

DATA PACKAGE GENERAL CHEMISTRY

PROJECT NAME : R36720

**TETRA TECH, EMI
240 Continental Drive, Suite 200**

**Newark, DE - 19713
Phone No: 302-738-7551**

**ORDER ID : P4648
ATTENTION : Ava Heiss**



Laboratory Certification ID # 20012



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Cover Page

Order ID : P4648

Project ID : R36720

Client : Tetra Tech, EMI

Lab Sample Number

P4648-01
P4648-02
P4648-03
P4648-05
P4648-06
P4648-07

Client Sample Number

C0JZ7
C0JZ9
C0K01
C0K06
C0K08
C0K24

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: 11/6/2024

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012



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

CASE NARRATIVE

Tetra Tech, EMI

Project Name: R36720

Project # N/A

Chemtech Project # P4648

Test Name: Oil and Grease

A. Number of Samples and Date of Receipt:

6 Water samples were received on 10/31/2024.

B. Parameters:

According to the Chain of Custody document, the following analyses were requested: Oil and Grease. This data package contains results for Oil and Grease.

C. Analytical Techniques:

The analysis of Oil and Grease was based on method 1664A.

D. QA/ QC Samples:

The Holding Times were met for all analysis.

The Blank Spike met requirements for all samples.

The Duplicate analysis met criteria for all samples.

The Blank analysis did not indicate the presence of lab contamination.

The Calibration met the requirements.

E. Additional Comments:

As per method 1664A, MS/MSD is required to be performed with the sample analysis. However, Lab did not receive sufficient volume to perform the MS/MSD therefore MS/MSD were not performed for this project.

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. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature_____

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

GENERAL CHEMISTRY CONFORMANCE/NON-CONFORMANCE SUMMARY

CHEMTECH PROJECT NUMBER: P4648

MATRIX: Water

METHOD: 1664A

	NA	NO	YES
1. Blank Contamination - If yes, list compounds and concentrations in each blank:		✓	
2. Matrix Spike Duplicate Recoveries Met Criteria			✓
If not met, list those compounds and their recoveries which fall outside the acceptable range.			
The Blank Spike met requirements for all samples.			
3. Sample Duplicate Analysis Met QC Criteria			✓
If not met, list those compounds and their recoveries which fall outside the acceptable range.			
4. Digestion Holding Time Met			✓
If not met, list number of days exceeded for each sample:			

ADDITIONAL COMMENTS:

As per method 1664A, MS/MSD is required to be performed with the sample analysis. However, Lab did not receive sufficient volume to perform the MS/MSD therefore MS/MSD were not performed for this project.

QA REVIEW

Date

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: P4648

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: SOHIL JODHANI

Date: 11/06/2024

LAB CHRONICLE

OrderID:	P4648	OrderDate:	10/31/2024 11:08:00 AM
Client:	Tetra Tech, EMI	Project:	R36720
Contact:	Ava Heiss	Location:	K61

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
P4648-01	C0JZ7	WATER			10/29/24 12:20			10/31/24
			Oil and Grease	1664A			11/03/24 13:30	
P4648-02	C0JZ9	WATER			10/29/24 12:30			10/31/24
			Oil and Grease	1664A			11/03/24 13:30	
P4648-03	C0K01	WATER			10/29/24 12:45			10/31/24
			Oil and Grease	1664A			11/03/24 13:30	
P4648-05	C0K06	WATER			10/29/24 12:05			10/31/24
			Oil and Grease	1664A			11/03/24 13:30	
P4648-06	C0K08	WATER			10/29/24 11:20			10/31/24
			Oil and Grease	1664A			11/03/24 13:30	
P4648-07	C0K24	WATER			10/29/24 10:00			10/31/24
			Oil and Grease	1664A			11/03/24 13:30	



SAMPLE DATA

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Report of Analysis

Client:	Tetra Tech, EMI	Date Collected:	10/29/24 12:20
Project:	R36720	Date Received:	10/31/24
Client Sample ID:	C0JZ7	SDG No.:	P4648
Lab Sample ID:	P4648-01	Matrix:	WATER
		% Solid:	0

Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
Oil and Grease	0.40	J	1	0.40	5.00	mg/L		11/03/24 13:30	1664A

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:	Tetra Tech, EMI	Date Collected:	10/29/24 12:30
Project:	R36720	Date Received:	10/31/24
Client Sample ID:	C0JZ9	SDG No.:	P4648
Lab Sample ID:	P4648-02	Matrix:	WATER
		% Solid:	0

Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
Oil and Grease	0.40	U	1	0.40	5.00	mg/L		11/03/24 13:30	1664A

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:	Tetra Tech, EMI	Date Collected:	10/29/24 12:45
Project:	R36720	Date Received:	10/31/24
Client Sample ID:	C0K01	SDG No.:	P4648
Lab Sample ID:	P4648-03	Matrix:	WATER
		% Solid:	0

Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
Oil and Grease	0.40	U	1	0.40	5.00	mg/L		11/03/24 13:30	1664A

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:	Tetra Tech, EMI	Date Collected:	10/29/24 12:05
Project:	R36720	Date Received:	10/31/24
Client Sample ID:	C0K06	SDG No.:	P4648
Lab Sample ID:	P4648-05	Matrix:	WATER
		% Solid:	0

Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
Oil and Grease	0.40	U	1	0.40	5.00	mg/L		11/03/24 13:30	1664A

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:	Tetra Tech, EMI	Date Collected:	10/29/24 11:20
Project:	R36720	Date Received:	10/31/24
Client Sample ID:	C0K08	SDG No.:	P4648
Lab Sample ID:	P4648-06	Matrix:	WATER
		% Solid:	0

Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
Oil and Grease	0.40	U	1	0.40	5.00	mg/L		11/03/24 13:30	1664A

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:	Tetra Tech, EMI	Date Collected:	10/29/24 10:00
Project:	R36720	Date Received:	10/31/24
Client Sample ID:	C0K24	SDG No.:	P4648
Lab Sample ID:	P4648-07	Matrix:	WATER
		% Solid:	0

Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
Oil and Grease	0.40	U	1	0.40	5.00	mg/L		11/03/24 13:30	1664A

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

- 1
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Preparation Blank Summary

Client: Tetra Tech, EMI

SDG No.: P4648

Project: R36720

Analyte	Units	Result	Acceptance Limits	Conc Qual	MDL	RDL	Analysis Date
Sample ID:	LB133263BL						
Oil and Grease	mg/L	< 2.5000	2.5000	U	0.4	5.0	11/03/2024

Duplicate Sample Summary

Client:	Tetra Tech, EMI	SDG No.:	P4648
Project:	R36720	Sample ID:	LB133263BS
Client ID:	LB133263BSD	Percent Solids for Spike Sample:	0

Analyte	Units	Acceptance Limit	Sample Result	Conc. Qualifier	Duplicate Result	Conc. Qualifier	Dilution Factor	RPD/AD	Qual	Analysis Date
Oil and Grease	mg/L	+/-18	16.8		17.0		1	1.18		11/03/2024

Laboratory Control Sample Summary

Client: Tetra Tech, EMI

SDG No.: P4648

Project: R36720

Run No.: LB133263

Analyte	Units	True Value	Result	Conc. Qualifier	% Recovery	Dilution Factor	Acceptance Limit %R	Analysis Date
Sample ID	LB133263BS							
Oil and Grease	mg/L	20.0	16.8		84	1	78-114	11/03/2024

Laboratory Control Sample Summary

Client: Tetra Tech, EMI

SDG No.: P4648

Project: R36720

Run No.: LB133263

Analyte	Units	True Value	Result	Conc. Qualifier	% Recovery	Dilution Factor	Acceptance Limit %R	Analysis Date
Sample ID	LB133263BSD							
Oil and Grease	mg/L	20.0	17.0		85	1	78-114	11/03/2024



RAW DATA

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Extraction and Analytical Summary Report

