

FORM 1 - IN
INORGANIC ANALYSIS DATA SHEET

MX1008

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011
Lab Code: ACE Case No.: 51882 MA No. : SDG No.: MX1007
Matrix: SOIL Lab Sample ID: P4917-02
% Solids: 100 Date Received: 11/19/2024
Analytical Method: CN
Concentration Units ($\mu\text{g/L}$, mg/L , mg/kg dry weight, μg , or $\mu\text{g/cm}^2$): mg/kg

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
57-12-5	Cyanide	78	D	11/22/2024	1117

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

Comments:

MX1012

Lab Name:	Alliance Technical Group, LLC	Contract:	68HERH20D0011
Lab Code:	ACE	Case No.:	51882
		MA No. :	SDG No.: MX1007
Matrix:	Water	Lab Sample ID:	P4917-06
% Solids:		Date Received:	11/19/2024
Analytical Method:	CN		
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
57-12-5	Cyanide	340		11/22/2024	1125

Comments:

Test results

Aquakem 7.2AQ1

Page: 1

CHEMTECH CONSULTING GROUP INC
284 Sheffield Street, Mountainside, NJ 07092

11/22/2024 11:38

Reviewed by : NF

Instrument ID : Konelab

Test: CNEPA-NEW

Sample Id	Result	Dil. 1 +	Response	Errors
ICV001 ICV001	95.943	0.0	0.088	
ICB001 ICB001	0.451	0.0	0.002	
CCV001 CCV001	248.209	0.0	0.224	
CCB001 CCB001	-0.194	0.0	0.001	
PB165195BL PBS195	-0.430	0.0	0.001	
MDL-SOILQT4-2024-08	4.250	0.0	0.005	
P4917-02 MX1008	1571.214	0.0	1.411	Test limit high
P4917-02 MX1008	311.413	0.0	0.281	
PB165196BL PBW196	-1.112	0.0	0.001	
WATER-QT4-2024-08	4.154	0.0	0.005	
P4917-06 MX1012	343.151	0.0	0.309	
CCV002 CCV002	250.531	0.0	0.226	
CCB002 CCB002	-0.180	0.0	0.001	

N 13
Mean 217.492
SD 428.3808
CV% 196.96

P4776-04

NF 11-22-2024

P4776-02

Aquakem v. 7.2AQ1

Results from time period:

Fri Nov 22 09:55:11 2024

Fri Nov 22 11:25:30 2024

Sample Id	Sam/	Test short name	Test	Result	Result	Result date and time
S0.0	A	CNEPA-NEW	P	-0.5935	µg/l	11/22/2024 10:12:24
S5.0	A	CNEPA-NEW	P	4.4952	µg/l	11/22/2024 10:12:25
S10.0	A	CNEPA-NEW	P	8.5446	µg/l	11/22/2024 10:12:26
S100.0	A	CNEPA-NEW	P	100.108	µg/l	11/22/2024 10:12:27
S250.0	A	CNEPA-NEW	P	254.8663	µg/l	11/22/2024 10:12:28
S500.0	A	CNEPA-NEW	P	497.5794	µg/l	11/22/2024 10:12:29
ICV001 ICV001	S	CNEPA-NEW	P	95.9432	µg/l	11/22/2024 11:10:13
ICB001 ICB001	S	CNEPA-NEW	P	0.451	µg/l	11/22/2024 11:10:14
CCV001 CCV001	S	CNEPA-NEW	P	248.2085	µg/l	11/22/2024 11:10:16
CCB001 CCB001	S	CNEPA-NEW	P	-0.1945	µg/l	11/22/2024 11:10:18
PB165195BL PBS195	S	CNEPA-NEW	P	-0.4297	µg/l	11/22/2024 11:10:21
P4776-04 MDL-SOIL-QT4-2024-08	S	CNEPA-NEW	P	4.2501	µg/l	11/22/2024 11:10:22
P4917-02 MX1008	S	CNEPA-NEW	P	1571.214	µg/l	11/22/2024 11:17:46
P4917-02DLX5 MX1008	S	CNEPA-NEW	P	311.4133	µg/l	11/22/2024 11:17:51
PB165196BL PBW196	S	CNEPA-NEW	P	-1.1124	µg/l	11/22/2024 11:25:21
P4776-02 MDL-WATER-QT4-2024-08	S	CNEPA-NEW	P	4.1542	µg/l	11/22/2024 11:25:22
P4917-06 MX1012	S	CNEPA-NEW	P	343.1507	µg/l	11/22/2024 11:25:26
CCV002 CCV002	S	CNEPA-NEW	P	250.5307	µg/l	11/22/2024 11:25:27
CCB002 CCB002	S	CNEPA-NEW	P	-0.1802	µg/l	11/22/2024 11:25:29

