standard Name: HG Stock  
Date Prepared: 1/10/2022  
Date Expires: 1/10/2023  
Department: ME  
Vendor: SCP Science  
Lot Number: S210729017  
Balance ID:  
Comments:

Type: Primary  
BY: Amanda E. McDani  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Mercury	14711	125	mL	1/10/2023

**Final Volume:**  
125 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

ID #: 14711

Opened: \_\_\_\_\_

ICP/ICPMS Standard Mercury

Expires: 7/31/2023

Rec'd: 12/29/2021

Energy Laboratories Inc 1120 So. 27th Street  
Billings MT 59107

# SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists

## rtificate of Analysis

# Hg

### 1.0 DESCRIPTION:

**PlasmaCAL ICP/ICPMS Standard - Mercury 1000 µg/ml**  
 Catalogue Number: 140-051-800/-801/-805  
 Starting Material: Mercury(II) oxide 99.99+%  
 Lot Number: **S210729017**  
 Matrix: 10% HNO<sub>3</sub> (See Section 3 for actual matrix)  
 Expiration Date (End of month): **July 2023** (or 15 months after bottle is opened, whichever comes first)

### 2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **999 µg/ml +/- 5 µg/ml**  
**952 µg/g +/- 5 µg/g**  
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)  
 Traceability: NIST Standard Reference Material 3133 Lot: **160921**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

### 3.0 REFERENCE VALUES:

Density: **1.050 g/ml @ 23.6 °C**  
 Actual Matrix: **10.0% (v/v) HNO<sub>3</sub>**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<b>0.0322</b>	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0042</b>	Ga	<0.0010	Ni	<b>0.0039</b>	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	N/A	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<b>0.0117</b>
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<b>0.0112</b>	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0060</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	<b>0.0092</b>	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

### 4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Daniel Boisvert, Chemist  
 Certification Date: August 12, 2021



## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP* : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.
  - AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA* : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).
  - Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice* : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.
  - pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH* : Pour étalonnage de pH mètres et autres applications de chimie humide.
  - Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité* : Comme étalon pour les mesures de conductivité électrolytiques.
  - IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC* : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.
- For any inquiries, please contact **SCP SCIENCE**. / Pour toute question, veuillez contacter **SCP SCIENCE**.

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034 :** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Alte Marktberdorfer Straße 14, 87616  
Marktberdorf  
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Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211229A AU 2ND SOURCE  
Standard Name: Au 2nd source Stock  
Date Prepared: 12/29/2021  
Date Expires: 12/29/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S211129013  
Balance ID:  
Comments: opened 12/29/2021; expires 12/29/2022

Type: Primary  
BY: Amanda E. McDani  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Gold	14710	500	mL	12/29/2022

**Final Volume:**  
500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

ID #: 14710

Opened:

ICP/ICPMS Standard Gold

Expires: 12/31/2023

Rec'd: 12/29/2021

Eneray Laboratories Inc 1120 So. 27th Street

Billings MT 59107

**SCP SCIENC**

Providing Innovative Solutions to Analytical

**Certificate of Analysis****Au****1.0 DESCRIPTION:****PlasmaCAL ICP/ICPMS Standard - Gold 1000 µg/ml**

Catalogue Number: 140-052-790/-791/-795

Starting Material: Gold Metal 99.99+%

Lot Number: **S211129013**

Matrix: 10% HCl (See Section 3 for actual matrix)

Expiration Date (End of month): **December 2023** (or 15 months after bottle is opened, whichever comes first)**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**Certified Concentration: **1001 µg/ml +/- 4 µg/ml****982 µg/g +/- 4 µg/g**

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3121 Lot: **991806**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor ( $k$ ) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**Density: **1.019 g/ml @ 22.4 °C**Actual Matrix: **10.0% (v/v) HCl**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<b>0.3851</b>	Fe	<0.0090	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0062</b>	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	N/A	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<b>0.0434</b>	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<b>0.0048</b>	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<b>0.0362</b>	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<b>0.0029</b>	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0023</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.01	Zr	<0.0010
Er	<0.0010	Na	<b>0.0070</b>	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**

Certification Approval: Daniel Boisvert, Chemist

Certification Date: December 10, 2021

*Daniel Boisvert*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP* : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.
  - AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA* : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).
  - Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice* : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.
  - pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH* : Pour étalonnage de pH mètres et autres applications de chimie humide.
  - Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité* : Comme étalon pour les mesures de conductivité électrolytiques.
  - IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC* : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.
- For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

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# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211208 MSCAL2B  
Standard Name: MSCAL 2B  
Date Prepared: 12/8/2021  
Date Expires: 12/8/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: S2-MEB704403  
Balance ID:  
Comments: Opened 12/08/2021; Expires 12/08/2022

Type: Primary  
BY: Stacy R. Hendricks  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13793		mL	12/8/2022

**Final Volume:**  
mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

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: EL-MSCAL-2B  
 Lot Number: S2-MEB704403  
 Matrix: 5% (v/v) HNO<sub>3</sub>  
 Value / Analyte(s):  
     100 µg/mL ea:  
     Aluminum, Arsenic,  
     Boron, Barium,  
     Beryllium, Cadmium,  
     Cobalt, Chromium,  
     Copper, Iron,  
     Manganese, Nickel,  
     Lead, Selenium,  
     Strontium, Thorium,  
     Thallium, Uranium,  
     Vanadium, Zinc,  
     40 µg/mL ea:  
     Silver

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

**ID #: 13793**

Opened: \_\_\_\_\_

Multi Analyte Custom Grade Solution

**Expires: 4/21/2025**

Rec'd: 4/29/2021

 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107



ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	100.0 ± 0.4 µg/mL	Arsenic, As	100.0 ± 0.9 µg/mL
Barium, Ba	100.0 ± 0.5 µg/mL	Beryllium, Be	100.0 ± 0.7 µg/mL
Boron, B	100.0 ± 0.7 µg/mL	Cadmium, Cd	100.0 ± 0.5 µg/mL
Chromium, Cr	100.0 ± 0.8 µg/mL	Cobalt, Co	100.0 ± 0.6 µg/mL
Copper, Cu	100.0 ± 0.5 µg/mL	Iron, Fe	100.1 ± 0.4 µg/mL
Lead, Pb	100.0 ± 0.6 µg/mL	Manganese, Mn	100.0 ± 0.5 µg/mL
Nickel, Ni	100.0 ± 0.6 µg/mL	Selenium, Se	100.0 ± 0.7 µg/mL
Silver, Ag	39.99 ± 0.18 µg/mL	Strontium, Sr	100.0 ± 0.4 µg/mL
Thallium, Tl	100.0 ± 0.6 µg/mL	Thorium, Th	100.0 ± 0.5 µg/mL
Uranium, U	100.0 ± 0.5 µg/mL	Vanadium, V	100.0 ± 0.5 µg/mL
Zinc, Zn	100.0 ± 0.5 µg/mL		

Density: 1.033 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
As	ICP Assay	3103a	100818
B	ICP Assay	3107	110830
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
Fe	Calculated		See Sec. 4.2
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Sr	EDTA	928	928
Sr	ICP Assay	Traceable to 3153a	K2-SR650985
Sr	Calculated		See Sec. 4.2
Th	EDTA	928	928
Th	Calculated		See Sec. 4.2
Tl	ICP Assay	3158	151215
U	ICP Assay	3164	080521
U	Calculated		See Sec. 4.2
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,  $X_{CRM/RM}$ , 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:

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

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

$k$  = 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

**Certified Abundance:**

#### IV's Certified Abundance

##### Isotope

Uranium 238U

Uranium 235U

##### Atom %

99.8 ± 0.1

0.24 ± 0.05

### 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

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

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

N/A

## 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](http://www.inorganicventures.com/TCT)

**8.0 HAZARDOUS INFORMATION**

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

**9.0 HOMOGENEITY**

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

**10.0 QUALITY STANDARD DOCUMENTATION**

**10.1 ISO 9001 Quality Management System Registration**

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

**11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY**

**11.1 Certification Issue Date**

April 21, 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**

- **April 21, 2025**

- 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211229A AU 2ND SOURCE  
Standard Name: Au 2nd source Stock  
Date Prepared: 12/29/2021  
Date Expires: 12/29/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S211129013  
Balance ID:  
Comments: opened 12/29/2021; expires 12/29/2022

Type: Primary  
BY: Amanda E. McDani  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Gold	14710	500	mL	12/29/2022

**Final Volume:**  
500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

ID #: 14710

Opened:

ICP/ICPMS Standard Gold

Expires: 12/31/2023

Rec'd: 12/29/2021

Eneray Laboratories Inc 1120 So. 27th Street

Billings MT 59107

**SCP SCIENC**

Providing Innovative Solutions to Analytical

**Certificate of Analysis****Au****1.0 DESCRIPTION:****PlasmaCAL ICP/ICPMS Standard - Gold 1000 µg/ml**

Catalogue Number: 140-052-790/-791/-795

Starting Material: Gold Metal 99.99%+

Lot Number: **S211129013**

Matrix: 10% HCl (See Section 3 for actual matrix)

Expiration Date (End of month): **December 2023** (or 15 months after bottle is opened, whichever comes first)**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**Certified Concentration: **1001 µg/ml +/- 4 µg/ml****982 µg/g +/- 4 µg/g**

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3121 Lot: **991806**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor ( $k$ ) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**Density: **1.019 g/ml @ 22.4 °C**Actual Matrix: **10.0% (v/v) HCl**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<b>0.3851</b>	Fe	<0.0090	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0062</b>	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	N/A	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<b>0.0434</b>	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<b>0.0048</b>	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<b>0.0362</b>	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<b>0.0029</b>	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0023</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.01	Zr	<0.0010
Er	<0.0010	Na	<b>0.0070</b>	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**

Certification Approval: Daniel Boisvert, Chemist

Certification Date: December 10, 2021

*Daniel Boisvert*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP* : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.  
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA* : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).  
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice* : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.  
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH* : Pour étalonnage de pH mètres et autres applications de chimie humide.  
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité* : Comme étalon pour les mesures de conductivité électrolytiques.  
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC* : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.  
For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisée, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034:** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**CORPORATE HEADQUARTERS**  
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Marktoberdorf  
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Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220110 CE, LA PRIMARY  
Standard Name: Ce, La Primary      Type: Secondary  
Date Prepared: 1/10/2022      BY: Amanda E. McDani  
Date Expires: 1/6/2023  
Department: ME      Status: Open  
Vendor: Inorganic Ventures  
Lot Number: M2-CE657768/M2-  
Balance ID:  
Comments: Used to make standards and spiking solutions; No primary La available