Analysis Method: 1664A
Test: Oil and Grease
Run Number: LB133263
Analysis Date: 11/03/2024
BalanceID: WC SC-6
OvenID: EXT OVEN-3

ANALYST: jignesh
REVIEWED BY: Iwona
Extraction Date: 11/03/2024
Extraction IN Time: 12:15
Extraction OUT Time: 12:50
Thermometer ID: EXT OVEN#3

Dish #	Lab ID	Client ID	Matrix	pH	Sample Vol (ml)	Final Volume (ml)	Empty Dish Weight (g)	Final Empty Dish Weight (g)	Silica Gel Weight (g)	Weight After Drying (g)	Final Weight After Drying (g)	Change Weight (g)	Result in ppm
1	LB133263BL	LB133263BL	WATER	1.3	1000	100	2.5639	2.5639	0	2.5640	2.5640	0.0001	0.1
2	LB133263BS	LB133263BS	WATER	1.3	1000	100	2.9741	2.9741	0	2.9909	2.9909	0.0168	16.8
3	LB133263BSD	LB133263BSD	WATER	1.3	1000	100	2.8745	2.8745	0	2.8915	2.8915	0.0170	17
4	P4648-01	C0JZ7	WATER	1.3	1000	100	3.0152	3.0152	0	3.0156	3.0156	0.0004	0.4
5	P4648-02	C0JZ9	WATER	1.3	1000	100	2.7408	2.7408	0	2.7410	2.7410	0.0002	0.2
6	P4648-03	C0K01	WATER	1.3	1000	100	2.9360	2.9360	0	2.9363	2.9363	0.0003	0.3
7	P4648-05	C0K06	WATER	1.3	1000	100	2.9987	2.9987	0	2.9990	2.9990	0.0003	0.3
8	P4648-06	C0K08	WATER	1.3	1000	100	2.7305	2.7305	0	2.7307	2.7307	0.0002	0.2
9	P4648-07	C0K24	WATER	1.3	1000	100	2.9633	2.9633	0	2.9635	2.9635	0.0002	0.2
10	P4651-01	C0K10	WATER	1.3	1000	100	3.1367	3.1367	0	3.1370	3.1370	0.0003	0.3
11	P4651-02	C0K12	WATER	1.3	1000	100	2.4136	2.4136	0	2.4140	2.4140	0.0004	0.4
12	P4651-03	C0K14	WATER	1.3	1000	100	3.1152	3.1152	0	3.1154	3.1154	0.0002	0.2
13	P4651-04	C0K16	WATER	1.3	1000	100	3.0847	3.0847	0	3.0850	3.0850	0.0003	0.3
14	P4651-05	C0K18	WATER	1.3	1000	100	3.1302	3.1302	0	3.1303	3.1303	0.0001	0.1
15	P4651-06	C0K20	WATER	1.3	1000	100	2.5363	2.5363	0	2.5365	2.5365	0.0002	0.2
16	P4651-07	C0K22	WATER	1.3	1000	100	2.3666	2.3666	0	2.3669	2.3669	0.0003	0.3

QC Batch# LB133263 Test: Oil and Grease Analysis Date: 11/03/2024

Chemicals Used:

Chemical Name	Chemical Lot #
HEXANE	W3110
pH Paper 0-14	M6069
Sodium Sulfate	EP2554
1:1 HCL	WP108566
Silica Gel	NA
Sand	NA

Standards Used:

Standard Name	Amount Used	Standard Lot #
LCSW	2.5 ML	WP108567
LCSWD	2.5 ML	WP108568
MS/MSD	NA	NA

BALANCE CALIBRATION / OVEN Dessicator Data

Analytical Balance ID # : WC SC-6

Before Analysis

0.0020 gram Balance: 0.0018 (0.0018-0.0022) In OVEN TEMP1 : 70 °C Dessicator Time In1 : 14:26
 1.0000 gram Balance: 1.0004 (0.9950-1.0050) In Time1: 13:30
 Bal Check Time: 12:30 Out OVEN TEMP1: 70 °C Dessicator Time Out1: 15:00
 Out Time1: 14:25