Calibration results

Aquakem 7.2AQ1

Page: 1

CHEMTECH CONSULTING GROUP INC
284 Sheffield Street, Mountainside, NJ 07092

11/22/2024 10:20

Reviewed by : NF Instrument ID : Konelab

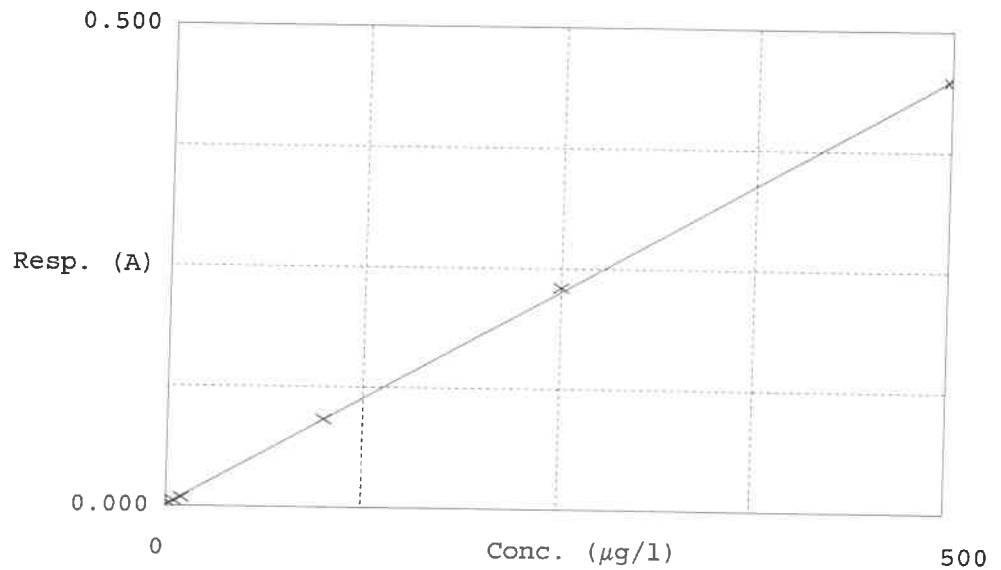
Test CNEPA-NEW

Accepted 11/22/2024 10:20

Factor slope 1115 0.000897 NF
Bias Intercept 0.002 11.25.2024

Coeff. of det. 0.999837

Errors



	Calibrator	Response	Calc. con.	Conc.	Re Errors	
1	0.0PPBCN <u>50.0</u>	0.001	-0.5935	0.0000		
2	5.0PPBCN <u>55.0</u>	0.006	4.4952	5.0000	-10.1	
3	10PPBCN <u>510.0</u>	0.009	8.5446	10.0000	-14.6	
4	100PPBCN <u>5100.0</u>	0.091	100.1080	100.0000	0.1	NF
5	250PPBCN <u>5250.0</u>	0.230	254.8663	250.0000	1.9	11.22.2024
6	500PPBCN <u>5500.0</u>	0.448	497.5794	500.0000	-0.5	

Prep Standard - Chemical Standard Summary

Order ID : P4917

Test : Cyanide

Prepbatch ID : PB165195,PB165196,

Sequence ID/Qc Batch ID: LB133577,

Standard ID :

WP108075,WP108076,WP108640,WP108688,WP109089,WP110103,WP110390,WP110391,WP110837,WP110838,W
P110839,WP110840,WP110841,WP110842,WP110843,WP110844,WP110845,WP110846,WP110847,

Chemical ID :

E3657,M5673,M5951,W2606,W2668,W2882,W3001,W3011,W3019,W3101,W3112,W3113,W3121,W3139,W3142,

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>
3214	Magnesium Chloride For Cyanide 2.5M(51%W/V)	WP108075	05/22/2024	10/24/2024	Rubina Mughal	WETCHEM_SCALE_5 (WC SC-5)	None	Iwona Zarych
								05/24/2024

FROM 500.00000ml of W2606 + 510.00000gram of W3001 = 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>
1714	Sulfuric Acid, 50% (v/v)	WP108076	05/22/2024	10/24/2024	Rubina Mughal	None	None	Iwona Zarych
								05/24/2024

FROM 1000.00000ml of M5673 + 1000.00000ml of W2606 = Final Quantity: 2000.000 ml



<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
11	Sodium hydroxide absorbing solution 0.25 N	WP108640	07/05/2024	01/05/2025	Rubina Mughal	WETCHEM_S CALE_4 (WC SC-4)	None	Iwona Zarych 07/08/2024
<u>FROM</u> 21.00000L of W3112 + 210.00000gram of E3657 = Final Quantity: 21.000 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>
1581	Sodium hydroxide solution, 1.25N	WP108688	07/11/2024	01/11/2025	Niha Farheen Shaik	WETCHEM_S CALE_5 (WC SC-5)	None	Iwona Zarych 07/11/2024
<u>FROM</u>	50.00000gram of W3113 + 950.00000ml 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>
2816	CN-EPA Pyridine-Burbituric Acid solution	WP109089	08/07/2024	12/27/2024	Rubina Mughal	WETCHEM_S CALE_5 (WC SC-5)	None	Iwona Zarych 08/07/2024
<u>FROM</u> 15.00000gram of W2882 + 15.00000ml of M5951 + 75.00000ml of W3019 + 895.00000ml 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>
539	CN BUFFER	WP110103	10/08/2024	04/08/2025	Rubina Mughal	WETCHEM_S CALE_5 (WC SC-5)	None	Iwona Zarych 10/08/2024
<u>FROM</u> 138.00000gram of W2668 + 862.00000ml 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>
3214	Magnesium Chloride For Cyanide 2.5M(51%W/V)	WP110390	10/24/2024	04/24/2025	Niha Farheen Shaik	WETCHEM_SCALE_5 (WC SC-5)	None	Iwona Zarych 10/24/2024
<u>FROM</u> 500.00000ml of W3112 + 510.00000gram of W3001 = 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>
1714	Sulfuric Acid, 50% (v/v)	WP110391	10/24/2024	04/24/2025	Niha Farheen Shaik	None	None	Iwona Zarych 10/24/2024
<u>FROM</u> 1000.00000ml of M5673 + 1000.00000ml of W3112 = Final Quantity: 2000.000 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>
1585	Cyanide Intermediate standard solution, 10PPM	WP110837	11/22/2024	11/23/2024	Niha Farheen Shaik	None	None	Iwona Zarych
								11/22/2024

FROM 1.00000ml of W3142 + 79.00000ml of W3112 + 20.00000ml of WP108688 = 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>
1586	Cyanide Cal Std, 500 PPB	WP110838	11/22/2024	11/23/2024	Niha Farheen Shaik	None	None	Iwona Zarych
								11/22/2024