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Milli-Q H2O	391	39.5	mL	6/1/2100

**Final Volume:**  
50 mL

**Stock Source**

ME220106-CE      Ce Primary Stock

**Base Units**

ug/mL

**Amount Added**

5 mL

**Analytes**

**CAS**

Conc:      ug/mL



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220112 50 PPB STANDARD\_CCV  
 Standard Name: 50 ppb Standard/CCV  
 Date Prepared: 1/12/2022  
 Date Expires: 11/18/2022  
 Department: ME  
 Vendor: Inorganic Ventures  
 Lot Number:  
 Balance ID:  
 Comments: Made Fresh Daily

Type: Secondary  
 BY: Cindy Rohrer  
 Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Hydrochloric Acid E1421	14721	0.25	mL	1/4/2027
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Milli-Q H2O	391	48.335	mL	6/1/2100

**Final Volume:**  
 100 mL

**Stock Source**

ME211221 MSCAL MSCAL 3C  
 ME211118 MSCAL EL-MSCAL-5A  
 ME220105 HgPrim Primary Hg Stock 2 PPM  
 ME211208 MSCAL MSCAL 2B  
 ME211229A AU 2n Au 2nd source Stock  
 ME220110 Ce, La Ce, La Primary

**Base Units**

ug/mL  
 ug/mL  
 ug/mL  
 ug/mL  
 ug/mL  
 ug/mL

**Amount Added**

0.05 mL  
 0.25 mL  
 0.05 mL  
 0.05 mL  
 0.01 mL  
 0.05 mL

**Analytes**

**CAS**

Conc: **mg/L**

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211221 MSCAL 3C  
Standard Name: MSCAL 3C  
Date Prepared: 12/21/2021  
Date Expires: 12/21/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: S2-MEB700780  
Balance ID:  
Comments: Opened 12/21/21; expires 12/21/22

Type: Primary  
BY: Stacy R. Hendricks  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13473	250	mL	12/21/2022

**Final Volume:**  
250 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

**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: EL-MSCAL-3C  
 Lot Number: S2-MEB700780  
 Matrix: 3% (v/v) HNO<sub>3</sub>  
 tr. HF  
 Value / Analyte(s): 400 µg/mL ea:  
 Silicon,  
 100 µg/mL ea:  
 Tin,  
 Molybdenum,  
 Titanium,  
 Antimony

*1-6-2025*

ID #: 13473  
 Opened: \_\_\_\_\_  
 Multi Analyte Custom Grade Solution  
 Expires: 1/6/2025  
 Rec'd: 1/15/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

**3.0 CERTIFIED VALUES AND UNCERTAINTIES**

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	100.0 ± 0.8 µg/mL	Molybdenum, Mo	100.0 ± 0.6 µg/mL
Silicon, Si	399.9 ± 3.0 µg/mL	Tin, Sn	100.0 ± 0.6 µg/mL
Titanium, Ti	100.0 ± 0.7 µg/mL		

Density: 1.018 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
Si	ICP Assay	3150	130912
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	3162a	130925

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

$u_{\text{bb}}$  = bottle to bottle homogeneity standard uncertainty

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

$u_{\text{ts}}$  = 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

$u_{\text{bb}}$  = bottle to bottle homogeneity standard uncertainty

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

$u_{\text{ts}}$  = 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 ( $\mu\text{g/mL}$ )

N/A

## 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](http://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**

January 06, 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**

- **January 06, 2025**

- 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211118 MSCAL-5A  
Standard Name: EL-MSCAL-5A  
Date Prepared: 11/18/2021  
Date Expires: 11/18/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: P2-MEB687200  
Balance ID:  
Comments: Opened 11/18/2021; Expires 11/18/2022

Type: Primary  
BY: Stacy R. Hendricks  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13175	500	mL	11/18/2022

**Final Volume:**  
500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

### 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: EL-MSCAL-5A  
 Lot Number: P2-MEB687200  
 Matrix: 3% (v/v) HNO<sub>3</sub>  
 Value / Analyte(s):  
     5 000 µg/mL ea:  
         Calcium, Potassium, Magnesium,  
         Sodium,  
     500 µg/mL ea:  
         Phosphorus, Iron,  
     250 µg/mL ea:  
         Lithium

### 3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Calcium, Ca	5 000 ± 20 µg/mL	Iron, Fe	499.9 ± 2.1 µg/mL
Lithium, Li	250.0 ± 1.1 µg/mL	Magnesium, Mg	5 000 ± 21 µg/mL
Phosphorus, P	499.8 ± 2.5 µg/mL	Potassium, K	5 000 ± 18 µg/mL
Sodium, Na	5 000 ± 18 µg/mL		

**Density:** 1.076 g/mL (measured at 20 ± 4 °C)

**Assay Information:**

**ID #: 13175**  
 Opened: \_\_\_\_\_  
 Multi Analyte Custom Grade Solution  
**Expires: 12/2/2023**  
 Rec'd: 10/12/2020  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	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
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L

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

- 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 outer bag.

- While stored in the sealed outer bag, transpiration of this CRM/RM is negligible. After opening the sealed outer 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 outer 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.

## 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](http://inorganicventures.com); [info@inorganicventures.com](mailto:info@inorganicventures.com)

## 11.0 CERTIFICATION, EXPIRATION AND PERIOD OF VALIDITY

### 11.1 Certification Issue Date

December 02, 2019

- 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 02, 2023**

- 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 outer 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:**

Michael Booth  
Manager, Quality Control



**Certifying Officer:**

Paul Gaines  
CEO, Senior Technical Director



# Energy Laboratories Inc

# Spike LOG

Standard ID: ME220105 HGPRIMARY  
Standard Name: Primary Hg Stock 2 PPM  
Date Prepared: 1/5/2022  
Date Expires: 12/29/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number:  
Balance ID:  
Type: Secondary  
BY: Amanda E. McDani  
Status: Open  
Comments: Made with different HG stock than QCS

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Hydrochloric Acid E1421	14721	0.25	mL	1/4/2027

**Final Volume:**  
25 mL

**Stock Source**

ME220110HG HG Stock  
ME211229A AU 2N Au 2nd source Stock

**Base Units**

ug/mL  
ug/mL

**Amount Added**

0.05 mL  
0.05 mL

**Analytes**

**CAS**

Conc: ug/mL

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220110HG  
Standard Name: HG Stock  
Date Prepared: 1/10/2022  
Date Expires: 1/10/2023  
Department: ME  
Vendor: SCP Science  
Lot Number: S210729017  
Balance ID:  
Comments:

Type: Primary  
BY: Amanda E. McDani  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Mercury	14711	125	mL	1/10/2023

**Final Volume:**  
125 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

ID #: 14711

Opened: \_\_\_\_\_

ICP/ICPMS Standard Mercury

Expires: 7/31/2023

Rec'd: 12/29/2021

Energy Laboratories Inc 1120 So. 27th Street  
Billings MT 59107

# SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists

## rtificate of Analysis

# Hg

### 1.0 DESCRIPTION:

**PlasmaCAL ICP/ICPMS Standard - Mercury 1000 µg/ml**  
 Catalogue Number: 140-051-800/-801/-805  
 Starting Material: Mercury(II) oxide 99.99+%  
 Lot Number: **S210729017**  
 Matrix: 10% HNO<sub>3</sub> (See Section 3 for actual matrix)  
 Expiration Date (End of month): **July 2023** (or 15 months after bottle is opened, whichever comes first)

### 2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **999 µg/ml +/- 5 µg/ml**  
**952 µg/g +/- 5 µg/g**  
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)  
 Traceability: NIST Standard Reference Material 3133 Lot: **160921**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

### 3.0 REFERENCE VALUES:

Density: **1.050 g/ml @ 23.6 °C**  
 Actual Matrix: **10.0% (v/v) HNO<sub>3</sub>**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<b>0.0322</b>	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0042</b>	Ga	<0.0010	Ni	<b>0.0039</b>	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	N/A	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<b>0.0117</b>
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<b>0.0112</b>	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0060</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	<b>0.0092</b>	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

### 4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Daniel Boisvert, Chemist  
 Certification Date: August 12, 2021

*Daniel Boisvert*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP* : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.
  - AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA* : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).
  - Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice* : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.
  - pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH* : Pour étalonnage de pH mètres et autres applications de chimie humide.
  - Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité* : Comme étalon pour les mesures de conductivité électrolytiques.
  - IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC* : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.
- For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034 :** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Marktberdorf  
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Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211229A AU 2ND SOURCE  
Standard Name: Au 2nd source Stock  
Date Prepared: 12/29/2021  
Date Expires: 12/29/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S211129013  
Balance ID:  
Comments: opened 12/29/2021; expires 12/29/2022

Type: Primary  
BY: Amanda E. McDani  
Status: Open

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Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Gold	14710	500	mL	12/29/2022

**Final Volume:**  
500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

ID #: 14710

Opened:

ICP/ICPMS Standard Gold

Expires: 12/31/2023

Rec'd: 12/29/2021

Eneray Laboratories Inc 1120 So. 27th Street

Billings MT 59107

**SCP SCIENC**

Providing Innovative Solutions to Analytical

**Certificate of Analysis****Au****1.0 DESCRIPTION:****PlasmaCAL ICP/ICPMS Standard - Gold 1000 µg/ml**

Catalogue Number: 140-052-790/-791/-795

Starting Material: Gold Metal 99.99%+

Lot Number: **S211129013**

Matrix: 10% HCl (See Section 3 for actual matrix)

Expiration Date (End of month): **December 2023** (or 15 months after bottle is opened, whichever comes first)**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**Certified Concentration: **1001 µg/ml +/- 4 µg/ml****982 µg/g +/- 4 µg/g**

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3121 Lot: **991806**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor ( $k$ ) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**Density: **1.019 g/ml @ 22.4 °C**Actual Matrix: **10.0% (v/v) HCl**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<b>0.3851</b>	Fe	<0.0090	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0062</b>	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	N/A	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<b>0.0434</b>	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<b>0.0048</b>	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<b>0.0362</b>	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<b>0.0029</b>	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0023</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.01	Zr	<0.0010
Er	<0.0010	Na	<b>0.0070</b>	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**

