EPA SAMPLE NO.

E29S9

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-19

% Solids: Date Received: 11/16/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.20	U	11/26/2024	1607

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E29Z1

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-01

% Solids: Date Received: 11/15/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.20	U	11/26/2024	1522

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E29Z3

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-02

% Solids: Date Received: 11/15/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.20	U	11/26/2024	1524

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E29Z5

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-03

% Solids: Date Received: 11/15/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.20	U	11/26/2024	1526

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E29Z7

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-04

% Solids: Date Received: 11/15/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.052	J	11/26/2024	1529

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E29Z9

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-09

% Solids: Date Received: 11/16/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.030	J	11/26/2024	1540

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E2A01

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-10

% Solids: Date Received: 11/16/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.047	J	11/26/2024	1542

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E2A03

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-13

% Solids: Date Received: 11/16/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.20	U	11/26/2024	1549

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E2A05

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-14

% Solids: Date Received: 11/16/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.026	J	11/26/2024	1551

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E2A07

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-15

% Solids: Date Received: 11/16/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.20	U	11/26/2024	1558

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E2A09

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-16

% Solids: Date Received: 11/16/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.20	U	11/26/2024	1600

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E2A13

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-05

% Solids: Date Received: 11/15/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.028	J	11/26/2024	1531

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E2A19

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-06

% Solids: Date Received: 11/15/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.044	J	11/26/2024	1533

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E2A20

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-17

% Solids: Date Received: 11/16/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.20	U	11/26/2024	1603

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E2A22

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-07

% Solids: Date Received: 11/15/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.20	U	11/26/2024	1535

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E2A23

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-08

% Solids: Date Received: 11/15/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.029	J	11/26/2024	1538

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

E2A24

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51878 MA No. : SDG No.: E29Z5

Matrix: Water Lab Sample ID: P4877-18

% Solids: Date Received: 11/16/2024

Analytical Method: Hg

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7439-97-6	Mercury	0.20	U	11/26/2024	1605

NOTE: Hardness (total) is reported in mg/L

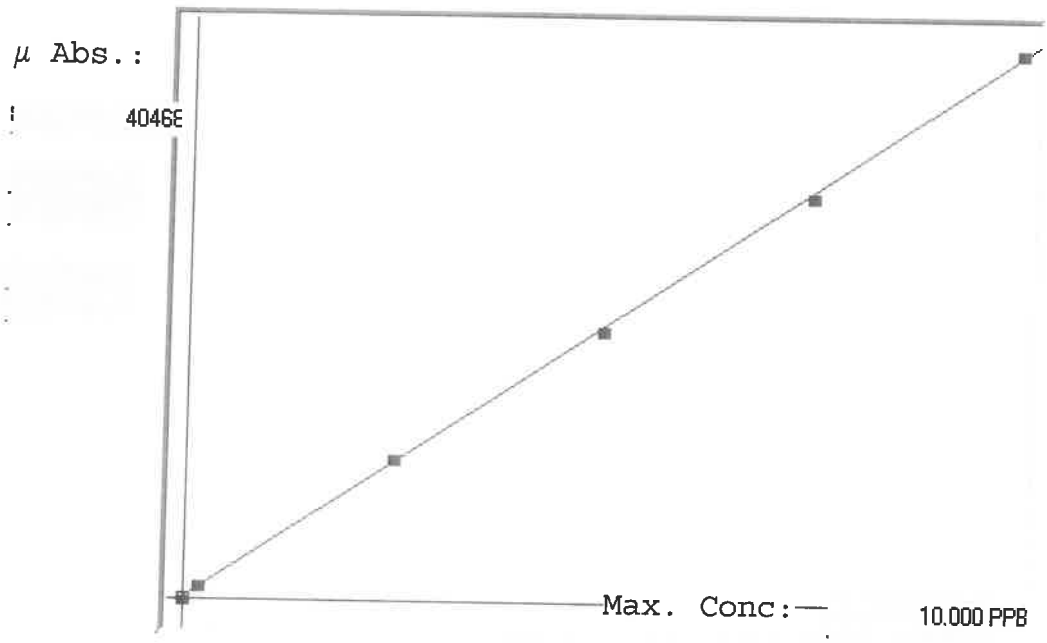
Comments:

Reviewed By:mohan
On:11/27/2024
10:31:16 PM
Inst Id :CV1

LB133633

SFAM01.1 INSTRUMENT ID: CV1

Linear



A= 0.0000e+000

B= 2.4956e-004 slope

C= -3.3584e-002 y=mx+intercept

Rho= 0.9998942

Accept=Accepted

Std ID	Conc.	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	% D
0.00	0.000	-0.013	-0.013	83	0.000	83	0				5
0.05	0.050					442	0				10
0.20	0.200	0.220	0.020	1017	0.0 %	1017					2
2.50	2.500	2.560	0.060	10392	0.0 %	10392					-1
5.00	5.000	4.932	-0.068	19899	0.0 %	19899					-1
7.50	7.500	7.435	-0.065	29926	0.0 %	29926					1
10.0	10.000	10.066	0.066	40468	0.0 %	40468					