FROM 5.00000ml of WP110837 + 95.00000ml of WP108640 = Final Quantity: 0.100 L

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>
1587	Cyanide Cal Std, 250 PPB	WP110839	11/22/2024	11/23/2024	Niha Farheen Shaik	None	None	Iwona Zarych
								11/22/2024

FROM 2.50000ml of WP110837 + 97.50000ml of WP108640 = Final Quantity: 0.100 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>
1588	Cyanide Cal Std, 100 PPB	WP110840	11/22/2024	11/23/2024	Niha Farheen Shaik	None	None	Iwona Zarych
								11/22/2024

FROM 1.00000ml of WP110837 + 99.00000ml of WP108640 = Final Quantity: 0.100 L

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>
1589	Cyanide Cal Std, 10 PPB	WP110841	11/22/2024	11/23/2024	Niha Farheen Shaik	None	None	Iwona Zarych 11/22/2024

FROM 4.00000ml of WP110839 + 96.00000ml of WP108640 = Final Quantity: 0.100 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>
1590	Cyanide Cal Std, 5 PPB	WP110842	11/22/2024	11/23/2024	Niha Farheen Shaik	None	None	Iwona Zarych 11/22/2024

FROM 2.00000ml of WP110839 + 98.00000ml of WP108640 = Final Quantity: 0.100 L

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>
1591	Cyanide blank std, 0 PPB	WP110843	11/22/2024	11/23/2024	Niha Farheen Shaik	None	None	Iwona Zarych 11/22/2024

FROM 100.00000ml of WP108640 = Final Quantity: 0.100 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>
1592	Cyanide CCV Std, 250 PPB	WP110844	11/22/2024	11/23/2024	Niha Farheen Shaik	None	None	Iwona Zarych 11/22/2024

FROM 2.50000ml of WP110837 + 97.50000ml of WP108640 = Final Quantity: 0.100 L

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>
1763	Cyanide ICV Std	WP110845	11/22/2024	11/23/2024	Niha Farheen Shaik	None	WETCHEM_FIPETTE_3 (WC)	Iwona Zarych 11/22/2024

FROM 0.50000ml of W3011 + 49.50000ml of WP108640 = Final Quantity: 50.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
3885	MDL std, 5ppb	WP110846	11/22/2024	11/23/2024	Niha Farheen Shaik	None	WETCHEM_FIPETTE_3 (WC)	Iwona Zarych 11/22/2024

FROM 2.00000ml of WP110839 + 98.00000ml of WP108640 = 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>
1582	Chloramine T solution, 0.014M	WP110847	11/22/2024	11/23/2024	Niha Farheen Shaik	WETCHEM_SCALE_5 (WCS-5)	None	Iwona Zarych 11/25/2024
<u>FROM</u>	0.08000gram of W3139 + 20.00000ml of W3112 = Final Quantity: 20.000 ml							

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	PC19510-5 / Sodium Hydroxide Pellets 2.5 Kg, Pk of 4	23B1556310	12/31/2025	12/04/2023 / Rajesh	12/01/2023 / Rajesh	E3657

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-9530-33 / Hydrochloric Acid, Instra-Analyzed (cs/6x2.5L)	22G2862015	12/27/2024	07/04/2024 / Jaswal	06/23/2024 / Al-Terek	M5951

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	DIW / DI Water	Daily Lab-Certified	10/24/2024	10/24/2019 / apatel	10/24/2019 / apatel	W2606

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	J3818-5 / SODIUM PHOSPHATE, MONOBAS/HYD, CRYST, ACS, 2.5 KG	0000225799	12/03/2025	04/05/2021 / Alexander	02/10/2020 / apatel	W2668

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	EM-BX0035-3 / Barbituric Acid, 100 gms	1.00132.0100	04/30/2025	12/07/2021 / jaswal	11/30/2021 / apatel	W2882

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	01237-10KG / Magnesium Chloride Hexahydrate ACS 10KG	002251-03319	06/06/2027	01/23/2023 / lwona	06/06/2022 / lwona	W3001

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	/ ICV-CN	ICV6-400	12/31/2024	01/03/2024 / lwona	02/20/2020 / lwona	W3011

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
SIGMA ALDRICH	270970-1L / Pyridine 1L	SHBQ2113	04/03/2028	04/03/2023 / lwona	04/03/2023 / lwona	W3019

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	470112-662 / TEST STRIPES, NITRATE/NITRITE, PK50	402403	04/30/2026	05/02/2024 / lwona	04/10/2024 / lwona	W3101

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

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

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	140444 / TEST PAPERS,PH 0-14,.5 SENSI,100PK	HC446507	07/25/2029	07/25/2024 / lwona	07/25/2024 / lwona	W3121

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	JTE494-6 / CHLORAMINE-T BAKER 250GM	10239484	09/09/2029	09/09/2024 / lwona	09/09/2024 / lwona	W3139

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	RC2543-4 / CYANIDE STD 1000PPM 4OZ	1405J81	11/30/2024	09/25/2024 / lwona	09/25/2024 / lwona	W3142

W2918
W3001
rec. 06/06/22
exp. 06/06/27

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
Product	Magnesium chloride hexahydrate
Lot Number	002251-03319 Magnesium chloride•6H ₂ O
CAS Number	7791-18-6
Molecular Formula	MgCl ₂ •6H ₂ O
Molecular Weight	203.3

Appearance	Colorless crystals, very deliquescent
Heavy Metals	< 5 ppm
Anion	Nitrate : < 0.001% Phosphate : < 5 ppm Sulfate : < 0.002%
Cation	Ammonium : < 0.002% Barium : < 0.005% Calcium : 0.0006% Iron : < 5 ppm Manganese : 1.8 ppm Potassium : 0.0006% Sodium : 0.0008% Strontium : 0.0015%
Insoluble material	0.0025%
Assay by titration	100.29%
Grade	ACS reagent
Storage	Store at RT
Country of Origin	India