Certification Approval: Daniel Boisvert, Chemist

Certification Date: December 10, 2021

*Daniel Boisvert*



## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP* : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.  
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA* : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).  
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice* : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.  
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH* : Pour étalonnage de pH mètres et autres applications de chimie humide.  
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité* : Comme étalon pour les mesures de conductivité électrolytiques.  
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC* : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.  
For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034:** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**CORPORATE HEADQUARTERS**  
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Marktoberdorf  
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Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211208 MSCAL2B  
Standard Name: MSCAL 2B  
Date Prepared: 12/8/2021  
Date Expires: 12/8/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: S2-MEB704403  
Balance ID:  
Comments: Opened 12/08/2021; Expires 12/08/2022

Type: Primary  
BY: Stacy R. Hendricks  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13793		mL	12/8/2022

**Final Volume:**  
mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

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: EL-MSCAL-2B  
Lot Number: S2-MEB704403  
Matrix: 5% (v/v) HNO3  
Value / Analyte(s):  
100 µg/mL ea:  
Aluminum, Arsenic,  
Boron, Barium,  
Beryllium, Cadmium,  
Cobalt, Chromium,  
Copper, Iron,  
Manganese, Nickel,  
Lead, Selenium,  
Strontium, Thorium,  
Thallium, Uranium,  
Vanadium, Zinc,  
40 µg/mL ea:  
Silver

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

**ID #: 13793**

Opened: \_\_\_\_\_

Multi Analyte Custom Grade Solution

**Expires: 4/21/2025**

Rec'd: 4/29/2021

Energy Laboratories Inc 1120 So. 27th Street  
Billings MT 59107

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	100.0 ± 0.4 µg/mL	Arsenic, As	100.0 ± 0.9 µg/mL
Barium, Ba	100.0 ± 0.5 µg/mL	Beryllium, Be	100.0 ± 0.7 µg/mL
Boron, B	100.0 ± 0.7 µg/mL	Cadmium, Cd	100.0 ± 0.5 µg/mL
Chromium, Cr	100.0 ± 0.8 µg/mL	Cobalt, Co	100.0 ± 0.6 µg/mL
Copper, Cu	100.0 ± 0.5 µg/mL	Iron, Fe	100.1 ± 0.4 µg/mL
Lead, Pb	100.0 ± 0.6 µg/mL	Manganese, Mn	100.0 ± 0.5 µg/mL
Nickel, Ni	100.0 ± 0.6 µg/mL	Selenium, Se	100.0 ± 0.7 µg/mL
Silver, Ag	39.99 ± 0.18 µg/mL	Strontium, Sr	100.0 ± 0.4 µg/mL
Thallium, Tl	100.0 ± 0.6 µg/mL	Thorium, Th	100.0 ± 0.5 µg/mL
Uranium, U	100.0 ± 0.5 µg/mL	Vanadium, V	100.0 ± 0.5 µg/mL
Zinc, Zn	100.0 ± 0.5 µg/mL		

Density: 1.033 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
As	ICP Assay	3103a	100818
B	ICP Assay	3107	110830
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
Fe	Calculated		See Sec. 4.2
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Sr	EDTA	928	928
Sr	ICP Assay	Traceable to 3153a	K2-SR650985
Sr	Calculated		See Sec. 4.2
Th	EDTA	928	928
Th	Calculated		See Sec. 4.2
Tl	ICP Assay	3158	151215
U	ICP Assay	3164	080521
U	Calculated		See Sec. 4.2
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,  $X_{CRM/RM}$ , 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:

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

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

$k$  = 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

**Certified Abundance:**

#### IV's Certified Abundance

##### Isotope

Uranium 238U

Uranium 235U

##### Atom %

99.8 ± 0.1

0.24 ± 0.05

### 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

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

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

N/A

## 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](http://www.inorganicventures.com/TCT)

**8.0 HAZARDOUS INFORMATION**

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

**9.0 HOMOGENEITY**

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

**10.0 QUALITY STANDARD DOCUMENTATION**

**10.1 ISO 9001 Quality Management System Registration**

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

**11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY**

**11.1 Certification Issue Date**

April 21, 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**

- **April 21, 2025**

- 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211229A AU 2ND SOURCE  
Standard Name: Au 2nd source Stock  
Date Prepared: 12/29/2021  
Date Expires: 12/29/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S211129013  
Balance ID:  
Comments: opened 12/29/2021; expires 12/29/2022

Type: Primary  
BY: Amanda E. McDani  
Status: Open

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Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Gold	14710	500	mL	12/29/2022

**Final Volume:**  
500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**



ID #: 14710

Opened:

ICP/ICPMS Standard Gold

Expires: 12/31/2023

Rec'd: 12/29/2021

Eneray Laboratories Inc 1120 So. 27th Street

Billings MT 59107

**SCP SCIENC**

Providing Innovative Solutions to Analytical

**Certificate of Analysis****Au****1.0 DESCRIPTION:****PlasmaCAL ICP/ICPMS Standard - Gold 1000 µg/ml**

Catalogue Number: 140-052-790/-791/-795

Starting Material: Gold Metal 99.99+%

Lot Number: **S211129013**

Matrix: 10% HCl (See Section 3 for actual matrix)

Expiration Date (End of month): **December 2023** (or 15 months after bottle is opened, whichever comes first)**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**Certified Concentration: **1001 µg/ml +/- 4 µg/ml****982 µg/g +/- 4 µg/g**

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3121 Lot: **991806**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor ( $k$ ) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**Density: **1.019 g/ml @ 22.4 °C**Actual Matrix: **10.0% (v/v) HCl**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<b>0.3851</b>	Fe	<0.0090	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0062</b>	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	N/A	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<b>0.0434</b>	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<b>0.0048</b>	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<b>0.0362</b>	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<b>0.0029</b>	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0023</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.01	Zr	<0.0010
Er	<0.0010	Na	<b>0.0070</b>	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**

Certification Approval: Daniel Boisvert, Chemist

Certification Date: December 10, 2021

*Daniel Boisvert*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP* : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.  
- AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA* : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).  
- Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice* : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.  
- pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH* : Pour étalonnage de pH mètres et autres applications de chimie humide.  
- Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité* : Comme étalon pour les mesures de conductivité électrolytiques.  
- IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC* : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.  
For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 meghom/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 meghom/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034:** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220110 CE, LA PRIMARY  
Standard Name: Ce, La Primary      Type: Secondary  
Date Prepared: 1/10/2022      BY: Amanda E. McDani  
Date Expires: 1/6/2023  
Department: ME      Status: Open  
Vendor: Inorganic Ventures  
Lot Number: M2-CE657768/M2-  
Balance ID:  
Comments: Used to make standards and spiking solutions; No primary La available

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Milli-Q H2O	391	39.5	mL	6/1/2100

**Final Volume:**  
50 mL

**Stock Source**

ME220106-CE      Ce Primary Stock

**Base Units**

ug/mL

**Amount Added**

5 mL

**Analytes**

**CAS**

Conc:      ug/mL

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220112 10 PPB STANDARD  
Standard Name: 10 ppb Standard  
Date Prepared: 1/12/2022  
Date Expires: 11/18/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number:  
Balance ID:  
Comments: Made Fresh Daily

Type: Secondary  
BY: Cindy Rohrer  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Hydrochloric Acid E1421	14721	0.25	mL	1/4/2027
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Milli-Q H2O	391	48.335	mL	6/1/2100

**Final Volume:**  
50 mL

**Stock Source**  
ME220112 100 PP 100 ppb Standard

**Base Units**  
ug/mL

**Amount Added**  
5 mL

**Analytes**

**CAS**

Conc: **mg/L**

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220112 1 PPB STANDARD  
Standard Name: 1 ppb Standard  
Date Prepared: 1/12/2022  
Date Expires: 11/18/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number:  
Balance ID:  
Comments: Made Fresh Daily

Type: Secondary  
BY: Cindy Rohrer  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Hydrochloric Acid E1421	14721	0.25	mL	1/4/2027
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Milli-Q H2O	391	48.335	mL	6/1/2100

**Final Volume:**  
50 mL

**Stock Source**  
ME220112 10 PPB 10 ppb Standard

**Base Units**  
ug/mL

**Amount Added**  
5 mL

**Analytes**

**CAS**

Conc: **mg/L**

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220112 0.5 PPB STANDARD  
Standard Name: 0.5 ppb Standard  
Date Prepared: 1/12/2022  
Date Expires: 11/18/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number:  
Balance ID:  
Comments: Made Fresh Daily

Type: Secondary  
BY: Cindy Rohrer  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Hydrochloric Acid E1421	14721	0.25	mL	1/4/2027
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Milli-Q H2O	391	48.335	mL	6/1/2100

**Final Volume:**  
50 mL

**Stock Source**  
ME220112 10 PPB 10 ppb Standard

**Base Units**  
ug/mL

**Amount Added**  
2.5 mL

**Analytes**

**CAS**

Conc: **mg/L**

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220112 0.1 PPB STANDARD  
Standard Name: 0.1 ppb Standard  
Date Prepared: 1/12/2022  
Date Expires: 11/18/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number:  
Balance ID:  
Comments: Made Fresh Daily

Type: Secondary  
BY: Cindy Rohrer  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Hydrochloric Acid E1421	14721	0.25	mL	1/4/2027
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Milli-Q H2O	391	48.335	mL	6/1/2100

**Final Volume:**  
50 mL

**Stock Source**

ME220112 1 PPB 1 ppb Standard

**Base Units**

ug/mL

**Amount Added**

5 mL

**Analytes**

**CAS**

Conc: **mg/L**

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220112 0.05 PPB STANDARD  
Standard Name: 0.5 ppb Standard  
Date Prepared: 1/12/2022  
Date Expires: 11/18/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number:  
Balance ID:  
Comments: Made Fresh Daily

Type: Secondary  
BY: Cindy Rohrer  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Hydrochloric Acid E1421	14721	0.25	mL	1/4/2027
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Milli-Q H2O	391	48.335	mL	6/1/2100

**Final Volume:**  
50 mL

**Stock Source**  
ME220112 0.5 PP 0.5 ppb Standard

**Base Units**  
ug/mL

**Amount Added**  
5 mL

**Analytes**

**CAS**

Conc: **mg/L**



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220112 0.025 PPB STANDARD  
Standard Name: 0.025 ppb Standard  
Date Prepared: 1/12/2022  
Date Expires: 11/18/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number:  
Balance ID:  
Comments: Made Fresh Daily

Type: Secondary  
BY: Cindy Rohrer  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Hydrochloric Acid E1421	14721	0.25	mL	1/4/2027
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Milli-Q H2O	391	48.335	mL	6/1/2100

