

Cover Page

Order ID : Q1194

Project ID : Amtrak Sawtooth Bridges 2025

Client : Portal Partners Tri-Venture

Lab Sample Number

Q1194-01
Q1194-02
Q1194-03
Q1194-04
Q1194-08
Q1194-09
Q1194-10

Client Sample Number

B-110-SB01
B-110-SB02
B-113-SB01
B-113-SB02
EB
FB
TB

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

Signature : _____

Date: 2/8/2025

DATA REPORTING QUALIFIERS- INORGANIC

For reporting results, the following “ Results Qualifiers” are used:

J	Indicates the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).
U	Indicates the analyte was analyzed for, but not detected.
ND	Indicates the analyte was analyzed for, but not detected
E	Indicates the reported value is estimated because of the presence of interference
M	Indicates Duplicate injection precision not met.
N	Indicates the spiked sample recovery is not within control limits.
S	Indicates the reported value was determined by the Method of Standard Addition (MSA).
*	Indicates that the duplicate analysis is not within control limits.
+	Indicates the correlation coefficient for the MSA is less than 0.995.
D	Indicates the reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.
M	Method qualifiers “P” for ICP instrument “PM” for ICP when Microwave Digestion is used “CV” for Manual Cold Vapor AA “AV” for automated Cold Vapor AA “CA” for MIDI-Distillation Spectrophotometric “AS” for Semi -Automated Spectrophotometric “C” for Manual Spectrophotometric “T” for Titrimetric “NR” for analyte not required to be analyzed
OR	Indicates the analyte’s concentration exceeds the calibrated range of the instrument for that specific analysis.
Q	Indicates the LCS did not meet the control limits requirements
H	Sample Analysis Out Of Hold Time

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: Q1194

Completed

For thorough review, the report must have the following:

GENERAL:

Are all original paperwork present (chain of custody, record of communication,airbill, sample management lab chronicle, login page)

✓

Check chain-of-custody for proper relinquish/return of samples

✓

Is the chain of custody signed and complete

✓

Check internal chain-of-custody for proper relinquish/return of samples /sample extracts

✓

Collect information for each project id from server. Were all requirements followed

✓

COVER PAGE:

Do numbers of samples correspond to the number of samples in the Chain of Custody on login page

✓

Do lab numbers and client Ids on cover page agree with the Chain of Custody

✓

CHAIN OF CUSTODY:

Do requested analyses on Chain of Custody agree with form I results

✓

Do requested analyses on Chain of Custody agree with the log-in page

✓

Were the correct method log-in for analysis according to the Analytical Request and Chain of Custody

✓

Were the samples received within hold time

✓

Were any problems found with the samples at arrival recorded in the Sample Management Laboratory Chronicle

✓

ANALYTICAL:

Was method requirement followed?

✓

Was client requirement followed?

✓

Does the case narrative summarize all QC failure?

✓

All runlogs and manual integration are reviewed for requirements

✓

All manual calculations and /or hand notations verified

✓

QA Review Signature: MAYUR DESAI

Date: 02/08/2025

LAB CHRONICLE

OrderID:	Q1194	OrderDate:	1/27/2025 9:35:00 AM
Client:	Portal Partners Tri-Venture	Project:	Amtrak Sawtooth Bridges 2025
Contact:	Joseph Krupansky	Location:	N41,VOA Ref. #2 Soil,VOA Ref. #3 Water

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
Q1194-01	B-110-SB01	SOIL			01/25/25 11:33	01/27/25	01/28/25 09:49	01/27/25
			Hexavalent Chromium	7196A				
			Trivalent Chromium	6010D			01/29/25 12:15	
Q1194-02	B-110-SB02	SOIL			01/25/25 13:58	01/27/25	01/28/25 09:50	01/27/25
			Hexavalent Chromium	7196A				
			Trivalent Chromium	6010D			01/29/25 12:19	
Q1194-03	B-113-SB01	SOIL			01/25/25 11:52	01/27/25	01/28/25 09:51	01/27/25
			Hexavalent Chromium	7196A				
			Trivalent Chromium	6010D			01/29/25 12:23	
Q1194-04	B-113-SB02	SOIL			01/25/25 14:44	01/27/25	01/28/25 09:58	01/27/25
			Hexavalent Chromium	7196A				
			Trivalent Chromium	6010D			01/30/25 18:03	
Q1194-08	EB	Water			01/25/25 12:00			01/27/25
			trivalent Chromium	6010D			01/28/25 13:22	

LAB CHRONICLE

Hexavalent Chromium

7196A

01/27/25
16:01



SAMPLE DATA

Report of Analysis

Client:	Portal Partners Tri-Venture	Date Collected:	01/25/25 11:33
Project:	Amtrak Sawtooth Bridges 2025	Date Received:	01/27/25
Client Sample ID:	B-110-SB01	SDG No.:	Q1194
Lab Sample ID:	Q1194-01	Matrix:	SOIL
		% Solid:	88.3

Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units(Dry Weight)	Prep Date	Date Ana.	Ana Met.
Hexavalent Chromium	0.089	U	1	0.089	0.45	mg/Kg	01/27/25 14:25	01/28/25 09:49	7196A
Trivalent Chromium	14.7		1	0.57	0.57	mg/Kg		01/29/25 12:15	6010D

Comments: _____

U = Not Detected

LOQ = Limit of Quantitation

MDL = Method Detection Limit

LOD = Limit of Detection

D = Dilution

Q = indicates LCS control criteria did not meet requirements

H = Sample Analysis Out Of Hold Time

J = Estimated Value

B = Analyte Found in Associated Method Blank

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

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

OR = Over Range

N =Spiked sample recovery not within control limits

Report of Analysis

Client:	Portal Partners Tri-Venture	Date Collected:	01/25/25 13:58
Project:	Amtrak Sawtooth Bridges 2025	Date Received:	01/27/25
Client Sample ID:	B-110-SB02	SDG No.:	Q1194
Lab Sample ID:	Q1194-02	Matrix:	SOIL
		% Solid:	57

Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units(Dry Weight)	Prep Date	Date Ana.	Ana Met.
Hexavalent Chromium	0.14	U	1	0.14	0.68	mg/Kg	01/27/25 14:25	01/28/25 09:50	7196A
Trivalent Chromium	109		1	0.88	0.88	mg/Kg		01/29/25 12:19	6010D

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution
Q = indicates LCS control criteria did not meet requirements
H = Sample Analysis Out Of Hold Time

J = Estimated Value
B = Analyte Found in Associated Method Blank
* = indicates the duplicate analysis is not within control limits.
E = Indicates the reported value is estimated because of the presence of interference.
OR = Over Range
N =Spiked sample recovery not within control limits

Report of Analysis

Client:	Portal Partners Tri-Venture	Date Collected:	01/25/25 11:52
Project:	Amtrak Sawtooth Bridges 2025	Date Received:	01/27/25
Client Sample ID:	B-113-SB01	SDG No.:	Q1194
Lab Sample ID:	Q1194-03	Matrix:	SOIL
		% Solid:	86.9

Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units(Dry Weight)	Prep Date	Date Ana.	Ana Met.
Hexavalent Chromium	0.089	U	1	0.089	0.45	mg/Kg	01/27/25 14:25	01/28/25 09:51	7196A
Trivalent Chromium	9.71		1	0.57	0.57	mg/Kg		01/29/25 12:23	6010D

Comments: _____

U = Not Detected

LOQ = Limit of Quantitation

MDL = Method Detection Limit

LOD = Limit of Detection

D = Dilution

Q = indicates LCS control criteria did not meet requirements

H = Sample Analysis Out Of Hold Time

J = Estimated Value

B = Analyte Found in Associated Method Blank

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

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

OR = Over Range

N =Spiked sample recovery not within control limits

Report of Analysis

Client:	Portal Partners Tri-Venture	Date Collected:	01/25/25 14:44
Project:	Amtrak Sawtooth Bridges 2025	Date Received:	01/27/25
Client Sample ID:	B-113-SB02	SDG No.:	Q1194
Lab Sample ID:	Q1194-04	Matrix:	SOIL
		% Solid:	64.7

Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units(Dry Weight)	Prep Date	Date Ana.	Ana Met.
Hexavalent Chromium	0.12	U	1	0.12	0.60	mg/Kg	01/27/25 14:25	01/28/25 09:58	7196A
Trivalent Chromium	24.2		1	0.77	0.77	mg/Kg		01/30/25 18:03	6010D

Comments: _____

U = Not Detected

LOQ = Limit of Quantitation

MDL = Method Detection Limit

LOD = Limit of Detection

D = Dilution

Q = indicates LCS control criteria did not meet requirements

H = Sample Analysis Out Of Hold Time

J = Estimated Value

B = Analyte Found in Associated Method Blank

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

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

OR = Over Range

N =Spiked sample recovery not within control limits

Report of Analysis

Client:	Portal Partners Tri-Venture	Date Collected:	01/25/25 00:00
Project:	Amtrak Sawtooth Bridges 2025	Date Received:	01/27/25
Client Sample ID:	EB	SDG No.:	Q1194
Lab Sample ID:	Q1194-08	Matrix:	WATER
		% Solid:	0

Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
Dissolved Hexavalent Chromium	0.0030	U	1	0.0030	0.010	mg/L		01/27/25 16:01	7196A
trivalent Chromium	0.010	U	1	0.010	0.010	mg/L		01/28/25 13:22	6010D

Comments: _____

U = Not Detected

LOQ = Limit of Quantitation

MDL = Method Detection Limit

LOD = Limit of Detection

D = Dilution

Q = indicates LCS control criteria did not meet requirements

H = Sample Analysis Out Of Hold Time

J = Estimated Value

B = Analyte Found in Associated Method Blank

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

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

OR = Over Range

N =Spiked sample recovery not within control limits



QC RESULT SUMMARY



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

Initial and Continuing Calibration Verification

Client: Portal Partners Tri-Venture

SDG No.: Q1194

Project: Amtrak Sawtooth Bridges 2025

RunNo.: LB134432

Analyte	Units	Result	True Value	% Recovery	Acceptance Window (%R)	Analysis Date
Sample ID: ICV Hexavalent Chromium	mg/L	0.503	0.5	101	90-110	01/27/2025
Sample ID: CCV1 Hexavalent Chromium	mg/L	0.498	0.5	100	90-110	01/27/2025
Sample ID: CCV2 Hexavalent Chromium	mg/L	0.500	0.5	100	90-110	01/27/2025

Initial and Continuing Calibration Verification

Client: Portal Partners Tri-Venture

SDG No.: Q1194

Project: Amtrak Sawtooth Bridges 2025

RunNo.: LB134452

Analyte	Units	Result	True Value	% Recovery	Acceptance Window (%R)	Analysis Date
Sample ID: ICV Hexavalent Chromium	mg/L	0.502	0.5	100	90-110	01/28/2025
Sample ID: CCV1 Hexavalent Chromium	mg/L	0.498	0.5	100	90-110	01/28/2025
Sample ID: CCV2 Hexavalent Chromium	mg/L	0.501	0.5	100	90-110	01/28/2025
Sample ID: CCV3 Hexavalent Chromium	mg/L	0.502	0.5	100	90-110	01/28/2025

Initial and Continuing Calibration Blank Summary

Client: Portal Partners Tri-Venture

SDG No.: Q1194

Project: Amtrak Sawtooth Bridges 2025

RunNo.: LB134432

Analyte	Units	Result	Acceptance Limits	Conc Qual	MDL	RDL	Analysis Date
Sample ID: ICB Hexavalent Chromium	mg/L	< 0.0050	0.0050	U	0.0027	0.01	01/27/2025
Sample ID: CCB1 Hexavalent Chromium	mg/L	< 0.0050	0.0050	U	0.0027	0.01	01/27/2025
Sample ID: CCB2 Hexavalent Chromium	mg/L	< 0.0050	0.0050	U	0.0027	0.01	01/27/2025

Initial and Continuing Calibration Blank Summary

Client: Portal Partners Tri-Venture
Project: Amtrak Sawtooth Bridges 2025

SDG No.: Q1194
RunNo.: LB134452

Analyte	Units	Result	Acceptance Limits	Conc Qual	MDL	RDL	Analysis Date
Sample ID: ICB Hexavalent Chromium	mg/L	< 0.0050	0.0050	U	0.0027	0.01	01/28/2025
Sample ID: CCB1 Hexavalent Chromium	mg/L	< 0.0050	0.0050	U	0.0027	0.01	01/28/2025
Sample ID: CCB2 Hexavalent Chromium	mg/L	< 0.0050	0.0050	U	0.0027	0.01	01/28/2025
Sample ID: CCB3 Hexavalent Chromium	mg/L	< 0.0050	0.0050	U	0.0027	0.01	01/28/2025

Preparation Blank Summary

Client: Portal Partners Tri-Venture

SDG No.: Q1194

Project: Amtrak Sawtooth Bridges 2025

Analyte	Units	Result	Acceptance Limits	Conc Qual	MDL	RDL	Analysis Date
Sample ID: LB134432BL							
Hexavalent Chromium	mg/L	< 0.0050	0.0050	U	0.003	0.01	01/27/2025
Sample ID: PB166262BL							
Hexavalent Chromium	mg/Kg	< 0.2000	0.2000	U	0.079	0.4	01/28/2025

Matrix Spike Summary

Client:	Portal Partners Tri-Venture	SDG No.:	Q1194
Project:	Amtrak Sawtooth Bridges 2025	Sample ID:	Q1194-03
Client ID:	B-113-SB01MS	Percent Solids for Spike Sample:	86.9

Analyte	Units	Acceptance Limit %R	Spiked Result	Conc. Qualifier	Sample Result	Conc. Qualifier	Spike Added	Dilution Factor	% Rec	Qual	Analysis Date
Hexavalent Chromium	mg/Kg	75-125	1440		0.089	U	1480	40	97		01/28/2025

Matrix Spike Summary

Client:	Portal Partners Tri-Venture	SDG No.:	Q1194
Project:	Amtrak Sawtooth Bridges 2025	Sample ID:	Q1194-03
Client ID:	B-113-SB01MS	Percent Solids for Spike Sample:	86.9

Analyte	Units	Acceptance Limit %R	Spiked Result	Conc. Qualifier	Sample Result	Conc. Qualifier	Spike Added	Dilution Factor	% Rec	Qual	Analysis Date
Hexavalent Chromium	mg/Kg	85-115	45.1		0.089	U	46.0	2	98		01/28/2025

Matrix Spike Summary

Client:	Portal Partners Tri-Venture	SDG No.:	Q1194
Project:	Amtrak Sawtooth Bridges 2025	Sample ID:	Q1194-03
Client ID:	B-113-SB01MS	Percent Solids for Spike Sample:	86.9

Analyte	Units	Acceptance Limit %R	Spiked Result	Conc. Qualifier	Sample Result	Conc. Qualifier	Spike Added	Dilution Factor	% Rec	Qual	Analysis Date
Hexavalent Chromium	mg/Kg	75-125	40.3		0.089	U	46.0	2	88		01/28/2025

Duplicate Sample Summary

Client:	Portal Partners Tri-Venture	SDG No.:	Q1194
Project:	Amtrak Sawtooth Bridges 2025	Sample ID:	Q1194-03
Client ID:	B-113-SB01DUP	Percent Solids for Spike Sample:	86.9

Analyte	Units	Acceptance Limit	Sample Result	Conc. Qualifier	Duplicate Result	Conc. Qualifier	Dilution Factor	RPD/ AD	Qual	Analysis Date
Hexavalent Chromium	mg/Kg	+/-20	0.089	U	0.090	U	1	0		01/28/2025

Laboratory Control Sample Summary

Client: Portal Partners Tri-Venture

SDG No.: Q1194

Project: Amtrak Sawtooth Bridges 2025

Run No.: LB134432

Analyte	Units	True Value	Result	Conc. Qualifier	% Recovery	Dilution Factor	Acceptance Limit %R	Analysis Date
Sample ID	LB134432BS							
Hexavalent Chromium	mg/L	0.5	0.50		100	1	90-111	01/27/2025

Laboratory Control Sample Summary

Client: Portal Partners Tri-Venture

SDG No.: Q1194

Project: Amtrak Sawtooth Bridges 2025

Run No.: LB134452

Analyte	Units	True Value	Result	Conc. Qualifier	% Recovery	Dilution Factor	Acceptance Limit %R	Analysis Date
Sample ID	PB166262BS							
Hexavalent Chromium	mg/Kg	20	20.0		100	1	84-110	01/28/2025



RAW DATA

Analysis Method: 7196A

ANALYST: rubina

Parameter: ~~Hexavalent Chromium~~

SUPERVISOR REVIEW BY: Iwona

Run Number: LB134432

pH Meter ID: WC pH Meter-1

Reagent/Standard	Lot/Log #
Calibration Std. hexchrome 0.1 ppm	WP111653
Calibration Std. hexchrome 0.05 ppm	WP111652
calibration std. hexchrome 0.01 ppm	WP111650
calibration std. hexchrome 0 ppm	WP111649
hexavalent chromium color reagent	WP111659
5N sulfuric acid	WP110380
HEX LOD STD, 0.005PPM	WP111657
Hex LOQ Std, 0.01PPM	WP111658
Calibration Std Hexachrome 0.025 ppm	WP111651
Hexavalent Chromium ICV-LCS Std	WP111656
Calibration and CCV std HexChrome 0.5PPM	WP111654
Calibration std HexChrome 1.0PPM	WP111655