Reviewed By:mohan
On:11/27/2024
10:31:16 PM
Inst Id :CV1

LB133633

INSTRUMENT ID : CV1

Sample ID	Extended ID	µ Abs.	Conc.		Stnd Conc	Method	Units	Date	Type
0	S0	83	-		0	SFAM01.1	PPB	11/26/2024 13:52	Std
0.2	S01	1017	-		0.2	SFAM01.1	PPB	11/26/2024 13:54	Std
2.5	S02	10392	-		2.5	SFAM01.1	PPB	11/26/2024 13:57	Std
5	S03	19899	-		5	SFAM01.1	PPB	11/26/2024 13:59	Std
7.5	S04	29926	-		7.5	SFAM01.1	PPB	11/26/2024 14:01	Std
10	S05	40468	-		10	SFAM01.1	PPB	11/26/2024 14:04	Std
ICV001	ICV001	17194	4.2574	-		SFAM01.1	PPB	11/26/2024 14:09	SMPL
ICB001	ICB001	-159	-0.0733	-		SFAM01.1	PPB	11/26/2024 14:12	SMPL
CCV055	CCV055	19836	4.9167	-		SFAM01.1	PPB	11/26/2024 14:14	SMPL
CCB055	CCB055	-179	-0.0783	-		SFAM01.1	PPB	11/26/2024 14:16	SMPL
PB165275BL	PBW275	127	-0.0019	-		SFAM01.1	PPB	11/26/2024 14:18	SMPL
P4831-01	E29S4	-80	-0.0535	-		SFAM01.1	PPB	11/26/2024 14:21	SMPL
P4831-02	E29S4D	-48	-0.0456	-		SFAM01.1	PPB	11/26/2024 14:23	SMPL
P4831-03	E29S4S	4354	1.053	-		SFAM01.1	PPB	11/26/2024 14:25	SMPL
P4831-04	E29T2	0	-0.0336	-		SFAM01.1	PPB	11/26/2024 14:27	SMPL
P4831-05	E29T4	2	-0.0331	-		SFAM01.1	PPB	11/26/2024 14:30	SMPL
P4831-06	E29W0	324	0.0473	-		SFAM01.1	PPB	11/26/2024 14:32	SMPL
P4831-07	E29W4	154	0.0048	-		SFAM01.1	PPB	11/26/2024 14:34	SMPL
P4831-08	E29W1	174	0.0098	-		SFAM01.1	PPB	11/26/2024 14:37	SMPL
P4831-09	E29W5	170	0.0088	-		SFAM01.1	PPB	11/26/2024 14:39	SMPL
P4831-10	E29R6	50	-0.0211	-		SFAM01.1	PPB	11/26/2024 14:41	SMPL
P4831-11	E29S0	35	-0.0248	-		SFAM01.1	PPB	11/26/2024 14:43	SMPL
P4831-12	E29S2	65	-0.0174	-		SFAM01.1	PPB	11/26/2024 14:46	SMPL
P4831-13	E29S6	81	-0.0134	-		SFAM01.1	PPB	11/26/2024 14:48	SMPL
P4831-14	E29W6	164	0.0073	-		SFAM01.1	PPB	11/26/2024 14:50	SMPL
P4831-15	E29W2	101	-0.0084	-		SFAM01.1	PPB	11/26/2024 14:52	SMPL
P4832-01	E29S5	143	0.0021	-		SFAM01.1	PPB	11/26/2024 14:55	SMPL
P4832-02	E29S5D	74	-0.0151	-		SFAM01.1	PPB	11/26/2024 14:57	SMPL
P4832-03	E29S5S	5064	1.2302	-		SFAM01.1	PPB	11/26/2024 14:59	SMPL
P4832-04	E29T3	73	-0.0154	-		SFAM01.1	PPB	11/26/2024 15:01	SMPL
CCV056	CCV056	19406	4.8094	-		SFAM01.1	PPB	11/26/2024 15:04	SMPL
CCB056	CCB056	-193	-0.0817	-		SFAM01.1	PPB	11/26/2024 15:06	SMPL
P4832-05	E29T5	252	0.0293	-		SFAM01.1	PPB	11/26/2024 15:08	SMPL
P4832-06	E29R7	161	0.0066	-		SFAM01.1	PPB	11/26/2024 15:10	SMPL
P4832-07	E29S1	407	0.068	-		SFAM01.1	PPB	11/26/2024 15:13	SMPL
P4832-08	E29S3	238	0.0258	-		SFAM01.1	PPB	11/26/2024 15:15	SMPL
P4832-09	E29S7	257	0.0306	-		SFAM01.1	PPB	11/26/2024 15:17	SMPL
PB165276BL	PBW276	108	-0.0066	-		SFAM01.1	PPB	11/26/2024 15:20	SMPL
P4877-01	E29Z1	175	0.0101	-		SFAM01.1	PPB	11/26/2024 15:22	SMPL
P4877-02	E29Z3	41	-0.0234	-		SFAM01.1	PPB	11/26/2024 15:24	SMPL
P4877-03	E29Z5	65	-0.0174	-		SFAM01.1	PPB	11/26/2024 15:26	SMPL
P4877-04	E29Z7	343	0.052	-		SFAM01.1	PPB	11/26/2024 15:29	SMPL
P4877-05	E2A13	247	0.0281	-		SFAM01.1	PPB	11/26/2024 15:31	SMPL
P4877-06	E2A19	311	0.044	-		SFAM01.1	PPB	11/26/2024 15:33	SMPL
P4877-07	E2A22	189	0.0136	-		SFAM01.1	PPB	11/26/2024 15:35	SMPL
P4877-08	E2A23	250	0.0288	-		SFAM01.1	PPB	11/26/2024 15:38	SMPL