**Final Volume:**  
50 mL

**Stock Source**  
ME220112 0.5 PP 0.5 ppb Standard

**Base Units**  
ug/mL

**Amount Added**  
2.5 mL

**Analytes**

**CAS**

Conc: **mg/L**

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211206 ICV STANDARD  
 Standard Name: ICV for ICPMS Standards  
 Date Prepared: 12/6/2021  
 Date Expires: 4/30/2022  
 Department:   
 Vendor:   
 Lot Number:   
 Balance ID:   
 Comments: Made fresh daily

Type: Secondary  
 BY: Stacy R. Hendricks  
 Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Hydrochloric Acid Instra Analyzed 000	14028	1	mL	3/29/
Nitric Acid Instra Analyzed 000028856	14572	2	mL	6/28/
Milli-Q H2O	391		mL	6/1/2

**Final Volume:** 100 mL

<u>Stock Source</u>	<b>Base Units</b>	<b>Amount Added</b>
ME210211 U Seco U 2' QCS	ug/mL	0.05 mL
ME211206 Th QC Th QCS Stock	ug/mL	0.05 mL
ME210901 Hg Sec Secondary Hg Stock 2 PPM	ug/mL	0.05 mL
ME211124 EL-MSI EL-MSICV-2	ug/mL	0.05 mL
ME210817 ICV-1A EL-MSICV-1A	ug/mL	0.05 mL
ME210903 Ce, La Ce, La Secondary solution	ug/mL	0.05 mL

Analvtes **CAS** Conc: **mg/L**

# Energy Laboratories Inc

# Spike LOG

Standard ID: ME210211 U SECOND SOURCE  
Standard Name: U 2' QCS  
Date Prepared: 2/11/2021  
Date Expires: 4/30/2022  
Department: ME  
Vendor:  
Lot Number:  
Balance ID:  
Comments:

Type: Secondary  
BY: Alyssa A. Olson  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid Instra Analyzed 0000264786	13061	0.25	mL	5/12/2025
Milli-Q H2O	391	22.25	mL	6/1/2100

**Final Volume:**  
25 mL

**Stock Source**

ME200624A U Stock

**Base Units**

ug/mL

**Amount Added**

2.5 mL

**Analytes**

**CAS**

Conc: ug/mL

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME200624A  
Standard Name: U Stock  
Date Prepared: 6/24/2020  
Date Expires: 4/30/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S200422002  
Balance ID:  
Comments:

Type: Primary  
BY: Ron Hunt  
Status: Empty/Disposed

---

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
PlasmaCal Standard Uranium	12767	500	mL	4/30/

**Final Volume:** 500 mL

Stock Source

**Base Units**

**Amount Added**

Analvtes

**CAS**

Conc: **ug/mL**

A Uranium

7440-61-1

1000

# U

**1.0 DESCRIPTION:** **PlasmaCAL ICP/ICPMS Standard - Uranium 1000 µg/ml**  
 Catalogue Number: 140-051-920/-921/-925  
 Starting Material: Uranyl Nitrate 99.99%  
 Lot Number: **S200422002**  
 Matrix: 4% HNO<sub>3</sub> (See Section 3 for actual matrix)  
 Expiration Date (End of month): **April 2022** (or 15 months after bottle is opened, whichever comes first)

**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**  
 Certified Concentration: **1003 µg/ml +/- 4 µg/ml**  
**983 µg/g +/- 4 µg/g**  
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)  
 Traceability: NIST Standard Reference Material 3164 Lot: **080521**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u) including uncertainty established during characterization of the material (u<sub>char</sub>), the between bottle variation (u<sub>bb</sub>), short-term stability (u<sub>sts</sub>) and long-term stability (u<sub>lts</sub>) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**  
 Density: **1.020 g/ml @ 21.7 °C**  
 Actual Matrix: **4.0% (v/v) HNO<sub>3</sub>**

**ID #: 12767**  
 Opened: \_\_\_\_\_  
 PlasmaCAL Standard Uranium  
**Expires: 4/30/2022**  
 Rec'd: 6/15/2020  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

% abundance of stable isotopes : <sup>238</sup>U : 99.79% ; <sup>235</sup>U : 0.21%  
 Note : The uranyl nitrate comes from a depleted source of uranium.

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0073</b>	Ga	<0.0010	Ni	<b>0.0038</b>	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	*	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0026	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0031
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<b>0.0020</b>
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	<b>0.0340</b>	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	N/A
Ce	<0.0010	La	*	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	<1.0000	Y	<b>0.0049</b>
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<0.0010	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	*	Zr	<0.0010
Er	<0.0010	Na	<0.0010	Si	<1.0000		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**  
 Certification Approval: Daniel Boisvert, Chemist  
 Certification Date: April 28, 2020

*Daniel Boisvert*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
  - AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
  - Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleurs réponses instrumentales et limites de détection pour SAA four au graphite.*
  - pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
  - Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
  - IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*
- For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en presumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisée, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

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Marktobendorf  
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Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Spike LOG

Standard ID: ME211206 TH QCS STOCK  
Standard Name: Th QCS Stock  
Date Prepared: 12/6/2021  
Date Expires: 10/25/2022  
Department: ME  
Vendor:  
Lot Number:  
Balance ID:  
Comments:

Type: Secondary  
BY: Stacy R. Hendricks  
Status: Open

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Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid Instra Analyzed 000028856	14572	0.25	mL	6/28/
Milli-Q H2O	391	22.25	mL	6/1/2

**Final Volume:** 25 mL

Stock Source  
ME 211025 Th Sec Th Secondary Stock

**Base Units**  
ug/mL

**Amount Added**  
2.5 mL

Analvtes

**CAS**

Conc: **ug/mL**

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME 211025 TH SECONDARY STOCK  
Standard Name: Th Secondary Stock  
Date Prepared: 10/25/2021  
Date Expires: 10/25/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: S2-TH706436  
Balance ID:  
Comments: Opened 10/25/2021; Expires 10/25/2022

Type: Primary  
BY: Stacy R. Hendricks  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Thorium Single Analyte Custom Grade Sol	14318	125	mL	10/25/2022

**Final Volume:**  
500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**



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: Single Analyte Custom Grade Solution  
 Catalog Number: CGTH1  
 Lot Number: S2-TH706436  
 Matrix: 5% (v/v) HNO<sub>3</sub>  
 Value / Analyte(s): 1 000 µg/mL ea:  
 Thorium  
 Starting Material: TH(NO<sub>3</sub>)<sub>4</sub>·4H<sub>2</sub>O  
 Starting Material Lot#: 2250  
 Starting Material Purity: 99.9905%

**ID #: 14318**  
 Opened:  
 Thorium Single Analyte Custom Grade Solution  
**Expires: 7/4/2025**  
 Rec'd: 9/24/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

**Certified Value:** 1001 ± 4 µg/mL  
**Density:** 1.026 g/mL (measured at 20 ± 4 °C)

### Assay Information:

**Assay Method #1**      **1001 ± 3 µg/mL**  
 EDTA NIST SRM 928 Lot Number: 928

**Assay Method #2**      **1001 ± 6 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:

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

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

$k$  = 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

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

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

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  $\mu\text{m}$ .

M Ag <	0.000448	M Eu <	0.000224	O Na	0.064077	M Se <	0.005827	M Zn	0.003183
O Al	0.010962	M Fe	0.012392	M Nb <	0.003138	i Si <		M Zr <	0.010310
M As <	0.038776	M Ga <	0.004931	M Nd	0.004697	M Sm	0.000871		
M Au <	0.000224	M Gd	0.000300	M Ni <	0.006724	M Sn <	0.028242		
M B <	0.021293	M Ge <	0.008965	M Os <	0.000224	M Sr	0.002582		
M Ba	0.001317	M Hf <	0.000224	i P <		M Ta <	0.001344		
M Be <	0.000224	M Hg <	0.000448	M Pb	0.003287	M Tb <	0.001793		
M Bi <	0.001793	M Ho <	0.001344	M Pd <	0.000448	M Te <	0.010086		
O Ca	0.051969	M In	0.000134	M Pr	0.001202	s Th <			
M Cd <	0.001344	M Ir <	0.000224	M Pt <	0.000224	M Ti <	0.004258		
M Ce	0.015420	O K	0.028928	M Rb <	0.005155	M Tl <	0.000224		
M Co <	0.001344	M La	0.003577	M Re <	0.000224	M Tm <	0.000224		
M Cr <	0.015465	M Li <	0.000448	M Rh <	0.000224	M U	0.006564		
M Cs <	0.013896	M Lu <	0.000224	M Ru <	0.000224	M V <	0.001793		
M Cu	0.001472	O Mg	0.027914	i S <		M W <	0.000224		
M Dy	0.000197	M Mn	0.001814	M Sb <	0.004931	M Y	0.000860		
M Er <	0.002241	M Mo <	0.000896	M Sc <	0.000672	M Yb <	0.000224		

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](http://www.inorganicventures.com/TCT)

**Atomic Weight; Valence; Coordination Number; Chemical Form in Solution** - 232.04 +4 8 Th(OH) 3+ and Th(OH)22+

**Chemical Compatibility** -Soluble in HCl, and HNO3. Avoid H3PO4, H2SO4 and HF although solubilities may not be a problem depending upon pH and matrix (For example: ThF4 is soluble in acids). Avoid neutral to basic media. Th4+ is stable with most metals and inorganic anions forming an insoluble carbonate, oxide, fluoride, oxalate, sulfate and phosphate in neutral to slightly acidic media.

**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.

**Th Containing Samples (Preparation and Solution)** -Metal (Soluble in Aqua Regia); Oxide (The heated oxide is not soluble in acids except hot conc. H2SO4 ); Ores ( Na2O2 fusion at 480 ± 20EC for 7 minutes, cool and treat sintered mass with 50 mL cold water and stand until disintegrated. The mass is transferred to a beaker and acidified with HCl with 25 mL excess HCl added. Any residue is collected on a Whatman No. 42 filter, dried and ignited to 1000 EC in Pt0 crucible and the ash treated with H2SO4 / HF and fumed. If residue remains, then treat it by peroxide fusion as above.)