Intercept: -0.0001

Slope: 0.7839

Regression: 0.999996

Seq	Lab ID	True Value (mg/l)	DF	Initial Vol (ml)	Final Vol (ml)	pH HN03	pH H2SO4	Absorb.at 540nm		Absorbance Difference	Result (mg/L)	%D	Anal Date	Anal Time
								Backgrnd	Color					
1	CAL1	0	1	100	100		1.81	0.000	0.000	0.000	0.000		01/27/2025	15:45
2	CAL2	0.01	1	100	100		1.87	0.000	0.007	0.007	0.009	-10	01/27/2025	15:46
3	CAL3	0.025	1	100	100		1.88	0.000	0.019	0.019	0.024	-4	01/27/2025	15:47
4	CAL4	0.05	1	100	100		1.88	0.000	0.039	0.039	0.049	-2	01/27/2025	15:48
5	CAL5	0.1	1	100	100		1.85	0.000	0.080	0.080	0.102	2	01/27/2025	15:49
6	CAL6	0.5	1	100	100		1.87	0.000	0.391	0.391	0.498	-0.4	01/27/2025	15:50
7	CAL7	1	1	100	100		1.90	0.000	0.784	0.784	1.000	0	01/27/2025	15:51

Analytical Summary Report

Analysis Method: 7196A

ANALYST:rubina

Parameter: Hexavalent Chromium

SUPERVISOR REVIEW BY:Iwona

Run Number: LB134432

pH Meter ID:WC pH Meter-1

Seq	Lab ID	True Value	DF	Initial Vol (ml/gm)	Final Vol (ml)	pH HN03	pH H2SO4	Absorb.at540nm		Absorbance Difference	Intermediate Result (mg/L)	Anal Date	Anal Time
								Backgrnd	Color				
1	ICV	0.5	1	100	100		1.92	0.000	0.394	0.394	0.503	01/27/2025	15:52
2	ICB		1	100	100		1.78	0.000	0.001	0.001	0.001	01/27/2025	15:53
3	CCV1	0.5	1	100	100		1.95	0.000	0.390	0.390	0.498	01/27/2025	15:54
4	CCB1		1	100	100		1.79	0.000	0.000	0.000	0.000	01/27/2025	15:55
5	RL Check	0.01	1	100	100		1.91	0.000	0.008	0.008	0.010	01/27/2025	15:56
6	LB134432BL		1	100	100		1.75	0.000	0.001	0.001	0.001	01/27/2025	15:57
7	LB134432BS	0.5	1	100	100		1.92	0.000	0.390	0.390	0.498	01/27/2025	15:58
8	Q1168-07		1	100	100		2.04	0.000	0.004	0.004	0.005	01/27/2025	15:59
9	Q1168-08		1	100	100		2.03	0.000	0.007	0.007	0.009	01/27/2025	16:00
10	Q1194-08		1	100	100		2.10	0.000	0.000	0.000	0.000	01/27/2025	16:01
11	CCV2	0.5	1	100	100		1.93	0.000	0.392	0.392	0.500	01/27/2025	16:02
12	CCB2		1	100	100		1.78	0.000	0.000	0.000	0.000	01/27/2025	16:03

WORKLIST(Hardcopy Internal Chain)

6134432

WorkList Name : hex-1-27 WorkList ID : 187165 Department : Wet-Chemistry Date : 01-27-2025 08:21:47

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q1168-07	LOD-MDL-WATER-01-QT1-202	Water	Hexavalent Chromium	Cool 4 deg C	CHEM02	QA Of	01/23/2025	7196A
Q1168-08	LOQ-WATER-02-QT1-2025	Water	Hexavalent Chromium	Cool 4 deg C	CHEM02	QA Of	01/23/2025	7196A
Q1194-08	EB	Water	Hexavalent Chromium	Ammonium sulfate buffer	PORT06	N41	01/25/2025	7196A

Date/Time 01/27/2025 14:10
Raw Sample Received by: RM CWG
Raw Sample Relinquished by: RM CWG

Date/Time 01/27/2025 15:00
Raw Sample Received by: RM CWG
Raw Sample Relinquished by: RM CWG

Analytical Summary Report

Analysis Method: 7196A

ANALYST: rubina

Parameter: ~~Hexavalent Chromium~~

SUPERVISOR REVIEW BY: Iwona

Run Number: LB134452

pH Meter ID: WC pH Meter-1

Reagent/Standard	Lot/Log #
hexavalent chromium color reagent	WP111659
5N sulfuric acid	WP110380
HNO3 Hex-Chrome, 5M	WP110381
HEX LOD STD, 0.005PPM	WP111657
Hexchrome Cleaning Solution	WP111249
Hex LOQ Std, 0.01PPM	WP111658

Intercept: 0.0009

Slope: 0.7666

Regression: 0.999997

Seq	Lab ID	True Value (mg/l)	DF	Initial Vol (ml)	Final Vol (ml)	pH HNO3	pH H2SO4	Absorb.at 540nm		Absorbance Difference	Result (mg/L)	%D	Anal Date	Anal Time
								Backgrnd	Color					
1	CAL1	0	1	100	100	7.28	1.79	0.000	0.000	0.000	-0.00		01/28/2025	09:30
2	CAL2	0.01	1	100	100	7.40	1.90	0.000	0.009	0.009	0.010	0	01/28/2025	09:31
3	CAL3	0.025	1	100	100	7.36	1.84	0.000	0.020	0.020	0.024	-4	01/28/2025	09:32
4	CAL4	0.05	1	100	100	7.36	1.86	0.000	0.040	0.040	0.051	2	01/28/2025	09:33
5	CAL5	0.1	1	100	100	7.38	1.87	0.000	0.078	0.078	0.100	0	01/28/2025	09:34
6	CAL6	0.5	1	100	100	7.39	1.89	0.000	0.383	0.383	0.498	-0.4	01/28/2025	09:35
7	CAL7	1	1	100	100	7.38	1.86	0.000	0.768	0.768	1.000	0	01/28/2025	09:36

Analytical Summary Report

Analysis Method: 7196A

ANALYST:rubina

Parameter: Hexavalent Chromium

SUPERVISOR REVIEW BY:Iwona

Run Number: LB134452

pH Meter ID:WC pH Meter-1

Seq	Lab ID	True Value	DF	Initial Vol (ml/gm)	Final Vol (ml)	pH HN03	pH H2SO4	Absorb.at540nm		Absorbance Difference	Intermediate Result (mg/L)	Anal Date	Anal Time
								Backgrnd	Color				
1	ICV	0.5	1	100	100	7.43	1.94	0.000	0.386	0.386	0.502	01/28/2025	09:37
2	ICB		1	100	100	7.25	1.76	0.000	0.001	0.001	0.000	01/28/2025	09:38
3	CCV1	0.5	1	100	100	7.46	1.95	0.000	0.383	0.383	0.498	01/28/2025	09:39
4	CCB1		1	100	100	7.27	1.78	0.000	0.001	0.001	0.000	01/28/2025	09:40
5	RL Check	0.01	1	100	100	7.41	1.92	0.000	0.010	0.010	0.012	01/28/2025	09:41
6	PB166262BL		1	2.50	100	7.27	1.74	0.000	0.000	0.000	-0.001	01/28/2025	09:42
7	PB166262BS	20	1	2.50	100	7.44	1.94	0.000	0.385	0.385	0.501	01/28/2025	09:43
8	Q1168-01		1	2.50	100	7.52	2.00	0.000	0.006	0.006	0.007	01/28/2025	09:44
9	Q1168-02		1	2.50	100	7.50	2.00	0.000	0.010	0.010	0.012	01/28/2025	09:45
10	Q1169-01		1	2.57	100	7.60	2.10	0.007	0.008	0.001	0.000	01/28/2025	09:46
11	Q1169-03		1	2.54	100	7.63	2.18	0.009	0.010	0.001	0.000	01/28/2025	09:47
12	Q1169-05		1	2.52	100	7.52	2.20	0.005	0.005	0.000	-0.001	01/28/2025	09:48
13	Q1194-01		1	2.52	100	7.58	2.18	0.008	0.009	0.001	0.000	01/28/2025	09:49
14	Q1194-02		1	2.57	100	7.60	2.10	0.038	0.038	0.000	-0.001	01/28/2025	09:50
15	Q1194-03		1	2.54	100	7.57	2.06	0.003	0.004	0.001	0.000	01/28/2025	09:51
16	CCV2	0.5	1	100	100	7.43	1.93	0.000	0.385	0.385	0.501	01/28/2025	09:52
17	CCB2		1	100	100	7.29	1.80	0.000	0.000	0.000	-0.001	01/28/2025	09:53
18	Q1194-03DU		1	2.53	100	7.55	2.07	0.003	0.004	0.001	0.000	01/28/2025	09:54
19	Q1194-03MS	40	2	2.54	100	7.56	2.08	0.000	0.342	0.342	0.445	01/28/2025	09:55
20	Q1194-03MS	1284	40	2.54	100	7.54	2.06	0.000	0.609	0.609	0.793	01/28/2025	09:56
21	Q1194-03MS	40	2	2.56	100	7.60	2.10	0.000	0.386	0.386	0.502	01/28/2025	09:57
22	Q1194-04		1	2.56	100	7.66	2.10	0.012	0.012	0.000	-0.001	01/28/2025	09:58
23	CCV3	0.5	1	100	100	7.42	1.95	0.000	0.386	0.386	0.502	01/28/2025	09:59
24	CCB3		1	100	100	7.26	1.77	0.000	0.001	0.001	0.000	01/28/2025	10:00