Reviewed By:mohan
On:11/27/2024
10:31:16 PM
Inst Id :CV1

LB133633

INSTRUMENT ID : CV1

P4877-09	E29Z9	253	0.0296	-	SFAM01.1	PPB	11/26/2024	15:40	SMPL
P4877-10	E2A01	323	0.047	-	SFAM01.1	PPB	11/26/2024	15:42	SMPL
P4877-11	E2A01D	131	-0.0009	-	SFAM01.1	PPB	11/26/2024	15:44	SMPL
P4877-12	E2A01S	4581	1.1097	-	SFAM01.1	PPB	11/26/2024	15:47	SMPL
P4877-13	E2A03	224	0.0223	-	SFAM01.1	PPB	11/26/2024	15:49	SMPL
P4877-14	E2A05	239	0.0261	-	SFAM01.1	PPB	11/26/2024	15:51	SMPL
CCV057	CCV057	18931	4.6908	-	SFAM01.1	PPB	11/26/2024	15:54	SMPL
CCB057	CCB057	-116	-0.0625	-	SFAM01.1	PPB	11/26/2024	15:56	SMPL
P4877-15	E2A07	203	0.0171	-	SFAM01.1	PPB	11/26/2024	15:58	SMPL
P4877-16	E2A09	180	0.0113	-	SFAM01.1	PPB	11/26/2024	16:00	SMPL
P4877-17	E2A20	159	0.0061	-	SFAM01.1	PPB	11/26/2024	16:03	SMPL
P4877-18	E2A24	127	-0.0019	-	SFAM01.1	PPB	11/26/2024	16:05	SMPL
P4877-19	E29S9	144	0.0024	-	SFAM01.1	PPB	11/26/2024	16:07	SMPL
PB165277BL	PBW277	340	0.0513	-	SFAM01.1	PPB	11/26/2024	16:09	SMPL
P4878-01	E29Z2	366	0.0578	-	SFAM01.1	PPB	11/26/2024	16:12	SMPL
P4878-02	E29Z4	228	0.0233	-	SFAM01.1	PPB	11/26/2024	16:14	SMPL
P4878-03	E29Z6	206	0.0178	-	SFAM01.1	PPB	11/26/2024	16:16	SMPL
P4878-04	E29Z8	173	0.0096	-	SFAM01.1	PPB	11/26/2024	16:18	SMPL
P4878-05	E2A14	179	0.0111	-	SFAM01.1	PPB	11/26/2024	16:21	SMPL
P4878-06	E2A00	186	0.0128	-	SFAM01.1	PPB	11/26/2024	16:23	SMPL
P4878-07	E2A02	241	0.0266	-	SFAM01.1	PPB	11/26/2024	16:25	SMPL
P4878-08	E2A02D	302	0.0418	-	SFAM01.1	PPB	11/26/2024	16:28	SMPL
P4878-09	E2A02S	5155	1.2529	-	SFAM01.1	PPB	11/26/2024	16:30	SMPL
P4878-10	E2A04	69	-0.0164	-	SFAM01.1	PPB	11/26/2024	16:32	SMPL
P4878-11	E2A06	176	0.0103	-	SFAM01.1	PPB	11/26/2024	16:34	SMPL
P4878-12	E2A08	272	0.0343	-	SFAM01.1	PPB	11/26/2024	16:37	SMPL
P4878-13	E2A10	330	0.0488	-	SFAM01.1	PPB	11/26/2024	16:39	SMPL
CCV058	CCV058	19116	4.737	-	SFAM01.1	PPB	11/26/2024	16:41	SMPL
CCB058	CCB058	-114	-0.062	-	SFAM01.1	PPB	11/26/2024	16:43	SMPL

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

Prep Standard - Chemical Standard Summary

Order ID : P4877

Test : Mercury

Prepbatch ID : PB165276,

Sequence ID/Qc Batch ID: LB133633,

Standard ID :
MP83207,MP83208,MP83209,MP83210,MP83377,MP83378,MP83379,MP83380,MP83381,MP83382,MP83383,MP83384,MP83385,MP83386,MP83387,MP83391,

Chemical ID :
M4371,M4465,M4916,M5062,M5673,M5882,M5884,M5953,M6119,M6121,M6124,W3112,

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

Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
3965	2:1 H2SO4 : HNO3	MP83207	11/11/2024	05/09/2025	Mohan Bera	None	None	Sarabjit Jaswal 11/11/2024

FROM 1600.00000ml of M5673 + 800.00000ml of M6119 = Final Quantity: 3200.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
65	POTASSIUM PERMANGANATE SOLUTION 5 %	MP83208	11/11/2024	05/11/2025	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal 11/11/2024

FROM 100.00000gram of M4916 + 2000.00000ml of W3112 = Final Quantity: 2000.000 ml

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

Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
66	POTASSIUM PERSULFATE SOLUTION 5 %	MP83209	11/11/2024	05/11/2025	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal 11/11/2024

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

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
67	SODIUM CHLORIDE - HYDROXYL- CHLORIDE SOLUTION	MP83210	11/11/2024	05/11/2025	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal 11/11/2024

FROM 2000.00000ml of W3112 + 240.00000gram of M4371 + 240.00000gram of M5884 = Final Quantity: 2000.000 ml

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Fax : 908 789 8922

Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
871	MERCURY INTERMEDIATE B 250PPB WORKING STD.	MP83377	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 1.00000ml of M6124 + 2.50000ml of M5062 + 96.50000ml of W3112 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1340	Hg 0.00 PPB STD	MP83378	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M6124 + 247.50000ml of W3112 = Final Quantity: 250.000 ml

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Fax : 908 789 8922

Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1341	Hg 0.2 PPB STD	MP83379	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M6124 + 247.30000ml of W3112 + 0.20000ml of MP83377 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1342	Hg 2.5 PPB STD	MP83380	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M6124 + 245.00000ml of W3112 + 2.50000ml of MP83377 = Final Quantity: 250.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1343	Hg 5.0 PPB STD	MP83381	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M6124 + 242.50000ml of W3112 + 5.00000ml of MP83377 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1344	Hg 7.5 PPB STD	MP83382	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M6124 + 240.00000ml of W3112 + 7.50000ml of MP83377 = Final Quantity: 250.000 ml

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Fax : 908 789 8922

Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1345	Hg 10.0 PPB STD	MP83383	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M6124 + 237.50000ml of W3112 + 10.00000ml of MP83377 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1346	Hg ICV SOLUTION	MP83384	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M5953 + 2.50000ml of M6124 + 245.00000ml of W3112 = Final Quantity: 250.000 ml