**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 232 amu	1 ppt	N/A	
ICP-OES 274.716 nm	0.08 / 0.008 µg/mL	1	Ti, Ta, Fe, V
ICP-OES 283.231 nm	0.07 / 0.007 µg/mL	1	U, Mo, Ti, Fe, Cr
ICP-OES 283.730 nm	0.07 / 0.007 µg/mL	1	U, Zr

## 8.0 HAZARDOUS INFORMATION

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

## 9.0 HOMOGENEITY

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

## 10.0 QUALITY STANDARD DOCUMENTATION

### 10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

## 11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

### 11.1 Certification Issue Date

July 04, 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

- July 04, 2025

- 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:

Michael Booth  
Director, Quality Control



### Certifying Officer:

Paul Gaines  
Chairman / Senior Technical Director



# Energy Laboratories Inc

# Spike LOG

Standard ID: ME210901 HG SECOND SOURCE  
 Standard Name: Secondary Hg Stock 2 PPM  
 Date Prepared: 9/1/2021  
 Date Expires: 7/26/2022  
 Department: ME  
 Vendor: Inorganic Ventures  
 Lot Number:  
 Balance ID:  
 Comments:

Type: Secondary  
 BY: Alyssa A. espinoza  
 Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid, 69.0-70.0%,0000282671	14178	0.1	mL	4/11/
Hydrochloric Acid Instra Analyzed 000	14028	0.05	mL	3/29/

**Final Volume:** 50 mL

Stock Source  
 ME210726 Hg Secondary Source

**Base Units**  
 ug/mL

**Amount Added**  
 0.1 mL

Analvtes

**CAS**

Conc: **ug/mL**

# Energy Laboratories Inc

# Spike LOG

Standard ID: ME210726  
Standard Name: Hg Secondary Source  
Date Prepared: 7/26/2021  
Date Expires: 7/26/2022  
Department: \_\_\_\_\_  
Vendor: \_\_\_\_\_  
Lot Number: \_\_\_\_\_  
Balance ID: \_\_\_\_\_  
Comments: \_\_\_\_\_

Type: \_\_\_\_\_  
BY: Jordan A. Gjerde  
Status: New

---

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Mercury Single Analyte Custom Grade	13979	120	mL	7/26/

Final Volume: mL

Stock Source

Base Units

Amount Added

Analvtes

CAS

Conc: ug/mL

**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: CGHG1  
 Lot Number: R2-HG696409  
 Matrix: 5% (v/v) HNO3  
 Value / Analyte(s): 1 000 µg/mL ea:  
 Mercury  
 Starting Material: Hg metal  
 Starting Material Lot#: 1959  
 Starting Material Purity: 99.9994%

**ID #: 13979**  
 Opened:  
 Mercury Single Analyte Custom Grade Solution  
**Expires: 9/15/2024**  
 Rec'd: 6/23/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

**3.0 CERTIFIED VALUES AND UNCERTAINTIES**

**Certified Value:** 1002 ± 3 µg/mL  
**Density:** 1.026 g/mL (measured at 20 ± 4 °C)

**Assay Information:**

**Assay Method #1**      **1004 ± 8 µg/mL**  
 ICP Assay NIST SRM 3133 Lot Number: 160921

**Assay Method #2**      **1003 ± 3 µg/mL**  
 EDTA NIST SRM 928 Lot Number: 928

**Assay Method #3**      **1001 ± 3 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.

O Ag	0.001159	M	Eu <	0.000201	O Na	0.000435	M	Se <	0.015915	O Zn <	0.001510
O Al	0.000090	O	Fe	0.000113	M Nb <	0.000201	O	Si	0.000525	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	0.000746	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	0.002007	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	0.000096	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	0.000971	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](http://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 HNO<sub>3</sub>. 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% HNO<sub>3</sub> / LDPE container, stable in 10% HNO<sub>3</sub> packaged in borosilicate glass. 1-100 ppm levels stable in 7% HNO<sub>3</sub> packaged in borosilicate glass. 1000-10,000 ppm solutions are chemically stable for years in 5-10% HNO<sub>3</sub> / LDPE container.

**Hg Containing Samples (Preparation and Solution)** - Metal (soluble in HNO<sub>3</sub>); Oxide (Soluble in HNO<sub>3</sub>); 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](http://inorganicventures.com); [info@inorganicventures.com](mailto:info@inorganicventures.com)

## 11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

**11.1 Certification Issue Date**

September 15, 2020

- 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 15, 2024**

- 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211124 EL-MSICV-2  
Standard Name: EL-MSICV-2  
Date Prepared: 11/24/2021  
Date Expires: 11/24/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number:  
Balance ID:  
Comments:

Type: Primary  
BY: Amanda E. McDani  
Status: Open

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Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Multi Analyte Custom Grade Solution	14023	500	mL	11/24

**Final Volume:** mL

Stock Source

**Base Units**

**Amount Added**

Analvtes

**CAS**

Conc: **ug/mL**

**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: EL-MSICV-2  
 Lot Number: R2-MEB696849  
 Matrix: 3% (v/v) HNO<sub>3</sub>  
 tr. HF  
 Value / Analyte(s):  
 1 000 µg/mL ea:  
 Silicon,  
 100 µg/mL ea:  
 Tin, Titanium,  
 Molybdenum, 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	100.0 ± 0.6 µg/mL	Molybdenum, Mo	100.0 ± 0.5 µg/mL
Silicon, Si	1 000 ± 7 µg/mL	Tin, Sn	99.9 ± 0.4 µg/mL
Titanium, Ti	99.9 ± 0.6 µg/mL		

**Density:** 1.019 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
Si	ICP Assay	3150	130912
Sn	ICP Assay	3161a	070330
Sn	Calculated		See Sec. 4.2
Ti	ICP Assay	3162a	130925

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.

**ID #: 14023**

Opened: \_\_\_\_\_

Multi Analyte Custom Grade Solution

**Expires: 9/14/2024**

Rec'd: 7/7/2021

 Eneray Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

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

N/A

## 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.

**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, EXPIRATION AND PERIOD OF VALIDITY**

**11.1 Certification Issue Date**

September 14, 2020

- 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 14, 2024**

- 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME210817 ICV-1A  
Standard Name: EL-MSICV-1A  
Date Prepared: 8/17/2021  
Date Expires: 8/17/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: R2-MEB688457  
Balance ID:  
Comments: Opened 8/17/2021; Expires 8/17/2022

Type: Primary  
BY: Alyssa A. espinoza  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Multi Analyte Custom Grade Solution	13475	500	mL	8/17/

**Final Volume:** 500 mL

Stock Source

**Base Units**

**Amount Added**

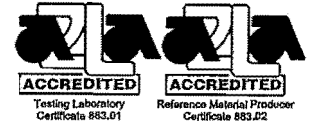
Analvtes

**CAS**

Conc: **ug/mL**

**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:	EL-MSICV-1A		
Lot Number:	R2-MEB688457		
Matrix:	5% (v/v) HNO <sub>3</sub>		
Value / Analyte(s):	5 000 µg/mL ea:	Calcium,	Potassium,
		Sodium,	Magnesium,
	1 000 µg/mL ea:	Phosphorus,	
	500 µg/mL ea:	Manganese,	Iron,
			Aluminum,
	100 µg/mL ea:	Arsenic,	Boron,
		Cobalt,	Chromium,
		Lithium,	Nickel,
		Selenium,	Strontium,
		Vanadium,	Zinc,
	50 µg/mL ea:	Silver,	Cadmium,
			Beryllium

**ID #: 13475**

Opened: \_\_\_\_\_

Multi Analyte Custom Grade Solution

**Expires: 1/10/2024**

Rec'd: 1/15/2021

 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

**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	500.3 ± 1.8 µg/mL	Arsenic, As	100.0 ± 0.8 µg/mL
Barium, Ba	99.9 ± 0.4 µg/mL	Beryllium, Be	49.96 ± 0.33 µg/mL
Boron, B	100.0 ± 0.6 µg/mL	Cadmium, Cd	50.10 ± 0.22 µg/mL
Calcium, Ca	5 001 ± 20 µg/mL	Chromium, Cr	100.0 ± 0.6 µg/mL
Cobalt, Co	100.0 ± 0.5 µg/mL	Copper, Cu	100.1 ± 0.4 µg/mL
Iron, Fe	499.7 ± 2.1 µg/mL	Lead, Pb	100.1 ± 0.4 µg/mL
Lithium, Li	100.0 ± 0.4 µg/mL	Magnesium, Mg	5 000 ± 21 µg/mL
Manganese, Mn	499.8 ± 1.9 µg/mL	Nickel, Ni	100.1 ± 0.4 µg/mL
Phosphorus, P	1 000 ± 5 µg/mL	Potassium, K	5 000 ± 18 µg/mL
Selenium, Se	100.1 ± 0.8 µg/mL	Silver, Ag	50.02 ± 0.22 µg/mL
Sodium, Na	5 000 ± 18 µg/mL	Strontium, Sr	100.1 ± 0.4 µg/mL
Thallium, Tl	100.0 ± 0.7 µg/mL	Vanadium, V	99.9 ± 0.5 µg/mL
Zinc, Zn	100.0 ± 0.4 µg/mL		

Density: 1.098 g/mL (measured at 20 ± 4 °C)

**Assay Information:**

1.098 g/mL  
measured at  
20 ± 4 °C

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	110830
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
Co	EDTA	928	928
Co	ICP Assay	traceable to 3113	M2-CO661665
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	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	120715
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	3153a	990906
Tl	ICP Assay	3158	993012
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

$u_{\text{bb}}$  = bottle to bottle homogeneity standard uncertainty

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

$u_{\text{ts}}$  = 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:

$$X_{\text{CRM/RM}} = (X_n) (u_{\text{char } n})$$

$X_n$  = mean of Assay Method  $n$  with

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

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

$k$  = coverage factor = 2

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

$u_{\text{bb}}$  = bottle to bottle homogeneity standard uncertainty

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

$u_{\text{ts}}$  = 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 ( $\mu\text{g/mL}$ )

N/A

## 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 outer bag.

- While stored in the sealed outer bag, transpiration of this CRM/RM is negligible. After opening the sealed outer 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 outer bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at  $20 \pm 4$ ° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

## 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, EXPIRATION AND PERIOD OF VALIDITY**

**11.1 Certification Issue Date**

January 10, 2020

- 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 10, 2024**

- 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 outer 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:**

Michael Booth  
Manager, Quality Control



**Certifying Officer:**

Paul Gaines  
CEO, Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME210903 CE, LA SECONDARY  
 Standard Name: Ce, La Secondary solution  
 Date Prepared: 9/3/2021  
 Date Expires: 5/25/2022  
 Department: ME  
 Vendor:  
 Lot Number:  
 Balance ID:  
 Comments: Second Source Stock Solution

Type: Secondary  
 BY: Parker A. Pearsall  
 Status: Open

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Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid Instra Analyzed 000020579	10902	0.5	mL	7/1/2
Milli-Q H2O	391	39.5	mL	6/1/2