SOP ID : M3060A,7196A-Hex.Chromium-26

SDG No : N/A

Matrix : SOIL

Pipette ID : WC

Balance ID : WC SC-7

Hood ID : HOOD#3

Block ID : WC S-2, WC S-1

Welgh By : RM

Start Digest Date: 01/27/2025 **Time :** 14:25 **Temp :** 90 °C

End Digest Date: 01/27/2025 **Time :** 15:25 **Temp :** 95 °C

if batch 01/27/2025 15:40 90°C RM
01/27/2025 16:40 95°C RM

Digestion tube ID : M6054

Filter paper ID : 400213

pH Meter ID : WC pH meter-1

Block Thermometer ID : WC-Block#1

Prep Technician Signature: RM

Supervisor Signature: 12

Standard Name	MLS USED	STD REF. # FROM LOG
PRE-DIGESTION SPIKE	2.0ML	WP111315
INSOLUBLE SPIKE	0.02GM	W2202
POST-DIGESTION SPIKE	2.0ML	WP111315
LCSS	1.0ML	WP111316
PBS003	50.0ML	W3112

Chemical Used	ML/SAMPLE USED	Lot Number
MAGNESIUM CHLORIDE	0.4GM	W3152
PHOSPHATE BUFFER	0.5ML	WP110498
HEX. DIGESTION SOLN.	50.0ML	WP111384
5M HNO3	5-7ML	WP110381
5N H2SO4	1-3ML	WP110380
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	Vol(ml)	Comment
CAL1	CAL1	2.5ML	W3112
CAL2	CAL2	0.2ML	WP111648
CAL3	CAL3	0.5ML	WP111648
CAL4	CAL4	1ML	WP111648
CAL5	CAL5	0.2ML	WP111315
CAL6	CAL6	1ML	WP111315
CAL7	CAL7	2.0ML	WP111315
ICV	ICV	1ML	WP111316
ICB	ICB	2.5ML	W3112
CCV	CCV	1ML	WP111315
CCB	CCB	2.5ML	W3112

Extraction Conformance/Non-Conformance Comments:

LOD WP111657,LOQ WP111658

01/27/2025 RM

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
	Preparation Group	Analysis Group

Lab Sample ID	Client Sample ID	Initial Weight (g)	Final Vol (ml)	pH	Sulfide	Oxidizing	Nitrate/ Nitrite	Comment	Prep Pos
PB166262BL	PBS262	2.50	100	N/A	N/A	N/A	N/A	N/A	N/A
PB166262BS	LCS262	2.50	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1168-01	LOD-MDL-SOIL-01-QT1-2025	2.50	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1168-02	LOQ-SOIL-02-QT1-2025	2.50	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1169-01	ARS20-0006	2.57	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1169-03	REGULATOR-BUILDING-GRAVEL	2.54	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1169-05	SPIILL-SITE	2.52	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1194-01	B-110-SB01	2.52	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1194-02	B-110-SB02	2.57	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1194-03	B-113-SB01	2.54	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1194-03DUP	B-113-SB01DUP	2.53	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1194-03MSPre	B-113-SB01MSPRE	2.54	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1194-03MS2Ins	B-113-SB01MS2INS	2.54	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1194-03MS3Post	B-113-SB01MS3POST	2.56	100	N/A	N/A	N/A	N/A	N/A	N/A
Q1194-04	B-113-SB02	2.56	100	N/A	N/A	N/A	N/A	N/A	N/A

WORKLIST(Hardcopy Internal Chain)

WorkList Name : HEX SOIL

WorkList ID : 187180

Department : Distillation

Date : 01-27-2025 10:03:10

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q1168-01	LOD-MDL-SOIL-01-QT1-2025	Solid	Hexavalent Chromium	Cool 4 deg C	CHEM02	QA Of	01/23/2025	7196A
Q1168-02	LOQ-SOIL-02-QT1-2025	Solid	Hexavalent Chromium	Cool 4 deg C	CHEM02	QA Of	01/23/2025	7196A
Q1169-01	ARS20-0006	Solid	Hexavalent Chromium	Cool 4 deg C	PSEG03	N51	01/23/2025	7196A
Q1169-03	REGULATOR-BUILDING-GRAV	Solid	Hexavalent Chromium	Cool 4 deg C	PSEG03	N51	01/23/2025	7196A
Q1169-05	SPILL-SITE	Solid	Hexavalent Chromium	Cool 4 deg C	PSEG03	N51	01/23/2025	7196A
Q1194-01	B-110-SB01	Solid	Hexavalent Chromium	Cool 4 deg C	PORT06	N41	01/25/2025	7196A
Q1194-02	B-110-SB02	Solid	Hexavalent Chromium	Cool 4 deg C	PORT06	N41	01/25/2025	7196A
Q1194-03	B-113-SB01	Solid	Hexavalent Chromium	Cool 4 deg C	PORT06	N41	01/25/2025	7196A
Q1194-04	B-113-SB02	Solid	Hexavalent Chromium	Cool 4 deg C	PORT06	N41	01/25/2025	7196A

Date/Time 01/27/2025 13:50
 Raw Sample Received by: R17 CWC
 Raw Sample Relinquished by: R17 CWC

Date/Time 01/27/2025 16:00
 Raw Sample Received by: R17 CWC
 Raw Sample Relinquished by: R17 CWC

Instrument ID: SPECTROPHOTOMETER-1

Daily Analysis Runlog For Sequence/QC Batch ID # LB134432

Review By	rubina	Review On	1/27/2025 4:57:24 PM
Supervise By	Iwona	Supervise On	1/27/2025 4:57:48 PM
SubDirectory	LB134432	Test	Hexavalent Chromium
STD. NAME	STD REF.#		
ICAL Standard	N/A		
ICV Standard	N/A		
CCV Standard	N/A		
ICSA Standard	N/A		
CRI Standard	N/A		
LCS Standard	N/A		
Chk Standard	WP111653,WP111652,WP111650,WP111649,WP111659,WP110380,WP111657,WP111658,WP111651,WP111656,WI		

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	CAL1	CAL1	CAL	01/27/25 15:45			OK
2	CAL2	CAL2	CAL	01/27/25 15:46			OK
3	CAL3	CAL3	CAL	01/27/25 15:47			OK
4	CAL4	CAL4	CAL	01/27/25 15:48			OK
5	CAL5	CAL5	CAL	01/27/25 15:49			OK
6	CAL6	CAL6	CAL	01/27/25 15:50			OK
7	CAL7	CAL7	CAL	01/27/25 15:51			OK
8	ICV	ICV	ICV	01/27/25 15:52			OK
9	ICB	ICB	ICB	01/27/25 15:53			OK
10	CCV1	CCV1	CCV	01/27/25 15:54			OK
11	CCB1	CCB1	CCB	01/27/25 15:55			OK
12	RL Check	RL Check	SAM	01/27/25 15:56			OK
13	LB134432BL	LB134432BL	MB	01/27/25 15:57			OK
14	LB134432BS	LB134432BS	LCS	01/27/25 15:58			OK
15	Q1168-07	LOD-MDL-WATER-01	SAM	01/27/25 15:59			OK
16	Q1168-08	LOQ-WATER-02-QT1	SAM	01/27/25 16:00			OK
17	Q1194-08	EB	SAM	01/27/25 16:01			OK
18	CCV2	CCV2	CCV	01/27/25 16:02			OK

Instrument ID: SPECTROPHOTOMETER-1

Daily Analysis Runlog For Sequence/QC Batch ID # LB134432

Review By	rubina	Review On	1/27/2025 4:57:24 PM
Supervise By	Iwona	Supervise On	1/27/2025 4:57:48 PM
SubDirectory	LB134432	Test	Hexavalent Chromium
STD. NAME	STD REF.#		
ICAL Standard	N/A		
ICV Standard	N/A		
CCV Standard	N/A		
ICSA Standard	N/A		
CRI Standard	N/A		
LCS Standard	N/A		
Chk Standard	WP111653,WP111652,WP111650,WP111649,WP111659,WP110380,WP111657,WP111658,WP111651,WP111656,WI		

19	CCB2	CCB2	CCB	01/27/25 16:03			OK
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Instrument ID: SPECTROPHOTOMETER-1