Certificate of Analysis

Catalog Number: 01237

Lot Number: 002251-03319

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



Bala Kumar
Quality Control Manager

W3019
rec 4/3/23

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.comEmail USA: techserv@sial.comOutside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:

Pyridine - anhydrous, 99.8%

Product Number:

270970

Batch Number:

SHBQ2113

Brand:

SIAL

CAS Number:

110-86-1

MDL Number:

MFCD00011732

Formula:

C₅H₅N

Formula Weight:

79.10 g/mol

Quality Release Date:

15 DEC 2022



Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
Infrared Spectrum	Conforms to Structure	Conforms
Purity (GC)	≥ 99.75 %	99.99 %
Water (by Karl Fischer)	≤ 0.003 %	0.002 %
Residue on Evaporation	≤ 0.0005 %	< 0.0001 %


Larry Coers, Director
Quality Control
Sheboygan Falls, 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	$\leq 0.005 \%$	$< 0.005 \%$	PASS
Chloride	$\leq 0.005 \%$	0.002 %	PASS
Heavy Metals	$\leq 0.002 \%$	$< 0.002 \%$	PASS
Iron	$\leq 0.001 \%$	$< 0.001 \%$	PASS
Magnesium	$\leq 0.002 \%$	$< 0.002 \%$	PASS
Mercury	$\leq 0.1 \text{ ppm}$	$< 0.1 \text{ ppm}$	PASS
Nickel	$\leq 0.001 \%$	$< 0.001 \%$	PASS
Nitrogen Compounds	$\leq 0.001 \%$	$< 0.001 \%$	PASS
Phosphate	$\leq 0.001 \%$	$< 0.001 \%$	PASS
Potassium	$\leq 0.02 \%$	$< 0.02 \%$	PASS
Purity	$\geq 97.0 \%$	99.2 %	PASS
Sodium Carbonate	$\leq 1.0 \%$	0.5 %	PASS
Sulfate	$\leq 0.003 \%$	$< 0.003 \%$	PASS

Internal ID #: 710

Signature

We certify that this batch conforms to the specifications listed.

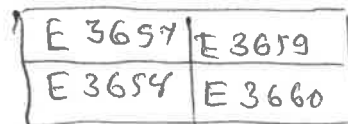
This document has been electronically produced and is valid without a signature.

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.





QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
"An ISO 9001:2015 Certified Program"

Instructions for QATS Reference Material: *Inorganic ICV Solutions*

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.

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

Safety Data Sheets
Available Upon Request

W2160, W2161, W2162,
W2163, W2164 Receive by
AP on 9/2/2016

(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.



Instructions for QATS Reference Material: *Inorganic ICV Solutions*

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) K₂Cr₂O₇ 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 K₃Fe(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

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

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



MS947 MS948 MS949
MS950 MS951 MS952

Material No.: 9530-33
Batch No.: 22G2862015
Manufactured Date: 2022-06-15
Retest Date: 2027-06-14
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
ACS – Assay (as HCl) (by acid–base titrn)	36.5 – 38.0 %	37.9 %
ACS – Color (APHA)	≤ 10	5
ACS – Residue after Ignition	≤ 3 ppm	< 1 ppm
ACS – Specific Gravity at 60°/60°F	1.185 – 1.192	1.191
ACS – Bromide (Br)	≤ 0.005 %	< 0.005 %
ACS – Extractable Organic Substances	≤ 5 ppm	< 1 ppm
ACS – Free Chlorine (as Cl ₂)	≤ 0.5 ppm	< 0.5 ppm
Phosphate (PO ₄)	≤ 0.05 ppm	< 0.03 ppm
Sulfate (SO ₄)	≤ 0.5 ppm	< 0.3 ppm
Sulfite (SO ₃)	≤ 0.8 ppm	0.3 ppm
Ammonium (NH ₄)	≤ 3 ppm	< 1 ppm
Trace Impurities – Arsenic (As)	≤ 0.010 ppm	< 0.003 ppm
Trace Impurities – Aluminum (Al)	≤ 10.0 ppb	1.3 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 3.0 ppb
Trace Impurities – Barium (Ba)	≤ 1.0 ppb	0.2 ppb
Trace Impurities – Beryllium (Be)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Bismuth (Bi)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 20.0 ppb	< 5.0 ppb
Trace Impurities – Cadmium (Cd)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	163.0 ppb
Trace Impurities – Chromium (Cr)	≤ 1.0 ppb	0.7 ppb
Trace Impurities – Cobalt (Co)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Copper (Cu)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Gallium (Ga)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Germanium (Ge)	≤ 3.0 ppb	< 2.0 ppb
Trace Impurities – Gold (Au)	≤ 4.0 ppb	0.6 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 15 ppb	6 ppb

>>> Continued on page 2 >>>

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

 **avantor™**



Material No.: 9530-33
Batch No.: 22G2862015

Test	Specification	Result
Trace Impurities – Lead (Pb)	≤ 1.0 ppb	< 0.5 ppb
Trace Impurities – Lithium (Li)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Magnesium (Mg)	≤ 10.0 ppb	2.9 ppb
Trace Impurities – Manganese (Mn)	≤ 1.0 ppb	< 0.4 ppb
Trace Impurities – Mercury (Hg)	≤ 0.5 ppb	0.1 ppb
Trace Impurities – Molybdenum (Mo)	≤ 10.0 ppb	< 3.0 ppb
Trace Impurities – Nickel (Ni)	≤ 4.0 ppb	< 0.3 ppb
Trace Impurities – Niobium (Nb)	≤ 1.0 ppb	0.8 ppb
Trace Impurities – Potassium (K)	≤ 9.0 ppb	< 2.0 ppb
Trace Impurities – Selenium (Se), For Information Only		< 1.0 ppb
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	< 10.0 ppb
Trace Impurities – Silver (Ag)	≤ 1.0 ppb	0.5 ppb
Trace Impurities – Sodium (Na)	≤ 100.0 ppb	2.3 ppb
Trace Impurities – Strontium (Sr)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Tantalum (Ta)	≤ 1.0 ppb	1.6 ppb
Trace Impurities – Thallium (Tl)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Tin (Sn)	≤ 5.0 ppb	4.0 ppb
Trace Impurities – Titanium (Ti)	≤ 1.0 ppb	1.5 ppb
Trace Impurities – Vanadium (V)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Zinc (Zn)	≤ 5.0 ppb	0.8 ppb
Trace Impurities – Zirconium (Zr)	≤ 1.0 ppb	0.3 ppb