**Final Volume:** 50 mL

Stock Source

ME210903 La Sec La Secondary Stock  
 ME210525 Ce 2nd Ce Secondary Stock

**Base Units**

ug/mL  
 ug/mL

**Amount Added**

5 mL  
 5 mL

Analvtes

**CAS**

Conc: ug/mL

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME210903 LA SECOND SOURCE  
Standard Name: La Secondary Stock  
Date Prepared: 9/3/2021  
Date Expires: 9/3/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S201029004  
Balance ID:  
Comments: Opened 9/3/2021; Expires 9/3/2022

Type: Primary  
BY: Alyssa A. espinoza  
Status: Open

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Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Lanthanum PlasmaCal Standard	14019	125	mL	9/3/2022

**Final Volume:**  
mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

# La

### 1.0 DESCRIPTION:

**PlasmaCAL ICP/ICPMS Standard - Lanthanum 1000 µg/ml**  
 Catalogue Number: 140-051-570/-571/-575  
 Starting Material: Lanthanum(III) Oxide 99.99+%  
 Lot Number: **S201029004**  
 Matrix: 4% HNO<sub>3</sub> (See Section 3 for actual matrix)  
 Expiration Date (End of month): **November 2022** (or 15 months after bottle is opened, whichever comes first)

### 2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **1005 µg/ml +/- 4 µg/ml**  
**985 µg/g +/- 4 µg/g**  
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)  
 Traceability: NIST Standard Reference Material 3127a Lot: **151030**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u<sub>i</sub>) including uncertainty established during characterization of the material (u<sub>char</sub>), the between bottle variation (u<sub>bb</sub>), short-term stability (u<sub>sts</sub>) and long-term stability (u<sub>lts</sub>) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

**ID #: 14019**

Opened: \_\_\_\_\_  
 Lanthanum PlasmaCal Standard  
**Expires: 11/30/2022**  
 Rec'd: 7/6/2021  
 Energv Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

### 3.0 REFERENCE VALUES:

Density: **1.020 g/ml @ 23.4 °C**  
 Actual Matrix: **4.0% (v/v) HNO<sub>3</sub>**

Trace Metal Impurities as tested by ICP-AES:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0049	Fe	<0.0102	Nd	<0.1595	Sn	<0.0307
Al	<0.0280	Ga	<0.0260	Ni	<0.0139	Sr	<0.0004
As	<0.0525	Gd	<0.0685	Os	*	Ta	<0.0635
Au	<0.0085	Ge	<0.0548	P	<0.0104	Tb	<0.0146
B	<0.2535	Hf	<0.0339	Pb	<0.2460	Te	<0.4025
Ba	<0.0025	Hg	*	Pd	<0.1410	Th	<0.0471
Be	<0.0022	Ho	<0.0065	Pr	<0.0274	Ti	<0.0013
Bi	<0.0780	In	<0.0105	Pt	<0.0533	Tl	<0.5600
Ca	<b>0.0164</b>	Ir	<0.0243	Rb	*	Tm	<0.0105
Cd	<0.0048	K	<0.0128	Re	<0.0076	U	<0.2490
Ce	<0.0393	La	N/A	Rh	<0.0163	V	<0.0049
Co	<0.0224	Li	<0.0006	Ru	<0.0304	W	<0.0443
Cr	<0.0063	Lu	<0.0021	S	<0.0515	Y	<0.0033
Cs	*	Mg	<0.0045	Sb	<0.0197	Yb	<0.0057
Cu	<0.0040	Mn	<0.0018	Sc	<0.0055	Zn	<0.0045
Dy	<0.0043	Mo	<0.0229	Se	<0.0249	Zr	<0.0061
Er	<0.0070	Na	<0.0038	Si	<0.0455		
Eu	<0.0086	Nb	<0.0112	Sm	<0.1105		

\*: Not tested

### 4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Daniel Boisvert, Chemist  
 Certification Date: November 04, 2020

*Daniel Boisvert*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
  - AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
  - Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleurs réponses instrumentales et limites de détection pour SAA four au graphite.*
  - pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
  - Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
  - IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*
- For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présupmant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou au CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034 :** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Marktoberdorf  
Phone: +49 (0) 8342-89560-61  
Fax: +49 (0) 8342-89560-69



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME210525 CE 2ND SOURCE  
Standard Name: Ce Secondary Stock  
Date Prepared: 5/25/2021  
Date Expires: 5/25/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S210208003  
Balance ID:  
Comments: opened 5/25/2021, expires 5/25/2022

Type: Primary  
BY: Stacy R. Hendricks  
Status: Empty/Disposed

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Cerium	13642	125	mL	5/25/2022

**Final Volume:**  
125 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

# Ce

**1.0 DESCRIPTION:** *PlasmaCAL ICP/ICPMS Standard - Cerium 1000 µg/ml*  
 Catalogue Number: 140-051-580/-581/-585  
 Starting Material: Cerium(III) Nitrate Hexahydrate 99.99+%  
 Lot Number: **S210208003**  
 Matrix: 4% HNO<sub>3</sub> (See Section 3 for actual matrix)  
 Expiration Date (End of month): **February 2023** (or 15 months after bottle is opened, whichever comes first)

**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**  
 Certified Concentration: **1003 µg/ml +/- 4 µg/ml**  
**982 µg/g +/- 4 µg/g**  
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)  
 Traceability: NIST Standard Reference Material 3110 Lot: **090504**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor ( $k$ ) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**  
 Density: **1.021 g/ml @ 22.5 °C**  
 Actual Matrix: **4.0% (v/v) HNO<sub>3</sub>**

Trace Metal Impurities as tested by ICP-MS:

**ID #: 13642**  
 Opened: \_\_\_\_\_  
 ICP/ICPMS Standard Cerium  
**Expires: 2/28/2023**  
 Rec'd: 3/16/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<b>0.0102</b>	Sn	<0.0010
Al	<b>0.0148</b>	Ga	<b>0.0526</b>	Ni	<b>0.0064</b>	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<b>0.0235</b>	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	<b>0.0375</b>	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	N/A	La	<0.10	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0121</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	<0.0010	Si	<0.10		
Eu	<b>0.0035</b>	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**  
 Certification Approval: Yaling Sui, Chemist  
 Certification Date: February 22, 2021

*Yaling Sui*

## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
  - AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (FAAS) et four au graphite (GFAA).*
  - Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.*
  - pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
  - Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
  - IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*
- For any inquiries, please contact SCP SCIENCE. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisée, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034:** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME210901 ICSAB  
 Standard Name: ICSAB  
 Date Prepared: 9/1/2021  
 Date Expires: 9/1/2022  
 Department: ME  
 Vendor:  
 Lot Number:  
 Balance ID:

Type: Secondary  
 BY: Cindy Rohrer  
 Status: Open

Comments: Made fresh every Monday, Wednesday, and Friday

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
Nitric Acid, 69.0-70.0%,0000282671	14178	1	mL	4/11/
Milli-Q H2O	391	46.45	mL	6/1/2
Hydrochloric Acid Instra Analyzed 000	14028	0.5	mL	3/29/

**Final Volume:** 50 mL

Stock Source

ME210901 6020IC 6020ICS-8A  
 ME 210901 6020IC 6020ICS-9B

**Base Units**

ug/mL  
 ug/mL

**Amount Added**

2 mL  
 0.05 mL

Analvtes

**CAS**

Conc: **mg/L**

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME 210901 6020ICS-9B  
Standard Name: 6020ICS-9B  
Date Prepared: 9/1/2021  
Date Expires: 9/1/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: P2-MEB678862  
Balance ID:  
Comments: Opened 9/1/2021; Expires 9/1/2022

Type: Primary  
BY: Alyssa A. espinoza  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13478	125	mL	9/1/2022

**Final Volume:**  
125 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **mg/L**

**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: 6020ICS-9B  
 Lot Number: P2-MEB678862  
 Matrix: 3% (v/v) HNO<sub>3</sub>  
 Value / Analyte(s): 20 µg/mL ea:  
                           Cobalt, Chromium, Copper,  
                           Manganese, Nickel, Vanadium,  
                           10 µg/mL ea:  
                           Zinc, Arsenic, Cadmium,  
                           Selenium,  
                           5 µg/mL ea:  
                           Silver

ID #: 13478  
 Opened: \_\_\_\_\_  
 Multi Analyte Custom Grade Solution  
 Expires: 5/17/2023  
 Rec'd: 1/15/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

**3.0 CERTIFIED VALUES AND UNCERTAINTIES**

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Arsenic, As	10.01 ± 0.05 µg/mL	Cadmium, Cd	10.01 ± 0.04 µg/mL
Chromium, Cr	20.02 ± 0.12 µg/mL	Cobalt, Co	20.01 ± 0.10 µg/mL
Copper, Cu	20.02 ± 0.08 µg/mL	Manganese, Mn	20.02 ± 0.09 µg/mL
Nickel, Ni	20.02 ± 0.09 µg/mL	Selenium, Se	10.01 ± 0.06 µg/mL
Silver, Ag	5.005 ± 0.022 µg/mL	Vanadium, V	20.02 ± 0.08 µg/mL
Zinc, Zn	10.01 ± 0.04 µg/mL		

Density: 1.015 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
As	ICP Assay	3103a	100818
As	Calculated		See Sec. 4.2
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Co	EDTA	928	928
Co	ICP Assay	traceable to 3113	M2-CO661665
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Mn	EDTA	928	928
Mn	ICP Assay	Traceable to 3132	N2-MN665236
Mn	Calculated		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
V	EDTA	928	928
V	ICP Assay	3165	992706
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,  $X_{CRM/RM}$ , 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**

- 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](http://www.inorganicventures.com/TCT)

**Low Silver Note:** This solution contains "LOW" levels of Silver. Please store this entire bottle inside a sealed glass jar.