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Fax : 908 789 8922

Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1351	ICB (Hg 0.00 PPB SOLUTION)	MP83385	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M6124 + 247.50000ml of W3112 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1358	CCV (Hg 5.0 PPB SOLUTION)	MP83386	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 485.00000ml of W3112 + 5.00000ml of M6124 + 10.00000ml of MP83377 = Final Quantity: 500.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1352	CCB (Hg 0.00 PPB SOLUTION)	MP83387	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 495.00000ml of W3112 + 5.00000ml of M6124 = Final Quantity: 500.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
68	STANNOUS CHLORIDE SOLUTION	MP83391	11/26/2024	11/27/2024	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal 11/27/2024

FROM 450.00000ml of W3112 + 50.00000gram of M5882 + 50.00000ml of M6121 = Final Quantity: 500.000 ml

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CHEMICAL RECEIPT LOG BOOK

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

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

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9673-33 / Sulfuric Acid, Instra-Analyzed (cs/6c2.5L)	23D2462010	03/20/2028	09/21/2023 / mohan	09/05/2023 / mohan	M5673

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

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Fax : 908 789 8922

CHEMICAL RECEIPT LOG BOOK

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	ICV-5 / ICV (HG) STOCK SOLN	ICV5-0415	01/01/2025	07/01/2024 / mohan	03/30/2023 / mohan	M5953

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24B1362001	05/09/2025	11/09/2024 / Janvi	10/09/2024 / Janvi	M6119

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9530-33 / Hydrochloric Acid, Instra-Analyzed (cs/6x2.5L)	0000275677	05/13/2025	11/13/2024 / Eman	10/13/2024 / Eman	M6121

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24D1062002	05/22/2025	11/22/2024 / Janvi	10/22/2024 / Janvi	M6124

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

Certificate of Analysis
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M5882
M3

Certificate of Analysis

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

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

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

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

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

Harout Sahagian - Quality Control Supervisor - Fair Lawn

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

M4371

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

Rec – 06.07.19

J.T.Baker | avantor™

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

Certificate of Analysis

Meets ACS Reagent Chemical Requirements,

Test	Specification	Result
Assay ($NH_2OH \cdot HCl$) (by $KMnO_4$ titrn)	>= 96.0 %	99.1
Clarity of Alcohol Solution	Passes Test	PT
Residue after Ignition	<= 0.050 %	0.017
Titrable Free Acid (meq/g)	<= 0.25	0.19
Ammonium (NH_4)	Passes Test	PT
Sulfur Compounds (as SO_4)	<= 0.005 %	< 0.003
Trace Impurities - ACS - Heavy Metals (as Pb)	<= 5 ppm	4
Trace Impurities - Iron (Fe)	<= 5 ppm	< 3
Trace Impurities - Mercury (Hg)	<= 0.050 ppm	< 0.005

For Laboratory, Research or Manufacturing Use

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

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

James Ethier
Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Certificate of Analysis
ThermoFisher SCIENTIFIC

M4913-1b

MB

Certificate of Analysis

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

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

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

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

Julian Burton

Julian Burton - Quality Control Manager – Fair Lawn

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

Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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

M5062
M5063
M3

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).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

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

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10.001 ± 0.053 µg/mL

Density: 1.020 g/mL (measured at 20 ± 4 °C)

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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.

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

CRM/RM Expanded Uncertainty (±) $= U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2 (u_{char\ i})^2)]^{1/2}$ 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 (±) $= U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

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 (µg/mL)

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

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

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

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 22, 2021

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

11.2 Lot Expiration Date

- September 22, 2026

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Supervisor, Product Documentation

Certificate Approved By:

Michael Booth
Director, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

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

A15673-78
A-3

avantor™ | J.T.Baker®

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

Certificate of Analysis

Test	Specification	Result
ACS – Assay (H_2SO_4)	95.0 – 98.0 %	96.1 %
Appearance	Passes Test	Passes Test
ACS – Color (APHA)	≤ 10	5
ACS – Residue after Ignition	≤ 3 ppm	< 1 ppm
ACS – Substances Reducing Permanganate (as SO2)	≤ 2 ppm	< 2 ppm
Ammonium (NH_4)	≤ 1 ppm	1 ppm
Chloride (Cl)	≤ 0.1 ppm	< 0.1 ppm
Nitrate (NO_3)	≤ 0.2 ppm	< 0.1 ppm
Phosphate (PO_4)	≤ 0.5 ppm	< 0.1 ppm
Trace Impurities – Aluminum (Al)	≤ 30.0 ppb	< 5.0 ppb
Arsenic and Antimony (as As)	≤ 4.0 ppb	< 2.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	8.5 ppb
Trace Impurities – Cadmium (Cd)	≤ 2.0 ppb	< 0.3 ppb
Trace Impurities – Chromium (Cr)	≤ 6.0 ppb	< 0.4 ppb
Trace Impurities – Cobalt (Co)	≤ 0.5 ppb	< 0.3 ppb
Trace Impurities – Copper (Cu)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Gold (Au)	≤ 10.0 ppb	0.5 ppb
Heavy Metals (as Pb)	≤ 500.0 ppb	< 100.0 ppb
Trace Impurities – Iron (Fe)	≤ 50.0 ppb	1.3 ppb
Trace Impurities – Lead (Pb)	≤ 0.5 ppb	< 0.5 ppb
Trace Impurities – Magnesium (Mg)	≤ 7.0 ppb	0.8 ppb
Trace Impurities – Manganese (Mn)	≤ 1.0 ppb	< 0.4 ppb
Trace Impurities – Mercury (Hg)	≤ 0.5 ppb	< 0.1 ppb
Trace Impurities – Nickel (Ni)	≤ 2.0 ppb	0.3 ppb
Trace Impurities – Potassium (K)	≤ 500.0 ppb	< 2.0 ppb
Trace Impurities – Selenium (Se)	≤ 50.0 ppb	< 0.1 ppb
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	31.5 ppb
Trace Impurities – Silver (Ag)	≤ 1.0 ppb	< 0.3 ppb