Daily Analysis Runlog For Sequence/QC Batch ID # LB134452

Review By	rubina	Review On	1/28/2025 12:03:31 PM
Supervise By	Iwona	Supervise On	1/28/2025 12:10:07 PM
SubDirectory	LB134452	Test	Hexavalent Chromium
STD. NAME	STD REF.#		
ICAL Standard	N/A		
ICV Standard	N/A		
CCV Standard	N/A		
ICSA Standard	N/A		
CRI Standard	N/A		
LCS Standard	N/A		
Chk Standard	WP111659,WP110380,WP110381,WP111657,WP111249,WP111658		

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	CAL1	CAL1	CAL	01/28/25 09:30			OK
2	CAL2	CAL2	CAL	01/28/25 09:31			OK
3	CAL3	CAL3	CAL	01/28/25 09:32			OK
4	CAL4	CAL4	CAL	01/28/25 09:33			OK
5	CAL5	CAL5	CAL	01/28/25 09:34			OK
6	CAL6	CAL6	CAL	01/28/25 09:35			OK
7	CAL7	CAL7	CAL	01/28/25 09:36			OK
8	ICV	ICV	ICV	01/28/25 09:37			OK
9	ICB	ICB	ICB	01/28/25 09:38			OK
10	CCV1	CCV1	CCV	01/28/25 09:39			OK
11	CCB1	CCB1	CCB	01/28/25 09:40			OK
12	RL Check	RL Check	SAM	01/28/25 09:41			OK
13	PB166262BL	PB166262BL	MB	01/28/25 09:42			OK
14	PB166262BS	PB166262BS	LCS	01/28/25 09:43			OK
15	Q1168-01	LOD-MDL-SOIL-01-Q	SAM	01/28/25 09:44			OK
16	Q1168-02	LOQ-SOIL-02-QT1-20	SAM	01/28/25 09:45			OK
17	Q1169-01	ARS20-0006	SAM	01/28/25 09:46			OK
18	Q1169-03	REGULATOR-BUILD	SAM	01/28/25 09:47			OK

Instrument ID: SPECTROPHOTOMETER-1

Daily Analysis Runlog For Sequence/QC Batch ID # LB134452

Review By	rubina	Review On	1/28/2025 12:03:31 PM
Supervise By	Iwona	Supervise On	1/28/2025 12:10:07 PM
SubDirectory	LB134452	Test	Hexavalent Chromium
STD. NAME	STD REF.#		
ICAL Standard	N/A		
ICV Standard	N/A		
CCV Standard	N/A		
ICSA Standard	N/A		
CRI Standard	N/A		
LCS Standard	N/A		
Chk Standard	WP111659,WP110380,WP110381,WP111657,WP111249,WP111658		

19	Q1169-05	SPILL-SITE	SAM	01/28/25 09:48			OK
20	Q1194-01	B-110-SB01	SAM	01/28/25 09:49			OK
21	Q1194-02	B-110-SB02	SAM	01/28/25 09:50			OK
22	Q1194-03	B-113-SB01	SAM	01/28/25 09:51			OK
23	CCV2	CCV2	CCV	01/28/25 09:52			OK
24	CCB2	CCB2	CCB	01/28/25 09:53			OK
25	Q1194-03DUP	B-113-SB01DUP	DUP	01/28/25 09:54			OK
26	Q1194-03MSPre	B-113-SB01MS	MS	01/28/25 09:55			OK
27	Q1194-03MS2Ins	B-113-SB01MS	MS	01/28/25 09:56			OK
28	Q1194-03MS3Post	B-113-SB01MS	MS	01/28/25 09:57			OK
29	Q1194-04	B-113-SB02	SAM	01/28/25 09:58			OK
30	CCV3	CCV3	CCV	01/28/25 09:59			OK
31	CCB3	CCB3	CCB	01/28/25 10:00			OK

Prep Standard - Chemical Standard Summary

Order ID : Q1194
Test : Hexavalent Chromium,Percent Solids,trivalent Chromium

Prepbatch ID : PB166262,
Sequence ID/Qc Batch ID: LB134432, LB134452, LB134637, LB134642,

Standard ID :
WP110380, WP110381, WP110498, WP111249, WP111315, WP111316, WP111384, WP111648, WP111649, WP111650, WP111651, WP111652, WP111653, WP111654, WP111655, WP111656, WP111657, WP111658, WP111659,

Chemical ID :
E3854, M5673, M6096, M6121, M6126, W2202, W2511, W2651, W2652, W2708, W2979, W3112, W3113, W3152, W3163,

Wet Chemistry STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
126	5N sulfuric acid	WP110380	10/24/2024	04/24/2025	Rubina Mughal	None	None	Iwona Zarych
								10/24/2024

FROM 140.00000ml of M5673 + 860.00000ml of W3112 = Final Quantity: 1.000 L

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1836	HNO3 Hex-Chrome, 5M	WP110381	10/24/2024	04/24/2025	Rubina Mughal	None	None	Iwona Zarych
								10/24/2024

FROM 320.00000ml of M6096 + 680.00000ml of W3112 = Final Quantity: 1000.000 ml



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
190	HEX CHROME PHOSPHATE BUFFER	WP110498	10/31/2024	04/29/2025	Rubina Mughal	WETCHEM_SCALE_5 (WCS-5)	None	Iwona Zarych 10/31/2024
<u>FROM</u> 0.84500L of W3112 + 68.04000gram of W2708 + 87.09000gram of W2511 = Final Quantity: 1.000 L								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3354	Hexchrome Cleaning Solution	WP111249	12/30/2024	05/13/2025	Rubina Mughal	None	None	Iwona Zarych 01/02/2025
<u>FROM</u> 182.00000ml of M6121 + 727.00000ml of W3112 + 91.00000ml of M6126 = Final Quantity: 1000.000 ml								



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1993	HEXAVALENTCHROMIUM STOCK STD 1, 50PPM	WP111315	01/09/2025	07/09/2025	Rubina Mughal	WETCHEM_S CALE_5 (WC SC-5)	None	Iwona Zarych 01/09/2025
<u>FROM</u> 0.14140gram of W2651 + 1000.00000ml of W3112 = Final Quantity: 1000.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1994	HEXAVALENTCHROMIUM STOCK STD 2, 50PPM	WP111316	01/09/2025	07/09/2025	Rubina Mughal	WETCHEM_S CALE_5 (WC SC-5)	None	Iwona Zarych 01/09/2025
<u>FROM</u> 0.14140gram of W2652 + 1000.00000ml of W3112 = Final Quantity: 1000.000 ml								



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
148	hexchrome digestion fluid	WP111384	01/13/2025	02/13/2025	Rubina Mughal	WETCHEM_S CALE_8 (WC SC-7)	None	Iwona Zarych 01/13/2025
<u>FROM</u> 120.00000gram of W3163 + 4.00000L of W3112 + 80.00000gram of W3113 = Final Quantity: 4000.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1103	HEX CHROME INTERMEDIATE STD SOURCE 1 (5PPM)	WP111648	01/27/2025	01/28/2025	Rubina Mughal	None	WETCHEM_PIPETTE_3 (WC)	Iwona Zarych 01/28/2025
<u>FROM</u>	9.00000ml of W3112 + 1.00000ml of WP111315 = Final Quantity: 10.000 ml							

Wet Chemistry STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
110	calibration std. hexchrome 0 ppm	WP111649	01/27/2025	01/28/2025	Rubina Mughal	None	None	Iwona Zarych
								01/28/2025

FROM 100.00000ml of W3112 = Final Quantity: 100.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
109	calibration std. hexchrome 0.01 ppm	WP111650	01/27/2025	01/28/2025	Rubina Mughal	None	WETCHEM_FIPETTE_3 (WC)	Iwona Zarych
								01/28/2025

FROM 99.80000ml of W3112 + 0.20000ml of WP111648 = Final Quantity: 100.000 ml

Wet Chemistry STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3800	Calibration Std Hexachrome 0.025 ppm	WP111651	01/27/2025	01/28/2025	Rubina Mughal	None	WETCHEM_F IPETTE_3 (WC)	Iwona Zarych 01/28/2025
FROM 99.50000ml of W3112 + 0.50000ml of WP111648 = Final Quantity: 100.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
108	Calibration Std. hexchrome 0.05 ppm	WP111652	01/27/2025	01/28/2025	Rubina Mughal	None	WETCHEM_F IPETTE_3 (WC)	Iwona Zarych 01/28/2025
FROM 99.00000ml of W3112 + 1.00000ml of WP111648 = Final Quantity: 100.000 ml								