>>> Continued on page 3 >>>

Hydrochloric Acid, 36.5–38.0%

BAKER INSTRA-ANALYZED® Reagent

For Trace Metal Analysis



Material No.: 9530-33
Batch No.: 22G2862015

Test	Specification	Result
------	---------------	--------

For Laboratory, Research, or Manufacturing Use
Product Information (not specifications):
Appearance (clear, fuming liquid)
Meets ACS Specifications
Storage Condition: Store below 25 °C.

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

James Ethier

Jamie Ethier
Vice President Global Quality



Certificate of Analysis

1.00132.0000 Barbituric acid for analysis EMSURE®
Batch N020065932

	Spec. Values		Batch Values	
Assay (acidimetric)	≥ 99	%	99.6	%
Identity (IR-spectrum)	passes test		passes test	
Chloride (Cl)	≤ 40	ppm	≤ 40	ppm
Heavy metals (as Pb)	≤ 50	ppm	≤ 50	ppm
Fe (Iron)	≤ 10	ppm	≤ 10	ppm
Sulfated ash	≤ 0.1	%	≤ 0.1	%
Loss on Drying (105 °C)	≤ 0.1	%	≤ 0.1	%
Suitability as reagent (for cyanide determination)	passes test		passes test	

Date of release (DD.MM.YYYY) 17.04.2020
Minimum shelf life (DD.MM.YYYY) 30.04.2025

Ioannis Chartomatsidis
Responsible laboratory manager quality control

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Sodium Phosphate, Monobasic, Monohydrate,
Crystal
BAKER ANALYZED® A.C.S. Reagent

(sodium dihydrogen phosphate, monohydrate)



Material No.: 3818-05
Batch No.: 0000225799
Manufactured Date: 2018/12/05
Retest Date: 2025/12/03
Revision No: 1

Certificate of Analysis

Meets ACS Reagent Chemical Requirements,

Test	Specification	Result
Assay ($\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$)	98.0 – 102.0 %	99.5
pH of 5% Solution at 25°C	4.1 – 4.5	4.3
Insoluble Matter	$\leq 0.01 \%$	< 0.01
Chloride (Cl)	$\leq 5 \text{ ppm}$	< 5
ACS – Sulfate (SO_4)	$\leq 0.003 \%$	< 0.003
Calcium (Ca)	$\leq 0.005 \%$	< 0.005
Potassium (K)	$\leq 0.01 \%$	< 0.01
Heavy Metals (as Pb)	$\leq 0.001 \%$	< 0.001
Trace Impurities – Iron (Fe)	$\leq 0.001 \%$	< 0.001

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

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


Jamie Ethier
Vice President Global Quality

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



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.

W3139 Received on 9/9/24 by IZ

Product No.: A12044
Product: Chloramine-T trihydrate, 98%
Lot No.: 10239484

Appearance:	White powder
Melting Point:	166°C(dec)
Assay (Iodometric titration):	100.5%
Identification (FTIR):	Conforms

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Products are processed under ISO 9001:2015 quality management systems and samples are tested for conformance to the noted specifications. Certain data may have been supplied by third parties. We disclaim the implied warranties of merchantability and fitness for a particular purpose, and the accuracy of third party data or information associated with the product. Products are for research and development use only. Products are not for direct administration to humans or animals. It is the responsibility of the final formulator or end user to determine suitability, and to qualify and/or validate each product for its intended use.

Certificate of Analysis

Cyanide Standard, 1000 ppm CN⁻

Lot Number: 1405J81

Product Number: 2543

Manufacture Date: MAY 20, 2024

Expiration Date: NOV 2024

This standard is prepared using accurate volumetric techniques from material that has been assayed against Silver Nitrate solution certified traceable to NIST Standard Reference Material 999. The certified value reported is the prepared value based upon the method of preparation of the material. The uncertainty in the prepared value is the combined uncertainty based on the stability of the assayed Potassium Cyanide, and the uncertainty in the mass and volume measurements.

Use 0.16% (w/v) (0.04 N) Sodium Hydroxide or 0.225 % (w/v) (0.04 N) Potassium Hydroxide to make dilutions of this standard. Restandardize weekly if extreme accuracy is required.

Name	CAS#	Grade
Water	7732-18-5	ACS/ASTM/USP/EP
Potassium Cyanide	151-50-8	ACS
Sodium Hydroxide	1310-73-2	Reagent

Test	Specification	Result
Appearance	Colorless liquid	Passed
Cyanide (CN ⁻)	995-1005 ppm	1000 ppm

Specification	Reference
Stock Standard Cyanide Solution	APHA (4500-CN- F)
Stock Cyanide Solution	APHA (4500-CN- E)
Stock Cyanide Solution	APHA (4500-CN- K)
Stock Cyanide Solution	APHA (4500-CN- H)
Cyanide Reference Solution (1000 mg/L)	EPA (SW-846) (7.3.3.2)
Cyanide Calibration Stock Solution (1,000 mg/L CN ⁻)	EPA (SW-846) (9213)
Stock Cyanide Solution	EPA (335.3)
Stock Cyanide Solution	EPA (335.2)
Cyanide Solution Stock	ASTM (D 4282)
Simple Cyanide Solution, Stock (1.0 g/L CN ⁻)	ASTM (D 4374)

Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured.