>>> Continued on page 2 >>>

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

avantor™ | J.T.Baker®

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

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

For Laboratory,Research,or Manufacturing Use

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

James Ethier

Jamie Ethier
Vice President Global Quality

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

MT884
MB

avantor™ | J.T.Baker®

Material No.: 3624-01
Batch No.: 0000281938
Manufactured Date: 2021-06-07
Retest Date: 2026-06-07
Revision No.: 1

Certificate of Analysis

Test	Specification	Result
Assay (NaCl) (by Ag titrn)	≥ 99.0 %	100.0 %
pH of 5% Solution at 25°C	5.0 - 9.0	6.3
Insoluble Matter	≤ 0.005 %	0.003 %
Iodide (I)	≤ 0.002 %	< 0.002 %
Bromide (Br)	≤ 0.01 %	< 0.01 %
Chlorate and Nitrate (as NO_3)	≤ 0.003 %	< 0.001 %
ACS - Phosphate (PO_4)	≤ 5 ppm	< 5 ppm
Sulfate (SO_4)	≤ 0.004 %	< 0.004 %
Barium (Ba)	Passes Test	Passes Test
ACS - Heavy Metals (as Pb)	≤ 5 ppm	< 5 ppm
Iron (Fe)	≤ 2 ppm	< 1 ppm
Calcium (Ca)	≤ 0.002 %	< 0.001 %
Magnesium (Mg)	≤ 0.001 %	< 0.001 %
Potassium (K)	≤ 0.005 %	0.001 %

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

James T Ethier
Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Mansford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone 610.386.1700

QATS LABORATORY INORGANIC REFERENCE MATERIAL INITIAL CALIBRATION VERIFICATION SOLUTIONS (ICV1, ICV5, AND ICV6)

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.

M5528-32
MB
M5953
MB 3/30/23

Contains Metals in Dilute Acidic or
Cyanide in Basic Aqueous Solutions
HAZARDOUS MATERIAL

Safety Data Sheets
Available Upon Request

(A) *SAMPLE DESCRIPTION*

Enclosed is a set of one (1) or more Aqueous Inorganic Reference Materials containing various analyte concentrations. ICV1 and ICV5 are in a matrix of dilute nitric acid. ICV6 is in a matrix of dilute basic solution. **For the reference material source in reporting ICVs use "USEPA". For the reference material lot number for the ICV1, ICV5, and ICV6 solutions use "ICV1-1014", "ICV5-0415", and "ICV6-0400", respectively.**

(B) *BREAKAGE OR MISSING ITEMS*

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) *ANALYSIS OF SAMPLES*

The Initial Calibration Verification Solutions (ICVs) are to be used to evaluate the accuracy of the initial calibrations of ICP, AA, and Cyanide colorimetric instruments, and are to be used with the CLP SOWs and revisions. The values for each element in the ICVs are listed below in µg/L (ppb) for the resulting solution(s) after the dilution of the concentrate(s) according to the following instructions. Use Class 'A' glassware to prepare the solution(s).

ICV1-1014 For ICP-AES analysis, use a 10-fold dilution by pipetting 10 mL of the ICV1 concentrate into a 100 mL volumetric flask and dilute to volume with 2% (v/v) nitric acid.

ICV1-1014 For ICP-MS analysis, use a 50-fold dilution by pipetting 2 mL of the ICV1 concentrate into a 100 mL volumetric flask and dilute to volume with 1% (v/v) nitric acid.

ICV5-0415 For the cold vapor analysis of mercury by AA, use a 100-fold dilution by pipetting 1 mL of the ICV5 concentrate into a 100 mL volumetric flask and dilute to volume with 2% (v/v) nitric acid. The ICV5 concentrate is prepared in 0.05% (w/v) $K_2Cr_2O_7$ and 5% (v/v) nitric acid.

ICV6-0400 For the analysis of cyanide, use a 100-fold dilution by pipetting 1 mL of the ICV6 concentrate into a 100 mL volumetric flask and dilute to volume with Type II water. Distill this solution along with the samples before analysis. The cyanide concentrate is prepared from $K_3Fe(CN)_6$, Type II water, and 0.1 % sodium hydroxide, and will decompose rapidly if exposed to light.

NOTE: USE TYPE II WATER AND HIGH-PURITY ACIDS FOR ALL DILUTIONS.

(D) ***CERTIFIED CONCENTRATIONS OF QATS ICV1, ICV5, AND ICV6 SOLUTIONS***

ICV1-1014		
Element	**Concentration (µg/L) (after 10-fold dilution)**	**Concentration (µg/L) (after 50-fold dilution)**
Al	2500	500
Sb	1000	200
As	1000	200
Ba	520	100
Be	510	100
Cd	510	100
Ca	10000	2000
Cr	520	100
Co	520	100
Cu	510	100
Fe	10000	2000
Pb	1000	200
Mg	6000	1200
Mn	520	100
Ni	530	110
K	9900	2000
Se	1000	200
Ag	250	50
Na	10000	2000
Tl	1000	210
V	500	100
Zn	1000	200

ICV5-0415		ICV6-0400	
Element	**Concentration (µg/L) (after 100-fold dilution)**	**Analyte**	**Concentration (µg/L) (after 100-fold dilution)**
Hg	4.0	CN^-	99