Wet Chemistry STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
107	Calibration Std. hexchrome 0.1 ppm	WP111653	01/27/2025	01/28/2025	Rubina Mughal	None	WETCHEM_F IPETTE_3 (WC)	Iwona Zarych 01/28/2025
FROM 99.80000ml of W3112 + 0.20000ml of WP111315 = Final Quantity: 100.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3808	Calibration and CCV std HexChrome 0.5PPM	WP111654	01/27/2025	01/28/2025	Rubina Mughal	None	WETCHEM_F IPETTE_3 (WC)	Iwona Zarych 01/28/2025
FROM 99.00000ml of W3112 + 1.00000ml of WP111315 = Final Quantity: 100.000 ml								



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3809	Calibration std HexChrome 1.0PPM	WP111655	01/27/2025	01/28/2025	Rubina Mughal	None	WETCHEM_PIPETTE_3 (WC)	Iwona Zarych 01/28/2025
<u>FROM</u> 98.00000ml of W3112 + 2.00000ml of WP111315 = Final Quantity: 100.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3804	Hexavalent Chromium ICV-LCS Std	WP111656	01/27/2025	01/28/2025	Rubina Mughal	None	WETCHEM_PIPETTE_3 (WC)	Iwona Zarych 01/28/2025
<u>FROM</u> 99.00000ml of W3112 + 1.00000ml of WP111316 = Final Quantity: 100.000 ml								



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1986	HEX LOD STD, 0.005PPM	WP111657	01/27/2025	01/28/2025	Rubina Mughal	None	WETCHEM_PIPETTE_3 (WC)	Iwona Zarych 01/28/2025
<u>FROM</u> 99.90000ml of W3112 + 0.10000ml of WP111648 = Final Quantity: 100.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3731	Hex LOQ Std, 0.01PPM	WP111658	01/27/2025	01/28/2025	Rubina Mughal	None	WETCHEM_PIPETTE_3 (WC)	Iwona Zarych 01/28/2025
<u>FROM</u> 99.80000ml of W3112 + 0.20000ml of WP111648 = Final Quantity: 100.000 ml								



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
114	hexavalent chromium color reagent	WP111659	01/27/2025	02/03/2025	Rubina Mughal	WETCHEM_SCALE_5 (WC SC-5)	None	Iwona Zarych 01/28/2025
<u>FROM</u>	0.25000gram of W2979 + 50.00000ml of E3854 = Final Quantity: 50.000 ml							

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9254-03 / Acetone, Ultra Resi (cs/4x4L)	1234	03/25/2025	10/30/2024 / Rajesh	10/22/2024 / Rajesh	E3854

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-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24D1062002	03/25/2029	10/22/2024 / Janvi	09/21/2024 / Janvi	M6096

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	06/03/2025	12/03/2024 / Janvi	11/12/2024 / Janvi	M6126

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	AA14125-36 / LEAD (II) CHROMATE, ACS, 500G	U19B018	01/23/2027	01/23/2017 / apatel	01/23/2017 / apatel	W2202

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	J3252-1 / POTAS PHOSPHATE, DIBASIC PWD, ACS, 500G	0000207436	04/29/2025	05/22/2019 / AMANDEEP	03/21/2019 / apatel	W2511

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	AA13450-36 / Potassium Dichromate, 500g(NEW)	T15F019	01/24/2030	01/24/2020 / apatel	01/24/2020 / apatel	W2651

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	P188-500 / Potassium Dichromate, 500g(new-2nd lot)	194664	01/24/2030	01/24/2020 / apatel	01/24/2020 / apatel	W2652

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	J3246-1 / POTAS PHOSPHATE, MONO, CRYST, ACS, 500G	99/2019-20	05/05/2025	05/05/2020 / apatel	05/05/2020 / apatel	W2708

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	31390 / 1,5-Diphenylcarbazine	MKCR6636	12/09/2027	12/09/2022 / lwona	12/09/2022 / lwona	W2979

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

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	PC19510-7 / Sodium Hydroxide Pellets 12 Kg	23B1556310	12/31/2025	07/08/2024 / lwona	07/08/2024 / lwona	W3113

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	01237-10KG / Megnasium Chloride Hexahydrate ACS 10KG	002126-2019-201	11/25/2029	11/25/2024 / lwona	11/25/2024 / lwona	W3152

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	EM-SX0395-3 / SODIUM CARBONATE ANHYDR 2.5KG	24E3156178	09/30/2027	12/10/2024 / lwona	12/10/2024 / lwona	W3163

Certificate of analysis

Product No. 14125
Product: Lead(II) chromate, ACS, 98%
Lot No.: U19B018

Test	Limits	Results
Assay	98.0 % min	99.3 %
Soluble matter	0.15 % max	< 0.02 %
Carbon compounds	0.01 % max	< 0.01 %

Traceable to NIST? Yes

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ThermoFisher
S C I E N T I F I C

Product No.: 13450
Product: Potassium dichromate, ACS, 99.0% min
Lot No.: T15F019

Test	Limits	Results
Appearance	Orange-red crystals	Orange-red crystals
Identification	To Pass	Passes
Purity	99.0 % min	99.67 %
Insoluble matter	0.005 % max	0.004 %
Loss on drying	0.05 % max	0.03 %
Chloride	0.001 % max	< 0.001 %
Sulfate	0.005 % max	< 0.005 %
Iron	0.001 % max	< 0.001 %
Calcium	0.003 % max	0.0012 %
Sodium	0.02 % max	0.0047 %

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Potassium Phosphate, Dibasic, Powder
BAKER ANALYZED® A.C.S. Reagent

(dipotassium hydrogen phosphate)



Material No.: 3252-01
Batch No.: 0000207436
Manufactured Date: 2018/05/01
Retest Date: 2025/04/29
Revision No: 1

Certificate of Analysis

Meets ACS Reagent Chemical Requirements,

Test	Specification	Result
Assay (K ₂ HPO ₄) (by acidimetry)	>= 98.0 %	99.2
Insoluble Matter	<= 0.01 %	< 0.01
Loss on Drying at 105°C	<= 1.0 %	< 1.0
pH of 5% Solution at 25°C	8.5 – 9.6	9.1
Chloride (Cl)	<= 0.003 %	< 0.003
Fluoride (F)	<= 0.001 %	< 0.001
Nitrogen Compounds (as N)	<= 0.001 %	< 0.001
Sulfate (SO ₄)	<= 0.005 %	< 0.005
Trace Impurities – Iron (Fe)	<= 0.001 %	< 0.001
Sodium (Na)	<= 0.05 %	< 0.05
Trace Impurities – Arsenic (As)	<= 1.000 ppm	< 1.000
Trace Impurities – ACS – Heavy Metals (as Pb)	<= 5 ppm	< 5
Trace Impurities – Lead (Pb)	<= 5.000 ppm	< 5.000
Color (APHA), For Information Only		5

For Laboratory, Research or Manufacturing Use
Meets Reagent Specifications for testing USP/NF monographs

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



Phillipsburg, NJ 9001:2015, FSC22000
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

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

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

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

Catalog Number	P188	Quality Test / Release Date	08/12/2019
Lot Number	194664		
Description	POTASSIUM DICHROMATE, A.C.S.		
Country of Origin	United States	Suggested Retest Date	Aug/2024
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.		
Chemical Comment			

N/A			
Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	Fine, orange-red crystals
ASSAY	%	>= 99	99.2
CALCIUM	%	<= 0.003	<0.003
CHLORIDE	%	<= 0.001	<0.001
LOSS ON DRYING @ 105 C	%	<= 0.05	<0.05
SULFATE (SO4)	%	<= 0.005	<0.005
INSOLUBLE MATTER	%	<= 0.005	0.003
IRON (Fe)	%	<= 0.001	<0.001
SODIUM (Na)	%	<= 0.02	<0.02
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST

Jerusa Bailey-Wyche

Quality Assurance Specialist - Certificate of Analysis 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.

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

 **avantor**™



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

Certificate of Analysis

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

>>> Continued on page 2 >>>

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

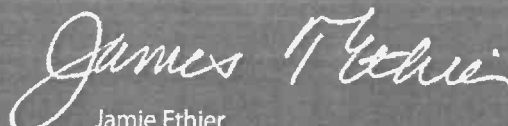


Material No.: 9673-33
Batch No.: 23D2462010

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

For Laboratory, Research, or Manufacturing Use

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


Jamie Ethier
Vice President Global Quality

Nitric Acid 69%
CMOS

avantor™



M6096
M6097
M6098
M6099
M6100

Mutdig
9/21/24

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



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



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

Test	Specification	Result
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For Microelectronic Use
Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC


Jamie Croak
Director Quality Operations, Bioscience Production

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

avantor™



R → 16/13/24
Met dig

M 6121

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

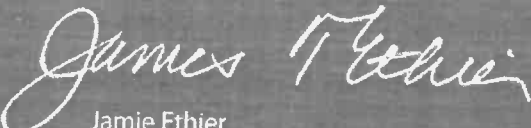
Product Information (not specifications):

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



R → 11/12/24

M6126

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**TM



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

Test	Specification	Result
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For Microelectronic Use

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



Jamie Croak
Director Quality Operations, Bioscience Production



CHAMPA PURIE-CHEM INDUSTRIES

ISO 9001 : 2015 CERTIFIED COMPANY

Importers Exporters Manufacturers & Marketing of Fine Chemicals & Pharmaceuticals

262-263, G.I.D.C. Estate,
Makarpura,
Vadodara - 390 010.
Gujarat - INDIA.