After Analysis

0.0020 gram Balance: 0.0019 (0.0018-0.0022) In OVEN TEMP2 : 71 °C Dessicator Time In2 : 16:01
 1.0000 gram Balance: 1.0005 (0.9950-1.0050) In Time2: 15:30
 Bal Check Time: 16:40 Out OVEN TEMP2: 71 °C Dessicator Time Out2: 16:37
 Out Time2: 16:00

WORKLIST(Hardcopy Internal Chain)

NB 133263

WorkList Name : oil & grease p4648 WorkList ID : 185063 Department : Wet-Chemistry Date : 11-03-2024 12:01:51

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
P4648-01	C0JZ7	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A
P4648-02	C0JZ9	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A
P4648-03	C0K01	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A
P4648-05	C0K06	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A
P4648-06	C0K08	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A
P4648-07	C0K24	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A
P4651-01	C0K10	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A
P4651-02	C0K12	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A
P4651-03	C0K14	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A
P4651-04	C0K16	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A
P4651-05	C0K18	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A
P4651-06	C0K20	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A
P4651-07	C0K22	Water	Oil and Grease	Conc H2SO4 to pH < 2	TETR16	K61	10/29/2024	1664A

Date/Time 11/03/24 12:10
Raw Sample Received by: JO Gue
Raw Sample Relinquished by: RJ (KAL-1.0.0)

Date/Time 11/03/24 16:30
Raw Sample Received by: RJ Gue
Raw Sample Relinquished by: JO Gue

Instrument ID: WC SC-3

Daily Analysis Runlog For Sequence/QC Batch ID # LB133263

Review By	jignesh	Review On	11/3/2024 1:11:22 PM
Supervise By	Iwona	Supervise On	11/4/2024 8:58:29 AM
SubDirectory	LB133263	Test	Oil and Grease
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	W3110,M6069,EP2554,WP108566,NA,NA,WP108567,WP108568,NA		

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	LB133263BL	LB133263BL	MB	11/03/24 13:30		jignesh	OK
2	LB133263BS	LB133263BS	LCS	11/03/24 13:30		jignesh	OK
3	LB133263BSD	LB133263BSD	LCSD	11/03/24 13:30		jignesh	OK
4	P4648-01	C0JZ7	SAM	11/03/24 13:30		jignesh	OK
5	P4648-02	C0JZ9	SAM	11/03/24 13:30		jignesh	OK
6	P4648-03	C0K01	SAM	11/03/24 13:30		jignesh	OK
7	P4648-05	C0K06	SAM	11/03/24 13:30		jignesh	OK
8	P4648-06	C0K08	SAM	11/03/24 13:30		jignesh	OK
9	P4648-07	C0K24	SAM	11/03/24 13:30		jignesh	OK
10	P4651-01	C0K10	SAM	11/03/24 13:30		jignesh	OK
11	P4651-02	C0K12	SAM	11/03/24 13:30		jignesh	OK
12	P4651-03	C0K14	SAM	11/03/24 13:30		jignesh	OK
13	P4651-04	C0K16	SAM	11/03/24 13:30		jignesh	OK
14	P4651-05	C0K18	SAM	11/03/24 13:30		jignesh	OK
15	P4651-06	C0K20	SAM	11/03/24 13:30		jignesh	OK
16	P4651-07	C0K22	SAM	11/03/24 13:30		jignesh	OK

Prep Standard - Chemical Standard Summary

Order ID : P4648

Test : Oil and Grease

Prepbatch ID :

Sequence ID/Qc Batch ID: LB133263,

Standard ID :

EP2554,WP108566,WP108567,WP108568,

Chemical ID :

E3551,E3726,M5943,M6069,W2606,W2817,W2871,W3009,W3082,W3110,

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Extractions 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>
3923	Baked Sodium Sulfate	EP2554	10/26/2024	01/03/2025	RUPESHKUMAR SHAH	Extraction_SC ALE_2 (EX-SC-2)	None	Rajesh Parikh 10/26/2024
FROM 4000.00000gram of E3551 = Final Quantity: 4000.000 gram								