Part Number	Size / Package Type	Shelf Life (Unopened Container)
2543-16	500 mL amber poly	6 months
2543-4	120 mL amber poly	6 months

Recommended Storage: 2°C - 8°C (36°F - 46°F)



Heidi J Green (05/20/2024)
Operations Manager

This test report shall not be reproduced, except in full, without the written approval of Ricca Chemical Company.

SOP ID : MSFAM01.1-Cyanide-2

SDG No : MX1007

Start Digest Date: 11/22/2024 Time : 08:10 Temp : 123 °C

Matrix : SOIL

End Digest Date: 11/22/2024 Time : 09:40 Temp : 127 °C

Pipette ID : WC

Balance ID : WC SC-7

Hood ID : HOOD#1

Digestion tube ID : M5595

Block Thermometer ID : WC CYANIDE

Block ID : MC-1, MC-2

Filter paper ID : N/A

Prep Technician Signature:

Weigh By : JP

pH Meter ID : N/A

Supervisor Signature:

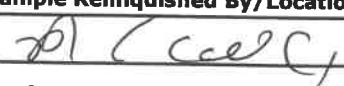

Standard Name	MLS USED	STD REF. # FROM LOG
PBS003	50.0ML	W3112
MDL	50.0ML	WP110846
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Chemical Used	ML/SAMPLE USED	Lot Number
0.25N NaOH	50.0ML	WP108640
50% v/v H2SO4	5.0ML	WP110391
51% w/v MgCL2	2.0ML	WP110390
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

LAB SAMPLE ID	CLIENT SAMPLE ID	Wt(g)/Vol(ml)	Comment
S0	S0	50ML	WP110843
S5.0	S5.0	50ML	WP110842
S10.0	S10.0	50ML	WP110841
S100.0	S100.0	50ML	WP110840
S250.0	S250.0	50ML	WP110839
S500.0	S500.0	50ML	WP110838
ICV	ICV	50ML	WP110845
ICB	ICB	50ML	WP108640
CCV	CCV	50ML	WP110844
CCB	CCB	50ML	WP108640
Midrange	Midrange	N/A	N/A
HIGHSTD	HIGHSTD	N/A	N/A
LOWSTD	LOWSTD	N/A	N/A

Extraction Conformance/Non-Conformance Comments:

MIDI-DISTILLATION_SOIL; I-ST BATCH MC-2 START TEMP:123 C; MC-2 END TEMP: 127 C; Block Therm.ID: WC-CYANIDE-2

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
11.22.2024, 09:50		
	Preparation Group	Analysis Group

Lab Sample ID	Client Sample ID	Initial Weight (g)	Final Vol (ml)	pH	Sulfide	Oxidizing	Nitrate/ Nitrite	Comment	Prep Pos
P4776-04	MDL-SOIL-QT4-2024-08	1.01	50	N/A	N/A	N/A	N/A	N/A	N/A
P4917-02	MX1008	1.00	50	N/A	N/A	N/A	N/A	N/A	N/A
PB165195BL	PBS195	1.00	50	N/A	N/A	N/A	N/A	N/A	N/A

SOP ID : MSFAM01.1-Cyanide-2

SDG No : MX1007

Matrix : WATER

Pipette ID : WC

Balance ID : N/A

Hood ID : HOOD#1

Block ID : MC-1, MC-2

Weigh By : N/A

Start Digest Date: 11/22/2024 Time : 08:10 Temp : 123 °C

End Digest Date: 11/22/2024 Time : 09:40 Temp : 127 °C

Digestion tube ID : M5595

Filter paper ID : N/A

pH Meter ID : N/A

Block Thermometer ID : WC CYANIDE

Prep Technician Signature:

Supervisor Signature:

Standard Name	MLS USED	STD REF. # FROM LOG
PBW	50.0ML	W3112
MDL	50.0ML	WP110846
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Chemical Used	ML/SAMPLE USED	Lot Number
0.25N NaOH	50.0ML	WP108640
50% v/v H2SO4	5.0ML	WP108076
51% w/v MgCL2	2.0ML	WP108075
pH Paper 0-14	N/A	W3121
Nitrate/Nitrite Strip	N/A	W3101
Lead Acetate strip	N/A	W3134
KI-starch paper	N/A	W2965
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
S0	S0	50ML	WP110843
S5.0	S5.0	50ML	WP110842
S10.0	S10.0	50ML	WP110841
S100.0	S100.0	50ML	WP110840
S250.0	S250.0	50ML	WP110839
S500.0	S500.0	50ML	WP110838
ICV	ICV	50ML	WP110845
ICB	ICB	50ML	WP108640
CCV	CCV	50ML	WP110844
CCB	CCB	50ML	WP108640
Midrange	Midrange	N/A	N/A
HIGHSTD	HIGHSTD	N/A	N/A
LOWSTD	LOWSTD	N/A	N/A

Extraction Conformance/Non-Conformance Comments:

MIDI-DISTILLATION_AQUEOUS; I-ST BATCH MC-2 START TEMP:123 C; MC-2 END TEMP: 127 C; Block Therm.ID: WC-CYANIDE-2, PT prep: 5mL of the concentrate and 2mL of 50% NAOH into 1000mL DI water.