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

M6119

Recive → 10/9/24
Met dig

Material No.: 9606-03
Batch No.: 24B1362001
Manufactured Date: 2024-01-25
Retest Date: 2029-01-23
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO_3)	69.0 – 70.0 %	69.6 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	< 1 ppm
Chloride (Cl)	≤ 0.08 ppm	< 0.03 ppm
Phosphate (PO_4)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO_4)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities – Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Bismuth (Bi)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	< 0.2 ppb
Trace Impurities – Chromium (Cr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Germanium (Ge)	≤ 20 ppb	< 10 ppb
Trace Impurities – Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities – Lead (Pb)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities – Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24B1362001

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	3 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	1 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24B1362001

Test	Specification	Result

For Microelectronic Use

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

Ken Koehnlein
Sr. Manager, Quality Assurance

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

avantor™ | J.T.Baker®

R → 10/13/24
Met dig

M 6/21

Material No.: 9530-33
Batch No.: 0000275677
Manufactured Date: 2020/12/16
Retest Date: 2025/12/15
Revision No: 1

Certificate of Analysis

Test	Specification	Result
ACS - Assay (as HCl) (by acid-base titrn)	36.5 - 38.0 %	37.6
ACS - Color (APHA)	<= 10	5
ACS - Residue after Ignition	<= 3 ppm	1
ACS - Specific Gravity at 60°/60°F	1.185 - 1.192	1.190
ACS - Bromide (Br)	<= 0.005 %	< 0.005
ACS - Extractable Organic Substances	<= 5 ppm	1
ACS - Free Chlorine (as Cl_2)	<= 0.5 ppm	< 0.5
Phosphate (PO_4)	<= 0.05 ppm	< 0.03
Sulfate (SO_4)	<= 0.5 ppm	< 0.3
Sulfite (SO_3)	<= 0.8 ppm	0.3
Ammonium (NH_4)	<= 3 ppm	< 1
Trace Impurities - Arsenic (As)	<= 0.010 ppm	< 0.003
Trace Impurities - Aluminum (Al)	<= 10.0 ppb	< 0.2
Arsenic and Antimony (as As)	<= 5 ppb	< 3
Trace Impurities - Barium (Ba)	<= 1.0 ppb	< 0.2
Trace Impurities - Beryllium (Be)	<= 1.0 ppb	< 0.2
Trace Impurities - Bismuth (Bi)	<= 10.0 ppb	< 1.0
Trace Impurities - Boron (B)	<= 20.0 ppb	< 5.0
Trace Impurities - Cadmium (Cd)	<= 1.0 ppb	< 0.3
Trace Impurities - Calcium (Ca)	<= 50.0 ppb	29.7
Trace Impurities - Chromium (Cr)	<= 1.0 ppb	< 0.4
Trace Impurities - Cobalt (Co)	<= 1.0 ppb	< 0.3
Trace Impurities - Copper (Cu)	<= 1.0 ppb	< 0.1
Trace Impurities - Gallium (Ga)	<= 1.0 ppb	< 0.2

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Material No.: 9530-33
Batch No.: 0000275677

Test	Specification	Result
Trace Impurities - Germanium (Ge)	<= 3.0 ppb	< 2.0
Trace Impurities - Gold (Au)	<= 4.0 ppb	< 0.2
Heavy Metals (as Pb)	<= 100 ppb	< 50
Trace Impurities - Iron (Fe)	<= 15.0 ppb	<1
Trace Impurities - Lead (Pb)	<= 1.0 ppb	< 0.5
Trace Impurities - Lithium (Li)	<= 1.0 ppb	0.2
Trace Impurities - Magnesium (Mg)	<= 10.0 ppb	0.4
Trace Impurities - Manganese (Mn)	<= 1.0 ppb	< 0.4
Trace Impurities - Mercury (Hg)	<= 0.5 ppb	0.1
Trace Impurities - Molybdenum (Mo)	<= 10.0 ppb	< 5.0
Trace Impurities - Nickel (Ni)	<= 4.0 ppb	< 0.3
Trace Impurities - Niobium (Nb)	<= 1.0 ppb	< 0.2
Trace Impurities - Potassium (K)	<= 9.0 ppb	< 2.0
Trace Impurities - Selenium (Se), For Information Only	ppb	1.0
Trace Impurities - Silicon (Si)	<= 100.0 ppb	< 10.0
Trace Impurities - Silver (Ag)	<= 1.0 ppb	< 0.3
Trace Impurities - Sodium (Na)	<= 100.0 ppb	< 5.0
Trace Impurities - Strontium (Sr)	<= 1.0 ppb	< 0.2
Trace Impurities - Tantalum (Ta)	<= 1.0 ppb	< 0.9
Trace Impurities - Thallium (Tl)	<= 5.0 ppb	< 2.0
Trace Impurities - Tin (Sn)	<= 5.0 ppb	< 0.8
Trace Impurities - Titanium (Ti)	<= 1.0 ppb	0.2
Trace Impurities - Vanadium (V)	<= 1.0 ppb	< 0.2
Trace Impurities - Zinc (Zn)	<= 5.0 ppb	0.3
Trace Impurities - Zirconium (Zr)	<= 1.0 ppb	< 0.1

For Laboratory, Research or Manufacturing Use
Product Information (not specifications):
Appearance (clear, fuming liquid)
Meets ACS Specifications

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

Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

R:- 10/22/24

MG124

Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO_3)	69.0 - 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	1 ppm
Chloride (Cl)	≤ 0.08 ppm	< 0.03 ppm
Phosphate (PO_4)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO_4)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities - Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities - Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Bismuth (Bi)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Boron (B)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities - Calcium (Ca)	≤ 50.0 ppb	2.3 ppb
Trace Impurities - Chromium (Cr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities - Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Germanium (Ge)	≤ 20 ppb	< 10 ppb
Trace Impurities - Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 100 ppb	100 ppb
Trace Impurities - Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities - Lead (Pb)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities - Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
Trace Impurities - Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities - Potassium (K)	≤ 50 ppb	16 ppb
Trace Impurities - Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities - Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities - Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities - Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities - Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities - Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count - 0.5 µm and greater	≤ 60 par/ml	10 par/ml
Particle Count - 1.0 µm and greater	≤ 10 par/ml	3 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result