**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](http://inorganicventures.com); [Info@inorganicventures.com](mailto:Info@inorganicventures.com)

**11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY**



**11.1 Certification Issue Date**

May 17, 2019

- 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 17, 2023**

- 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**

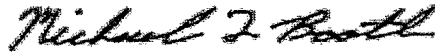
- Sealed TCT Bag Open Date: \_\_\_\_\_

- 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:**

Michael Booth  
Supervisor, Quality Control



**Certifying Officer:**

Paul Gaines  
CEO, Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220112 SS1  
 Standard Name: SS1 ICPMS Spiking Solution  
 Date Prepared: 1/12/2022  
 Date Expires: 12/8/2022  
 Department: ME  
 Vendor: Inorganic Ventures  
 Lot Number:  
 Balance ID:  
 Comments:

Type: Secondary  
 BY: Stacy R. Hendricks  
 Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid, 69.0-70.0%,0000277202	13781	0.8	mL	1/14/2026
Hydrochloric Acid, 36.5-38.0% 000027567	13784	2	mL	12/15/2025
Milli-Q H2O	391	28.8	mL	6/1/2100

**Final Volume:**  
 40 mL

**Stock Source**

ME220105 HgPrim Primary Hg Stock 2 PPM  
 ME211208 MSCAL MSCAL 2B  
 ME211221 MSCAL MSCAL 3C  
 ME220110 Ce, La Ce, La Primary

**Base Units**

ug/mL  
 ug/mL  
 ug/mL  
 ug/mL

**Amount Added**

2 mL  
 2 mL  
 2 mL  
 2 mL

**Analytes**

**CAS**

Conc: **mg/L**

# Energy Laboratories Inc

# Spike LOG

Standard ID: ME220105 HGPRIMARY  
Standard Name: Primary Hg Stock 2 PPM  
Date Prepared: 1/5/2022  
Date Expires: 12/29/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number:  
Balance ID:  
Type: Secondary  
BY: Amanda E. McDani  
Status: Open  
Comments: Made with different HG stock than QCS

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Hydrochloric Acid E1421	14721	0.25	mL	1/4/2027

**Final Volume:**  
25 mL

**Stock Source**

ME220110HG HG Stock  
ME211229A AU 2N Au 2nd source Stock

**Base Units**

ug/mL  
ug/mL

**Amount Added**

0.05 mL  
0.05 mL

**Analytes**

**CAS**

Conc: ug/mL

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220110HG  
Standard Name: HG Stock  
Date Prepared: 1/10/2022  
Date Expires: 1/10/2023  
Department: ME  
Vendor: SCP Science  
Lot Number: S210729017  
Balance ID:  
Comments:

Type: Primary  
BY: Amanda E. McDani  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Mercury	14711	125	mL	1/10/2023

**Final Volume:**  
125 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

ID #: 14711

Opened: \_\_\_\_\_

ICP/ICPMS Standard Mercury

Expires: 7/31/2023

Rec'd: 12/29/2021

Energy Laboratories Inc 1120 So. 27th Street  
Billings MT 59107**SCP SCIENCE**

Providing Innovative Solutions to Analytical Chemists

**rtificate of Analysis****Hg****1.0 DESCRIPTION:**

**PlasmaCAL ICP/ICPMS Standard - Mercury 1000 µg/ml**  
 Catalogue Number: 140-051-800/-801/-805  
 Starting Material: Mercury(II) oxide 99.99+ %  
 Lot Number: **S210729017**  
 Matrix: 10% HNO<sub>3</sub> (See Section 3 for actual matrix)  
 Expiration Date (End of month): **July 2023** (or 15 months after bottle is opened, whichever comes first)

**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**

Certified Concentration: **999 µg/ml +/- 5 µg/ml**  
**952 µg/g +/- 5 µg/g**  
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)  
 Traceability: NIST Standard Reference Material 3133 Lot: **160921**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**

Density: **1.050 g/ml @ 23.6 °C**  
 Actual Matrix: **10.0% (v/v) HNO<sub>3</sub>**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<b>0.0322</b>	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0042</b>	Ga	<0.0010	Ni	<b>0.0039</b>	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	N/A	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<b>0.0117</b>
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<b>0.0112</b>	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0060</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.0010	Zr	<0.0010
Er	<0.0010	Na	<b>0.0092</b>	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**

Certification Approval: Daniel Boisvert, Chemist  
 Certification Date: August 12, 2021



## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP* : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.
  - AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA* : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).
  - Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice* : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.
  - pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH* : Pour étalonnage de pH mètres et autres applications de chimie humide.
  - Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité* : Comme étalon pour les mesures de conductivité électrolytiques.
  - IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC* : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.
- For any inquiries, please contact **SCP SCIENCE**. / Pour toute question, veuillez contacter **SCP SCIENCE**.

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en présumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable Thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisé, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034 :** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

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Alte Marktberdorfer Straße 14, 87616  
Marktberdorf  
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Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211229A AU 2ND SOURCE  
Standard Name: Au 2nd source Stock  
Date Prepared: 12/29/2021  
Date Expires: 12/29/2022  
Department: ME  
Vendor: SCP Science  
Lot Number: S211129013  
Balance ID:  
Comments: opened 12/29/2021; expires 12/29/2022

Type: Primary  
BY: Amanda E. McDani  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
ICP/ICPMS Standard Gold	14710	500	mL	12/29/2022

**Final Volume:**  
500 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

ID #: 14710

Opened:

ICP/ICPMS Standard Gold

Expires: 12/31/2023

Rec'd: 12/29/2021

Eneray Laboratories Inc 1120 So. 27th Street

Billings MT 59107

**SCP SCIENC**

Providing Innovative Solutions to Analytical

**Certificate of Analysis****Au****1.0 DESCRIPTION:****PlasmaCAL ICP/ICPMS Standard - Gold 1000 µg/ml**

Catalogue Number: 140-052-790/-791/-795

Starting Material: Gold Metal 99.99+%

Lot Number: **S211129013**

Matrix: 10% HCl (See Section 3 for actual matrix)

Expiration Date (End of month): **December 2023** (or 15 months after bottle is opened, whichever comes first)**2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:**Certified Concentration: **1001 µg/ml +/- 4 µg/ml****982 µg/g +/- 4 µg/g**

Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)

Traceability: NIST Standard Reference Material 3121 Lot: **991806**

**Note:** The uncertainty of the certified value has been calculated from applicable uncertainty contributors ( $u_i$ ) including uncertainty established during characterization of the material ( $u_{char}$ ), the between bottle variation ( $u_{bb}$ ), short-term stability ( $u_{sts}$ ) and long-term stability ( $u_{lts}$ ) according to the model  $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sts}^2 + u_{lts}^2)}$ . This combined uncertainty has been further multiplied by a coverage factor ( $k$ ) of 2 to provide a 95% confidence interval.

**3.0 REFERENCE VALUES:**Density: **1.019 g/ml @ 22.4 °C**Actual Matrix: **10.0% (v/v) HCl**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<b>0.3851</b>	Fe	<0.0090	Nd	<0.0010	Sn	<0.0010
Al	<b>0.0062</b>	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	<0.0010	Ta	<0.0010
Au	N/A	Ge	<0.0010	P	<0.0132	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<b>0.0434</b>	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<b>0.0048</b>	Tl	<0.0011
Ca	<0.0135	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<b>0.0362</b>	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	<0.0010	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<b>0.0029</b>	Mg	<0.0010	Sb	<0.0010	Yb	<0.0010
Cu	<b>0.0023</b>	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	<0.01	Zr	<0.0010
Er	<0.0010	Na	<b>0.0070</b>	Si	<0.1		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

\*: Not tested

**4.0 APPROVAL AND DATE OF CERTIFICATION:**

Certification Approval: Daniel Boisvert, Chemist

Certification Date: December 10, 2021

*Daniel Boisvert*



## 5.0 INTENDED USE / UTILISATION PRÉVUE:

- ICP Standards: For the calibration of, including but not limited to: ICP-AES, ICP-MS, FAAS, GFAA, XRF and DCP. / *Étalons ICP : Pour l'étalonnage d'instruments de mesure tels que: ICP-AES, ICP-MS, FAAS, GFAA, XRF et DCP.*
  - AA Standards: For the calibration of Flame (FAAS) and Graphite Furnace (GFAA) Atomic Absorption Spectrometers. / *Étalons AA : Pour l'étalonnage de spectromètres d'absorption atomique flamme (GFAA) et four au graphite (GFAA).*
  - Matrix Modifiers: For the optimization of analytical conditions to provide better Graphite Furnace Atomic Absorption (GFAA) instrument response and improved detection limits. / *Modificateur de matrice : Pour l'optimisation des conditions analytiques afin de fournir des meilleures réponses instrumentales et limites de détection pour SAA four au graphite.*
  - pH Standards: For the calibrating pH meters or for other wet chemistry applications. / *Étalons pH : Pour étalonnage de pH mètres et autres applications de chimie humide.*
  - Conductivity Standards: For electrolytic conductivity measurement as a calibration standard. / *Étalons de conductivité : Comme étalon pour les mesures de conductivité électrolytiques.*
  - IC Standards: for calibration of, but not limited to IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS or other wet chemistry applications. / *Étalons IC : Pour étalonnage d'instruments tels que : IC, HPLC, TLC, ISE, IR, NMR, MS, UV/VIS et autres applications de chimie humide.*
- For any inquiries, please contact **SCP SCIENCE**. / *Pour toute question, veuillez contacter SCP SCIENCE.*

## 6.0 INSTRUCTIONS FOR USE / INSTRUCTIONS D'UTILISATION:

**Handling and Storage / Manutention et entreposage:** Keep product tightly capped when not in use. The solution should be opened for a minimum amount of time necessary to dispense the amount required. Do not pipet or use directly from container. Do not return unused portions back to container. Store under normal laboratory conditions. Avoid exposure to excessive sources of heat and humidity or direct sunlight. / *Garder les contenants bien fermés lorsque non utilisés. Le contenant devrait être ouvert seulement pour le temps requis afin de prélever la quantité nécessaire. Ne pas pipetter ou utiliser directement du contenant. Ne pas retourner les portions non-utilisées dans le contenant. Conserver dans des conditions normales de laboratoire. Éviter l'exposition à des sources de chaleur et d'humidité excessives ou à l'exposition solaire directe.*

**Stability / Stabilité:** This Standard is guaranteed to be stable and accurate to within the specified uncertainty of measurement up to the unopened expiry date, if sealed, or up to the opened expiry date (when indicated), whichever comes first, provided the solution is kept tightly capped and stored under the indicated storage conditions. Purchasers will be notified of any significant changes resulting in re-certification or withdrawal of the product prior to the expiration date. / *La stabilité et l'exactitude de cet étalon sont garanties d'être à l'intérieur de l'incertitude de mesure, jusqu'à la date d'expiration de la bouteille non-ouverte, si scellée, ou jusqu'à la date d'expiration de la bouteille ouverte (si indiquée), en presumant que le contenant est maintenu fermé et gardé dans les conditions d'entreposage indiquées. Les acheteurs seront avisés dans le cas où il y aura des changements significatifs nécessitant une re-certification ou un rappel du produit avant la date d'expiration.*