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
11-22-2024, 09:50	rd / WC	NF(WC)
	Preparation Group	Analysis Group

Lab Sample ID	Client Sample ID	Initial Vol (ml)	Final Vol (ml)	pH	Sulfide	Oxidizing	Nitrate/ Nitrite	Comment	Prep Pos
P4776-02	MDL-WATER-QT4-2024-08	50	50	>10	Negative	Negative	Negative	N/A	N/A
P4917-06	MX1012	50	50	>10	Negative	Negative	Negative	N/A	N/A
PB165196BL	PBW196	50	50	>10	Negative	Negative	Negative	N/A	N/A

Instrument ID: KONELAB

Daily Analysis Runlog For Sequence/QC Batch ID # LB133577

Review By	Niha Farheen Shaik	Review On	11/25/2024 9:19:36 AM
Supervise By	Iwona Zarych	Supervise On	11/25/2024 9:25:04 AM

STD. NAME	STD REF.#
ICAL Standard	WP110843,WP110842,WP110841,WP110840,WP110839,WP110838
ICV Standard	WP110845
CCV Standard	WP110844
ICSA Standard	
CRI Standard	
LCS Standard	
Chk Standard	WP110103,WP109089,WP110847

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0.0	S0	CAL1	11/22/24 10:12		Niha	OK
2	S5.0	S01	CAL2	11/22/24 10:12		Niha	OK
3	S10.0	S02	CAL3	11/22/24 10:12		Niha	OK
4	S100.0	S03	CAL4	11/22/24 10:12		Niha	OK
5	S250.0	S04	CAL5	11/22/24 10:12		Niha	OK
6	S500.0	S05	CAL6	11/22/24 10:12		Niha	OK
7	ICV001	ICV001	ICV	11/22/24 11:10		Niha	OK
8	ICB001	ICB001	ICB	11/22/24 11:10		Niha	OK
9	CCV001	CCV001	CCV	11/22/24 11:10		Niha	OK
10	CCB001	CCB001	CCB	11/22/24 11:10		Niha	OK
11	PB165195BL	PBS195	MB	11/22/24 11:10		Niha	OK
12	P4776-04	MDL-SOIL-QT4-2024	SAM	11/22/24 11:10		Niha	OK
13	P4917-02	MX1008	SAM	11/22/24 11:17	Cn High	Niha	Dilution
14	P4917-02DL	MX1008	SAM	11/22/24 11:17	5x For Cn	Niha	Confirms
15	PB165196BL	PBW196	MB	11/22/24 11:25		Niha	OK
16	P4776-02	MDL-WATER-QT4-20	SAM	11/22/24 11:25		Niha	OK
17	P4917-06	MX1012	SAM	11/22/24 11:25		Niha	OK
18	CCV002	CCV002	CCV	11/22/24 11:25		Niha	OK

Instrument ID: KONELAB

Daily Analysis Runlog For Sequence/QCBatch ID # LB133577

Review By	Niha Farheen Shaik	Review On	11/25/2024 9:19:36 AM				
Supervise By	Iwona Zarych	Supervise On	11/25/2024 9:25:04 AM				

STD. NAME	STD REF.#
ICAL Standard	WP110843,WP110842,WP110841,WP110840,WP110839,WP110838
ICV Standard	WP110845
CCV Standard	WP110844
ICSA Standard	
CRI Standard	
LCS Standard	
Chk Standard	WP110103,WP109089,WP110847

19	CCB002	CCB002	CCB	11/22/24 11:25		Niha	OK
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A Waters Company



Instructions for Catalog # 540QR Metals in Soil

Revision 111122

Description:

- This standard is packaged in a 2-ounce glass jar containing approximately 30 grams of soil.
- This standard is not preserved.
- The standard can be stored at room temperature.
- The standard will contain all the analytes listed in the ranges specified on the data reporting form.

Before you Begin:

- The Mercury in this standard should be determined using the digestion and analytical procedures in the current version of EPA method 7471, or equivalent.
- The other metals in this standard should be determined using EPA digestion methods 3050 or 3051 followed by your normal analysis procedures.
- This standard should not be analyzed for Hexavalent Chromium. A separate standard, ERA catalog number 921QR, is available for Hexavalent Chromium.
- Although all ERA soil standards have been thoroughly blended prior to shipping, the standards should be homogenized prior to taking an aliquot for analysis due to settling which may occur during shipping.
- The percent moisture of this standard should be determined, and your analytical results adjusted accordingly and reported on a dry weight basis.

Instructions:

1. Open the Metals in Soil standard in a fume hood to avoid inhalation of dust.
2. Mix the sample well prior to removing aliquots for analysis.
3. Digest and analyze the standard using your normal procedures.
4. Determine the percent moisture of an aliquot of the Metals in Soil standard.
5. Report your results as mg/kg on a dry weight basis.

Safety:

ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Safety Data Sheets (SDS) for all ERA products are available through our website www.eraqc.com.



A Waters Company



Instructions for Catalog # 500QR

WatR™Pollution Trace Metals

Revision 030512

Description:

- This standard is packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate.
- This concentrate is preserved with approximately 2% (v/v) nitric acid.
- The concentrate can be stored at room temperature.
- The diluted standard will contain all the analytes listed in the ranges specified on the data reporting form.

Before you begin:

- The sample resulting from the dilution described below will have a nitric acid concentration of approximately 0.02% before any acid is added. You may add a volume of acid different from the 2 to 5 mL of HNO₃ suggested in order to matrix match your calibration standards or meet any other method criteria.
- If analyzing this standard using colorimetric techniques, it may be necessary to pH adjust the sample prior to analysis. If using colorimetric techniques, it is acceptable to omit the addition of the 2-5 mL nitric acid suggested.
- While it is technically not necessary to digest this standard prior to analysis, digestion should be performed if this is your normal procedure.
- This standard should be analyzed as soon as possible after the concentrate is diluted.

Instructions:

1. Add 100-200 mL of deionized water and approximately 2 to 5 mL of nitric acid to a clean 500 mL class A volumetric flask.
2. Shake the Trace Metals vial prior to opening.
3. Using a clean, dry, class A pipet, volumetrically pipet 5.0 mL of the concentrate into the 500 mL volumetric flask.
4. Dilute the flask to final volume with deionized water.
5. Cap the flask and mix well.
6. Immediately analyze the diluted sample by your normal procedures.
7. Report your results as µg/L for the diluted sample.