For Microelectronic Use

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

Jamie Croak
Director Quality Operations, Bioscience Production

Alliance TECHNICAL GROUP

Water Mercury Preparation Sheet

PB165276

SOP ID : M7470A-Mercury-19, MSFAM01.1-Mercury in Water-2

SDG No : E29Z5

Matrix : WATER

Pippete ID: HG A

Balance ID : N/A

Filter paper ID : NA

pH Strip ID : M4909

Hood ID : #1

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

Start Digest Date: 11/26/2024 **Time :** 09:50 **Temp :** 94 °C

End Digest Date: 11/26/2024 **Time :** 11:50 **Temp :** 94 °C

Digestion tube ID: M60

Block thermometer ID: HG-DIG#2

Dig Technician Signature: MB

Supervisor Signature: 12

Temp : 1. 94°C 2. N/A

Standared Name	MLS USED	STD REF. # FROM LOG
ICV	100mL	MP83384
CCV	100mL	MP83386
Matrix Spike	0.40mL	MP83377
N/A	N/A	N/A
N/A	N/A	N/A

Chemical Used	ML/SAMPLE USED	Lot Number
HNO3/H2SO4(1:2)	7.5mL	MP83207
KMnO4 (5%)	15.0mL	MP83208
K2S2O8 (5%)	8.0mL	MP83209
Hydroxylamine HCL (12%)	6.0mL	MP83210
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

LAB SAMPLE ID	CLIENT SAMPLE ID	Wt(g)/Vol(ml)	Comment
0.0 ppb	S0	100mL	MP83378
0.05 ppb	S0.05	N/A	N/A
0.2 ppb	S0.2	100mL	MP83379
2.5 ppb	S2.5	100mL	MP83380
5.0 ppb	S5.0	100mL	MP83381
7.5 ppb	S7.5	100mL	MP83382
10.0 ppb	S10.0	100mL	MP83383
ICV	ICV	100mL	MP83384
ICB	ICB	100mL	MP83385
CCV	CCV	100mL	MP83386
CCB	CCB	100mL	MP83387
CRI	CRI	N/A	N/A
CHK STD	CHK STD	N/A	N/A

Extraction Conformance/Non-Conformance Comments:

N/A

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
11/26/24 @ 12:15	MB - Bldg. Lab	MB - metal Lab
	Preparation Group	Analysis Group

Alliance TECHNICAL GROUP

Water Mercury Preparation Sheet

PB165276

Lab Sample ID	Client Sample ID	Initial Vol (ml)	Final Vol (ml)	pH	Comment	Prep Pos
P4877-01	E29Z1	100	100	<2	N/A	2-1
P4877-02	E29Z3	100	100	<2	N/A	2
P4877-03	E29Z5	100	100	<2	N/A	3
P4877-04	E29Z7	100	100	<2	N/A	4
P4877-05	E2A13	100	100	<2	N/A	5
P4877-06	E2A19	100	100	<2	N/A	6
P4877-07	E2A22	100	100	<2	N/A	7
P4877-08	E2A23	100	100	<2	N/A	8
P4877-09	E29Z9	100	100	<2	N/A	9
P4877-10	E2A01	100	100	<2	N/A	10
P4877-11	E2A01D	100	100	<2	N/A	11
P4877-12	E2A01S	100	100	<2	MP83377	12
P4877-13	E2A03	100	100	<2	N/A	13
P4877-14	E2A05	100	100	<2	N/A	14
P4877-15	E2A07	100	100	<2	N/A	15
P4877-16	E2A09	100	100	<2	N/A	16
P4877-17	E2A20	100	100	<2	N/A	17
P4877-18	E2A24	100	100	<2	N/A	18
P4877-19	E29S9	100	100	<2	N/A	19
PB165276BL	PBW276	100	100	<2	N/A	20

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

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QCBatch ID # LB133633

Review By	Sarabjit Jaswal	Review On	11/27/2024 10:29:19 PM
Supervise By	Mohan Bera	Supervise On	11/27/2024 10:31:16 PM

STD. NAME	STD REF.#
ICAL Standard	MP83378,MP83379,MP83380,MP83381,MP83382,MP83383
ICV Standard	MP83384
CCV Standard	MP83386
ICSA Standard	
CRI Standard	
LCS Standard	
Chk Standard	MP83385,MP83387,MP83391

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	11/26/24 13:52		Mohan	OK
2	S0.2	S01	CAL2	11/26/24 13:54		Mohan	OK
3	S2.5	S02	CAL3	11/26/24 13:57		Mohan	OK
4	S5	S03	CAL4	11/26/24 13:59		Mohan	OK
5	S7.5	S04	CAL5	11/26/24 14:01		Mohan	OK
6	S10	S05	CAL6	11/26/24 14:04		Mohan	OK
7	ICV001	ICV001	ICV	11/26/24 14:09		Mohan	OK
8	ICB001	ICB001	ICB	11/26/24 14:12		Mohan	OK
9	CCV055	CCV055	CCV	11/26/24 14:14		Mohan	OK
10	CCB055	CCB055	CCB	11/26/24 14:16		Mohan	OK
11	PB165275BL	PBW275	MB	11/26/24 14:18		Mohan	OK
12	P4831-01	E29S4	SAM	11/26/24 14:21		Mohan	OK
13	P4831-02	E29S4D	DUP	11/26/24 14:23		Mohan	OK
14	P4831-03	E29S4S	MS	11/26/24 14:25		Mohan	OK
15	P4831-04	E29T2	SAM	11/26/24 14:27		Mohan	OK
16	P4831-05	E29T4	SAM	11/26/24 14:30		Mohan	OK
17	P4831-06	E29W0	SAM	11/26/24 14:32		Mohan	OK
18	P4831-07	E29W4	SAM	11/26/24 14:34		Mohan	OK