<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>
229	1:1 HCL	WP108566	06/27/2024	10/24/2024	Jignesh Parikh	None	None	Iwona Zarych 06/27/2024
FROM 500.00000ml of M5943 + 500.00000ml of W2606 = Final Quantity: 1.000 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>
2470	1664A SPIKING SOLN	WP108567	06/27/2024	12/25/2024	Jignesh Parikh	None	None	Iwona Zarych 06/27/2024
FROM 1000.00000ml of E3726 + 4.00000gram of W2817 + 4.00000gram of W2871 = 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>
3374	1664A QCS spiking solution-SS	WP108568	06/27/2024	12/25/2024	Jignesh Parikh	WETCHEM_S CALE_4 (WC SC-4)	None	Iwona Zarych 06/27/2024
FROM 1000.00000ml of E3726 + 4.00000gram of W3009 + 4.00000gram of W3082 = Final Quantity: 1000.000 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.	PC19631-100 / SODIUM SULFATE, ANHYDROUS, PEST GRADE, 1	313201	01/03/2025	01/03/2024 / Rajesh	07/20/2023 / Rajesh	E3551

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	12/25/2024	02/26/2024 / Rajesh	02/23/2024 / Rajesh	E3726

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	12/24/2024	06/24/2024 / Al-Terek	06/21/2024 / Al-Terek	M5943

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	140440 / TEST PAPERS,PH,0-2.5,.2SENSI, 100PK	80A0441	02/29/2028	09/03/2024 / jignesh	08/19/2024 / Jaswal	M6069

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.	A12244 / Stearic acid, 98%, 100 g	U20E006	04/02/2026	04/02/2021 / apatel	04/02/2021 / apatel	W2817

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	H223-57 / Hexadecane, 99.0%	0000266903	05/04/2027	09/07/2021 / apatel	08/26/2021 / apatel	W2871

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	H223-57 / Hexadecane, 99.0%	SHBP8192	02/27/2028	02/27/2023 / lwona	02/27/2023 / lwona	W3009

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	A12244 / Stearic acid, 98%, 100 g	U23E020	02/26/2029	02/26/2024 / lwona	02/26/2024 / lwona	W3082

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9262-03 / Hexane, Ultra-Resi (cs/4x4L)	235898	02/28/2029	06/27/2024 / jignesh	06/26/2024 / jignesh	W3110

Hexadecane, 99.0%



Material No.: H223-57
Batch No.: 0000266903
Manufactured Date: 2020/05/05
Retest Date: 2027/05/04
Revision No: 1

Certificate of Analysis

Test	Specification	Result
Assay (CH ₃ (CH ₂) ₁₄ CH ₃) (by GC)	>= 99.0 %	99.3
Infrared Spectrum	Passes Test	PT

For Laboratory, Research or Manufacturing Use

Country of Origin: US
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

W2817
REC. 04/02/2021

Product Name: Stearic acid, 98%, Thermo Scientific Chemicals
Catalog Number: A12244.14

CAS Number: 57-11-4
Molecular Formula: C₁₈H₃₆O₂
Molecular Weight: 284.48
InChI Key: QIQXTHQIDYTRH-UHFFFAOYSA-N
SMILES: CCCCCCCCCCCCCCCCC(O)=O
Synonym: stearic acid acide stearique hydrofol acid 1855 hydrofol acid 1655 industrene 5016
stearic acid, ion(1-) (8Cl) glycon TP glycon DP acidum stearinicum hydrofol acid 150

Product Specification

Appearance (Color): White
Form: Crystals or powder or crystalline powder or flakes or waxy solid
Assay (Silylated GC): ≥97.5%
Melting Point (clear melt): 67.0-74.0°C

Date Of Print: 11/30/2023

Product Specifications are subject to amendment and may change over time. Data contained is accurate as of the date printed.