## 7.0 HAZARDOUS INFORMATION / INFORMATION SUR LES RISQUES POTENTIELS:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)). / *SVP vous référer à la Fiche Signalétique applicable pour de l'information sur ce produit (Disponible à [www.SCPSCIENCE.com](http://www.SCPSCIENCE.com)).*

## 8.0 HOMOGENEITY / HOMOGÉNÉITÉ:

This solution has been blended according to an in-house procedure and its homogeneity is guaranteed to be fit for purpose when a sample size sufficient for the intended method of analysis is used. / *Cette solution a été préparée selon une procédure maison et nous assurons que sa homogénéité est approprié à l'emploi lorsqu'un échantillon suffisant pour la méthode d'analyse prévue est utilisé.*

## 9.0 TRACEABILITY / TRAÇABILITÉ:

This CRM (Certified Reference Material) is traceable to the NIST SRM (Standard Reference Material) indicated in section 2 through an unbroken chain of comparisons. In addition, balances used are regularly calibrated using weights which are traceable to NIST (National Institute of Standards and Technology) or NRC (National Research Council of Canada) standards. All conductivity meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and standards. All pH meters used to analyze this standard have been regularly calibrated using a NIST or NRC traceable thermometer and pH/MV simulator. / *Ce matériel de référence certifié est traçable au Matériel de Référence Standardisé de NIST indiqué à la section 2 par une chaîne de comparaison ininterrompue. De plus, les balances utilisées sont étalonnées régulièrement en utilisant des poids qui sont traçables au NIST (National Institute of Standards and Technology) ou au CRNC (Conseil National de Recherches Canada). Tout conductimètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et étalons traçables au NIST ou CNRC. Tout pH mètre utilisé afin d'analyser cet étalon a été sujet à un étalonnage périodique utilisant des thermomètres et un simulateur pH/MV traçables au NIST ou au CNRC.*

## 10.0 PREPARATION / PRÉPARATION:

For the preparation of these solutions, 18 megohm/cm double deionized water, high-purity acids and glassware calibrated to ASTM Class A specifications are used. / *Une eau de 18 megohm/cm doublement déionisée, de l'acide de haute pureté, ainsi que de la verrerie étalonnée afin de satisfaire les spécifications Classe A de ASTM ont été utilisés pour la préparation de cet étalon.*

## 11.0 QUALITY SYSTEM CERTIFICATIONS / CERTIFICATIONS DE SYSTÈME QUALITÉ:

**ISO 9001 Certification / Certification ISO 9001:** This standard was produced in a facility which operates under a registered ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration. / *Cet étalon a été fabriqué dans un laboratoire qui utilise un Système de Gestion de la Qualité enregistré à la norme ISO 9001. Veuillez consulter notre site web pour obtenir la version la plus récente de notre certificat d'enregistrement.*

**ISO 17025 Accreditation / Accréditation ISO 17025:** SCP SCIENCE (Corporate Headquarters) operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est accréditée ISO 17025. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**ISO 17034 Accreditation / Accréditation ISO 17034:** SCP SCIENCE (Corporate Headquarters) is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation. / *SCP SCIENCE (Siège social) est un Fabricant de Matériaux de Référence Accrédité ISO 17034. Veuillez consulter notre site web afin d'obtenir la plus récente version de notre certificat d'accréditation ainsi que la portée de notre accréditation.*

**CORPORATE HEADQUARTERS**  
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Alte Marktoberdorfer Straße 14, 87616  
Marktoberdorf  
Phone: +49 (0) 8342-89560-61  
Fax: +49 (0) 8342-89560-69

# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211208 MSCAL2B  
Standard Name: MSCAL 2B  
Date Prepared: 12/8/2021  
Date Expires: 12/8/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: S2-MEB704403  
Balance ID:  
Comments: Opened 12/08/2021; Expires 12/08/2022

Type: Primary  
BY: Stacy R. Hendricks  
Status: Open

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13793		mL	12/8/2022

**Final Volume:**  
mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**

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: EL-MSCAL-2B  
Lot Number: S2-MEB704403  
Matrix: 5% (v/v) HNO3  
Value / Analyte(s):  
100 µg/mL ea:  
Aluminum, Arsenic,  
Boron, Barium,  
Beryllium, Cadmium,  
Cobalt, Chromium,  
Copper, Iron,  
Manganese, Nickel,  
Lead, Selenium,  
Strontium, Thorium,  
Thallium, Uranium,  
Vanadium, Zinc,  
40 µg/mL ea:  
Silver

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

**ID #: 13793**

Opened: \_\_\_\_\_

Multi Analyte Custom Grade Solution

**Expires: 4/21/2025**

Rec'd: 4/29/2021

Energy Laboratories Inc 1120 So. 27th Street  
Billings MT 59107

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	100.0 ± 0.4 µg/mL	Arsenic, As	100.0 ± 0.9 µg/mL
Barium, Ba	100.0 ± 0.5 µg/mL	Beryllium, Be	100.0 ± 0.7 µg/mL
Boron, B	100.0 ± 0.7 µg/mL	Cadmium, Cd	100.0 ± 0.5 µg/mL
Chromium, Cr	100.0 ± 0.8 µg/mL	Cobalt, Co	100.0 ± 0.6 µg/mL
Copper, Cu	100.0 ± 0.5 µg/mL	Iron, Fe	100.1 ± 0.4 µg/mL
Lead, Pb	100.0 ± 0.6 µg/mL	Manganese, Mn	100.0 ± 0.5 µg/mL
Nickel, Ni	100.0 ± 0.6 µg/mL	Selenium, Se	100.0 ± 0.7 µg/mL
Silver, Ag	39.99 ± 0.18 µg/mL	Strontium, Sr	100.0 ± 0.4 µg/mL
Thallium, Tl	100.0 ± 0.6 µg/mL	Thorium, Th	100.0 ± 0.5 µg/mL
Uranium, U	100.0 ± 0.5 µg/mL	Vanadium, V	100.0 ± 0.5 µg/mL
Zinc, Zn	100.0 ± 0.5 µg/mL		

Density: 1.033 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
As	ICP Assay	3103a	100818
B	ICP Assay	3107	110830
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
Fe	Calculated		See Sec. 4.2
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Sr	EDTA	928	928
Sr	ICP Assay	Traceable to 3153a	K2-SR650985
Sr	Calculated		See Sec. 4.2
Th	EDTA	928	928
Th	Calculated		See Sec. 4.2
Tl	ICP Assay	3158	151215
U	ICP Assay	3164	080521
U	Calculated		See Sec. 4.2
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,  $X_{CRM/RM}$ , 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:

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

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

$k$  = 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

**Certified Abundance:**

#### IV's Certified Abundance

##### Isotope

Uranium 238U

Uranium 235U

##### Atom %

99.8 ± 0.1

0.24 ± 0.05

### 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

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

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

N/A

## 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](http://www.inorganicventures.com/TCT)

**8.0 HAZARDOUS INFORMATION**

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

**9.0 HOMOGENEITY**

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

**10.0 QUALITY STANDARD DOCUMENTATION**

**10.1 ISO 9001 Quality Management System Registration**

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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

**11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY**

**11.1 Certification Issue Date**

April 21, 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**

- **April 21, 2025**

- 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director



# Energy Laboratories Inc

# Standard LOG

Standard ID: ME211221 MSCAL 3C  
Standard Name: MSCAL 3C  
Date Prepared: 12/21/2021  
Date Expires: 12/21/2022  
Department: ME  
Vendor: Inorganic Ventures  
Lot Number: S2-MEB700780  
Balance ID:  
Comments: Opened 12/21/21; expires 12/21/22

Type: Primary  
BY: Stacy R. Hendricks  
Status: Open

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Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Multi Analyte Custom Grade Solution	13473	250	mL	12/21/2022

**Final Volume:**  
250 mL

**Stock Source**

**Base Units**

**Amount Added**

**Analytes**

**CAS**

Conc: **ug/mL**



**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: EL-MSCAL-3C  
 Lot Number: S2-MEB700780  
 Matrix: 3% (v/v) HNO<sub>3</sub>  
 tr. HF  
 Value / Analyte(s): 400 µg/mL ea:  
 Silicon,  
 100 µg/mL ea:  
 Tin,  
 Molybdenum,

*1-6-2025*

ID #: 13473  
 Opened: \_\_\_\_\_  
 Multi Analyte Custom Grade Solution  
**Expires: 1/6/2025**  
 Rec'd: 1/15/2021  
 Energy Laboratories Inc 1120 So. 27th Street  
 Billings MT 59107

Titanium,  
 Antimony

**3.0 CERTIFIED VALUES AND UNCERTAINTIES**

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	100.0 ± 0.8 µg/mL	Molybdenum, Mo	100.0 ± 0.6 µg/mL
Silicon, Si	399.9 ± 3.0 µg/mL	Tin, Sn	100.0 ± 0.6 µg/mL
Titanium, Ti	100.0 ± 0.7 µg/mL		

Density: 1.018 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
Si	ICP Assay	3150	130912
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	3162a	130925

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

$u_{\text{bb}}$  = bottle to bottle homogeneity standard uncertainty

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

$u_{\text{ts}}$  = 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

$u_{\text{bb}}$  = bottle to bottle homogeneity standard uncertainty

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

$u_{\text{ts}}$  = 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 ( $\mu\text{g/mL}$ )

N/A

## 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](http://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**

January 06, 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**

- **January 06, 2025**

- 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:**

Michael Booth  
Director, Quality Control



**Certifying Officer:**

Paul Gaines  
Chairman / Senior Technical Director





# Energy Laboratories Inc

# Standard LOG

Standard ID: ME220110 CE, LA PRIMARY  
Standard Name: Ce, La Primary      Type: Secondary  
Date Prepared: 1/10/2022      BY: Amanda E. McDani  
Date Expires: 1/6/2023  
Department: ME      Status: Open  
Vendor: Inorganic Ventures  
Lot Number: M2-CE657768/M2-  
Balance ID:  
Comments: Used to make standards and spiking solutions; No primary La available

---

Chemical / Solvent Used	BottleNo	Amt	Units	Expires
Nitric Acid 69.0- 70.0% D0521	14626	0.5	mL	12/14/2026
Milli-Q H2O	391	39.5	mL	6/1/2100

**Final Volume:**  
50 mL

**Stock Source**

ME220106-CE      Ce Primary Stock

**Base Units**

ug/mL

**Amount Added**

5 mL

**Analytes**

**CAS**

Conc:      ug/mL