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CCV Standard	MP83386
ICSA Standard	
CRI Standard	
LCS Standard	
Chk Standard	MP83385,MP83387,MP83391

19	P4831-08	E29W1	SAM	11/26/24 14:37		Mohan	OK
20	P4831-09	E29W5	SAM	11/26/24 14:39		Mohan	OK
21	P4831-10	E29R6	SAM	11/26/24 14:41		Mohan	OK
22	P4831-11	E29S0	SAM	11/26/24 14:43		Mohan	OK
23	P4831-12	E29S2	SAM	11/26/24 14:46		Mohan	OK
24	P4831-13	E29S6	SAM	11/26/24 14:48		Mohan	OK
25	P4831-14	E29W6	SAM	11/26/24 14:50		Mohan	OK
26	P4831-15	E29W2	SAM	11/26/24 14:52		Mohan	OK
27	P4832-01	E29S5	SAM	11/26/24 14:55		Mohan	OK
28	P4832-02	E29S5D	DUP	11/26/24 14:57		Mohan	OK
29	P4832-03	E29S5S	MS	11/26/24 14:59		Mohan	OK
30	P4832-04	E29T3	SAM	11/26/24 15:01		Mohan	OK
31	CCV056	CCV056	CCV	11/26/24 15:04		Mohan	OK
32	CCB056	CCB056	CCB	11/26/24 15:06		Mohan	OK
33	P4832-05	E29T5	SAM	11/26/24 15:08		Mohan	OK
34	P4832-06	E29R7	SAM	11/26/24 15:10		Mohan	OK
35	P4832-07	E29S1	SAM	11/26/24 15:13		Mohan	OK
36	P4832-08	E29S3	SAM	11/26/24 15:15		Mohan	OK
37	P4832-09	E29S7	SAM	11/26/24 15:17		Mohan	OK
38	PB165276BL	PBW276	MB	11/26/24 15:20		Mohan	OK

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CCV Standard	MP83386
ICSA Standard	
CRI Standard	
LCS Standard	
Chk Standard	MP83385,MP83387,MP83391

39	P4877-01	E29Z1	SAM	11/26/24 15:22		Mohan	OK
40	P4877-02	E29Z3	SAM	11/26/24 15:24		Mohan	OK
41	P4877-03	E29Z5	SAM	11/26/24 15:26		Mohan	OK
42	P4877-04	E29Z7	SAM	11/26/24 15:29		Mohan	OK
43	P4877-05	E2A13	SAM	11/26/24 15:31		Mohan	OK
44	P4877-06	E2A19	SAM	11/26/24 15:33		Mohan	OK
45	P4877-07	E2A22	SAM	11/26/24 15:35		Mohan	OK
46	P4877-08	E2A23	SAM	11/26/24 15:38		Mohan	OK
47	P4877-09	E29Z9	SAM	11/26/24 15:40		Mohan	OK
48	P4877-10	E2A01	SAM	11/26/24 15:42		Mohan	OK
49	P4877-11	E2A01D	DUP	11/26/24 15:44		Mohan	OK
50	P4877-12	E2A01S	MS	11/26/24 15:47		Mohan	OK
51	P4877-13	E2A03	SAM	11/26/24 15:49		Mohan	OK
52	P4877-14	E2A05	SAM	11/26/24 15:51		Mohan	OK
53	CCV057	CCV057	CCV	11/26/24 15:54		Mohan	OK
54	CCB057	CCB057	CCB	11/26/24 15:56		Mohan	OK
55	P4877-15	E2A07	SAM	11/26/24 15:58		Mohan	OK
56	P4877-16	E2A09	SAM	11/26/24 16:00		Mohan	OK
57	P4877-17	E2A20	SAM	11/26/24 16:03		Mohan	OK
58	P4877-18	E2A24	SAM	11/26/24 16:05		Mohan	OK

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CCV Standard	MP83386
ICSA Standard	
CRI Standard	
LCS Standard	
Chk Standard	MP83385,MP83387,MP83391

59	P4877-19	E29S9	SAM	11/26/24 16:07		Mohan	OK
60	PB165277BL	PBW277	MB	11/26/24 16:09		Mohan	OK
61	P4878-01	E29Z2	SAM	11/26/24 16:12		Mohan	OK
62	P4878-02	E29Z4	SAM	11/26/24 16:14		Mohan	OK
63	P4878-03	E29Z6	SAM	11/26/24 16:16		Mohan	OK
64	P4878-04	E29Z8	SAM	11/26/24 16:18		Mohan	OK
65	P4878-05	E2A14	SAM	11/26/24 16:21		Mohan	OK
66	P4878-06	E2A00	SAM	11/26/24 16:23		Mohan	OK
67	P4878-07	E2A02	SAM	11/26/24 16:25		Mohan	OK
68	P4878-08	E2A02D	DUP	11/26/24 16:28		Mohan	OK
69	P4878-09	E2A02S	MS	11/26/24 16:30		Mohan	OK
70	P4878-10	E2A04	SAM	11/26/24 16:32		Mohan	OK
71	P4878-11	E2A06	SAM	11/26/24 16:34		Mohan	OK
72	P4878-12	E2A08	SAM	11/26/24 16:37		Mohan	OK
73	P4878-13	E2A10	SAM	11/26/24 16:39		Mohan	OK
74	CCV058	CCV058	CCV	11/26/24 16:41		Mohan	OK
75	CCB058	CCB058	CCB	11/26/24 16:43		Mohan	OK