W3009
rec. 2/27/2023 12

Product Name:

Hexadecane - ReagentPlus®, 99%

Certificate of Analysis

Product Number:

H6703

Batch Number:

SHBP8192

 $\text{CH}_3(\text{CH}_2)_{14}\text{CH}_3$

Brand:

SIAL

CAS Number:

544-76-3

MDL Number:

MFCD00008998

Formula:

C16H34


Formula Weight:

226.44 g/mol

Quality Release Date:

04 AUG 2022

Test	Specification	Result
Appearance (Color)	Colorless or White	Colorless
Appearance (Form)	Liquid or Solid	Liquid
Infrared Spectrum	Conforms to Structure	Conforms
Refractive index at 20 ° C	1.432 - 1.436	1.435
Purity (GC)	≥ 98.5 %	99.3 %
Color Test	≤ 20 APHA	< 5 APHA


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.





**PRODUCTOS
QUÍMICOS
MONTERREY, S.A. DE C.V.**

MIRADOR 201, COL. MIRADOR
MONTERREY, N.L. MEXICO
CP 64070
TEL +52 81 13 52 57 57
www.pqm.com.mx

CERTIFICATE OF ANALYSIS

PRODUCT :	SODIUM SULFATE CRYSTALS ANHYDROUS		
QUALITY :	ACS (CODE RMB3375)	FORMULA :	Na ₂ SO ₄
SPECIFICATION NUMBER :	6399	RELEASE DATE:	ABR/21/2023
LOT NUMBER :	313201		

TEST	SPECIFICATIONS	LOT VALUES
Assay (Na ₂ SO ₄)	Min. 99.0%	99.7 %
pH of a 5% solution at 25°C	5.2 - 9.2	6.1
Insoluble matter	Max. 0.01%	0.005 %
Loss on ignition	Max. 0.5%	0.1 %
Chloride (Cl)	Max. 0.001%	<0.001 %
Nitrogen compounds (as N)	Max. 5 ppm	<5 ppm
Phosphate (PO ₄)	Max. 0.001%	<0.001 %
Heavy metals (as Pb)	Max. 5 ppm	<5 ppm
Iron (Fe)	Max. 0.001%	<0.001 %
Calcium (Ca)	Max. 0.01%	0.002 %
Magnesium (Mg)	Max. 0.005%	0.001 %
Potassium (K)	Max. 0.008%	0.003 %
Extraction-concentration suitability	Passes test	Passes test
Appearance	Passes test	Passes test
Identification	Passes test	Passes test
Solubility and foreign matter	Passes test	Passes test
Retained on US Standard No. 10 sieve	Max. 1%	0.1 %
Retained on US Standard No. 60 sieve	Min. 94%	97.3 %
Through US Standard No. 60 sieve	Max. 5%	2.5 %
Through US Standard No. 100 sieve	Max. 10%	0.1 %
COMMENTS		
QC: PhC Irma Belmares		

If you need further details, please call our factory or contact our local distributor.

Recd. by R3 on 7/24/23 E 3551

RC-02-01, Ed. 3

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

avantor™



MS943 MS944
MS945 MS946

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



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

 **avantorsm**

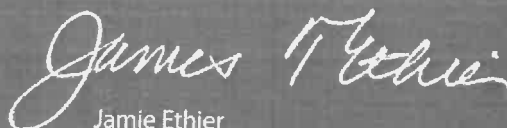


Material No.: 9530-33
Batch No.: 22G2862015

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

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



Jamie Ethier
Vice President Global Quality

Certificate of Analysis

Product information

Product	pH-Fix 0.3-2.3
REF	92180
LOT	80A0441
Expiration date:	29.02.2028
Date of examination:	23.01.2024
Gradation:	pH 0.3-0.7-1.0-1.3-1.6-1.9-2.3

Confirmation

Hereby we confirm, that the above mentioned product has successfully passed our quality control system in accordance with ISO 9001 and meets the specific quality criteria.

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

Certificate of analysis

W3082 Received on 2/26/2026 by IZ

Product No.: A12244
Product: Stearic acid, 98%
Lot No.: U23E020

Appearance White flakes
Assay 98.7 %

This document has been electronically generated and does not require a signature.