Safety:

ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Material Safety Data Sheets (MSDS) for all ERA products are available by calling 1-800-372-0122.



A Waters Company



Instructions for Catalog # 541QR

Cyanide in Soil

Revision 030512

Description:

- This standard is packaged in a 2-ounce glass jar containing approximately 40 grams of soil.
- This standard is not preserved.
- The standard can be stored at room temperature.
- The standard will contain Reactive and Total Cyanide in the range specified on the data reporting form.

Before you Begin:

- This standard is designed to be distilled using the procedures in the most recent revisions of EPA methods 9010, 9012 or equivalent.
- Although all ERA soil standards have been thoroughly blended prior to shipping, the standards should be homogenized prior to taking an aliquot for analysis due to settling which may occur during shipping.
- The percent moisture of this standard should be determined and your analytical results adjusted accordingly and reported on a dry weight basis.

Instructions:

1. Open the Cyanide in Soil standard in a fume hood to avoid inhalation of dust.
2. Mix the sample well prior to removing aliquots for analysis.
3. Distill and analyze the standard using your normal procedures.
4. Determine the percent moisture of an aliquot of the Cyanide in Soil standard.
5. Report your results as mg/kg on a dry weight basis.

Safety:

ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Material Safety Data Sheets (MSDS) for all ERA products are available by calling 1-800-372-0122.



A Waters Company



Instructions for Catalog #666QR

WatR™Supply Mercury

Revision 030512

Description:

- This standard is packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate.
- This concentrate is preserved with approximately 1% (v/v) nitric acid and 0.04% (w/v) potassium dichromate.
- The concentrate can be stored at room temperature.
- The diluted standard will contain Mercury in the range specified on the data reporting form.

Before you begin:

- This standard has been prepared as a concentrate and must be diluted prior to analysis.
- The USEPA *Criteria Document* requires that Mercury be present as a mixture of organic and inorganic forms and must, therefore, be analyzed as Total Mercury.
- This standard should be analyzed as soon as possible after the concentrate is diluted.

Instructions:

1. Add 100-200 mL of deionized water and approximately 2 to 5 mL of nitric acid to a clean 500 mL class A volumetric flask.
2. Shake the Mercury vial prior to opening.
3. Using a clean, dry, class A pipet, volumetrically pipet 5.0 mL of the concentrate into the 500 mL volumetric flask.
4. Dilute the flask to final volume with deionized water.
5. Cap the flask and mix well.
6. Immediately analyze the diluted sample by your normal procedures.
7. Report your results as $\mu\text{g/L}$ for the diluted sample.

Safety:

ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Material Safety Data Sheets (MSDS) for all ERA products are available by calling 1-800-372-0122.



A Waters Company



Instructions for Catalog # 697QR

WatR™ Supply Metals

Revision 030512

Description:

- This standard is packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate.
- This concentrate is preserved with approximately 2% (v/v) nitric acid.
- The concentrate can be stored at room temperature.
- The diluted standard will contain all the analytes listed in the ranges specified on the data reporting form.

Before you begin:

- This standard has been prepared as a concentrate and must be diluted prior to analysis.
- The sample resulting from the dilution described below will have a nitric acid concentration of approximately 0.01% before any acid is added. You may add a volume of acid different from the 2 to 5 mL of nitric acid suggested in order to match the matrix of your calibration standards or to meet any other method requirements.
- If analyzing this standard using colorimetric techniques, it may be necessary to pH adjust the sample prior to analysis. If using colorimetric techniques, it is acceptable to omit the addition of the 2-5 mL nitric acid suggested.
- While it is technically not necessary to digest this standard prior to analysis, digestion should be performed if this is your normal procedure.
- This standard should be analyzed as soon as possible after the concentrate is diluted.

Instructions:

1. Add 100-200 mL of deionized water and approximately 2 to 5 mL of nitric acid to a clean 1000 mL class A volumetric flask.
2. Shake the Metals vial prior to opening.
3. Using a clean, dry, class A pipet, volumetrically pipet 5.0 mL of the concentrate into the 1000 mL volumetric flask.
4. Dilute the flask to final volume with deionized water.
5. Cap the flask and mix well.
6. Immediately analyze the diluted sample by your normal procedures.
7. Report your results as $\mu\text{g/L}$ for the diluted sample.

Safety:

ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Material Safety Data Sheets (MSDS) for all ERA products are available by calling 1-800-372-0122.



A Waters Company



Instructions for Catalog # 983QR

WatR™ Supply Cyanide

Revision 030512

Description:

- This standard is packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate.
- This concentrate is preserved with approximately 0.25%(w/v) sodium hydroxide.
- The concentrate can be stored at room temperature.
- The diluted standard will contain Total Cyanide in the range specified on the data reporting form.

Before you begin:

- This standard has been prepared as a concentrate and must be diluted prior to analysis.
- This standard does not require distillation prior to analysis.
- This standard should be analyzed as soon as possible after the concentrate is diluted.

Instructions:

1. Add 100-200 mL of deionized water and approximately 1 to 2 mL of 50% sodium hydroxide to a clean 1000 mL class A volumetric flask.
2. Shake the Cyanide vial prior to opening.
3. Using a clean, dry, class A pipet, volumetrically pipet 5.0 mL of the concentrate into the 1000 mL volumetric flask.
4. Dilute the flask to final volume with deionized water.
5. Cap the flask and mix well.
6. Immediately analyze the diluted sample by your normal procedures.
7. Report your results as mg/L for the diluted sample.

Safety:

ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Material Safety Data Sheets (MSDS) for all ERA products are available by calling 1-800-372-0122.