Phone : (F) +91-265-2633314 / 2643723
Fax : (F) +91-265-2638036
E-mail : info@cpcindia.com
Web : www.cpcindia.com

W2708 Received on 05/05/20 by AP

CERTIFICATE OF ANALYSIS

PRODUCT	: POTASSIUM PHOSPHATE MONOBASIC Anhy. - ACS	
CERTIFICATE NO	: 99/2019- 20	DATE 26-08-2019
Date of receipt of sample	: 22.08.2019	Quantity : 1000 KGS
Batch No. /Lot No	: 99/2019- 20	
Mfg. Date	: Aug-2019	
1. Characteristic	: A White powder	
2. Identification	: Positive	
	RESULT OBTAINED	LIMITS
3. Clarity and colour of solution	: 10% solution is clear and colourless	
4. Assay (on dry basis)	: 99.27%	Min.99.00%
5. PH (5% solution)	: 4.4	4.1-4.5
6. Loss on Drying	: 0.1%	Max 0.2%
7. Heavy Metals	: 0.0003%	Max.0.001%
8. Iron	: 0.001%	Max 0.002%
9. Sulphate	: 0.001%	Max. 0.003%
10. Chloride	: 0.0005%	Max.0.001%
11. Insoluble Matter	: 0.003%	Max. 0.01%
12. Sodium	: 0.004%	Max. 0.005%
The sample does comply with specification as per Above.		
Analysed by	<u>J.A. PATHAK</u>	Quality Control Department

W 2979

Rec: 12/09/22

exp. 12/09/27

Product Name:

1,5-Diphenylcarbazide - ACS reagent

Product Number:

259225

Batch Number:

MKCR6636

Brand:

SIAL

CAS Number:

140-22-7

MDL Number:

MFCD00003013

Formula:

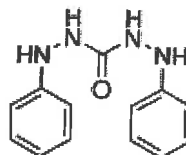
C₁₃H₁₄N₄O

Formula Weight:

242.28 g/mol

Quality Release Date:

02 JUN 2022



Certificate of Analysis

Test	Specification	Result
Appearance (Color)	Conforms to Requirements	Pink
Off-White to Pink, Light Purple or Tan		
Appearance (Form)	Powder or Chunks	Powder
Melting Point	173.0 - 176.0 °C	173.0 °C
Infrared Spectrum	Conforms to Structure	Conforms
Residue on ignition (Ash)	≤ 0.05 %	0.01 %
15 minutes, 800 Degrees Celsius		
Solubility	Pass	Pass
Sensitivity Test	Pass	Pass
Meets ACS Requirements	Current ACS Specification	Conforms



Larry Coers, Director
Quality Control
Milwaukee, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.





Certificate of Analysis



Sodium Hydroxide (Pellets)

Material: 0583
Grade: ACS GRADE
Batch Number: 23B1556310

Chemical Formula: NaOH
Molecular Weight: 40
CAS #: 1310-73-2
Appearance:

Manufacture Date: 12/14/2022
Expiration Date: 12/31/2025

Storage: Room Temperature

Pellets

TEST	SPECIFICATION	ANALYSIS	DISPOSITION
Calcium	<= 0.005 %	<0.005 %	PASS
Chloride	<= 0.005 %	0.002 %	PASS
Heavy Metals	<= 0.002 %	<0.002 %	PASS
Iron	<= 0.001 %	<0.001 %	PASS
Magnesium	<= 0.002 %	<0.002 %	PASS
Mercury	<= 0.1 ppm	<0.1 ppm	PASS
Nickel	<= 0.001 %	<0.001 %	PASS
Nitrogen Compounds	<= 0.001 %	<0.001 %	PASS
Phosphate	<= 0.001 %	<0.001 %	PASS
Potassium	<= 0.02 %	<0.02 %	PASS
Purity	>= 97.0 %	99.2 %	PASS
Sodium Carbonate	<= 1.0 %	0.5 %	PASS
Sulfate	<= 0.003 %	<0.003 %	PASS

Internal ID #: 710

Signature

We certify that this batch conforms to the specifications listed.

This document has been electronically produced and is valid without a signature.

Leona Edwardson, Quality Control Sr. Manager - Solon
VWR Chemicals, LLC.
28600 Fountain Parkway, Solon OH 44139 USA

Additional Information

Analysis may have been rounded to significant digits in specification limits.

Product meets analytical specifications of the grades listed.



Sodium Hydroxide (Pellets)

Material: 0583
Grade: ACS GRADE
Batch Number: 23B1556310

Chemical Formula: NaOH
Molecular Weight: 40
CAS #: 1310-73-2
Appearance:

Manufacture Date: 12/14/2022
Expiration Date: 12/31/2025

Storage: Room Temperature

Pellets

Spec Set: 0583ACS

Internal ID #: 710

Signature

We certify that this batch conforms to the specifications listed.

This document has been electronically produced and is valid without a signature.

Leona Edwardson, Quality Control Sr. Manager - Solon
VWR Chemicals, LLC.
28600 Fountain Parkway, Solon OH 44139 USA

Additional Information

Analysis may have been rounded to significant digits in specification limits.

Product meets analytical specifications of the grades listed.

Chem-Impex International, Inc.

Tel: (630) 766-2112**E-mail:** sales@chemimpex.com**Shipping and Correspondence:**

935 Dillon Drive

Wood Dale, IL 60191

Fax: (630) 766-2218**Web site:** www.chemimpex.com**Manufacturing site:**

825 Dillon Drive

Wood Dale, IL 60191

Certificate of Analysis

Catalogue Number	01237
Lot Number	002126-2019-201
Product	Magnesium chloride hexahydrate

Magnesium chloride•6H₂O

CAS Number	7791-18-6
Molecular Formula	MgCl ₂ •6H ₂ O
Molecular Weight	203.3

Appearance	White crystals
Solubility	167 g in 100 mL water
Melting Point	~ 115 °C
Heavy Metals	4.393 ppm
Anion	Nitrate (NO ₃) : < 0.001% Phosphate (PO ₄) : < 5 ppm Sulfate (SO ₄) : < 0.002%
Cation	Ammonium (NH ₄) : < 0.002% Barium (Ba) : 0.005% Calcium (Ca) : 0.01% Iron (Fe) : 4.5 ppm Manganese (Mn) : 0.624 ppm Potassium (K) : 0.004% Sodium (Na) : 0.000003% Strontium (Sr) : 0.005%
Insoluble material	0.0021%
Assay by titration	100.83%
Grade	ACS reagent
Storage	Store at RT

Certificate of Analysis

Catalog Number: 01237

Lot Number: 002126-2019-201

Remarks

See material safety data sheet for additional information

For laboratory use only

The foregoing is a copy of the Certificate of Analysis as provided by our supplier

A handwritten signature in black ink, appearing to read 'Bala Kumar', with a stylized flourish at the end.

Bala Kumar
Quality Control Manager



W3163 Rec. on 12/10/24 by IZ

Certificate of Analysis



Material BDH9284-2.5KG
Material Description BDH SODIUM CARB ANHYD ACS 2.5KG
Grade U S P REAGENT (ACS GRADE)

Batch 24E3156178
Reassay Date 09/30/2027
CAS Number 497-19-8
Molecular Formula Na₂CO₃
Molecular Mass 105.99

Date of Manufacture 09/01/2023
Storage Room Temperature
Material is hygroscopic. Protect from Moisture.
Additional Product Description:

Characteristics	Specifications	Measured Values
Appearance	Fine white granular powder	Fine white granular powder
Calcium	<= 0.03 %	0.003 %
Chloride	<= 0.001 %	0.0003 %
Heavy Metals (as Pb)	<= 0.0005 %	0.0001 %
Insolubles	<= 0.01 %	0.001 %
Iron	<= 0.0005 %	0.0001 %
Loss on Heating	<= 1.0 %	0.03 %
Magnesium	<= 0.005 %	0.001 %
Phosphate	<= 0.001 %	0.001 %
Potassium	<= 0.005 %	0.003 %
Purity	>= 99.5 %	100.0 %
Silica	<= 0.005 %	0.001 %
Sulfur Compounds	<= 0.003 %	0.002 %
Extra Description:	Meets Reagent Specifications for testing USP/NF monographs	

Internal ID #: 710

Signature	Additional Information
We certify that this batch conforms to the specifications listed above. This document has been electronically produced and is valid without a signature. Leona Edwardson, Quality Control Sr. Manager - Solon VWR Chemicals, LLC. 28600 Fountain Parkway, Solon OH 44139 USA	Analysis may have been rounded to significant digits in specification limits Product meets analytical specifications of the grades listed.