Order our products online www.alfa.com

ThermoFisher
SCIENTIFIC

W3110
58
operate!
06/27/2024

Certificate of Analysis

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

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

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

Catalog Number	H303	Quality Test / Release Date	02/23/2024
Lot Number	235898		
Description	HEXANES - OPTIMA		
Country of Origin	United States	Suggested Retest Date	Feb/2029
Chemical Origin	Organic - non animal		
BSE/TSE Comment	No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product.		

N/A			
Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	Clear, colorless liquid
ASSAY (N-HEXANE)	%	>= 60	73
ASSAY (SUM C6 HYDROCARBONS)	%	>= 99.9	>99.9
COLOR	APHA	<= 5	<5
DENSITY AT 25 DEGREES C	GM/ML	Inclusive Between 0.653 - 0.673	0.670
EVAPORATION RESIDUE	ppm	<= 1	0.3
FLUORESCENCE BACKGROUND	ppb	<= 1	<1
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
OPTICAL ABS AT 195 NM	ABS. UNITS	<= 1	0.64
OPTICAL ABS AT 210 NM	ABS. UNITS	<= 0.25	0.16
OPTICAL ABS AT 220 NM	ABS. UNITS	<= 0.07	0.06
OPTICAL ABS AT 254 NM	ABS. UNITS	<= 0.005	0.002
PESTICIDE RESIDUE ANALYSIS	NG/L	<= 10	<10
REFRACTIVE INDEX @ 25 DEG C		Inclusive Between 1.375 - 1.385	1.380
SUITABILITY FOR GC/MS		= PASS TEST	PASS TEST
SULFUR COMPOUNDS	%	<= 0.005	<0.005
THIOPHENE	PASS/FAIL	= PASS TEST	PASS TEST
WATER (H2O)	%	<= 0.01	<0.01
WATER-SOLUBLE TITRABLE ACID	MEQ/G	<= 0.0003	0.0001

Harout Sahagian

Harout Sahagian - Quality Control Manager - Fair Lawn

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

*Based on suggested storage condition.



SHIPPING DOCUMENTS

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USEPA CLP COC (LAB COPY)

DateShipped: 10/30/2024

CarrierName: FedEx

AirbillNo: 779630335370

CHAIN OF CUSTODY RECORD

DAS #: R36720

Cooler #: Oil and Grease TW/SW

No: 3-103024-151714-0082

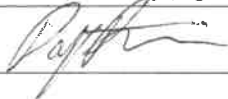

Lab: Chemtech Lab

Lab Contact: Yazmeen Gomez

Lab Phone: (908) 728-3147

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
ET-TW-01-20241029	C0JZ7	Treatment Water/ START	Grab	O/G(14)	2891 (H2SO4) (1)	TW-01	10/29/2024 12:20	
ET-TW-02-20241029	C0JZ9	Treatment Water/ START	Grab	O/G(14)	2895 (H2SO4) (1)	TW-02	10/29/2024 12:30	
ET-TW-03-20241029	C0K01	Treatment Water/ START	Grab	O/G(14)	2899 (H2SO4) (1)	TW-03	10/29/2024 12:45	
ET-TW-04-20241029	C0K04	Treatment Water/ START	Grab	O/G(14)	2906 (H2SO4) (1)	TW-04	10/29/2024 12:40	Backup
ET-WW-01-20241029	C0K06	Waste Water/ START	Grab	O/G(14)	2910 (H2SO4) (1)	WW-01	10/29/2024 12:05	
ET-WW-02-20241029	C0K08	Waste Water/ START	Grab	O/G(14)	2914 (H2SO4) (1)	WW-02	10/29/2024 11:20	
ET-DUP-01-20241029	C0K24	Waste Water/ START	Grab	O/G(14)	2951 (H2SO4) (1)	DUP-01	10/29/2024 10:00	

Special Instructions: Oil and Grease TW/SW	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #
Analysis Key: O/G=Oil and Grease	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	 START	10/30/24 1000		945 10-31-24	1 Sample 1 4.2 Custody Seal Intact Temp Blank present

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