PERCENT SOLID

Supervisor: Iwona
Analyst: jignesh
Date: 1/28/2025

OVENTEMP IN Celsius(°C): 107
Time IN: 16:30
In Date: 01/27/2025
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
OvenID: M OVEN#1

OVENTEMP OUT Celsius(°C): 103
Time OUT: 08:10
Out Date: 01/28/2025
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
BalanceID: M SC-4
Thermometer ID: % SOLID- OVEN

QC:LB134424

Lab ID	Client SampleID	Dish #	Dish Wt(g) (A)	Sample Wt(g)	Dish + Sample Wt(g) (B)	Dish+Dry Sample Wt(g) (C)	% Solid	Comments
Q1194-01	B-110-SB01	1	1.15	8.82	9.97	8.94	88.3	
Q1194-02	B-110-SB02	2	1.19	8.59	9.78	6.09	57.0	
Q1194-03	B-113-SB01	3	1.17	8.41	9.58	8.48	86.9	
Q1194-04	B-113-SB02	4	1.15	8.84	9.99	6.87	64.7	

$$\% \text{ Solid} = \frac{(C-A) * 100}{(B-A)}$$

WORKLIST(Hardcopy Internal Chain)

134424

WorkList Name : %1-012725

WorkList ID : 187156

Department : Wet-Chemistry

Date : 01-27-2025 07:59:22

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q1194-01	B-110-SB01	Solid	Percent Solids	Cool 4 deg C	PORT06	N41	01/25/2025	Chemtech -SO
Q1194-02	B-110-SB02	Solid	Percent Solids	Cool 4 deg C	PORT06	N41	01/25/2025	Chemtech -SO
Q1194-03	B-113-SB01	Solid	Percent Solids	Cool 4 deg C	PORT06	N41	01/25/2025	Chemtech -SO
Q1194-04	B-113-SB02	Solid	Percent Solids	Cool 4 deg C	PORT06	N41	01/25/2025	Chemtech -SO

Date/Time 01/27/25 15:00
 Raw Sample Received by: J8 WJC,
 Raw Sample Relinquished by: CFSM

Date/Time 01/27/25 17:00
 Raw Sample Received by: CFSM
 Raw Sample Relinquished by: CFSM



SHIPPING DOCUMENTS

CHEMTECH

CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 • Fax (908) 789-8922
www.chemtech.net

CHEMTECH PROJECT NO. Q1194
QUOTE NO. 2041522
COC Number 2041522

CLIENT INFORMATION

REPORT TO BE SENT TO:
COMPANY: Gannett Fleming
ADDRESS: 1010 Abrams Ave
CITY: Audubon STATE: PA ZIP: 19403
ATTENTION: _____
PHONE: _____ FAX: _____

CLIENT PROJECT INFORMATION

PROJECT NAME: Amtrak Replacement of SB
PROJECT NO.: 95000878 LOCATION: Kearny, NJ
PROJECT MANAGER: Joe Krupansky
e-mail: QAQC@bemsys.com
PHONE: 610-310-8342 FAX: _____

CLIENT BILLING INFORMATION

BILL TO: Chemtech PO#: _____
ADDRESS: 284 Sheffield St
CITY: Mountainside STATE: NJ ZIP: 07092
ATTENTION: Samantha Beasley PHONE: 908-728-3148

ANALYSIS

DATA TURNAROUND INFORMATION

FAX (RUSH) _____ DAYS*
HARDCOPY (DATA PACKAGE): 10 DAYS*
EDD: 10 DAYS*
*TO BE APPROVED BY CHEMTECH
STANDARD HARDCOPY TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

☐ Level 1 (Results Only) ☐ Level 4 (QC + Full Raw Data)
☐ Level 2 (Results + QC) ☐ NJ Reduced ☐ US EPA CLP
☐ Level 3 (Results + QC) ☐ NYS ASP A ☐ NYS ASP B
+ Raw Data ☐ Other _____
☐ EDD FORMAT BEM EDD

TCL VOCs+10
TCL PAH
TCL Metals
EPH
Cr(VI)
Cr(VI)

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE		SAMPLE COLLECTION		# OF BOTTLES	PRESERVATIVES									COMMENTS	
			COMP	GRAB	DATE	TIME		1	2	3	4	5	6	7	8	9	← Specify Preservatives A-HCl D-NaOH B-HNO3 E-ICE C-H2SO4 F-OTHER	
1.	B-110-SB01	S	X		1/25/25	11:33	7	X	X	X	X	X	X					
2.	B-110-SB02	S	X		1/25/25	13:58	7	X	X	X	X	X	X					
3.	B-113-SB01	S	X		1/25/25	11:52	7	X	X	X	X	X	X					
4.	B-113-SB02	S	X		1/25/25	14:44	7	X	X	X	X	X	X					
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER: 1. <u>Dylan C</u>	DATE/TIME: <u>1-25-25 16:22</u>	RECEIVED BY: <u>[Signature]</u>	1-27-25 0700	Conditions of bottles or coolers at receipt: ☐ COMPLIANT ☐ NON COMPLIANT ☐ COOLER TEMP <u>3.1°C</u>
RELINQUISHED BY SAMPLER: 2.	DATE/TIME:	RECEIVED BY:		Comments:
RELINQUISHED BY SAMPLER: 3.	DATE/TIME:	RECEIVED BY:		

Page ____ of ____

CLIENT: ☐ Hand Delivered ☐ Other _____
CHEMTECH: ☐ Picked Up ☐ Field Sampling

Shipment Complete
☐ YES ☐ NO



284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Laboratory Certification

Certified By	License No.
CAS EPA CLP Contract	68HERH20D0011
Connecticut	PH-0830
DOD ELAP (ANAB)	L2219
Maine	2024021
Maryland	296
New Hampshire	255424 Rev 1
New Jersey	20012
New York	11376
Pennsylvania	68-00548
Soil Permit	525-24-234-08441
Texas	T104704488

LOGIN REPORT/SAMPLE TRANSFER

Order ID : Q1194 PORT06

Order Date : 1/27/2025 9:35:00 AM

Project Mgr :

Client Name : Portal Partners Tri-Venture

Project Name : Amtrak Sawtooth Bridges 2

Report Type : NJ Reduced

Client-Contact : Joseph Krupansky

Receive DateTime : 1/27/2025 7:00:00 AM

EDD Type : EXCEL NJCLEANUP

Invoice Name : Portal Partners Tri-Venture

Purchase Order :

Hard Copy Date :

Invoice Contact : Joseph Krupansky

Date Signoff :

LAB ID	CLIENT ID	MATRIX	SAMPLE DATE	SAMPLE TIME	TEST	TEST GROUP	METHOD	FAX DATE	DUE DATES
Q1194-01	B-110-SB01	Solid	01/25/2025	11:33	VOC-TCLVOA-10		8260D		10 Bus. Days
Q1194-02	B-110-SB02	Solid	01/25/2025	13:58	VOC-TCLVOA-10		8260D		10 Bus. Days
Q1194-03	B-113-SB01	Solid	01/25/2025	11:52	VOC-TCLVOA-10		8260D		10 Bus. Days
Q1194-04	B-113-SB02	Solid	01/25/2025	14:44	VOC-TCLVOA-10		8260D		10 Bus. Days
Q1194-08	EB	Water	01/25/2025	00:00	VOC-TCLVOA-10		8260-Low		10 Bus. Days
Q1194-09	FB	Water	01/25/2025	00:00	VOC-TCLVOA-10		8260-Low		10 Bus. Days
Q1194-10	TB	Water	01/25/2025	00:00	VOC-TCLVOA-10		8260-Low		10 Bus. Days

LOGIN REPORT/SAMPLE TRANSFER

Order ID : Q1194	PORT06	Order Date : 1/27/2025 9:35:00 AM	Project Mgr :
Client Name : Portal Partners Tri-Venture		Project Name : Amtrak Sawtooth Bridges 2	Report Type : NJ Reduced
Client Contact : Joseph Krupansky		Receive DateTime : 1/27/2025 7:00:00 AM	EDD Type : EXCEL NJCLEANUP
Invoice Name : Portal Partners Tri-Venture		Purchase Order :	Hard Copy Date :
Invoice Contact : Joseph Krupansky			Date Signoff :

LAB ID	CLIENT ID	MATRIX	SAMPLE DATE	SAMPLE TIME	TEST	TEST GROUP	METHOD	FAX DATE	DUE DATES
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Relinquished By : 
Date / Time : 1/27/25 11:20

Received By : 
Date / Time : 01/27/25 11:20

Storage Area : VOA Refridgerator Room

*Ref #6
P22
Ref #5*